



EFFECT OF SELECTED MACROECONOMIC FACTORS ON BANK LENDING BEHAVIOUR: EVIDENCE FROM NSE-LISTED COMMERCIAL BANKS IN KENYA

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Abstract

The study investigated the influence of selected macroeconomic factors on bank lending behaviour among commercial banks listed on the Nairobi Securities Exchange (NSE), Kenya. It is widely known that macroeconomic conditions are important determinants of bank credit, but empirical evidence from Kenya is mixed regarding the direction and magnitude of effects of individual macroeconomic variables. Therefore, the study focused on the direct macroeconomic determinants of lending behaviour and adopted a longitudinal quantitative panel design. Secondary data were collected from 2014 to 2024 on 11 NSE-listed commercial banks. Pooled mean group autoregressive distributed lag (PMG-ARDL) estimation was employed because the variables had different orders of integration, where some were stationary at level and some at

first difference. Kao testing indicated a stable long-run relationship, and Hausman specification test favoured the PMG estimator ($\chi^2(6)=5.83$, $p=.442$). The results reveal a positive and significant effect of GDP growth on bank lending behaviour ($\beta=0.2145$, $p=.008$) and a significant negative effect of interest rate ($\beta=-0.5318$, $p=.002$). The exchange rate had a positive and significant effect ($\beta=0.1432$, $p=.006$) while inflation had negative effect on lending behaviour ($\beta=-0.1984$, $p=.006$). The direct-effects model accounted for 65.7% of the variation in bank lending behaviour. The study concludes that sustainable economic growth and exchange-rate stability help to expand credit, whereas high interest rates and persistent inflation limit bank lending. The results have implications on monetary policy, regulation of the financial sector and bank credit-risk management in Kenya.

Keywords: Bank lending behaviour; GDP growth; interest rate; exchange rate; inflation

INTRODUCTION

The commercial banks are central players in financial intermediation, mobilizing deposits and allocating financial resources to households, firms and productive sectors. Bank lending is a key transmission mechanism between financial conditions and real economic activity (Mishkin, 2019; Vo, 2018) because it finances investment, working capital, household consumption and employment. But bank-specific decisions are not the only factor influencing the volume and direction of bank credit. Lending is influenced by changes in credit demand, funding costs, borrower repayment capacity, perceived risk and banks' willingness to take on credit exposure (Bernanke & Blinder, 1988; Vo, 2018) in response to the wider macroeconomic environment.

Macroeconomic factors are the basic elements of an economy that could affect the country's economic performance. Macroeconomics is the study of the behaviour, structure and performance of an economy as a whole i.e. GDP, foreign exchange rate, interest rate and inflation rate (Franco, 2014). Portfolio risk analysis classifies macroeconomic factors as unsystematic risks since they are not firm-specific and cannot be diversified through holding a variety of investment securities in a portfolio (Wairimu & Gitundu, 2017). The literature identifies GDP and inflation as the relevant macroeconomic factors for the financial sector in Kenya that have fluctuated somewhat throughout time (Wairimu & Gitundu, 2017).

Every loan and potential borrower is unique, and as such, different lending rates may be needed to reflect the economic conditions of the country where the loan is being given. Financial institutions can consider different factors like the creditworthiness of a customer, previous interaction with the institution, the maturity period of the loan, the non-fee services provided by the bank for the maintenance of the loan, the fixed or flexible maturities and rates,

and maturity factors to determine the loan rate that they charge (Thiong'o et al., 2024). Cost of funding is a key factor for commercial banks in determining lending rates and the overall performance of the economy in terms of GDP. Furthermore, customers' risk profile is the most common attributes used to evaluate a borrower's credit risk profile are creditworthiness, repayment ability, loan repayment period, type and amount borrowed, collateral value, market concentration risk, and a variety of the other products offered to clients (Galvis-Ciro et al., 2023).

Ngure et al. (2022) not only showed that lending rates are a problem especially in SSA countries, but also pointed out inflation and GDP as factors affecting lending rates in Kenyan banks. The tests on exchange rate effect reveal that the effect is minimal that influence the lending rates. The studies assume direct correlations and test the interest rate spread and found that inflation has a positive effect on lending rates and GDP harms lending rates (Orange & Okenyuri, 2013). While Galvis-Ciro et al. (2023) and Ekanayake (2018) found a positive effect of GDP on lending rates and a negative one between inflation and lending rates. The research on the effect of macroeconomic factors such as GDP and inflation and lending rates is therefore complex. Some suggest a direct positive correlation while others suggest that high inflation can lead to tight monetary policy and increased lending rates to compensate for the diminished purchasing power of money and stifle demand for loans (Banda, 2018). This makes the landscape for understanding bank lending behaviour complicated, and that is the reason for the choice of GDP, interest rate, exchange rate and inflation for this investigation.

Thus, bank lending is important for private sector investment and economic development in Kenya but lending conditions can be sensitive to macroeconomic instability. Fluctuations in interest rates may lead to higher borrowing costs; inflation can erode real incomes and increase uncertainty in repayment; changes in exchange rates can affect the cost of imported inputs and foreign currency obligations; and weak economic growth can result in lower credit demand and borrowers' ability to service debt (Galvis-Ciro et al., 2023; Nadeem et al., 2021; Vo, 2018). Despite the significance of these relationships, empirical findings are mixed and the relative importance of individual macroeconomic variables is not always clear.

Evidence has often been focused on bank performance, lending rates, credit risk or individual macroeconomic variables, rather than on the joint long-run relationship between the four factors and bank lending behaviour (Galvis-Ciro et al., 2023; Vo, 2018). Further, the Kenyan regulatory and macroeconomic environment has changed, and evidence from earlier periods is less directly relevant to the current banking sector (Central Bank of Kenya, 2024; International Monetary Fund, 2024). Therefore, the study tries to answer the question how far

GDP growth, interest rates, exchange rates and inflation impact the lending behaviour of NSE listed commercial banks in Kenya.

LITERATURE REVIEW

GDP Growth Influence on Bank Lending Behaviour

Bank performance is affected by business fluctuations proxied by real GDP growth. As economic growth slows down, the quality of loans declines and NPLs increase, which in turn leads to higher borrowing margins and wider credit spreads, thus establishing an inverse relationship between economic growth and credit spreads. As the economy grows and borrowers' incomes rise, debt-servicing capacity and overall financial stability improve and this creates the relationship. Therefore, a growing economy with higher income, less financial stress and GDP growth should be negatively correlated with NPLs (Nishani, 2018).

Mokaya (2018) analyzed the determinants of commercial bank lending rates in Kenya using a census of 39 commercial banks. The study adopted a positivist philosophy and non-experimental research design. Secondary panel data was analyzed using STATA 13. The study revealed that operating expenses, inflation and credit risk generally had positive effects and were significant determinants of the lending rates. However, the effect was negative for GDP and size of the bank. Political risk had an insignificant moderating effect on the relationship between the bank characteristics, the macroeconomic indicators and the lending rates in Kenyan CBs.

Otero et al. (2015) found that bank lending has a significant effect on economic growth in emerging economies with Kenya being a good example. The study, used panel data from 17 economies from 1995-2012 and found that both domestic credit to the private sector and the credit-to-GDP ratio had a positive impact on GDP growth. However, the quality of bank lending, measured by NPL ratio to total loans, had negative effect on economic growth. This means that high levels of NPAs hamper the effectiveness of bank lending in promoting growth in the economy. The investigation implied that policymakers should focus on improving the quality of bank lending and reducing NPLs to improve the impact of bank credit on economic growth.

Asongu et al. (2017) examined the impact of bank lending and credit growth on GDP growth in sub-Saharan Africa. The findings of the study indicate a positive impact of bank lending on credit expansion on the growth of GDP in sub-Saharan Africa. This reaffirms the significance of a sound and stable financial system in stimulating economic growth. The study suggests an increase in bank lending and credit growth can lead to higher levels of investment and consumption, which can boost economic activity and GDP growth in the region. Access to credit enables businesses to invest in new projects, expand operations and create jobs which

enhances the overall performance of the economy. The study also highlighted the role of government policies in providing a conducive environment for bank lending on credit growth.

Using the Vector Auto Regression (VAR) model, Liu et al. (2016) investigated the effect of bank lending on economic growth in China over the period 1995-2013. The results showed that bank lending had a positive impact on economic growth in the short run and long run, with a stronger impact in the industrial and services sectors. This implied that bank lending could be an important source of growth in these sectors. The study therefore provides important insights into effect of bank lending and economic growth in Kenya. The results highlight the importance of a sound banking system in fostering growth and development of economy.

Serrasqueiro et al., (2018) investigated the impact of the global financial crisis of 2008 on the financing-growth relationship of Portuguese SMEs. Data from the Portuguese national database (SCIE) at the firm level for the period 2000–2012 and Generalized Method of Moments (GMM) estimators to consider endogeneity and unobservable heterogeneity. The results suggest that internal financing (cash flow) and external debt had a positive effect on the growth of SMEs before the crisis. However, in the post-crisis period, debt had a strongly negative effect, especially for young and small firms, reflecting tighter credit conditions. The study suggests policy interventions to support SMEs during economic crises, including credit guarantee schemes, diversified financing options, and resilience-building strategies based on firm characteristics.

Ezekiel et al. (2017) carried out research on the relationship between bank credit, economic growth and financial stability in Central and Eastern Europe countries. The study showed that bank lending has a positive effect on economic growth through investment, consumption and overall economic activity. However, the study also indicated the need for financial stability while promoting bank lending as excessive lending can lead to financial crises and economic instability. Ezekiel et al. (2017) also investigated the link between the bank lending channel of monetary policy and the performance of the Nigerian economy using data from the Central Bank of Nigeria and other sources. The results showed that increase in bank lending results in higher economic growth in Nigeria. This shows the importance of the monetary policy in stimulating economic activity through bank lending. The findings have important implication to the policy makers and the central banks in designing the effective monetary policy to support long-term expansion in the economy.

Rashid and Yousaf (2015) examined the impact of bank lending and economic growth in Pakistan over the period of 1972 to 2011 using ARDL bounds testing. The study results showed a significant long-term effect of credit extension on the growth of GDP, thereby confirming the importance of the banking sector development for the economic performance. The empirical

evidence shows that the allocation of credit by commercial banks is a catalyst to the expansion of the macroeconomy. The deepening of the banking sector is an important engine of sustained economic growth in developing economies.

Exchange Rate influence on Bank Lending Behaviour

There are many studies that have examined the impact of macroeconomic variables and financial indicators on bank performance and credit risk in different contexts. Osano and Koine (2016) used secondary time-series data from 2005 to 2013 to study the effect of exchange rate volatility on performance of banks in Kenya. The regression analysis indicates that exchange rate volatility has a negative effect on the profitability of banks, particularly through exposure to foreign exchange risks. In the same vein, Osoba (2010) used GARCH model to find out the effect of exchange rate volatility on the performance of stock market in Nigeria. The findings showed a negative relationship, which means exchange rate volatility reduces investors' confidence and weakens capital market activity.

The influence of exchange rate fluctuations on banks' lending decisions has been investigated. Khan et al. (2023) note that changes in exchange rates can significantly affect banks' decisions to lend. When the exchange rate depreciates, the lending activity may be dampened because banks become more cautious. The effect of exchange rate fluctuations on the credit supply is different by bank type. The bigger banks are more able to resist the effects of the exchange rate fluctuations. For example, larger banks may be more resilient to the impact of changes in exchange rates than smaller banks which may be more vulnerable to changes in the exchange rate. The results showed that the exchange rate fluctuations had important implications for the bank credit supply which could have impact on the economic activity and growth.

Bhuyan et al. (2021) studied the determinants of bank lending behaviour of Bangladesh using panel data. They collected data from sampled banks and considered factors such as the bank-specific characteristics, the macroeconomic variables and the regulatory environment. The results reveal that the factors namely profitability, bank size, capital adequacy, liquidity and credit risk are the significant determinants of bank lending behaviour in Bangladesh. also factors, i.e. The GDP growth rate, inflation rate and interest rate had significant influence on the bank lending decision. These findings may provide useful information for the policy makers, regulators and the banking institutions to understand and predict the bank lending behaviour of the country.

Umaru et al. (2019) examined the effect of exchange rate volatility on economic growth in West African countries during the period 1980-2017. Annual time series data was obtained

from the World Bank and three panel data models were applied; Pooled Ordinary Least Squares (OLS), the Fixed Effects, and the Random Effects. The study found mixed effects of exchange rate volatility on economic growth, hence the need for in-depth analysis. Unobserved heterogeneity and varying intercepts across entities were controlled using fixed effects and random effect models, respectively, and the Hausman test was used to determine the most appropriate model. The study pointed out the importance of stable exchange rates to economic stability and growth through proposing that monetary policies be modified to reduce the negative effects of the exchange rate movements.

In a study of bank lending behaviour in Ghana, Booth and Ntow-Gyamfi (2016) found that exchange rate movements, inflation and economic growth were key factors. This suggests the complex nexus between these variables and the significance of comprehending the effect of exchange rate fluctuations on bank lending decisions. Understanding this can help policymakers and financial institutions anticipate and respond to changes in the market.

Flavio and Massimiliano (2018) show that exchange rate volatility negatively affects bank lending in emerging economies, particularly in more dollarized economies with less developed financial institutions. The study, which looked at data from 53 emerging economies between 2001 and 2014, found that depreciation in the home currency led to a fall in bank lending, while appreciation led to an increase. The results also emphasized the great importance of exchange rate changes for the stability and availability of credit in emerging economies, and recommended that policymakers to take these effects into account when formulating and implementing monetary policies.

Another study by Elod and Temesvary (2019) explored the effect of fluctuating exchange rates on the lending behaviour of banks in Central and Eastern European countries and found that changes in lending behaviour were induced by the fluctuations of the local currency. The study found that a currency depreciation increased the amount of lending, but a currency appreciation decreased lending. This tendency was consistent throughout the entire sample of countries. The study also finds that the impact of exchange rate volatility on bank lending is greater in countries with higher foreign currency lending levels, suggesting that banks in these countries are more exposed to foreign currency risk.

Basher et al. (2020) argue that interest rates and inflation may mediate the impact of exchange rate fluctuations on bank lending behaviour. High interest rates have less effect on bank lending behaviour, as they compensate for the risks associated with swings and banks are more willing to give out loans. Inflation also has the potential to lessen the impact of exchange rate fluctuations on bank lending behaviour. Banks may be less willing to lend because of the uncertainty and dangers involved with swings. The results suggest that certain macroeconomic

variables can affect the relationship between exchange rate volatility and bank lending behaviour, which highlights the need for policymakers to consider a multiplicity of factors when developing policies to encourage economic growth and stability.

Zhang et al. (2020) demonstrated that bank lending behaviour is substantially impacted by exchange rate risk. With the risk from fluctuating exchange rates on the rise, banks are becoming more cautious about making loans in an attempt to curb potential losses. This is also evident in the decisions to accept loans, where banks tend to lend to borrowers that are less exposed to exchange rate risk. Borrowers might be charged higher rates of interest and/or have to provide collateral to offset the increased risk of lending in a volatile exchange rate environment. Banks are more likely to offset increased exchange rate risk by changing the terms of the loan, for example by increasing the interest rate or demanding more collateral. The empirical literature shows a complicated relationship between exchange rate risk and bank lending behaviour. Further research is necessary to determine the mechanisms and to develop policy recommendations to mitigate the possible risks.

Empirical studies on the lending behaviour of banks and exchange rates reveal a complex relationship between them, where exchange rate movements affect bank lending decisions and overall financial stability. Further work is needed to better understand the mechanisms through which exchange rates influence bank lending behaviour and to formulate policy recommendations to avoid the potential dangers associated with this relationship.

Interest Rate Influence on Bank Lending Behaviour

Khan, Nadeem and Akram (2020) investigated the relationship between bank lending behaviour and macroeconomic indicators in South Asian countries. The study found a significant positive relationship between economic growth and bank lending. This means that the economic growth is related to the increase in the lending of banks to companies and consumers. Inflation also favourably affected bank lending because higher interest rates could spur demand for loans. In contrast, higher interest rates had a negative impact on bank lending. Increased interest rates can make borrowing more expensive for firms and individuals, and exchange rate volatility can increase the risks associated with lending. This study provides useful insights into the determinants of bank lending behaviour in South Asian countries. It will assist policymakers and regulators in making well-informed decisions to ensure the stability and growth of the banking sector. The results are in line with Janda and Zetek (2014) who found negative impact of interest rates on bank lending in the United States.

Nderitu and Onyangore (2019) found that changes in interest rates significantly affected bank lending behaviour in developing countries, with higher rates reducing lending and lower

rates increasing lending. How it affects depends on the type of bank and loan, with larger banks more sensitive to changes in interest rates and unsecured loans more sensitive to changes in interest rates. The study emphasizes the importance of considering the impact of interest rate volatility on the lending behaviour of banks in developing countries, which could have major economic consequences.

Adu, Amoah and Kwame (2018) examined the influence of bank lending behaviour, interest rate policy on economic development in Ghana. They found that bank lending behaviour has a significant positive effect on country economic growth. A low-interest-rate environment encourages banks to lend more, therefore promoting growth. But if rates are too low, it can lead to inflation and create imbalances in the financial system. The study provides evidence that bank lending behaviour and interest rate policy are key drivers of economic growth in Ghana and suggests policies that promote a lending environment while ensuring interest rates are set at levels that favour long-term economic growth.

Vo (2018) examined the bank behaviour of lending in emerging markets using panel data analysis across a sample of developing countries. In this study we employed the fixed effects regression model to examine the impact of macroeconomic conditions, especially inflation, interest rates and institutional quality, on the supply of bank credit. The results showed that increases in inflation and interest rate volatility were associated with a reduction in lending, while a strong institutional framework was conducive to credit expansion. The analysis identified a sensitivity of bank lending to macro-financial risks in less developed regulatory environments, and emphasized the need for macroeconomic stability for sustainable credit growth.

Ben Naceur et al. (2017) investigated factors that influence bank lending behaviour in European countries after the 2008 financial crisis, with particular emphasis on the impact of Basel III regulations. The investigation used the panel dataset of the listed commercial and investment banks of Europe and United States for the period 2008-2015. The investigation used panel regression techniques to evaluate the effect of bank-specific and macroeconomic variables on loan growth. The results suggest that bank size had a positive impact on lending, meaning that larger banks were more likely to lend. Higher capital adequacy and liquidity levels were associated with lower lending activity, indicating a trade-off between regulatory compliance and credit expansion. Profitability had a positive effect on lending, indicating that more profitable banks were more likely to lend. In addition to the bank-specific characteristics, macroeconomic factors, i.e. GDP, interest rates, inflation and unemployment, were also important. Increased lending was supported by higher GDP growth and lower unemployment rates, and discouraged by higher inflation and rising interest rates. The investigation stressed the need for better

understanding and monitoring of the institutional and economic drivers of bank lending to inform policies aimed at balancing financial stability and credit availability.

Mishra et al. (2016) examined the link between changes in the interest rate of central banks and the commercial bank lending in developing economies using a large panel data set of different countries for the period 1978-2013. The investigation used a Structural Vector Autoregression (SVAR) to study the transmission of policy rate shocks to lending rates and loan volumes. The analysis showed that interest rate pass-through is often partial and slow and that there is a lot of variation between countries in how quickly and how much interest rate changes are transmitted. The market structure of the banking sector, the level of financial market development and institutional characteristics such as contract enforcement and banking concentration are important determinants. The results showed that economies with deeper financial structures and more competitive banking sectors tend to have more complete and faster pass-through, while less developed economies have lower pass-through rates (long-run elasticity ≈ 0.29 vs. 0.35 in advanced economies). The study pointed to the importance of financial structure and institutional quality in determining the effectiveness of monetary policy in emerging markets.

The global financial crisis of 2007–2008 demanded a redefinition of the role of central banks, which went beyond the traditional objective of price stability to actively promote financial system stability (Botos, 2016). The crisis exposed the inadequacy of monetary policy alone and the limits of self-regulating markets, leading to a shift to macroprudential oversight. This required central banks to be more forward-looking, including early detection and containment of systemic risks such as credit bubbles and asset-price inflation. The study pointed to the need for coordinated action from central banks, regulatory bodies and fiscal authorities to protect financial stability. The regulation and supervision of the financial sector are portrayed as joint responsibilities that call for robust institutional mechanisms and cooperation among agencies. The lender of last resort function remains a valuable tool in times of financial distress, but should be used with clear guidelines to reduce moral hazard.

Louzis et al. (2012) examined the macroeconomic and bank-specific determinants of non-performing loans for mortgage, business and consumer loan portfolios in Greece. The study found that macroeconomic indicators, namely the unemployment rate, GDP growth and interest rates, had a significant impact on the quality of the loan portfolio, with business and consumer loans being more sensitive to economic conditions than mortgage loans. The level of non-performing loans was also affected by bank-level factors such as loan loss provisions, efficiency ratios and size of the institution, but with varying effects across loan categories. The study revealed that external macroeconomic shocks and internal bank operations jointly account

for variation in credit risk exposure. The results emphasise the significance of distinguishing between loan types when assessing portfolio risk and suggest that banks should engage in proactive loan monitoring and risk assessment. Thus, the findings provide useful insights for developing economies such as Kenya where the same dynamics between macroeconomic volatility and internal bank strategies may influence lending behaviour and credit risk outcomes.

Pestova et al. (2012) analysed determinants of credit risk in Russia using fixed effects panel regression with data from 2000 to 2010. The investigation found that both macroeconomic shocks (e.g., GDP decline and rising interest rates) and bank-specific characteristics (e.g., liquidity and capitalization) had significant effects on credit risk. Likewise, Rajha (2016) used panel data of Jordanian banks to study the determinants of non-performing loans for the period 2005–2014. The study found that GDP growth, unemployment and interest rates were the main macroeconomic determinants. Internal bank factors such as loan growth and credit monitoring were also important.

Overall, these studies contribute to our comprehension of the complicated relationship between bank lending practices and interest rates, providing insights into the various factors that influence patterns of access to credit in different countries and financial contexts.

Inflation Influence on Bank Lending Behaviour

There is little empirical work on the effect of inflation on bank lending behaviour, and what exists is recent. However, some studies have looked into the effect of inflation on the bank lending behaviour when considering wider macro-economic factors. For example, a study by Darmouni et al. (2015) explored the relationship between inflation, bank lending behaviour and economic growth using a sample of European banks. In the years of high inflation, the study found the effect of inflation was more pronounced, with banks less willing to lend. This was because inflation erodes the real value of loan repayments and reduces borrowers' ability to service debts, which makes banks more cautious in their lending activities. The investigation also revealed that inflation negatively affected the lending behaviour of banks, as an increase in inflation reduces the demand for loans. This can in turn stifle economic growth, as businesses may find it difficult to get the financing they need to expand and invest in new projects. The investigation also revealed that the relationship between inflation, bank lending behaviour and economic growth was more robust in countries with a high level of financial development. This means that a well-functioning financial system is needed to limit the negative impact of inflation on lending and economic growth. The findings suggested that the effects of inflation on banks' lending behaviour should be considered in monetary policy formulation and financial regulations

application. Understanding these relationships can help policymakers better support economic growth and stability in their countries.

Gómez et al. (2018) conducted another study that examined how inflation affected the lending behaviour of banks in emerging market economies. The authors found that inflation volatility had a negative impact on banks' lending decisions, resulting in lower credit growth and higher loan defaults. The uncertainty and risk associated with lending in high-inflation environments, however, led banks to tighten their lending standards and reduce their exposure to risky borrowers. The study also found that high inflation rates can be detrimental to bank lending because they increase the uncertainty and risk in the economy. This can lead to a fall in loan demand from households and firms, and a fall in banks' willingness to lend, because of concerns about loan repayment. High inflation rates can also eat into the real value of loan portfolios, possibly resulting in losses for banks. It could also affect their ability to lend, as they might have to put aside capital to cover potential loan defaults. The findings argued that it is essential to maintain an appropriate level of inflation for central banks in the emerging market economies so that they can allow a healthy level of bank lending and economic growth. The study also emphasizes the necessity of policies that curb inflation uncertainty and ensure macroeconomic stability, so as to promote a stable and efficient banking sector.

Rahn and Schmidt (2015) investigated the effects of inflation on the credit policy of central banks and examined the influence of inflation on the lending behaviour of banks in different countries. cross-country panel methodology was applied to study the impact of inflation on the credit policy of central banks. The study found that high inflation is often followed by tighter lending policies especially in emerging markets where monetary instability is more prevalent. The results highlighted the significance of inflation targeting for the stability of credit markets. In addition, central banks respond to rising inflation rates by tightening their credit policies so as to control inflation and maintain price stability. This credit policy tightening involved raising interest rates, reducing the money supply or other measures to tighten credit availability. Thus, the effectiveness of the central bank credit policies in controlling inflation were not uniform across the countries, depending on factors i.e. economic conditions, financial market structure and institutional factors. In general, the study emphasizes the role played by the central banks in lowering inflation and promoting economic stability in their credit policy. The study provides useful insights for policymakers and central banks in developing effective credit policies to control inflation and promote economic growth, especially in Kenya. It also adds to the literature on the link between inflation and central bank policies across different countries.

Gersbach and Schanz (2016) studied the relation between inflation and the performance of the financial sector, including bank lending. The investigation utilized data from 40 different countries over a 20-year period and found that higher levels of inflation are associated with lower financial sector performance. The study used metrics like bank profitability, credit growth, and stock market returns to measure financial sector performance, and found that higher inflation was associated with lower performance. The study claimed that this negative relationship was due to inflation eroding the real value of financial assets and increasing uncertainty in the economy. The study argues that high inflation reduces the value of financial assets, which reduces the profitability of financial institutions and results in less investment and lending, which in turn impacts economic growth and development. The study also showed that the impact of inflation on the performance of the financial sector varied with the level of financial development of a country. In particular, the adverse effects of inflation were more pronounced in less developed monetary systems. The findings indicate that inflation control is important for a healthy and efficient financial sector, which is important for sustainable economic growth.

Agung, Santoso and Pratomo (2025) investigated the relationship between inflation, fiscal shocks and bank lending behaviour in Asian economies. The research found that inflationary pressures tend to distort credit markets by raising the cost of borrowing and diminishing the repayment capacity of borrowers. This is consistent with evidence from Kenya, where it has been shown that inflation volatility reduces banks' willingness to extend credit. The study also found that fiscal shocks, particularly expansionary fiscal policies, crowd out private sector lending by increasing government borrowing and therefore limiting the ability of banks to allocate credit to households and firms. Additionally, the interaction of inflation and fiscal shocks leads to higher risk aversion of banks, which translates into tighter credit standards and weaker loan growth. This is consistent with the broader literature on the bank lending channel that argues that macroeconomic shocks (monetary or fiscal) directly affect bank lending decisions. The findings of Agung et al. (2025) therefore provide comparative evidence to support the findings of this dissertation, particularly the negative effects of inflation and fiscal instability on lending behaviour in commercial banks in Kenya.

Empirical literature findings generally indicate that inflation have a significant effect on bank lending behaviour. Higher inflation rates generally lead to reduced lending activity and tightening credit conditions. Further research is required to investigate the channels through which inflation influences bank lending behaviour and to determine the possible policy implications for managing inflation and its effects on the banking sector. Thus, this study will fill the gap in the literature by identifying the inflation effect on bank lending behaviour in CBs listed on the NSE, Kenya.

Theoretical Framework

The article is mainly based on the Bank Lending Channel Theory of Bernanke and Blinder (1988). The theory proposes that monetary policy influences aggregate economic activity through the cost of funds and the supply of bank credit. Tighter monetary conditions can reduce the demand for credit and at the same time reduce the banks' willingness or ability to lend. The theory gives a reasonable basis for expecting a negative relationship between interest rates and lending. The theory also provides a useful framework for the inclusion of wider macro-economic conditions. Economic growth can improve the balance sheets of borrowers and banks but risk and the expected return from lending can be changed by inflation and movements in exchange rates. Therefore, the theory prefers to analyse the four macro-economic indicators together rather than focusing on monetary policy alone.

Conceptual Framework and Hypotheses Development

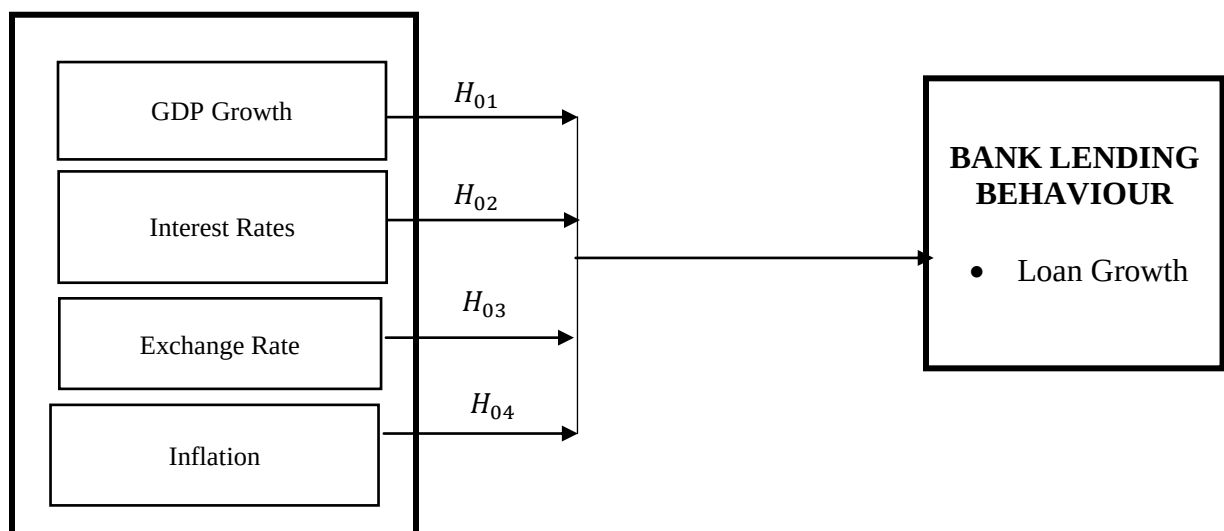


Figure 1: Conceptual Framework

The study tested the following hypotheses:

H_{01} There is no significant relationship between GDP growth and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{11} There is a significant relationship between GDP growth and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{02} There is no significant relationship between interest rates and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{12} There is a significant relationship between interest rates and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{03} There is no significant relationship between exchange rates and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{13} There is a significant relationship between exchange rates and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{04} There is no significant relationship between inflation and bank lending behaviour among NSE-listed commercial banks in Kenya.

H_{14} There is a significant relationship between inflation and bank lending behaviour among NSE-listed commercial banks in Kenya.

METHODOLOGY

Research Design and Population

The study adopted a quantitative longitudinal design, and data were collected using secondary panel data. The target population was commercial banks listed in the NSE and a census approach was applied to 11 listed commercial banks over 2014–2024. The final balanced panel contained 121 bank-year observations. The panel-data design was appropriate when observations are repeated across entities and time to investigate both cross-sectional and temporal variation (Wooldridge, 2020). The period 2014–2024 was selected to capture an adequate time span for the analysis of both short-run and long-run relationships using the PMG-ARDL approach. This period captures fluctuations in Kenya's economic growth, interest rates, inflation and exchange rates, including varying macroeconomic conditions and the economic disruption from COVID-19. The period was also selected based on the availability of complete and comparable bank-level and macroeconomic data for the 11 NSE-listed commercial banks in the census.

Data Sources and Variables

Bank-level information was collected from published financial statements and banking reports while macroeconomic information was collected from official economic and regulatory sources such as Central Bank of Kenya reports and national economic statistics (Central Bank of Kenya, 2023, 2024; World Bank, 2024). Bank lending behaviour (BLB) was measured as the log difference in gross loans, representing credit growth. GDP was measured by annual GDP growth, interest rate by the annual interest-rate measure used in the study, exchange rate by the USD/KES rate, and inflation by the annual inflation rate. Loan growth is a recognized measure of bank lending behaviour in the empirical literature (Vo, 2018; Le et al., 2022).

Table 1: Operational Definition of Terms

Variable	Operational measure	Expected relationship
BLB	Credit Growth	Dependent variable
GDP	Annual GDP growth rate (%)	Positive
Interest rate	Annual interest rate (%)	Negative
Exchange rate	USD/KES exchange rate	Ambiguous/empirical
Inflation	Annual inflation rate (%)	Negative

Econometric Model

The direct-effects model was specified as:

$$BLB_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 INT_{it} + \beta_3 EXC_{it} + \beta_4 INF_{it} + \varepsilon_{it}$$

Where, BLB denotes bank lending behaviour; GDP is Gross Domestic Product growth; INT is interest rate; EXC is exchange rate; INF is inflation; i is bank index; t is Years index; and ε is the error term.

Estimation Procedure

The statistical analysis was conducted using Stata software, version 16, and included descriptive statistics, Pearson correlation analysis, and diagnostic testing. Panel stationarity was assessed using the Levin-Lin-Chu test. The results showed the existence of both I(0) and I(1) variables, and no variable was integrated beyond I(1), which is a significant condition for PMG-ARDL estimation. Then, panel cointegration was tested by the residual test of Kao (Kao, 1999). Finally, the Hausman specification test was used to choose between Mean Group and Pooled Mean Group estimators. The test favoured PMG because the null hypothesis of long-run parameter homogeneity was not rejected (Pesaran et al., 1999). PMG-ARDL was selected because it allows different short-run dynamics across banks but requires common long-run coefficients (Pesaran et al., 1999). This is appropriate when banks face the same national macroeconomic and regulatory environment, but may adjust differently in the short run. The approach is thus consistent with the objective of separating short-run bank-specific adjustment from common macroeconomic relationships in the long-run.

RESULTS

Descriptive Statistics

The descriptive results show that the average yearly credit growth was 8.28% with a standard deviation of 2.18%. The mean GDP growth rate was 4.88% , the average inflation rate was 6.56% , the average interest rate was 8.68% and the mean USD/KES exchange rate was

91.49. These values are typical for a period of moderate economic growth with some variation in the macroeconomic environment. The macroeconomic series are broadly consistent with the type of indicators used in official Kenyan macroeconomic and financial-sector reporting (Central Bank of Kenya, 2024; World Bank, 2024).

Table 2: Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Maximum
Credit growth	121	0.0828	0.0218	0.0532	0.1253
Interest rate	121	0.0868	0.0033	0.0798	0.0941
Inflation	121	0.0656	0.0045	0.0573	0.0756
GDP growth	121	0.0488	0.0017	0.0456	0.0524
Exchange rate	121	91.4909	3.8031	83.1440	100.8873

Correlation Analysis

Correlation analysis provides preliminary evidence of associations between credit growth and the macroeconomic variables. In the bivariate matrix, credit growth was positively related to interest rate ($r=.7120$) and GDP ($r=.5101$). While credit growth was negatively related to inflation ($r=-.6372$) and exchange rate ($r=-.6129$). These correlations are descriptive and do not indicate the direction of the long-run relationships because they do not consider the dynamic adjustment or the joint effect of the variables.

Stationarity and Cointegration

Table 3: Stationarity and Cointegration Results

Test	Statistic	p-value	Decision
Kao ADF t	-6.1843	<.001	Reject no-cointegration null
Kao unadjusted DF t	-4.2758	<.001	Reject no-cointegration null
Kao modified DF t	-3.5627	.0002	Reject no-cointegration null
Kao DF t	-3.1489	.0008	Reject no-cointegration null
Kao unadjusted modified DF t	-2.9415	.0016	Reject no-cointegration null
Hausman $\chi^2(6)$	5.83	.442	Select PMG

The results of Levin-Lin-Chu indicated that BLB and GDP were level stationary, while interest rate, inflation and exchange rate were stationary after first difference. Thus the panel contains the $I(0)$ and $I(1)$ variables. The Kao residual test strongly rejected the null hypothesis of

no cointegration. The ADF statistic was -6.1843 ($p < .001$). Other Kao statistics were also statistically significant. Hence, the evidence is consistent with a stable long-run equilibrium relation between bank lending behaviour and the macroeconomic variables, in line with the purpose of residual-based panel cointegration testing (Kao, 1999).

PMG-ARDL Results

The Hausman test was $\chi^2(6)=5.83$ with $p=.442$, which suggests that there is no statistically significant difference between the long-run coefficients under Mean Group and PMG. Thus the PMG estimator was chosen. Below are the direct macroeconomic coefficients of the preferred PMG specification. This choice is consistent with the PMG framework, which allows for heterogeneous short-run responses but imposes common long-run coefficients if the data support such a structure (Pesaran et al., 1999).

Table 4: PMG-ARDL Results

Variable	Coefficient	Std. Error	z	p-value
GDP	0.2145	0.0812	2.64	.008
Interest rate	-0.5318	0.1736	-3.06	.002
Exchange rate	0.1432	0.0521	2.75	.006
Inflation	-0.1984	0.0715	-2.77	.006
Error-correction term	-0.6473	0.0614	-10.54	<.001

The coefficient on long-run GDP is positive and statistically significant ($\beta = 0.2145$, $p = 0.008$). This means that higher economic growth is associated with more bank lending. The coefficient of interest rates is negative and significant ($\beta = -0.5318$, $p = .002$), implying that higher borrowing costs reduce lending. The exchange rate coefficient is positive and significant ($\beta = 0.1432$, $p = .006$) and inflation has a negative and significant coefficient ($\beta = -0.1984$, $p = .006$). The negative and significant error-correction coefficient (0.6473 , $p = .001$) implies a quick response to short-run shocks in the long-run equilibrium, which is in line with the dynamic error-correction specification of the PMG models (Pesaran et al., 1999).

The short-run equation indicated that changes in GDP were positive and significant ($\Delta \text{GDP} = 0.0315$, $p = .009$) whereas changes in interest rates were negative and significant ($\Delta \text{IR} = -0.0876$, $p = .001$). The change in inflation was also negative and significant ($\Delta \text{INF} = -0.0247$, $p = .029$). The short-run exchange-rate coefficient was positive but slightly insignificant at the 5% level ($\Delta \text{EXC} = 0.0164$, $p = .051$). These results suggest that the long-run relationship between exchange rates is stronger than its immediate short-run effect. The PMG-

ARDL approach (Pesaran et al., 1999) has the advantage of distinguishing between short-run adjustments and long-run equilibrium.

Explanatory Power of the Model

The baseline direct-effects model produced an R-squared of 0.657, meaning that 65.7% of the variation in bank lending behaviour can be explained by the combined explanatory power of GDP growth, interest rates, exchange rates and inflation. This level of explanatory power suggests that macroeconomic conditions are an important part of a bank's lending environment but also allows for bank-specific, regulatory and institutional determinants, in line with the broader bank-lending literature that emphasises both macroeconomic and bank-specific influences (Vo, 2018; Gambacorta & Marqués-Ibáñez, 2011).

DISCUSSION

GDP Growth and Bank Lending Behaviour

The positive coefficient on GDP shows that higher bank lending is linked to economic expansion. As economic activity improves, firms have higher needs for investment and working capital, households have more income and borrowing capacity, and banks have better expectations about loan repayment. The result is consistent with the bank lending channel and financial intermediation views that predict higher credit allocation under better economic conditions (Bernanke & Blinder, 1988; Mishkin, 2019). It is also consistent with the evidence from Vietnamese commercial banks that GDP growth is significantly correlated with loan expansion (Le et al., 2022) and the evidence of macroeconomic condition effects on bank lending in emerging markets (Vo, 2018).

Interest Rates and Bank Lending Behaviour

The negative interest rate coefficient provides strong support for the hypothesis that high interest rates constrain bank lending in Kenya. Higher rates raise the cost of credit and may shrink the pool of potential borrowers. They may also increase debt-service burdens and default risk (Galvis-Ciro et al., 2023). This result is consistent with the monetary transmission mechanism suggested by Bernanke and Blinder (1988), and with the evidence that monetary tightening can reduce the supply of credit (Abuka et al., 2019; Gambacorta & Marqués-Ibáñez, 2011). This is of particular relevance to Kenya considering that monetary and financial sector conditions influence the environment in which commercial banks price and allocate credit (Central Bank of Kenya, 2024; International Monetary Fund, 2024).

Exchange Rates and Bank Lending Behaviour

The positive long-run exchange-rate coefficient suggests that the exchange-rate measure in the study is related to more long-run lending. Another perspective is that exchange rate conditions can increase the financing needs of trade-oriented firms and boost credit demand in sectors that generate foreign-exchange earnings. However, the result should be understood in the Kenyan structural context for example, exchange rate depreciation can at the same time increase the cost of imports and the burden of foreign currency obligations in local currency (Nadeem et al., 2021). Thus, the positive coefficient should not be taken as evidence that depreciation is always good for bank lending; the direction of the relationship depends on the institution and the exposure.

Inflation and Bank Lending Behaviour

The negative coefficient on inflation indicates that persistent price instability constrains bank lending. Inflation can erode the real purchasing power of the borrower, increase operating costs, and make future cash flows more uncertain. Banks may respond by raising their risk premiums and tightening their credit standards (Galvis-Ciro et al., 2023; Vo, 2018). This is in line with broader evidence that adverse macroeconomic conditions can increase credit risk and weaken financial intermediation in emerging markets (Galvis-Ciro et al., 2023). Moreover, the Kenyan financial-sector context emphasizes the necessity of maintaining macroeconomic and financial stability (Central Bank of Kenya, 2024; International Monetary Fund, 2024).

CONCLUSION

The study concluded that macroeconomic conditions are important determinants of bank lending behaviour of commercial banks listed on the NSE. Lending has a positive long-run relationship with GDP growth and the exchange rate, and negative long-run relationships with interest rates and inflation. The large error-correction coefficient also suggests that deviations from long-run equilibrium are corrected relatively quickly. Thus, the evidence shows that the expansion of bank credit in Kenya is highly correlated with the general economic environment rather than being solely determined by bank-specific considerations, in line with the bank lending literature (Vo, 2018; Le et al., 2022).

POLICY AND MANAGERIAL IMPLICATIONS

Monetary authorities should first consider the credit transmission effects of interest rate changes. Higher persistent rates may constrain private-sector credit and investment while tighter policy may be required to address inflation and macroeconomic imbalances. Secondly,

stable and sustainable economic growth policies may improve credit demand and banks' willingness to lend. Third, the management of exchange rates should consider the impact of currency volatility on the banking sector, particularly for borrowers in foreign currency and trade finance portfolios. Fourth, price stability is a precondition for sustainable credit expansion, as persistent inflation raises uncertainty and credit risk. Finally, commercial banks should incorporate macroeconomic scenarios into credit planning, portfolio management and stress testing so as to ensure that lending strategies are resilient across economic cycles.

LIMITATIONS AND FURTHER RESEARCH

The results are based on 11 NSE-listed commercial banks and should therefore not be generalized automatically to all commercial banks, non-listed banks, microfinance institutions or other financial intermediaries in Kenya. The analysis also employed secondary data and four macroeconomic variables. Future research may consider bank-specific variables such as capitalization, liquidity, profitability and asset quality; study nonlinear or asymmetric effects of macroeconomic shocks; and compare listed and non-listed banks. Alternative dynamic panel approaches may be used to test the robustness of the PMG-ARDL finding, especially considering the significance of bank-specific characteristics in the broader lending literature.

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