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Misati Roseline and Kamau Anne

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# Local and International Dimensions to Credit Provision by Commercial Banks in Kenya

Misati Roseline* and Kamau Anne*

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## Abstract

*Although considerable research has focused on the determinants of credit to the private sector, the issue still remains controversial, particularly with respect to the role of foreign banks in emerging markets. This study sought to understand the factors that affect lending of commercial bank loans both in form of foreign and local loans. It used panel data methods on quarterly bank-specific data covering the period 2000 to 2013. In general, the results reveal that the ownership structure, housing variable and the size of the bank are the main determinants of aggregate commercial bank lending. This conclusion is maintained even when we specifically examine the determinants of foreign loans and local loans separately. However, the role of the liquidity measure in not consistent in the different specifications while the role of interest rates is largely in line with expectation in most of the specifications. Implicitly, the results seem to suggest a need for mergers of small banks, policy focus on incentives for more local bank ownership and continued efforts on minimization of interest rate spread, which not only promote mortgage financing and home ownership but also overall credit growth.*

* *Central Bank of Kenya. The views in this paper are purely those of the authors and not necessarily those of the Central Bank of Kenya.*

# Introduction

**The Kenyan financial system has been evolving rapidly both in terms of institutional set up and financial products. Facilitated by an equally developing information technology, new financial products and models such as mobile financial services, agency banks, among others, have transformed the financial structure in Kenya.**

The improved technology has enabled banks to process data/information faster and efficiently; and has also led to increasingly cashless society with rapid growth in use of plastic money. Despite these developments, structural rigidities, evidenced by high interest rate spread, remain a major impediment in the banking sector growth. The banking market remains segmented and constrained with few credit lines. Large banks preferably lend and borrow from each other in the interbank market while small banks have limited credit because of perceived risk or non-existence of credit lines. Credit growth to the private sector in Kenya has thus been relatively sluggish compared to other African countries such as Mauritius and South Africa whose growth of private sector credit to GDP ratios are in triple digits. On average, growth of credit to the private sector as a ratio of GDP in Kenya increased from 33.6 percent in 2010 to an average of 38 percent in the period 2011-2013. This sluggish growth and some of the observed bottlenecks to credit growth necessitate an interrogation of the commercial bank lending behavior in Kenya using micro data.

In the literature, there is widespread consensus both in terms of theory and evidence that the banking sector plays a critical role in financial intermediation, investment and economic growth, particularly in countries where capital markets are underdeveloped. For investment and economic growth, the critical element of the banking sector is the ease with which firms and households obtain loans. Credit to the

private sector is therefore a core component of the banking sector as one of the main sources of finance particularly for small firms prevalent in Africa and in relatively underdeveloped financial systems.

Credit provision in Kenya is largely driven by the commercial banks that dominate the financial system. Banks mobilize deposits in both local and foreign currencies and use them to advance credit in similar currencies. Prior to liberalization of the financial system, loans were largely denominated in local currency, however, following financial sector liberalization, foreign denominated loans have been rising rapidly. This would be explained, among other factors, by the relatively low foreign interest rate spread compared to the local interest rate spread, which sometimes results in substitution of local currency loans for foreign currency loans, particularly when the exchange rate is also conducive. This changing structure of the banking sector has implications for commercial bank lending behavior and therefore warrants further analysis and understanding. For example, as noted in Haas et al., (2010), if domestic banks and foreign banks have access to different sorts of client information and process this information differently, they may focus on different customer types. In this case, local banks make decisions based on soft information while foreign banks that lack local knowledge may use standard quantitative methods to assess creditworthiness of clients. This may lead to general decline on aggregate credit growth. On the other, some studies in the literature contrastingly contend that foreign banks that acquire local banks may adopt new lending technologies to collect and process information that may facilitate increased credit flows to initially opaque entities (Torre et al., 2010; Claeys and Hainz, 2007 ).

Although some research on determinants of credit growth exists, little is known of the factors that affect the two components of credit growth, separately, in the form of foreign and local loans. This study is therefore critical for Kenya in view of: the lack of consensus in the literature concerning the role of foreign banks or foreign loans in enhancing credit growth; the rapid growth of foreign loans in Kenya in the recent past and presence of a diversified banking sector in Kenya in terms of ownership and size.

Moreover, the evolution in the financial structure has opened investment opportunities in the property market, which has also been rapidly evolving, particularly in the last five years. This also implies that the number of home owners as opposed to renters has grown and with it enhanced credit worthiness of consumers and households with possible implications on commercial bank credit behavior to tap the new market that is relatively not constrained with collateral requirements. Evaluating the determinants of credit growth in the last decade is thus important, particularly in the light of the recent global financial crisis that was partly caused by credit and housing bubble in the advanced economies.

It is against this background that this study seeks to understand the determinants of bank credit growth over the last decade. Previous studies in this subject using Africa data regardless of whether it is panel or time series are deficient in at least three respects, upon which this study complements. First, this study disaggregates loans into local and foreign currency denominations which is absent from other studies. Disaggregating loans into local and foreign currency will enable us understand whether the same factors drive both segments of the loans market. Second, the study will investigate the ownership structure and loan provisions to understand whether international affiliation matter when it comes to credit provision. Third, the study incorporates the mortgage market credit, proxied for, by the housing price index developed by Hass Consultant, a variable that is absent in previous studies. The study also provides an analytical review of bank credit across different sectors of the economy to establish if key sectors of economy receive bank credit.

Our research questions therefore constitute:

i. What are the determinants of commercial bank credit growth?

ii. Does ownership/international affiliation matter in credit provision in Kenya?

iii. Does the mortgage market matter in commercial bank credit?

iii. Are there differences in credit allocation to different sectors of the economy over time?

To address the first three questions, the study uses bank level data of all the commercial banks in Kenya with full data covering the period 2000-2013. It utilizes panel data techniques which are suitable to panel data studies. The last question is addressed analytically. Data is collected from balance sheets of commercial banks supplemented by data from the Central Bank of Kenya for other critical variables in this study.

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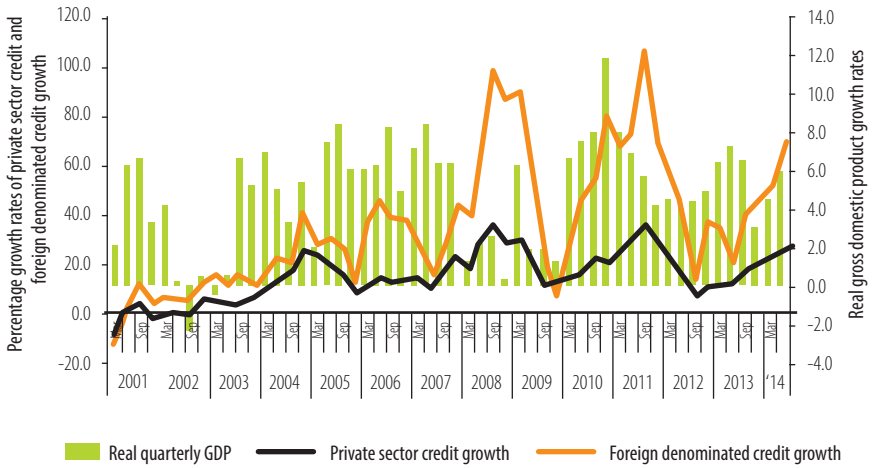
# Analysis of indicators of commercial bank credit provision

**The provision of credit in Kenya has been mainly through the commercial banks which provide credit in both foreign and local denominations. The provision of credit facilitates consumption and production of goods in the economy, which in turn leads to economic growth. According to theory, a fall in bank reserves leads to a decrease in bank loans which in turn lower investment spending, causing a fall in output and growth.**

According to this traditional view, credit channel operates through decisions made by businesses regarding investment spending, and also includes consumers' decisions on housing and consumer durable expenditure as investment decisions financed by loans. Figure 1, shows the trends in growth rates for private sector credit (PSC), foreign denominated credit (FC) and real Gross Domestic Product (GDP) for the period 2001-2014 June. From figure 1, economic growth seems to credit growth but with some lag as expected.

The general growth rate trend for PSC, FC and GDP is on the rise growing from annual average growth of -7.4 percent, 8.1 percent and 3.8 percent in 2000 to an annual average of 14.4 percent, 20.5 percent and 5.7 percent respectively in 2013. The first six months of 2014 continue to show an upward trend, growing to 23.2 percent, 31.2 percent and 5.8 percent for PSC, FC and GDP, an indication of increased demand and supply of credit in the market to support economic activities.

**Figure 1: Growth rates of private sector credit (PSC), foreign denominated credit (FC) and real gross domestic product (GDP)**




The period before December 2007 is dominated by lower growth rates of credit as compared to period after 2008, reflecting impact of financial reforms, innovations and technology undertaken after global financial crisis of 2007/2008, which have resulted to higher credit growth in Kenya. In 2011, credit growth rate rose significantly above targets, rising to 36 percent and 59% for local and foreign credit respectively. This was as a result of the government stimulus program of 2010 to stimulate the economy following the 2009 second round effects of global financial crisis that spilled over to 2011. Generally the growth of credit has been on rise in the recent past with possible positive implications on the economic growth.

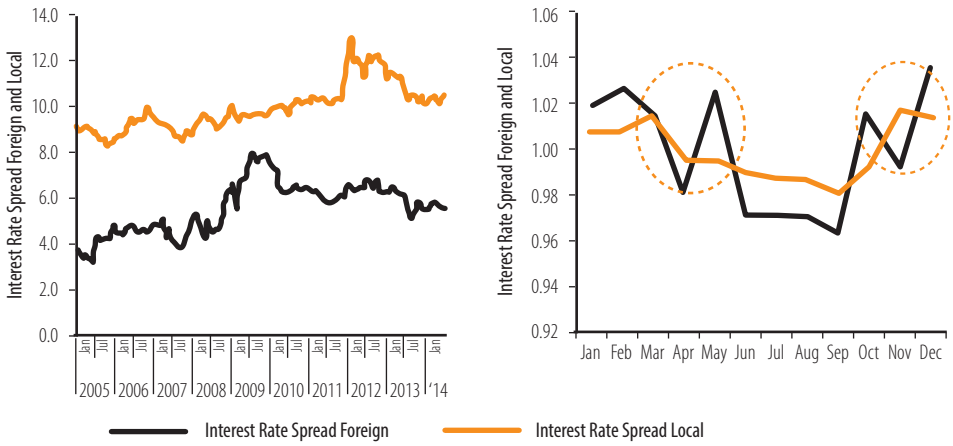
The pricing of credit determines the demand and supply of credit in Kenya. It is expected in line with theory that the higher the interest rates the lower will be demand for the credit thus lower output, and vice versa. A review of the trends of local and foreign interest rates spread figure 2 shows high interest rates spread for local denominated loans as compared to the foreign denominated loans which have generally been lower in panel 1 of figure 2. Commercial banks arrive at the interest rates they charge on the loans by taking into consideration a number of factors; cost of funds, credit risk, recently introduced Kenya Banker Reference rate (KBRR) and competition. The same factors are critical in arriving at the deposit interest rate to charge on deposits. The difference between

the interest rates on loans and deposit rates give the interest rate spread. The interest rate spreads for local denominated loans experienced some volatility in 2011 resulting from volatility experienced in the economy then, when inflation escalated and the exchange rate depreciated significantly with the Euro area experiencing depression, whereas the foreign denominated loans experienced some volatility in 2009 following increased demand of foreign denominated loans when Kenya experienced the second round effects of the global financial crisis.

Panel two of figure 2 shows seasonality in the demand for the foreign and local denominated interest rates spreads. Generally, seasonality pattern is observed in the foreign denominated interest spreads in April, May and December during the seasons of dividends payouts and festivities. The Local denominated interest rate spread deviates marginally from month to month.

In addition to pricing of loans, it matters where credit is channeled to, for it to contribute to economic growth. Credit channeled to household consumption would have less multiplier effect on the economic output as compared to credit channeled to productive sectors of the economy. According to Economic survey of 2013, the greatest contributors to Economic output are the following sectors; Agriculture, forestry and

**Figure 2: Pricing of loans: Local and foreign denominated interest rates spread trends**



fishing (22.4 percent of GDP), manufacturing (11.1 percent of GDP), real estate (8.1 percent of GDP), Wholesale and retail trade; repairs (7.6 percent of GDP), education (6.9 percent of GDP), transport and storage (6.6 percent of GDP), financial and insurance activities (5.9). Thus credit channeled to these sectors would enhance economic growth significantly. Figure 3 below shows credit to the various selected sectors of the economy denominated in local currency.

Figure 3 shows higher growth rates of credit to various sectors in the economy from 2007 as compared to before 2007. Credit to agriculture and manufacturing recovered from negative growth rates experienced in 2007 and 2008 to positive high growth rates in 2009-2012. The growth rates have stabilized at 10 percent, indicating potential for growth in these sectors. Recent data shows declining trends on real estate and construction loans from 2011, whereas business services and trade is on the rise as the economy recovers from period of low economic activities. Credit to consumer durables and households moves erratically, indicating the patterns of consumer behavior in Kenya which are seasonal with higher demand in December.

**Figure 3: Private Sector Credit by Sectors in the economy**

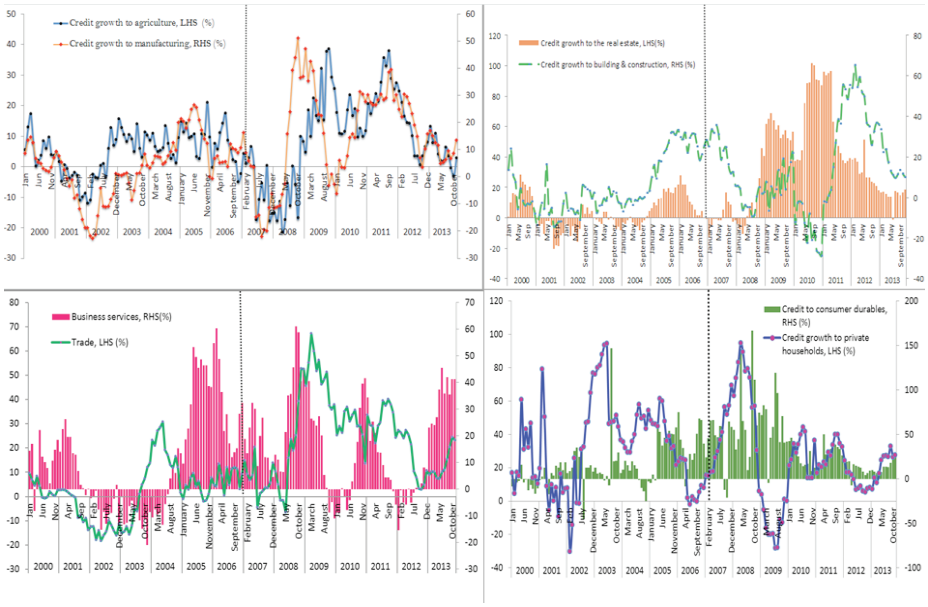
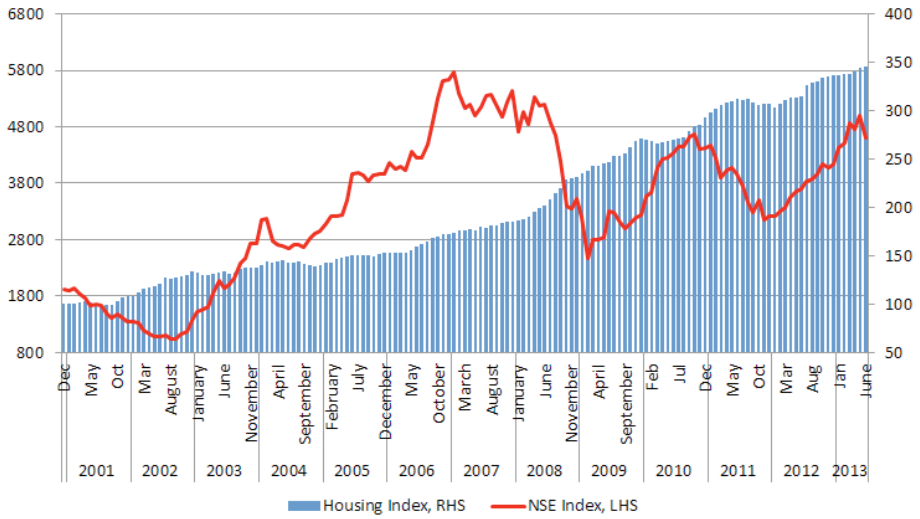


**Figure 4: Developments of Nairobi Stock Index and Housing index**




This study also considers the development of capital markets as a source of credit/capital to finance borrowing. Figure 4 shows the development of the stock market and the housing index in Kenya. Housing index is considered as a key variable in this study as it has significantly risen in the last few years and is becoming an increasingly important asset in commercial bank books. Kenya's capital market has progressively grown over the years as indicated in figure 4 below. The Nairobi stock index (NSEI) stood at 4800 points in June 2013 from 1800 points in 2000 reflecting a preference and development of capital market as a borrowing option for companies and individuals.

The housing index has also significantly grown over time from 100 to 300 points indicating significant development in the housing market. The housing market remained resilient to the 2008 global financial crisis and grew progressively over the years, whereas the stock market was negatively affected in 2008 recovered by 2010. The NSEI has however not developed to the high levels experienced in 2006. The development of the housing sector and stock market may have been supported by financial reforms that have taken place over the years.

The analysis of indicators in the provision of credit in Kenya shows increased growth in credit by the

commercial banks in Kenya over the years under review 2000-2013. The reforms and innovations in technology that have taken place since the 2007/2008 financial crisis may have contributed to the increased significant growth in credit provision from 2008. Furthermore the economic growth has picked up averaging 5 percent since 2007 to 2013 compared to 4.1 percent from 2001-2006. Increased economic activities are supported by credit provision, both in local and foreign denominated currencies. All these developments may have had implications on commercial bank lending behavior, which is the subject of this paper.

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# Literature review

The theories on bank lending behavior are diverse and evolutional depending on the macroeconomic circumstances prevailing at a given point in time. The more traditional theories embedded on the role of monetary policy on credit growth focused on the 'bank lending view'; 'bank capital channel' hypothesis and information asymmetry/financial accelerator and credit rationing theories while the more recent theories have incorporated the country experiences such as the crisis, presence of foreign banks and the differences in supply and demand sides of bank lending behavior as well as a blend of various traditional theories. In this section, we provide a brief overview of most of this theories that form the basis for formulation of our hypothesis.

Most theories on the bank lending behavior derive from the failure of the once highly celebrated Modigliani-Miller (MM) irrelevance theorem of capital structure in 1958. According to the MM theory, under an environment of perfect markets, symmetric information and absence of taxes, a firm's total market value is independent of its capital structure, (Modigliani and Miller,1958). The validity of the MM model has been extensively discussed resulting in many alternative models such as the trade-off approach and the pecking order model. The alternative approaches relax the extreme assumptions in MM by incorporating, at least one of the following elements: taxes, transaction costs, bankruptcy costs, agency conflicts, asymmetric information, among other considerations (for details, see Kashyap and Luigi, 2010; Luigi and Sorin, 2009).

Heuvel, (2002) builds on the failure of the MM theory in explaining the bank capital channel thesis, by incorporating risk-based capital requirements of the Basle Accord and an imperfect market for bank equity. Under this approach, the bank's lending depends on its financial structure, lending opportunities and market interest rates. When equity is sufficiently low, because of loan losses or some other adverse shock,

the bank will reduce lending because of capital requirements and the cost of issuing new equity. Even when the capital requirement is not binding, the author shows that a low capital bank may optimally forgo profitable lending opportunities now in order to lower the risk of future capital adequacy. In a similar line of thinking, Jose and Rochelle, (2010) contends that a well-capitalized bank or a bank with additional sources of capital will be able to accommodate capital losses without reducing its assets and hence lending. At the same time, banks can actively manage their assets to maintain a constant equity-capital-to-assets ratio because they cannot raise equity to offset declines in their capital.

However, the literature also shows that in the presence of information asymmetries in credit markets, firms and households face borrowing constraints and their borrowing capacity depends on their net worth or value of their collateral. In such cases, the cost of external finance is higher relative to the cost of internal finance, which affects the borrowing capacity of wealth constrained entrepreneurs/borrowers and households resulting in reduced investment. Borrowers net worth is pro-cyclical in the sense that the borrowing capacity increases in economic upswings and decreases in downswings. An increase in credit availability stimulates economic activity and vice-versa, which in turn boosts borrower's net worth. The mutually reinforcing interaction between credit and economic activity is referred to as 'financial accelerator' (Hammersland and Bolstad, 2014; Hirakata et al., 2013; Coric, 2011; Hofmann, 2004; Bernanke, et al., 1999; Kiyotaki and Moore, 1997; Bernanke and Gertler, 1989). Proponents of the financial accelerator theory contend that the agency costs of undertaking physical investment are inversely related to the borrower's net worth, in which case, the greater the level of net worth of the potential borrower, the less the expected agency costs implied by optimal financial contracts. This suggests therefore that the lower the borrower's net worth, the greater the divergence of interests between the lender and the borrower and thus the higher the interest rate or the lower the availability of credit.

In the literature credit growth is not only discussed in aggregate terms but also in disaggregated components into foreign currency loans and domestic currency loans. Under this line of reasoning, some studies, notably, Brzoza-Brzezina et al., (2010) contend that, the role of central bank on total loans is limited in countries with foreign currency loans since it only affects domestic credit and cannot prevent lending in foreign currency. According to the findings of these authors, whereas interest rate negatively affects domestic currency loans, it positively affects foreign currency loans thus facilitating substitution between the two loan sources. However, although foreign loans and domestic loans are close substitutes, interest rate still has a negative on total lending.

Based on some of the discussed theories, the empirical literature has focused on two perspectives of credit growth, the demand side and the supply side. On the demand side, credit growth is affected based on

demand for it from firms and individuals in which case, GDP, prices and interest rates are the common explanatory variables. On the other hand, the supply side is viewed from the financial intermediaries' perspective. In this case, credit channel models consider how changes in the financial position of banks and borrowers affect the availability of credit in the economy. Relevant variables on the supply side include: bank equity, total assets, deposits and cost of external financing, capital position, cost of alternative bank portfolio choices, competition from other banks and risk perception (Brissimis, et al., 2014; Imran and Nishat, 2013; Balazs et al, 2007).

More recently, following the global financial crisis, in a bid to understand why credit growth contract during crises periods, some literature contends that increase in information asymmetry spawns ex ante a cumulative risk of adverse selection and produces expost a proliferation in moral hazard, which is coped by limiting credit to financial intermediaries. As asymmetries of information are ubiquitous in financial markets, any crisis that escalates the asymmetries of information e.g. impairing of banking or non-banking intermediaries' balance sheets, escalating interest rates and fall in asset prices cause curtailment of credit (see Swamy and Sreejesh, 2012).

It is clear from the brief foregoing literature review that African countries are not only excluded in theoretical analysis but also in the empirical studies (Tomak, 2013; Castro and Santos, 2010; Nieto, 2009; Vodova, 2008; Swain, 2007; Hoffman, 2004; Manrique and Ojah 2004; Panagopoulos and Spiliotis, 1998).

# Model and Estimation Method

In line with previous studies, we specify our model as follows (Allen et el, 2013; Djiogap and Ngomsi, 2012; Bogoev, 2010; Amidu, 2006):

$$TL_{it}=\beta_0 + \beta_1 Size_{it} + \beta_2 NPL_{it} + \beta_3 Liquidity_{it} + \beta_4 GDP_{it} + \beta_5 Inflation_{it} + \beta_6 interest_{it} + \beta_7 X_{it} + e \quad .....(1)$$

The dependent variable is the percentage of real growth in loans of bank i in year t. Loans here refer to three types of loans, namely, the aggregate loans, the foreign loans and local loans, which will be separately considered as dependent variables. This dependent variable is used as a proxy for credit growth. We include both bank specific (size of the bank; non-performing loans and liquidity) and macro variables (GDP; inflation; interest rate). X refers to the new variables for the case of Kenya to the standard model. These are mainly the ownership variable that distinguishes the banks into foreign and locally owned and the property index/housing index to capture the rapidly developing mortgage market.

Liquidity represents cash balances to total assets for bank i in year t. The apriori sign for this variable is positive because as pointed out in Bogoen, (2010), in periods of tightened monetary policy when banks face a withdrawal of deposits, those banks with more liquid assets can more easily offset the withdrawal of deposits. Bank size is measured by the bank assets. Apriori, a positive sign is expected between bank size and credit growth/ loans since larger banks are more diversified, have larger pool of funds available, have access to larger and more credit worthy corporate borrowers and have more resources for the development of advanced credit risk management and evaluation systems. Larger banks face lower risks, (Djiogap

and Ngomsi, 2012; Jose and Rochelle, 2010). Non-performing loan is used as a measure of the quality of the bank business loan portfolio but it can also be used to represent bank's risk preferences. Higher non-performing loans signal riskier bank lending practices. Apriori, a negative sign is expected for this variable.

Following Bogoev, (2010), we include GDP and the inflation rate to account for the macroeconomic environment and also to capture the loan demand side. The state of economic activity have a positive effect on consumption and investment demand, thus economic activity is expected to have a positive effect on credit demand. The positive link of credit growth-GDP nexus is traceable to permanent income model for open economies where credit growth is determined by income growth and changes in interest rate. Under this standard framework, households dis-save in the early part of their working life, and their consumption is financed by borrowing. At old age, the stock of wealth is run down as households dis save by consuming the assets accumulated during working age. Thus there is a strong positive link between income and household credit equation. (see Mart and Tuusis, 2009). Other arguments however, point to a negative relationship between economic activity and credit demand. Proponents of these arguments as summarized in Calza et al (2003), contend that an increase in contemporary as opposed to expected productivity leads to a rise in output, ultimately, profits. Thus during expansionary periods, companies might prefer to rely more on internal sources of finance and reduce the relative proportion of external financing. Households too may opt to reduce their debt levels during booming phases. While in recessions, when both disposable income of households and the profitability of firms decline, they may increase their demand for bank credit in order to smooth out the impact of lower income and profits.

Apriori, a negative sign is expected between bank credit and inflation since it is assumed that higher inflation is associated with lower productivity levels, which, in turn, reduces the demand for labor, Amadu, (2006). But the sign can also be positive since a rise in inflation may result in higher demand for nominal credit (Tan, 2012; Guo and Stepanyan, 2011).

We separately include the interbank rate to capture the monetary policy stance and the lending interest rate to capture the cost of capital. The interbank rate and lending rate negatively affect credit demand since high interest costs depress credit demand through increased loan costs.

Property affects private sector's borrowing capacity since it is commonly used as collateral. Property prices are therefore likely to affect the value of the loans secured. Moreover, as Balazs et al (2007) points out, first, increases in housing prices result in a rise in the total amount which has to be spent to purchase a given residential or commercial property, which is reflected in an increase in demand for credit. Second, rising house prices may generate a rise in credit demand of homeowners as higher housing prices increase lifetime wealth according to Modigliani's

lifecycle theory, which in turn leads to consumption smoothening by means of more borrowing.

The ownership variable here is defined as a dummy represented by 1 for a foreign bank and zero otherwise. The presence of foreign banks can increase access to financial services, enhance the financial and economic performance of borrowers and generally lower the cost of financial intermediation in the host country. These benefits accrue since foreign banks increase competition, product, technology and know-how spillovers. However, at the same time foreign banks can be a channel through which shocks are transmitted across borders with negative implications on credit supply (Feyen et al., 2014; Claessens and Horen, 2013; Burcu, 2008). Foreign banks may also displace local lenders thereby tightening firms' overall access to credit (Bruno and Hauswald, 2008).The apriori sign is therefore ambiguous.

The study uses two stage least squares (2SLS), a methodology that is not only appropriate for this kind of study but also solves problems of endogeneity prevalent in the variables used in the model.

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# Discussion of results

In this section we present results in which we use three different dependent variables but with similar independent variables. In table 1, we use all loans from commercial banks as the dependent variable while in table 2, we use foreign loans as the dependent variable. In table 3, we use local loans as the dependent variable. In table 4, we use the interbank interest rate rather than the lending rate as the independent variables to assess the sensitivity of all commercial bank loans to monetary policy stance. The commercial bank loans here proxy for credit demand to the private sector

In table 1, column 2, we present the results of the basic model of variables that have been established in the literature as the determinants of loans from the commercial banks while in the subsequent columns, we separately include the housing variable, the ownership variable and both of the variables in the same model. The results show that, although the liquidity and non-performing loans bear the expected signs, they are not significant in explaining demand for commercial bank loans. In all the models, lending interest rate, output growth and the size of the commercial banks are significant in explaining demand for commercial bank loans. Inflation on the other hand bears a positive sign in all the models but is significant in only two of the models.

**Table 1: The dependent variable is all loans of commercial banks**

| Independent variables | Model without ownership and housing variables | Model without housing | Model without ownership | Model with both housing and ownership |
|---|---|---|---|---|
| Liquidity | 0.162(1.30) | 0.067(0.71) | 0.016(0.16) | 0.038(0.39) |
| NPLs | -0.016(-0.10) | -0.109(-0.705) | 0.009(0.68) | -0.045(-0.30) |
| GDPG | 0.249(2.20)** | 0.153(1.61)* | 0.086(1.91)** | 0.172(1.84)* |
| Inflation | 1.490(4.01)*** | 0.727(2.82)*** | 0.374(1.40) | 0.475(1.24) |
| Lending | -0.435(-2.74)*** | -0.261(-2.31)** | -0.195(-1.66)* | -0.216(1.90)** |
| Size | 0.986(7.67)*** | 1.131(8.51)*** | 0.936(9.20)*** | 1.100(7.62)*** |
| Ownership | - | -0.409(-2.38)*** | - | -0.350(-2.10)** |

| Independent variables | Model without ownership and housing variables | Model without housing | Model without ownership | Model with both housing and ownership |
|---|---|---|---|---|
| Housing | - | - | 0.014(5.43)*** | 0.011(4.68)*** |
| 0.43 | 0.61 | 0.90 | 0.88 | |
| Observations | 195 | 218 | 202 | 178 |

The significance of size implies that larger banks which are more diversified with a larger pool of funds and more resources for advanced credit risk management and evaluation system have a higher capacity to lend. Thus, the results seem to suggest that mergers of small banks to form bigger banks is beneficial for credit growth. The fact that higher lending interest rates deters demand for commercial bank loans also builds a case for further minimization of spreads in commercial banks.

In columns 3-5 where we introduce ownership and housing index as explanatory variables. The relationship between ownership and commercial bank loans is consistently negative and significant while the relationship between the housing and commercial bank loans is consistently positive and significant. The negative and significant relationship between ownership and commercial bank loans supports the theories that foreign banks can be a channel through which shocks in one country are transmitted thus affecting the supply of credit in another country. Moreover, foreign banks may select only best customers leaving domestic banks with a worsening credit pool which can hurt their profitability and ability to lend (see Claessens and Horen, 2013). It also supports the arguments in the literature that foreign banks use 'hard' information that is based on standard and quantitative methods to assess creditworthiness as opposed to local banks that complement such methods with qualitative information. Consequently, foreign banks tend to focus on transparent and large firms, which may lead to a decline in aggregate credit as opaque businesses see a disproportional decline in bank lending (Haas et al., 2010). The positive relationship between housing and commercial bank lending signifies the increasing role of the mortgage market in Kenya not only in terms of increased home ownership but also usage of homes as collateral for loans for other economic activities.

In table 2, we replaced all commercial loans with foreign loans as the dependent variable but with similar explanatory variables. In general, the results reveal some considerable differences to the results in table 1. The negative and significant result of the liquidity measure is the most surprising. Apriori, a positive sign is expected between liquidity and foreign loans.

The negative sign is perhaps a reflection of the conservative nature of foreign banks, which are the ones expected to provide foreign loans, with a tendency of building high liquidity buffers rather than lending in form of foreign loans. It is also possible that the high liquidity does not necessarily end up in foreign loans, rather it is allocated to other portfolio investments including the stock market and bonds. The negative sign may also be explained by lower demand for foreign loans even when the liquidity is high and the volatility of the exchange rate that may deter investors from demanding foreign loans. Since the liquidity measure also reflects liquidity in local currency, it is possible that most of it is allocated in local rather than foreign loans. However it may be important to analyze the various sectors that receive foreign loans, it is possible that even with high liquidity in the banking system, investment growth was weak and therefore there was low demand for foreign loans.

The results further show that GDP growth and lending interest rates, though bearing the expected signs, they are not significant in explaining foreign loans. This result is the opposite of what was observed in table 1. It is possible that increase in GDP reflected in increase in people's income is only relevant in increasing domestic deposits in local currency and this is not converted to lending in foreign currency thus its increase is not important in determining the level of foreign loans. However, the fact that foreign loans are not sensitive to lending rates is rather strange. The interpretation of the results for the house, ownership and size variables is the same in table 1.

**Table 2: The dependent variable is foreign loans of commercial banks**

| Independent variables | Model without ownership and housing variables | Model without housing | Model without ownership | Model with both housing and ownership |
|---|---|---|---|---|
| Liquidity | -0.505(-3.41)*** | -0.874(-3.65)*** | -0.666(-2.97)*** | -0.842(-4.46)*** |
| NPLs | -0.091(-0.46) | -0.029(-008) | -0.205(-0.84) | -0.349(-1.83)* |
| GDPG | 0.161(1.12) | 0.263(1.73)* | 0.060(0.44) | 0.013(0.16) |
| Inflation | 1.238(2.60)*** | 1.385(4.18)*** | 0.985(1.78)* | -0.040(-1.51) |
| Lending | -0.108(-0.603) | -0.042(-0.32) | -0.042(-0.21) | -0.208(-2.75)*** |
| Size | 1.264(6.38)*** | 1.281(4.20)*** | 1.318(6.16)*** | 1.506(9.36)*** |
| Ownership | | -0.235(-0.59) | - | -0.930(-2.51)*** |
| Housing | | | 0.006(1.80)* | 0.019(7.44)*** |
| R | 0.46 | 0.41 | 0.49 | 0.59 |
| Observations | 167 | 190 | 171 | 172 |

**Table 3: The dependent variable is local loans of commercial banks**

| Independent variables | Model without ownership and housing variables | Model without housing | Model without ownership | Model with both housing and ownership |
|---|---|---|---|---|
| Liquidity | 0.099(2.48)*** | 0.216(3.02)*** | 0.157(3.29)*** | 0.132(2.48)*** |
| NPLs | 0.051(1.24) | -0.090(-0.97) | 0.061(1.24) | 0.096(1.17) |
| GDPG | 0.214(4.38)*** | 0.056(1.42) | 0.073(2.75)*** | 0.010(0.41) |
| Inflation | -1.004(-3.65)*** | 0.259(3.26)*** | -0.103(-1.24) | 0.004(0.36) |
| Lending | -0.139(-1.83)* | -0.108(-2.48)*** | -0.026(-0.70) | -0.035(-1.69)* |
| Size | 0.895(23.7)*** | 1.114(12.95)*** | 0.928(22.49)*** | 0.922(18.65)*** |
| Ownership | | -0.525(-4.08)*** | - | -0.302(-3.73)*** |
| Housing | | | 0.008(7.10)*** | 0.007(12.6)*** |
| | 0.93 | 0.78 | 0.90 | 0.93 |
| Observations | 73 | 179 | 202 | 189 |

In table 3, we used local loans as the dependent variable. In this case, we also observe significant differences to table 2 but almost similar results to table 1 safe for the liquidity and inflation variables. Unlike in table 1, where the liquidity measure was positive and insignificant and table 2 where the result was negative and significant, in this case the liquidity measure bears the expected positive sign and is highly significant in all the models. This is in line with the theory that banks with liquidity stress may constrain lending and vice versa.

The other notable difference is the negative and significant coefficient of inflation in column 2 but given the positive coefficient in the next column and its dominating effect in the other tables, we cannot make any strong statements concerning this relationship. It can best be interpreted as mixed with no clear role in bank loans. The coefficient of GDP growth is significant in two of the four models, complementing table 1 and in contrast to table 2. The other results are similar for the three tables. Ownership and the house variable are significant with negative and positive signs, respectively. The interpretation is therefore similar as in table 1. The coefficient for size and lending interest rates also bear the expected signs and are significant at the statistically acceptable levels.

**Table 4: The dependent variable is all commercial bank loans but with interbank rate**

| Independent variables | Model without ownership and housing variables | Model without housing | Model without ownership | Model with both housing and ownership |
|---|---|---|---|---|
| Liquidity | 0.150(1.76)* | 0.775(1.67)* | 0.104(1.55) | 0.103(1.95)** |
| NPLs | -0.227(-2.54)*** | -0.041(-0.24) | -0.024(-0.43) | -0.146(-2.70)*** |
| GDPG | 0.229(4.01)*** | 0.326(3.08)*** | 0.176(2.02)** | 0.030(0.80) |
| Inflation | 0.217(0.92) | 0.774(1.72)* | 0.596(2.15)** | 0.016(1.76)* |
| Interbank | -0.207(-5.37)*** | -0.227(-4.04)*** | -0.064(-1.93)** | -0.035(-0.84) |
| Size | 1.129(12.84)*** | 1.082(7.62)*** | 1.003(16.9)*** | 1.141(21.3)*** |
| Ownership | | -0.177(-1.02) | | -0.301(-3.31)*** |
| Housing | - | - | 0.013(5.55)*** | 0.006(4.28)*** |
| 0.62 | 0.74 | 0.85 | 0.90 | |
| Observations | 197 | 222 | 202 | 199 |

In table 4, we used the same dependent variable as in table 1 but replaced the lending interest rate with the interbank interest rate that is expected to more closely capture the monetary policy stance. The results are largely similar to those obtained in table 1 except for only the liquidity and non-performing loans measures. While in table 1, the liquidity and non-performing loans measures have the right signs, they are insignificant but in table 4, the two variables are significant. The results for the liquidity measure therefore complement results in in table 3. However, the significant result of the non-performing loans do not change our earlier conclusions from the other tables that it is not a very important variable in explaining loan demand. We however observe the measure of interest rate used does not significantly alter our results. The coefficient of the interbank interest rate is negative and significant signaling some sensitivity of private sector credit to monetary policy. The fact that the lending rate is also consistently negative and significant in tables 3 and 1 would signal a sensitivity of private sector credit to the cost of capital and by implication to somewhat effective policy transmission to the intermediate stage of monetary policy transmission.

# Conclusions and policy implications

**The study sought to understand the factors that affect lending of commercial bank loans both in form of foreign and local loans. It used panel data methods on quarterly bank- specific data covering the period 2000 to 2013.**

To address its objectives, the study considered all commercial bank loans, foreign loans and local loans separately as dependent variables but with similar independent variables. In general, ownership structure of the banks and housing variable are important in explaining credit growth regardless of the dependent variable used. However, there are considerable differences in the other explanatory factors used in the models. Lending interest rates, size of banks, ownership of banks, housing variable and GDP growth are found to be the main determinants of credit growth while non-performing loans and liquidity are not important when all commercial bank loans are used as the dependent variable. Replacing the lending rates with interbank interest rates did not significantly alter the results.

However, when we use foreign loans as the dependent variable, the results differ significantly in some explanatory variables. In this case, the coefficient of liquidity is surprisingly negative and significant. We attribute this to the possibility that part of the liquidity is allocated to other portfolio investments besides foreign loans, a lower demand for foreign loans and volatility of the exchange rate as a deterrent to investor demand for foreign loans. The results also reveal that GDP growth, lending interest rates and non-performing loans are not important in explaining foreign loans while inflation, size, ownership and housing variables are significant in explaining foreign loans.

The results are also different in some variables when we use local loans as the dependent variable. The liquidity measure is positive and highly significant in all the models as expected while the results of the inflation measure are mixed. Lending interest rates, size ownership and housing are the other significant variables in majority of the models under this specification.

In terms of policy implications, first, the positive and significant results of size of banks in all the specifications suggest that mergers of small banks would be beneficial for credit growth. Second, the significant and negative effect of ownership imply that for credit growth, policy should focus in providing incentives for local ownership of banks and mobilization of domestic deposit base rather than foreign ownership. Third, the consistently positive effect of housing variable on credit growth regardless of the dependent variable used signals the importance of mortgage market in determining credit growth not only as a form of enhancing credit worthiness of consumers but also in boosting home ownership. Together with the significant negative effect of lending interest rate, it seems that continued policy efforts to minimize interest rate spreads are in order.

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