

## Determinants of Bank Long-term Lending Behavior in the Central African Economic and Monetary Community (CEMAC)

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**Abstract:** This paper studies the determinants of bank long-term loan in the Central African Economic and Monetary Community (CEMAC) context. The study aimed to test the common bank-level and macroeconomics determinants of bank long-term loan behavior. The model used is estimated using a sample of six countries from the CEMAC. We find that a bank's ability to extend long-term business loans depends on its size, capitalization, GDP growth and the availability of long term liabilities. These results underline the importance of supply side constraints in extending vital long-term credit to firms.

**JEL Classifications:** G21, G32, O16

**Keywords:** Long-term business loans, CEMAC, Bank –level determinants, GDP growth

### 1. Introduction

Bank loans are one of the most important long-term financing sources in many countries (Freixas and Rochet, 2008). In some developed countries like Japan, long term bank loans represent more than 70% of its total long-term debt. The recent cross-country evidence shows that banks in the emerging and developing countries' economies are reluctant to extend long-term credit to private businesses.

Some factors influencing this reluctance are the unstable local government economic policies, the idiosyncratic country legal risk and the riskiness and opacity of business borrowers in these countries. Although there is a broad body of literature that addresses these issues, it either focuses on the demand side of debt (firms access to credit) or on the cross-country variation of bank lending behavior. Little effort has been devoted in explaining the within country variation of the supply side (banks) choices in their long-term lending practices, especially in emerging economies.

In this paper, we study the determinants of bank long term lending behavior to firms in developing market. We focus on long-term business loans since this type of external financing is crucial for private firm's investment and long-term growth. Our paper complements the existing literature on credit availability in developing markets in at least three important ways. First, we show that there is substantial within country, cross-sectional variation in banks' business lending behavior. Second, we provide evidence that this variation is systematically explained by bank-level characteristics, such as size, capitalization, and access to long-term funds. From the practical view, these results shed light on bank-level constraints in lending by identifying the factors that systematically affect banks' willingness and ability to extend long-term credit to firms. Third, this

study is the first empirical attempt to an investigation of Central Africa countries' banks long-term lending behavior.

The question this paper deals with is: what are the key bank-level and market determinants of long-term lending behavior? We address this question empirically by using a sample of commercial bank of CEMAC countries.

The Central African Economic and Monetary Community banking sector is shallow, its sources of funding are poorly diversified, and lending opportunities are limited. Banks' total assets amount to only 16 percent of GDP, and lending to the private sector to 7 percent (15 percent for sub-Saharan Africa). The minimum deposit rate, at 3.25 percent, is well above market conditions, and this represents an obstacle to financial intermediation, particularly in a context of excess liquidity. In effect, volatility of deposits has increased in some countries, and highly concentrated deposits consisting mostly of demand or short-term deposits limit the supply of long-term financing. With the exception of Gabon, where 10% of deposits must be placed in government securities, banks have few opportunities to invest in securities, and they serve a small number of corporate clients.

In that context, the maximum lending rate (15 percent) constrains the optimal pricing of risk, limits client diversification to SMEs and households, and leads the banks to boost profitability by increasing fees, a practice that limits financial intermediation.

In a general banking literature, a long-term loan is commonly defined as a loan with an original maturity of several years. According to international standards, most business loans in this category have three to ten years maturity. In this study, we define long-term business loans as loans with at least three years to maturity, which is the longest maturity specified by the Central African Banking Commission (COBAC) standards for banks. On average, the sample bank allocates only about 1.2% of its assets to long-term business loans (COBAC, 2008).

At the same time, the long-term lending activity of small and medium size private domestic banks is negligible. We provide evidence that these financial intermediaries focus exclusively on providing short-term financing to firms rather than long-term.

The rest of the paper is organized as follows: In the section 2, we present the review of the related literature. In section 3, we describe our methodology. In section 4, we present our main results. In section 5, we provide a summary and make our concluding remarks.

## 2. Literature Review

The brief sketch of the theoretical foundations of relationship lending highlights the key element of the concept, the informational privilege of the bank and the resulting bargaining power vis-à-vis the borrower. This element in turn provides the rationale for several indicator variables frequently used in empirical work to identify relationship lending.

The most commonly used proxy for relationship lending in applied empirical work is the duration of a bank-borrower relationship (see e.g. Petersen and Rajan (1994), Berger and Udell (1995), and Ongena and Smith (2001)). The basic idea is that duration reflects the degree of relationship intensity over time. If duration is equivalent to private information accumulation over time, the lock-in of a borrower should increase with duration. Duration then reflects switching costs, the severity of the hold-up problem, and relationship intensity in general.

However, the relation between accumulated information, duration, and borrower lock-in does not have to be monotonic. First, it may take time to establish a valuable information advantage. Second, the value of previously accumulated private information may start to decrease after some time, for example if the borrower establishes an observable track record, as suggested by Diamond (1991). Third, the marginal value of additional information might be decreasing.

Using the number of bank relationships as an indicator for the presence of relationship lending is based on the premise that maintaining an exclusive bank relationship promotes the development of close ties between bank and borrower. Exclusivity induces a lower degree of direct competition between banks, allows for unique access to valuable information, and eases the realization of the economic benefits associated with relationship lending, like for instance (efficient) renegotiation of loan contracts.

However, exclusivity of a bank relationship is neither a necessary nor a sufficient condition for relationship lending. First, Holmström and Tirole (1997) have shown that only a fraction of funds needs to be financed by a monitoring lender to deter the borrower from moral hazard. The remaining funds can be raised from the market or uninformed arm's-length banks. Second, the building block of theory is access to valuable private information and its accumulation over time. But, since valuable information is likely to be distributed by the borrower in a strategic way, this can be accomplished even in the context of multiple bank relationships (though possibly harder), and, most importantly, it does not have to happen at all.

Hence, the proxy value of the number of simultaneous bank relationships remains unclear, but a negative correlation between the number of banks and the incidence of relationship lending seems plausible.

Similar arguments apply when it comes to the share of the borrower's total debt financing accounted for by relationship lending since this is conceptually the same as the issue of multiple banks, but without the assumption of equal financing provided by all banks. Therefore, it also seems plausible that a higher debt financing share increases the likelihood of relationship lending.

The scarcity of long-term credit availability in developing market economies is recognized as an obstacle to their growth. Caprio and Demirguc-Kunt (1997) find that non-financial firms in such markets consider the scarcity of long-term credit as one of the most important impediments to their operations. They show that firms that grew faster than predicted, exhibited higher levels of long-term debt to total assets. The long-term credit availability is also sensitive to the development level of a country's financial and legal institutions. If the legal environment and the enforcement of debt contracts are weak then, as stipulated by Diamond (1991), banks will mitigate potential credit risks by extending short-term rather than long-term loans.

A number of empirical studies support the argument that banks use shorter loan maturities to enforce monitoring through more frequent renegotiations of loans and to mitigate informational asymmetries between the creditor and opaque or risky borrowers. Strahan (1999) finds that safer, larger, and more profitable companies receive loans with greater maturity times.

Ortiz-Molena and Penas (2008) report a negative and monotonic relationship between borrower risk and maturity and show that more opaque and risky companies receive shorter maturity loans. More recent research explores the credit availability and cross-country variation in the maturities of bank loans in the emerging markets. It reveals an important risk factor that affects the supply of credit in general and loan maturities in particular - the legal risk of debt. The legal risk of debt, as defined by Esty and Megginson (2003), depends on both the strength of creditor's rights and the enforcement of those rights in the country where the loan is originated.

The authors find that the strength of creditor's rights affects non-financial firms' debt structure. Demirguc-Kunt and Maksimovic (1999) find that in developing countries loan maturities tend to be shorter. The importance of creditors rights protection in bank lending decisions, including the credit rationing and the maturity of loans, is further supported by Demirguc-Kunt and Diamond (2004), Qian and Strahan (2007), and Bae and Goyal (2009). González and González (2008) find that higher bank concentration acts as a substitute for creditor's protection. Giannetti (2003) finds that the existence of creditor protection rights is very important in determining the availability of long term debt for companies operating in industries exhibiting high volatility of returns. De Jong, Kabir,

and Nguyen, (2008) also find that the existence of creditor's rights protection in a country is an important factor in determining the capital structure of firms operating in that country and that institutions favoring creditor's rights protection and enforcement have more long term loans available. According to Claessens, Djankov and Nenova (2001), stronger creditor and shareholder rights have a strong negative impact on a company's leverage.

Similarly, Fan, Titman and Twite (2006) show that, in countries with strong legal systems and creditor protection rights, firms tend to exhibit lower leverage but higher long term debt to total debt ratios. Diamond (2004) states that in emerging markets where the financial benefits from pursuing legal enforcement are too small, creditors might engage in what is called lender passivity. Instead of relying on weakly enforced legal protection of creditor rights or on higher interest rates, a passive lender will employ non-price mechanisms, such as the maturity of loans, to effectively control credit risk in such environments.

Overall, the prior theoretical and empirical literature reveals the importance of long-term loans to developing markets firms on one hand and the shortage of these loans on the other. It also predicts that bank loan maturities should be shorter in countries with higher legal risk and more risky or opaque corporate borrowers. At the same time, most prior studies of long-term bank financing in the developing markets has focused either on cross-country evidence or the analysis of bank loan maturities exclusively from the borrower's perspective. Very little is known about bank-level determinants that affect long-term lending to firms. In this paper, we attempt to extend the literature on credit availability in a developing market by focusing on bank-level determinants of long-term lending to firms in developing countries. The within-country setting allows us to control for the legal and business environment and to identify which factors, besides countries and borrower characteristics, are systematically related to the bank's willingness and ability to extend long-term credit to firms in a risky developing market.

### **3. Methodology and Data**

To examine the relationship between bank characteristics and bank propensity to issue long-term loans to firms, a large sample of Central Africa Countries banks and a broad set of explanatory variables are applied to a panel data model. The total number of observations is 60, and 9 independent variables are included. To mitigate the effects of extreme outliers, all constructed financial ratios are Winsorized at the one percent level in both tails of the distribution.

Our major dependent variable is the ratio of bank long-term business loans to total assets. Our supplementary dependent variable is the bank overall business lending activity, measured as the ratio of bank business loans to total assets. Business loans in this study are defined as loans to private non-financial firms. Long-term business loans are loans with over three years to maturity. To construct ratios, we scale both loans categories by total bank assets.

To explain the bank-level cross-sectional variability in long-term business loans ratio, we select our explanatory variables by relying upon the general existing literature on bank lending behavior. More specifically, we account for bank size, capitalization, liabilities structure, risk taking, ownership type, inflation and Gross Domestic Product (GDP) growth. Bank size is measured as the logarithm of bank assets. Larger banks are more diversified, have larger pools of funds available, have access to larger and more creditworthy corporate borrowers, and have more resources for the development of advanced credit risk management and evaluation systems.

Therefore, we expect a positive relation between bank size and the ratio of long-term loans.

Bank capitalization is measured by the book equity to assets ratio. Bank capitalization can affect bank willingness and ability to extend long-term loans in several different ways.

Banks with larger capital cushion against credit risks should have higher capacity to extend risky, long-term loans. In addition, better capitalized banks can attract more creditworthy borrowers that will qualify for longer term loans. Alternatively, high levels of capital can reveal risk averse and conservatively managed banks that may be reluctant to issue risky long-term loans. Therefore, we cannot predict a sign on the capital ratio.

To capture the potential mismatch between liabilities and loans maturities that can also affect the bank ability to lend long-term, we account for the bank reliance on long-term financing, measured as the ratio of liabilities with over three years to maturity to total liabilities.

We expect that banks with better access to long-term financing should be better able to issue long-term loans. We use the Nonperforming loans (NPL), as a measure of the quality of bank business loans portfolio. NPL is a sum of borrowed money upon which the debtor has not made his or her scheduled payments for at least 90 days. A nonperforming loan is either in default or close to being in default. Once a loan is nonperforming, the odds that it will be repaid in full are considered to be substantially lower. If the debtor starts making payments again on a nonperforming loan, it becomes a re-performing loan, even if the debtor has not caught up on all the missed payments. In general, the riskier the banking lending practices are, the higher their NPL ratio should be.

Bank ownership type is captured by two dummy variables that indicate state-controlled or foreign-controlled banks. State-controlled banks can allocate long-term credit to promote economic growth and to address the shortage of long-term financing found in the CEMAC banking sector. If this is the case and regional banks indeed fulfill the social welfare agenda, there should be a positive and significant relation between the regional-controlled dummy and the ratio of long-term loans. Foreign-controlled banks may also play a distinct role in allocating long-term loans in a developing market. In particular, they may have comparative advantages in issuing long-term loans due to better risk management and/or their ability to “cherry pick” low risk borrowers (Bhaumik and Piesse, 2008). In the inherently risky developing markets, foreign banks also tend to establish relations with more transparent corporate borrowers.

The GDP growth is used to control for changes in loan demand, lending standards are used to control for credit supply changes that arise from changes in banks' lending behavior, and the Central Bank rate controls for monetary policy changes. Inflation rate is measured by the GDP deflator. Specifically, the long-term loans that we estimate take the form:

$$\begin{aligned}
 LTBL_{i,t} = & \alpha_i + \alpha_1 Size_{i,t} + \alpha_2 Cap_{i,t} + \alpha_3 LTliab_{i,t} + \alpha_4 NPL_{i,t} + \alpha_5 State_{i,t} \\
 & + \alpha_6 Foreign_{i,t} + \alpha_7 Infl_{i,t} + \alpha_8 GDP_{i,t} + v_t + u_{i,t}
 \end{aligned} \tag{1}$$

Here, total business loan (TBL) is the ratio of bank loans to nonfinancial private firms divided by assets, expressed as a percentage. Long-term business loans (LTBL) is the ratio of bank loans to nonfinancial private firms with over three years maturity divided by assets, expressed as a percentage. Size is the log of the Bank assets in CFA Billions. Capital (Cap) is the ratio of book equity to assets, expressed as a percentage. Long-term liability (LTliab) is the ratio of bank liabilities with over three years maturity divided by total liabilities, expressed as a percentage. NPL is a sum of borrowed money upon which the debtor has not made his or her scheduled payments for at least 90 days. State = 1 if a bank is majority-controlled by any combination of government authorities or state-owned companies/enterprises and zero otherwise. Foreign = 1 if a bank is majority-controlled by a foreign investor zero otherwise. GDP is the growth rate and Infl the inflation rate.  $\alpha_i$ ,  $v_t + u_{i,t}$  are respectively, the specific effect in every country, a dumb variable of time and a term of error.

We use the data from 35 commercial banks of six African countries of the CEMAC over the period 2001-2010. These data are pulled by the COBAC report and World Development Indicators of the World Bank. The method of estimation is the panel data model.

#### 4. Regression Results and Discussion

As described in Section 3, we distinguish between the total business lending activity of banks (all maturities) and long-term business lending by employing two alternatives dependent Variables: (1) the ratio of business loans to assets and (2) the ratio of long-term business loans to assets. The explanatory variables are identical in both models and account for bank size, capitalization, reliance on long-term liabilities, NPL, ownership type, Inflation and GDP Growth. The estimation results are presented in Table 1.

Table 1 reports the fixed-effect regression estimates of equation (1) for the determinants of long-term bank loans.

**Table 1** Regression results

	Dependent variable: Total business loans as % of assets	Dependent variable: Long-term business loans as % of assets
Size	3.25 (5.12)***	0.654 (5.94)***
Cap	0.32 (5.37)***	0.026 (2.58)**
LT liab	0.203 (2.62)**	0.081 (8.11)***
NPL	0.111 (1.22)	0.027 (2.51)**
State	-7.991 (-2.11)*	0.401 (0.81)
Foreign	-3.379 (-1.22)	0.962 (2.86)**
Infl	2.402 (0.27)	0.333 (1.76)
GDP	3.011 (5.29)***	0.633 (5.32)***
Constant	-13.987 (-1.82)	-8.602 (-5.21)
N	60	60
Adj.-R <sup>2</sup>	0.72	0.82
P-value	0.00122	0.00321

**Note:** Robust t-statistics are given in parenthesis; \*, \*\*, and \*\*\* denote significance levels of 10%, 5%, and 1%, respectively.

In the first model, the coefficients on bank size, GDP growth and capital-to assets ratio are positive and statistically significant at the 1 percent level for all three regressions. This finding indicates that larger (and likely more diversified) banks and well capitalized banks are better able to withstand potential credit risks and, therefore, allocate higher percentage of their assets to business loans. The regression results for the first model also suggest two marginally significant (at a 10% level) associations: banks with more long-term liabilities are marginally more willing to lend to businesses, while state-controlled banks are marginally less likely to lend to businesses. Although the estimated coefficient for inflation variable is statistically insignificant in explaining the total business loans ratios of banks.

The main results of our study are presented in the second regression where the dependent variable is the ratio of long-term business loans to total assets. Similar to our prior findings, bank size, GDP growth and capitalization continue to play an important role in determining the bank's willingness and ability to lend to businesses long term. The coefficients on these explanatory variables remain positive and highly statistically significant, indicating that larger banks and better

capitalized banks tend to extend more long-term credit to firms than smaller and less capitalized banks. As expected, long-term liabilities become even more significant in determining the bank's propensity to lend long-term to businesses than to simply lend to businesses.

Interestingly, the multivariate results in Table 1 reveal that once we control for bank level financial characteristics, the bank ownership effect in long-term lending, either becomes weak (in the case of foreign banks) or completely disappears (in the case of state banks). The estimated coefficient of foreign banks, however, is positive and highly significant clearly indicating that foreign banks tend to exhibit higher long term loan ratios. Although state-controlled and foreign-controlled banks appear to have higher than average involvement in long-term lending in Central Africa countries, their involvement is explained by their larger size and /or better access to long-term stable funding in the form of long-term liabilities and capital.

Since state banks account for almost two thirds of long-term business loans, it can be argued that a few largest state-controlled banks, account for the bulk of these loans. In the case of foreign-controlled banks, the coefficient on foreign bank dummy is positive.

One possible explanation is that foreign banks are able to "cherry pick" more transparent and creditworthy borrowers and, therefore, may be relatively more willing to extend longer term loans.

Banks with larger Nonperforming Loans also exhibit higher ratios of long-term loans to assets. One plausible explanation for this result is that the NPL ratio is endogenous: banks with higher ratio of long-term loans have overall riskier loan portfolios and need to allocate more reserves for potential losses. Since our data are cross-sectional, we cannot empirically address this possibility. Finally, contrary to our expectations, we do not find any significant relation between inflation and its long-term loans ratio.

Definitely, bank size, GDP growth and capital are the most important and consistent factors in determining a bank's propensity not only to lend to businesses but to lend long term loans. While long-term liabilities and provisions for loan losses are not important for determining a bank's propensity to lend to business, they become very important in determining a bank's long-term lending behavior. Finally, while our explanatory variables explain 72 percent of the variation we observe in business loans, their explanatory power increases to 83 percent in explaining the variation in long-term business loans.

## 5. Concluding Remarks

This study examines the determinants of bank long-term lending to businesses in the developing market context. By examining bank-level data in a single country setting, we are able to control for the legal and business environment characteristics and to provide robust empirical evidence on the determinants of the bank's propensity to extend long-term business loans in a risky developing market. Using a sample of six countries of the CEMAC banks from 2001 to 2010, we provide strong evidence on the banks reluctance to provide business loans with more than three years maturity.

The multivariate test of cross-countries differences in the bank lending decisions reveals that smaller banks, less capitalized banks, banks with low levels of long term funding sources, banks with higher nonperforming loans and operate in recession environment are more averse to lend long term. From the broader perspective, these results confirm that in addition to the well-known country-level obstacles to long-term financing in emerging markets, such as weak creditor rights protection and enforcement and low creditworthiness of risky borrowers, there are significant bank-level constraints in providing long-term loans to firms, including insufficient bank size, low capitalization, and lack of long-term liabilities. From the practical view, these results identify specific bank-level macroeconomics constraints that systematically affect bank willingness and ability to extend long-term credit to firms.

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