ASYMMETRIC FINANCIAL SUPPORT AND RISK OF NON-REPAYMENT OF BANK LOANS: AN ANALYSIS IN THE CEMAC CONTEXT

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Abstract

The aim of this article is to determine the factors contributing to the increase in the risk of non-repayment of bank loans in financing relationships in the Central African Economic and Monetary Community (CEMAC) zone. Analysis of data from reports by the Central African Banking Commission (COBAC) has established these various factors. A summary of the analyses reveals that the presence of information asymmetry in the relationship leads the bank and the company to give priority to personal interests (Mbama, 2022). The proposed solution encourages both parties to promote reciprocal and benevolent behaviour in order to create mutual trust in the relationship and reduce the existing information asymmetry. Overall, solving the problem of loan default requires a multi-faceted approach (Porretta et al., 2020). This involves raising collective awareness, improving the regulatory framework, strengthening the financial management capabilities of businesses, and introducing more effective risk control systems by banks (Hertouch & Achibane, 2020). By taking these measures, it is possible to create a more favourable environment for businesses to prosper and contribute to the sub-region's economic development.

Keywords: Financial Support, Credit Risk, Business, Unpaid Loans, Information Asymmetry

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1. INTRODUCTION

The Central African Economic and Monetary Community (CEMAC) sub-region is endowed with abundant natural resources such as oil, gold, tin, bauxite, uranium, timber, and iron ore, among others. Despite the abundance of these resources, it is now facing declining economic growth, leading to rising poverty levels, minimal increases in per capita incomes, social conflicts, and internal security problems for its member states.

Despite the efforts made by leaders to boost the economic environment (encouraging entrepreneurship, creating energy networks and roads, etc.), the economies of the CEMAC sub-region have not yet achieved a rate of economic expansion

of 10%, growth that could help solve the problems of poverty and unemployment among the population. To overcome this unfavourable situation, the private sector has been liberalised and the means have been put in place to promote private enterprise. Privately owned businesses, which are at the heart of this policy, should be the source of wealth creation and a reduction in unemployment (Mbama, 2021). However, to achieve these objectives, they need to invest, and these investments require large amounts of capital. As their own capital is insufficient, they are obliged to turn to commercial banks, hence the importance of transactional bank financing.

Nevertheless, Mbama and Kono Abe (2020) point out that this type of financing is quite perilous for the lender. The first cause of this peril is the asymmetry of information (pre- and post-financing) which can lead to the lender being exposed to the hazards of adverse selection and moral hazard on the part of the company, leading to opportunism (self-interest) (Gardès & Maque, 2012).

The issue of opportunism is not new as economic agents generally prefer their own interests to those of others. This tendency is not unknown in financial governance, which is why Jensen and Meckling (1976) proposed the positive theory of agency. Because of its lack of knowledge of the company, the bank is susceptible to self-interested strategies that can have harmful consequences for it, such as an increase in the probability of non-return of credit.

According to Sharpe (1990), relationship bank financing is an effective means of countering this problem of opportunism, which is highlighted by the risks of adverse selection and moral hazard in fee-for-service (FFS) financing. This is due to the fact that the bank and the company form a long-term cooperative partnership which reduces the informational gap.

Mbama (2022) found that in the context of financial support, the bank is already succeeding in reducing informational asymmetry prior to access to credit for businesses in the CEMAC zone. However, it has not yet succeeded in reducing informational asymmetry after financing. This asymmetry leads to an increase in the risk of default on loans, with a consequent drop in the amount of credit granted to businesses in the future (Hertouch & Achibane, 2020). Effective banking supervision of the company is a solution to minimising the consequences that may be suffered by co-contractors. Unfortunately, according to Mbama (2022), this strategy of control of the company by the bank has some limitations.

This situation stems from the fact that banks are unable to compile information on the company after the loan has been granted (Manove et al., 2001). For some authors (Mbama, 2022; Sharpe, 1990; Mbama & Kono Abe, 2020; Rajan, 1992), this ineffectiveness of bank control of the company in the context of asymmetric financial support may occur because the bank decides to expropriate the company (this is described as banking opportunism) due to its possession of certain specific information about it and its strong dependence on its financial resources. This may justify ineffective control of the company. The question of the type of control to be implemented by the bank and its frequency should be taken into consideration as it may determine the level of risk of non-repayment of the loan in the context of the financial relationship. The limitations of scientific academic literature actualise the topic of this study, which will make it possible to better understand the reasons for the progression of default risk. The relevance of the context of the CEMAC zone comes from the fact that it is one of the regions facing this problem in Africa, with high rates of financial exclusion. Therefore, the main research question of this study can be formulated as follows:

RQ: What are the determining factors that increase the risk of non-repayment of loans by businesses in the context of asymmetric financial support?

The rest of this paper is structured as follows. Section 2 reviews the relevant literature. The methodological aspects are presented in Section 3. Section 4 provides the main results, while Section 5 discusses these results. In Section 6, the main results and contributions of the study are presented.

2. THEORETICAL AND CONCEPTUAL FRAMEWORK OF THE RESEARCH

Banking institutions can offer efficient and inexpensive loans to businesses in financial relationships (Alouanga & Kobou, 2023). However, this does not generally last over time, as the mutual opportunism of co-contractors increases the likelihood of loans not being repaid. This is exacerbated by the banks' ineffective control of businesses as a result of informational capture, especially when they are in possession of strong guarantees.

2.1. Information captured by the bank as a factor increasing the risk of default

When it comes to financial support, banks are routinely censured for their inability to present information about the business before and after the loan agreement is formalised. However, several authors believe that the private information gathered by the bank gives it the power to disadvantage the less well-informed company (Mbama, 2021; Sharpe, 1990; Mbama & Kono Abe, 2020; Rajan, 1992). According to Longhofer and Santos (2000), this private information obtained by the bank in the context of the loan relationship leads it to demand significant guarantees and high-interest rates from the company.

The concept of the "hold-up problem" is known in financial theory as "informational capture". The banks tend to increase the amount of physical collateral required from companies as well as the levels of credit costs, as the relationship progresses (Ducoudré et al., 2021). This is illustrated by the fact that the bank generally offers favourable terms to the business during the early stages of the relationship in order to attract it (Alouanga & Kobou, 2023). Longhofer and Santos (2000) point out that the bank's possession of high material guarantees and the preferential status of bank credit are essential to the smooth functioning of the bank-business relationship. These elements of the loan contract can encourage banks to take advantage of customers by imposing onerous conditions, as Longhofer and Santos (2000) point out.

It is generally noted in the financial literature that relationship bank financing is an ideal form of financing, not only for the company that obtains

profitable financing but also for the bank which reduces the risk to which it is exposed. This is why Diamond (1984) argues that financial intermediaries, particularly banks, are professional controllers to whom people entrust the monitoring of loans because they are particularly good at allocating and monitoring them.

Unfortunately, this observation runs counter to the concept of the banking institution as a financial intermediary. When providing financial support, the bank tends to take advantage of a company that is in a position of trust. In general, the fact that the bank has considerable guarantees does not encourage it to supervise the company. It is often the case that the bank takes advantage of the situation because it understands that it has a privileged status in the repayment of creditors in the event of the company's insolvency.

In Africa, the financing relationship is not yet well understood by all parties, leading to a lack of trust between banks and the businesses to which they have granted credit. When banks know that they have substantial collateral, they are less likely to keep a close eye on the company to which they have lent money. This type of behaviour, referred to as opportunistic bank behaviour, increases the possibility of loan default and has a negative effect on the firm's future financing potential (Mbama, 2021). Therefore, our initial hypothesis is formulated as follows:

H1: The more opportunistic a bank is in providing financial support to a business, the less successful it is in mitigating the risk of non-repayment of loans.

It is essential to note, however, that while the issue of expropriation of the business leads to a higher risk of loan default, it is not the only factor responsible for this occurrence. The bank's quest to maximise profits by reducing monitoring costs may also be a factor.

2.2. Negligence in controlling the business as a factor increasing the risk of default

Today, banks are the world's leading financial institutions, with branches and subsidiaries all over the world. They provide various products and services to governments, individuals, and organisations, in particular. However, it is essential to bear in mind that their intermediation activities can be very dangerous. They face many dangers, such as interest rate risk, exchange rate risk, political risk, market risk, liquidity risk, operational risk, and credit risk (Hertouch & Achibane, 2020). Since credit creation is the main source of income for banks, it poses significant problems for households, banks, the government, and others involved (Kargi, 2011). Therefore, the main responsibility of banks is to address these issues, especially when it comes to credit, as it counts as one of the most crucial risks due to their operations.

According to Chigozie and Ikechukwu (2015), credit risk is losses resulting from the inability or unwillingness of borrowers to make full and timely payments. The main reasons for credit jeopardy are inappropriate lending regulations, fluctuating interest rates, high collateral, inadequate rules, capital and liquidity, compulsory lending, greatly increased bank authorisation, negligent lending, inadequate credit assessment, poor credit review, government intervention, insufficient central bank supervision, and inadequate credit control resulting in insufficient customer monitoring. This can also occur when the business is generated by an executive of the opposite gender to the bank's credit officer (Ali et al., 2023). A bank's level of risk can also be a function of its level of capital (Hsieh et al., 2022).

Properly managing credit risk not only allows banks to maintain their success and profitability but also strengthens the economic system and the way resources are allocated (Psillaki et al., 2010). This risk management can be facilitated by the integration of financial technologies within banks (Li et al., 2022).

Fee-for-service (FFS) bank financing is known to be a means of incurring greater credit risk, and relationship financing is thus proposed as a response to this problem. Since 1984, the concept of financial intermediation has recognised that banks, in particular, are the appointed overseers to whom households entrust the management of loans. Relationship financing has made this possible, by enabling businesses to meet their needs at a reduced cost, and by enabling banks to reduce various risks, particularly credit risk. Monitoring activities are carried out to verify the advertised rate of return, detect any potential opportunistic behaviour by the company and, if necessary, demand payment or initiate liquidation. Unfortunately, this approach is not accepted in all currency zones and with all financed companies.

In the various financing relationships, banks generally give priority to reducing the costs associated with monitoring companies, particularly small and medium-sized enterprises (SMEs), as monitoring is very costly. In most cases, the level of financing is often lower than the cost of supervision. In the light of these ideas, we formulate our second hypothesis, which is as follows:

H2: The bank's attempt to reduce the costs of controlling the company increases the risk of non-repayment of the loan.

It should be noted that this risk may arise through no fault of the bank.

2.3. Asymmetry of post-financing information: An explanation for the ineffectiveness of bank supervision

In general, when a company takes out a loan from the bank, it does not respect the terms of the agreement because it knows that the bank is not in a position to monitor its operations (Mbama, 2022). As a result, it chooses to conceal the financial benefits of its investments or to support businesses that are riskier than agreed with the bank.

This *ex-post* informational asymmetry is a situation in which the company takes advantage of its informational advantage to act in an exploitative manner. In this case, the company has an incentive to publish a result that is different from the actual result, in order to reduce the amount of its payments and therefore increase the risk of loss for the bank. Consequently, once the loan has been granted, its disbursement depends on the actions of the company, its behaviour, and the sacrifice made. Here, the bank is exposed to the danger of asset transfer, also known as moral hazard (Thakor, 2005; Stiglitz & Weiss, 1981).

The impossibility of determining in advance the circumstances in which the contract will be performed and the complex nature of the work to be

carried out, which cannot be taken into account in the contract, can lead to opportunistic behaviour. This doubt is partly caused by the lack of trust between the bank and the company. This lack of trust is dealt with in traditional economic theory by Williamson (1986) and studied in the social sciences by the economist Kenneth Arrow (1974).

Given the inadequacy of post-transaction information, the risk of loan default increases. To combat the possibility of opportunism, the bank resorts to raising the interest rate. Stiglitz and Weiss (1981) state that the interest rate becomes a factor in a company's investment decisions. Thus, higher interest rates indicate a greater level of risk (Ducoudré et al., 2021). The same should be true for the level of material guarantees required of companies in relationship financing. These developments lead to the following third hypothesis:

H3: The increase in the firm's ex-post informational disparity increases the possibility of defaulting on loans.

It should be noted that the control methods used by the bank can have a detrimental effect on the level of loans not repaid by the company.

2.4. Poor banking control practices: A situation that could lead to a high risk of default

The changes that have taken place in commercial banks over the last decade, the study of the problems they face, and even the failure of some of them, demonstrate the importance of internal control in these banks (Agbovoedo et al., 2022). These changes show that internal control must play a preventive role, enabling banks to ensure that their operations are carried out in a safe and secure manner. Internal control is not a policy implemented at a given time or a simple audit process, but a system that operates consistently at all levels of the bank.

Tang et al. (2015) states that in the event of default control of the company is unpredictable. It is only applicable if the difference between the payment required and the amount obtained exceeds the price of control, and if this is the case, the bank may agree to a reduction in the debt. The control hazard is only plausible if the banking institution's litigation costs are low. Consequently, faced with the threat of moral hazard, the bank's control is only activated when it registers the company's actual default. Control activities are carried out to ensure that the declared rate of return is accurate and to prevent any potential opportunistic behaviour on the part of the company. If necessary, the required amount can be recovered or the liquidation process initiated. This understanding of a bank's internal control, particularly in the case of a commercial loan, is intended to allow the danger of non-repayment of the entity's loan to manifest itself. Williamson (1986) postulates that verification, a kind of monitoring activity, is carried out selectively when default is deemed to be effective. Diamond's (1984) valuation of credit agreements does not take into account the potential gain from the investment, even if it has a cost. Tang et al. (2015) find that weak internal controls amplify firms' credit risk. The authors establish a link between internal control and credit risk in a way. Going in the same direction of control, banks generally do not implement financial technologies, which are nonetheless effective in risk management (Li et al., 2022).

This demonstrates that when a bank does not prioritise the long-term monitoring of a business in a relationship-based loan, the likelihood of the loan not being repaid increases. Mutual trust should be present between the bank and the business in such an arrangement, but if it is not, then having non-random internal control is a means of discouraging opportunistic behaviour by the business after the contract has been signed. The objective of internal control should be to prevent problems rather than to repress them. The objective of corporate internal control is not to identify fraud and error, but to maintain a reliable structure that provides reasonable assurance of safety in the management of credit risk (Porretta et al., 2020). In fact, internal controls can recognise credit risk. Ashbaugh-Skaife et al. (2007) found a link between internal controls and several levels of risk such as idiosyncratic risk and higher systematic risk.

Chen et al. (2016) reported that a good internal control system not only improves the accuracy of financial reporting but also enhances investor confidence in the capital market. Ellul and Yerramilli (2013), also corroborated the importance of effective internal controls by finding that financially sound organisations with strong internal risk controls can weather financial crises. Considering these developments, we put forward the following hypothesis:

H4: The introduction of random monitoring of companies by the bank increases the risk of default.

Having analysed the literature on the factors behind the ineffectiveness of internal banking controls, it is appropriate to present a research study in the CEMAC zone. In order to move forward, we will begin by outlining the methodology employed.

3. METHODOLOGY

The emphasis on methodology means that we first present the research strategy, then the details of the practical work, including the group's characteristics and the collection and analysis of the research data.

3.1. Research strategy

This article uses a positivist approach to research, based on a factual and impartial interpretation of the data collected. This method is appropriate in this context because it enables the various hypotheses proposed by the analysis of quantitative data to be tested. From an epistemological point of view, quantitative methods are chosen to collect data because the problem to be solved is understood to be causal in nature. Statistical tests are carried out on the data obtained, as well as an economic study, using panel data regression by the generalised method of moments (GMM), with hypotheses tested using the dynamic model. Alternative methods that would be suitable for carrying out this research include the ordinary least squares (OLS) method, which allows any normality and heteroscedasticity problems to be fixed.

3.2. Description of operating work

It is essential in this section to first present the study population before introducing the main data analysis tools.

The CEMAC sub-region is made up of six nations: Cameroon, Central African Republic, Equatorial Guinea, Congo, Chad, and Gabon. The information used comes from the banking systems of the countries in this sub-region. On December 31, 2019, the CEMAC banking sector comprised 51 banks in operation, distributed as follows: Cameroon (15), Central African Republic (4), Congo (11), Gabon (7), Equatorial Guinea (5), and Chad (9). These 51 banks had a total of 84 branches for a total number of accounts for the banking system as a whole of 3,758,375, with an aggregate balance sheet total for CEMAC banks of 14,093 billion CFA francs (F.CFA) compared with 13,476 billion F.CFA a year earlier.

This study in the CEMAC zone is based on the reports of banks included in the COBAC banking system for the period from 2011 to 2019. This allows us to have a number of observations that allow us to better analyse the problem and draw conclusions.

The aim of this study is to monitor changes in various variables according to the four hypotheses presented. In addition to the dependent variable, the explanatory variables are also observed.

The dependent variable is the bad debt variable to measure the risk of loan default (*DOUBDEB*). Observing the evolution of DOUBDEB gives us insight into the determinants of this phenomenon in the context of asymmetric financial support over the nine-year period from 2011 to 2019.

With regard to the various independent variables, we have cost of credit, guarantees, medium-term loans, doubtful commitments, degree of risk coverage, net banking income, volatility of banking resources, net regulatory equity, and provisions.

Table 1 summarises the different variables to be tested.

Table 1. Summary of variables to be tested

Symbol	*Name*
Dependent variable	
DOUBDEB	Doubtful debts
Independent variables	
COSTCRED	Cost of credit
GUARANT	Guarantees
MED LOA	Medium-term loans
DOUBCOM	Doubtful commitments
DEGRISCOV	Degree of risk coverage
NBI	Net banking income
VOLBANRE	Volatility of banking resources
NET REGEQ	Net regulatory equity
PROV	Provisions

Source: Authors' elaboration.

4. RESULTS

In order to determine the cause of the increased risk of non-repayment of debt by companies in the CEMAC zone in the context of asymmetric financial support, we need to analyse the data using both descriptive statistics and econometrics.

4.1. Descriptive analysis of research data

The purpose of this sub-section is to analyse the descriptive statistics for the various variables in the study. The descriptive statistics allow us to better understand the evolution of the different variables and the correlations between the dependent variable and the explanatory variables.

Table 2 summarizes the descriptive statistics for the various variables in the study. It is worth making a few comments to make it easier to understand.

With regard to doubtful debts (*DOUBDEB*), as a dependent variable, we observe that the amplitude of its variation is between 246.000 and 75,693.000 billion F.CFA. Thus, the country with the least bad debts had 246.000 billion F.CFA during the period under consideration in the CEMAC zone, while the country with the most bad debts had just over 75,693.000 billion F.CFA.

The median amount shows that a minimum of 50% of banks in the CEMAC zone recorded 8,445.500 billion F.CAF over the period in question. As for the average, this table shows that an average of F.CFA 15,600.722 billion in doubtful debts was recorded by banks between 2011 and 2019. The standard deviation, which reveals the level of dispersion of all the amounts of doubtful debts, is 18,197.670 billion F.CFA in the CEMAC zone.

In light of this observation, it can be said that banks in the CEMAC zone are well aware of the problem of bad debts, even in the context of financial support. The asymmetry of information between banks and companies leads to behaviour that increases the risk of default.

The median of these expenses reveals that more than half of the banking systems in the CEMAC zone had a credit interest rate of less than 11.765% over the period observed. On average, medium-term credit for these six banking sectors in the CEMAC zone was 11.776% over the nine-year period observed. The standard deviation of 1.736% indicates the level of divergence of the credit costs of each sector from the average, as well as of all credit cost values of all banking sectors from the average over the observed period. It is important to observe the impact of this variable on the level of default risk.

The "physical collateral" variable has a range between 8.300 and 361,732.000 billion F.CFA. Its median is 41,598.000 billion CFA francs, while its mean is 70,094.701 billion F.CFA, indicating the amount of physical collateral required by each banking system. The standard deviation is 83,629.674 billion F.CFA, showing the variation in the value of collateral from the mean.

The median value indicates that more than half of the banking systems in the CEMAC zone have medium-term credit values over 152,193.500 billion F.CFA in the period under consideration. Taking the average of medium-term loans issued by the six banking sectors over the nine-year period, the result is 256,411.111 billion F.CFA francs. The standard deviation is 2157,640.353 billion CFA francs.

Table 2. Descriptive statistics for the different variables analysed (in billions of CFA francs)

Statistics	*DOUBDEB*	*COSTCRED*	*GUARANT*	*MED LOA*	*DOUBCOM*	*DEGRISCOV*	*NBI*	*VOLBANRE*	*NET REGEQ*	*PROV*
No. of observations	459	459	459	459	459	459	459	459	459	459
No. of missing values	0	0	0	0	0	0	0	0	0	0
Minimum	246.000	7.980	8.300	4838.000	0.060	-38.900	6397.000	0.430	10498.000	252.000
Maximum	75693.000	16.500	361732.000	893292.000	81627.000	50.300	198586.000	0.970	233003.000	65998.000
Minimum effect	1	1	1	1	1	1	1	1	1	1
Maximum effect	1	1	1	1	1	1	1	1	1	1
Amplitude	75447.000	8.520	361723.700	888454.000	81626.940	89.200	192189.000	0.540	222505.000	65746.000
Median	8445.500	11.765	41598.000	152193.500	5034.000	16.250	51726.500	0.800	80989.500	6953.500
Average	15600.722	11.776	70094.701	256411.111	14553.163	17.093	61172.241	0.795	89243.611	13154.444
Standard deviation (n)	18197.670	1.736	83629.674	257640.353	23405.603	15.273	48397.957	0.117	61160.845	15782.445
Coefficient of variation	1.166	0.147	1.193	1.005	1.608	0.894	0.791	0.147	0.685	1.200
Standard deviation of the mean	2499.642	0.238	11487.419	35389.624	3215.007	2.098	6647.971	0.016	8401.088	2167.885
Lower limit of average (95%)	10587.075	11.298	47053.856	185428.514	8104.676	12.885	47838.100	0.763	72393.162	8806.217
Upper limit of average (95%)	20614.370	12.254	93135.546	327393.708	21001.650	21.300	74506.381	0.827	106094.060	17502.672
Standard deviation of variance	65543032.976	0.596	1384253912.595	13137802356.330	108426291.792	46.166	463605958.974	0.003	740358231.147	49299611.844
Standard error (Fisher asymmetry)	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325
Geometric mean	8238.917	11.646	19790.596	129353.668	2027.332		41837.518	0.786	64285.448	7113.657
Geometric standard deviation	3.478	1.163	12.044	3.833	21.445		2.575	1.175	2.467	3.254
Harmonic mean	3301.370	11.514	238.828	51112.189	3.032	22.024	27136.918	0.775	42235.436	3267.135

Note: The CFA franc (F.CFA) — franc of the Financial Community of Africa.
Source: Based on data compiled from COBAC reports from 2011 to 2019 and processed by XLSTAT.

Table 3. Correlation matrix for the variables studied

Variables	*DOUBDEB*	*COSTCRED*	*GUARANT*	*MED LOA*	*DOUBCOM*	*DEGRISCOV*	*NBI*	*VOLBANRE*	*NET REGEQ*	*PROV*
DOUBDEB	1*	-0.280*	0.503*	0.585*	0.773*	-0.163	0.702*	-0.279*	0.635*	0.865*
COSTCRED	-0.280*	1*	-0.428*	-0.562*	-0.210	-0.067	-0.527*	0.002	-0.473*	-0.296*
GUARANT	0.503*	-0.428*	1*	0.670*	0.685*	-0.124	0.657*	-0.337*	0.625*	0.446*
MED LOA	0.585*	-0.562*	0.670*	1*	0.417*	-0.168	0.942*	-0.525*	0.862*	0.631*
DOUBCOM	0.773*	-0.210	0.685*	0.417*	1*	-0.102	0.509*	-0.234	0.514*	0.696*
DEGRISCOV	-0.163	-0.067	-0.124	-0.168	-0.102	1*	-0.201	0.127	0.117	-0.165
NBI	0.702*	-0.527*	0.657*	0.942*	0.509*	-0.201	1*	-0.387*	0.895*	0.761*
VOLBANRE	-0.279*	0.002	-0.337*	0.525*	-0.234	0.127	-0.387*	1*	-0.391*	-0.251
NET REGEQ	0.635*	-0.473*	0.625*	0.862*	0.514*	0.117	0.895*	-0.391*	1*	0.666*
PROV	0.865*	-0.296*	0.446*	0.631*	0.696*	-0.165	0.761*	-0.251	0.666*	1*

*Note: * Values differ from 0 at significance level alpha = 0.05.*
Source: From data collected and processed under XLSTAT.

The range of explanations varies from 0.060 to 81,627 billion F.CFA for doubtful commitments (*DOUBCOM*), -38.900 to 50.300 billion F.CFA for the degree of risk coverage (*DEGRISCOV*), 6,397.00 to 198,586.00 billion F.CFA for net banking income (*NBI*), 0.430 to 0.970 billion F.CFA for the volatility of banking resources (*VOLRESBANC*), 10,498.00 to 233,003.00 billion F.CFA for net regulatory capital (*NET REGEQ*), and 252.00 to 65,998.00 billion F.CFA for provisions (*PROV*).

The mean values of the explanatory variables are 5,034.00 billion F.CFA for doubtful commitments (*DOUBCOM*); 16,250.00 billion F.CFA for the amount of risk protection (*DEGRISCOV*); 51,726.50 billion F.CFA for net banking income (*NBI*); 0.80 billion F.CFA for the volatility of banking resources (*VOLBANRE*); 80,989.50 billion F.CFA for net regulatory capital (*NET REGEQ*) and 6,953.50 billion F.CFA for provisions (*PROV*).

The average of these explanatory variables is 14,553.163 billion F.CFA for doubtful commitments (*DOUBCOM*); 17,093 billion F.CFA for the degree of risk coverage (*DEGRISCOV*); 61,172.241 billion F.CFA for net banking income (*NBI*); 0.795 billion F.CFA for the volatility of banking resources (*VOLBANRE*); 89,243.611 billion F.CFA for net regulatory capital (*NET REGEQ*) and 13,154.444 billion F.CFA for provisions (*PROV*). This average for each variable indicates what the CEMAC banking sector should have in terms of the explanatory variables we display.

All these variables explain the rise in corporate bad debts in the context of asymmetrical financial support.

After presenting the descriptive statistics for the various variables in the study, it is interesting to understand the correlations between them.

Table 3 presents the various correlations between the explained (dependent) variable and the explanatory (independent) variables. It shows a strong negative correlation between bad debts (*DOUBDEB*) and the cost of credit (*COSTCRED*) of -0.280, and between bad debts and the volatility of bank resources (*VOLBANRE*) of -0.279. It should be noted that the inverse relationship suggests that when the cost of credit decreases in an asymmetric financial environment, the risk of credit default increases. The result indicates that firms in the CEMAC zone are not able to mitigate the disparity in post-transaction information due to falling credit costs, thus preventing the bank from successfully supervising them. In view of these results, hypothesis *H3* is accepted.

On the other hand, other factors have a strong association with the bad debt variable. For example, the table shows that if the bank increases the collateral requirements for financing customer relationships (0.503), bad debts also increase. This confirms hypothesis *H1* since the bank does not focus on controlling the business because of the high collateral requirement. Net banking income (0.702) shows the same trend as bad debts. This result implies that when the bank aims to maximise its profit through financing, it reduces control costs in order to obtain higher returns, which increases the risk of credit default. Consequently, hypothesis *H2* is confirmed.

The *PROV* variable (coefficient 0.865) shows a positive correlation with bad debts, which indicates that the banks are committed to a random control of companies when providing financial support, despite the existence of informational asymmetry. This could be due to the fact that they seek to maximise profit by writing back provisions. This correlation confirms hypothesis *H4*.

The other variables are medium-term loans (0.585), impaired commitments (0.773), and net regulatory capital (0.635), which follow the impaired loans variable.

The explanatory variables that correlate with the dependent variable are those that can influence it. An econometric study is needed to verify this.

4.2. Econometric analysis of research data

Table 4 presents the results of the econometric study. The variables that significantly explain bad debts for the study period are preferably presented separately in Table 5.

Table 4. The different variables analysed in the CEMAC zone

Independent variables	*Coefficients*
Doubtful debts delayed by one period (*DOUBDEB$_{t-1}$*)	0.671*** (0.183)
Interest rate changes over time in the CEMAC zone (*COSTCRED*)	-1,566** (469.5)
The level of collateral required by banks for MT loans (*GUARANT*)	0.0983** (0.0350)
The level of medium-term loans granted by banks in the CEMAC zone (*MED LOA*)	-0.0910 (0.0263)
The level of doubtful commitments on medium-term loans in the CEMAC zone (*DOUBCOM*)	0.0562 (0.0736)
Banks risk coverage (*DEGRISCOV*)	67.91 (96.35)
Average net banking income for banks (*NBI*)	0.488** (0.172)
Volatility of banking resources (sight deposits/total deposits) (*VOLBANRE*)	11,068** (-3,425)
The level of net regulatory capital for each banking system in the CEMAC zone (*NET REGEQ*)	-0.173** (0.0258)
The level of provisions used by banks in the CEMAC zone (*PROV*)	-0.0652 (0.383)

*Note: *, **, and *** reflect the fact that the parameter is not statistically different from zero, is statistically different from zero, respectively at the 10%, 5%, and 1% significance levels.*
Source: Authors' elaboration.

Table 5. Determinants of the level of doubtful loans in the CEMAC zone

Variables	*Name*	*Symbol*	*Coefficients*
Dependent variable	Doubtful debts for period *t*	*DOUBDEB*	-
Independent variables	Doubtful debts for period *t-1*	*DOUBDEB$_{t-1}$*	0.6714075
	Cost of credit for period *t*	*COSTCRED*	-1.566375
	The level of cover required	*GUARANT*	0.0983
	Net banking income for period *t*	*NBI*	0.4883419
	Volatility of bank resources over period *t*	*VOLBANRE*	11.06833
	Net regulatory capital for the period	*NET REGEQ*	-0.173887

Source: Authors' elaboration.

Table 5 summarizes the various independent variables of our study that help explain the level of doubtful debts (as the dependent variable) recorded by banks in the CEMAC zone in the context of financial support during the period observed.

5. DISCUSSION

The results of this study enabled us to observe that when a bank is rigorous in its demand for guarantees in the context of a relationship-based loan, the probability of non-payment of the loan by the borrower also increases. Longhofer and Santos (2000) suggest that the confidential information that the bank holds on the borrower as part of the loan relationship encourages it to demand material guarantees. The authors show that the characteristics of the credit contract can lead banks to take advantage of companies by setting costly financing conditions. In this context, because of the high level of material guarantees, the bank may be encouraged to act opportunistically, ignoring the company's monitoring. These results enabled us to confirm hypothesis *H1*.

Analysis of Table 5 leads us to the conclusion that "*Net banking income*" and bad debts have a correlation of 0.488. This implies that when a bank wants to maximise its profit from a lending relationship, it must minimise its control costs. Psillaki et al. (2010), have shown that banks can both ensure their own success and benefit the economy as a whole by effectively managing credit risk exposure. This result supports hypothesis *H2*. The coefficient of (-1.566) indicates contradictory trends between the two variables, suggesting that firms are unable to eliminate post-transaction information asymmetry, and therefore that the bank cannot guarantee adequate supervision. Manove et al. (2001), in a similar vein, indicate that the inability of banks to obtain information about a company in the context of financial support exposes them to the risk of default. However, Uchida et al. (2013) go in the opposite direction by indicating that relationship financing allows banks to generate specific qualitative information that not only helps in the evaluation of the company but also contributes to reducing informational asymmetry (both *ex-ante* and *ex-post*). Consequently, this result allows us to support hypothesis *H3*.

Table 5 shows that "*Doubtful debts of period t-1*" ($DOUBDEB_{t-1}$) has a positive coefficient (0.671) and is positively correlated with "*Doubtful debts of period t*". This result suggests that an increase in bad debts in the previous year leads to an increase in bad debts in the current year. This development can be explained by the fact that in relationship financing, the bank cannot implement a permanent and effective internal control policy for the company. Tang et al. (2015) determined that the low importance of internal control increases the credit risk of companies. The authors found a relationship between internal controls and credit risk, validating hypothesis *H4*. In the event of default, the firm's control is determined randomly, which is consistent with Tang et al.'s (2015) assertion that the firm's internal control is arbitrary in the event of default. This is only applicable if the difference between the payment required and that received exceeds the cost of control.

6. CONCLUSION

Given that the capital market in the CEMAC zone is still in its infancy, indirect financing — mainly through bank loans — is the main source of financing for the economy in the sub-region (Hicks, 1974; Fouda Owoundi, 2009). Mbama (2021) suggests that relational bank financing could be adopted to resolve the information imbalance between banks and their customers when the latter uses transactional financing. Despite the dilution of the information gap prior to financing, the ex-post information asymmetry still leads to the inefficient nature of relationship financing in the CEMAC zone, thus increasing the potential for moral hazard. Indeed, banks are not in a position to effectively manage the borrowing company after the loan has been granted in the context of asymmetric financial support.

This article seeks to examine the factors determining the increased risk of non-repayment of bank loans in the context of asymmetric financial support in the CEMAC zone, during the period from 2011 to 2019.

A literature review was conducted to discuss these determinants of credit risk, which increase the probability of credit default. As a result, business expropriation was identified as a type of banking opportunism that is a source of credit default. Going in the same direction of banking opportunism, it was important to reveal that the inefficiency of controlling the company is also a desire for the bank to minimise the costs it incurs in controlling the company.

Having presented banking opportunism as a factor contributing to this risk of default, it was also necessary to emphasise that the bank's deficiencies in the management of the financing relationship can also lead to ineffective control. Thus, the concept of informational opacity of the company as an explanation for the ineffectiveness of the bank's control was proposed. This ex-post informational asymmetry occurs when the company takes advantage of its informational superiority and acts opportunistically. The bank is unable to make up for this information deficit, with the main consequence being an increase in the risk of moral hazard. We sought to identify the determinants of the increase in bad debts by conducting an empirical study using secondary data in the CEMAC zone between 2011 and 2019.

The results of this analysis allow us to conclude that banking opportunism led the banks to neglect the monitoring of the companies in the context of financial support in the CEMAC region during the period under review. However, it should also be pointed out that the companies also took advantage of the post-financing information imbalance between it and the banks, as well as the inadequacies of the control procedure, to indulge in their own opportunism.

As a solution to this problem, both parties should take steps to improve this damaging situation. Banks should refrain from opportunistic behaviour and draw up a plan for continuous and effective monitoring of the companies. For its part, companies should favour transparency in their relations in order to gain access to more financing and cost-cutting measures. The proposed reflection

invites both parties to focus on the valuable financial relationship that binds them and to make commitments that encourage the emergence of reciprocal benevolent behaviour, for banks to strengthen credit risk assessment mechanisms, and for policymakers to focus on putting in place effective legal and regulatory frameworks.

This article is useful for future research in the field of finance. The study highlights the issue of asymmetric information in the context of financial support and the resulting risk of non-repayment of loans to banks in the CEMAC sub-region. This is a crucial concern for policymakers, financial institutions, and researchers, as it affects the overall stability of the financial system. The article presents an in-depth analysis of the factors that contribute to this problem, including opportunism on both sides, inadequate credit risk assessment by banks, and the lack of appropriate legal and regulatory frameworks. We also propose some possible solutions to the problem.

The results of this study have important implications for future research in the field of finance, particularly in the context of emerging economies such as those of the CEMAC. It highlights the need for a more nuanced understanding of the factors that influence the efficiency of financial systems in these countries. It also highlights the importance of developing appropriate policies and regulations that can help address the challenges facing the financial sector in these countries. This research can serve as a basis for future studies on the subject and help inform the development of policy and regulatory frameworks in the CEMAC sub-region and beyond.

There are a number of limitations to this work, namely: the number of observations in our study population is small given the difficulty of obtaining data from COBAC reports over a larger number of years. Also, the generalisation of this result to other geographical areas or financing contexts may not be appropriate, as economic factors, business practices, and regulations may vary. Other factors, such as the quality of company management, economic conditions, competition in the banking market, etc. may also influence the risk of non-repayment of loans, as these factors were not taken into account in this study. The results of the study may not be applicable to all financing relationships between banks and companies in the CEMAC zone, as the characteristics and practices of each financing relationship may vary considerably.

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