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Credit Rationing for Moroccan SMEs: Banking Constraints and Financing Characteristics in Casablanca - Settat region

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Abstract. Moroccan SMEs, which are closely linked to banking institutions to obtain the financing needed for their projects, often find themselves in a situation where these sources of financing are not easily accessible. Indeed, access to credit is often difficult for these categories of companies that are frequently confronted with the phenomenon of total and partial credit rationing. Among the causes of this problem, we can cite the somewhat opaque nature of their information system and their inability to comply with bank financing conditions compared to large companies. This article aims to shed light on the relationship between restrictive bank clauses, including the availability of guarantees, the characteristics of the credit requested and the credit rationing of SMEs in the CASABLANCA-SETTAT region. We conducted a questionnaire survey of 218 SMEs in the same region. Contingency and simple regression tests show that the lack of guarantees is a direct cause of total and partial credit rationing, particularly for small businesses that need significant financing.

Keywords: *Moroccan SMEs; Information asymmetry; Credit rationing; Bank financing; Bank restrictive clauses; Guarantee.*

1. Introduction

Several studies analyzing the dynamics between banks and SMEs have highlighted that the challenges faced by Moroccan SMEs are primarily due to a lack of financial resources, particularly from banks (Oudgou & Zeamari, 2019). This situation leads to low competitiveness, forcing SMEs to focus on survival rather than innovation. However, with the opening of borders, the signing of free trade agreements, and technological advancements, it has become imperative for SMEs to invest in strengthening their competitiveness. This reality underscores the need for robust financial resources.

Bank financing remains the most utilized source of funding for SMEs. Nevertheless, despite the importance of their business relationships, bankers often report challenges in dealing with this category of enterprises. These difficulties stem from SMEs' management weaknesses and their failure to provide comprehensive information in loan applications. Financing agreements often reflect this uncertainty through restrictive clauses, which are linked to the perceived risks associated with SMEs.

The significant asymmetry of information in the credit market often subjects SMEs to banking constraints when seeking credit. These constraints can, paradoxically, encourage SMEs to adopt a more cooperative approach post-credit approval. Banking restrictions frequently manifest as requirements for collateral. McKillop & Hutchinson (1994) assert that the presence of collateral significantly influences credit-granting decisions. Similarly, Berger & Udell (1992) were among the first researchers to consider loan size in their studies on access to bank financing, presenting it in two opposing ways: either as a factor promoting credit rationing or as a means to offset associated expenses, thereby increasing the likelihood of approval.

Evans & Jovanovic (1989) also emphasize the impact of loan size on credit rationing. Contrarily, Phung (2009), in a study on Vietnamese SMEs, concluded that loan size, the nature of debt (short or long term), and the intended use of credit do not necessarily determine the need for collateral.

Our observations prompted an investigation into the extent of this phenomenon among Moroccan SMEs, particularly in the Casablanca-Settat region. We aim to examine credit rationing that arises from SMEs' inability to provide adequate collateral and its correlation with the characteristics of credit demand. A deeper exploration of this issue in the Casablanca-Settat region, a pivotal area for Morocco's economic activity, is essential for helping SMEs identify their weaknesses in financing applications. Furthermore, this study can assist Moroccan financial regulatory bodies, such as Bank Al Maghreb, in evaluating the effectiveness of financing and recovery plans extended to SMEs by banks.

This scientific inquiry seeks to answer the following key question: Are restrictive banking clauses directly responsible for the credit rationing experienced by SMEs in the Casablanca-Settat region?

Our research stands out by shedding light on the mechanisms underlying credit rationing among SMEs in Casablanca-Settat. By focusing on the restrictive clauses imposed by banking institutions, the study examines an often-overlooked aspect of economic analyses, which typically emphasize macroeconomic variables. From a theoretical perspective, this research contributes to academic literature by explicitly linking restrictive clauses to credit rationing.

In Morocco, there is a lack of transparency regarding the volume of rejected bank financing applications. Rejected applications are often destroyed or, in rare cases, archived. Additionally, a review of existing studies on SME financing in Morocco reveals limited research on credit rationing, with studies being narrow in scope and time. Thus, the issue remains insufficiently explored.

This research aims to deepen the understanding of the relationship between banks and SMEs by analyzing the credit rationing phenomenon caused by information asymmetries. It seeks to identify the determinants of credit refusal—whether total or partial—and to help Moroccan SMEs recognize their strengths and weaknesses in accessing bank financing, rather than relying on public intervention during financial difficulties.

The study pursues two main objectives: first, to decipher the elements influencing bank credit decisions for SMEs in the Casablanca-Settat region; second, to identify the factors contributing to credit rationing. This investigation addresses a critical gap in the understanding of SME financing dynamics and equips companies with insights into the challenges they face in this domain.

Beyond its scientific contributions, this research has practical implications for various stakeholders:

- SMEs and the Private Sector: The findings will help SMEs better understand their financial shortcomings and improve their financing strategies.
- Moroccan Credit Institutions: Banks can benefit from insights into how restrictive clauses impact SME financing, prompting them to optimize their credit-granting processes, revise internal rating systems, and enhance competitiveness.
- National Financial Supervisory Bodies: Institutions like Bank Al Maghreb and the Ministry of Finance can use this research to evaluate state-supported SME policies and financing plans.
- Development Institutions and Funds: Public and private organizations supporting SMEs can assess the effectiveness of current programs and propose improvements for recovery initiatives, particularly in terms of bank financing.

This study emphasizes the importance of restrictive clauses in bank contracts as a direct factor limiting SMEs' access to credit in Morocco, a subject that has received little attention in existing

literature. By focusing on SMEs in the Casablanca-Settat region, this research highlights how these clauses, often perceived as risk management tools, may exacerbate financial challenges for Moroccan SMEs.

2. Literature review

a. Concept of credit rationing

According to Jaffe and Russell (1976), credit rationing occurs when the amount of credit granted by a bank is less than the amount requested by borrowers. Keeton (1979) distinguishes between two types of credit rationing: Type I rationing, which involves a partial refusal affecting all borrowers within a group, and Type II rationing, where some borrowers within a group receive the full amount requested while others face restrictions.

Furthermore, Stiglitz and Weiss (1981) argue that credit rationing occurs when a borrower is willing to accept the bank's terms, and the bank has sufficient funds, yet it still refuses to grant the loan or reduces the requested amount.

Similarly, Bester (1987) suggests that credit rationing happens when certain borrowers are denied credit, even if they are willing to pay a higher interest rate or provide collateral. This phenomenon can be explained by imbalances in the credit market, where the supply of credit exceeds demand but specific borrowers are excluded.

Based on these various theoretical definitions, it can be concluded that credit rationing manifests in two main forms: either as an outright refusal of the financing request or as a limitation on the amount of credit granted.

b. Information asymmetry and credit rationing

In the credit market, information asymmetry refers to the imbalance of information between the lender and the borrower. On one hand, borrowers may be reluctant to share relevant details about themselves, their company, or their financing project. On the other hand, lenders, acting rationally, are often unwilling to incur additional costs to obtain the necessary information (Roger, 1988).

In this context, when the information provided by the borrower is deemed poor or irrelevant by the bank's decision-making center, the bank may resort to credit rationing in various forms. Stiglitz and Weiss (1981), convinced of the prevalence of incomplete information between lenders and borrowers, demonstrate that the greater the information asymmetry, the higher the likelihood of credit rationing.

Jensen and Meckling (1976) argue that ignoring information asymmetry can lead, ex post, to the voluntary reallocation of funds through asset substitution. In such cases, creditors are at a disadvantage, as they lack sufficient knowledge about the projects being financed. Company managers, who do not always share the same interests as creditors, typically have better insights into the quality of their projects (Jensen & Meckling, 1976). Under these circumstances, credit rationing can be a useful and rational decision.

Peterson and Schulman (1987) further note that when company managers identify promising project ideas, they may hesitate to share relevant information with the bank, exacerbating the issue of information asymmetry.

c. Information asymmetry and restrictive banking clauses

We have shown that the persistence of significant information asymmetry in the credit market clearly reduces lenders' ability to distinguish between honest SMEs and dishonest companies. To avoid the consequences of information opacity, funders ask SMEs to provide more guarantees to demonstrate their good intentions. Indeed, the allocation of tangible guarantees is among the most decisive elements for obtaining bank financing, whether for an individual or a legal entity.

McKillop and Hutchinson (1994) assert that the presence of guarantees is the element that influences the decision to grant credit. Thus, companies that offer goods as collateral are more likely to have their financing requests approved. This helps the bank reduce information opacity and encourages company collaboration.

The presence of collateral is a critical factor for SMEs' access to bank credit. These physical guarantees help to reduce information asymmetries between the company and its creditors (Steijvers & Voordeckers, 2009; Hall & Lerner, 2010). Furthermore, to encourage SMEs to be more cooperative and reduce the costs associated with information gathering, creditors require guarantees in the form of pledges on the company's tangible assets (Myers, 1977).

The requirement for guarantees or collateral is essential in the credit relationship (Gracia & Mira, 2008). Funders use this method to mitigate risk and serve as a means of self-selection for borrowers. This requirement may discourage leaders from making underinvestments and discretionary withdrawals (Jensen & Meckling, 1976; Myers, 1977). It can also reduce the risks of moral hazard: guarantees, whether they are company assets or personal contributions from the manager (Voordeckers & Steijvers, 2006), increase the losses incurred by the company and the entrepreneur in the event of default, thereby encouraging the company to undertake less risky projects in advance. The works of Besanko and Thakor (1987) and Berger and Udell (1990) provide further insights. Guarantees help reduce agency costs and encourage creditors to engage in long-term loans. Jensen and Meckling (1976), Titman and Wessels (1988), and Harris and Raviv (1990) contend that companies possessing collateral-ready assets exhibit greater leverage.

However, Stiglitz and Weiss (1987) challenge this thesis, arguing that higher collateral requirements may encourage the borrower to undertake riskier projects to offset the opportunity cost resulting from the "locking up" of the company's collateral assets. Moreover, high collateral requirements exclude the least risky borrowers with low risk aversion. The increase in required guarantees can lead to an adverse selection phenomenon.

Bester (1987) challenged Stiglitz and Weiss's thesis by demonstrating that collateral in the form of assets can reveal the firm's quality. High-risk borrowers choose a contract with low collateral and a high interest rate. On the other hand, low-risk borrowers prefer a contract with a low interest rate and more considerable collateral. Thus, revealing contracts based on combinations of interest rates and the amount of guarantees can replace the costly construction of information about the company. According to the results obtained by Phung (2009), the presence of guarantees is a determinant of credit rationing for Vietnamese SMEs.

The exchange of information between the bank and the SME is one of the most critical steps in the credit-granting process. Indeed, this phase is crucial as it allows for preparing a funding application file containing all the accurate, practical, and necessary information for the bank's decision-making process.

The funding decision is based on an application file containing qualitative and quantitative information. Any incorrect or incomplete information can mislead the bank. This is why the bank will constantly seek to be advantaged in terms of information obtained from the SME while facing the issue of information asymmetry. The term "information asymmetries" in the credit market refers to the discrepancy between the information available to companies seeking credit and the fund providers, who are considered disadvantaged in information.

According to Roger (1988), information asymmetry can have two origins: either one partner has more information than the other, or the costs of obtaining the information are high, which can likely lead to a credit rationing phenomenon. According to Goyer (1995), ex-ante information asymmetry results from the lender's inability to accurately assess the business's financing needs, which may lead the banker to limit their financing offer and exclude the most risky companies from the market,

particularly SMEs. According to Stiglitz and Weiss (1981), lenders face a risk of asset substitution due to ex-post information asymmetry when they cannot observe the company's performance.

Peterson and Shulman (1987) analyze the capital structure of SMEs and assert that they hesitate to share relevant information with third parties when they have found successful investment projects. Ngongang (2015) asserts that the inability of Cameroonian SMEs to properly evaluate their projects and build a future representation that allows them, as well as the bank, to assess the projected profitability of the project, creates an obstacle to access to bank credit.

Levratto (2000) estimates that bankers perceive a risk of project change in companies that do not obtain bank financing. Boot (2000), in a study on the strategies implemented by banks to manage moral hazard issues in financing SMEs, found that the fraction of SMEs not receiving the full amount of credit requested faced a risk of changing their investment project after receiving part of the funds.

The inability of external financiers to fully understand the risk characteristics of companies due to the lack of complete and reliable financial information is explained, according to Besanko and Kanatas (1993), by the small size and youth of the companies. According to Levratto (2000), the inability of SMEs to provide quantitative and qualitative information that meets the expectations of banks justifies their exposure to credit rationing. Burkart and Ellingsen (2004) emphasize that uncertainty regarding the conditions that will prevail during the execution of the contract contributes to increasing the risk of changes in the borrower's investment projects during the contract's execution, which can lead to partial or total credit refusals. Persais (2004) concludes that uncertainty about the investment project and the borrower's quality in successfully implementing the financed project leads to rationing behaviors.

In order to restore the company's brand image with its financial and non-financial partners, Mayoux (1979) suggests encouraging companies, particularly SMEs, to rely more on internal savings.

According to Portait and Nourel (1982), the evaluation of bank financing requests is based on three types of information: first, admissibility to determine the legality of the credit request. Then, the study of financial and accounting statements allows for the assessment of the level of indebtedness, the quality of equity, the amount of future repayments, and their close relationship with projected self-financing. Finally, the economic objectives relate to the anticipated profitability of the investment project.

The company must therefore maintain its brand image before obtaining bank financing. This can be done by presenting solid quantitative information, in particular its repayment capacity, which is a function of self-financing. Using one's own self-financing capacity, which is an intrinsically free form of financing that does not bear the costs associated with reducing informational asymmetries, promotes companies' access to all forms of credit (Ludovic, 2008).

This implies that companies such as SMEs, before seeking bank financing, must first strengthen their self-financing capacity in order to send a positive signal about their performance and their ability to generate cash flow. This practice can help reduce informational asymmetries and thus avoid credit rationing.

d. Information asymmetry and Characteristics of the requested loan

The purpose of the loan, the type of credit, and the amount requested are usually the primary questions addressed during an interview with an entrepreneur seeking financing. Banks often discuss these aspects before opening and registering the credit application file. In a credit market characterized by imperfect information, banks frequently need to collect and process information on investment projects during the initial meeting to theoretically quantify financing needs.

Researchers in the economic field have established a link between credit rationing and the information available on the project to be financed. For example, Peterson and Shulman (1987), analyzing the capital structure of SMEs, claim that these businesses are reluctant to share relevant information with third parties when they have promising investment projects. According to Binks et al. (1992), the difficulty in accessing bank credit for SMEs may arise from issues related to the availability of information on the projects to be financed and the entrepreneur's inability to evaluate their project accurately.

Boot (2000) arrives at a similar conclusion, noting that a large majority of SMEs experiencing credit rationing are those that present a high risk of asset substitution, even when banks establish renewable debt contracts over several periods. Manchon (2001) argues that the imperfection of the information held by banks is primarily due to the borrower's desire to conceal the quality of their projects.

A negative past experience or a lack of trust in the bank can also contribute to borrowers' reluctance to share sensitive and complete information about their financed projects. Borrowers often fear that banks could appropriate the project after gaining access to vital information, such as the business plan or prototype details, particularly in industrial or technological ventures.

The work of the Banque de France has highlighted the importance of short-term debt for small businesses (Cieply & Paranque, 1998). Short-term loans, on the other hand, can mitigate issues related to information asymmetry (Ortiz-Molina & Penas, 2008) and reduce moral hazards while increasing the likelihood of credit approval (Berger & Udell, 1992). Flannery (1986) adds that short-term debt enables adjustments to the terms of the credit contract based on new information.

Berger and Udell (1992) were among the first to consider credit size in their investigation of bank financing. These researchers view credit size in two contradictory ways: it either promotes rationing or covers the costs incurred, thereby increasing the likelihood of approval. Evans and Jovanovic (1989) emphasize the relationship between credit size and rationing, noting that the likelihood of rationing increases with larger credit amounts.

A study by Phung (2009) on the credit rationing of Vietnamese SMEs indicates that the demand for collateral does not vary based on the size of the loan, the nature of the debt (short-term or long-term), or the purpose of the credit. Meanwhile, Ngongang (2015) finds that a long-term banking relationship between banks and Cameroonian SMEs, coupled with the ability to provide guarantees, negatively influences the rationing of bank credit.

3. Research hypotheses

Our literature review has shown that the persistence of a significant information asymmetry in the credit market reduces lenders' ability to distinguish between honest SMEs and those deemed dishonest clearly.

Thus, funders are asking SMEs to put more effort into their banking finance applications to avoid the consequences of informational opacity.

Indeed, after a careful review of the credit file, the banker may request full disclosure from the SME's manager by asking them to provide all the sensitive information about their SME and the project to be financed or even to provide additional guarantees if the banker believes that the value of the collateral offered to the bank does not sufficiently cover the risk faced by the bank.

Furthermore, the banker pays special attention to the SME's self-financing capacity in case of a funding request for an investment project. Indeed, before turning to bank financing, the banker believes that the SME must fully contribute to its investment project by drawing more from its self-financing capacity before taking on debt.

One hypothesis suggests that banking restrictive clauses influence total and partial credit rationing. The second hypothesis assumes a link between banks' restrictive clauses and the characteristics of the requested financing.

- Hypothesis H.1: Banking restrictive clauses are direct determinants of the total and partial credit rationing of SMEs in the Casablanca Settat region.
    - Hypothesis H.1.1: there is a positive link between the availability of guarantees and the total and partial rationing of credit for SMEs in the Casablanca Settat region.
    - Hypothesis H.1.2: there is a positive link between the level of self-financing and the total and partial rationing of credit for SMEs in the Casablanca Settat region.
    - Hypothesis H.1.2: there is a positive link between the quality of information exchanged with the bank and the total and partial rationing of credit for SMEs in the Casablanca Settat region.
- Hypothesis H.2: The characteristics of the requested financing justify the bank's use of restrictive clauses to ration credit.
    - Hypothesis H.2.1: there is a positive link between the rationing of total and partial credit due to lack or insufficiency of collateral and the amount of credit requested.

4. Methodology

The methodological framework facilitates the structured presentation of the sample, the measurement of variables, and the statistical analysis tools employed. We conducted a voluntary survey targeting small and medium-sized enterprises (SMEs) in the Grand Casablanca-Settat region using a straightforward questionnaire.

a. Sample

Our sample selection was based on the following criteria:

- The SME must have an annual turnover, excluding taxes, between 10 million and 175 million dirhams, in line with the definition provided by Bank Al-Maghrib (circular no. 8/G/2010) [1].
- It must be located in the Casablanca-Settat region.
- It should operate within a specific field of activity.

We administered the survey to 850 SMEs within the Casablanca-Settat region, 218 of which had sought bank financing at least once.

The Casablanca-Settat region was selected for its significant economic importance and dense concentration of businesses, making it a strategic choice for studying the challenges faced by Moroccan SMEs. As the leading economic region in the country, it is home to approximately 40% of national businesses, including SMEs active in various sectors such as industry, commerce, and services, as highlighted in the High Commission for Planning (HCP) report on Moroccan businesses (2019).

[1] Circular No. 8/G/2010 refers to the criteria for segmenting companies that credit institutions must apply to determine capital requirements related to credit risk. Regardless of the approaches adopted for measuring this risk, the prudential segmentation criteria are as follows: The large enterprise (GE) is the company whose turnover, excluding taxes, or that of the interest group to which it belongs, exceeds 175 million dirhams. The small and medium-sized enterprise (SME), including sole proprietors, meets one of the following two conditions: - The turnover excluding taxes, or that of the group of interest to which it belongs, is greater than 10 million dirhams and less than or equal to 175 million dirhams; - The turnover excluding taxes, or that of the group of interest to which it belongs, is less than or equal to 10 million dirhams and the total amount of receivables held by the establishment against it, or against the group of interest to which it belongs, is more significant than 2 million dirhams.

Data collection began in the last quarter of 2021 and continued for 12 months (from September 2021 to August 2022).

The decision to study the period 2021–2022 was intentional, as it coincided with the Moroccan economy's dynamic recovery phase following the COVID-19 pandemic. This period also marked the gradual implementation of the Mohammed VI Fund for Investment, which aimed to strengthen the financial stability of companies and foster their development.

Furthermore, Morocco introduced a strategy in 2019 to promote financial inclusion, particularly targeting young entrepreneurs, through initiatives designed to diversify external financing mechanisms. These factors made the period 2021–2022 an ideal window for initiating this scientific investigation.

b. Measurement of variables

Our measurement approach for credit rationing among SMEs is inspired by the work of Phung (2009). Three variables capture the characteristics of the requested financing:: the nature of the loan, its amount, and its duration. Three variables also measure the banking restrictive clauses, specifically the absence or insufficiency of collateral, the lack or insufficiency of self-financing, and the information shared with the bank being incomplete or irrelevant.

Table n 1: Variables of the study

Variable	Variable Nature	Variable measurement
Total or partial credit rationing	Dépendent	- Refusal of the credit application - Agreement with a reduction in the requested credit amount
Restrictive banking clauses	Independent	- Lack or insufficiency of collateral - Insufficient self-financing - Information shared with the bank is incomplete or irrelevant
characteristics of the requested financing	Independent	- Nature of credit, - amount of the loan, - duration of the loan

Source: Statistical Results, Authors

c. Statistical tests

The statistical tests we used in this scientific work include chi-squared contingency tests and simple linear regression tests.

i. Cross table (chi-square)

The chi-square analysis allows for the evaluation of the relationship between two categorical variables. We use this statistical test to ascertain the independence of the two variables. By default, the null hypothesis **(H0)** states that there is no relationship between the variables. The decision rule is based on the **p-value**, which represents a level of statistical significance. If the value of **p** is less

than **0.05**, we reject **H0**, which suggests that there is a significant relationship between the two variables.

The test statistic for the Chi-Square Test of Independence is computed as:

$$\chi 2 = \sum_{i=1}^{R} \sum_{j=1}^{C} \frac{(oij - eij)2}{eij} \qquad (1)$$

where

$-oij$ is the observed cell count in the ith row and jth column of the table.
-eij is the expected cell count in the ith row and jth column of the table, is computed as:

$$eij = \frac{row\ i\ total * col\ j\ total}{grand\ total} \qquad (2)$$

ii. Simple linear regression

We use linear regression analysis to create a model that explains the relationship between a dependent variable and one or more independent variables. Indeed, the purpose of simple regression is to explain a variable **Y** using one or more variables **Xi**. We refer to the variable **Y** as the dependent variable and the variables **Xi** as independent variables or explanatory variables. Note that X is the explanatory variable (exogenous) and Y is the real random variable (endogenous). The model assumes that, on average**, E(Y)** is an affine function of **X**. Because the model is not symmetrical, the writing implicitly assumes a prior notion of causality in the sense that **Y** depends on **X**.

The simple linear regression model is expressed through the following equation:

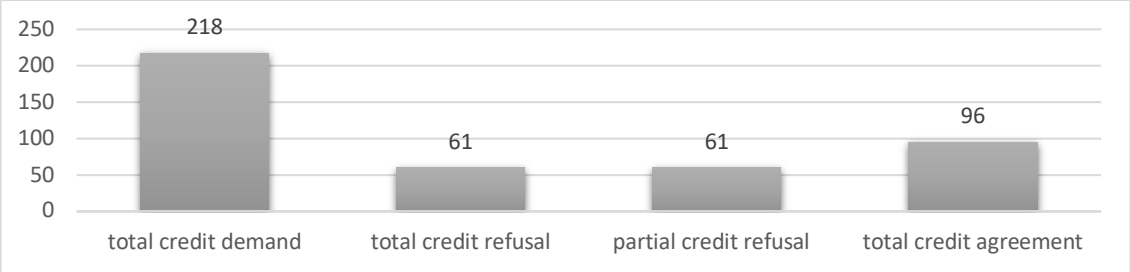
$$E(Y) = f(X) = \beta 0 + \beta 1X \text{ ou } Y = \beta 0 + \beta 1X + \varepsilon \qquad (3)$$

Furthermore, we processed the collected information using the statistical analysis software "SPSS—Statistical Package for the Social Sciences," a tool highly regarded by management sciences researchers for its user-friendly approach and effectiveness.

5. Results and Discussion

It is important to note that our base sample consists of 850 SMEs, of which 218 have at least sought bank financing. Our observations reveal that 56% of SMEs have already experienced rationing. Indeed, out of this total, 61 SMEs had their credit requests denied, and 61 SMEs received a favorable agreement but with a partial amount of the requested sum. On the other hand, we found that the % of SMEs that received a favorable decision on their credit application with full acceptance of the requested amount is the highest in our sample, at 44%.

Graph 1: Results of the credit request from SMEs that applied for bank financing.



Source: Statistical Results, Authors.

a. Restrictive banking clauses, as well as total and partial credit rationing (flat sorting method)

At this stage of the analysis, we will focus on examining the determinants of total and partial credit rationing, based on the information provided by banks to SMEs regarding the reasons that led to this rationing. Indeed, the bank agent is required to inform the SME manager about the outcome of the financing request and, in the event of a refusal or partial approval of the credit.

Table 2 presents the descriptive statistics of the restrictive reasons presented by the bank when a credit application is refused or partially approved.

Direct reasons for credit rationing	Frequency	Valid percentage
Lack or insufficiency of guarantee	90	75,0
Lack or insufficiency of self-financing	14	10,3
The information shared with the bank is incomplete or irrelevant.	18	14,7
Total	**122**	**100,0**

Source: Statistical Results, Authors.

Our statistical results show that the reasons for credit rationing by banks range from insufficient guarantees and self-financing to the submission of an incomplete financing file. However, we note that the lack of guarantees is the reason most frequently cited by banks that rationed credit to SMEs in the Casablanca-Settat region. Indeed, 75% of rationed SMEs faced a lack or insufficiency of guarantees, according to the banks.

b. Chi-square test analyzing the existing relationship between restrictive banking clauses and total and partial credit rationing.

We estimate that banking restrictive clauses, such as the lack or insufficiency of guarantees, self-financing, and information, impact total and partial credit rationing.

Table 3: Chi-Squared Independence Test of Banking Restrictive Clauses

Independent variables	analysis variable	Chi-square	significance threshold
Bank restrictive clauses	- Lack or insufficiency of guarantees - Lack or insufficiency of self-financing - Lack or insufficiency of information	X2 (2) =6,866	**0,032**

Source: Statistical Results, Authors.

According to our results, the Pearson chi-square test is statistically significant, with a significance level of (Sig 0.032). This indicates that total and partial credit rationing depends on restrictive bank covenants.

Table 4: Contingency Table (V de Cramer)

		Value	Approximate meaning
Nominal by Nominal	Phi	,239	,032
	V de Cramer	,239	,032

Source: Statistical Results, Authors.

The Cramér's V test informs us about the strength of the relationship between significant variables at the 5% level. According to the contingency table below, we can say that the relationship between our significant variables is of medium strength since Cramér's V (0.239) is less than (0.30). We will explain credit rationing by examining the restrictive clauses that the bank can put forward in the event of refusal or partial acceptance of a credit. In other words, we will try to identify the explanatory variables that indirectly influence the bank financing decision. in fact, we believe that the characteristics of the requested financing have an indirect impact on the total and partial rationing of credit resulting from bank restrictive clauses.

c. The Chi-square test analyzes the relationship between the characteristics of the requested financing and the restrictive banking clauses.

Our cross table shows that the variable "credit amount" is significant at the threshold of 0.004. This means there is a correlation between the bank's direct reasons justifying its financing decision and the amount of credit requested. On the other hand, our results highlight that the lack of guarantees is the most cited reason by banks following a total credit rationing for SMEs that have requested financing exceeding 3 million dirhams, with 44% of observed cases.

Table 5: The results of the chi-square test related to banking restrictive clauses and financing characteristics.

Independent variables	Analysis variable	Chi-square	Significance threshold
Characteristics of credit	Nature of credit	X2 (4) =4,660	0,324
	Purpose of credit	X2 (8)=11,172	0,192
	Amount of the loan	X2(8)=22.402	**0,004**

Source: Statistical Results, Authors.

d. Chi-squared test analyzing the existing relationship between credit rationing due to lack of collateral and the characteristics of the requested financing.

In the previous titles, we explored the links between bank covenants and various aspects of the requested financing conditions.

It is nevertheless essential to note that our statistical tests systematically highlighted a key variable, namely the absence or insufficiency of guarantees, which can significantly affect bank financing decisions. This observation legitimately raises questions about the specificities of the financing sought.

Our cross-tabulation shows that the variable "credit amount" is significant at the threshold of (0.019). This means that there is a correlation between credit rationing caused by insufficient guarantees and the amount of credit requested. Furthermore, our results highlight that the absence of guarantees is the reason most often cited by banks for practicing total and partial credit rationing, particularly for SMEs that have requested financing greater than 3 million dirhams.

Table n 6: Results of the chi-squared tests related to credit rationing by guarantee and characteristics of credit financing.

Independent variables	analysis variable	Chi-square	significance threshold
Characteristics of credit	Nature of credit	X2 (2) =2,530	0,282
	Purpose of funding	X2 (4)= 6,271	0,180
	Amount of the loan	X2(4)= 11,832	**0,019**

Source: Statistical Results, Authors.

Our results show that the absence or lack of collateral is one of the main determinants that push the bank to ration the credit request of a small and medium-sized enterprise. In our sample, 75% of SMEs experience total and partial rationing due to lack of collateral. Moreover, our results demonstrate a significant correlation between the amount of credit requested and credit rationing due to insufficient collateral (sig 0.019). We can infer that the bank requires the SME to provide

significant collateral when the amount of credit requested exceeds a threshold well defined by the bank; if the SME fails to meet the bank's request, the bank will revise the credit request accordingly.

e. Chi-square tests analyzing the existing relationship between credit rationing due to insufficient self-financing and the characteristics of the requested financing.

At this analysis stage, we will check if a statistical link exists between the restrictive clause "insufficient self-financing" and the various characteristics of the requested credit.
Our cross-table shows that the characteristics of the requested credit are not significant at the 0.05 level. This means there is no correlation between the dependent variable of insufficient self-financing and our independent variables related to the requested credit characteristics.

Table n 7: Results of the chi2 tests related to credit rationing due to insufficient self-financing

Independent variables	analysis variable	Chi-square	significance threshold
characteristics of credit	Nature of credit	X2 (2) =2,389	0,303
	Purpose of funding	X2 (2)= 2,9509	0,566
	Amount of the loan	X2(4)=19,230	0,216

Source: Statistical Results, Authors.

f. Chi-square tests analyzing the existing relationship between the analysis of credit rationing due to a lack of information and the characteristics of the financing requested.

We will now proceed to study the statistical correlation between the restrictive clause "lack of information" and the various types of credit requested.

Our cross-tabulation shows that the requested financing characteristics are insignificant at 0.05. There is no correlation between lack of information and requested funding type.

Table n 8: Results of the chi-squared tests related to credit rationing due to lack of information

Independent variables	analysis variable	Chi-square	significance threshold
characteristics of credit	Nature of credit	X2 (2) =2,124	0,346
	Purpose of funding	X2 (4)= 7,973	0, 930
	Amount of the loan	X2(4)=1,994	0,737

Source: Statistical Results, Authors.

g. Linear regression model adapted to credit rationing by collateral

Previously, we observed from our contingency table results that the variable explaining "credit rationing due to lack or insufficiency of collateral" only correlates with a single explanatory variable, the amount of credit requested, at a significance level of (0.019). Thus, given that our results identify

the existence of a single explanatory variable and to better illustrate the strength of the relationship between our two variables, "dependent and independent," we deemed it appropriate to proceed with simple linear regression tests.

The simple regression model reveals a significant (Sig 0,006) and positive (B =0,412) relationship between the explanatory variable of the amount of credit requested and the guarantee's total and partial credit rationing.

Table 9: present the results of a simple linear regression test that examines credit rationing due to a lack or insufficiency of collateral.

	B	**E.S**	**Wald**	**ddl**	**Sig.**	**Exp(B)**
Amount of the loan	,412	,150	7,587	1	**0,006**	1,510
Constante	-,361	,525	,473	1	0,491	,697

Source: Statistical Results, Authors.

As for the Chi-squared test, we observe that it is significant at the 5% level, and therefore our model is overall significant.

Tableau 9: Composite tests of the model coefficients

	chi-square	**Ddl**	**Sig.**
Step	7,914	1	,005
Block	7,914	1	,005
Model	7,914	1	,005

Source: Statistical Results, Authors.

h. Discussion of the results

Our results show that the absence or insufficiency of guarantees is one of the direct determinants that lead banks to ration credit requests from SMEs in the Casablanca-Settat region, particularly for those seeking large amounts of financing. This is due to a significant information asymmetry in the credit market, which reduces the ability of lenders to clearly distinguish well-intentioned SMEs from those that are not, particularly those seeking large amounts of credit, as we have previously highlighted. Thus, to avoid the consequences of information asymmetries, lenders require SMEs to provide more guarantees to signal their positive intentions. If the SME is unable to meet the bank's requirements, the latter restricts credit in various ways. Therefore, we can conclude that its ability to provide guarantees is one of the most determining factors for a small or medium-sized enterprise in the Casablanca-Settat region to obtain bank financing Studies such as (Udell *&* al.,1991 *;* McKillop *&* Hutchinson , 1994) *;* Ngongang, 2015) argue that collateral impacts the credit decision. Firms that offer assets as collateral are more likely to have their financing requests approved. This allows the bank to reduce information opacity and forces the firm to cooperate.

The presence of collateral represented by pledges on the firm's tangible assets is essential in SMEs' access to bank credit. These physical guarantees help reduce information asymmetries between the firm and its creditors (Steijvers & Voordeckers, 2009 *;* Hall & Lerner, 2010). In addition, creditors require collateral to encourage SMEs to be more cooperative and reduce the costs of information gathering. For Vietnamese SMEs, the presence of collateral is also a determinant of credit rationing, according to (Phung ,2009).

However, despite the decline in interest rates and the intervention of public financial institutions through guarantees for SMEs, businesses in the Casablanca-Settat region continue to face challenges in accessing bank financing, primarily due to insufficient collateral.

6. Conclusion

At the credit market level, the significant disparity between the information available to companies seeking financing and that held by lenders can give rise to credit rationing. To counter the consequences of this phenomenon related to the opacity of information, funders urge SMEs to provide more guarantees to signify their honorable intention. Indeed, providing tangible guarantees is one of the critical factors in obtaining bank financing for SMEs.

Our empirical results highlight a significant and positive correlation between total and partial credit rationing related to guarantees and the amount of credit requested by SMEs in the Casablanca Settat region. Furthermore, our results highlight that the lack of guarantees is the most frequently cited reason by banks following a total or partial credit rationing, particularly for SMEs that have sought significant financing, often exceeding 3 million dirhams. The study highlights managerial implications: it sheds light on the direct reason for the credit rationing of Moroccan SMEs, particularly those located in the Casablanca-Settat region, which is related to these entities' ability to provide guarantees.

Thus, the Moroccan regulatory authorities, must intervene in bank lending to limit the phenomenon of credit rationing through guarantees, by offering more sovereign guarantees or encouraging banks to find other alternatives to real guarantees, particularly for innovative and more profitable SMEs.

On the other hand, since the request for collateral is unavoidable in their case, SMEs in the Casablanca-Settat region must, before submitting a financing request to the bank, weigh the amount they wish to request against the value of the assets they are willing to put in the bank's hands as collateral. It's crucial to understand that the guarantee's worth must match the minimum loan amount. Our study has some limitations: first, the sample size is small; second, two independent variables related to the characteristics of the requested amount and restrictive banking clauses are used, while other variables such as the characteristics of the SME, the manager, and the nature of the bank-SME relationship could explain credit rationing.

In this regard, our study could serve as a foundation for future research, encouraging scholars to explore broader geographical areas and incorporate the aforementioned variables into their econometric models to generate more precise insights into the credit rationing of SMEs in Morocco.

7. References

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