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Asymmetry of Information and Credit Rationing: Investigation of Small and Medium-Sized Tunisian Firms

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Abstract

The Small and Medium Enterprise is a natural or legal person who creates merchandise and services, registered in the register of trade or trades according to the country. Despite the importance of SMEs at the social and economic level, these companies do not receive the support that they deserve in particular concerning the financing neither from the state nor the banks. Thus, SMEs represent the majority of enterprises in Tunisia. It has an important role in the economy: it contributes to the creation of employment and the absorption of unemployment; they also support the development and creation of added value in different sectors of activity. As a result, the Tunisian government has set up various institutions to provide technical and professional assistance to SMEs, to modernize these entities for international integration, particularly in the Euro-Mediterranean context. It is in this context, our study is located to appreciate the relationship between asymmetry of information and the rationing of credits for Tunisian SMEs. Throughout this article, we will study the determinants of the rationing strategy of credit for Tunisian SMEs.

Introduction

Since the 1990s, Tunisia has modified its strategies in order to improve its economic situation through several incentives aimed at encouraging SMEs. However, SMEs face financial difficulties; thus the participation of banks is very important in order to preserve the sustainability and development of SMEs. There is not a particular definition of SME, because each country has its own criteria according to legislative or regulatory texts. So the legislation defines SME because of the incompatibility of the size of the economy on an international scale. Indeed, Tunisian SMEs cooperate in two-thirds of economic activities and 65% of employment. For this reason, that the banks gives importance to this type of firms. Consequently, the banks and leasing indicate almost 92% of the financing of companies in Tunisia among almost 8% for the financial market.

The relationship bank-SMES is characterized by an asymmetry of information. As a result, this asymmetry of information show the banker to use the strategy of rationing credit since it is difficult to know the honest borrowers and those dishonest. Therefore, some borrowers are excluded by this strategy. In addition, various measures have been taken to reform the access of the SMES to financing, as well as the creation of the Bank for the financing of SMES and of the Tunisian Society of guarantee which have admitted to improve the number of projects approved by the new promoters and the SMES. The SMEs are in development, so the banking system is increasingly involved in this market and offers a diversification of products and services that are made available to SMEs.

In this article, we will study the strategy of credit rationing for Tunisian SMEs since it favors the economic situation of Tunis. Precisely, we try to determine the factors that influence the banker's decision either at the level of its manager, the desired loan and at the level of the firm itself. A question that arises here: what are the determinants of a strategy of credit rationing to minimize the asymmetry of information?

To meet our goal, we will primary present a review of the literature on credit rationing and previous studies in Tunisia. Then we will present the research methodology. And finally, we present the main empirical conclusions.

A Review of the Literature

According to the decree n 2005-2397 of 31 August 2005 "in accordance with the recommendations of the Inter-annual Board of Directors on Monday 13 March 2006, are considered as small and medium-sized firms, firm whose net fixed assets and staffing criteria do not reach the following thresholds: Four million dinars as the amount of net fixed assets, and 300 persons as total staff". Stiglitz and Weiss [1] adapt a credit rationing model as for some identical borrowers some get a loan and some do not. In fact, these authors state that "We reserve the term credit rationing for circumstances in which either (a) among loan applicants who appear to be identical some receive a loan and others do not, and the rejected applicants would not receive a loan even if they offered to pay a higher interest rate; or (b) there are identifiable groups of individuals in the population who, with a given supply of credit, are unable to obtain loans at any interest rate, even though with a larger supply of credit they would" [2].

Therefore, the willingness to borrow at a rate higher than the market rate does not allow for credit and is excluded from the list. So, in view of the asymmetry of information, the banker applies high interest rates to reward the risk of insolvency since only high risk projects that their managers agree to have a credit with this rate and guarantees. In addition, bankers believe that with high interest rates, they can minimize the likelihood of having bad borrowers, though these rates can scare off good borrowers who would really deserve lower interest rates. The asymmetry of information may cause an excluded from an honest borrower or a poor loan portfolio for the lending bank. Thus, with uncertainty (through information asymmetry), the bank may

have a deterioration in the profitability of its portfolio even with the high interest rate it proposes as a solution. Thus, the increase in the interest rate applied to loans granted may lead to an increase in high-risk projects that have a low probability of success and a deterioration of the loan portfolio.

Asymmetry of information arises when some rational individuals can have opportunistic behaviors to maximize their utility which will create bad consequences on the efficient functioning of the market. Stiglitz and Weiss [1] explain the phenomenon of credit rationing by the difficulties of asymmetries of information. They show that the rationing of the credit, the balance, is linked to two phenomena: the adverse selection and moral hazard. For, the adverse selection (anti-selection), it designates an asymmetry of information which declares at the time of the signature of the contract (ex-ante). The asymmetry of information ex-ante is reflected when the banker does not detect perfectly the quality of the project to finance. The managers of the projects have interests to on-estimate their projects to have a credit. Therefore, the first part (client) has secret information on the characteristics of its project at the time of signature of the contract [3].

About, the moral hazard (chance moral), it appoint the asymmetry of information after the agreement of the credit. In this situation, one of the two parties (main) cannot control the behavior of the other party (agent) or it may not value correctly via the tools of opportunity. The asymmetry of information prevents the banker to efficiently control the behavior of Project Manager after the sign of the contract. Therefore, after the signature of the contract the customer can divert the funds for its staff operating system. The use of the interest rate cannot create a balance between supply and demand in the banking market. Since, a high rate will escape the good borrowers and the low rate does not ensure loan profitability. So the balance of the banking market is realized by the quantities that are the limitation is on the number of credits and not on the size of the loan. And thereafter, the interest rate increases with the increase in the size of the loan. In the same way, Adair and Fhima (2013) have studied the credit rationing in Tunisia between 2001 and 2006 about 1275 SMES by the model of imbalance. They discover that the request of the bank credit is not determined by the determinants "endogenous", but by determinants" exogenous", such as the cost of financing and the guarantees required by the banks. They also found that the percentage of SMES rationed is high.

The Methodology

Our study aims to determine the factors that have a significant impact on obtaining credit for an SME. Therefore, our empirical research will allow us to determine the probability of an SME being rationed and to analyze the factors that affect this strategy of rationing. Then, we are going to identify the factors that affect the credit rationing of small and medium-sized Tunisian firm. The questionnaire contains 17 questions divided into groups: firstly, the characteristics of the firm (warranty, Place, Sector of activity, age of the company). Then, the

characteristics of the manager (level of education, gender, age manager, experience of the manager). And finally, we found the financial characteristics (maturity of the credit, turnover, bank relationship-Enterprise, lever of indebtedness).

We contacted 300 Tunisian SMEs; the number of questionnaires exploitable is 51, almost 64% of the panel. The population is composed of four categories: firms that apply for credit and their applications are accepted or rejected, firms that prefer to self-finance, and firms do not accept the interest rate because they are not considered rationed. But, we will focus our research for firms that apply for credits and their applications are accepted or rejected, and we reject the other categories.

The Results of the Analysis of the Determinants of Credit Rationing

There are different methods to study rationing credit such as the univariate analysis and the multi varied analysis. Similarly, these studies can be based on the method of the simple Probit or on the logit equation of the dependent variables regressed on a set of explanatory variables. First of all, it is important to analyze from the results of our investigation if these Tunisian SMEs are suffering of rationing credit.

Analysis bi-varied

It is important to understand the criteria for granting credit (also rationing) by banks on the basis of a bi-varied analysis (Table 1).

The table above shows that the real guarantees are the ones most requested by the bank when obtaining a credit (Table 2).

The results for this table show that the majority of Tunisian SMEs which require credit are located in the North. Nevertheless, the place may not really be a determinant for the acceptance or the refusal of credits (Table 3).

According to the results of this table, we note that the sectors of industry and building and civil engineering benefit more from the credits compared to the other sectors. SMEs operating in these sectors are accepted by the banks because they have very rich fixed assets which are a guarantee for the bank (Table 4).

Based on this table, the oldest firms are those that have the most opportunity to have access to bank credit. Without a doubt, this variable indicates the continuity of the activity of the Tunisian SMEs given that it is more sensitive to disappear (Table 5).

The outcomes in this table explain that more the manager of Tunisian SMEs has a high level of education, more the demand for the granting of credits is accepted (Table 6).

The results show that most of the firms of which the request for the credit is accepted have a leader man. But also the banks do not engage in discrimination based on gender (Table 7).

An older manager has more opportunity to apply for a credit from

Result of the request/ guarantees	Real guaranteed	Personal guaranteed	Total
Refused request	35%	65%	100%
Accepted request	60%	40%	100%

Table 1: The effect of guarantees.

Result of the request/place	North	South	West	East	Total
Refused request	50%	20%	15%	15%	100%
Accepted request	54%	18%	13%	15%	100%

Table 2: The effect of the place.

Result of the request/activity	Trade	Service	Agriculture	Industrial	BTP	Total
Refused request	55%	30%	15%	0%	0%	100%
Accepted request	13%	14%	11%	38%	24%	100%

Table 3: The effect of the sector of activity.

Result of the request/age of the company	Between 2 and 5 years	Between 5 and 10 years	Plus 10 years	Total
Refused request	55%	45%	0%	100%
Accepted request	0%	60%	40%	100%

Table 4: The effect of the age of the firm.

Result of the request/level of education	Primary Level	Secondary Level	higher Level	Total
Refused request	0%	30%	70%	100%
Accepted request	10%	25%	65%	100%

Table 5: The effect of the level of education of the manager.

Result of the request/sex	Man	Woman	Total
Refused request	100%	0%	100%
Accepted request	80%	20%	100%

Table 6: The effect of the sex of the manager.

Result of the request/Age of manager	Less than 35 Years	Between 35 and 50	More than 50	Total
Refused request	66.70%	33.30%	0%	100%
Accepted request	6.50%	87%	6.50%	100%

Table 7: The effect of the age of the manager.

Result of the request/experience	<5 Years	Between 5 and 10	More than 10	Total
Refused request	34%	66%	0%	100%
Accepted request	4%	17%	79%	100%

Table 8: The effect of the experience of the manager.

Result of the request/maturity	Short term	Medium term	The long-term	Total
Refused request	40%	30%	30%	100%
Accepted request	22%	55.70%	22.30%	100%

Table 9: The effect of maturity.

the bank. Indeed, the oldest firm's managers are the most experienced, which can serve as a guarantee (Table 8).

The banks are that the experience of manager of Tunisian SMEs is a guarantee of a certain degree of solvency (Table 9).

Based on the results of the table, we note that medium- and long-term loans are the most demanded by Tunisian SMEs and more accepted by banks (Table 10).

We note according to these results, that more the turnover of the Tunisian SMEs increases the chance of acceptance for the granting of credit with the bank increases (Table 11).

The duration of bank relationship-enterprise is important given that more that it is long more the business benefits of the possibility of granting the credit (Table 12).

The more the company is indebted more its application is refused. For businesses that have a request is accepted, it is thanks to the effect of the relationship that they have been able to benefit from the credit. We can conclude, according to the previous analysis conducted with the aid of the descriptive statistics, which the characteristics of the selection of banks in the offer of credit are:

- A SMES benefiting of appropriations installed to the north.

- An SME exercising to the sector of industry or construction.

- An SME with an age between 5 and 10 years

- An SME with a leader of higher educational level.

- An SME with a leader man.

- Having a manager who is between age 35 and 50 years.

- With a manager with an experience more than 11 years.

- A SMES benefiting more medium-term credit.

- A SME with a long relationship with the Bank.

- An SME with a debt rate low or acceptable.

- The type of warranty the most sought is the actual guarantees.

- The turnover of SMES acceptable is between 5 and 20 million.

We are going as following confirm our results using an econometric analysis of the granting of the credit or credit rationing by banks.

The probit model

In order to study the determinants of the probability or not to obtain credit, we will use a univaried probit in using the explanatory variables explained below (Table 13).

The estimation of the model is present, then, as follows (Table 14).

Result of the request/turnover	<5 million	Between 5 and 20 million	More than 20 million	Total
Refused request	67%	33%	0%	100%
Accepted request	8%	55%	37%	100%

Table 10: The effect of turnover.

Result of the request/relationship	<1 Years	Between 1 and 10 Years	More than 10 Years	Total
Refused request	65%	35%	0%	100%
Accepted request	33%	27%	40%	100%

Table 11: The effect of the relationship bank-firm.

Result of the request/debt	Between 10 and 30%	Between 30 and 50%	More than 50%	Total
Refused request	65.30%	34.70%	0.00%	100%
Accepted request	7%	63.20%	29.80%	100%

Table 12: The effect of financial leverage.

Results of the request	=1 if the enterprise benefits from the bank credit; 0 otherwise
Warrant	=1; real; 2 personal
Place	=1 if the firm is located in the North; 2 if the company is located in the South
Sector of activity	=1 if the firm belongs to the domain of the service; 2 trade; 3 industry; 4 BTP;
Age of the firm	=1 between 2and 5 years; 2between 5 and10 years; 3 more than 10 years
Level of Education	=1 if the manager of the firm has a level of primary education; 2 secondary, 3higher
Sex	=1 if the manager of the firm is to male; 0 otherwise
Manager Age	=1 less than 35 years; 2 between 35 and 50; 3 more than50 years
Experience of the Manager	=1 less than 5 years; 2 between 5 and 10; 3 more than10 years
Maturity of the credit	=1 short term; 2 medium term; 3 Long Term
Turnover	1= If the turnover is <5 million; 2 between 5 and 20 million; 3 more that 20 million
Bank relationship-Enterprise	=1 less than 1 year; 2 between 1 and 10; 3 more than 10 years
Lever of indebtedness	=1 between 10 and 30%; 2 between 30 and 50%; 3 more than 50%

Table 13: Presentation of the variables.

The variables	The coefficients	Meaning
The warrant	0.1060	0.0013
Place	-0.0412	0.5582
Sector of activity	-1.187	0.4423
The age of the firm	0.0036	0.0211
Level of Education	7.0328	0.262
Sex of the Manager	-0.0006	0.104
Age of the Manager	-0.002	0.2626
Experience of the Manager	0.0535	0.0096
The maturity of the credit	-0.0202	0.0014
Turnover	0.0922	0.0079
Bank relationship Customer	0.0316	0.0033
Financial lever	0.0462	0.6749

Table 14: Results of estimates of the probit model on the determinants of credit rationing by banks.

In analyzing the table above, we find that only six variables are significant: the age of the firm, the turnover, the age of the head of the firm, the maturity of the credit, the experience of the manager, the guarantees and the relationship bank-firm. On the field of Tunisia, we discern that an SME older has more chance of having credit. In addition, the increase of the turnover causes an increase in the chance of having a credit. Yet, an SME which has a turnover of important is a firm which is looking for to broaden its investments. Subsequently, the place is not really a determinant for this study. We discern that the dependency is not significant in this investigation.

Indeed, the experience of manager has an impact on the possibility of having a credit. Of this fact, the increase in the experience of manager generates an increase in the probability of having a credit.

This idea is confirmed by Mayer and Alfred (1994). Of this fact, the experience is the only one which allows the manager to learn how to cope with the daily problems and the financial crises in a context unstable or stable. By contrast, the age, the level of instruction and the sex of the manager of the firm does not affect the decision of the Bank of credit granting. Again, the explanation that we can move forward, concerning the criterion maturity of the credit, is that banks consider the long term credits as an additional risk factor and a source of asymmetry of information (the banks may not consider the strategies adopted by SMES for this she catches up this lack by the agreement of credits in the medium term) and therefore records a preference for the appropriations in the medium term [4]. As well, without doubt, a long relationship between the firm and the bank creates a stronger relationship and more confidence. Of this fact, a long relationship leads to a greater chance of having a credit. In this framework, the SMES enjoys lower interest rates and fewer requirements in terms of warranty. This conclusion is confirmed by Berger and Udell [5].

In summary, the guarantees are requested by the Bank in order to retain its rights. In addition to the guarantees may be real or personal. We can justify this by the fact that banks, in a difficult economic situation, would be more prudent to finance some of the projects in the sectors in crisis such as the hotel sector. For this, in the face of certain categories of firm, the Bank may be more demanding and requires personal guarantees. In addition, the age of the business and the experience of the manager provide the bank information on the capacity to cope with the competitiveness and financial crises [6]. Thus, the turnover and the relationship between the Bank and the customer can be considered by the Bank as a guarantee of settlement of the debt by the firm in the deadlines. But, the Bank is trying to do in the face of

the risk of none payment of the debt by the application of safeguards. When of request for guarantees, the Bank takes into account the legal status of the firm to inform on the intensity of personal involvement of the officer who is a signal for the bank and having an effect to reduce the moral hazard of bad management. Of this fact, these features allow to attenuate the degree of asymmetry of information between the Bank and the applicant of the credit. The information collected through its characteristics offer a clearer picture and a relationship of trust that allow the applicant of the credit to have access to credit and thus avoid the rationing.

Conclusion

The relationship banks-SMES is a topical issue given that the two actors play a very important role in the productive system of a country. As well, several research studies have placed the emphasis on the importance of the one for the other and the requirements of one on the other. Yet, in Tunisia, similarly to other developing countries, SMES are a pillar of the economic fabric. They participate in a positive manner to the economic growth, the creation of employment and local development, regional and national level.

Thus, the SMES in Tunisia, to finance their growth, have the own resources (cash flow, increase in capital), external resources (leasing, bank resources) and other types of resources created by the State such as (FOPRODI, FONAPRAM and SICARS). Still, they can appeal to foreign sources that have are either of the financial organizations either multinational countries with which Tunisia has relations of economic and financial cooperation or, finally, and, with rarity, the international financial market. In addition, SMES can obtain short-term credits in order to finance their operations (the appropriations mobilizable, the appropriations of cash). Throughout this work, we have tried to answer the question of the determinants and the degree of credit rationing facing small and medium-sized enterprises in Tunisia. We studied, therefore, the variables that significantly influenced the decision to grant or to rationing of credit by a bank. In the first time, the denial

of credit granting to certain firms is explained by the fact that these are of the companies in the growth phase. Still, the results suggest that the traditional variables the age of the business and the experience of its owner, guarantees, and the maturity of the credit, the bank-client relationship and the number of case are significant.

Specifically, the Bank chooses these variables as indicators since the variable bank-client relationship provides an image on the reputation of the firm, as well the turnover reflects an image on the power of the firm to repay the annuities to the repayment date, then the maturity of the credit offers an image on the risk assumed by the Bank which request for guarantees in order to retain its rights against the risk of none payment. Finally the age of the firm and the experience of the manager bring an image on the ability of the firm to stand before the instability of the environment. Without doubt our work has limitations as the reduced size of our sample which may not be representative of all categories of small and medium-sized enterprises who may suffer of credit rationing. In the final analysis, we recognize that our work would have been able to be more interesting if we had been able, with more time, to integrate more variables and to study the relationship between the significant variables.

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