

Where does the risk of default hide? Evidence from the Italian Central Guarantee Fund

Abstract

In many countries policy makers have set loan guarantee programs as a response to restricted access to capital for small and medium firms. In Italy in 2000 a loan guarantee program called Central Guarantee Fund (CGF) has been introduced to provide guarantee for SME loans, selected by banks or Mutual Guarantee Institutions (MGIs, otherwise known as Confidi in Italy). This study aims to verify the variables that influence the probability of default of the loans guaranteed, also discovering the different role of banks and MGIs. The findings confirm that cash flow is the most important variable to distinguish companies with the highest risk of default from those having a low risk. The second relevant variable is the type of intermediary. The probability of default is higher for firms selected by banks than for those selected by MGIs.

1. Introduction

In many countries policy makers have set loan guarantee programs as a response to restricted access to capital for small and medium firms. Stiglitz and Weiss (1981) gave a considerable theoretical justification for policy intervention in such situation of credit rationing. Italian economy is characterized by fragmentation of the enterprise system, this is mainly composed by small and medium firms. As presented by Zecchini and Ventura (2009), one of the main problems for Italian SMEs is the shortage of bank financing and the deep dependence from the banking system. Because of the financial crisis, credit rationing increased, thus creating many problems with firm financing. The relation between lender and borrower, mostly when represented by an SME, is characterized by asymmetric information, in terms of *ex-ante* adverse selection and moral hazard (related to the appropriate use of borrowed funds). All these conditions exacerbate credit rationing. In Italy policy makers introduced a loan guarantee program called Central Guarantee Fund (CGF) in 2000 to provide guarantee for SME loans, selected by banks or Mutual Guarantee Institutions (MGIs, otherwise known as Confidi in Italy). Specifically in the Italian system, the financial intermediary has the role to decide which loan requires the public guarantee.

This study is intended to verify which are the variables that influence the probability of default of the loan guaranteed, also discovering the different role of banks and MGIs.

The original contribution of the paper is to analyze the Italian guarantee system and, at the same time, to examine an example of public-private partnership as functioning of the Central Guarantee Fund includes both a public (State financing the CGF) and a private role (Banks and MGIs that select firms).

Our contribution to the literature on the subject is aimed at presenting an example of a public-private partnership in the world of guarantees with a view to identifying the main characteristics of the companies and guarantees that lead to the default position, and the role of banks and MGI's in their scouting activity. We try to identify the profile of companies with the highest risk of default.

For the purpose of the analysis we used an internal dataset that considers loans granted by guarantees between 2007 and 2009. Our analysis focuses on the credit crunch period that raises the credit rationing for SME's.

The Italian economy is an interesting subject of analysis for several reasons. First, the Central Guarantee Fund is one of the most important initiatives of guarantee in Europe. Italian SMEs are highly dependent on bank credit, in particular during financial crises. The guarantee system is

highly developed and fragmented in Italy. Surely the MGIs play a major role as providers of guarantees.

Our aim is to discover the features of guaranteed firms that have had a default in the 3-year period after the guarantee grant. Furthermore, we analyze if banks and MGIs have a different scouting activity.

The hypothesis tested confirm that liquidity, represented by Cash Flow, is the most important variable to discriminate the probability of default. However, another important role is played by the intermediary that selected the firms.

The paper proceeds as follows. Section 2 is dedicated to highlighting the main theoretical and empirical studies. In section 3 the hypotheses to be tested are developed. Section 4 and 5 provide a description of the dataset and the methodology. In section 6 our empirical specification is tested and in section 7 some conclusions are presented.

2. Related studies

Restrictions on credit to small businesses are a global phenomenon (Baas and Schrooten, 2006). Many studies demonstrate that small firms have more difficulties to access credit if compared to large firms (Berger and Udell, 2006)

Credit rationing is the situation in which a potential borrower lacks access to credit even though he agrees to pay an higher price (interest rate) compared to the market price (Zambaldi et al., 2011).

The functioning and the motivation of credit rationing are been studied by a large number of economists (Jaffe and Russel, 1976; Stiglitz and Weiss 1981).

Certainly asymmetric information and transaction costs are the main drivers of credit rationing.

By focusing on asymmetric information, we can say that the problem is with both adverse selection and moral hazard. Asymmetric information is higher for SMEs due to the poor quality of legal and financial information. As a consequence, SMEs are considered opaque: financiers are unable to solve the problem originating from lack of information and frequently they do not admit these companies to lending. As regards moral hazard, we can observe that the cost to monitor SMEs after the lending is quite substantial for some financiers (Vogel and Adams, 1997) and when the cost of credit is high, the borrower can react by switching to riskier projects.

As observed by Coco (2000), Besanko and Thakor (1987), collaterals are one of the tools that can contribute to the reduction of credit rationing, whereas another is building a close relationship with lenders (Cotugno et al., 2013).

Within the Italian financial system it is quite a common practice for banks to grant loans upon presentation of a collateral, although not all the SMEs are able to present the required collaterals.

Beck, Klapper and Mendoza (2008) summarize the main problem with SMEs as a lack of collateral, asymmetric information, limited liability structure.

Many countries responded to these problems by creating mutually based guarantees that can help SMEs to gather the necessary guarantees to access credit. Mutual guarantee institutions (MGIs) are widespread in Germany, France, Spain and Italy. Italian mutual guarantee institutions represent the largest component of the European sector (Columba et al. 2009).

As ascertained by Zecchini and Ventura (2009), the role of mutually based guarantees is very important because they can prevent some of the moral hazard problems that limit banks' credit to SMEs. However, the MGIs themselves are affected by a problem of information asymmetry, adverse selection in particular. In fact, companies having a lower level of risk may consider it too dangerous to become part of a mutual guarantee scheme, because this would mean sharing the risk undertaken by other companies, which is difficult to control. In addition, these guarantee schemes are likely to attract businesses that are particularly risky.

The role of the SMEs in the economy and the importance of access to credit is one of the pillars of the European Commission (2011). To help SMEs obtain credit, governments have frequently intervened on the credit market by using loan guarantee programs. There is not a unique scheme

for these programs, as they are different in each country (for a presentation of the loan guarantee programs in the UK, USA and Canada see Riding and Haines, 2001). Literature does not present a unique consideration about the suitability of these schemes. Vogel and Adams (1997), Listerri (1997) and De Meza (2002) affirm that these systems are not sustainable and they can have potential distorting effects because they do not remove the basic problem of credit rationing. Others (Riding and al., 2006, and Zecchini and Ventura, 2009) show that these loan guarantee schemes represent a positive contribution for SME financing as they increase the possibilities of access to credit and reduce the related costs. Meyer and Nagarajan (1996) suggest that credit guarantees can lead to a learning process and improve the relation between banks and firms.

The potential distorting effect may relate to the moral hazard adopted by both companies and by intermediaries.

Firms can adopt riskier strategies than those adopted in normal circumstances. On the other hand, the intermediaries may have a distorting effect. If the share of loan covered by the guarantee is too large, the bank could reduce the attention paid in the screening activity (as affirmed by Benavente et al., 2006). Some authors claim that MGIs are better in their screening and monitoring activity compared to banks (Mistrulli and Vacca 2011).

According to the Bank of Italy (2012) the number of companies that declared not having received the full amount of credit requested has doubled to 11,8% in 2011 (a high figure if compared to the past) and they amount to over one third of the companies that applied for credit. The increase was stronger for SMEs than for large firms.

Since 2008, the difficulties encountered to access credit have increased, especially among manufacturers and those located in the southern regions. The financial conditions of the applicant company have become a determining factor to access credit.

During the crisis the State has promoted several initiatives to support the financial condition of enterprises and to promote favorable access to credit, the Guarantee Fund for Small- and Medium-Size Enterprises being one of them.

The Guarantee Fund for Small- and Medium-Size Enterprises, which has been in place ever since 2000, has taken a prominent role in facilitating access to credit during the crisis.

The Italian Law Decree no. 201 dated 6 December 2011, the so-called "Save Italy" decree, has increased the funding by 400 million per year from 2012 to 2014. In 2012 the Fund has granted guarantees for 4 billion, activating 8.2 billion of loans. The incidence of the excluded applications amounts to 1.4%. The most common causes for exclusion from the guarantee of the Fund, as a result of the resolution by the Management Committee, are: an insufficient cash flow to pay the installments (21.6% of total applications excluded), high current liabilities in relation to the turnover (16.9%) and a low ratio of gross operating margin on turnover (13.3%) (Management Committee's CGF, 2013).

As Bugno (2012) states, the guarantee of the Fund can be considered as an infrastructure, a bridge between the state and businesses. However, the relationship between the state and businesses is not straightforward: they are the financial intermediaries (trust banks, regional funds and leasing companies) that speak directly with them, as mediators in disbursing credit backed by the guarantee of the Fund.

In this logic of public-private partnership, the Fund is designed in such way as to be attractive for the operators and encourage them to use the guarantee with benefits for their own business. The strengths of its attractiveness, that distinguish it from other instruments available within the Italian warranty system, can be summarized as follows:

- since 2009 the Fund has been under the guarantee of the last resort State which involves, according to the Basel Accord, "risk mitigation credit" on direct guarantees and counter-guarantees on first demand granted by the Fund. This warranty applies, in particular, to the weighting of zero mechanism, which resets the capital absorption for those lenders on the level of funding guaranteed;

- operators should not require companies to deliver additional collateral financing. SMEs accepted by the Fund have access to credit without any additional collaterals: this is what happened in the majority of cases (99.6%) back in 2011;
- in addition, there are some benefits ranging from reduction of the fees to total gratuity (as envisaged by the "Save Italy" decree).

Riding A. and Haines (2001) define four criteria to describe a loan guarantee program: the degree of discretion in credit decision, the level of guarantee, fees, eligibility criteria. Following this criterion of analysis, Table 1 presents the main characteristics of the CGF.

Table 1_ Summary of the main characteristics of the Fund

Degree of Discretion in lending	The Fund decides on the proposals of banks and MGIs according to a pre-defined scoring system or set of indicators.
Eligibility conditions	Only small- and medium-size firms, as defined by EU regulations, and SME consortia. With the extension to the building sector, the Fund is intended to assist all sectors of the economy. Only the areas defined as "sensitive" by the European Commission (shipbuilding, transport, iron and steel industry, etc...) are excluded.
Guarantee Coverage Rates	In less developed areas: up to 80% of loans for direct guarantees; up to 90% for MGI guarantee that cannot, however, exceed 80% of the loan. This range is also valid for Businesses affected by the earthquake and women-run companies. Credits from the government anticipated by the intermediary and operations with a maturity of less than 36 months: up to 70% loans for direct guarantee; up to 80% for MGI guarantee that cannot, however, exceed 80% of the loan. Other operations: up to 70% of loans for direct guarantee; up to 80% for MGI guarantee that cannot, however, exceed 80% of the loan. Operation on equity: up to 50% of loans for direct guarantee; up to 80% for MGI guarantee that cannot, however, exceed 60%. Consolidation of short-term liabilities: up to 30% of loans for direct guarantee; up to 60% for MGI guarantee that cannot, however, exceed 60% of the loan.
Fees	Consolidation of short-term liabilities: direct guarantee 3%, counter-guarantee 2%. Operations on equity: direct guarantee 1% (for the first year), counter-guarantee 2% (for the first year), next years from 0.25% to 0.5%). Other operations: nothing in Southern Italy (Mezzogiorno); from 0.25% to 1% in other Regions depending on the firm size.

Types of Guarantee	Direct guarantee to banks Counter-guarantee to MGIs Co-guarantee with MGIs On equity participation or participatory debt
Maximum amount guaranteed	Credits from the government anticipated by the intermediary and operations with a maturity of more than 36 months: 2.5 million. Consolidation of short-term liabilities: 1.5 million. Operation on equity: 2.5 million. Other operations: 1.5 million.
Funding	Annual allocation from State budget

Adapted and updated from Zecchini and Ventura (2009)

3. Research Hypothesis

In this paper we test different hypotheses.

The first two hypotheses are intended to check the variables that explain the probability of default of the loan. The variables analyzed include: the economic and financial characteristics of the firm, the loan characteristics, the type of intermediary that requests the Fund guarantee for the company.

HP₁: there are some firm financial characteristics and loan characteristics capable of influencing the probability of default.

HP₂: there is a significant difference in terms of default probability depending on whether the firm is selected by banks or MGI.

The third hypothesis is affected by the results of the previous ones and is aimed at defining the company profile with the highest risk of default.

HP₃: the firms with the highest risk of default have a different profile from those with a low risk.

4. Sample and descriptive statistics

The data presented here are confidential. They were supplied by Central Guarantee Fund and are related to the financial guarantee from 2007 to 2009.

The sample consists of about 26,000 observations, each related to a single application for loan¹. Each of them is associated to many variables given by the CGF, such as the Firm size, the Geographical areas, the Economic Sector, the Loan maturity, the Loan Sizes, the Percentage of Guarantee, the Type of Guarantee and the Type of Intermediary that has selected the company (banks, MGIs and others). We complete the dataset using Aida to collect the balance sheet information for each company.

Table 2 presents guarantee allocation for the companies in the sample. We can observe that the majority of companies (more than eighty percent) are small and micro. Counter Guarantees are predominant and the loan average maturity is about 50 months. The firms in the industrial and commercial sectors, mainly located in the North-West and South, are those which received most guarantees although coverage has been assured throughout Italy. These firms were prevalently submitted by MGIs rather than by banks.

¹ It represents about 50% of the entire population

Table 2: Allocation of guarantees and default distributions (2007-2009)

Distribution Size	Guaranteed loans not in default	Guaranteed loans in default
<i>Size (%)</i>		
Medium - size firm	13.51	15.20
Small-size firm	42.30	45.51
Micro-size firm	44.12	39.28
Consortia of firms	0.07	0
<i>Maturity (in months)</i>	45.31	52.17
<i>Type of Guarantee (%)</i>		
Direct-Guarantee	21.78	47.20
Counter-guarantee	78.11	52.79
Co-guarantee	0.11	0.11
<i>Percentage of Guarantee (%)</i>	0.52	0.60
<i>Loan Size (euros)</i>	136,348	154,696
<i>Economic Sector(%)</i>		
Agriculture	0.2	0.1
Industry	41.48	37.67
Constructions	8.86	10.16
Trade and Other services	49.46	52.07
<i>Geographical areas (%)</i>		
North-West	39.65	34.32
North-East	13.16	10.77
Centre	16.21	11.62
South	21.46	36.64
Island	9.52	6.65
<i>Originator(%)</i>		
Banks	23.56	48.68
Mutual Guarantee Firm	76.01	49.95
Other	0.43	1.37

Elaboration based on Fund data

Table 3 presents the main financials features of the firms guaranteed.

Table 3 Descriptive statistics of financial variables

Financial variables	Guaranteed loans not in default	Guaranteed loans in default
Number of firms	25,103	948
Revenues (thousand euros)	4,479.05	4,772.43
Net profit (thousand euros)	-58.75	-509.223
Shareholders' Funds (thousand euros)	755.153	369.98
Asset (thousand euros)	4,428.53	4,904.56
ROA (%)	0.75	-9.02
ROE (%)	3.19	-13.31
Cash Flow (thousand euros)	79.54	-273.612
ROI (%)	5.58	2.73

Current Ratio	0.91	0.84
Liquidity Ratio	0.64	0.56
Solvency Ratio	14.67	9.31
Gearing	240.11	238.03
EBITDA/OF	13.37	1.06

5. Methodology

Logit Regression is the empirical model used to test whether firm financial characteristics and loan characteristics exist capable of influencing the probability of default and to examine whether a significant difference is experienced depending on whether the firm is selected by banks and MGI.

The model does not consider observations with missing or incomplete values, so the final sample is composed by 23,645 observations.

For firm i , where $i = 1, 2, \dots, 23,645$ the equation is:

$$\text{DEFAULT}_i = \beta_0 + \beta_1 \text{North West}_i + \beta_2 \text{North East}_i + \beta_3 \text{Centre}_i + \beta_4 \text{South}_i + \beta_5 \text{Loan_size}_i + \beta_6 \text{Perc_Guarantee}_i + \beta_7 \text{Maturity}_i + \beta_8 \text{Agriculture}_i + \beta_9 \text{Industry}_i + \beta_{10} \text{Constructions}_i + \beta_{11} \text{Trade}_i + \beta_{12} \text{Intermediary}_i + \beta_{13} \text{Revenues}_i + \beta_{14} \text{ROA}_i + \beta_{15} \text{CF}_i + \beta_{16} \text{EBIDA/OF}_i + \beta_{17} \text{Liquidity_Ratio}_i + \beta_{18} \text{Solvency_ratio}_i + \beta_{19} \text{Gearing}_i$$

The dependent variable DEFAULT takes the value of 1 (one) if the loan went into default within the three years subsequent to the acceptance of the warranty claim by the Fund, otherwise it is 0 (zero). The decision to consider a period of three years depends on a homogeneous parameter for all the guarantees in the sample (for companies entrusted in 2009 this criterion considers the period up to 2012).

The “North West _{i} ”, “North East _{i} ”, “Centre _{i} ” and “South _{i} ” are dummy variables that identify the geographical area of the company. “Loan_size _{i} ” is the size of the loan expressed as a logarithm. “Perc_Guarantee _{i} ” is the percentage of the guarantee accorded by the Fund. “Maturity” represents the loan maturity expressed in months. “Agriculture _{i} ”, “Industry _{i} ”, “Construction _{i} ” and “Trade _{i} ” are dummy variables that represent the economic sector of the firm.

“Intermediary _{i} ” represents the financial intermediary that selects the firms and applies for the public guarantee for them. Banks are assigned a value of 1, MGIs and other intermediaries a value of 0 (zero). Financial data are for the year of acceptance of the application. Revenues are expressed as a logarithm where “ROA _{i} ” represents the return on asset that is calculated as Net income/Total Asset. “CF _{i} ” is the Cash Flow. “EBIDA/OF _{i} ” is an indicator of the company capability to cover the cost of debt. “Liquidity_Ratio _{i} ” is calculated as ((Current assets - Stocks) / Current liability). “Solvency_ratio _{i} ” is calculated as (Shareholder fund/ Total assets) and, finally, “Gearing _{i} ” is calculated as ((No current liabilities + loans) / Shareholders Fund).

Some variables such as net income, shareholders' equity, total assets, current ratio, ROI, ROE and Type of Guarantee were not included in the regression due to a high correlation with other variables in the model. See correlation matrix in the appendix.

To answer the third hypothesis we use a CHAID Analysis (Chi Square Automatic Interaction Detection). This form of analysis determines how variables best combine to explain the outcome in a given dependent variable. The dependent variable (DEFAULT) and the related factors are those presented above and used for the Logistic regression.

6. Empirical Results

In this section we present the main results of the logistic regression model.

As presented in Table 3, there are numerous variables that can affect the probability of default. Focusing on the firm characteristics, the geographical area is a discriminating variable, whereas

ROA, CF and the Solvency ratio can be reported to be important financial indicators. Moving on to the characteristics of the loan, the percentage of guarantee and the maturity appear significant. Finally, the type of intermediary applying for the public guarantee for the firm influences the probability of default.

In order to quantify the impact of these variables on the risk of default it is necessary to calculate the odds-ratio as e raised to the power of β (as presented in table 3).

Considering geographical area if firm is located in the Northwest the risk of default increase of 1.99 times, in the Northeast increase of 1.76 times. For companies in central regions the probability of default increase of 1.57 times, in Southern regions increase of 1.47 times.

Focusing on the characteristics of the loan, we can notice that if the maturity increases of 1 unit, so does the risk of default by 1.004 times. The biggest impact is the percentage of guarantee: the increase of one unit, in fact, increases the risk of default by 19 times.

From the point of view of the balance indicators, an increase in the Roa and the CF by one unit leads to a reduction of the default risk by about 1%. At the same time, an increase in the Solvency ratio by one unit reduces the risk by 3%. Finally, it is interesting to see the role of the intermediaries. If the company is offered by a bank, the default risk is 2.40 times higher than in the case of MGI and others.

Table 3_ Logit Regression

	β	<i>S.E.</i>	<i>p-value</i>		<i>Odds-ratio</i>
β_0	-5.9479	0.344	0.000	***	0.0026
North West	0.6920	0.181	0.000	***	1.9977
North East	0.5653	0.209	0.007	***	1.7599
Centre	0.4542	0.211	0.039	**	1.5749
South	0.3837	0.162	0.018	**	1.4677
Perc_Guarantee	2.9689	0.505	0.000	***	19.470
Maturity	0.0040	0.001	0.002	***	1.0040
Intermediary	0.9254	0.118	0.000	***	2.5228
ROA	-0.0059	0.002	0.001	***	0.9941
FCG	-0.0003	0.000	0.000	***	0.9997
Solvency_ratio	-0.0280	0.003	0.000	***	0.9724

This table shows the results of the Logit Regression. “*”, “***”, “****” indicate 1%, 5%, 10% significance levels respectively. The dependent variable is default (1) or not default (0), recorded within the three years subsequent to the acceptance of the warranty claim by the Fund. The Likelihood Test presents a p-value of 0.000. The number of observations is 23,645. The percentage of cases correctly predicted is 97,1%.

In the second part of the analysis an attempt has been made to define a hierarchy of variables capable of discriminating the major probability of default and to identify a profile for firms with the highest and the lowest risk of default.

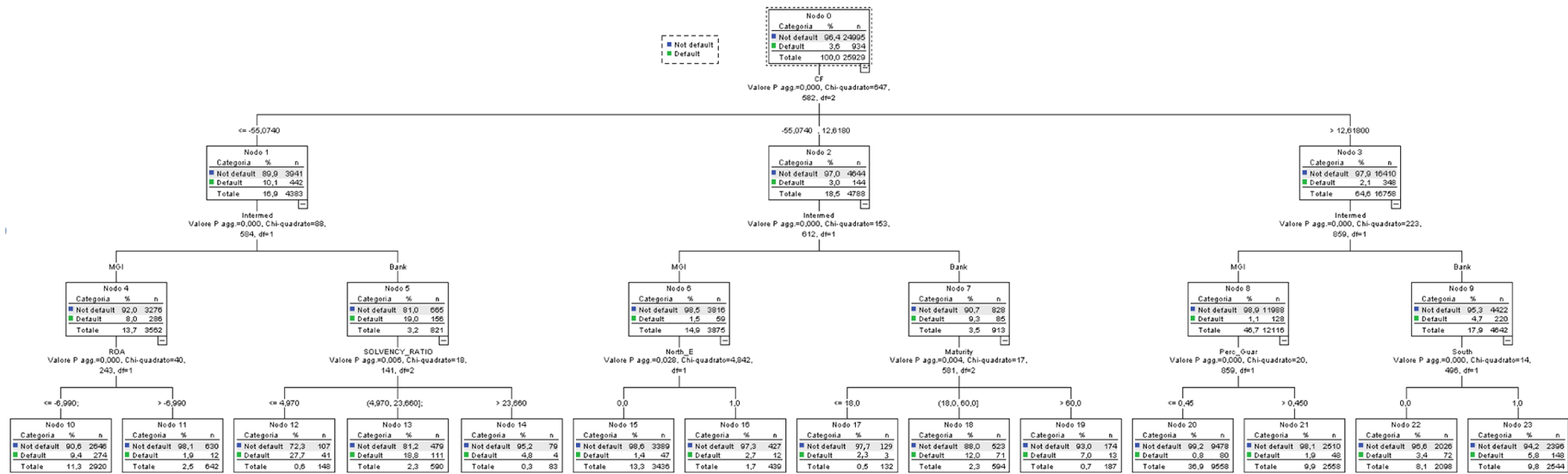
The CHAID analysis presented in the Figure below selects “Cash Flow” as the variable having the strongest correlation to sub-divide data into the next level. The firms with a CF below -55,074 euro have a risk of default equal to 10.1%, while the firms with a CF between -55,074 euro and 12,618 euro have a risk of 3%; companies with a CF above 12,618 euro have a risk of 2.1%.

The second relevant variable to discriminate the default is type of intermediary. The default is higher for firms selected by banks than those selected by MGIs. If we consider the group with the highest probability of default the solvency ratio and ROA score third in the list: the smaller these

financial indicators, the greater the risk of default. When the firm is selected by banks the risk increase in particular when the solvency ratio is lower than 4.970. When the firm is selected by MGI the most important variable seem to be the profitability measured by ROA. Firms with ROA lower than -6.99% have a risk of default of 9.4% , whereas if ROA is higher than -6.99% the risk is 1.9%.

Focusing on the firms with the lowest risk of default, we can observe that after the discrimination of the CF, the second relevant variable is type of intermediary. The risk of default is 1.1% if firm is selected by MGI and 4.7% if it's selected by bank. Focus the attention on firm with higher CF and presented by MGI, the third relevant variable is the percentage of guarantee. Even if the firm is healthy in terms of liquidity, an increase in the percentage of guarantee over 45% causes a greater risk of default.

Figure 1_ CHAID Analysis



Legenda:
 Chi Quadrato= Chi Squared
 Nodo= Node
 Categoria= Category
 Totale= Total

7. Conclusions

The credit rationing is a widespread phenomenon in Italy, which mainly affects SMEs. Back in 2000 policy makers in Italy introduced a loan guarantee program called Central Guarantee Fund (CGF) to provide guarantee for loans to SMEs presented by banks or Mutual Guarantee Institutions (MGIs, called Confidi). The aim of this paper is to identify which variables are capable of influencing the default of the loan guaranteed by the Central Guarantee Fund and to measure the intensity of this influence.

The paper identifies many variables that can affect the probability of default.

As the guarantee percentage and the maturity increase, so does the probability of default. We also demonstrate that the scouting activity of the intermediary is impacting: the probability of default is higher for firms selected by banks than for those selected by MGIs. If we consider the financial ratio, we can observe that an increase in the ROA, Cash Flow and Solvency ratio contributes to reducing the probability of default.

The paper has tried to identify two main profiles of firms: those with the highest risk of default and those with the lowest risk of default.

The firms with the highest risk of default are characterized by a Cash Flow below -55,074 Euro, are normally selected by a bank and present a value of Solvency ratio lower than 4.970.

This confirms that, as presented in section 2, the main exclusion criteria adopted by the Management Committee (insufficient cash flow to pay the installment) is actually the strongest discriminating variable between the two groups of companies. As highlighted by Mistrulli and Vacca (2011), the results are affected by the type of intermediary: MGIs appear to be better in their screening and monitoring activity when compared to banks.

The firms with the lowest risk of default are characterized by a Cash Flow above 12,618 Euro. Also in this case the intermediary is a variable affecting the probability of default: the risk of default diminishes if the firm is selected by MGI. The percentage of guarantee is farther more significant. Even if the firm is healthy in terms of liquidity, an increase in the percentage of guarantee leads to an increased risk of default. If the percentage is below 45%, the probability of default is 0.8%; when the percentage is above 45%, the probability of default is 1.9%. These results are in line with Benavente et al. (2006) who suggest the following: if the share of loan covered by the guarantee is too large, the intermediaries may reduce the attention paid in the screening and monitoring activity. This paper produces some useful indications on how to select companies to reduce the probability of default. Firstly, attention must be paid to liquidity, measured by the Cash Flow. Secondly, consideration must be given to the different scouting activities of the intermediaries and the value of solvency ratio.

For companies having a lower level of risk (in terms of CF) attention should be paid to the percentage of guarantee that can have an important role in the increasing risk of default.

Future research will be directed at having a deeper insight into this analysis by considering different time periods, pre-and post-crisis, and additional explanatory variables such as the cost of financing.

Appendix

Pearson's correlation matrix

	Geo_area	Size	Loan_Size	Perc_Guar	Type_Guar	Maturity	Intermediary	Sector	Revenues	Net profit	Shareholders'Fund	Asset	ROA	ROE	CF	ROI	Current ratio	Liquidity ratio	Solvency ratio	Gearing	Ebitda/Of
Geo_area	1	-.024	-.035	.453	-.334	.202	.315	.110	-.049	.047	.037	-.031	.052	.068	.030	.026	.088	.010	.180	-.159	-.002
Size		1	.481	.023	-.173	-.061	.159	-.236	.520	-.088	.351	.557	.028	-.060	.082	.021	.048	.021	.127	.040	-.007
Loan_Size			1	.047	-.222	.311	.222	-.143	.431	-.051	.333	.484	.025	-.042	.086	-.012	.005	-.015	.136	.052	-.011
Perc_Guar				1	-.758	.287	.709	.089	-.021	.050	.061	-.010	.041	-.042	.042	.023	.067	.011	.136	-.095	.001
Type_Guar					1	-.301	-.938	-.033	-.137	-.048	-.176	-.154	-.053	-.029	-.091	-.029	-.071	-.013	-.172	.074	-.004
Maturity						1	.291	.037	.025	.022	.076	.060	.001	-.034	.045	-.072	-.065	-.082	.083	-.020	.001
Intermediary							1	.035	-.134	.045	.166	.148	.051	.025	.086	.027	.061	.007	.160	-.067	.002
Sector								1	-.051	.031	-.125	-.159	-.017	.053	-.031	.040	-.018	-.006	-.072	-.004	.005
Revenues									1	-.030	.444	.752	.055	-.037	.174	.102	.067	.036	.067	.086	-.003
Net profit										1	.332	-.062	.367	.348	.907	.237	.146	.119	.222	.045	.010
Shareholders'Fund											1	.723	.155	-.012	.520	-.012	.124	.066	.400	-.085	-.003
Asset												1	.042	-.028	-.208	.004	.011	-.041	.144	.054	-.006
ROA													1	.527	.336	.309	.225	.169	.268	.090	.046
ROE														1	.209	.431	.117	.155	.055	-.086	.037
Cash Flow															1	.199	.119	.101	.266	.046	.007
ROI																1	.152	.156	.028	.172	.007
Current ratio																	1	.757	.417	-.137	-.005
Liquidity ratio																		1	.322	-.120	-.001
Solvency ratio																			1	-.380	.010
Gearing																				1	-.011
Ebitda/Of																					1

** , * indicate 1%, 5% significance levels respectively.

References

- Baas T, Schrooten M. (2006), Relationship banking and SMEs: a theoretical analysis. *Small Business Economics*, 27 (2–3), 127–37.
- Beck, T., Klapper, L. and Mendoza, J. (2008). The typology of partial credit guarantee funds around the world, The World Bank, Policy research working paper n. 4771.
- Benavente, J.M, Galetovic A., Sanhueza R, (2006). Fogape: an economic analysis. *University of Chile Economics Department Working Paper 222*
- Berger A.N., Udell G.F., (2006), A More Complete Conceptual Framework for SME Finance, *Journal of Banking and Finance*, 30 (11), 2945-66.
- Besanko D, Thakor AV. (1987), Collateral and rationing: sorting equilibria in monopolistic and competitive credit markets. *International Economic Review*, 28 (3), 671–89.

- Bugno C. (2012), Il fondo centrale di garanzia tra opportunità e rischi, *Rivista italiana di intelligence*, Gnosis, 1, 49-59.
- Coco G. (2000), On the Use of Collateral, *Journal of Economic Surveys*, 2, 191-214.
- Columba F., Gambacorta L., Mistrulli P.E., (2009), The Effects of Mutual Guarantee Consortia on the Quality of Bank Lending, *Revue Bancaire et Financière*, (4), 226-232.
- Cotugno M., Monferrà, S., & Sampagnaro, G. (2013). Relationship lending, hierarchical distance and credit tightening: Evidence from the financial crisis. *Journal of Banking & Finance*, 37, 1372-1385
- De Meza, D. (2002). Overlending?. *The Economic Journal*, 112 (477), F17-F31
- European Commission (2011). SMEs' access to finance, Survey 2011
- Jaffee D, Russell T. (1976), Imperfect information, uncertainty, and credit rationing. *The Quarterly Journal of Economics*, 90 (4), 651-66.
- Llisteri, J. (1997). Credit guarantee schemes: Preliminary conclusions. *The Financier* 4(1-2), 95-112.
- Meyer, R. L., Nagarajan, G. (1996, June). Evaluating credit guarantee programs in developing countries. In meetings of the American Agricultural Economics Association, San Antonio, Texas, July.
- Mistrulli, P. and Vacca, V. (eds) (2011). Mutual guarantee institutions and small business credit during the crisis, Occasional paper 105, Bank of Italy.
- Riding A.L, Haines, G. Jr (2001), Loan Guarantees: cost of default and benefits to small firms, *Journal of business venturing*, 16, 595-612.
- Riding, A., Madill, J., Haines Jr, G. (2007). Incrementality of SME loan guarantees. *Small Business Economics*, 29(1-2), 47-61.
- Stiglitz J, Weiss A. (1981), Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393-410.
- Vogel, R., gAdams, D. (1997). Costs and benefits of loan guarantee programs. *The Financier* 4(1-2), 22-29.
- Zecchini, S., Ventura, M. (2009). The impact of public guarantees on credit to SMEs. *Small Business Economics*, 32(2), 191-206.