

MICROCREDIT AND PROBABILITY OF DEFAULT FOR SMALL BUSINESS IN ITALY

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This paper proposes an empirical analysis of the microcredit initiatives promoted by local and cooperative credit banks trying to take advantage of any differences in the initiatives promoted by other types of operators in terms of default rates of loans. The differences are analyzed on the basis of distinctive features to identify a possible way of developing microcredit in Italy. The empirical analysis verifies the existence of a statically significant correlation between characteristics of the entrepreneurial microcredit programs and their default risk. The presence of credit guarantee schemes and the role of banking intermediaries as promoters reduce significantly the risk of default on these initiatives. The Italian microcredit programs do not show territorial differences.

(J.E.L.: G21, L31, O16)

INTRODUCTION³

This paper aims to investigate the microcredit approach as a tool for reducing the financial marginalization of families and individuals. The growing interest in the theme of financial exclusion has led to the definition of microcredit as "*social banking*" indicating a specific segment of financial services devoted to customers segmented by income and other economic conditions, qualifying them as marginal or unbanked (Anderloni,2003).

This clientele has increased because of the strong direct channel based on sequential events such as " economic crisis - credit crunch - financial exclusion", fueled by the financial markets to produce a polarizing effect between affluent and poor individuals (Bendig *et al.* 2014). During the recent economic crisis the availability of credit influenced a growing number of individuals constrained by a lack of cash flow. Lack of access to finance is one of the main obstacles that micro-enterprises face. Microfinance, which includes guarantees, microcredit, equity and quasi-equity extended to persons and micro-enterprises that are having difficulty accessing credit, can help reduce it. In other words, we are dealing with an action capable of both overcoming short-term financial distress and preventing future cash flow imbalances.

Once the temporary difficulties have been overcome, beneficiaries may have the opportunity to begin a business project generating income streams in the longer term. In order to achieve financial independence via microcredit tools, small firms offer products and services to develop entrepreneurial skills.

The paper has as its focus the investigation on micro-credit for small business. This research uses the definition of entrepreneurial microcredit given by art. 111 of the Banking Act, introduced by Legislative Decree 141 of 13 August 2010 (and subsequently amended by Legislative Decree 169 of 19 September) that is a loan that meets the following characteristics

- The amount not exceeding 25,000 euro. This amount may be increased by a further 10,000 euro in presence of divided loan, the development of the project has met the achievement of interim results and the beneficiary has at least returned the last six previous installments;

- It does not require real guarantees. The guarantee can be provided by special funds or, more frequently, will be represented by membership of the beneficiary to an association which operates as an institution of the beneficiary's discipline. In other words the presence of a social network functions as a guarantee of repayment of the credit and allows you to keep a very low level the cases of insolvency;

- Is used to fund the start-up or development of entrepreneurial activities and integration into the labor market. Funding can also be used to remunerate new employees or members. With reference to this last destination of use, the legislature intended to refer to the payment of training courses for retraining of employees, partners and contractors as well as the payment of training courses to facilitate the integration of beneficiaries in the labour market;

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- The maximum loan period may not exceed seven years. This time threshold could reach 10 years for loans used to pay for training courses to promote the integration into the labor market;
- The loan repayment rate should not exceed the quarter;
- The same person will be eligible for a second loan if the amount of the new loan, plus the outstanding amount of the current loan does not exceed the threshold of € 25,000 (or € 35,000 in the case of divided loan);
- Provides for the payment by the promoter of auxiliary services of assistance and monitoring of the financed subjects.

According to Italian and European Legislation entrepreneurial microcredit is riskier. In 2010 The Italian Banking Law added a number of provisions on microcredit to identify potential beneficiaries. The Table 1 in appendix underline that the entrepreneurial microcredit intends to satisfy the demands of two typologies of beneficiaries: 1) autonomous workers 2) micro-businesses organized in the form of individual firm, people's society, simplified srl or cooperative society. With reference to the first subject, the legislator establishes that self-employed people or companies that, at the time of the request of the loan, are VAT registered for more than five years, may not require microcredit. As regards the second category of beneficiaries, the new legislative framework shows that individual businesses and companies with a workforce of more than 5 and 10 units may not require microloans. In the case of companies, the legislature has identified other requirements such as a greater total asset than 300,000 euro, gross revenues more than € 200,000 and a level of debt more than 100,000 euro.

The new regulation also contains provisions aimed at facilitating the identification of operators, which are exclusively involved the provision of micro-loans, if in possession of specific requirements regarding the legal form, the capital, to the respectability and professionalism of members and corporate officers. These subjects must have a minimum capital not less than five times that of the Spa. The monitoring of compliance with these requirements is entrusted to the Bank of Italy that in case of positive evaluation, put these subjects in a special list. To these subjects called "microcredit operators", the legislator also added the "Casse Peota" ie entities, non-profit, collect small sums locally and deliver small loans. In addition also "finance Operators and mutual solidarity" carrying on an activity equivalent to micro-credit because they intend to meet the same financing needs. Unlike traditional microcredit operators, these individuals may pay amounts up to € 75,000 and for a maximum duration of ten years. To complete this taxonomy of persons authorized to offer microcredit there are specialized operators in the provision of auxiliary services of assistance and monitoring, and banks and financial intermediaries pursuant to art. 106 of the TUB.

This paper, analyzing the Italian situation up to 2013, aims to identify possible causes of the increased risk of the entrepreneurial microcredit schemes. Territorial analysis is also conducted to test the likelihood of spatial differences in the Italian microcredit programs.

We consider two steps. In the first, a static indicator of the risk of default is analyzed for a group of Italian microcredit programs differentiated by promoter (private organizations, public agencies, religious institutions, national banks and banking foundations, BCCs). According to the relationship lending definition the behavior of local banks (including the cooperative banks) and their microcredit initiatives is analyzed in terms of default risk.

In a fragmented Italian market microloans are low when compared to ordinary credit loans. This granularity is the result of a lack of experienced credit agents able to implement a selective process of monitoring entrepreneurial microcredit projects based on a different set of variables and social metrics.

In order to verify the role that guarantee schemes might play in credit-worthiness evaluation processes of marginal individuals and firms traditionally excluded from loans, we estimate, via probit models, what factors the following research questions might entail:

1. Can we determine differences in the default risk between local banks such as CCBs and other Institutions in Italy?
2. What are the structural and spatial factors influencing the default risk of entrepreneurial microcredit in Italy?

The paper is divided into four sections. After this introduction, section 2 analyzes the microcredit issue and the default rates. A methodology is developed to measure the default rate of business loans granted. The comparison between the default rates of several microcredit programs activated by the CCBs and other banks leads to certain considerations on the relationship between the culture of relationship lending, typical of the mutual banks and microcredit, also verifying whether an Italian way of operating in microfinance can be detected. Section 3 provides an econometric analysis to test the existence of significant correlations between some features of the entrepreneurial microcredit programs and their risk of default. Section 4 contains some final remarks.

2. THE MICROCREDIT PROGRAMS IN ITALY: DEFAULT RATES, PROMOTERS AND LOCAL BANKS.

This section focuses on the cooperative credit banks (CCBs) and says a few words about the characteristics of these local banks, which may also allow a diversification of the supply model in the sector of microcredit. In particular it proposes a statistical exercise comparing the default rate of entrepreneurial microcredit initiatives that have seen the involvement of CCBs, with the default rate for all other micro-credit programs.

If, as expected, default rates are lower for programs by CCBs this evidence can be reduced to the benefits produced by the economic culture of relationship lending in the process of lending and other distinctive features of this category of local banks. Having a synthetic indicator, calculated on the basis of data supplied by the owners of micro-credit programs, allows one to determine the best-performing programs with the highest rates of return and those programs with a higher credit risk. The calculation of the rate of return is based on the distinction of loans into two simple categories: those still running and those fully repaid.

In order to calculate the rate of default of microcredit program (TD), in 2013, C.Borgomeo & Co. developed the following ratio:

$$TD = \frac{\sum_{i=1}^n P_d}{P_t}$$

where:

TD: default rate;

n: the number of years of the program until the reference date;

P_d: the number of non performing loans in year *i*;

P_t: the total number of loans issued by microcredit program up to reference date.

This indicator provides a single estimate of the default rate, which should be calculated by taking into account not only the number of “non-performing” loans, but also their total dimensions. The benefits related to the adoption of this proxy of the real default rate are easy data collection as regards program definitions and facility in the verification of the data acquired by the promoting subjects of the programs of microcredit .

On 297 monitored programs (launched in 2012, of which 273 started on 31 December 2012, and 24 in the year 2013), the C.Borgomeo & Co. collected the following information:

- the total number of effective loans up to 31 December 2013 ;
- the number of regular performing loans for which the relationship of debt between financier and applicant of the credit has expired regularly;
- the number of loans, for which the debt has not been fully settled and been evaluated “non performing” by the promoter.

All information is based on 155 microcredit programs. The default rate of these programs stood at 10.8%, with a median between 14.5% for programs of social microcredit (calculated over 76 programs) and 9.2% for entrepreneurial microcredit initiatives (calculated over 62 programs).

The 62 entrepreneurial micro-credit programs show the following characteristics: 28 programs have a zero default rate (for a total of 2,756 loans), 8 a default rate of 3.8%, lower than the average nationwide default rate equal to 9.2% (for a total of 5,729 loans) and 26 have a higher default rate, equal to 20% (corresponding to 5,042 loans).

With reference to the 76 programs of social microcredit: 22 programs have a zero default rate (709 loans), 17.7% (769 of 11,056 non performing loans) and 37 or 23% (in following the default relative to 2457 on 10,512 paid loans).

It is essential to analyze the default rates for the various promoters of the microcredit programs (both social and entrepreneurial). For the 62 entrepreneurial microcredit programs the results show that programs promoted by private entities (non-banking foundations, associations and MAG) reveal an increased risk of default (19.8%, based on 15 programs and 1,058 loans). On the other hand, microcredit programs sponsored by religious organizations (Caritas), indicate a default rate of 16.9% (6 programs and 302 loans).

On the contrary, the public and ordinary banks' programs have a lower default rate. The 26 programs promoted by public entities have an average default rate of 10.6% (calculated on 5,967 loans), whereas the 15 programs supported by credit institutions have a default rate of 5.7% (out of a total 6,200 loans).

The CCBs default rate of microcredit programs is calculated on 20 promoters banks of microcredit programs (33.9 percent of the total of 59 BCC active in the microcredit activities).

We observe the following characteristics:

- 399 non performing loans for families and the start-up (mixed) out of the total of 2473 (16%);
- 330 non performing loans for social microcredit out of the total of 1,650 (20%);
- 69 non performing loans for entrepreneurial microcredit out of the total of 840 (or 8.2%).

The median default rate of all microcredit programs is equal to 16%.

First results highlighted a lower risk of social entrepreneurial microcredit programs financed by banking intermediaries. This feature can be justified by citing the conclusions of Andreoni *et al.* (2013), who conducted a survey of a sample of banks as follows: 53% banks SpA, 27% and 20% of BCC banks.

The aim of this investigation was to conduct an evaluation on the intensity of the role of operators in microcredit banks, analyzing the whole process of investigation, which can be broken down into six stages:

- Step 1 "interception and collection of demand,
- Step 2 "first screening and case investigation "
- Step 3 "surveys and assessment",
- Step 4 "bank-customer relationship and consulting services"
- Step 5 "Assessment of the dossier,
- Step 6 "Decision on creditworthiness

Among the various types of information used in these various phases of the investigation, there are interesting issues related to the credit scoring methodologies used by big and small banks. With regard to entrepreneurial microcredit, in phases 1 and 2, only 50% of banks are using these methodologies for assessing the credit risk of customers and 67% of the banks assess the guarantees provided.

The use of such scoring methodologies is the exclusive prerogative of the big banks. In the last two stages, 56% of banks do use credit scoring methodologies to ensure that risk-taking is not too high with regard to the microcredit policy outcomes managed by the banks. During stage 1 and 2, a higher percentage of banks use credit scoring for the social microcredit (65% versus 50% of local banks). In stages 5 and 6, this percentage is slightly lower (60,3%), showing that these methodologies can be used to support both the initial screening of requests for microcredit and the final decision on creditworthiness.

One characteristic of microcredit is the small amount and the extremely frequent terms of repayment (small installments weekly and, in some cases, daily). This mechanism reflects not only the financial constraints of the potential customers who are not capable of handling the reimbursement in a single solution but also their poor financial education,. According to these peculiarities the microcredit is characterized by relatively low risk and a high rate of return of loans (over 95%), fueling the interest of banking intermediaries to gain a market share in the credit sector. In order to become competitive in this market compared to other microfinance institutions, banks, however, have to follow alternative procedures to those of traditional lending.

Customers of microfinance do not have entrepreneurial records and would not be able to offer real guarantees (collateral) in the same way as regular customers handled by traditional banks. Microcredit should be granted by using new and more numerous social credit scoring techniques that can resolve *ex ante* asymmetric information between borrowers and lenders. This makes "the microcredit project-based lending" more difficult than traditional "collateral-based lending" (De Vincentis, 2006) and risks representing a potential moral hazard for the credit institutions. The demand for collateral would reduce information asymmetries, leaving riskier debtors out of the credit market, including also those persons with marginal financial conditions, would be able, however, to repay the loan (Polin, 2005).

To overcome these problems, microcredit institutions developed alternative guarantee schemes to encourage the substitution of collateral with reliable guarantees. Among the most popular are: group lending, progressive loans, the establishment of guarantee funds by government agencies, foundations, associations and religious bodies, the request to potential borrowers to accumulate a minimum fund of savings before obtaining their first loan, the presentation of letters of guarantee from banks, insurance companies and consortia, the tutoring of a guarantor acceptable to the lender for his/her reliability or the robustness of his/her assets, the transparency of the repayment phase of the loan and the creation of a mutualistic relationship between the institution and the potential applicants (for example in the case of CCBs).

All the microcredit performance of C.Borgomeo & Co. programs is worse than the programs of cooperative credit banks or CCBs, because of the lower default rates (Table 2, 3). Andreoni et al. (2013) with regard to the sources of information in the process of investigation of entrepreneurial microcredit, notice that there are significant differences between large, medium and small banks emerging purely from stages 3 and 4, in which the loan procedure reflects a more direct contact between lenders and applicants. These elements show that the economic culture of relationship lending can also be considered, in our view, a strategic tool for developing a different supply of programs via CCBs.

In the first two phases the main information is related to the financial needs of the customer in connection with his or her income and the presence of previous credit relationships with banking institutions.

An interesting finding was that in step 4 the share of CCBs carrying out analysis of the market position of the start-up is higher for large and medium banks (60% versus 50% and 33%); for companies already under analysis the market comprises 40% of CCBs (compared to 50% of large banks and 0% of medium-sized banks).

Moreover, the share of banks that collect customer information through business plans reaches 80% in the case of small banks (including also the CCBs). Additionally, when compared to phases 1 and 2, the share of small banks in the last two phases that use credit scoring methodologies increases (60% versus 40%).

In the final stage of the investigation, especially, the CCBs show a greater capacity than the big banks to conduct a more detailed assessment of the customer's ability to generate income and the ability to borrow and refund (100% vs. 50%). In the area of social microcredit small banks (including CCBs), (like the big banks), intercept credit demand mainly on the basis of information regarding the financing needs (91.67%), whether temporary or permanent.

In the first phase small banks show a greater capacity than the large banks to assess the financial and earnings situation of the potential customer (80% versus 66%) and his/her credit history (60% versus 33%). The increased emphasis on credit history by small banks can be traced back to the canons of relationship lending aimed at creating a more intense and longer-lasting relationship of bank-customer trust. Only in this way banks reduce the action of asymmetric information.

The small banks can use advanced methods of credit scoring to assess the risk of customers. The valuation of collateral is carried out by 80% of small banks, breaking away cleanly from the banks of large and medium size (respectively 33% and 50%). The risks of lending by small banks are covered by guarantees provided by public entities, primarily religious bodies (Caritas and its territorial divisions, the Italian Episcopal Conference). Many CCBs have joined the "Loan of Hope" promoted by the Italian Episcopal Conference (CEI) and the Italian Banking Association (ABI).

These peculiarities of local banks can be traced to the benefits produced by internal mutualism and the solidarity of relationship lending. The mutual component of CCBs can facilitate volunteering in the field of microfinance by reducing, with greater intensity than other banking competitors, the risk of moral hazard. Piersante and Stefani (2013) have shown that the action of peer monitoring, which constitutes the success factor of group lending, is amplified by the social pressure ("peer pressure") mitigating the exclusionary processes; more generally speaking, the significance of social control is relevant to the existence of credit unions.

The deterioration in the credit quality of the loans (measured by the bad debit ratio on loans) is lower in the lending relationships with shareholders and a positive correlation exists between credit quality and intensity of local participation in cooperative governance⁴.

Other important benefits derive from local banks if they take more note of customers through intense and long-term credit relations. The availability of qualitative and confidential information as a result of unmediated relationships with customers (soft information) allows these banks to recognize the potential of customers who, in the short term, might appear rather insolvent and financially fragile. However, hard information contained in balance sheet data and produced with credit scoring, customary for the big banks, can easily reject application of this type of customer would see his/her demand for credit rejected. Soft information reduce transaction costs of the small banks. Therefore, relationship lending would increase the availability of credit in favor of the unbanked people. Another feature of small-sized banks (Stein, 2002) is the capacity to generate and organize soft information in a non-hierarchical way.

In light of these considerations, the adoption of relationship lending would produce benefits in both the supply and demand of credit, which, in our view, might shift the preferences of the excluded in favor of these banks. On the supply side this culture would reduce the difficulties in assessing the riskiness of SME, marked by greater information opacity (Albareto et al. 2012).

In particular, several authors argue that in small banks, where there is almost no overlap between the person who collects customer information and uses it for the evaluation of creditworthiness, higher levels of efficiency in the production of soft information will be reached (Angelini *et al.*, 1998, De Young *et al.* 2003, Scott 2004).

⁴Bongini *et al.* (2009), and Hansmann (1996) found similar results.

On the demand side, several contributions show that local banks, thanks to soft information, can evaluate the future potential of financially fragile companies, and reducing the problem of credit rationing. Ferri et al. (2014) argue that the production of “soft information” within the bank-firm relationship significantly reduces the probability of credit rationing, while the opposite is true if the relationship is managed according to the lending transaction. Barboni and Rossi (2012) showed that enterprises indebted with local banks showed a lower likelihood of undergoing credit rationing during the 2008-2009 period. Gobbi and Sette (2012) showed that the intensity of credit relations, expressed by smaller distances between borrowers and lenders and the stability of the bank-firm relationship, increases the availability of credit during financial upheaval.

Petersen and Rajan (2002) hold the view that financial flexibility allows the banks providing credit to renegotiate the contractual terms of the offer or to change the technical form of the loan. From the previous sections it emerges that the failure to renegotiate the terms applied to the offer of credit was one of the causes of financial exclusion (included under the heading "Condition exclusion").

Moreover, according to the trends of the financial theory known as "Relationship Banking", the consolidation of stable and lasting relations between banks and customers would allow the bank to write off the cost of screening and monitoring over a period of several years (Angelini and Nieri 2006).

TABLE 2
Default rates of entrepreneurial microcredit programs-promoters category

ENTREPRENEURIAL MICROCREDIT -62 PROGRAMS									
Average Default	Program Number	Loan Number	Default =0		0≤Default<average		Default> average		
			Program Numbers	Loan Number	Program Numbers	Loan Number	Program Numbers	Loan Number	
Promoters									
Private	19,8%	15	1.058	5	33	2	468	8	557
Religious	16,9%	6	302	1	2	2	176	3	124
Public	10,6%	26	5.967	15	2.474	1	701	10	2.792
Banking	5,7%	15	6.200	7	247	3	4.384	5	1.569
CCBs*	8,2%								
Total	9.2%	62	13.527	28	2.756	8	5.729	26	5.042

SOURCE: our analysis on Borgomeo Report data (2014);

* The default rate on a sample of 20 banks (i.e. 33.9% of the 59 CCBs involved in microcredit programs)

TABLE 3
Default rates of social microcredit programs- promoters category

SOCIAL MICROCREDIT -76 PROGRAMS									
Average Default	Program Number	Loan Number	Default =0		0≤Default<average		Default> average		
			Program Numbers	Loan Number	Program Numbers	Loan Number	Program Numbers	Loan Number	
Promoters									
Private	15,4%	22	14.467	8	306	5	5.036	9	9.125
Religious	13,2%	22	2.530	6	246	5	1.739	11	545
Public	13,1%	25	4.904	5	27	4	4.041	16	836
Banking	6,4%	7	376	3	130	3	240	1	6
CCBs *	20,0%								
Totale	14,5%	76	22.277	22	709	17	11.056	37	10.512

SOURCE: our analysis on Borgomeo Report data (2014);

* The default rate on a sample of 20 banks (i.e. 33.9% of the 59 CCBs involved in micro-credit programs)

3. THE DEFAULT RISK OF ENTREPRENEURIAL MICROCREDIT: AN EMPIRICAL EXERCISE

3.1 OBJECTIVES OF THE ANALYSIS

As a final step, it proposes an empirical analysis designed to identify which characteristics of different microcredit initiatives launched in the Italian macro regions have had a greater impact on their probability of default.

The decision to focus exclusively on entrepreneurial microcredit programs can be traced to three different motivations. The first from the conclusions of various contributions that have investigated the dynamics of the credit market in the current economic downturn (as a result of the international crisis). Furthermore the Institute for Studies and Economic Analyses (ISAE), in 2010, highlighted the occurrence of a more severe deterioration in the quality of loans issued to firms than to households.

Credit rationing from both the supply and demand side are the main reasons for households and small firms experiencing difficult relations with their lending banks (National Microcredit Agency, 2013) because of the long waiting times for loan requests. The timing of borrowing is a crucial factor for entrepreneurial and social microcredit. The Financial Stability Report of the Bank of Italy (2013) notes that in 2013 it was mostly small and medium-sized enterprises that suffered from a higher intensity of credit rationing.

According to this source the latest credit crunch originated mainly from a tightening of credit supply conditions. In the second half of 2014 the situation worsened in terms of payments and other typology of financing, but, on the other hand, the role of microcredit might play a role in the improvement of micro businesses during the downturn.

The National Microcredit Agency (2013) which monitored 106 microcredit programs reports that the amount financed for microcredit to small businesses is greater than the social microcredit (20,000 against 5,000 Euros) but the frequency of rejection is higher than the social microcredit. These considerations worsened in the southern Regions (Campania, Calabria, Puglia and Sicily) where social loans are present in 7.5% of cases, when compared to 92.5% of lending money for activities related to creating one's own job of work.

Social microcredit, as well as being less common, delivers even fewer resources than entrepreneurial microcredit: the social lending money in 84% of cases is less than 5,000 euros and never exceeds 15,000 euros, while lending to small business is never below 2,500 euros and only 11.8% of cases exceed the limit of 25,000 euros.

The microcredit initiative, especially in backward Italian regions, could act as a catalyst for an active employment policy. Of the 125 recipients interviewed, around 90% applied to microcredit in order to begin new activities and, more specifically, 74.4% set self-employment as their priority goal. The benefits of using microcredit as a tool for self-employment do not only come to the applicant but also on his/her staff: as many as 46.2% of the applicants have their own salaried staff. Therefore microcredit can be seen as a multiplier of work opportunities, helping to create jobs both directly and indirectly.

Another reason was that microcredit for business attracted the greatest interest of the legislature, which regulated the microcredit sector with a bill presented in August 2010 and passed in early June 2015. Before 2010 microcredit was not the subject of any special legislative framework and its ordinary operations were carried out by banks in the form of loans of reduced size (art.106 of the Banking Act).

The new bill consisted of two articles (111 and 113) and the subsequent decree 176 of 17 October 2014 of the Ministry of Economy and Finance (MEF), under the title of "Microcredit for starting or the development of business initiatives and for inclusion in the labor market".

The first article introduces the new discipline of microcredit as a derogation from Article 106, distinguishing, on the one hand, parties authorized to grant finance to individuals and small firms (entrepreneurial microcredit up to 25,000 euros), and, on the other, those operators in non-profit organizations who can offer loans to particularly vulnerable economic or social individuals (social microcredit up to 10,000 euros).

Other aspects of this article are the obligatory requirement to be included in the Bank of Italy lists (paragraph 2), the characteristics of the beneficiaries (paragraph 3) and the information to be provided to customers (paragraph 4).

The use of the word "microcredit" (paragraph 5) is subject to a specific meaning of granting loans according to the characteristics of borrowers referred to in the above-mentioned paragraphs 1 and 3.

Art.113 entrusted the Bank of Italy to own a list of operators specializing in the provision of microcredit and the supervisory function of the Central Bank (paragraphs 1-3).

The aforesaid Decree introduced a series of rules such as:

- 1) the characteristics of the beneficiaries to be financed;
- 2) purposes of financing;
- 3) auxiliary services of assistance and monitoring (following a full microfinance approach);
- 4) maximum amount, characteristics of funding and distribution channels.

This short summary of a few aspects of the new regulation of microcredit shows the new framework for microcredit initiatives in Italy, having as their final objective the avoidance of opportunistic behavior by improvised operators and potential beneficiaries who cannot comprehend the true significance and opportunities of these financing opportunities.

3.2 THE DATASET AND SOME DESCRIPTIVE STATISTICS

The dataset for the empirical analysis was provided by C.Borgomeo & co., who have, since 2004, analyzed the number of microcredit programs realized in Italy, including loans and financing volume whilst taking into consideration promoters, sponsors and beneficiaries. All data was also analyzed with regard to geographical area and size.

The methodology for the construction of the data set involves the use of a schematization of micro-credit programs divided into four main variables:

- The *beneficiary*: single person or group (eg an informal group, a family or a couple), legal entities (cooperatives or partnerships);
- The *lender subject*: public entities, ordinary banks and self-management mutuals (MAG);
- The *promoter*: it does not necessarily coincide with the funder. He often claims costs, for example related to promotional activity prior to the commencement of the program or other services. This role can be assumed by banking foundations, banks, non-banking foundations, associations, MAG, dioceses, the state, the regions, other local authorities and universities;
- The *guarantee repayment of the loans*: provides guarantees (in full or in part) to the subject lender against the risk of non-repayment of the loan. This role can be played by the public guarantee funds (eg regional funds) or private (run by foundations) or, in some cases, different funds can contribute to cover, in varying degrees, the credit risk.

In addition to these variables, which represent the basic architecture of the micro-credit model other variables were considered such as the size of loans, the territorial scope and the progress of the micro-credit initiatives, the needs. The size of the loans varies within four possible size classes (up to 5000 Euros, up to 10,000 EUR, up to 25,000 € and over 25,000 €). The geographical area covers the territory (often a region, a province, a municipality or a neighborhood) in which they reside percipients. The state of progress of the project to microcredit has four types of micro-credit programs: the first fall programs of which there is only a preliminary study or feasibility of the initiative; in the second the programs for which there are the first formal acts (such as signed agreements, public notices) that make explicit the intention of the promoters; in the third, there are the programs started during the reference year; fourth in programs undertaken by several years and still going. The needs of the beneficiaries are classified into three types: indistinct financial requirements, financial requirements to start or sustain economic activity, financial requirements to support higher education or postgraduate. Within the empirical analysis this type of need is neglected because little relevant to the micro-credit business which is the subject of investigation of this contribution.

Micro-credit programs undertaken in the years 2005-2013 were selected by a constant search for information available on the internet and specialized press for every new micro-credit initiative. After this phase of research, followed by a further phase of research aimed at identifying the promoter of each micro-credit initiative and in particular the contact person or person to contact in order to deepen the objectives and progress of the initiative. After identifying the programs and their promoters, it was given an interview to each representative in order to gather qualitative and quantitative information about the program.

The database is based on 126 microcredit programs (69 social and 57 entrepreneurial) for which it was possible to monitor the quality of loans, distinguishing between repaid and nonperforming loans. The social microcredit schemes are distributed primarily in the North (49%, 34 initiatives) and in smaller percentages in the South (25%, 17 events) and the Centre (17%, 12 initiatives) of Italy. The entrepreneurial microcredit schemes are distributed mainly in the South (in 49% of cases, i.e. 28 events) and in lesser amounts in the Centre (21% i.e. 12 events) and the North (18% of cases, i.e. 10 events).

This database is used to monitor all Italian programs in their long-term trend, covering the period 2003-2013, including the high peak of the current economic crisis, also having gone through a period of financial uncertainty.

The 57 entrepreneurial microcredit programs for which it was possible to measure the risk of default (see at tables 4, 5), provided loans for an average amount of almost 33,000 euros. There is a wide heterogeneity between them, as evidenced by the high value of the standard deviation (Euro 280.000, not included in the tables) and the wide gap between the minimum and maximum (respectively 2,500 and 150,000 euros, not inserted in the table).

Twenty-one micro-credit programs, or 37% of the total initiatives that have provided loans, exceeded the threshold determined by Italian Law (Article 111 and 113 of Legislative Decree 13 August 2010) i.e. 25,000 euros per beneficiary. Of these 21, eleven exceeded the further threshold of 35,000 euros wherever financing provides grants fractionated by making subsequent payments under the following conditions:

1) timely payment of one of the last six previous instalments;

2) the development of the project being funded, and certified by the achievement of intermediate results as laid down by the contract and verified by the people working in the field. These 11 programs may be indicated as “mixed” because of the dual individual and social nature of the funds, making the microcredit portfolio loans riskier in terms of reimbursement to borrowers .

The project duration of the Italian microcredit initiatives indicates another granular characteristic. On average, these microcredit initiatives (calculated on the basis of 55 programs, see Table 4) have a median duration of about 68 days, ranging from 18 to 180 days. Shown in Table 3, up to 2013, are the mean values of the 243 loans funded.

The high value of the standard deviation (602) indicates that among 57 entrepreneurial programs, there are programs that have allowed/ a single loan and those that have granted/ a large number of customers . Since the objective of the subsequent empirical analysis is to identify some of the determinants of the default risk of microcredit business programs, the quality of loans was analyzed in Table .

In this context, each of the 57 microcredit programs was monitored and the presence of three types of loans distinguished, which can be ranked in a descending order of quality: performing loans, paid loans, non performing loans.

The first category includes loans that are not in or near default. The paid loans are fully repaid, whereas the non performing loans are those that are either in default or close to being in default, with the failure to promptly pay interest or principal when due.

Looking at the distribution of microcredit initiatives based on the quality of loans (Table 5), the dataset shows most of the programs are characterized by loans with a regular mechanism of amortization (211 loans). The fully repaid loans are 27. About 32 loans are insolvent and characterized by a greater risk of default (Table 5).

Table 4: Statistics on entrepreneurial microcredit programs in Italy

<i>Variabile</i>	<i>Mean Value</i>	<i>Standard Deviation</i>	<i>Min</i>	<i>Max</i>
<i>AMOUNT (€)</i> <i>(computed on 57 programs)</i>	€32895	€28089	€2500	€150000
<i>DURATION– days-</i> <i>(computed on 55 programs)</i>	68	24	18	180
<i>NUMBER OF LOANS</i> <i>(computed on 57 programs)</i>	243	602	1	3951

Source: data calculated on cumulated values up 2013, *no indication for two paid loans programs

Table 5: Quality of loans on entrepreneurial microcredit programs in Italy

Variables	Mean Value	Standard Deviation
PERFORMING LOANS (calculated on 57 programs)	211	575
PAID LOANS * (calculated on 55 programs*)	27	73
NON PERFORMING LOANS (NPL-calculated on 57 programs)	32	78

Source: data calculated on cumulated values up 2013, *no indication for two paid loans programs

Microcredit schemes are characterized by a significant variation between them as shown by the high value of the standard deviation (575): we have programs for which the presence of the performing loans is minimal (1 loan) and programs marked with more widespread good quality of loans.

In addition on average 27 loans are regularly repaid as indicated in the table above. The maximum number of loans repaid amounted to 1533. A presence, slightly above the value of 27, was recorded as nonperforming loans (NPL- 32) that turn out to be insolvent and therefore characterized by a greater risk of default. The high standard deviation (78) on NPL is attributable to 10 specific microcredit programs (i.e. 17% out of the total) for which loans were found anomalous in quantities higher than the average.

3.3 THE MODEL

The question analyzed may be treated as a statistical problem of binary choice, ie between two alternatives x and y. The dependent variable is a binary variable (or indicator) equal to 1 if there is an alternative x 0 or if there is the alternative y.

The default of the loans becomes objective only when, reached the end of the loan repayment, the beneficiary is insolvent and produces losses for the lender. If the probability that the loan go into default is p, then P (Default = 1) = p; accordingly, the probability that the loan is regularly returned is P (Default = 0) = 1-p. The probability function of a random binary variable as this is given by:

$$f(\text{Default}) = p^{\text{Default}}(1 - p)^{1-\text{Default}} \quad \text{Default} = 0,1 \quad [1]$$

The default variable has expected value $E(\text{Default}) = p$ and variance $\text{Var}(\text{Default}) = p(1-p)$.

A model to solve a binary choice problem is the linear probability model that can be so formalized:

$$y = E(y) + \varepsilon = \beta_1 + \beta_2 x_2 + \dots \beta_k x_k + \varepsilon \quad [2]$$

One of the critical points of this model is the heteroskedasticity nature of the error term ε . Its variance is equal to:

$$\text{Var}(\varepsilon) = (\beta_1 + \beta_2 x + \dots \beta_k x)(1 - \beta_1 - \beta_2 x - \dots \beta_k x) \quad [3]$$

In the linear probability model the equation [2] is estimated by the least squares method and the estimation of the variance of the error term will be:

$$\hat{\sigma}_i^2 = \widehat{Var}(\varepsilon_i) = (b_1 + b_2x_2 + \dots b_kx_k)(1 - b_1 - b_2x_2 - \dots b_kx_k) \quad [4]$$

Using this estimate of the variance you can make the following transformation of variables (both dependent and explanatory) and then estimate a new version of the model [5] that achieves the calculated estimates of generalized least squares:

$$y_i^* = \frac{y_i}{\hat{\sigma}_i}$$

$$x_i^* = \frac{x_i}{\hat{\sigma}_i}$$

$$y_i^* = \beta_1 / \hat{\sigma}_i + \beta_2 x_i^* + \dots \beta_k x_k + \varepsilon_i^* \quad [5]$$

The empirical analysis identifies the variables that make up the basic structure of the micro-credit model, can better influence the probability of default. In light of this goal it is not possible to estimate a linear probability model. This model; in fact, it can give rise to certain difficulties, related to the fact that the expected probability can be less than 0 or greater than 1. The estimating equation [2], using the least squares method, allows to obtain an approximation of the systematic component of y and (y) which coincides with p, the probability associated with the alternative x. In formulas:

$$\hat{p} = b_1 + b_2x_2 + \dots b_kx_k \quad [6]$$

If the model [6] is used to predict the values associated with different values of x, it is possible to obtain negative values of or greater than 1, that have no meaning as probability. In addition to this difficulty, some of the estimates of the variances obtained, by means of the [4] equation may be negative. This problem is mainly caused from the assumption that, for each variation of the variable x is associated with a constant impact on the probability of the variable y. In formulas:

$$\frac{d_p}{d_x} = \beta_2$$

If the above assumption is valid, then when the variable x increases the probability p of the variable y increases at a steady rate. This hypothesis can not find any application since the probability, by definition, can assume values in the range [0,1].

To overcome this problem a nonlinear probit model can be used. This model is characterized by a report, S-shaped, between x and p. Therefore, the direct relation between x and p typical of the linear probability model, is only valid for low values of x. As x increases, p grows but at a less than proportionate rate. The slope of this curve, captured by beta estimated coefficients associated with the explanatory variables, unlike the previous model, is no longer constant.

The non-linear probit model expresses the probability p that y has a value of 1 as a non-linear relationship between p and $\beta_1, \beta_2 \dots \beta_k$:

$$p = P(Z \leq \beta_1 + \beta_2x_2 + \dots \beta_kx_k) = \Phi(\beta_1 + \beta_2x_2 + \dots \beta_kx_k) \quad [7]$$

where:

$$\Phi(z) = P(Z \leq z) = \int_{-\infty}^z \frac{1}{\sqrt{2\pi}} e^{-0.5u^2} du$$

It is the probit function connected to a distribution of standard normal probability.

This model allows us to estimate the marginal effects of a change in x on the probability that $y = 1$ by calculating the first derivative of the equation [7]:

$$\frac{dp}{dx} = \frac{d\Phi(t)}{dt} * \frac{dt}{dx} = \phi(\beta_1 + \beta_2 x)$$

where $t = \beta_1 + \beta_2 x$ and $\phi(\beta_1 + \beta_2 x)$ is the value of the density function of the standard normal distribution associated with $\beta_1 + \beta_2 x$.

In this empirical analysis three probit models were estimated where the dependent variable is a binary variable with the value 0 or 1 depending on whether the loans granted are considered paid or not paid.

The paid loans are those regularly reimbursed at the end of the amortization period. The nonperforming loans are those which, although they have completed the amortization period, have not been repaid to the lender. Therefore, the dependent variable of all three estimated models is a measure of the risk of default defined according to the Basel II. Internal Convergence of Capital Measurement and Capital Standards.

The explanatory variables are the logarithm of the amounts granted, the maximum duration of the loans and dummy expressions of certain features of programs, specifically guarantees (model 1), beneficiaries (model 2) and promoters (model 3). Table 6 below shows the structure of Models.

Model 1

$$P(Z \leq \beta_1 + \log \text{loans } x_2 + \log \text{duration } x_3 + \text{Region } x_4 + \dots \text{Region } x_6 + \text{Guarantees } x_7 + \dots \text{Guarantees } x_{11}) = \Phi(\beta_1 + \log \text{loans } x_2 + \log \text{duration } x_3 + \text{Region } x_4 + \dots \text{Region } x_6 + \text{Guarantees } x_7 + \dots \text{Guarantees } x_{11})$$

Model 2

$$P(Z \leq \beta_1 + \log \text{loans } x_2 + \log \text{duration } x_3 + \text{Region } x_4 + \dots \text{Region } x_6 + \text{Promoters } x_7 + \dots \text{Promoters } x_{11}) = \Phi(\beta_1 + \log \text{loans } x_2 + \log \text{duration } x_3 + \text{Region } x_4 + \dots \text{Region } x_6 + \text{Promoters } x_7 + \dots \text{Promoters } x_{11})$$

Model 3

$$P(Z \leq \beta_1 + \log \text{loans } x_2 + \log \text{duration } x_3 + \text{Region } x_4 + \dots \text{Region } x_6 + \text{Beneficiary } x_7 + \dots \text{Beneficiary } x_9) = \Phi(\beta_1 + \log \text{loans } x_2 + \log \text{duration } x_3 + \text{Region } x_4 + \dots \text{Region } x_6 + \text{Beneficiary } x_7 + \dots \text{Beneficiary } x_9)$$

We also tested the null hypothesis stating that the amounts and duration of microcredit programs have a significant impact on reducing the probability of default of entrepreneurial microcredit programs. These results are not reported in this paper; they are not significant and we are looking for better and sounder explanations.

Table 6: Model 1, 2,3 – Dependent and Explicative Variables

MODEL 1: ANALYSIS OF GUARANTORS (GUARANTEE SYSTEMS)	
<i>Probability of Default: Dependent variable</i>	
<i>Explanatory variable - Guarantees</i>	No guarantor or Beneficiary [No guarantees: (1) guarantee of the beneficiary, (2) internal guarantee of bank-agent, (3) moral or group guarantee] Fund risks internal to the program: (1) Pawn or liquid fund of promoter with multiplicative factor of consistency risks $M = 1$, (2) New fund of promoter with $M > 1$; (3) Fund existing of promoter with $M > 1$ $M =$ multiplier Existing external fund to the program
<i>Explanatory var. – log of maximum amount financed via the programs</i>	Logloans
<i>Explanatory var. – log of maximum duration of programs</i>	Logduration
<i>Explanatory var. –territorial dummies relating to macro region programs</i>	North, Center, South
MODEL 2: ANALYSIS OF THE PROMOTERS	
<i>Probability of Default: Dependent variable</i>	
<i>Explanatory variable: Promoters (1 to 5)</i>	(1) Banking Foundation - (2) Not Banking Foundation- (3) National Bank - (4) Local Authorities (5) Religious Institutions
<i>Explanatory var. –log of maximum amount financed via the programs</i>	Logloans
<i>Explanatory var. –log of maximum duration of programs</i>	Logduration
<i>Explanatory var. –territorial dummies relating to macroregions of programs</i>	North, Center, South
MODEL 3: ANALYSIS OF BENEFICIARIES	
<i>Probability of Default: Dependent variable</i>	
<i>Explanatory variable –Beneficiaries (from 1 to 3)</i>	(1) Individuals- (2) Company- (3) Mixed Programs: both individuals and company
<i>Explanatory variable –logarithm granted maximum amount by the programs</i>	Logloans
<i>Explanatory variable –logarithm maximum duration of programs</i>	Logduration
<i>Explanatory variable –territorial dummy relating to macroregions of programs</i>	North, Center, South

3.3.1 ANALYSIS OF GUARANTEES: MAIN RESULTS

The first empirical analysis was carried out to verify the ability of the guarantor to assess loan credit merit by reducing the default risk of granted loans oriented towards entrepreneurial initiatives. In Table 1 different typologies of guarantors were analyzed.

The rationale of this approach is connected to all inherent risks engendered by the life span of all financial transactions, including microcredit loans, and influenced by the unexpected performance of financial assets. According to the Bank of Italy, microcredit loans are classified in the supervisory retail portfolio by considering the following features:

- The beneficiaries are individuals or small and medium-sized enterprises;
- In the case of a single beneficiary (individual or groups of borrowers) the outstanding amount does not exceed 1% of the volume of the portfolio;
- An individual client (or a group of related customers) can obtain up to 1 million euros from the banks without collateral

Therefore, even in the face of the demand for microcredit, lenders perform an analysis assessing the applicant's ability to be solvent under the agreed terms and thus judgment is passed on creditworthiness. In light of such considerations, the guarantor assumes a key role in the organization of the credit process in advance. The effectiveness of the guarantee is a form of protection for the promoters who usually do not concur with the financing party in the implementation of the various initiatives of microcredit.

They have the burden of certain costs (for example, related to promotional activity) before the start of the microcredit operations. The accuracy of the selection of the beneficiary (the so-called screening) is an expression of the ability of the guarantor to select the best customers, avoiding the incidence of credit loss that would cause an erosion of assets. It must also be monitored in the continuum, in order to adopt pro-active behavior (and, thus, the formation of a capital base in excess) that would allow anti-cyclical measures to anticipate adverse events.

This ability of the guarantor requires interaction, which is not always easy to be realized with the financing party, in order to determine the main economic conditions to be applied to loans (return times, interest rates) and the rules for distribution of the costs of assessment and investigation of requests for credit, guarantees, methods of collection of applications, the non-financial services to offer to the beneficiaries and how they will be funded. Moreover, this ability of the guarantor has difficulty emerging in full, given the nature of the beneficiaries of microcredit initiatives. The reasons are the high variability of income flows (i.e. the small amounts funded) and geo-segmentation (concentration risk).

The granularity (many clients) of the portfolio has both strengths and weakness, among the benefits a greater diversification of the credit risk is a significant point of strength. Additionally a more diversified business base is a good buffer to avoid a higher risk for a single huge financial loan. Among the critical issues we have the erosion of individual loan control caused by the high costs associated with these supervisory activities, a crucial aspect especially during the adverse economic cycle generated by the global crisis of the last few years.

The effectiveness of the explanatory variables on the dependent variable of the model was tested via the Wald test. This test enables one to estimate a vector θ of K parameters $\theta = (\theta_1, \theta_2, \dots, \theta_k)$ maximizing the function of log likelihood:

$$\max_{\theta} \text{Log } L(\theta) = \max_{\theta} \sum_i^N \log L_i(\theta)$$

The goal of the test is to verify the statistical significance of some linear constraints on the parameter vector θ . Such constraints help to formalize the null hypothesis of the test i.e. $H_0: R\theta = q$, where q is a constant column vector of dimension $J \times 1$ and R , the matrix of size $J \times K$.

To avoid the occurrence of multicollinearity between the constraints, it is assumed that the J rows of the matrix R are linearly independent. Therefore, given these assumptions the Wald test to verify whether the difference $R\hat{\theta} - q$ is zero, by using the corresponding asymptotic covariance matrix. The vector $R\hat{\theta}$ of dimension J has a normal asymptotic distribution that can be so formalized:

$$\sqrt{N}(\hat{\theta} - \theta) \Rightarrow \text{Norm}(0, V)$$

Under the null hypothesis $R\theta = q$ and then you can build a test statistic using quadratic form:

$$\xi_w = N(R\hat{\theta} - q)' [R\hat{V}R']^{-1} (R\hat{\theta} - q)$$

Where the accented term \hat{V} is a consistent estimator of V . Under this null hypothesis, this statistic test is distributed as a chi-square with J degrees of freedom. High values of this statistic (p-value associated with very low levels) lead to rejecting the null hypothesis.

The variables regarding the amount and duration of the programs are not significant, even taken together with other features investigated. The first consideration of the estimated probit model is the absence of statistically significant differences regarding the territoriality of microcredit initiatives on the default risk of loans.

These results reflect the homogeneous effects of the financial and real crisis, as well as the related impact of financial and social exclusion in Italy. Poverty and material deprivation are widely present in Italy and the magnitude of the coefficient for the North, Center and South (Table 7) constitutes a clear sign, denoting a homogeneous “borrowers” category throughout Italy: i.e. the unbanked).

The variables indicated as “internal guarantee” and “beneficiary” are statistically significant. This indicates that microcredit programs, not supported by explicit and specific forms of guarantee, were disbursed.

However, in order to reduce the risk of the loans, the borrower may decide to decrease the risk premium of uncollateralised lending through the adoption of appropriate and protective measures. In this case the guarantees take the form of “internal guarantees paid by the promoter”, “sureties paid by the beneficiary” and “moral or network guarantees”.

In the case of internal guarantees, given the small number of loans issued by microcredit, the promoters decided to bear all the credit risk. In our dataset these guarantees are made available mainly by local authorities (88%) and banks (16%). Personal sureties are a prerogative of microcredit initiatives promoted by MAG⁵ (Financial Cooperatives). In this case the decision to grant credit is not taken on the basis of the assessment of asset allocations of beneficiaries, but rather on the assessment of the economic viability of the project and of the existence of a fiduciary relationship between the beneficiary and the lender. In other words, we are dealing with the concept and application of ethical finance used marginally (only 1% of the number of programs launched in 2013 corresponding to a single initiative).

The other two examples of guarantee for the beneficiary were requested by promoters linked to banking (foundations and national banks). The moral or network guarantees indicate that the beneficiaries are members of social networks or organizations likely to take the most diverse forms (local, ethnic communities, centers of various combinations, churches etc.). To be a member of these organizations a kind of internal discipline is required pushing the beneficiary to discharge his obligations, under threat of exclusion from the community.

All other guarantors refer to microcredit programs that have provided for the establishment of internal risk funds to cover unexpected losses on loans.

This guarantee system may occur in three different forms:

1. Risk fund with multiplier $M = 1$ (100% coverage of the financing - no leverage effect).

This fund includes the available resources from the promoters to protect the lenders in the event of non-repayment of the loan (fully or partially) by beneficiaries. In this case the loan is returned wholly to the lender. Thus there is a more than proportionate return of the loan granted in the event of insolvency of the beneficiary, representing a 1 to 1 ratio between the loan and the guarantee by the fund. Thus the multiplier applied to the amount of the fund does not generate the kind of leverage that causes an increase in secured debt.

This type of security is present in 19% of micro-credit programs.

2. Risk fund with multiplier $M > 1$: this type of guarantee is totally absent among the programs monitored. In this case the Credit Guarantee Consortia (Confidi) bear the risk on the financial operation.

These financial operators, as well as local banks (including CCBs) characterized by a strong mutual vocation, are not very competitive in the Italian microcredit market, especially compared to the national banking intermediaries and the private and public authority.

The increased presence of these operators, given their intense relationship with the local areas, would produce a kind of leverage amplification of the amounts guaranteed by the consortia (direct effect) and bank lending (indirect effects), significantly reducing the credit risk of loans issued by microcredit⁶.

3. New “Dedicated” Guarantee Fund with $M > 1$ (Multiplier of the Risk)

This type of guarantee is adopted by 44% of the 57 micro-credit programs for which it was possible to calculate the default rate (i.e. 25 programs) and covers 21% of total volumes delivered (i.e. 10,451,800 thousand

⁵The first financial cooperative MAG, started (1978) in Verona. Today the entities connected to MAGs and Verona are 350, operating in different sectors (farming, hospitality, health and social care, fair trade).

⁶As emphasized by Borgomeo (2013), one single factor should not be applied indiscriminately to all the liability provisions. This observation takes on greater value for Consortia under Article 106 (now Art. 112 of the TUB, introduced by Legislative Decree 141 of 2010) as opposed to the Consortia art. 107 that may have a capital buffer.

euros). For this reason, a higher multiplier was applied to these funds. In other words, this condition is the result of agreements/conventions that the promoters of microcredit grant in order to finance loans amounting to over 100% of the Guarantee Fund and why the programs were implemented. Therefore the resources available to the fund will be used exclusively to cover losses on those loans that meet all the requirements before the program of microcredit and never for those losses from lender to the beneficiary. The available data show that this fund has been used to hedge average minor loans of, on average, 550,094 euros.

TABLE 7: ANALYSIS OF GUARANTEES

DEPENDENT VARIABLE: PROBABILITY OF DEFAULT ⁽¹⁾			
<i>Explanatory variables</i>	<i>Estimates (β)</i>	<i>Robust Standard Error</i>	<i>z-ratio</i>
Logloans	0.288717	0.293642	0.98
Logdurata	0.735105*	0.829769	0.89
North	-5.347962*	1.067089	-5.01
Center	-5.788761*	0.904143	-6.40
South	-5.595133*	1.000006	-5.60
Internal guarantee	-5.482315*	0.536000	-10.23
Religious bodies	-4.718471*	0.875704	-5.39
Private	-5.544597*	0.566713	-9.78
Public	-5.662889*	0.611504	-9.26
Private & Public	-5.923271*	0.875692	-6.76
Beneficiary	-11.11406*	0.559936	-19.85
Constant	5.212696	3.983036	1.31

1) The dependent variable is a dummy that takes the values 0 or 1 according to the probability of performing or not performing loans * The values are significant at a confidence level α of 1%. $\chi^2_{Wald} = 1376.22$, p -value = 0.0000

3.3.2 ANALYSIS OF THE PROMOTERS: MAIN RESULTS

The second probit model relies on the hypothesis to verify the identity of the different micro-entrepreneurial initiatives that promoters may have contributed towards reducing the risk of unexpected losses on loans (and therefore their transformation from regular to non performing loans).

Also in this case the Wald test statistic corroborating the existence of impacts produced by some of the characteristics of the monitored microcredit programs on their default risk is statically significant.

Similar considerations to those regarding the first model are related to the effects of environmental variables on the risk of default of microcredit initiatives (Table 8).

Of all the promoters of entrepreneurial microcredit programs only national banks can reduce the risk of default of loans granted. All other programs are characterized by an increase in credit risk. This result indicates a weakness shared by the majority of microcredit initiatives launched in Italy over the last 10 years and concerns the poor competitiveness of the promoters in the preparation of accurate and tutoring services. As evidenced by Corigliano and Torluccio (2014): "such services must necessarily be matched to financial services in order to avoid the risk that microcredit will become a form of subsidy irresponsible" (Table 7).

Especially with reference to the sector of entrepreneurial microcredit, these services play an important role since they work as a form of life-insurance-financed initiative and increase the probability of paying back the loans.

The program promoters are committed to offering advice and assistance to the beneficiaries through the work of its volunteers; these services begin and continue at all stages, from the request to comply with the practice of financing up to the accompaniment, to their eventual closure.

Corigliano and Torluccio (2014) and Santangelo 2013⁷ describe how these auxiliary services help the banks to make as complete a judgment as possible regarding the reliability and correctness of the applicant. Therefore, such activities represent a useful moral guarantee to the clients

However, these services are not enough to ensure the success of the initiative of entrepreneurial microcredit especially when they aim to finance start-up; they depend on the ability of new entrepreneurs to avoid errors in the start-up phase (the first two years are characterized by high mortality). These initial services must necessarily be

⁷ Santangelo (2013) proposes as an example of such services: orientation to the loan, start the enterprise, business management assistance, financial education, counselling on debt.

accompanied by tutoring services/technical support to simplify the management of relations with suppliers, customers and also the banking system.

According to the survey by Microcredit National Agency (2013), for the year 2012, the services of technical assistance to the beneficiaries of microcredit are the most widespread and on average only 13, 2% of microcredit initiatives undertaken in Italy do not offer these services.

The tutoring services were absent for less than a quarter of the total of the initiatives started and were characterized by a greater spread in the “mixed”, social purpose and entrepreneurial programs than in microcredit programs aimed exclusively at the creation of new firms. The training services providing advice in the use of money are the rarest (27.4% of microcredit programs) and they are often aimed at a minority of beneficiaries.

Another reason for the scarce significance of the results from all the other promoters can be traced to the absence of a provision for a pre-existing risk fund among the guarantees, to be applied where a state of insolvency of loans is manifested. The presence of this fund would reduce to zero the difficulty of financing these tutoring services, allowing promoters to commit fewer resources to provide guarantees to banks. There is a problem of financial sustainability of these non-financial services offering technical assistance and mentoring. To solve these problems of financial sustainability, institutional organizations such as Confidi in Italy could offer non expensive consulting services.

Another issue that distinguishes the microcredit sector in Italy is the absence of a public policy regulating this segment of the credit market. No assistance and mentoring programs are available for microcredit programs. A more diffuse distribution of this activity in this case would permit the smoothing out of all transaction costs in financial operations by reducing the unit cost of its supply. The introduction of new regulation for micro enterprise could also remedy a problem of skills shortage for the promoters. in this direction is the Article 111 of the Banking Law, in particular with the subjects who can professionally deliver microcredit initiatives.

TABLE 8: ANALYSIS OF PROMOTERS

DEPENDENT VARIABLE: DEFAULT ⁽¹⁾			
<i>Explanatory variables</i>	<i>Estimates (β)</i>	<i>Robust Standard Error</i>	<i>z-ratio</i>
Logloans	0.209127	.3000893	0.70
Logdurata	1.077062	.8067585	1.34
North	-4.97441*	.8705478	-5.71
Center	-5.27481*	.7549995	-6.99
South	-5.163606*	.7864026	-6.57
Banking Foundation	.3926546*	.6893781	0.57
Non-Banking Foundation	.9824255*	.7556085	1.30
National Bank	-4.491264*	.8283162	-5.42
Local Entity	.1296063*	.6008603	0.22
Religious Entity	1.358556*	.8206619	1.66
Constant	-1.73283	4.006003	-0.43

1) The dependent variable is a dummy that takes the values 0 or 1, * The values are significant at a confidence level α of 1%. $\chi_{Wald}^2 = 346.87$, $p\text{-value} = 0.0000$

3.3.3 ANALYSIS OF BENEFICIARIES: MAIN RESULTS

The third and final probit model meets the objective of verifying whether there are statistically significant differences in terms of risk of default of programs depending on the identity of the beneficiary.

The Wald test is statistically significant at a confidence level of 1%, confirming the model's ability to grasp significant correlations between the explanatory variables and the dependent variable.

Also for this model the credit risk of microcredit programs is not determined by local factors, as the three dummy variables North, Center and South indicate. The absence of spatial differences seems to be caused by the intrinsic homogeneity of the borrower (social and economic vulnerability), at this stage a uniform category in the Italian situation. We argue that this phenomenon is also the result of the available current dataset.

For none of the separate programs for beneficiaries could statically significant negative correlation with the risk of default be observed (Table 9).It is likely, in our opinion, that in future years, there might be a reversal of this result, given that the new regulation (art.111 Italian Banking Law), Microcredit does not include the following cases:

- funding aimed at the self-employed or independent businesses registered for VAT for more than five years,
- self-employed or individual firms with more than 5 employees, companies with more than 10 employees

This trend shows the orientation of legislation to facilitate access to credit through customers who do not really have guarantees. Currently, as emerges from the results of the Microcredit National Agency (2013), loans were also assigned to a small portion of bankable subjects (12.8%).

Corigliano and Torluccio (2014) suggest four possible channels of dissemination of services:

- First mode: there are no other ancillary services in addition to credit because the beneficiary has a high degree of self-sufficiency. This is the case of microcredit initiatives undertaken in the region of Lazio;

- Second mode: the promoter who takes charge of delivering such services with the beneficiary of microcredit and promoting continuous interaction with the latter, also after the delivery. Umbria, Basilicata and Campania apply this method.

- Third mode: a systemic networking of all local professional profiles via a real network. Again referring to the National Agency for Microcredit (2013) this mode of supply of microcredit is present in Apulia, Calabria and Piedmont;

- Fourth mode: The ability to identify highly specialized profiles is crucial to the success of the microcredit financing scheme. The Marche region represents the Italian instance.

The last two modes may be the solution to the lack of self-sufficiency of the first two emerging from the results of the last two empirical analyses.

Again in favor of nationally cooperative microcredit are Achilli (2015) and the Microcredit National Agency (2013). Their opinion is in favor of the establishment of a Single National Fund of microcredit, divided into two sections, one for individuals with social purpose and one for firms. This fund would be managed by selected professional staff on the basis of capacity and dimensional skills. The provision would also allow the expansion of the initiatives funded annually (between 8,000 and 20,000) thanks to the application of an average multiplier of 2.

This would also boost the employment impact in the area (between 19,000 and 49,000 units annually). All other operators enrolled in an official list, supervised by the Bank of Italy, should act as territorial and sectoral branches of the Unique National Fund, promoting a widespread distribution of microcredit throughout the country and avoiding a waste of resources.

The results of the last two analyses show a certain backwardness of both the promoters and beneficiaries in their approach to the provision of auxiliary services of assistance and tutoring. The results are perfectly in line with the conclusions by the National Agency for Microcredit (2013), through a survey conducted in 2012 aimed at assessing the impact of this instrument on employment and social integration.

This survey focused on beneficiaries who, two years before, had had access to microcredit programs active in Objective Convergence Regions (Calabria, Campania, Apulia and Sicily). According to this work, on average, 84.4% of the beneficiaries assess the support services as adequate, along with assistance in formulating the demand for microcredit services and 65.6% in support and mentoring after delivery of loans. These satisfaction rates fell dramatically for support and assistance services finding or creating jobs (9.4%).

TABLE 9: ANALYSIS OF BENEFICIARIES

DEPENDENT VARIABLE: DEFAULT ⁽¹⁾			
<i>Explanatory variables</i>	<i>Estimates (β)</i>	<i>Robust Standard Error</i>	<i>z-ratio</i>
Logloans	0.152511	0.2643053	0.58
Logdurata	0.5384211	0.7171837	0.75
North	- 4.654448*	0.5071978	-9.18
Center	-5.084552*	0.4223757	-12.04
South	- 4.995054*	0.3256851	-15.34
Individuals	4.708623*	0.9427467	4.99
Company	4.848627*	0.9883281	4.91
Individuals & Company	5.136529*	0.8333617	6.16
Constant	- 3.731917	3.221883	-1.16

1) The dependent variable is a dummy that takes the values 0 or 1, * The values are significant at a confidence level α of 1%. $\chi_{Wald}^2 = 594.91$, $p\text{-value} = 0.0000$

4.CONCLUSIONS

The default rates of microcredit programs highlighted the fact that distinctive features of the CCBs and the local banks, such as relationship lending, local interaction, the increased availability of soft information, the mutual approach, an efficient organizational structure with few hierarchical levels, may represent the strategic leverage in order to ensure a greater presence of these banks in the field of microcredit and microfinance.

The relational approach, as opposed to “transaction lending” of large banks, can facilitate the management of microcredit initiatives that are so different as to be difficult to standardize. The methodologies of credit scoring used by commercial banks that privilege hard information should be updated frequently to represent the real situation of the client's solvency in a changing business environment.

The availability of qualitative (soft) information, thanks to the close proximity of the decision-making centers to the customers, may reduce that critical point. Therefore, we need a strengthening of methodology scoring by integrating the qualitative (“soft”) and quantitative (“hard”) data.

The social dimension of microcredit, for example the loan lending group, the reputation of the beneficiary lending small amounts, implies a high probability of future demand for other loans, which, if considered individually, would not be able to give an exhaustive interpretation of the outcomes generated by microcredit lending.

The intensity of the relationship lending is facilitated by the frequency of (usually monthly) repayment of microloans (both principal and interest). This natural tendency of local banks in general, including the CCBs, is also demonstrated by qualitative analysis of the Microcredit National Agency (2013) in collaboration with the Italian Banking Association (ABI), using two focus groups, one in 2010 to 8 National Banks and the other in 2012 to 17 Regional Federation of Cooperative Credit Banks.

In order to promote more wide-ranging development of microcredit, the importance of guarantees to mitigate credit risk (in particular the creation of a Central Guarantee Fund and a Private Guarantee Funds) is considered fundamental to all types of financial institutions at the national and local level.

This finding is consistent with the diffusion of microcredit guarantees in Europe, as highlighted by Jayo et al. 2010. According to these authors, contrary to the general idea that microcredit is not backed by collateral, in Europe, about the 41% of microloans are guaranteed. The presence of third parties which raise capital from interested investors in this segment of the credit market and make it available for the microcredit promoters.

This finding is consistent with the empirical analysis on the guarantees. Other key factors are the development of a specific designed scoring system for microcredit clients and the increased promotion of auxiliary services for borrowers to support all grants. Therefore it is necessary to conduct a study and calibration of the criteria to be used for the assessment of credit risk with the dual objective of not penalizing beneficiaries and at the same time safeguard the stability of the intermediary, avoiding to the latter to take on too much risk.

National banks seem oriented towards the implementation of new scoring systems while the CCBs are more focused on the network condition to develop a social model of microcredit.

The initiatives of microcredit facilitate the creation of social capital, because the beneficiaries of these programs are encouraged to take part in regular (weekly) meetings with members of other groups and program staff following a peer monitoring approach.

These regular meetings help program members to propose community development projects that are more effective than in contexts where the intervention of microfinance is manifest. In addition, the beneficiaries often receive ancillary services such as training or technical assistance to support the financial initiatives.

The last two empirical analyses indicated in the paper, suggest that the inability of both the promoters (the supply side) and beneficiaries (the demand side) to provide ancillary services for the provision of credit represent a problem for microcredit. A possible strategy for addressing these critical issues is to promote a cooperative attitude among various initiatives based on a Single National Fund.

A final point. We are also testing the determinants of the microcredit projects default rate, considering the territorial context in which they are used, the characteristics of the loans (in terms of duration and amount) and those of recipient subjects. This analysis shows, territorially, that the default rates registered no significant differences between the geographical areas of the North, Center and South.

A possible explanation is that these initiatives tend to involve borrowers with relatively homogeneous characteristics, at this stage unrelated to any territorial differences, and therefore future legislation should consider general and codified rules oriented to a more efficient way of making credit available to unbanked people in Italy.

In addition, with more specific data it will be possible to understand better the Italian evolution of microcredit , which already reflects a different characterization in comparison to the European scheme.

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APPENDIX

Table 1

Object	Beneficiaries	Operators
<ul style="list-style-type: none">• amount not exceeding € 25,000• No collateral• Financing of start-up or development of entrepreneurial activities, inclusion in the labor market or remuneration employees or members• Maximum duration 7 years• Quarterly repayment• The same beneficiary may obtain a second loan• auxiliary support services and monitoring of financed subjects	<ul style="list-style-type: none">• Autonomous workers• Individual firm• Micro-businesses: individual firm, people's society, simplified Srl, cooperative society	<ul style="list-style-type: none">• Microcredit operators: stock company, limited partnership with a share capital, limited liability company, cooperative society• Casse Peota• Mutual funds• Banks and other financial intermediaries• Service providers

Source: Our elaboration from La Torre (2015)