

The financing of small entrepreneurs in Italy

Silvia Magri

Received: 15 January 2008 / Accepted: 11 November 2008 / Published online: 12 December 2008
© Springer-Verlag 2008

Abstract This paper focuses on the financing of very small entrepreneurs in Italy by using data in the Survey of Household Income and Wealth. In the period 1989–2006 only a little more than one fourth of these micro-firms used bank loans for business purposes. Supply factors may have played a role in explaining this low usage of bank loans. In this paper I look at what happens after the deregulation and innovation that started in the Italian credit market during the 1990s. Financial constraints appear to have partly lessened in the current decade. Specifically, the North/South divide is fading a little: the negative direct effect on the probability of having a bank loan for a firm located in a Southern region is less strong. However, business location still plays an important role in the process of credit allocation, though indirectly through a greater sensitivity to proxies of internal finance for small entrepreneurs located in regions that are less financially developed.

Keywords Entrepreneurship · Credit allocation · Household wealth

JEL Classification D13 · E21 · L26

I wish to thank Mariacristina De Nardi, Giorgio Gobbi, Anne Villamil, and an anonymous referee for their valuable comments. The opinions expressed do not necessarily reflect the views of the Bank of Italy.

S. Magri (✉)
Department for Structural Economic Analysis,
Financial Structures and Intermediaries Division,
Bank of Italy, Rome, Italy
e-mail: silvia.magri@bancaditalia.it

1 Introduction

Small entrepreneurs in Italy are very important to the economy, because they account for a larger share of GDP and total employment than in other countries. According to statistics collected by Eurostat, in 2004 the share of micro-firms (1–9 employees) in total value added was 30.8% in Italy, compared with 15.6% in Germany, 19.4% in France, and 17.8% in the UK; the corresponding shares referring to numbers of employees were 46.9% in Italy, 19.2% in Germany, 23.6% in France, and 21.1% in the UK.¹

The aim of this paper is to shed some light on the financial resources mainly used by small Italian entrepreneurs, both in their initial decision to become sole proprietors and in financing their everyday activity. The literature of reference is that concerned with the importance of personal wealth and saving in the decision to become an entrepreneur (Evans and Jovanovic 1989; Evans and Leighton 1989; Fairlie 1999; Holtz-Eakin et al. 1994a,b; Blanchflower and Oswald 1998; Gentry and Hubbard 2004; Hurst and Lusardi 2004; Caggetti and De Nardi 2006; Fairlie and Krashinsky 2006) and with the allocation of credit to very small entrepreneurs (Avery et al. 1998; Berger and Udell 1998; Campbell and De Nardi 2007).

In general, the information about the financial structure of very small entrepreneurs is scant due to the lack of data. The Survey of Household Income and Wealth (SHIW) on Italian households offers a unique opportunity to shed light on this issue. Unlike many other household surveys, the SHIW contains some questions about the use of bank loans for business purposes. The median number of people working in the firms surveyed in the SHIW is 2, while the average is 4. The sample is therefore perfect to capture the Italian micro-firms.

I find that in the period 1989–2006 roughly one fourth of small entrepreneurs use bank loans for business purposes; 20% borrow long-term bank loans.² Furthermore, new small entrepreneurs are much richer, before starting the entrepreneurial activity, than people who stay employees, an indication that being wealthy could be an important determinant of the decision to become an entrepreneur.

When analyzing these figures one question naturally arises, i.e., whether the low use of external finance among small entrepreneurs in Italy is due to some financing constraints. To disentangle demand and supply factors explaining the low use of credit

¹ In this paper, I do not want to dwell on the reasons for such a large presence of small entrepreneurs in Italy. Some studies discuss the importance of the law, both employment protection legislation, which is different between small and large firms, and fiscal legislation. Schivardi and Torrini (2004) show that the Italian employment protection legislation does influence firm size distribution, though its effects are quantitatively modest. Torrini (2004) analyzes a group of countries and argues that the higher percentage of self-employment in some countries can be partially explained by fiscal reasons: higher tax evasion opportunities have a positive effect on self-employment.

² These shares are quite small even when compared to those referring to only slightly larger firms: using the Survey of Manufacturing Firms (SMF), Guiso (2003) finds that at the end of the 1990s the fraction of Italian firms with fewer than 30 employees and with bank loans is double, around 53%; one fourth of these firms use long-term bank loans. Among firms with a number of employees between 30 and 99, the corresponding fractions increase to 80 and 51%, respectively.

among small Italian entrepreneurs is a difficult task, because we only observe the outcome of the process of credit allocation. The strategy followed in this paper is to look at what happened after the deregulation and innovation processes in the Italian credit market, which essentially started in the 1990s. The idea is that if some financial constraints existed in the previous decade, they should have lessened in the current decade. After the 1993 Banking Law, Italian banks widened their activities considerably following the introduction of the universal bank model: this enlarged the range of products offered by banks and also resulted in increased competition in the Italian credit market; this deregulation process was accompanied by a consolidation process, which significantly reduced the number of Italian banks. Finally, as in other countries, some important innovations also influenced the Italian credit market, such as the increasing use of credit scoring in small business lending, which greatly affected the underwriting of loans (Frame et al. 2001; Berger et al. 2005; Bofondi and Lotti 2006; Albareto et al. 2008).

In order to implement this strategy, the whole period under consideration (1989–2006) is split into two sub-periods: the first is 1989–1998 and the second is 2000–2006. First of all, I analyze credit rationing by looking at the fraction of entrepreneurs that have applied for a loan and have been turned down by lenders. The evidence is that by the most recent years (2000–2006), credit rationing had significantly decreased among small Italian entrepreneurs.

Following the same two-period strategy, I do a second type of analysis aimed at understanding whether and in what way the process of credit allocation to small entrepreneurs has changed in the most recent period. I analyze first the importance of personal wealth in the decision to become an entrepreneur and then the probability of having a bank loan. There are some indications of a reduction in credit market imperfections in the current decade. Personal wealth is less important for the probability to become an entrepreneur. In addition, there appear to be more similarities between North and South in the process of credit allocation. A possible explanation is that an increasing use of credit scoring by lenders should have enhanced the importance of the specific business characteristics in the underwriting process of the loan and reduced that of the more general background risk of the firm, mainly captured by the area where the business is located.

However, the indirect effect of business location has become important in the current decade: new small entrepreneurs located in Southern regions or in regions that are less financially developed seem more sensitive to proxies of internal finance. It could be that these higher-risk sole proprietors are more likely to obtain credit, but at a higher price; this can explain their stronger sensitivity to proxies of internal finance.

The paper proceeds as follows. Section 2 dwells on the definition of small entrepreneur, describes the two samples used in the analysis, and presents some statistics referring to the use of bank loans for business purposes. Section 3 contains the evidence on credit rationing. Section 4 reports the results of the estimations of the probability to become an entrepreneur and of having a bank loan for new small entrepreneurs. Section 5 concludes with some final remarks about the interpretation of the results.

2 The definition of entrepreneur and some descriptive statistics

In this paper I use the waves since 1989–2006 of the Survey of Household Income and Wealth, run every 2 years by the Bank of Italy.³ The Survey is rich with information on the social, demographic, and economic characteristics of households. Data on entrepreneurial businesses are also provided, including the use of bank loans and the value of the business.⁴

2.1 The sample of all small entrepreneurs

In the analysis carried out in this paper the definition of entrepreneur is crucial. I include in the group sole proprietors, owners or members of a family business, and active shareholders and partners. Given the focus on the access to capital and on the importance of external financial resources, initial capital requirements need to be non-trivial. Therefore, the preferred definition is the one that considers only those entrepreneurs who declare a positive value for their business, so as to isolate those who make significant up-front investments in their businesses (Gentry and Hubbard 2004).⁵ The fraction of working age (18–65) households that are entrepreneurs with positive business values out of the working age households is 22.4% (8,109 observations). As in the United States (Quadrini 1999), Italian entrepreneurs hold a high share of total net wealth (42.8%).⁶

This is the sample used in the first analysis in Sect. 3 regarding credit rationing. This analysis concerns only loan applicants and refers to all small entrepreneurs to maximize sample size.

2.2 The sample of new small entrepreneurs

Similarly to what has been done in other empirical papers (Hurst and Lusardi 2004), I analyze a sample of households that are in two consecutive waves of the SHIW and are not entrepreneurs in the first period considered. I define a new entrepreneur as a household that becomes an entrepreneur in the subsequent period. In order to increase the number of observations, I pool all the samples obtained by considering pairs of different waves of the SHIW (1989–1991, 1991–1993, 1993–1995, 1995–1998,

³ The survey is run biennially, though the 1998 SHIW is 3 years apart from the previous one.

⁴ For more details on the SHIW see <http://www.bancaditalia.it/statistiche/indcamp/bilfait> and for a comparison between the SHIW, National Accounts and Financial Accounts see the Methodological Notes in *Supplements to the Statistical Bulletin* (2008).

⁵ Berger and Udell (1998) also argue that bank lending would typically not be available to small businesses until they have some assets that might be pledged as collateral, such as inventory and equipment; this implies a positive business value.

⁶ Retirees are also excluded. The unit of analysis is the household. If the head is an entrepreneur, his personal characteristics are considered and used in the statistics and estimations. If the head of the household is not an entrepreneur, the characteristics of any other member of the household who declares he or she is an entrepreneur are taken into the analysis; generally, this person is the spouse, much less frequently a son or daughter.

Table 1 Descriptive statistics for new small entrepreneurs (average values)

Variables	Whole sample (<i>N</i> = 11,831)	Staying wage earners <i>A</i> (<i>N</i> = 11,045)	New entre- preneurs <i>B</i> (<i>N</i> = 786)	<i>P</i> value of the difference (<i>A</i> − <i>B</i> = 0)
Becoming an entrepreneur (dummy)	0.073			
Becoming an entrepreneur 1989–1998	0.073			
Becoming an entrepreneur 2000–2006	0.071			
Value of the business (000€)			65.4	
No. of employees			4.0	
Age	42.4	42.3	43.3	0.058
High School (dummy)	0.373	0.374	0.363	0.651
Graduate (dummy)	0.124	0.129	0.061	0.000
Unemployed (dummy)	0.037	0.038	0.019	0.001
Married (dummy)	0.796	0.796	0.798	0.915
Male (dummy)	0.774	0.769	0.836	0.000
No. of children	0.924	0.933	0.811	0.008
Hs. non-business net wealth (000€)	120.0	116.2	168.3	0.000
Hs. labor income (000€)	19.3	19.2	20.2	0.100
Self-employed parents (dummy)	0.397	0.386	0.541	0.000
	(<i>N</i> = 10,384)	(<i>N</i> = 9,683)	(<i>N</i> = 701)	
Graduate parents (dummy)	0.059	0.060	0.048	0.303
	(<i>N</i> = 10,136)	(<i>N</i> = 9,446)	(<i>N</i> = 690)	
Previous self-employed (dummy)	0.113	0.089	0.425	0.000
	(<i>N</i> = 5,817)	(<i>N</i> = 5,424)	(<i>N</i> = 393)	
Absolute risk aversion	0.153	0.153	0.150	0.589
	(<i>N</i> = 2,291)	(<i>N</i> = 2,142)	(<i>N</i> = 149)	

Source: the sample is obtained considering in pairs different waves of the SHIW (1989–1991 1991–1993, 1993–1995, 1995–1998, 1998–2000, 2000–2002, 2002–2004, 2004–2006). All households that in the first period are not entrepreneurs, according to the definition in Sect. 2, are considered. New entrepreneurs become entrepreneurs in the second period. Staying wage earners do not become entrepreneurs in the second period. Hs. is household. Data are weighted using SHIW sampling weights. All the nominal variables are expressed at 1995 prices. The value of the business excludes the value of the firm for active shareholders and partners. The last four variables are available for a fewer number of observations because they are present only in selected years

1998–2000, 2000–2002, 2002–2004, 2004–2006). The final sample is made up of 11,831 observations. The percentage of households that become entrepreneurs in the pooled sample is equal to 7.3% (786 observations); this percentage does not change over the two sub-periods analyzed (1989–1998 and 2000–2006, Table 1).

This is the sample used in the second analysis contained in this paper, concerning the process of credit allocation and presented in Sect. 4. The probability to become an entrepreneur can be calculated only for this sample. In addition, given that most business loans are long-term loans, probably lasting for a long time in an incumbent firm, the changes in the Italian credit market are more likely to affect new entrepreneurs than existing firms.

Table 1 highlights some differences between new entrepreneurs and people who stay wage earners. New small entrepreneurs are less likely to be graduate or unemployed, are more frequently male, and have fewer children; they are more likely to have grown up in a family of entrepreneurs or self-employed and to have had previous experience in this field. Regarding the focus of this paper, it is worth underlining that new small entrepreneurs have a higher household non-business net wealth, before becoming entrepreneurs, than people who stay wage earners: expressed in 1995 prices, the average value of non-business wealth is around 168,300 euros for them versus 116,200€ for people who stay wage earners. Therefore, at first glance, it appears that wealthy people are more likely to become entrepreneurs.

2.3 Statistics on the use of bank loans for business purposes

In the SHIW, households are asked about the amount of long-term bank loans to finance either buildings or investments, the amount of short-term bank loans for business purposes, and the amount of trade debt and credit. Table 2 contains some statistics on the use of bank loans among new small entrepreneurs; the evidence is similar for the sample of all small entrepreneurs. It turns out that among the 623 new small entrepreneurs who answer the question about debt, the frequency of credit for business purposes is quite small. Over the period 1989–2006 only 28.8% of new small entrepreneurs have bank loans and this share decreased from 32.8% in 1989–1998 to 23.3% in 2000–2006;⁷ 21.1% of new small entrepreneurs have long-term bank loans and this share does not change significantly over time. About 10% rely only on trade debt as a source of external finance and this frequency has also decreased remarkably in the current decade. The remaining small entrepreneurs, more than 60%, use only internal finance to run their businesses.

Table 2 The use of business debt by new small entrepreneurs

Period	Percentage of entrepreneurs with debt	Percentage of entrepreneurs with bank loans	Percentage of entrepreneurs with long-term bank loans	Percentage of entrepreneurs with only trade debt
All periods	38.5	28.8	21.1	9.6
1989–1998	47.2	32.8	23.8	14.4
2000–2006	26.4	23.3	17.3	3.1
Test <i>P</i> value	0.000	0.071	0.153	0.000

Source: calculations using 623 observations of new working age (18–65) entrepreneurs with non-missing debt, extracted from each pair of the 1989–2006 surveys of the SHIW. Data are weighted using SHIW sampling weights. The *P* value is for a test of the significance of the difference between the percentages calculated over the two periods

⁷ The only difference for the sample of all small entrepreneurs is that when comparing the two sub-periods, there is no change in the percentage of small entrepreneurs using bank debt for business purposes.

Table 3 presents the distribution of some components of net business wealth for new small entrepreneurs. Consistently with the previous table, the median value of bank loans for business purposes is equal to 0; similarly for debt net of trade credit (net debt). Consequently, the value of business equity, calculated as the difference between the value of the business and net debt, accounts for a large part of the amount of household net wealth available for investments (i.e., excluding from wealth the value of the primary residence). The median business equity is 20,603€ and the median net wealth available for investments is 59,063€ (at 1995 prices): the former, therefore, accounts for a share of about one third.⁸ Overall, the wealth portfolio of small entrepreneurs is biased toward their businesses: a remarkable amount of wealth, which can be invested either in real or financial assets, is actually used in the entrepreneurial activity. It is therefore not completely unlikely that some households would prefer a higher level of external financing, at reasonable prices, to run their businesses, in order to increase the diversification of their wealth portfolio and decrease the idiosyncratic risk connected with their business (Gentry and Hubbard 2004).^{9, 10}

Understanding the reasons for this low usage of credit among small Italian entrepreneurs is an interesting, though difficult task. The following sections shed light on this issue.

3 Credit rationing among all small entrepreneurs

In this section I want to exploit one question that is asked in the SHIW about credit rationing to single out whether supply reasons could be at work in explaining the low use of business debt. The wording of the question is “In the past year, did your household apply to a bank or a financial company for a loan or mortgage?”. The other

⁸ The median value of the ratios between business equity and investable net wealth, which tells us more about the typical family, is about 55%. Business equity accounts for a large part of investable net wealth even for the richest new small entrepreneurs: considering the mean values, business equity accounts for roughly 40%. Even for these statistics the evidence is similar for the sample of all small entrepreneurs: the value of wealth components are higher, though the ratios of business equity to investable wealth are similar.

⁹ These results are partially in line with the evidence in Campbell and De Nardi (2007). For the U.S., they consider new entrepreneurs at an earlier stage than those analyzed in this paper: if revenues cover the costs for salaries, this is considered an established business and excluded from the Panel Study of Entrepreneurial Dynamics used in their analysis. Most new entrepreneurs have saved to start their business and the vast majority have invested their own money. The informal credit market is the first source of external funds, with more than 40% of new entrepreneurs asking for such loans. Only 25% of male new entrepreneurs (16% for female new entrepreneurs) apply for formal business loans; in this case the rates of rejection are higher than for informal loans: for example for banks it is around 50% for men and 30% for women. Roughly half of male new entrepreneurs believe that their firm is not yet big enough to attract funding from the established financial community.

¹⁰ The amount of business equity for Italian new small entrepreneurs is not too different from that cited by Hurst and Lusardi (2006) for the U.S. Using the National Survey of Small Business Finances (NSSBF), they find that for small entrepreneurs in the U.S. during the 1980s, the median equity invested in the business was around \$34,600 (at 1996 prices) and for newly created businesses was \$22,700. They argue that this is a very low amount and, though they do not have data separately for business debt and assets in the household survey they use for their analysis (the Panel Study of Income Dynamics), they reckon that this low amount of capital required to start a business is probably due to the large presence among firms of bank loans in many different forms, on the basis of some statistics reported from the NSSBF. As shown before, this is not the case for Italian entrepreneurs.

Table 3 Distribution of some components of net business wealth for new small entrepreneurs (data in euros; 1995 prices)

Distribution	Value of the business	Total debt	Bank loans	Net debt (total debt-trade credits)	Business equity	Net wealth excluding house of residence
10 Percentile	2,747	0	0	-1,245	385	9,157
25 Percentile	8,019	0	0	0	6,785	19,793
50 Percentile	28,273	0	0	0	20,603	59,063
75 Percentile	77,041	4,773	2,066	3,099	62,051	171,993
90 Percentile	137,356	23,241	23,112	22,893	129,114	357,398
99 Percentile	616,333	154,083	104,250	130,054	491,945	1,075,110
Mean	65,408	10,015	6,910	7,148	56,026	144,011
No. observations	575	623	623	621	559	786

Source: calculations using observations of new working age (18–65) entrepreneurs extracted from each pair of the 1989–2006 surveys of the SHIW. Data are weighted using SHIW sampling weights. The value of the business does not include the market value of the shares in the firm held by active shareholders and partners. Net debt can be negative as it is the sum of short- and long-term debt (bank and trade debt) net of trade credit. Business equity is the difference between the value of the business and net debt

question is “Was the application granted in full, in part or rejected?”. This question refers to households applying for a loan in each year under analysis in the survey and hence it allows one to verify changes in lenders’ attitude over time.¹¹ Even though this question is asked only regarding loans unrelated to business, it can shed some light on the issue under analysis in this paper. Loans related and unrelated to business are likely to be more interchangeable for small entrepreneurs. Specifically, small entrepreneurs in Italy cannot go bankrupt, unlike larger companies;¹² therefore, they do not have any specific form of exit/protection, like going bankrupt in case of difficulty in paying back the loan, when asking for loans related to business. They could hence be more likely to ask for a more general loan related to consumer purposes, even to finance entrepreneurial activity. It is also worth keeping in mind that this is an extreme form of credit rationing because banks act directly on the quantity of the loan granted. Being out of the credit market can also be the consequence of overly strict terms of credit required by lenders, especially too high interest rates, which actually induce firms to refuse to borrow and to rely on internal financial sources. I will come back to this point in the following sections.

Table 4 refers to a sample of 42,619 observations of the working age population; the group of all small entrepreneurs as defined in Sect. 2 is made up of 8,109 observations. The table reports the average values of many household characteristics across three different groups of workers, i.e., employees, small entrepreneurs, and professionals. What I want to highlight in this table are the results on credit rationing in the bottom third of the table. The evidence is that the probability of being rationed in the credit

¹¹ The first question is not available for the SHIW in 1991 and 1993.

¹² This was true in the period under analysis; in 2006, a new law came into force allowing bankruptcy for small entrepreneurs above a specific size threshold.

Table 4 Descriptive statistics for different types of workers (average values)

Variables	Employees A (<i>N</i> =25,777)	Small entre- preneurs B (<i>N</i> =8,109)	Profes- sionals C (<i>N</i> =1,352)	<i>P</i> value difference (<i>A</i> − <i>B</i> = 0)	<i>P</i> value difference (<i>B</i> − <i>C</i> = 0)
Age	42.6	44.1	41.6	0.000	0.000
High School (dummy)	0.38	0.33	0.41	0.000	0.000
Graduate (dummy)	0.11	0.04	0.49	0.000	0.000
Married (dummy)	0.78	0.79	0.66	0.220	0.000
Male (dummy)	0.80	0.81	0.80	0.648	0.885
No. of children	0.86	0.74	0.69	0.000	0.221
Hs. non-business net wealth (000€)	106.5	197.2	250.0	0.000	0.000
Hs. labor income (000€)	20.0	23.3	30.0	0.000	0.000
Debt for personal reasons (dummy)	0.29	0.25	0.34	0.000	0.000
Debt for per.reasons 1989–1998	0.28	0.23	0.29	0.000	0.030
Debt for per.reasons 1998–2006	0.32	0.29	0.38	0.027	0.001
Ask for a loan for personal reasons (dummy)	0.08	0.08	0.07	0.647	0.143
Rationing on debt for personal reasons (dummy)	0.10	0.13	0.06	0.224	0.049
Rationing on debt for personal reasons (1989–1998) 1 <i>P</i>	0.08	0.16	0.05	0.034	0.020
Rationing on debt for personal reasons (2000–2006) 2 <i>P</i>	0.11	0.09	0.06	0.482	0.593
Test <i>P</i> value difference 1 <i>P</i> − 2 <i>P</i>	0.266	0.073	0.824		

Source: calculations using 42,619 observations for working age (18–65) households from the pooled data of the SHIW 1989–2006; the residual group is made of people not working or self-employed with non-positive business values. Hs. is household. Data are weighted using SHIW sampling weights. All the nominal variables are expressed at 1995 prices. Rationing is conditional on applying for a loan

market, when asking for a loan, was higher for small entrepreneurs than for employees and professionals. This was true only in the first period under analysis (1989–1998): the share of households that have been rationed, conditional on demanding a loan for personal reasons, was 16% among small entrepreneurs versus 8% among employees and 5% for professionals; these differences are statistically significant. In the second period (2000–2006), the share of rationed households is more similar across the three groups of workers. Moreover, over the two sub-periods, the reduction in credit rationing, conditional on demanding a loan, is significant only for small entrepreneurs (from 16 to 9%, *P* value of the test in the last row of Table 4). The same table also shows that the share of households with loans unrelated to business, i.e., for personal reasons, is lower among small entrepreneurs: 25 versus 29% for employees and 34% for professionals. This happens even though the share of households asking for a loan for personal reasons is similar, at around 8%, across the three different groups of workers.

In order to verify in a multivariate framework the robustness of the reduction in credit rationing for small entrepreneurs in the period 2000–2006, compared to the

previous one, Table 5 presents some probit estimations on the pooled sample of 1989–2006 SHIW.¹³ Column 2 reports an estimation for the probability of being rationed, conditional on demanding a loan unrelated to business; the number of firm-year observations is 2,439. This probability decreases with the education of the household head, for married couples, and with household income; it increases with the number of children. The probability is much higher in the South of Italy. A possible explanation is the longer period required to recover a loan in the Southern regions of the country (Magri 2007b).¹⁴ Finally, the coefficient of a time dummy for the period 2000–2006 is not significant. Therefore, following the changes in the Italian credit market during the 1990s, there seems to be no reduction in the credit rationing of households.

In column 3 of Table 5, I use a diff-in-diff estimation to verify whether small entrepreneurs have benefited from the deregulation and innovation in the Italian credit market (i.e., the change in policy) during the 1990s. The model estimated is the following:

$$Y = \beta_0 + \beta_1 dt + \beta_2 dgroup + \beta_3 dt \times dgroup + \text{controls} + \epsilon, \quad (1)$$

where Y is the output analyzed, in this case the probability of being credit rationed, dt is a time dummy capturing the period after the policy change (2000–2006), and the $dgroup$ is a dummy equal to 1 when the household is a small entrepreneur (the so-called treated group, i.e., the group that is supposed to have obtained some benefits from the policy change). The interaction term $dt \times dgroup$ is equal to 1 when the household is a small entrepreneur (treated group) and the time dummy is equal to 1, i.e., after the deregulation and innovation in the credit market.

The diff-in-diff specification tackles the problem of two possible confounding factors (Wooldridge 2002). First, the *time* dummy captures the change in the aggregate factors that affect the output under analysis Y in the *same* way for all the groups considered (control and treated). Second, the *group* dummies for the different categories *before* the treatment (i.e., the change in policy) capture the possible differences among the different groups that exist *before* the policy change occurs; so these dummies net out any time-invariant difference among the groups. Therefore, the interaction term ($dt \times dgroup$) measures the differential change in the output for the specific group considered, associated with the policy change. The focus is on the coefficient of this interaction term in order to verify whether the deregulation and innovation in the Italian credit market had a specific effect on the credit rationing of small entrepreneurs.

The estimation in column 3 of Table 5 confirms the descriptive evidence that before 2000 the probability of being rationed, when asking for loans unrelated to business, was much higher for small entrepreneurs than for employees and other workers. The coefficient of the dummy $dgroup$ is in fact positive and significant and the impact

¹³ During 1991 and 1993 households were not asked whether they had applied for a loan unrelated to business; hence the period under analysis excludes these 2 years.

¹⁴ Actually, when area dummies are substituted with variables that capture some characteristics of the local credit markets, such as the concentration in the credit market measured at provincial level and some measures of the loan recovery process at regional level, I find that the probability of credit rationing increases in the regions where the time required to recover a loan is longer.

Table 5 Probability of being rationed when applying for loans for personal reasons (probit pooled estimation—marginal effects)

Variables	Probability of credit rationing		Probability of credit rationing diff-in-diff	
Age	0.0006 (0.0005)		0.0007 (0.0005)	
High school	−0.0331 (0.0134)	**	−0.0315 (0.0137)	**
Graduate	−0.0606 (0.0168)	***	−0.0584 (0.0169)	***
Married	−0.0610 (0.0182)	***	−0.0586 (0.0175)	***
Male	−0.0090 (0.0158)		−0.0091 (0.0158)	
No. of children	0.0138 (0.0058)	**	0.0133 (0.0057)	**
Household income (000€)	−0.0037 (0.0007)	***	−0.0035 (0.0007)	***
Household net wealth (000€)	0.0000 (0.0000)		0.0000 (0.0001)	
No. of income earners	0.0086 (0.0083)		0.0058 (0.0081)	
Munic. with less than 20,000 inhabitants	0.0125 (0.0153)		0.0113 (0.0150)	
Center dummy	−0.0141 (0.0166)		−0.0160 (0.0164)	
South dummy	0.0537 (0.0189)	***	0.0541 (0.0188)	***
Time dummy (dt) (2000–2006)	−0.0023 (0.0162)		0.0126 (0.0205)	
Small entrepreneurs dummy (dgroup)			0.0617 (0.0295)	**
dt × dgroup			−0.0431 (0.0184)	*
GDP growth	−0.3768 (0.5040)		−0.3184 (0.5090)	
No. observations	2,439		2,439	
Pseudo R^2	0.096		0.102	
Period	1989–2006		1989–2006	
Observed probability	0.1074		0.1074	
Estimated probability	0.0806		0.0791	

The credit rationing refers only to households who apply for a loan for personal reasons. It cannot be calculated over the years 1991 and 1993 as in these two surveys households were not asked whether they applied for a loan. Time dummy refers to the period 2000–2006 to assess the effects of deregulation and innovation in the Italian credit market. Robust standard errors are in brackets; they are adjusted for 95 clusters in provinces

* Indicates significant at 10%, ** at 5%, and *** at 1%

is remarkable: being a small entrepreneur increases the probability of being rationed in the period 1989–1998 by 6.2 percentage points, almost doubling the average estimated probability (7.9%) The coefficient of the time dummy dt, which measures what happens to the rationing process in the period 2000–2006, is not significant as in the second column. However, the coefficient of the interaction term, dt × dgroup, between the time dummy and the category of small entrepreneurs is negative and significant: this means that credit rationing decreased in the period 2000–2006 in a significant way (by more than four points, half of the estimated probability) *only* for small entrepreneurs, confirming the descriptive evidence in Table 4.

Overall, from the evidence in this section, there are reasons to believe that the low share of small entrepreneurs with bank loans unrelated to business was at least partially connected to a supply explanation. This could also be true for bank loans demanded

for business purposes. The situation has improved in the most recent years: deregulation and increasing competition in the credit market seem to have had an impact for small entrepreneurs. This is likely to be due to a wider use of credit scoring techniques for small business loans, which have reduced the cost of evaluating and screening the credit risk of these small firms.

However, as we have seen in Sect. 2, the use of bank credit for business purposes is still remarkably low among small Italian entrepreneurs. It is also worth considering that in the most recent period (2000–2006) only 9% of small entrepreneurs, among those asking for loans unrelated to business (8% of the total sample), are completely rationed by lenders (Table 4). There should therefore be other explanations, in addition to this extreme form of credit rationing, for the evidence that only one fourth of small entrepreneurs use bank loans for business purposes. The next section is aimed at improving our understanding of the process of credit allocation and the relative importance of internal finance, considering the sample of new small entrepreneurs.

4 Credit allocation to new small entrepreneurs

This section focuses on new small entrepreneurs as previously defined in Sect. 2. For this group, I analyze first the probability of becoming a small entrepreneur and then the probability of having a bank loan. The focus is on assessing the differences that emerge by splitting the whole period under analysis into two sub-periods 1989–1998 and 2000–2006. Specifically, in both estimations I try to understand the importance of some proxies of internal finance, such as household non-business net wealth for the probability of becoming an entrepreneur and firm net profitability for the probability of having a bank loan. Particular attention is also devoted to the North/South divide and to business location.

4.1 The probability of becoming an entrepreneur and initial non-business wealth

Given the low amount of external financial resources new small entrepreneurs rely on, I want to understand the importance of household non-business wealth in the decision to become an entrepreneur. I therefore estimate a probability model of becoming an entrepreneur including many different explanatory variables (Magri 2007a).

Household net wealth is measured as the sum of real and financial assets after subtracting liabilities; I consider household net wealth *before* becoming an entrepreneur. Household labor income before the transition to entrepreneurship is also included in the estimation: this variable should control for any income effect in the occupational choice. In order to have a proxy for entrepreneurial ability, I include the possibility of learning informal business experience from the parents (Lentz and Laband 1990; Holtz-Eakin et al. 1994a; Guiso and Schivardi 2005): in detail, a dummy is equal to 1 if one of the parents was self-employed.¹⁵ Like other control variables, I also consider several household characteristics that can influence the shape of the household utility

¹⁵ Ardagna and Lusardi (2008) use a dummy equal to 1 if the person knows someone who started a business in the recent past to capture what they call influences by social network.

function and the occupational choice. First, age is a measure of the attitude toward risk: people will try riskier occupations, such as becoming an entrepreneur, when they are younger; age may also be an indicator of individual experience in the labor market. Two demographic controls for being married and the number of children are also in the estimations. Having to support a family can make people less willing to take the higher income risk associated with entrepreneurship; on the other hand, a family may support the business activity. Finally, I include a dummy for education, also for parents' education, and the sex and employment status of the household head. For the estimations over the whole period, I consider a time dummy equal to 1 for the period 2000–2006 and I control for business cycles by using real GDP growth; for the estimations on the two sub-periods I include year dummies.¹⁶

Table 6 reports the results of the estimations for all periods (9,805 observations). As in many other studies referring mainly to the U.S. (Evans and Jovanovic 1989; Holtz-Eakin et al. 1994a,b; Gentry and Hubbard 2004; Hurst and Lusardi 2004; Fairlie and Krashinsky 2006), an increase in household initial non-business net wealth has a positive and significant effect on the probability of becoming an entrepreneur. This result is traditionally interpreted as evidence of imperfections in credit markets, though Hurst and Lusardi (2004) argue that other explanations need to be considered. The economic impact is not trivial: when increasing household non-business wealth from the first quartile of its distribution in the sample (around 13,500€) to the third quartile (around 161,400€), the estimated probability increases by 1.8 percentage points, from 4.8 to 6.6%, i.e., by roughly 30% of the average estimated probability (about 6%, last row in Table 6).

Table 6 also shows that household net wealth is less important in more financially developed regions of the country. In model 2 the interaction term between household net wealth and the indicator of regional financial development, calculated by Guiso et al. (2004), has a negative coefficient: therefore, the more financial development increases, the less non-business net wealth matters in the estimation.¹⁷ This result is confirmed in model 3 when other control variables that measure the importance of business location are included, such as the ratio of bad loans to total loans for households measured at provincial level, an indicator of banking concentration calculated as a Herfindahl index at provincial level, the share of loans recovered, and the time required for loan recovery at regional level.¹⁸ In order to give an idea of the different economic impact, if we consider the effect of increasing household net wealth as before from the first to the third quartile of its sample distribution, at a low degree of financial development (the first quartile of its distribution), the probability of becoming an entrepreneur

¹⁶ In all the estimations the observations for which household labor income and net wealth are lower than the 1st percentile and higher than the 99th percentile are dropped.

¹⁷ The authors construct an indicator of regional financial development by estimating a regional effect on the probability that, *ceteris paribus*, a household asking for a loan is shut out of the credit market. They use the same SHIW question as I used in Sect. 3 for my analysis. Essentially, they take the coefficients of the regional dummies in the regression for the probability of being rejected, after controlling for many household characteristics; following a normalization, an increase in this indicator means higher financial development.

¹⁸ In this specification I need to drop the area dummies, which are highly correlated with the previous variables capturing the location of the business.

Table 6 Probability of becoming an entrepreneur: all periods (probit pooled estimation—marginal effects)

Variables	Model 1		Model 2		Model 3	
Age	−0.0082 (0.0029)	***	−0.0082 (0.0029)	***	−0.0078 (0.0028)	***
Age squared	0.0001 (0.0000)	**	0.0001 (0.0000)	**	0.0001 (0.0000)	**
High school (dummy)	−0.0271 (0.0047)	***	−0.0270 (0.0046)	***	−0.0270 (0.0044)	***
Graduate (dummy)	−0.0524 (0.0054)	***	−0.0525 (0.0053)	***	−0.0533 (0.0053)	***
Unemployed (dummy)	−0.0144 (0.0119)		−0.0135 (0.0112)		−0.0153 (0.0108)	
Married (dummy)	−0.0035 (0.0069)		−0.0028 (0.0068)		−0.0041 (0.0069)	
Male (dummy)	0.0137 (0.0070)	*	0.0139 (0.0070)	*	0.0147 (0.0071)	*
No. of children	−0.0050 (0.0033)		−0.0049 (0.0033)		−0.0051 (0.0032)	
Hs labor income (000€)	0.0002 (0.0004)		0.0002 (0.0004)		0.0002 (0.0004)	
Hs non-business net wealth (000€)	0.00012 (0.00003)	***	0.00020 (0.00004)	***	0.00021 (0.00004)	**
Self-employed parents (dummy)	0.0320 (0.0056)	***	0.0318 (0.0057)	***	0.0317 (0.0059)	***
Graduate parents (dummy)	−0.0057 (0.0135)		−0.0068 (0.0132)		−0.0062 (0.0132)	
Center	0.0149 (0.0085)	*	0.0169 (0.0103)	*		
South	0.0003 (0.0090)		0.0067 (0.0117)			
Financial development (findev)			0.0434 (0.0275)		0.0406 (0.0190)	**
Wealth × South	0.0000 (0.0000)					
Wealth × findev			−0.0002 (0.0001)	*	−0.0002 (0.0001)	**
Time dummy (2000–2006)	0.0007 (0.0050)		0.0008 (0.0049)		0.0018 (0.0060)	
GDP growth	0.4662 (0.1669)	***	0.4688 (0.1671)	***	0.4452 (0.1805)	**
No. observations	9,805		9,805		9,805	
Pseudo R^2	0.0370		0.0380		0.0381	
Period	1991–2006		1991–2006		1991–2006	
Observed probability	0.0664		0.0664		0.0664	
Estimated probability	0.0599		0.0597		0.0597	

The dependent variable is equal to 1 if the household becomes an entrepreneur; equal to 0 if the household remains a wage earner. Hs. is household. Area dummies are excluded from model 3, which includes other variables connected to the business location reported in the text. Robust standard errors are in brackets; they are adjusted for 95 clusters in provinces

* Indicates significant at 10%, ** at 5%, and *** at 1%

increases by 2.4 percentage points, while at a higher degree of financial development (the third quartile of its distribution), the probability increases by 1.6 points.

As for the other household characteristics, the relationship between the probability of becoming an entrepreneur and age is U-shaped (Table 6), though actually the probability decreases for most of the age distribution. This result is partly consistent with the interpretation that becoming an entrepreneur increases the income risk; this decision is therefore more likely to be taken when people are young. People who attain a higher level of education are less likely to become entrepreneurs, and males are more likely to become entrepreneurs than females. The measure of entrepreneurial ability, such as growing up in an entrepreneurial family, has—as expected—a positive effect on the transition into entrepreneurship: when this dummy is equal to 1, the probability increases by slightly more than three points, half of the average estimated probability, equal to roughly 6.0%.

I also include other control variables in some unreported estimations in order to reduce the problem that some unobserved, or imperfectly measured, effects, such as entrepreneurial talent or risk aversion, may be correlated with household net wealth. In this case, a shock in these unobserved factors might influence both the decision to become an entrepreneur and net wealth, so that one can find a spurious correlation between net wealth and entrepreneurship, which is actually driven by a third unobserved factor, i.e., talent and/or risk aversion. Similar unreported results to those in Table 6, in particular for household net wealth, are obtained when I include another more accurate variable to measure entrepreneurial ability, such as a dummy that takes on the value 1 if the would-be entrepreneur has already had self-employment experience (Hurst and Lusardi 2004); however, this variable is available for fewer years and the number of observation decreases to roughly 5,000. The results also hold when I include a measure of household absolute risk aversion; in this case the number of observations drops to about 2,000.¹⁹

Overall, until now we have learnt that a variable that substitutes for external finance, such as household non-business wealth before becoming an entrepreneur, is important in influencing the decision to start an entrepreneurial activity in Italy. Moreover, its effect is higher in less financially developed regions of the country.

In Table 7, I look at what happens after the process of deregulation, liberalization, and innovation in the Italian credit market. The entire period 1991–2006 is therefore split into two sub-periods: the first is 1991–1998 and the second is 2000–2006.²⁰ The evidence in Table 7 is that the importance of the substitute for external finance, i.e., household non-business wealth, in the decision to become an entrepreneur is halved in the period 2000–2006 (0.00007 reported in the fourth column versus 0.00016 in the first period, reported in the second column). However, this result is due only to the lower importance of household net wealth in 2000–2006 for households living in more financially developed regions of the country: in the last column of the table, the coefficient of the interaction term between household net wealth and the regional financial development indicator is indeed negative; the coefficient of net wealth for households living in the least financially developed region of the country, i.e., with a financial development indicator equal to 0 (0.00019 last column) is very similar to the one in the first period (0.00020 third column).²¹

¹⁹ This is the Arrow–Pratt index of absolute risk aversion at the individual level, as calculated in Guiso and Paiella (2003). The wording of the question included in the SHIW that makes it possible to measure this indicator is: “You are offered the opportunity of acquiring a security permitting you, with the same probability, either to gain 5,165€ or to lose all the capital invested. What is the most you are prepared to pay for this security?”. Despite the extent of non-response and the measurement error, this risk attitude indicator should capture the individual willingness to bear risk. Specifically, Guiso and Paiella (2003) find that differences in the degree of risk aversion seem to explain sorting into riskier occupations. However, in my unreported specification, risk aversion is not significant for the transition to entrepreneurship.

²⁰ The year 1989 of the SHIW is dropped because the dummy for parents’ occupation and education cannot be calculated.

²¹ The interaction term between net wealth and the dummy South is never significant. However, when I run three separate regressions for the three areas of the country, i.e., North, Center, and South, non-business net wealth is significant in all three areas in the first sub-period, while it is significant only in the South in the second sub-period. A possible reason for this different result—compared with a regression with just an interaction term between wealth and area dummy—is that in the regressions across areas, the coefficients

Table 7 Probability of becoming an entrepreneur: splitting in two periods (probit pooled estimation—marginal effects)

Variables	1991–1998	1991–1998	2000–2006	2000–2006
Age	–0.0117 (0.0031)	***	–0.0117 (0.0031)	***
Age squared	0.0001 (0.0000)	***	0.0000 (0.0000)	***
High school (dummy)	–0.0338 (0.0065)	***	–0.0340 (0.0064)	***
Graduate (dummy)	–0.0504 (0.0067)	***	–0.0501 (0.0066)	***
Unemployed (dummy)	–0.0157 (0.0143)		–0.0146 (0.0143)	
Married (dummy)	0.0060 (0.0097)		0.0066 (0.0096)	
Male (dummy)	0.0022 (0.0103)		0.0022 (0.0103)	
No. of children	–0.0070 (0.0039)	*	–0.0067 (0.0038)	*
Hs labor income (000€)	–0.0002 (0.0004)		–0.0003 (0.0005)	
Hs non-business net wealth (000€)	0.00016 (0.00003)	***	0.00020 (0.00005)	***
Self-employed parents (dummy)	0.0293 (0.0073)	***	0.0288 (0.0074)	***
Graduate parents (dummy)	0.0005 (0.0192)		–0.0003 (0.0191)	
Center	0.0177 (0.0100)	*	0.0230 (0.0116)	**
South	0.0008 (0.0107)		0.0080 (0.0127)	
Financial development (findev)			0.0468 (0.0294)	*
Wealth × South	–0.0000 (0.0000)			
Wealth × findev			–0.0001 (0.0001)	
No. observations	5,789	5,789	4,016	4,016
Pseudo R^2	0.0532	0.0540	0.0358	0.0371
Observed probability	0.0670	0.0670	0.0655	0.0655
Estimated probability	0.0579	0.0577	0.0591	0.0589

The dependent variable is equal to 1 if the household becomes an entrepreneur; equal to 0 if the household remains a wage earner. Year dummies are included. Robust standard errors are in brackets; they are adjusted for 95 clusters in provinces

* Indicates significant at 10%, ** at 5%, and *** at 1%

The bottom line of this analysis is therefore that internal finance has become less important for would-be Italian entrepreneurs, though this is true only in the most financially developed regions of the country. Business location in the first period had a direct impact on the entrance of new entrepreneurs, measured by the positive and significant coefficient of the financial development indicator in Table 7 (column 3); this direct effect is no longer present in the second period. Nonetheless, location still matters in the decision to become an entrepreneur even in the current decade (2000–2006), though indirectly through the greater importance of the substitute for external finance in less financially developed regions of the country.

4.2 The probability of having a bank loan for business purposes

This sub-section is aimed at deepening the understanding of the process of credit allocation to new small entrepreneurs and, in particular, whether it changed between the two sub-periods analyzed. I verify the determinants of credit allocation through an estimation of the probability of having a bank loan for business purposes. Only the new small entrepreneurs with non-missing debt and explanatory variables are considered (518 observations).²²

The evidence in Table 8 (second column) is that the probability of a bank loan among new small entrepreneurs increases with the age of the entrepreneur and with business size, though at a decreasing rate; it is also higher for more educated new entrepreneurs, since the coefficient of the high-school dummy is positive and significant. These results are likely to reflect supply effects: firms that are larger and run by older and more educated people are considered less risky by lenders. The probability of having a bank loan is also much lower for the new small entrepreneurs located in both the Central and the Southern regions of the country. The table also shows a negative relationship between firm net profitability (the ratio of net profits to firm value) and the probability of a bank loan. According to the pecking order theory (Myers and Majluf 1984; Myers 1984), when there are wide information asymmetries between lenders and borrowers, as in the case of new very small entrepreneurs, the cost of external finance could be very high compared to that of internal finance: in this case, firms prefer to finance themselves first with internal funds, until the size of the investment gets so large that external funds, first debt and then equity, become essential. Therefore, the negative sign of the coefficient of net profitability is likely to reflect more a demand effect, connected to the high price of credit: as long as net profits increase, so does internal finance and hence the probability of debt decreases. In a way, this is another form of imperfection in credit markets, less strong than credit rationing and working through the price of credit, which is not precisely linked to the borrowers' characteristics, exactly because of the existence of asymmetric information between lenders and firms. In Table 8 (models 1 and 2) I also try to assess whether

Footnote 21 continued

of *all* variables are allowed to be different in the three different areas; actually, the three regressions present some differences as for the importance of several variables.

²² In all estimations the observations for which firm net profitability and the number of employees are lower than the 1st percentile and higher than the 99th percentile are dropped.

Table 8 Probability of having a bank loan for a new small entrepreneur: all periods (probit pooled estimation—marginal effects)

Variables	Model 1		Model 2		Model 3	
Age	0.0466 (0.0185)	***	0.0469 (0.0185)	***	0.0486 (0.0185)	***
Age squared	−0.0006 (0.0002)	***	−0.0006 (0.0002)	***	−0.0006 (0.0002)	***
No. of employees	0.0390 (0.0166)	**	0.0384 (0.0167)	**	0.0379 (0.0173)	**
No. squared	−0.0016 (0.0008)	*	−0.0016 (0.0008)	*	−0.0015 (0.0009)	
High school (dummy)	0.0797 (0.0459)	*	0.0825 (0.0461)	*	0.0918 (0.0460)	**
Graduate (dummy)	−0.0810 (0.0872)		−0.0778 (0.0890)		−0.0736 (0.0889)	
Married (dummy)	0.0268 (0.0485)		0.0305 (0.0487)		0.0267 (0.0496)	
Male (dummy)	0.0564 (0.0434)		0.0558 (0.0429)		0.0544 (0.0437)	
No. of children	−0.0237 (0.0223)		−0.0242 (0.0226)		−0.0286 (0.0226)	
No. of income recipients	−0.0158 (0.0215)		−0.0161 (0.0219)		−0.0229 (0.0219)	
Net profit/firm value	−0.0338 (0.0146)	**	−0.0147 (0.0182)		−0.0120 (0.0180)	
Center	−0.1005 (0.0462)	**	−0.0893 (0.0577)			
South	−0.1448 (0.0527)	***	−0.1038 (0.0670)			
Financial development (findev)			0.0842 (0.1949)		0.1817 (0.1684)	
Netprofit × South	0.0261 (0.0175)					
Netprofit × findev			−0.0217 (0.0507)		−0.0207 (0.0518)	
Time dummy (2000–2006)	−0.0694 (0.0370)	*	−0.0704 (0.0364)	*	−0.0997 (0.0402)	**
GDP growth	−1.589 (1.213)		−1.585 (1.221)		1.422 (1.242)	
No. observations	518		518		518	
Pseudo R^2	0.0897		0.0872		0.0906	
Period	1989–2006		1989–2006		1989–2006	
Observed probability	0.2761		0.2761		0.2761	
Estimated probability	0.2363		0.2385		0.2391	

The dependent variable is equal to 1 if the new entrepreneur has a bank loan. Area dummies are excluded from model 3 which includes other variables connected to the business location reported in the text. Robust standard errors are in brackets; they are adjusted for 95 clusters in provinces

* Indicates significant at 10%, ** at 5%, and *** at 1%

the negative effect of net profit is higher in either the Southern regions or the regions where the financial development indicator is lower, because in these areas the cost of credit is even higher. However, the coefficients of the interaction terms in models 1 and 2 are never significant; in model 3, I also include the other variables mentioned above to control for business location and the results are similar to model 2.²³

In Table 8, the negative coefficient of the time dummy for the period 2000–2006 confirms the evidence in the descriptive statistics: the probability of a bank loan for new small entrepreneurs has decreased over time. In Table 9, in the same way

²³ Actually, when I include the interaction term between net profits and the financial development indicator at regional level (models 2 and 3), even the coefficient of net profit alone is no longer significant over the whole period analyzed, as if this variable loses force when the financial development indicator is included. However, we will see in the next paragraph that the effect of net profits is much stronger in the second sub-period under analysis than for the whole period; in this case the interaction term is also significant.

Table 9 Probability of having a bank loan for a new small entrepreneur: splitting in two periods (probit pooled estimation—marginal effects)

Variables	1989–1998	1989–1998	1989–1998	2000–2006	2000–2006	2000–2006			
Age	0.0530 (0.0250)	**	0.0533 (0.0247)	***	0.0531 (0.0250)	**	0.0098 (0.0089)	*	0.0112 (0.0102)
Age squared	−0.0007 (0.0003)	***	−0.0007 (0.0003)	***	−0.0007 (0.0003)	***	−0.0001 (0.0001)	**	−0.0002 (0.0001)
No. of employees	0.0895 (0.0234)	***	0.0898 (0.0231)	***	0.0891 (0.0237)	***	0.0090 (0.0066)	**	0.0109 (0.0076)
No. squared	−0.0072 (0.0021)	**	−0.0072 (0.0021)	**	−0.0071 (0.0022)	**	−0.0004 (0.0002)	***	−0.0002 (0.0001)
High school (dummy)	0.1458 (0.0670)	**	0.1434 (0.0670)	**	0.1468 (0.0672)	**	−0.0060 (0.0351)	−0.0004 (0.0163)	−0.0008 (0.0185)
Graduate (dummy)	0.0506 (0.1623)		0.0461 (0.1599)		0.0525 (0.1645)		−0.0845 (0.0436)	−0.0319 (0.0235)	−0.0411 (0.0272)
Married (dummy)	0.0681 (0.0565)		0.0662 (0.0565)		0.0672 (0.0568)		−0.0066 (0.0400)	−0.0021 (0.0184)	−0.0049 (0.0220)
Male (dummy)	0.0864 (0.0461)		0.0845 (0.0456)		0.0866 (0.0461)		0.0179 (0.0374)	0.0072 (0.0170)	0.0067 (0.0198)
No. of children	−0.0269 (0.0309)		−0.0249 (0.0304)		−0.0260 (0.0306)		−0.0198 (0.0244)	−0.0100 (0.0126)	−0.0100 (0.0144)
Income recipients	−0.0175 (0.0289)		−0.0185 (0.0287)		−0.0186 (0.0297)		−0.0111 (0.0220)	−0.0051 (0.0105)	−0.0042 (0.0119)
Net profit/firm value	−0.0012 (0.0054)		−0.0096 (0.0099)		0.0029 (0.0118)		−0.1052 (0.0156)	−0.0363 (0.0216)	−0.1521 (0.0431)
Center	−0.0921 (0.0482)	*	−0.0910 (0.0469)	*	−0.0883 (0.0522)		−0.0499 (0.0389)	−0.0195 (0.0192)	−0.0300 (0.0289)
South	−0.1305 (0.0537)	***	−0.1478 (0.0550)	***	−0.1244 (0.0706)	*	−0.0712 (0.0405)	* 0.0026 (0.0228)	−0.0460 (0.0389)
Findev					0.0426 (0.1630)			−0.1176 (0.0445)	−0.1279 (0.1099)
Netprofit × South			0.0147 (0.0113)						
Netprofit × findev					−0.0131 (0.0370)				0.2259 (0.0788)
No. observations	291	291	291	227	227	227	227	227	227
Pseudo R ²	0.1301	0.1328	0.1303	0.1695	0.1866	0.1808	0.1866	0.1808	0.1808
Observed probability	0.306	0.306	0.306	0.2379	0.2379	0.2379	0.2379	0.2379	0.2379
Estimated probability	0.180	0.177	0.181	0.0973	0.0347	0.0440	0.0347	0.0347	0.0440

The dependent variable is equal to 1 if the small entrepreneur has a bank loan. Year dummies are included. Robust standard errors are in brackets; they are adjusted for 95 clusters in provinces
 * Indicates significant at 10%, ** at 5%, and *** at 1%

as for the probability to become an entrepreneur, I present the estimation split separately for the two sub-periods under analysis. From the table, one can see that the signs of the coefficients for the age of the entrepreneur and the business size are similar across the two sub-periods. The table also shows that in the second sub-period under analysis the coefficient of the dummy South included alone, which in the first sub-period was negative, high, and significant at 1%, is roughly halved in magnitude and significant only at 10% (second and fifth columns). Furthermore, net profitability is negative and significant only in the second period analyzed. This effect is much greater for businesses located in the Southern regions, as one can see from the interaction term in the sixth column. Similarly, in the last column of the table the interaction term between firm net profits and the indicator of financial development has a positive and significant coefficient: as financial development increases, the negative sign of the impact of net profits on the probability of having a bank loan is less strong. To give an idea of the different economic impact of net profits on this probability across different levels of financial development, the effect of increasing net profits from the first to the third quartile of its distribution in the sample with a low degree of financial development (the first quartile of its distribution) is to decrease the probability of a bank loan by 27 points (from 37 to 10%); a similar increase in net profits with a high level of financial development (the third quartile of its distribution) entails a reduction in the probability by 12 points (from 27 to 15%).

In conclusion, the negative direct impact of the business location in Southern regions on the probability of having a bank loan is less important in the current decade. However, the location of the firm still matters for the probability of having a bank loan for business purposes, though more in an indirect way, through the greater importance of the internal finance proxies in Southern regions or in less financially developed regions of the country. When internal finance increases, it is more likely that firms located in these areas will use it and reduce their demand for bank loans.²⁴

5 Final remarks and discussion

This paper sheds some light on the financing of small entrepreneurs in Italy, which account for a very important part of the economy. Overall, most of the micro-firms surveyed in the SHIW, which have an average number of 4 employees, rely only on internal finance to run their businesses. Understanding whether the low borrowing from banks by small Italian entrepreneurs is determined by demand or supply reasons is not an easy task. In this paper, I try to verify whether there are changes in credit allocation after the intense process of deregulation and innovation that started in the Italian credit market during the 1990s.

It turns out that credit rationing, regarding loans unrelated to business, decreased in the current decade (2000–2006), compared to the previous one, only for small entrepreneurs. However, this is an extreme form of exclusion from the credit market and

²⁴ The results of the estimations are similar when I analyze the probability of having a long-term bank loan for business purposes, whose frequency does not change over the two sub-periods under consideration (Table 2). When I analyze the group of all small entrepreneurs no differences emerge between the two sub-periods.

even if still present it cannot explain the very low usage of bank debt for business purposes by small Italian entrepreneurs.

Other evidence emerges for the sample of new small entrepreneurs that suggests that some financial constraints were present in the process of credit allocation and slightly lessened in the current decade. In the period 2000–2006 internal finance in the form of personal wealth is less important for the probability to become an entrepreneur. Furthermore, the direct effect of business location matters less in the probability model that a small entrepreneur has a bank loan. However, in 2000–2006 the location of the sole proprietor is still an important factor, indirectly through the impact of internal finance in both the estimations: proxies for internal finance matter more in less financially developed regions of the country both for the probability of becoming an entrepreneur and for the probability of having bank loans.

These results are consistent with a more widespread use of credit scoring by lenders which has simplified the loan underwriting procedure for small businesses in Italy, as in many other countries. As a consequence of the greater use of credit scoring in the underwriting process of the loan, lenders should be better able to measure the creditworthiness of the individual firm; therefore, the impact of business location, a sort of measure of a more general background risk of the borrower, is expected to have decreased.²⁵ Thanks to this more efficient way of deciding whether to grant a loan, more firms get credit, even if high-risk, but at a higher price.²⁶

The price of credit should indeed have increased for high-risk borrowers, reflecting their risk more accurately. This can explain the greater preference for internal finance in less financially developed regions of the country, where the risk of running a business could be higher. In addition, at least in Italy, credit scoring models are not yet widely used by Italian banks for tailoring the price of credit to the specific risk of the borrowers (Albareto et al. 2008).²⁷ Therefore, business location, which reflects the background risk of the firm, rather than its individual and specific risk, is still probably one of the most important drivers of the price of credit. In other words, interest rates for small business lending are probably still defined on the basis of a very small number of groups of borrowers, split according to few characteristics, among which location is likely to be one of the most important. On similar lines, the fact that the share of new small entrepreneurs with bank loans for business purposes decreased in the current decade (only in the Northern regions of the country) could be explained by a sort of cross-subsidization of the interest rates applied by banks. Lenders have enlarged their

²⁵ Albareto et al. (2008) show that the adoption by Italian banks of credit scoring techniques has accelerated in recent years, above all for small business loans, because these techniques reduce the cost of screening and monitoring of small businesses; further, the new capital requirements, under Basel II, link the capital absorbed by each loan more directly to the borrower's risk, increasing the incentive for banks to evaluate their loan portfolio more accurately. The variables most frequently used to calculate the credit scoring are balance sheet data and the relationships that firms have with other banks; location and industry do not matter.

²⁶ Berger et al. (2005) find that in the U.S., small business credit scoring is associated with expanded quantities, greater average risk levels, and higher average prices for small business credits under \$100,000.

²⁷ This was also true, though to a lesser extent, even in the United States at the end of the 1990s. Frame et al. (2001) find that U.S. banks were more likely to use credit scoring for automatic approval/rejection of business loans (42%) than for setting loan terms (32%).

loan activity to riskier sole proprietors, though the increasing risk that they bear has been spread through a higher price of credit not only to high-risk borrowers, but also, since the price is not individually tailored, to some other sole proprietors who are difficult to single out as good borrowers. Firms have therefore become more sensitive to the price of credit even in more financially developed regions of the country; this explain the negative sign of firm net profits in the current decade for all new small entrepreneurs in the estimation for the probability of having a bank loan.

The bottom line of this analysis is that some imperfections in credit markets for small entrepreneurs are partly fading away, though some important developments still need to happen. One of these is in the direction of a price of credit more tailored to the specific risk of the small entrepreneur.

On the whole, the evidence in this paper is more in line with the theory developed by Knight at the onset of the past century, which supports the view that people need to be wealthy before starting a business (Le Roy and Singell 1987), rather than with Schumpeter (1934), who argued that entrepreneurs and capitalists are completely distinct, with the latter providing all the money required by the former. The high uncertainty correlated with entrepreneurial activity and the scarce information about small entrepreneurs and their businesses can cause the market to fail to provide them with all the money they need.

References

- Albareto, G., Benvenuti, M., Moccetti, S., Pagnini, M., Rossi, P.: L'organizzazione dell'attività creditizia e l'utilizzo di tecniche di scoring nel sistema bancario italiano: Risultati di un'indagine campionaria, Occasional Paper No.12, Banca d'Italia (2008)
- Ardagna, S., Lusardi, A.: Explaining international differences in entrepreneurship: the role of individual characteristics and regulatory constraints, Working Paper No.14012, NBER (2008)
- Avery, R., Bostic, R., Samolyk, K.: The role of personal wealth in small business finance. *J Bank Finance* **22**, 1019–1161 (1998)
- Berger, A., Udell, G.: The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle. *J Bank Finance* **22**(6–8), 613–673 (1998)
- Berger, A., Frame, W., Miller, N.: Credit scoring and the availability, price and risk of small business credit. *J Money, Credit Bank* **37**(2), 191–222 (2005)
- Blanchflower, D., Oswald, A.: What makes an entrepreneur? *J Labor Econ* **16**(1), 26–60 (1998)
- Bofondi, M., Lotti, F.: Innovation in the retail banking industry: the diffusion of credit scoring. *Rev Indust Organ* **28**, 343–358 (2006)
- Caggetti, M., De Nardi, M.: Entrepreneurship, frictions and wealth. *J Polit Econ* **114**(5), 835–870 (2006)
- Campbell, J., De Nardi, M.: A conversation with 590 nascent entrepreneurs, Working Paper No. 20, Federal Reserve Bank of Chicago (2007)
- Evans, D., Jovanovic, B.: An estimated model of entrepreneurial choice under liquidity constraints. *J Polit Econ* **97**(4), 809–827 (1989)
- Evans, D., Leighton, B.: Some empirical aspects of entrepreneurship. *Am Econ Rev* **79**(3), 519–535 (1989)
- Fairlie, R.: The absence of the african-american owned business: an analysis of the dynamics of self-employment. *J Labor Econ* **17**(1), 80–108 (1999)
- Fairlie, R., Krashinsky, H.: Liquidity constraints, households wealth, and entrepreneurship revisited, Discussion Paper Series No.2201, IZA (2006)
- Frame, S., Srinivasan, A., Woosley, L.: The effect of credito scoring on small-business lending. *J Money Credit Bank* **33**(3), 813–825 (2001)
- Gentry, W., Hubbard, R.: Entrepreneurship and household saving. *Adv Econ Anal Policy* **4**(1), 1–55 (2004)
- Guiso, L.: Small business finance in Italy, Working Paper No.2, EIB (2003)

- Guiso, L., Paiella, M.: Risk aversion, wealth and background risk, Working Paper No.483, Banca d'Italia (2003)
- Guiso, L., Schivardi, F.: Learning to be an entrepreneur, CEPR Discussion Paper No.5290 (2005)
- Guiso, L., Sapienza, P., Zingales, L.: Does local financial development matter? *Q J Econ* **119**(3), 929–969 (2004)
- Holtz-Eakin, D., Jouflain, D., Rosen, H.: Sticking it out: entrepreneurial survival and liquidity constraints. *J Polit Econ* **102**(1), 53–75 (1994a)
- Holtz-Eakin, D., Jouflain, D., Rosen, H.: Entrepreneurial decisions and liquidity constraints. *RAND J Econ* **25**(2), 335–347 (1994b)
- Hurst, E., Lusardi, A.: Liquidity constraints, household wealth and entrepreneurship. *J Polit Econ* **112**(2), 319–347 (2004)
- Hurst, E., Lusardi, A.: Do household savings encourage entrepreneurship? household wealth, parental wealth and the transition in and out of entrepreneurship. mimeo (2006)
- Le Roy, S., Singell, L.: Knight on risk and uncertainty. *J Polit Econ* **95**(2), 394–406 (1987)
- Lentz, B., Laband, D.: Entrepreneurial success and occupational inheritance among proprietors. *Can J Econ* **23**(3), 563–579 (1990)
- Magri, S.: Household wealth and entrepreneurship: is there a link? Bank of Italy, mimeo (2007a)
- Magri, S.: Italian households' debt: the participation to the debt market and the size of the loan. *Empirical Econ* **33**(3), 401–426 (2007b)
- Myers, S.: The capital structure puzzle. *J Finance* **39**(3), 575–592 (1984)
- Myers, S., Majluf, N.: Corporate financing and investment decisions when firms have information that investors do not have. *J Financial Econ* **13**, 187–221 (1984)
- Quadrini, V.A.: The importance of entrepreneurship for wealth concentration and mobility. *Rev Income Wealth* **45**(1), 1–19 (1999)
- Schivardi, F., Torrini, R.: Firm size distribution and employment protection legislation in Italy, Working Paper No.504, Banca d'Italia (2004)
- Schumpeter, J.: *The Theory of Economic Development*. Harvard University Press, Cambridge (1934)
- Supplements to the Statistical Bulletin: Household income and wealth in 2006, Bank of Italy (2008)
- Torrini, R.: Cross-country differences in self-employment rates: the role of institutions. *Labour Econ* **12**(5), 661–683 (2004)
- Wooldridge, J.: *Econometric analysis of cross section and panel data*. MIT Press, Cambridge (2002)