Informal loans, liquidity constraints and local credit supply: Evidence from Italy*

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Abstract

Using data from the Italian Survey on Household Income and Wealth for the period 1995-2012, we study the relation between informal credit (loans from relatives and friends) and the households' access to credit from banks. We show that the two are both substitutes and complements. We first provide new empirical evidence on the positive effect, already documented in the literature, of liquidity constraints on private transfers, but we show that the relation is stronger for informal loans than for gifts, and increased during the financial turmoil. Moreover, our results show that even households with full access to the formal credit market are more likely to be indebted with relatives or friends, when compared to those with no interest in loans. This complementarity is stronger for households who have problems in paying back their loans, suggesting the presence of a care effect from relatives and friends towards distressed families. Finally, we estimate the overall effect of an expansion of local credit supply on the diffusion of informal loans, using an IV approach. The results indicate that the effect is negative, but very small, suggesting that the substitution is compensated by an increased demand for both sources of credit.

Keywords: informal credit, local credit markets, inter vivos transfers
JEL codes: D14, E21

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1 Introduction

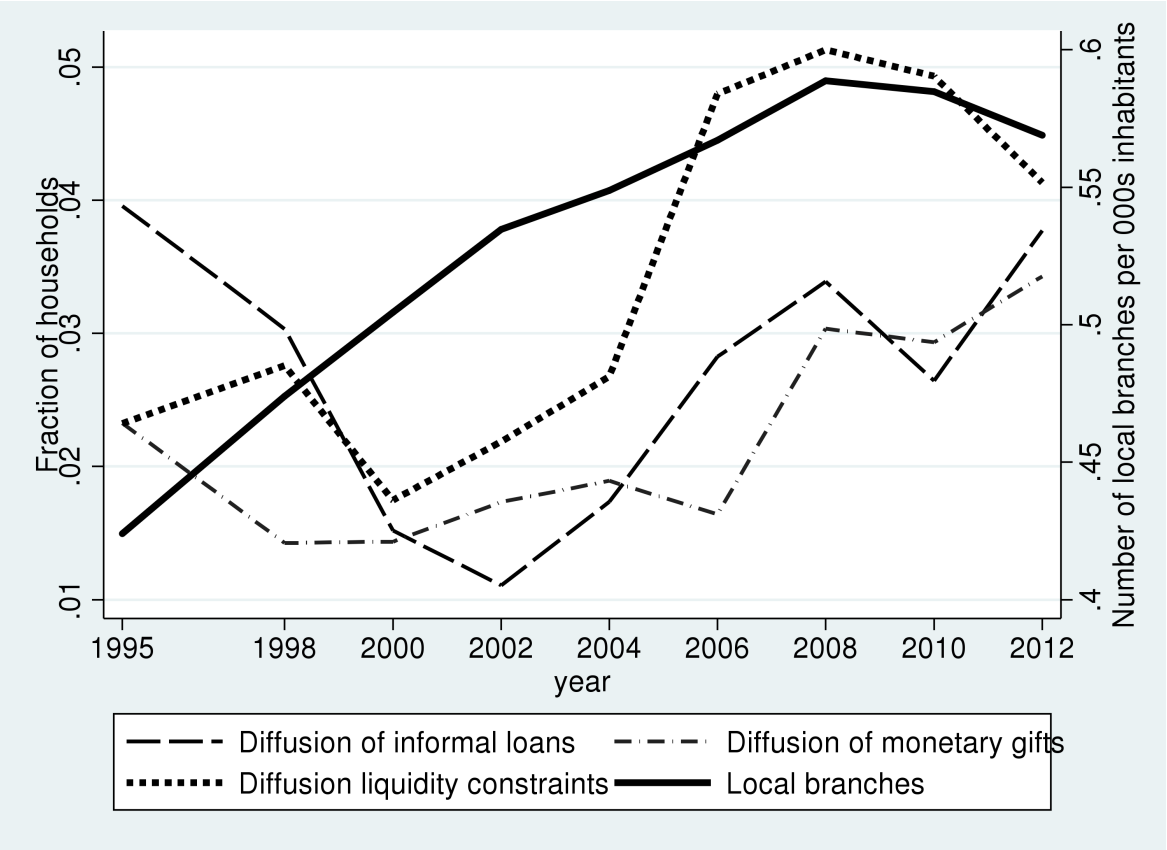
The study of informal loans (credit from relatives or friends) is a relatively unexplored issue in the framework of households' financial choices, and is only marginally mentioned in recent surveys of the literature on household finance, such as Campbell (2006) and Guiso and Sodini (2012). Nevertheless, this kind of loans are widespread adopted. Informal credit is widely used in EU countries (see ECB, 2013). For the United States, the Financial Diaries Project estimates it to be the second form of credit, used by two out of every five households.

The mainstream framework focuses on the relation between informal credit and financial market failures. Households usually borrow in early stages of life (mainly to access real estate or durables) and repay later. Financial markets, in particular the banking system, are, therefore, used to smooth households' consumption profile over time. However, modern intermediation theory states that credit markets, dominated by asymmetric information, are plagued by phenomena of adverse selection and moral hazard, which result in decreasing loan supply and preventing people from borrowing the desired level of money. Such liquidity constraints may impair the life cycle consumption profiles, leading to sub optimal consumption choices and to losses in personal utility. In this framework, non-market (informal) arrangements may arise as an endogenous solution to market deficiencies (see Batini et al., 2010, for a review). According to this view, informal transfers would act as a substitute for formal credit: households ask for money to relatives or friends when they are not able to access bank credit. As a consequence, a positive relation is expected between being liquidity constrained and the occurrence of informal transfers. Indeed, declining liquidity constraints - arising, for example, from an increase in banking competition or from the enlargement of the branches network - should result in a reduction of informal transfers. Furthermore, to the extent credit rationing behave anticyclically, so informal transfers should.

A first theoretical perspective has been provided by Arnott and Stiglitz (1991). Focusing on the insurance market, the authors show that, under certain conditions, peer monitoring performed by relatives or friends is beneficial to mitigate moral hazard occurring in the formal market. This view is corroborated by the few theoretical and empirical papers investigating this issue. Jain (1999) argues that formal and informal credit trade off: the former benefits from a higher deposit mobilization while the latter exhibits an informational advantage in assessing borrowers' creditworthiness. Empirical applications to the credit market are performed by Cox (1990) and Guiso and Jappelli (1991). The first shows that households with low present and high permanent income (those with a higher probability to be liquidity constrained) are more likely to

receive transfers. The seconds adopt a model describing the pattern of transfers across generations where the probability of receiving a transfer depends on both whether desired consumption exceeds current consumption and whether liquidity constraints occur. Using a cross section from the Survey on Household Income and Wealth by the Bank of Italy, they found that private transfers are mainly targeted towards liquidity constrained households. The probability of receiving a transfer is 1.7% higher for them, whereas the unconditional probability is 2.7.

Figure 1: Trends in informal loans, monetary gifts and local credit supply, Italy, 1995-2012



Note: Diffusion is expressed as fraction of households. Informal loans refer to households who report to have a debt with non-cohabiting relatives or friends at the end of the year. Monetary gifts refer to transfers during the year. Households are liquidity constrained if they were rejected credit (at least partially) by a bank or if they chose not to apply for a loan thinking that they would have been rejected. Sample weights have been used.

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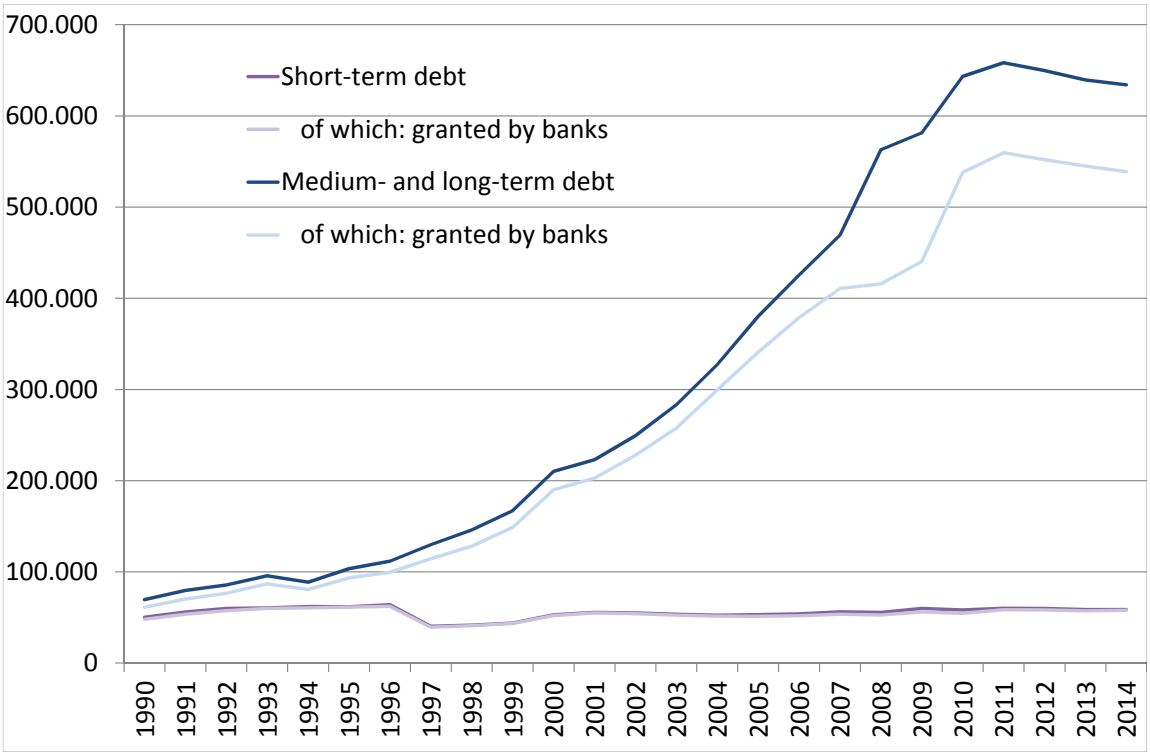
However, looking at the plot of the percentage of Italian households receiving transfers in the period 1995-2012 (Figure 1), we note a mismatch between theoretical predictions and data. During the nineties and in the first part of the last decade, informal loans exhibited a negative trend, ascribed to the development of formal market due to an extended deregulation (see Casolaro et al., 2005). We would have expected a

persistence of the decreasing trend in the period of highest development of bank lending, with a recovery in the event of recession. Differently, data show an unexpected pattern. Both before and during the financial turmoil the probability to receive informal credit rose steadily, even in the subperiod 2004-2008, characterized by a huge increase in formal credit to households (Figure 2).[1] This evidence suggests that a further interpretation of informal credit is somehow requested, as the usual nexus about substitution between formal and informal credit is not necessarily the most appropriate.

Figure 2: Trends in households' loans, Italy, 1990-2014, millions of euros.



In this paper we try to fill the gap by investigating the use of informal credit by households. We exploit data from the Bank of Italy's Survey on Household Income and Wealth (SHIW) in order to shed some light on the existence of different channels of demand with respect to the traditional substitution view.

The Italian credit market is an interesting field to study informal transfers. Firstly, because of the availability of a high-quality source of data, SHIW, a bi-annual survey on more than 8,000 households with a panel component. Secondly, the Italian household loan market remained for a long time small by international standards, and it still is, despite of a remarkable growth started in the second half of the nineties.

[1]Households' formal credit rose steadily in the medium- and long-term component between 1995 and 2008.

In an ongoing research project, Bartiloro and Rampazzi (2015) use SHIW data to study the role of informal credit in supporting consumption during the economic crisis. Differently from them, we exploit the SHIW over an extended period of time in order to provide a more comprehensive framework for informal credit. Moving from the use of informal transfers as a consequence of failures in the official credit market, we show that this channel does operate but can explain only a fraction of transfers. We find empirical evidence about the existence of a different channel, based on complementarity, where informal credit is used in addition to formal credit or as a backup to avoid default. Finally, we measure the net effect of a change in formal credit supply in local markets.

The paper is organised as follows. Section 2 describes data and descriptive analysis of informal credit and liquidity constraints in the Italian household credit market. Section 3 reports out empirical analysis, about substitution and complementarity channels, and the net effect. Section 4 concludes.

2 Data and descriptive

2.1 Informal credit and gifts: definition and features

SHIW provides detailed information on the economic situation (income, real and financial wealth, indebtedness), savings, consumption and several social characteristics for a stratified sample of over 8,000 households (about 24,000 individuals) from about 300 Italian municipalities. For our purpose, we can make use of the period 1995-2012 (9 waves), including a longitudinal component reaching about the 50 per cent of the sample. The survey includes a couple of questions on private transfers, with no major changes in wording or structure. One is related to informal loans ("*At the end of last year did the household have debt with relatives or friends?*"), while the other to gifts ("*During the last year did you receive regular gifts or cash from relatives or friends?*").

Guiso and Jappelli (1991), working on a cross section for 1987, focused their analysis on the probability to receive a generic transfer, both in the form of informal loans or as a monetary gift. In the present paper, we analise separately these forms of transfer for two main reasons. Firstly, the SHIW question on informal loans is related to the stock of debt faced by the households, whenever incurred, while the other one is restricted to the flow of gifts received in the last year. Secondly, the demand and supply mechanisms for loans and gifts may be quite different, therefore a distinct analysis can improve the quality of the results. Table A1 shows summary statistics about informal loans and monetary gifts. Both present U shaped dynamics over time, with a share of

households involved ranging from 1.1 percent in 2002 to 3.5 in 2012 for informal loans (from 1.5 in 2006 to 2.8 in 2012 for gifts).

The regional map of the share of households receiving transfers (Figure 3) shows that the densities of informal loans and monetary gifts do not follow the typical North-South divide, which characterizes in Italy the credit market as well as major macroeconomic indicators. The incidence of transfers is higher in the South, as one would expect considering banking loans and private transfers as substitutes, but exhibits a strong heterogeneity across regions. Moreover, the average value of transfers in northern regions is almost double with respect to southern ones. Results for informal loans and monetary gifts are not similar, confirming that the two phenomena are conceptually different.

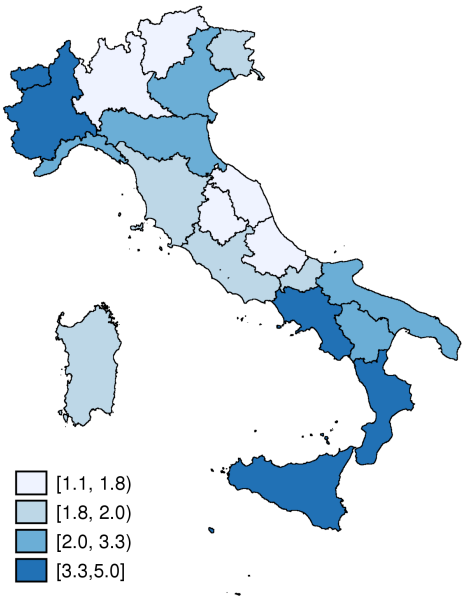
Table A2 in the Appendix shows the characteristics of households related to the probability to receive a transfer from relatives and friends. The recourse to informal loans and gifts is more frequent for large, low-income families, and for households living in large cities. Looking at individual characteristics, the incidence of transfers is higher for young, low educated people and for divorced people. These features, usually associated with potential difficulties in accessing the credit market, seems to support the traditional hypothesis of informal loans as a succedaneum of formal loans.

2.2 Liquidity constraints

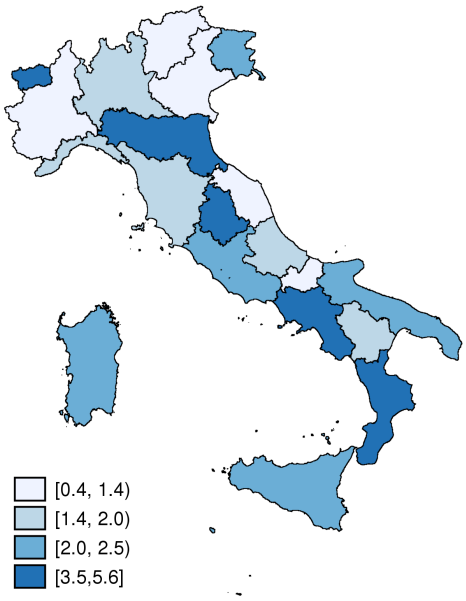
The SHIW survey contains a specific section dedicated to loan application and credit rationing. We use a question asking, to households who have applied for a loan, if they have been, even partially, turned down; those answering yes to this question are less then 1 per cent of the sample, and exhibit a slightly growing dynamics over time, ranging from 0.5 to 1.2 per cent in the period 1998-2012. Each household is also asked: "*During the year did you or a member of the household think of applying for a loan or a mortgage to a bank or other financial intermediary, but then changed your mind on the expectation that the application would have been turned down?*". The households answering yes to this second question, those we call "discouraged", are potentially credit constrained units, too. Our main dummy for liquidity constrained households includes, therefore, both cases.

One potential problem is that, in a context of sharp increase in the availability of loans, many households starts being interested in the (formal or informal) credit market. This boost in demand may increase the share of applicants turned down, not due to a drop in credit supply but just because of the increase in the number of people looking for a loan. This way, our liquidity constrained dummy may not only

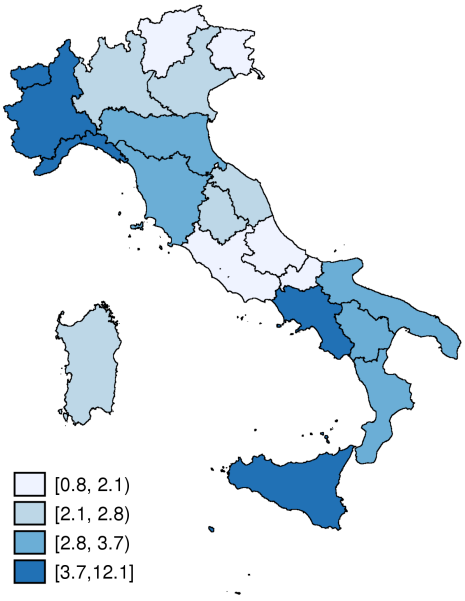
Figure 3: Geographical variation in informal loans, liquidity constraints and access to formal credit



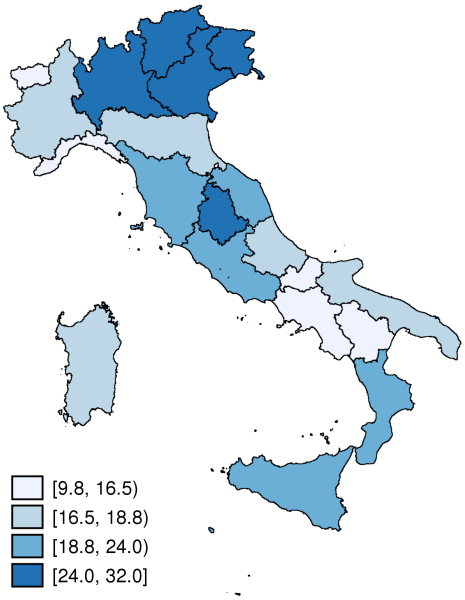
(a) % hhs with informal loans



(b) % hhs receiving monetary gifts



(c) % hhs with liquidity constraints



(d) % hhs with non-constrained access to formal credit

Note: hhs stands for households. The fraction of households have been calculated on the pooled 1995-2012 sample, using sample weights. For informal loans, monetary gifts and liquidity constraints, see Figure (1). Households with non-constrained access to formal credit are those who have a formal credit with a bank or other financial institution and are not liquidity constrained.

capture the supply side of credit relationship, but it can also be affected by demand. The demand-driven component is expected to be maximum for the discouraged households. For these households the lack of a formal loan application could also disclose a certain inconsistence of the demand, that could represent just a pure desire or a mental project, disconnected from economic fundamentals and therefore potentially overestimated. Looking at the data, the dynamics of the credit rationing variable over time confirms this view. Discouraged households, stable at about 2 per cent until 2004, exhibit a sharp rise in 2006, to 4 percent, in connection with the maximum expansion of the credit market, followed by a decline since 2010. The evolution of the "rejected" variable is much smoother, confirming the smaller impact of demand effects. To account for this, in the main regressions we will also show that our conclusions are qualitatively similar if we split the constrained dummy between rejected and discouraged households.

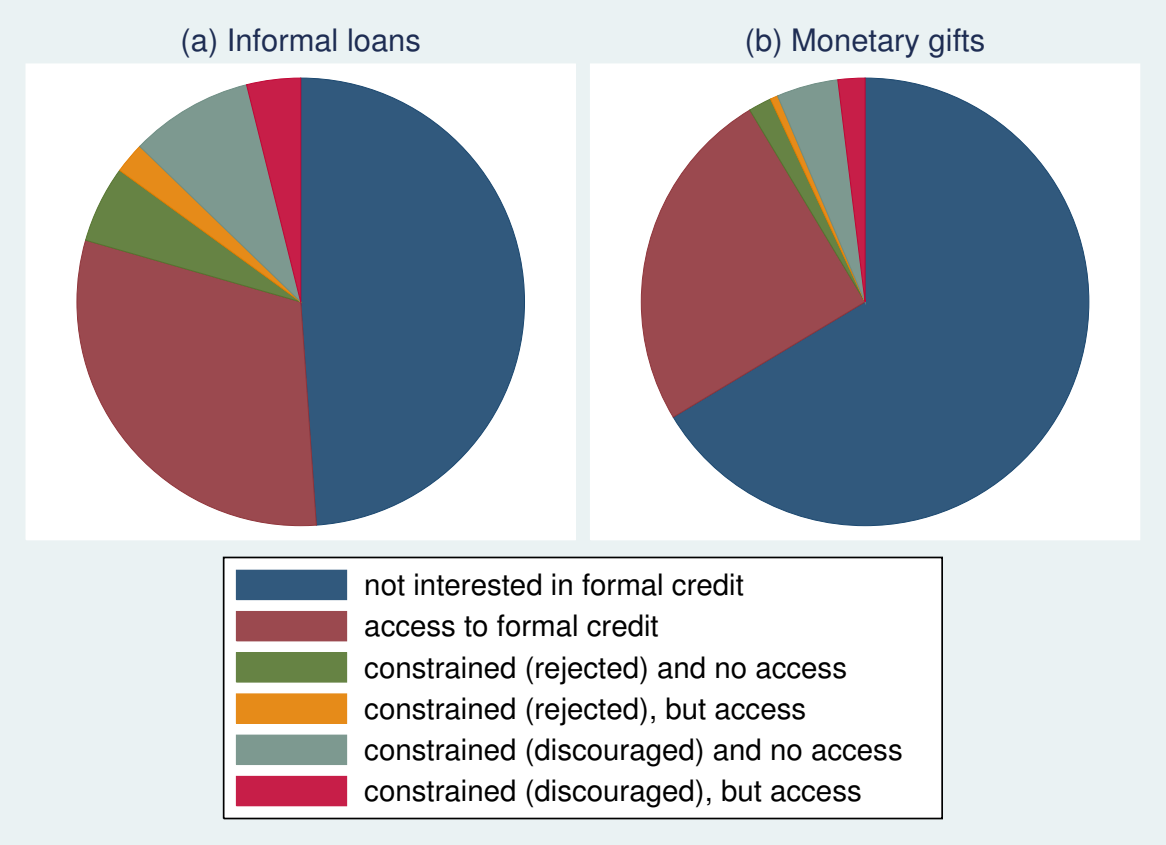
2.3 Private transfers and access to credit market

Figure 4 shows a partition of the number of households receiving a transfer with respect to their access to the credit market. Among households receiving informal loans, more than 50 percent are not interested in the credit market, that is they neither have any loans, nor they applied for it. Of these, about a half do not even hold a bank account. Almost 30 percent of the households with informal loans have full access to the credit market, as they hold a loan with a financial institution or they applied successfully in the survey year. The remaining 20 per cent faces some problems in accessing the banking market: 6 per cent had already a credit relation but they have been turned down a new request during the last year, while the 15 per cent has been constrained having no previous access to the credit market. Monetary gifts display similar characteristics, with a higher incidence of households not interested in the credit market. For this group the proportion rises to two thirds, while it is just 10 per cent for households who have not access to formal credit.

This preliminary evidence suggests that the economics of private transfers appears to be more complex than the view followed from the previous literature, considering informal loans and gifts as pure substitutes for formal credit. In particular, looking at the data, we believe that private transfers to households could be driven at least by three distinct channels.

The first one comes from an households version of the pecking order theory (Myers and Majluf, 1984): a certain number of households have a strong preference for a sort of internal liquidity, related to transfers from relative or friends. For this kind of

Figure 4: Distribution of households by credit access, Italy, 1995-2012

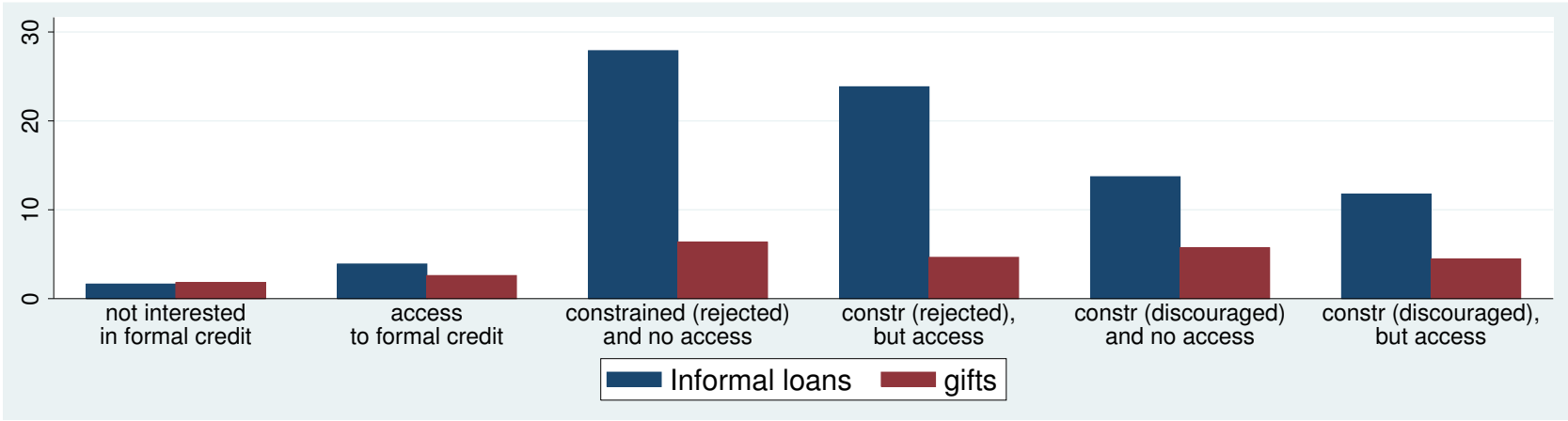


Note: access to formal credit refer having any kind of formal debt. Liquidity constraint refer to those who report to be rejected at least partially by a bank, and to those who are discouraged (they chose not to apply for a loan thinking that they would have been rejected).

households, private transfers are not an alternative solution to formal credit, but the preferred or even the unique choice, which should not be affected by changes in credit market conditions.

The second one is related to the complementarity between formal and informal credit, recently documented for Chinese firms by Degryse et al. (2013). Many households, far from considering private loans as a surrogate of formal credit, use this form of financing together with the traditional one. Moreover, the high share of households receiving transfers and having access to the credit market could be linked to a care effect of relatives and friends in the case of financial distress of the households, bringing to delays in loans' repayment.

Figure 5: Private transfers by access to credit, Italy, 1995-2012



Note: see figures 1 and 4 for the definitions.

The third channel for private transfer is the one underlined by previous literature (Guiso and Jappelli, 1991), related to the presence of liquidity constraints. Figure 5 shows the share of households receiving transfers and their access to the credit market. Households not interested at all in formal financing present a probability of 2 per cent to receive informal loans. The value doubles for households having a full access to the credit market. If we focus on constrained households, the percentage of units with informal loans increases dramatically. On average, it is almost 1/5, confirming that credit rationing is an important channel for informal loans demand. The share increases to 23 per cent in the case of households that asked for credit and have been turned down, while discouraged units present a value about 13 per cent. The pattern is similar, but much smoother, for households with monetary gifts, with values ranging from 2 to 6 per cent.

3 Empirical analysis

3.1 Liquidity constraints, informal credit and gifts

We first start by re-examining the substitution channel, focusing on the relation between liquidity constraints and private transfers already discussed by Guiso and Jappelli (1991). Thanks to the availability of a longer period of time, we can examine each form of transfer separately, showing that the relation is stronger for informal loans than for gifts, and that it is robust to the inclusion of household fixed effects. Furthermore, it is stronger during the years of the economic crisis, and for a subset of households whose observable characteristics are strongly related to the probability of being liquidity constrained.

The dependent variable in our estimations is a dummy equal to one if the household has received informal loans (or gifts), zero elsewhere. The independent variables, related to the status of households with respect to the credit market, are the presence of credit constraints (rejected and discouraged households are considered both separately and jointly) and the existence of a banking relation (both because the household has already a loan or because its application for a new loan has been accepted). We control for the heterogeneity at individual level by including covariates describing the head of the household (gender, age, civil status, education, employment status) and the whole household (number of components, number of people getting an income, income net of financial revenues).[2] We also include geographical controls (at provincial level s) and

[2]These variables also allow us to take into account the position of the specific household inside the life cycle, relevant in influencing borrowing decisions.

temporal dummies for each wave. Summary statistics for these variables are reported in the appendix (table A3). To summarize, we estimate the following equation:

$$y_{it} = \delta \text{constraint}_{it} + \gamma \text{formal credit}_{it} + x'_{it}\beta + \gamma_t + \gamma_s + \epsilon_{it} \quad (1)$$

$$E[\epsilon_{it}|\text{constraint}_{it}, \text{formal credit}_{it}, x'_{it}, \gamma_t] = 0 \quad (2)$$

where $i = 1, ..., N$ are households observed over different years $t = 1, ...T$ (the panel is unbalanced).

We start by assuming linearity and that the residuals do not include any important omitted variable that is related to the liquidity constraint and has a direct effect on the outcome y_{it} (which could be either informal loans or gifts), but we also check whether results are different using a logit specification or including household fixed effects.

Table 1 shows the results for our principal estimation, an OLS regression for the period 1995-2012 over a pooled sample of more than 70 thousands observations. The empirical analysis confirms the results of previous literature: credit constrained households face a probability to receive informal loans 13 percent higher than the rest of the sample, while only 2 percent higher in the case of gifts. Both the coefficients are highly significant but their different size confirms the structural difference between the two kind of transfers.

Looking at the definition of credit rationing introduced in the estimation, if the constraint dummies were picking up only an increased demand for credit in general, we would expect the relation with informal loans to be stronger for the discouraged households. Differently, the coefficient on the rejected cases is much larger, suggesting that we are successfully picking up also supply constraints.

The estimated coefficient for control variables have the expected signs: the probability to receive transfers is higher for larger families and for separate couples; it is decreasing in households' income and in the age of the head of household.

The interaction of credit constraints with time dummies shows that the effect of rationing on the probability of receiving informal loans is significantly higher for the last three waves (between 2008 and 2012), marked by the crisis (see table 2). This finding confirms the growing importance of the households' social environment during the crisis, when the boost in vulnerability of families enhanced the position of relatives and friends as a fundamental network of support and protection.

Results are extremely robust to alternative specifications. We perform a logit estimation and the results are completely in line with the previous ones, even in the magnitude of the marginal effects.[3] We also exploit the panel dimension of the dataset

[3]In logit estimates we include only regional dummies because (few) provinces are associated with no

Table 1: The relation between informal debt and credit constraints, Italy, 1995-2012

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS		OLS		Logit (AME)	
dependent variable	informal loans	gifts	informal loans	gifts	inf loans	gifts
constraint	0.1285***	0.0226***			0.0980***	0.0166***
	(0.0077)	(0.0047)			(0.0067)	(0.0036)
constraint (rejected)			0.2202***	0.0157*		
			(0.0189)	(0.0095)		
constraint (not applied)			0.1013***	0.0246***		
			(0.0082)	(0.0053)		
formal credit (with no constraint)	0.0228***	0.0096***	0.0227***	0.0096***	0.0277***	0.0111***
	(0.0018)	(0.0016)	(0.0018)	(0.0016)	(0.0022)	(0.0018)
Obs	71147	71147	71147	71147	71147	71147
R2	0.0629	0.0682	0.0661	0.0683		
Equality constraint for the coefficient in gift regression vs informal loans (p-value):						
constraint		0.0000				0.0000
formal credit		0.0000				0.0000

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Standard errors clustered for household in brackets. The dependent variables are a dummy for the presence of informal loans at the end of the year and a dummy for having received monetary gifts during the year. The explanatory variables are two dummies for being liquidity constraint (respectively, having been rejected at least partially by the bank or having chosen not to fill an application for a loan thinking that it would have been rejected) and a dummy for having any kind of formal debt without being liquidity constrained. The union of the two forms the main dummy "constraint". Regressions include year and province fixed effects, household's head age and age squared, log household income and its square, plus dummies for: household size, number of income recipients, number of labour income recipients, household head's gender, marital status, and education. The "equality constraint" is the p-value for a test that the coefficient on the constraint or formal credit dummy is the same for the informal loans and gift equations.

running a fixed effect estimation, but again the results are very similar (see table 3). We also tried adding lags or leads of the liquidity constraint dummies to the FE estimates, but they are not statistically significant at the 5% level.

One concern is that the regressions from table 1 are run on the overall sample, and not only on those who are somehow interested in the formal credit market (including both households holding a formal loan and households looking for credit, whether constrained or not). Actually, the effect of liquidity constraints on this subsample can already be derived from table 1 by comparing those with the constraint dummy equal to one and those with the dummy for formal credit (with no constraint) equal to one. For informal loans, this difference is large and around 10 percentage points, while it is very small for gifts. Running the regressions on the subsample gives very similar estimates for this effect.

In the main results we focused on the extensive margin, that is on the probability

cases of informal loans or gifts. Results using provincial dummies (and excluding these observations) are nevertheless extremely similar.

Table 2: The relation between informal debt and credit constraints, OLS by year, Italy, 1995-2012

dependent variable	(1) informal loans	(2) gifts	(3) informal loans	(4) gifts
constraint	0.0945***	0.0124**	0.1083***	0.0081
	(0.0092)	(0.0052)	(0.0264)	(0.0138)
constraint×1[year>2008]	0.0734***	0.0220**		
	(0.0152)	(0.0094)		
constraint×1[year=1998]			0.0216	0.0131
			(0.0354)	(0.0187)
constraint×1[year=2000]			-0.0438	-0.0086
			(0.0346)	(0.0175)
constraint×1[year=2002]			-0.0561*	-0.0085
			(0.0329)	(0.0174)
constraint×1[year=2004]			-0.0350	0.0239
			(0.0330)	(0.0209)
constraint×1[year=2006]			0.0032	-0.0006
			(0.0326)	(0.0162)
constraint×1[year=2008]			0.0876***	0.0225
			(0.0331)	(0.0184)
constraint×1[year=2010]			0.0224	0.0146
			(0.0323)	(0.0184)
constraint×1[year=2012]			0.0689*	0.0472**
			(0.0355)	(0.0214)
formal credit (with no constraint)	0.0227***	0.0095***	0.0228***	0.0095***
	(0.0018)	(0.0016)	(0.0018)	(0.0016)
Obs	71147	71147	71147	71147
R2	0.0646	0.0684	0.0656	0.0686

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Standard errors clustered for household in brackets. See Table (1) for variables definition and additional covariates. The reference year in columns (3)-(4) is 1995.

of receiving credit from relatives or friends. Exploiting information about the amount of credit, we can also check for relevant effects of credit rationing on the magnitude of the informal loan, conditioning on the attainment of such a transfer. We therefore run the same regressions using as dependent variable the quantity of informal credit and focusing only on the subsample of those who received informal loans. Results, available on request, do not show any significant coefficients on our main explanatory variables. This implies that focusing on the extensive margin already captures the relevant effects.

Households may be liquidity constrained either because of inefficiencies in the credit market or because they have observable characteristics that signal their inability of paying back the requested loan in the future. Although we do not have any direct information to distinguish between the two, some of the characteristics used as covariates are obviously related with their credit rating. For instance, household income and

Table 3: The relation between informal debt and credit constraints, with household fixed effects, Italy, 1995-2012

	(1)	(2)
dependent variable	informal loans	gifts
constraint	0.0874***	0.0184***
	(0.0100)	(0.0057)
formal credit (with no constraint)	0.0102***	0.0087***
	(0.0029)	(0.0024)
Obs	42674	42674
H0: $constraint_{t+1} = 0$ (p-value)	0.4828	0.5939
H0: $constraint_{t-1} = 0$ (p-value)	0.2824	0.0589

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Only households observed for at least two waves have been selected. Standard errors clustered for household in brackets. See Table (1) for variables definition and additional covariates (gender and education have been kept because the household head may change across waves; province fixed effects have been dropped because few households change residence). The last two rows refer to two alternative dynamic specifications including either a lead or lag of the liquidity constraint dummy; both tests refer to the null that the additional variable is equal to zero.

the head's occupation are variables that can be observed by financial institutions and used in assessing the household risk. Following the idea of statistical discrimination, for each household we build an index p_{it} equal to the predicted probability of being liquidity constrained conditional on observable household characteristics. We use the same covariates x_{it} as in table 1.[4] in order to estimate a probit model on the sample of those who either applied for a loan from a financial institution (of which some were rejected), or did not apply because they thought they would have been rejected.[5] This is in line with the index used by Guiso et al. (2004). We then forecast $\widehat{p}_{it}$ on the entire sample and we estimate a set of interactions with the constraint dummy:

$$\begin{aligned}\text{informal loans}_{it} = {} & \delta_0 \text{constraint}_{it} \\ & + \delta_1 \text{constraint}_{it} \times \widehat{p}_{it} + \delta_2 \text{constraint}_{it} \times \widehat{p}_{it}^2 + \delta_3 \text{constraint}_{it} \times \widehat{p}_{it}^3 \\ & + \rho_1 \widehat{p}_{it} + \rho_2 \widehat{p}_{it}^2 + \rho_3 \widehat{p}_{it}^3 + \gamma \text{formal credit}_{it} + x_{it}'\beta + \gamma_t + \gamma_s + \epsilon_{it} \quad (3)\end{aligned}$$

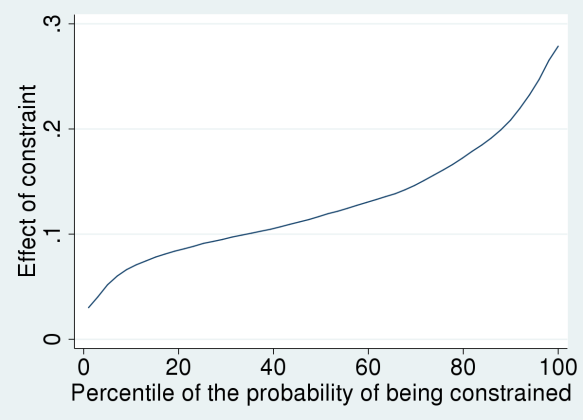
where the quadratic and cubic in $\widehat{p}_{it}$ are included to allow for some flexibility in the interaction effect.

We focus on the heterogeneity of the effect of the liquidity constraint on the sample of those who are actually constrained. Figure 6(a) shows that the estimated effect increases with the probability to be rationed; the growth is quite constant between the 10th and the 80th percentile of the p_{it} distribution, while it is higher for those house-

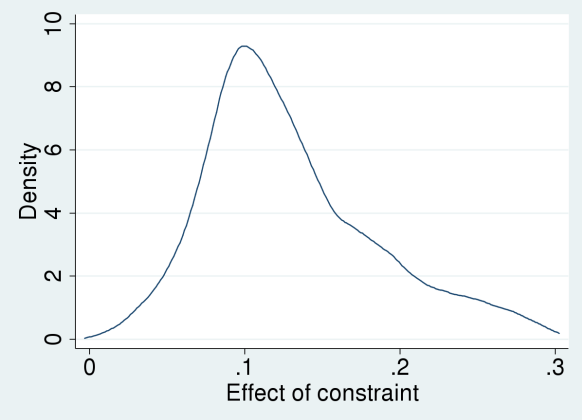
[4]One possible critique is that we should not include year and province fixed effects. Results excluding them are qualitatively similar.

[5]Results are similar if we exclude those who did not apply.

Figure 6: The effect of being liquidity constrained on informal loans, with respect to the index $\widehat{p}_{it}$



(a) The effect with respect to the p_{it}



(b) Density of the effect

Note: the index $\widehat{p}_{it}$ captures the probability of being constrained conditional on socio-demographic covariates. It is estimated with a probit model, with the constraint dummy as dependent variable, the covariates mentioned in the legend for Table 1, and selecting only the sample who applied for a formal loan or did not because they thought they would have been rejected. The effect of the constraint is estimated using eq. (3). Both figures refer only to the population of households which is actually liquidity constrained. The density is estimated using a Gaussian kernel and Silverman's rule of thumb.

holds presenting observable characteristics (in particular, lower household income) strongly correlated with the risk of being constrained. The estimated density (figure 6(b)) is concentrated around 10 percentage points, very close to the main estimate from table 1, while the effect tend to become quite large for households presenting a high risk of credit rationing. There is, therefore, a group of households who can hardly access the formal credit market, simply because they do not meet the requirements, related to their observable characteristics, set by financial institutions. This group tends to be more likely to substitute formal credit with informal loans from relatives or friends.

3.2 Complementarities with formal credit

The results displayed in table 1 show that the probability to obtain an informal loan is higher for the households having access to the credit market, corroborating our hypothesis about the presence of a complementarity channel for this kind of operation. To confirm this result, we focus on the longitudinal sample. We study whether households with neither formal credit, nor informal loans or gifts in one wave are more likely, in the following one, to start having debits to relatives or friends if they request a (formal) loan and they obtain the full amount. This regression is basically the same as in table 1, but it focuses more explicitly on the longitudinal transition.

Table 4: The relationship between formal credit and private transfers, OLS estimates Italy, 1995-2012

	(1) informal loans	(2) gifts
constraint	0.1165***	0.0153**
	(0.0134)	(0.0071)
obtained formal loan	0.0337***	0.0107*
	(0.0082)	(0.0060)
Obs	23870	23870
R2	0.0570	0.1279
Equality constraint for the coefficient in gift regression vs informal loans (p-value):		
constraint		0.0000
obtained formal loan		0.0236

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Standard errors clustered by household in brackets. We selected only households who (i) had no formal credit in the previous wave, (ii) had no informal credit in the previous wave, (iii) did not receive gifts in the previous wave. The "obtained loan" refers to households who applied for a loan at a financial institutions and received the full amount. The regressions also includes covariates as in table 1, to which we defer for other details.

Results, displayed in table 4 are indeed very similar to the main ones.[6] Note also

[6]It would be interesting to understand whether the complementarity depends also on the purpose

that the complementarity is stronger for informal loans than for gifts. With respect to the sample averages in the selected sample for table 4 (2.6% for informal loans and 2.1% for gifts), obtaining a loan from a financial institution more than doubles the proportion of households indebted with relatives or friends, while it increases by only a half those receiving monetary gifts.

Complementarity may be stronger when households indebted with a financial institutions have problems in paying back their mortgage. We perform an estimation on a subsample of households who (i) hold a formal loan both in the current and previous wave, (ii) were not informally indebted nor they received a gift in the previous one, (iii) presented no delays in payments in the previous one. The equation we estimate is[7]

$$y_{it} = \gamma \text{repayment delay}_{it} + x'_{it}\beta + \gamma_t + \omega_{it} \tag{4}$$

$$E[\omega_{it}|\text{repayment delay}_{it}, x'_{it}, \gamma_t] = 0 \tag{5}$$

Table 5: The relation between delay in debt-repayment and informal credit

	(1)	(2)	(3)	(4)
	With formal debt at t and t-1, no informal loan at t-1, no delay at t-1		With formal debt at t and t-1, no informal loan at t-1	
dependent variable	informal loans	gifts	informal loans	gifts
Delay in repayment	0.1837**	0.0678	0.1909***	0.0617*
	(0.0754)	(0.0465)	(0.0550)	(0.0366)
obs	971	971	1476	1476
R2	0.1591	0.1350	0.1248	0.0944
Equality delay (gift vs inf loans; p-value)		0.1491		0.0175

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Standard errors clustered for household in brackets. The main explanatory variable is a dummy for delay in repayment of formal debts for more than 90 days. It is available from 2008. See Table (1) for additional covariates and definitions of dependent variables. The sample includes all households (i) who had any kind of formal debit in the previous and current waves, (ii) who did not have informal loans or monetary gifts in the previous wave and (iii) who did not have delays in repayment in the previous wave (this requires using only 2010 and 2012). In columns (3)-(4) the (iii) selection criterion is removed (hence data are from 2008-10-12). The "equality delay" is the p-value for a test that the coefficient on the delay dummy is the same for the informal loans and gift equations.

Results presented in table 5 show that the emergence of financial distress for households holding formal credit relation (signalled by a delay in payments) increases by

of the formal loan. Unfortunately, direct information is fully available only for 2012, which is not sufficient to run the regressions (in 2010 it was asked only to those who were rejected).

[7]We do not include a control for liquidity constraints, given that these households are already indebted in the credit market. Results are basically unchanged if we add the relative dummy among the regressors.

20 per cent the probability to receive an informal loan. This finding indicates that at least part of the observed complementarity is driven by a backup effect of relatives and friends with respect to households with financial problems. The analysis leads to a strong drop in the number of observation, due both to the small fraction of households with debt and to the fact that the question about delays in payments is asked only since 2008, so the sample for the estimation (considering households having no delays in the past wave) includes just the waves for 2010 and 2012. We test the robustness of the results by relaxing the assumption of not having delays at time t-1 for households with loans. In this way we are able to include one more wave and increase by 30 per cent the size of the sample. Results are nevertheless quite similar.

3.3 Local credit supply and informal loans

Insofar we have shown that two different channels do influence simultaneously the probability of receiving an informal loan. These channels act in opposite directions with respect to "formal" credit: on the one side an informal aid is asked when formal credit is not available (or it is believed so), on the other side getting formal credit may actually foster informal one. Indeed, understanding which one prevails may prove worthy in both understanding the phenomenon and providing insightful knowledge for policy implication. As a final step, we try to measure the net effect on informal loans of variation in local credit supply, proxied by the diffusion of bank branches. As distance matters in accessing credit by households, the effect of a wider network of branches is well established in the literature (Ruiz, 2013).

We perform a regression estimating the impact of a proxy for local credit supply (per-capita bank branches at the provincial level) on the probability to receive informal loans. We are aware that the proxy for the supply of credit is affected by endogeneity: if loans demand generates its own supply, we expect the area with the best economic performances to present the most developed credit market, introducing a bias in our results.

In order to overcome endogeneity, we apply the methodology used by Guiso et al. (2004). The authors exploited the regulation introduced by the Italian banking law of 1936, that fixed the number of branches for every province and every type of bank and strictly regulated the entry up to the late Eighties, thus influencing the availability of branches for more than 50 years. The authors adopted as an instrument the number of per capita branches in 1936, showing that the variable explains an important part of regional heterogeneity in present credit volumes and is uncorrelated with 1936 local economic performance (local branch diffusion in 1936 "*reflects the interaction between*

the different waves of bank creation and the history of Italian unification" and "*was deeply affected by the consolidation in the banking sector that took place between 1927 and 1936.*" Guiso et al., 2004, pg. 944).

Given the strong heterogeneity of credit supply even within provinces, we introduce an alternative proxy for credit supply, given by the number of per capita branches at municipality level, instrumented by the value of per capita branches at 1989. This is because branches openings were liberalized in 1990, so it is reasonable to assume that the impact of new branches was limited and the power of the instrument is preserved.

To summarize, we estimate the equation

$$y_{igt} = \delta \text{per-capita local branches}_{gt} + x'_{it}\beta + \gamma_t + \eta_{igt} \tag{6}$$

where $g = 1, ..., G$ is the province or the municipality. First of all we run OLS, assuming that there are no relevant omitted variables at the individual or at the local level that could bias our results:

$$E[\eta_{igt}|\text{per-capita local branches}_{gt}, x'_{it}, \gamma_t] = 0 \tag{7}$$

Secondly, we relax this assumption by assuming that the current unobserved component η_{igt} may be correlated with local omitted variables at the provincial level, but that it is uncorrelated with the banking structure in 1936 (1989 for municipality):

$$Cov[\eta_{igt}, \text{per-capita local branches in } 1936_g] = 0. \tag{8}$$

Assuming this absence of correlation, we can estimate equation (6) by 2SLS, using *per-capita local branches in* 1936_g (*in* 1989_g for town halls) as an instrument for *per-capita local branches*$_{gt}$.

It must be noted that the variability of the instrument is at the provincial (municipality) level, and therefore all equations exclude province (municipality) fixed effects. We preferred the IV strategy because it allows us to exploit the variability across regions, instead of focusing on the more limited variability over time within area. Secondly, we cannot employ here fixed effects at the household level, because very few households change province over time and therefore we cannot combine FE with 2SLS.

We start by focusing only on the subsample of those interested in the formal credit market, that is those who are either liquidity constrained (rejected or discouraged) or have access to loans from financial institutions. Results, reported in table 5, highlight a negative relation between credit supply and informal loans, which seems to be explained through the (negative) effect on the proportion of liquidity constrained

Table 6: The relation between informal debt, credit constraints and local credit supply, only households interested in the formal credit market, Italy, 1995-2012

dependent variable	(1) informal loans	(2) constraint (rejected)	(3) constraint (not applied)	(4) formal credit (with no constraint)
	Province			
	OLS			
local branches per 000s	-0.0307*	-0.0352	0.0003	0.0349
inhabitants	(0.0180)	(0.0242)	(0.0409)	(0.0473)
	2SLS (instrument: local branches in 1936)			
local branches per 000s	-0.0214	-0.0620*	-0.0014	0.0633
inhabitants	(0.0371)	(0.0361)	(0.0788)	(0.0952)
Obs	16392	16392	16392	16392
First-stage F	31.7881	31.7881	31.7881	31.7881
	Municipality			
	OLS			
local branches per 000s	-0.0164*	-0.0223**	0.0061	0.0162
inhabitants	(0.0090)	(0.0113)	(0.0207)	(0.0243)
	2SLS (instrument: local branches in 1989)			
local branches per 000s	-0.0286**	-0.0225*	0.0138	0.0087
inhabitants	(0.0134)	(0.0121)	(0.0315)	(0.0351)
Obs	16392	16392	16392	16392
First-stage F	127.9869	127.9869	127.9869	127.9869

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Standard errors clustered for province (G=95) or municipality (G=438) in brackets. See Table (1) for variables definition and additional covariates. However, differently from Table (1), the regressions do not include province/municipality fixed effects.

households. The effect increases and its statistical significance improves if we focus our analysis on smaller areas: looking at per capita branches for single municipalities, the market supply proxy coefficient is significant at 5 percent level for the informal loans estimation, and at the 10 percent for the credit constraint estimation (restricted to rejected households; the effect for discouraged ones is negligible).

Although there is evidence of a drop in informal loans when local credit is expanded, the estimated relationship is quite weak. This confirms that the growth in local credit supply may produce two opposite effects. From one side, the fall in the number of credit constrained households induced by the increase in credit supply will reduce the need for informal credit. From the other, an increase in local branches will expand the number of indebted households, which would also result in more informal loans given the complementary channel described above.

If the complementary channel is relevant, we expect that the substitutability between local formal and informal credit should be even weaker when we look at the entire sample. The reason is that in this case we are looking also at the overall expansion of households interested in formal loans with respect to the rest of the population.

Table 7: The relation between informal debt, credit constraints and local credit supply, Italy, 1995-2012

dependent variable	(1) informal loans	(2) constraint (rejected)	(3) constraint (not applied)	(4) formal credit (with no constraint)
	Province			
	OLS			
local branches per 000s	-0.0121*	-0.0068	0.0025	0.0164
inhabitants	(0.0068)	(0.0054)	(0.0099)	(0.0403)
	2SLS (instrument: local branches in 1936)			
local branches per 000s	-0.0210	-0.0137	-0.0022	-0.0047
inhabitants	(0.0141)	(0.0085)	(0.0204)	(0.0548)
Obs	71147	71147	71147	71147
First-stage F	36.7489	36.7489	36.7489	36.7489
	Town hall			
	OLS			
local branches per 000s	-0.0074**	-0.0045*	0.0018	0.0095
inhabitants	(0.0032)	(0.0024)	(0.0047)	(0.0142)
	2SLS (instrument: local branches in 1989)			
local branches per 000s	-0.0104**	-0.0031	0.0099	0.0451**
inhabitants	(0.0051)	(0.0028)	(0.0076)	(0.0187)
Obs	71147	71147	71147	71147
First-stage F	155.8051	155.8051	155.8051	155.8051

Note: * p<.10 ** p<.05 *** p<.01. The unit of observation is the household. Standard errors clustered for province (G=95) or town hall (G=438) in brackets. See Table (1) for variables definition and additional covariates. However, differently from Table (1), the regressions do not include province/town-hall fixed effects.

Table 7 shows, indeed, that the coefficients on the per-capita local branches are even smaller, though still negative, when we run the regressions on the overall sample.

4 Conclusions

We tried to shed some light on the economics of informal credit used by households. The view of the mainstream literature is based on the general idea that informal markets take place when the functioning of formal ones is impaired. This way, as far as households are concerned, the diffusion of informal loans has been considered as a proxy of the distance to the credit market efficiency: the larger, the more policy actions is needed.

We enlarge this view using data over a relatively long period of time. As a first step we show that, indeed, this mechanism is at work, so that the probability of receiving an informal loan grows with the magnitude of credit rationing. However, we highlight the presence of a second channel, related to the complementarity between the access to the formal credit market and the demand for informal loans. As a result, the net

effect is a priori unclear. Focusing on the local supply of formal banking credit, we show that the substitution channel seems to prevail in our data, even if the overall impact on informal loans is rather limited.

This result has two important policy implications. First of all, the development of financial institutions does not necessarily lead to the disappearance of the informal market. Secondly, the presence of informal loans, usually considered an index of financial backwardness, may represent an important complement to the diffusion of formal credit and a valid support in the case of financial distress.

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Appendix: additional tables

Table A1: Summary statistics

	1995	1998	2000	2002	2004	2006	2008	2010	2012
Informal loans									
no.	306	243	103	85	137	185	257	227	286
ratio (percent)	3.8	3.4	1.3	1.1	1.7	2.4	3.2	2.9	3.5
Monetary gifts									
no.	184	108	116	132	169	113	211	218	233
ratio (percent)	2.3	1.5	1.5	1.6	2.1	1.5	2.6	2.7	2.8
Informal loans + monetary gifts									
no.	475	338	211	209	298	287	432	423	458
ratio	5.8	4.7	2.6	2.6	3.7	3.7	5.4	5.3	5.6

Table A2: Share of households with informal loans or receiving private transfers (percent)

	Share of households		
	inf. loans	mon. gifts	loans+gifts
Area			
North West	2.7	1.2	3.8
North East	1.9	1.7	3.5
Centre	1.5	1.8	3.1
South	3.8	3.4	6.6
Islands	2.9	2.6	5.1
Gender			
Men	2.6	1.8	4.1
Women	2.6	2.8	5.2
Age			
Under 30	4.6	4.9	8.9
31-40	4.1	3.6	7.4
41-50	3.8	2.7	6.1
51-65	2.0	1.6	3.4
Over 65	1.1	0.8	1.9
Marital status			
Married	2.6	1.8	4.2
Single	2.8	2.7	5.0
Separated/divorced	4.4	4.9	8.8
Widowed	1.8	1.4	3.1
Education			
None or elementary school	2.3	1.6	3.6
Middle school	3.5	2.3	5.4
High school	2.2	2.3	4.3
University degree or higher	1.7	2.3	4.0
Work status			
Blue-collar worker	4.2	2.2	6.0
Office worker, teacher	2.3	2.2	4.4
Junior manager	1.7	1.9	3.5
Senior manager	1.2	1.6	2.8
Freelance	2.1	1.9	4.0
Entrepreneur	2.7	1.9	4.4
Not employed	2.1	2.1	3.8
Town size			
Under 20,000	2.1	1.5	3.4
20,000-40,000	2.1	1.8	3.6
40,000-500,000	2.9	2.5	5.0
Over 500,000	3.7	2.6	6.1
Household members			
1	2.3	2.2	4.3
2	1.8	1.4	3.0
3	2.3	2.2	4.3
4 or more	3.8	2.7	6.1
Distribution of income			
1st quarter	4.9	4.2	8.4
2nd quarter	2.3	1.5	3.7
3rd quarter	1.7	1.2	2.9
4th quarter	1.4	1.4	2.7

Table A3: Descriptive statistics for the sample used in Table 1

	mean	median	sd	min	max
inf loan	.0257073	0	.1582619	0	1
monetary gift	.0208582	0	.1429106	0	1
constraint	.032721	0	.1779066	0	1
constraint (rejected)	.0075196	0	.0863898	0	1
constraint (not applied)	.0252013	0	.1567373	0	1
formal credit (with no constraint)	.1976752	0	.3982486	0	1
women	.2985649	0	.4576318	0	1
hh size=1	.2201498	0	.4143505	0	1
hh size=2	.2914951	0	.4544542	0	1
hh size=3	.2135719	0	.4098308	0	1
hh size=4	.1979282	0	.3984406	0	1
hh size=5	.0584283	0	.2345533	0	1
hh size$\geq$6	.0184266	0	.1344892	0	1
income recipients=1	.4693522	0	.4990633	0	1
income recipients=2	.410699	0	.4919642	0	1
income recipients$\geq$3	.1199488	0	.324904	0	1
labour inc recipients=0	.3759681	0	.4843752	0	1
labour inc recipients=1	.3399019	0	.473679	0	1
labour inc recipients=2	.2391106	0	.4265434	0	1
labour inc recipients$\geq$3	.0450195	0	.2073483	0	1
married	.6283048	1	.483261	0	1
single	.1541878	0	.3611312	0	1
divorced/separated	.059623	0	.2367888	0	1
widow	.1578844	0	.3646351	0	1
no qualification	.0611972	0	.2396934	0	1
primary school	.2477406	0	.4317034	0	1
12th grade	.3023318	0	.4592714	0	1
high school	.2872222	0	.4524693	0	1
bachelor	.0965747	0	.2953798	0	1
post-graduate	.0049334	0	.0700655	0	1
blue collar	.197366	0	.3980137	0	1
white collar	.1782366	0	.3827145	0	1
manager	.0331708	0	.1790835	0	1
freelance (libero professionista)	.016501	0	.1273931	0	1
entrepreneur	.0275205	0	.1635955	0	1
self-employed	.0979381	0	.297233	0	1
non-professional condition	.449267	0	.497423	0	1
age	55.54805	55	16.44548	18	104
age^2	3356.036	3025	1869.311	324	10816
log(hh income)	3.134441	3.169686	.7030507	0	6.932026
log(hh income)^2	10.319	10.04691	4.210394	0	48.05298
obs	71147				

Table A4: Descriptive statistics for the sample used in Table 5, columns (1)-(2)

	mean	median	sd	min	max
delay in repayment	.0339856	0	.1812854	0	1
inf loan	.0288363	0	.1674324	0	1
monetary gift	.015448	0	.1233898	0	1
constraint	.0638517	0	.2446146	0	1
constraint (rejected)	.0113285	0	.1058855	0	1
constraint (not applied)	.0525232	0	.2231945	0	1
formal credit (with no constraint)	.8939238	1	.3080938	0	1
women	.2348095	0	.4240981	0	1
hh size=1	.092688	0	.2901441	0	1
hh size=2	.2162719	0	.4119139	0	1
hh size=3	.2893924	0	.453714	0	1
hh size=4	.3017508	0	.4592542	0	1
hh size=5	.0803296	0	.2719428	0	1
hh size≥6	.0195675	0	.1385798	0	1
income recipients=1	.3048404	0	.460577	0	1
income recipients=2	.5355304	1	.498993	0	1
income recipients≥3	.1596292	0	.3664506	0	1
labour inc recipients=0	.1431514	0	.3504077	0	1
labour inc recipients=1	.346035	0	.4759497	0	1
labour inc recipients=2	.4294542	0	.4952534	0	1
labour inc recipients≥3	.0813594	0	.2735272	0	1
married	.7723996	1	.4194993	0	1
single	.1101957	0	.3132949	0	1
divorced/separated	.069001	0	.2535865	0	1
widow	.0484037	0	.2147284	0	1
no qualification	.0082389	0	.0904404	0	1
primary school	.092688	0	.2901441	0	1
12th grade	.3707518	0	.483255	0	1
high school	.3522142	0	.4779065	0	1
bachelor	.1585994	0	.3654903	0	1
post-graduate	.0175077	0	.1312209	0	1
blue collar	.2543769	0	.4357348	0	1
white collar	.284243	0	.4512856	0	1
manager	.07724	0	.2671094	0	1
freelance (libero professionista)	.0360453	0	.186499	0	1
entrepreneur	.0494336	0	.2168832	0	1
self-employed	.0782698	0	.2687341	0	1
non-professional condition	.2203913	0	.4147242	0	1
age	51.14315	50	11.77658	22	87
age^2	2754.167	2500	1249.813	484	7569
log(hh income)	3.638422	3.630985	.5283896	1.098612	5.771441
log(hh income)^2	13.51702	13.18406	3.801432	1.206949	33.30953
obs	971				

Table A5: Descriptive statistics for the sample used in Table 5, columns (3)-(4)

	mean	median	sd	min	max
delay in repayment	.0426829	0	.2022098	0	1
inf loan	.0298103	0	.1701213	0	1
monetary gift	.0189702	0	.1364659	0	1
constraint	.0663957	0	.2490568	0	1
constraint (rejected)	.0115176	0	.1067365	0	1
constraint (not applied)	.054878	0	.2278193	0	1
formal credit (with no constraint)	.902439	1	.2968207	0	1
women	.2283198	0	.419892	0	1
hh size=1	.0928184	0	.2902762	0	1
hh size=2	.2127371	0	.409382	0	1
hh size=3	.2906504	0	.4542164	0	1
hh size=4	.3042005	0	.4602239	0	1
hh size=5	.0779133	0	.2681259	0	1
hh size≥6	.0216802	0	.1456865	0	1
income recipients=1	.3062331	0	.461084	0	1
income recipients=2	.5345528	1	.4989737	0	1
income recipients≥3	.1592141	0	.3659996	0	1
labour inc recipients=0	.1436314	0	.3508345	0	1
labour inc recipients=1	.3333333	0	.4715643	0	1
labour inc recipients=2	.4403794	0	.4966009	0	1
labour inc recipients≥3	.0826558	0	.2754546	0	1
married	.7771003	1	.4163326	0	1
single	.1097561	0	.3126914	0	1
divorced/separated	.0650407	0	.2466812	0	1
widow	.048103	0	.2140564	0	1
no qualification	.0074526	0	.0860352	0	1
primary school	.1023035	0	.3031498	0	1
12th grade	.3699187	0	.482946	0	1
high school	.3536585	0	.4782668	0	1
bachelor	.151084	0	.3582521	0	1
post-graduate	.0155827	0	.1238961	0	1
blue collar	.2608401	0	.4392417	0	1
white collar	.2784553	0	.4483906	0	1
manager	.0697832	0	.2548676	0	1
freelance (libero professionista)	.0338753	0	.1809696	0	1
entrepreneur	.0501355	0	.2182985	0	1
self-employed	.0887534	0	.2844838	0	1
non-professional condition	.2181572	0	.4131347	0	1
age	50.64905	50	11.71487	20	87
age^2	2702.472	2500	1229.818	400	7569
log(hh income)	3.634779	3.648057	.5294986	0	5.771441
log(hh income)^2	13.4918	13.30832	3.777211	0	33.30953
obs	1476				

Table A6: Descriptive statistics for the sample used in Table 6

	mean	median	sd	min	max
inf loan	.0556979	0	.2293444	0	1
monetary gift	.0297096	0	.1697902	0	1
constraint	.1420205	0	.3490818	0	1
constraint (rejected)	.0326379	0	.1776923	0	1
constraint (not applied)	.1093826	0	.3121282	0	1
formal credit (with no constraint)	.8579795	1	.3490818	0	1
women	.2191923	0	.4137118	0	1
hh size=1	.1045632	0	.3059991	0	1
hh size=2	.2131528	0	.4095472	0	1
hh size=3	.2697657	0	.4438516	0	1
hh size=4	.2998414	0	.4582023	0	1
hh size=5	.0847975	0	.2785886	0	1
hh size≥6	.0278795	0	.1646324	0	1
income recipients=1	.3620059	0	.4805952	0	1
income recipients=2	.4825525	0	.4997107	0	1
income recipients≥3	.1554417	0	.3623363	0	1
labour inc recipients=0	.1338458	0	.3404969	0	1
labour inc recipients=1	.3939727	0	.4886438	0	1
labour inc recipients=2	.3985481	0	.4896143	0	1
labour inc recipients≥3	.0736335	0	.2611815	0	1
married	.7480478	1	.4341472	0	1
single	.1330527	0	.3396421	0	1
divorced/separated	.0687531	0	.2530414	0	1
widow	.0501464	0	.2182537	0	1
no qualification	.0155564	0	.123755	0	1
primary school	.1377501	0	.344648	0	1
12th grade	.3494388	0	.4768073	0	1
high school	.3757321	0	.4843261	0	1
bachelor	.1153612	0	.319467	0	1
post-graduate	.0061615	0	.0782557	0	1
blue collar	.2784285	0	.4482391	0	1
white collar	.2632992	0	.4404368	0	1
manager	.0533187	0	.2246751	0	1
freelance (libero professionista)	.0236091	0	.1518325	0	1
entrepreneur	.0418497	0	.2002517	0	1
self-employed	.1306125	0	.3369863	0	1
non-professional condition	.2088824	0	.4065226	0	1
age	47.42423	47	12.60504	18	95
age^2	2407.935	2209	1273.777	324	9025
log(hh income)	3.35665	3.403195	.6395493	0	6.932026
log(hh income)^2	11.6761	11.58174	4.070087	0	48.05298
obs	16392				