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Do Women Pay More for Credit?
Evidence from Italy

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Abstract

The answer is yes. By using a unique and large data set on overdraft contracts between banks and microfirms and self-employed individuals, we find robust evidence that women in Italy pay more for overdraft facilities than men. We could not find any evidence that women are riskier then men. The male/female differential remains even after controlling for a large number of characteristics of the type of business, the borrower and the market structure of the credit market. The result is not driven by women using a different type of bank than men, since the same bank charges different rates to male and female borrowers. Social capital does play a role: high levels of trust loosen credit conditions by lowering interest rates, but this benefit is not evenly distributed, as women benefit from increased social capital less than men.

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1 Introduction

In Italy, microfirms and self employment are especially common, and bank overdraft facilities (or credit lines) are an important source of credit for liquidity provisions. Self-employed women and microfirms owned by women comprise more than 25 percent of the total.[1]

We take advantage of a unique data set on all overdraft facilities used by the self-employed and microfirms in Italy, and we find that women pay a higher interest rate than men, after controlling for a host of personal characteristics, characteristics of the business and characteristics of local credit markets. An obvious explanation could be that women are riskier borrowers, but the result remains strong after controlling for a variety of risk factors, including past credit history of the individual borrower, the sector in which the borrower operates and his/her type of activity. In fact, female-owned businesses have gone bankrupt significantly less often than male-owned, and women have a slightly better credit history.

The result holds unchanged when we include bank fixed effects: therefore, it cannot be explained by the fact that women use a specific type of bank. We also find that firms asked to pledge collateral are charged higher interest, since they are perceived as more risky. Interestingly, we find that, when a woman has a male guarantor, her interest rate goes down, rather than up, while if a female borrower has a female guarantor, her interest rate is much higher even than that of a male/male pair. A woman guaranteed by a woman is considered the absolute worst possible borrower by banks.

In order to further investigate the role of trust and risk, we consider social capital in different parts of Italy and its effects on credit relationship. As a large literature has discussed, the level of trust varies dramatically across provinces in Italy, and this correlates to a host of socio-economic outcomes.[2]

[1] Even if female participation rates in the labor market have been increasing over time, reaching 46 percent in 2006, Italy is still lagging behind other European countries (the EU average is more than 57 percent).

[2] Pathbreaking work by Putnam (1993) made the point, and recent work by Guiso Sapienza and Zinagles (2007) deepened the argument in important ways. For related work

We show that interest rates charged for these overdraft facilities are lower in places with higher social capital and trust, and this robust result is of interest in its own right. The differential between female and male rates, however, is not an artifact of low social capital. In fact, when we look at the interaction of measures of social capital and the gender of the borrower, we find that women benefit from the trust effect of increased social capital less than men. In other words, both men and women pay relatively less in places with more trust, but women benefit less than men from this effect. We have also investigated whether the structure of the bank industry matters, for instance with more fragmentation in the system benefiting women (perhaps because of more competition), and whether the presence of small banks, for which fiduciary and personal relationships with the clients matter, would benefit women. We did not find much. Women pay more with any structure of the banking sector.

Are women then discriminated against in credit markets in Italy? First of all, we need to distinguish between statistical and taste-based discrimination. The first category implies that lenders find women to be more risky than men, and consequently a lender, even if not biased against women, would rationally charge a higher interest to them. Taste discrimination simply implies that lenders, holding risk constant, charge more to women because they are biased against them. We could not uncover any evidence than women are riskier than men in Italy, and in our regression, we try to control as well as we can for risk factors. Incidentally, note that the literature on microcredit in developing countries pointed out that women are significantly more reliable borrowers than men (see Armendariz and Morduch (2005) for a survey), even though it is not clear whether these results extend outside the context of very poor countries. However, it is possible that we are not fully capturing risk factors, and banks may know more than the econometricians about why women are riskier than men.

The alternative explanation is that women are taste-discriminated against

on Europe, see Tabellini (2006).

by banks: namely, banks view women as less desirable clients simply because they are women. Unfortunately, we do not have data on credit applications, approvals and denials, which could provide additional evidence regarding this effect.

Amongst OECD countries, Italy is towards the extreme in terms of viewing women in a "traditional" role, as recently shown in Alesina and Giuliano (2007). These authors point out that, in cultures where family ties are strong (as they are in Italy), the family is based on the more traditional roles of a male bread earner and a woman running the household. These cultural traits are especially strong in the south of Italy.[3] However, our results on interest rates on women are not driven by the behavior of the south; rather, they are pervasive.

While taste discrimination is likely to be more common in a society which views women "traditionally," one has to be constantly reminded of the Beckerian (Becker 1961) critique: that is, in our context, if some banks discriminate against women because they have a taste for it (i.e., they are willing to leave expected profits on the table to favor men over women), why don't other banks enter the market and make extra-profits by not discriminating? Banks run by women may be more likely to be averse to gender-based discrimination, but note that the presence of women on boards of banks is minimal in Italy.

The literature on discrimination in credit markets focuses mostly on racial discrimination in the US, and needless to say, the topic is hotly debated and politically charged. Cavalluzzo and Cavalluzzo (1998) and Blanchflower, Levine and Zimmerman (2003) review this debate and provide evidence that they claim is consistent with discrimination against African-Americans in the market for small business loans. They focus not on interest rates charged but on denials of credit applications.[4] Ravina (2008) presents evidence on US data of taste-based discrimination in the credit market: personal character-

[3]See the pathbreaking work by Banfield (1958) on this point.

[4]See also Cole (1999), Calomiris, Khan and Longhofer (1994) and Lundberg and Starz (1998)

istics like beauty (in addition to race) seem correlated with credit conditions, even though they are not correlated with repayment records. These results are generally consistent with those of Bertrand, Karlan, Mullainhatan, Shafir and Zinnerman (2005). Similar results are routinely found in labor markets.[5]

The organization of the paper is simple. In the next section, we describe our data sources and present some summary statistics. In Section 3, we show our results on female versus male interest rate differentials. Section 4 investigates the role of trust and social capital, and the last section discusses the results and concludes the paper.

2 Data

2.1 Sources

While there is no internationally recognized definition of "woman entrepreneur" or "female-run firm," the definition used by countries to disseminate data on male and female entrepreneurship includes concepts such as owners, managers, the self-employed and employers. For the purposes of the present paper, we rely on the sole proprietorship firm, because in this instance, it is straightforward to identify the owner's gender.

The data used in our empirical analysis come from two main sources: a) the Central Credit Register (Centrale dei Rischi) run by the Bank of Italy, containing detailed information on firms and individuals whose loans are above the threshold level of €75,000 and b) the Bank of Italy Loan Interest Rate Survey, including information on interest rates charged on each bank loan granted by a sample of about 200 Italian banks. This sample is highly representative of the Italian market for loans to small firms. These banks account for over 80 percent of the total lending granted to self employed and microfirms. Furthermore, the sample is representative of the universe of Italian banks in terms of bank size, category and location.

[5]See Altonji and Blank (1999) for a survey and Bertrand and Mullainhatan (2004) for some recent evidence obtained in an imaginative way.

We focus on overdraft facilities (i.e., credit lines) for three reasons.[6] First of all, for very small firms and self-employed individuals, overdraft facilities are the main form of credit and liquidity management. Second, since these loans are highly standardized among banks, we are sure that the comparison between the cost of credit among firms is not affected by unobservable (to the econometrician) loan-contract-specific covenants. This is not the case for mortgages, for which we cannot observe the exact maturity of the loan, the loan-to-value ratio and other eventual loan characteristics. Third, overdraft facilities are loans that are granted neither for some specific purpose, as is the case for mortgages, nor on the basis of a specific trade transaction, as is the case for advances against trade credit receivables. As a consequence, according to Berger and Udell (1995), the pricing of these loans is highly associated with the borrower-lender relationship, thus providing us with a better tool for testing gender discrimination. After a careful cleaning procedure, we end up with a sample of 1.2 million loans to nearly 150 thousand firms for 12 quarters, from January 2004 to December 2006.[7]

2.2 Summary Statistics

In Table 1, we define all the variables used below. Table 2 shows the gender composition of our data by firms and loan contracts and by regions of Italy: North-East, North-West, Center and South. The fraction of female-owned businesses is about 18 percent of the total, and the fraction of loans for these businesses is slightly less, at 16 percent. This may hint at the possibility of

[6] A credit line is a contract that allows a borrower to take advantage of a predetermined "line limit" and repay it at the borrower's discretion with an interest rate periodically set by the bank. Whenever the drawn credit exceeds the line limit, the bank charges a penalty interest rate.

[7] Data on credit lines have been trimmed to the 1-99 percentiles of the interest rate distribution. Also, we excluded from the sample those firms that are recipients of government subsidies, since those firms are likely to face a subsidized interest rate. Moreover, this exclusion enables us to rule out the possibility of having those "marginal" firms that wouldn't enter the market without a subsidy and/or that may be listed in a woman's name just to receive some kind of state aid.

a higher denial ratio for women, but we do not have these data, especially if we recall that one firm out of four is female-run, according to the business register. Interestingly, the share of female businesses is very similar between the north and south of Italy, and the geographic distribution of shares is similar, even though there are of course more firms in the more populated north of Italy. Note that female entrepreneurial rates are especially large in the south compared to labor participation rates. In any event, our results are not driven by observations in the south.

Table 3 illustrates the sectorial composition of the borrowers. Not surprisingly, women and men are not distributed evenly in all sectors; for instance, women are almost non-existent in construction but make up more than a third of the tourist industry. Needless to say, we control for sectors in our regression below, and in fact, we have a much-refined definition of sectors in our estimates. Table 4 illustrates data on the size of credit lines. Credit lines to women tend to be smaller: the first two columns of this table show that about 65 percent of loans to women are in the smaller category, versus 55 percent of loans to men. Table 5 shows that the average drawn from credit line in absolute value is similar between men and women, but women draw a slightly higher share of their lines. Table 6 shows that a higher percentage of loans to women are accompanied by external guarantees, often a person guarantor. We have also checked whether, on average, women are worse borrowers. In our data set, we have an indicator variable for the presence of bad loans, defined in Table 1, which captures whether the borrower has had a history of some sort of bad credit. The numbers are slightly higher for men than for women, 0.46 versus 0.44 percent. If we look at the underlying number of firms, we find that 1.1 percent of female firms have a bad credit history, while for males, the figure is 1.3 percent.

Unfortunately, we do not have data on bankruptcies; however, we have them for the universe of Italian firms obtained from from the Chamber of Commerce, the Italian business register. It turns out that, in 2004, female sole proprietorship firms had a lower failure rate than male firms: 1.9 vs.

2.2 (the failure rate is defined as the ratio of the number of firms with an outstanding bankruptcy procedure to the total number of active firms). If we take a broader definition of failure rates, which accounts for liquidations also, the figures are even more clear: the failure rate for female firms is 4.9 percent, and the one for males is 6.0. Accordingly, there is no evidence that firms owned by women tend to go bankrupt more than firms owned by men.[8]

In summary, female firms are roughly equally distributed as shares of the total across Italy, women-owned businesses obtain somewhat smaller loans and women seem to have a better credit history then men on average and are less likely to go bankrupt. Nevertheless, more women are asked to post a guarantee when they obtain a loan.

3 Results

3.1 Basic Regressions

Table 7 presents our basic results. All the columns include industry, time and province fixed effects. A province is a locality in Italy more or less equivalent to a non-sparsely-populated county in the US. In the period under exam, there were 103 provinces in Italy with a minimum of 89 thousand and a maximum of 3.5 million inhabitants.

The left-hand variable is the interest rate, expressed as the difference between the observed interest rate and the ECB marginal rate on lending facilities (in the period we consider, 2004-2006, the average interest rate paid on overdraft facilities is, in our sample, around 9 percent). We include a set of 148 industry dummies (3-digits SIC code) and 12 quarterly time dummies. Standard errors are robust and clustered at the firm level.

In the first column, we control only for the gender of the borrower, in addition to the dummies listed above, and we find that female borrowers pay about 29 basis points more than men with the coefficient significant at the

[8] See also Lotti (2007).

1 percent level. In column (2), we repeate the same regression, adding bank fixed effects. The coefficient on the female variable is virtually identical to that of the first column. This shows that the effect on female rate is not due to the fact that females choose systematically different types of banks relative to men. As a further robustness check, column (3) contains the same specifications as (1), estimated by means of panel techniques.[9] As expected, the coefficient for the female dummy is higher but unchanged in its magnitude. Secondly, in column (4), we control for a few other determinants typically related to firm riskiness, defined above in Table 1 (like all other variables).[10] The coefficient of the dummy for craftsmen is negative, but it is not significant when bank fixed effects are put in the regression: this finding is consistent with the hypothesis that craftsmen may take advantage of a preferential treatment with specialized lenders. The coefficient of the borrower's age variable shows that younger individuals are considered more risky by bank and pay a higher interest rate, because age is commonly viewed as the amount of public information available about the firm.[11] We also looked at the quadratic term on age: the estimated coefficient turned out to be positive but very small, suggesting very old borrowers paying more. Our coefficient of interest on the female variable was unchanged. Note that the average age of borrowers is 48 for women and 50 for men: thus, very similar. Third, we include a proxy for firm size, i.e. the size of the firm's total debt, and we find that firms with a larger amount of outstanding loans pay a lower rate, presumably because these are, to some extent, larger firms with higher bargaining power in setting the loan terms. In fact, the amount of the requested loan is strongly correlated with the firm's incentives to look

[9]We use a random effect panel, since a fixed effect model would wipe out all time-invariant characteristics, like the owner's gender. Nevertheless, with such a short time span, especially if compared to the large number of observation, we did not find any significant time effect in the regression (see Pesaran and Yamagata (2008) for testing issues in large panels).

[10]Firm characteristics included in our regressions are quite standard in the banking literature; see Berger and Udell (1995) or Petersen and Rajan (1995), among others.

[11]See Petersen and Rajan (1994) and Berger and Udell (1995).

for a lower price for credit (Stigler, 1961).

Fourth, past episodes of insolvency lead to higher interest rates, not surprisingly. The coefficient on the variable of interest (female) remains positive and significant at the one percent level; it falls in magnitude, but the female penalties remain close to 20 basis points.[12] We have also investigated whether the age effect is different from men and women, possibly because of maternity, but we found no indication that the interest rate differential is charged on women of childbearing age.[13]

Column (4) repeats the regression of column (3) but includes bank fixed effects. As for the case of column (2) versus (1), the introduction of bank fixed effects hardly changes the coefficient on females. We have repeated all the regressions that we report below using bank fixed effects, and we always find the same result: the coefficient on the female variable is virtually unaffected. We report below results without bank fixed effects; the other one are available from the authors. Given the large sample size, we could estimate the same basic specification separately for broadly defined industries. As one can see from Table A1 in the appendix, the coefficient of the dummy female is lower in the hospitality industry (0.1) and higher in the credit & insurance intermediation sector (0.4).

3.2 Men and Female Guarantors

Sometimes banks remand a guarantor in order to agree to a credit line contract. Presumably, they do so when they worry about the solvency of the borrower. As we discussed above, women seem to have fewer bankruptcies and better credit histories, but a larger fraction of women borrowers are asked for a guarantor.

Table 8 investigates the role of male and female guarantors relative to the

[12] We also added all these variables one at a time. The results on our coefficient of interest are robust, and the control variables added one at a time have the same sign and significance as in column (2).

[13] Results on this point are available upon request.

gender of the borrower. In column (1), we show that borrowers with guarantors pay higher interest rates because they are considered more risky by lenders and having a guarantor does not fully compensate for this fact. Column (2) shows that this effect is driven by male borrowers: they pay more if they have a guarantor, but females with a guarantor pay less. This suggests that, while a man with a guarantor is considered more risky, a woman is considered less risky. The last two columns are quite instructive and suggestive. They show that, when a female borrower has a male guarantor, she pays substantially less, but when a female borrower has a female guarantor, she pays a lot more! That is, a female borrower with a female guarantor is viewed by the banks as the worst type of client. A female borrower guaranteed by a female pays nearly 43 basis points more than a non-guaranteed man and 62 more than a woman guaranteed by a man.

3.3 Market Structure

The previous section's results on the gender of guarantors are suggestive of some form of preference of lenders for male borrowers and guarantors. If this is the case, according to Becker's (1961) argument, new entrants in the lending market would take advantage of the opportunity to cash in on the profits. We first looked at whether, with a significant presence of females in their boards, banks are less prone to charge female clients more, perhaps because a more gender-balanced board is sensitive to issues of potential gender discrimination. However, the presence of females in banks' boards is very limited. A very small fraction of loans are made by banks in which the number of females in their board goes beyond 2 or 3, clearly a small minority. A large fraction of loans (more than 71 percent) is made by banks with an all male board. When we run our regressions adding a dummy for banks with at least one or more female member of the board, we did not find much of an effect on the interest differential between male and female borrowers, as reported in Table 9.

In Table 10, we investigate the effect of the structure of lending markets,

defined as provinces. In column (1), we introduce a standard measure of concentration of the market, the Herfindahl index (HHI). The results show that interest rates are lower in more concentrated markets. In column (2), we add a quadratic term that shows that interest rates are lowest in markets with an intermediate level of concentration. This finding is consistent with the empirical results provided by Petersen and Rajan (1995) and more recently by Degryse and Ongena (2007): namely, the fact that, in more concentrated markets, banks tend to invest more in a relationship-based kind of lending and charge lower interest rates. In other words, in highly competitive markets, banks have a lower incentive on acquiring information on their potential borrowers and rank them as risky. When the degree of concentration increases, banks are more prone to establish long-term relationships with borrowers, and this lowers interest rates.

Given the U-shaped relationship between interest rates and concentration, the interest rate decreases until it reaches its minimum around the 96th percentile of the HHI distribution. In very highly concentrated credit markets, it grows again. The interaction of the Herfindahl index and female is negative, showing that women actually pay less in more concentrated markets. Thus, to the extent that more competition is associated with a lower Herfindahl index, it does not appear that this reduces the male versus female rate differences; in fact, it increases it.[14] For women, going from the 25th to the 75th percentile of the HHI distribution (i.e., for increasing levels of market concentration), the interest rate decreases, on average, by 13 basis points.

In the last column, we control for the failure rate at the province level, and obviously, we drop the province fixed effects in this specification. Women still pay a higher interest rate, but the interaction of failure rates and female borrowers is negative, indicating that women pay a lower differential relative to men in provinces with higher failures. This result is somewhat hard to

[14]In this specification, we did not include the quadratic term on the Herfindahl index to facilitate the interpretation of the interaction term.

interpret, but if one believes that females generally pay more because they are considered riskier, above and beyond all the controls which we have in these regressions, one might expect that, in a riskier environment, the differential between male and female borrowers should go up, not down. This piece of evidence indirectly casts some doubts on an explanation of the interest rate differential based on differential risk.

Perhaps women are less wealthy than men, both in terms of total wealth and in terms of expected wages on the labor market, so that if a woman defaults, the bank would expect to collects less. In other words, even if males and females do not exhibit different default probabilities, still there may be a difference in terms of "loss given default" (LGD, i.e., the expected loss in case of default). We do not have data on assets of the borrower. In order to address this issue, we examined data on credit write-offs as a proxy of the LGD: these are bad loans that banks categorize as foregone, since their cost of recollection is higher than the outstanding debt. It turns out that, in the period under exam (2004-2006), males exhibit a higher share of non-collectible bad debt (6.2 vs 4.8 percent).

4 Social Capital and Interest Rates

Differences in the level of social capital and trust within different parts of Italy have been the subject of a lively literature. The "classic" treatment is in Putnam (1993), while Guiso Sapienza and Zingales (2007) provide a recent in-depth analysis. Social capital and different levels of trust may be associated with more or less "secure" relationships between a borrower and a bank. Thus, in a place with higher trust, a bank may charge lower interest rates. In this subsection, we investigate whether this is the case and whether the male/female rate differential is present only in low social capital places and is the result of lack of generalized trust.

A cursory look at the data already suggests that it is unlikely that the male/female differential is present only in low social capital places. In fact,

we observe that the male/female rate differential is positive in the north, center and south of Italy, while the level of social capital is very different in the three places (higher in the North and Center and lower in the South).[15] But the data display significant variations in the level of social capital even within these three regions, and therefore further investigation is presented in Table 11. The first three columns simply add three measures of social capital to our basic regression. The first column uses the log of the number of newspapers per thousand individuals, a variable which may capture not only social capital but also level of education. The second uses the number of blood donations in the province, while the third is based on the number of members of sport associations, two widely used measures of social capital.[16] All three measures of social capital enter negatively with a strong degree of statistical significance in the regressions. More social capital and trust bring about lower rates of interest. Moving from the 25th percentile of the social capital distribution to the 75th, the interest rates decrease by approximately 20 basis points.

The coefficient on female rates, however, remains unchanged and, in fact, almost identical to what we had obtained in Table 6. In the next three columns, we add the failure rate in the province, which, as before and not surprisingly, enters positively. However, the coefficient on social capital does not change at all. Therefore, the explanation for the effect of social capital cannot be that failure rates are lower with more social capital. There is an effect of social capital that goes beyond that. In fact, failure rates and social capital are not especially highly correlated. If the female/male differential were driven mostly or exclusively by provinces with low social capital, the coefficient on the female dummy should go down when we control for social capital. It does not. As a further check, in Table 12, we add an interaction term between social capital and female. The sign is positive, indicating that social capital reduces rates on all borrowers but more on men than on women.

[15]Results for previous regressions run for different parts of Italy are available upon request.

[16]See, for instance, Guiso, Sapienza and Zingales (2007) and Cartocci (2007).

In other words, the beneficial effect of social capital is unevenly distributed across genders.

This result highlights the possibility that some businesses may be listed in the name of women because, in the past, their husbands or relatives had credit problems or a business failure, because in Italy, until 2006, the bankruptcy law hindered the owner of a failed business to restart a firm for a period up to five years. It is impossible to control for that, but these "grey" practices are more likely to occur in places with lower social capital. We find no sign that the male/female rate differential is concentrated only in places with low social capital. Also, presumably it would not be too difficult for the lender to check on this possible doubtful practice. Moreover, in statistical terms, "sham" business listings aimed at covering individuals with previous failure records are more likely to happen in those areas where business failure rates are higher. In Table 10, we control for province-specific failure rates: interacting this variable with the female dummy, we get a negative coefficient, meaning that in provinces with higher failure rates, female firms pay lower interest rates than the female average. It's in that interaction that fraudulent listings are more likely to be found, but since we get a negative estimate, we are confident that their economic impact would be negligible, if it exists at all. As a further check, we have excluded from the sample those firms whose proprietor has co-signed a loan with someone who has defaulted in the period under exam and one year prior. Some of these firms are likely to be sham listings. Still, female firms pay 30 basis points more than men.

5 Discussion and Conclusions

We have examined the pattern of lending rates on overdraft facilities in Italy with a unique and large data set. This borrowing channel is especially important for the self-employed and micro firms, which, in Italy, are especially numerous relative to other OECD countries. We document that women pay a higher interest rate even after controlling for a host of characteristics of the

borrower, the bank and the structure of the banking sector. In fact, we find that the same bank charges more to women than men, so the result cannot be explained by women using different types of bank than men. We have tried to control as well as we could for risk factors like type of business, past credit history and the presence of guarantors, but the differential remains. Incidentally, women-owned businesses display a lower failure rate than male-owned ones in Italy. We also find that, in places with higher social capital and trust, banks charge lower interest, and the amount of this effect is quite large, but the differential between male and female borrowing rates is not confined in places with low social capital. Both men and women pay lower interest in places with high social capital, but women benefit less.

The result is very robust. One interpretation is statistical discrimination, women being riskier than men. But we find that, on average, women show a better history then men in terms of past episodes of bad loans or bankruptcies. Guarantors are considered a risk factor for men: male borrowers are charged more if they have to post a guarantor. For women, is the opposite: when they post a male guarantor, their interest goes down, but, interestingly, if they have a female guarantor, the interest they pay goes way up. It would appear that even the gender of guarantor is considered a risk factor for banks, pointing out again the presence of some degree of taste-based discrimination. As discussed above, we could not explain the male versus female differential with many variables meant to capture differential risk, but it is possible that a bank has more information than the econometrician.

If the male/female differential is purely taste-driven, why wouldn't banks with different preferences enter the market to capitalize on this profit opportunity? Different measures of market concentration that may proxy for entry barrier do not seem to help explain the differential. Banks with female boards may be especially prone not to have gender-based preferences, but in Italian bank boards, the presence of women is minimal.

In summary, we are left with the following result: women pay more than men in Italy for overdraft facilities, and this difference does not seem to be

explained by any variable capturing differential risk, directly or indirectly.

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Table 1: Variable names and definitions.

Firm specific variable	**Description**	**Source**
Rate	Interest rate charged to firm i by bank j, expressed as a difference between the observed interest rate and the ECB marginal rate on lending facilities.	Loan Interest Rate Survey
Female	Dummy variable that takes value 1 if the owner's gender is female (0 if male).	Central Credit Register
Craftsmen	Dummy variable that takes value 1 if the firm is registered as "artisan" (0 if not).	Central Credit Register
Age	Proprietor's age (in log).	Central Credit Register
Loan size	Size of firms' total outstanding loans, in 9 classes (1=≤75; 2=[75; 125], 3=[125; 250], 4=[250; 500], 5=[500; 1,000], 6=[1,000; 2,500], 7=[2,500; 5,000], 8=[5,000; 25,000], 9=≥25,000. In thousand €).	Central Credit Register
Bad loans	Dummy variable that takes value 1 if the the firm had insolvency problems (0 if not).	Central Credit Register
Guarantor	Dummy variable that takes value 1 if the firm is required external collateral to secure its loans (backed up by physical and/or financial assets posted by a third party).	Central Credit Register
Female guarantor	Dummy variable that takes value 1 if the external guarantor is female.	Central Credit Register
Male guarantor	Dummy variable that takes value 1 if the external guarantor is male.	Central Credit Register
Bank specific variables	**Description**	**Source**
Female Auditor	Dummy variable that takes value 1 if at least one of the bank' auditors is female.	Supervisory Report
Female Managing Director	Dummy variable that takes value 1 if at least one of the bank' managing directors is female.	Supervisory Report
Market specific variables	**Description**	**Source**
HHI	Herfindahl-Hirschman concentration index, market shares computed on loans to enterprises.	Supervisory Report
Failure rate	Firms' failure rate, i.e. the ratio of firms with an outstanding bankruptcy procedure to the total number of active firms.	Infocamere
Newspapers	Number of newspapers (excl. sport) per th. persons, in log.	Carocci (2007)
Blood donations	Number of blood donations, per th. persons, in log.	Carocci (2007)
Membership in Sport Association	Number of members of sport associations per th. persons, in log.	Carocci (2007)

Table 2: Firms and credit lines: geographical distribution (in %).

	Firms		Credit lines	
	Female	Male	Female	Male
North East	17.2	82.8	15.4	84.6
North West	16.8	83.2	14.8	85.2
Center	20.4	79.6	18.0	82.0
South & Islands	18.3	81.7	16.9	83.1
Total	18.0	82.0	16.1	83.9

Table 3: Firms and credit lines: sectorial distribution (in %).

	Share of firms		Share of loans	
	Female	Male	Female	Male
Manufacturing	17.9	82.1	15.8	84.2
Constructions	2.8	97.2	2.5	97.5
Retail & Wholesale trade	25.1	74.9	22.9	77.1
Hotels & Restaurants	34.3	65.7	32.8	67.2
Credit & Insurance interm. (excl. banks)	6.9	93.1	6.4	93.6
Business Services	17.0	83.0	14.3	85.7
Total	18.0	82.0	16.1	83.9

Table 4: Credit lines' size (in €).

Global loans size [a]	Share of credit lines, in %		Av. granted credit per line, in €	
	Female	Male	Female	Male
Below 250,000	65.1	55.5	34,060	36,850
Between 250,000 and 2,500,000	34.2	42.7	84,889	83,388
Between 2,500,000 and 100,000,000	0.7	1.8	253,401	305,205
Total	100	100	53,048	61,511

[a] Global loan size refers to the firms' total outstanding loans.

Table 5: Average credit drawn per line (in €).

Global loans size [a]	Average drawn credit per line, in €		Credit line usage [b]	
	Female	Male	Female	Male
Below 250,000	27,840	28,749	81.7	78.0
Between 250,000 and 2,500,000	59,757	59,886	70.5	71.9
Between 2,500,000 and 100,000,000	177,526	219,884	70.0	72.1
Total	39,850	45,455	75.2	73.9

[a] Global loan size refers to the firms' total outstanding loans.

[b] The credit line usage is the ratio of drawn to granted credit, in %.

Table 6: Share of secured loans (in%).

Global loans size [a]	Share of secured credit lines [b]	
	Female	Male
Below 250,000	58.0	54.0
Between 250,000 and 2,500,000	60.0	53.8
Between 2,500,000 and 100,000,000	62.0	42.9
Total	58.7	53.7

[a] Global loan size refers to the firms' total outstanding loans.
[b] Secured loans are backed up by either physical and financial assets posted by a third party, which the lender can realize n case of default.

Table 7: Basic regression: interest rates on firm's characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.285***	0.274 ***	0.291***	0.178***	0.163***	0.202***
	(0.019)	(0.018)	(0.020)	(0.019)	(0.018)	(0.020)
Craftsmen				-0.073***	-0.023	-0.099***
				(0.020)	(0.020)	(0.021)
Age				-0.017***	-0.904***	-0.018***
				(0.001)	(0.026)	(0.001)
Loan size (class)				-0.248***	-0.264***	-0.171***
				(0.005)	(0.005)	(0.004)
Bad Loans				1.805***	1.724***	0.526***
				(0.068)	(0.064)	(0.053)
Bank fixed effects	No	Yes	No	No	Yes	No
Estimate	OLS	OLS	Panel R.E.	OLS	OLS	Panel R.E.
N. obs.	1,209,078	1,209,078	1,209,078	1,122,556	1,122,556	1,122,556

All regressions control for industry, time and province fixed effects.
Columns (3) and (6) are panel estimates with random effects.
Standard errors are robust and clustered at the firm level.
* = significant at 10%, ** = significant at 5%, *** = significant at 1% .

Table 8: Interest rates and third party secured loans.

	(1)	(2)	(3)	(4)
Female	0.280***	0.382***	0.395***	0.246***
	(0.019)	(0.026)	(0.022)	(0.020)
Guarantor	0.104***	0.133***		
	(0.012)	(0.013)		
Male Guarantor			0.186***	
			(0.026)	
Female Guarantor				-0.048***
				(0.014)
Female * Guarantor		-0.183***		
		(0.032)		
Female * Male Guarantor			-0.426***	
			(0.040)	
Female * Female Guarantor				0.428***
				(0.062)
N. obs.	1,209,078	1,209,078	1,209,078	1,209,078

All regressions control for industry, time and province fixed effects. Standard errors are robust and clustered at the firm level.
* = significant at 10%, ** = significant at 5%, *** = significant at 1% .

Table 9: Interest rates and banks' board of directors.

	(1)	(2)	(3)	(4)
Female	0.284***	0.295***	0.285***	0.282***
	(0.019)	(0.021)	(0.019)	(0.019)
Female Auditor	-0.145***	-0.135***		
	(0.015)	(0.016)		
Female Managing Director			-0.009***	-0.018
			(0.021)	(0.022)
Female * Female Auditor		-0.058		
		(0.038)		
Female * Female Managing Director				0.053
				(0.054)
N. obs.	1,209,078	1,209,078	1,209,078	1,209,078

All regressions control for industry, time and province fixed effects. Standard errors are robust and clustered at the firm level.
* = significant at 10%, ** = significant at 5%, *** = significant at 1% .

Table 10: Interest rates and credit markets' characteristics.

	(1)	(2)	(3)	(4)	(5)
Female	0.285***	0.285***	0.286***	0.354***	0.422***
	(0.019)	(0.019)	(0.020)	(0.040)	(0.041)
HHI	-3.688***	-7.628***		-3.542***	
	(0.603)	(1.547)		(0.607)	
HHI sq.		16.660***			
		(5.932)			
Failure rate[a]			0.153***		0.158***
			(0.003)		(0.004)
Female * HHI				-0.904**	
				(0.449)	
Female * Failure rate					-0.032***
					(0.008)
N. obs.	1,209,078	1,209,078	1,209,078	1,209,078	1,209,078

All regressions control for industry, time and province fixed effects. Standard errors are robust and clustered at the firm level.

* = significant at 10%, ** = significant at 5%, *** = significant at 1%.

[a] Province-specific failure rate, province fixed effects not included in this specification.

Table 11: Interest rates and social capital.

	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.278***	0.278***	0.282***	0.289***	0.289***	0.288***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
N. of newspapers	-0.426***			-0.450***		
	(0.016)			(0.016)		
Blood Donations		-0.661***			-0.492***	
		(0.023)			(0.023)	
Members of sport associations			-0.219***			-0.069***
			(0.015)			(0.015)
Failure rate				0.156***	0.142***	0.149***
				(0.003)	(0.003)	(0.003)
N. obs.	1,209,078	1,209,078	1,209,078	1,209,078	1,209,078	1,209,078

All regressions control for industry and time fixed effects. Province fixed effects not included.
Standard errors are robust and clustered at the firm level.
* = significant at 10%, ** = significant at 5%, *** = significant at 1%.

Table 12: Interest rates and social capital: interactions.

	(1)	(2)	(3)
Female	-0.154	-0.080	-0.145
	(0.179)	(0.184)	(0.161)
Female * N. of newspapers	0.099**		
	(0.041)		
Female * Blood Donations		0.112*	
		(0.057)	
Female * Sport associations			0.103***
			(0.039)
N. obs.	1,209,078	1,209,078	1,209,078

All regressions control for industry and time fixed effects. Province fixed effects not included. Standard errors are robust and clustered at the firm level.
* = significant at 10%, ** = significant at 5%, *** = significant at 1%.

Appendix

Table A.1: Interest rates and industries.

Industry	(1)	(2)	% of credit lines held by Females
Manufacturing	0.323***	0.215***	24.96
	(0.013)	(0.013)	
Constructions	0.590***	0.407***	2.99
	(0.034)	(0.034)	
Retail & Wholesale trade	0.216***	0.122***	50.30
	(0.009)	(0.009)	
Hotels & Restaurants	0.120***	0.099***	11.80
	(0.020)	(0.020)	
Credit & Insurance interm. (excl. banks)	0.523***	0.422***	2.40
	(0.039)	(0.038)	
Business Services	0.519***	0.356***	7.55
	(0.023)	(0.023)	

(1) and (2) are the same specifications as in Table 7, column (1) and (4) respectively.
Only "female" dummy coefficients are reported.
All regressions control for 3-digits industry and time fixed effects.
Standard errors are robust and clustered at the firm level.
* = significant at 10%, ** = significant at 5%, *** = significant at 1%.