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Family firms and access to credit. Is family ownership beneficial?

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Abstract

This paper investigates the impact of family ownership on credit rationing using a rich sample of Italian firms. Estimation results indicate that family owned firms are more likely to experience credit restrictions. The adverse impact of family ownership on credit rationing is particularly relevant for small-sized firms, whereas it is mitigated in firms with closer lending relationships. Finally, we find some evidence that family firms with high ownership concentration are more likely to be rationed by banks.

Keywords: Family firms, credit rationing, agency conflicts, relationship lending

JEL codes: D22, G21, G32

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1 Introduction

Families have always been at the heart of business (The Economist, 2015). History is full of examples of spectacular ascents of family firms, and even today a large fraction of companies across the world are organized around families (Bertrand and Schoar, 2006). In Continental Europe, they account for 85 percent of listed companies, but also in the United States some of the largest publicly traded firms are controlled by families (La Porta et al., 1999; Faccio and Lang, 2002; Burkart et al., 2003). Because of their economic relevance, a growing body of literature has recently focused on family businesses by looking at their performance (Anderson and Reeb, 2003; Villalonga and Amit, 2006), inheritance decisions (Ellul et al., 2010), and investment policies (Minetti et al., 2015a; Minetti et al., 2015b). Some studies have also analyzed the credit availability of family firms. However, the literature on this topic is still scarce and does not reach univocal results. On the one hand, due to the lower incentives for strategic default, family ownership improved firms' credit availability during the last financial crisis (D'Aurizio et al., 2015; Stacchini and Degasperi, 2015). On the other hand, family firms are found to be subject to higher collateral requirements and deeper screening methods when they relate with the banking system (Voordeckers and Steijvers, 2006; Steijvers et al., 2010; Pan and Tian, 2016; Cucculelli and Peruzzi, 2017). This evidence reflects two opposite views on family firms (Burkart et al., 2003; Bertrand and Schoar, 2006; Minetti et al., 2015b). The efficiency-based view, which considers family ownership as a source of comparative advantage, and the cultural view, suggesting that strong family ties may induce family owners to maximize their utility rather than firm value.

In this paper, we contribute to the literature on family firms and credit availability by analyzing the impact of family ownership on credit rationing in a non-crisis period. To address this issue, we exploit a very detailed survey of almost 18,000 Italian manufacturing firms conducted by the banking group UniCredt-Capitalia (Survey on Italian Manufacturing Firms, SIMF). The dataset provides unique information on firms' ownership and governance structure, financial conditions and bank-firm relationships based directly on firms' responses to survey questions. The same survey has recently been used as a testing ground for other objectives, such as exploring the impact of financial development on firms' innovation (Benfratello et al., 2008), studying the role of credit rationing on firm export decisions (Minetti and Zhu, 2011), and investigating the impact of firm ownership structure on innovation activities (Minetti et al., 2015a).

By way of preview, estimation results indicate that family ownership increases the probability of firms experiencing credit rationing. Controlling for a large set of controls, we find that family firms are 1.7 percent more likely to be rationed than non-family owned companies. This finding is robust to different definitions of family ownership and different estimation tech-

niques, which try to account for endogeneity problems. The analysis then turns to investigate the channels affecting the family ownership-credit rationing link. Following the theories on family businesses, we study the role of firm opacity, agency conflicts and relational capital. Our results indicate that the adverse impact of family owners on credit availability is mitigated in firms with closer lending relationships. Conversely, family ownership increases the probability of firms being credit rationed for the subsample of companies with higher opacity. Finally, we find some evidence that family firms with high ownership concentration are more likely to be rationed by banks.

In providing these findings, we contribute to the current literature in three ways. First, while previous studies showed a positive impact of family ownership on credit availability during the last financial crisis (D'Aurizio et al., 2015), we find that in periods of economic growth the costs associated with family owners compensate and reverse their benefits. Second, by investigating the channels affecting the ownership-credit rationing link, we report additional evidence about the adverse impact of family ownership concentration and opacity on firms' access to finance (Anderson et al., 2009; Pindado et al., 2011). Third, by highlighting a positive effect of closer bank relationships on family firms' credit availability, we contribute to the literature on relationship lending during the crisis (Gobbi and Sette, 2014; Sette and Gobbi, 2015; Bolton et al., 2016). In particular, we extend the validity of previous results to the years prior to the financial crisis.

The remainder of the paper is organized as follows. Section 2 presents the institutional background. Section 3 reviews the current literature on family firms' access to credit. Section 4 describes the dataset and the empirical strategy. Section 5 discusses the regression results, and Section 6 concludes.

2 Institutional background

Italy provides an ideal environment to study the credit availability of family firms. First, family ownership plays a key role in this country. In 1999, as discussed by Barontini and Caprio (2006) and reported in Figure 1, Italian listed firms were controlled by a family in 76.9 percent of cases. This percentage is much more higher than the ones registered in France (63.2 percent) and Germany (48.3 percent), and further raises when unlisted firms are accounted for. Neubauer and Lank (1998), by looking at the universe of registered firms, suggest that Italian companies were family owned in more than 95 percent of cases.[1] Italian firms also exhibit pronounced ownership concentration. In 2000, the main shareholder owned about 65

[1] La Porta et al. (1999) in their study on ownership structure around the world show that among small and medium-sized listed firms, family businesses represent only 30 percent in the United States, and 10 percent in Japan.

percent of a non-listed manufacturing company on average (Bianchi and Bianco, 2008). This feature is likely to be relevant in the determination of agency conflicts between main owners and minority shareholders, which could be detrimental for firms' creditworthiness (Claessens et al., 2002).

Second, as the Italian business sector consists mainly of small and medium-sized businesses, investments are primarily financed through bank loans. The central role of banks also depends on the long-lasting tradition of cooperative local financial institutions (Gambini and Zazzaro, 2013). According to the World Bank data, in 2001 (roughly the middle year of our sample) the stock market capitalization, as percentage of the gross domestic product, was 45 percent in Italy, compared to 131 percent in the United States (World Bank, 2002). In this context, banking relations are at the heart of the financial life of many Italian companies, and analyzing the extent of credit rationing for family owned firms results to be of the outmost importance.

3 Related literature and theoretical predictions

Despite the relevance of family firms' credit availability, the literature on this topic is still scarce and does not reach univocal results. Finance studies have investigated the existence of family firms' financing constraints through the analysis of the investment-cash flow sensitivity. Andres (2011) and Pindado et al. (2011) for a sample of European listed firms find that family ownership improves firms' credit availability by reducing the investment-cash flow dependence. Opposite results are provided by Gugler (2003), Hung and Kuo (2011) and Peruzzi (2017). These authors show that family firms are more likely to suffer from financing constraints, as evidenced by a positive relationship between investment spending and internal capital. The banking literature has not been more conclusive. Bopaiah (1998), by analyzing the availability and cost of trade credit for a sample of US enterprises included in the National Survey of Small Business Finance (NSSBF), finds that family firms have better access to credit in comparison to non-family businesses. Similarly, D'Aurizio et al. (2015) document that after the Lehman Brother collapse, bank lending to Italian family businesses contracted significantly less than the amount of credit granted to non-family firms. Stacchini and Degasperi (2015) further confirm the beneficial role of family ownership during the last financial crisis. By analyzing a sample of Italian companies included in the EU-EFIGE survey, they find that in 2007-2009 family firms were associated with a significant interest discount. By using the same survey, Cucculelli et al. (2019) show that family firms appointing family CEOs enjoy closer lending relationships in comparison to non-family businesses. However, these relevant relations do not improve family firms' credit availability. Contradictory findings have been provided by Voordeckers and Steijvers (2006), Steijvers et al. (2010), Pan and Tian (2016) and Cucculelli

and Peruzzi (2017). By analyzing family firms' lending relationships, these studies indicate that family ownership positively affects the probability of firms pledging higher levels of collateral and being subject to deep screening processes in the bank lending market.

In this paper, we try to shed new light on this topic by analyzing a period of economic growth. In a financial downturn, the lower expected return on investments can aggravate firms' incentives to strategically default and reduce loan repayment probabilities. In this context, family owners may be perceived as more creditworthy due to their lower incentives to default in the future. In times of economic growth, instead, the benefits of family firms may be compensated and also reversed by the costs associated with family ownership. Due to their higher agency conflicts, opacity and lower willingness to change, family firms may be less likely to exploit the growth opportunities provided by a positive economic framework (Perez-Gonzalez, 2006; Bennedsen et al., 2007). Hence, analyzing the family ownership-credit rationing link in a non-crisis period may provide new interesting insights.

The controversial evidence about the impact of family ownership on credit availability reflects two opposite theories on family firms (Burkart et al. 2003; Betrand and Schoar, 2006; Minetti et al., 2015b): the efficiency-based theory, which views family ownership as a source of comparative advantage, and the cultural theory, suggesting that strong family ties may induce family owners to maximize their utility rather than firm value. The theories on the comparative advantage of family firms stress that family owners have a long-term horizon. The link between current and future generations provides family firms with "patient capital", a focus on maximizing long-run returns, and the desire to pursue investment opportunities that myopic non-family firms would not (Bertrand and Schoar, 2006). This long-term perspective increases investment efficiency and mitigates external financial constraints (Stein, 1988; 1989; Pindado et al., 2011). The desire to transfer the firm down to future generations may also promote family firms' risk aversion. In order to protect family reputation and ensure firm survival, family owners may be less likely to strategically default, with beneficial effects on loan repayment probabilities and credit availability (Anderson et al., 2003; Anderson et al., 2012; D'Aurizio et al., 2015). As reported by the current literature, family firms' performance also benefits from the web of business contacts family owners develop (Salvato and Melin, 2008). There is evidence showing that family firms invest large amounts of resources in nurturing interpersonal relations with competitors, customers, and politicians (Amore and Bennedsen, 2013; Bunkanwanicha et al., 2013). Among this web of relationships, there is also the one with banks, which should provide better access to credit for family-owned firms (Cucculelli et al., 2019).

In contrast with this positive view of family firms, the cultural theory suggests that strong family values may distort family owners' decisions (Minetti et al., 2015b). One of the major problems of family firms is the existence of agency conflicts. Although family ownership often

solves the classic owner-manager agency problem, family firms are more likely to experience conflicts between controlling and minority shareholders (Villalonga and Amit, 2006; Pindado et al., 2011). These conflicts arise mainly from the risk of wealth expropriation of minority shareholders by the owner family, who may maximize the family's utility rather than firm value. Prior research has also indicated that family ownership positively influences firm opacity (Anderson et al., 2009; Chen et al., 2014). Controlling family members have incentives to conceal important company information to exploit their private benefits of control and expropriate minority shareholders. Moreover, by disclosing limited or distorted data, family owners avoid revelation of proprietary information to rivals, reduce direct accounting costs and mitigate non-family CEO compensation (Hermalin and Weisbach, 2012). From the bank's perspective, however, firm opacity increases asymmetric information and monitoring efforts, thus reducing firms' credit availability and raising the cost of external financing (Berger and Udell, 2006; Ferri and Murro, 2015). Finally, worries about firm survival and intentions to preserve the status quo may lead controlling families to promote conservative strategies (Miller et al., 2008). The tendency to preserve the acquired position may be negatively evaluated by lenders, thus making family businesses more likely to face financing constraints.

Following these contrasting theories, ex ante it is ambiguous whether family ownership mitigates or exacerbates firms' access to credit. However, consistently with the current literature, we may expect that family firms with high ownership concentration and opacity are more likely to suffer from credit constraints. Conversely, family businesses investing in closer lending relationships are less likely to experience credit restrictions. To the best of our knowledge, this is the first paper analyzing the channels affecting the family ownership-credit rationing link. By studying the role played by family firms' relational capital, opacity, and ownership concentration, we try to reconcile the contradictory evidence provided by the current literature.

4 Data and empirical method

4.1 Data sources

To test our hypotheses, we draw information from two main sources: (i) the Survey on Italian Manufacturing Firms, carried out by the banking group UniCredit (and previously by MedioCredito Centrale - Capitalia); and (ii) the BvD-AIDA database.

The Survey on Italian Manufacturing Firms (SIMF) provides detailed information about companies' ownership and governance structures, export and internationalization activities, investments in innovation and R&D expenditure, workforce characteristics and bank-firm relationships. The dataset includes a representative sample of manufacturing companies with

10-500 employees and the universe of manufacturing firms with more than 500 employees.[2] We use four waves of the survey covering the three-year periods 1995-1997, 1998-2000, 2001-2003 and 2004-2006. Each of the waves gathers information on approximately 4500 firms, representing about 9 percent of the population in terms of employees and 10 percent in terms of value added. To all the surveyed firms, we attach balance-sheet information provided by BvD-AIDA, the most comprehensive source of financial information for Italian companies.

To complement the survey, we use data about the value added and population of Italian provinces provided by the Italian National Statistics Office (ISTAT), the number of bank branches in local markets recovered from the Bank of Italy, and the index of external financial dependence developed by Rajan and Zingales (1998).

Table 1 provides a detailed description of all the variables employed in the empirical analysis. Table 2 reports summary statistics (for all firms, by ownership structure and credit rationing status). At the average, the surveyed firms have been in business for 26 years and have more than 80 employees. More specifically, beyond 50 percent of companies have fewer than 40 employees, and below 5 percent of them have more than 500 workers. As for their financial setup, on average firms do business with five banks and the average length of their main lending relationship is 16 years.

4.2 Variable definitions

4.2.1 Credit rationing

The Survey on Italian Manufacturing Firms has largely been used to study firms' credit constraints (Angelini and Generale, 2008; Minetti and Zhu, 2011; Bartoli et al., 2013). By providing detailed information on whether companies desired, asked and obtained additional financing, the survey allows to directly measure the credit rationing status of Italian firms. Hence, to create our main dependent variables, we rely on the following questions of the SIMF: (i) "*In the last year, would the firm have liked to obtain more credit at the market interest rate?*"; (ii) "*In the last year, did the firm demand more credit than it actually obtained?*". Following Angelini and Generale (2008) and Minetti and Zhu (2011), we define weak rationed firms as those that gave a positive response to question (i), regardless of their answer to question (ii), and strong rationed companies as those that responded "yes" to both questions.[3] Both measures, although reflecting a different intensity of rationing, should capture the existence of credit constraints.

[2] Firms with 10-500 employees are selected with a stratified sampling method each time with a rotating panel scheme; therefore, only few of them appear in two consecutive waves.

[3] Similar definitions of financially constrained firms have been also adopted by Angelini et al. (1998), Guiso (1998) and Minetti et al. (2018). Jappelli (1990) and Duca and Rosenthal (1993) derive analogous measures from the Survey of Consumer Finances, in the context of studies of credit constraints among US consumers.

Summary statistics reported in Table 2 indicate that, in the whole sample, only 3.7 percent of firms are strongly rationed, whereas 13.3 percent of companies result to be weakly rationed. Figure 2 draws the distribution of credit rationed firms across Italian provinces. The figure indicates that rationed firms are not clustered in few provinces. Although companies in Southern Italy are more likely to be rationed overall, we still find that some Northern provinces have a relatively high share of rationed firms.

4.2.2 Family ownership

The Survey on Italian Manufacturing Firms asks each firm to indicate the type and equity shares of the company's main shareholders. Hence, to distinguish between family and non-family owned companies, we rely on firms' self-reported information. First, we create our main measure of family ownership: Family Firm, a binary variable equal to one if the firm's main shareholder is an individual or a family, and zero otherwise. Then, as robustness checks, we employ two additional definitions of family businesses: (i) Family Control, a dummy variable equal to one if the firm's main shareholder is a family or an individual and he has direct control over the firm, and zero otherwise; (ii) Family Firm 20%, a dummy variable equal to one if the firm's main shareholder is a family or an individual and he owns more than 20 percent of the company, and zero otherwise.

As reported in Table 2, in our sample 77.6 percent of firms are family owned (Family Firm), 72.2 percent are family controlled (Family Control), and 71 percent of firms are owned by a family whose ownership share is higher than 20 percent (Family Firm 20%). The summary statistics presented in the table also suggest that family firms suffer more from weak credit restrictions in comparison to non-family owned businesses. Conversely, the two types of companies are not significantly different in terms of strong credit rationing. This result is driven by observable firm characteristics that confound the interpretation of the simple t-test. As Table 2 displays, family firms differ from non-family businesses on several dimensions that could affect the credit rationing status. On the one hand, family owned companies are significantly smaller and with higher levels of indebtedness when compared to non family firms. On the other hand, they appear to be more profitable, liquid, and able to create long-lasting relationships with their banks. Consistently with these considerations, in the following subsection we present the control variables included in the multivariate analysis.

4.2.3 Control variables

To correctly identify the impact of family ownership on firms' access to credit and to mitigate the omitted variables concern associated with the cross-sectional structure of our dataset, we control for a large set of possible confounding effects. Starting with some firm-specific

characteristics, we first control for those associated with firm opacity. The current literature has shown that young and small firms are more likely to be rationed by banks because of the lack of transparent information about their business (Guiso and Minetti, 2010; Ferri and Murro, 2015). Hence, we include firm size (Size, expressed as the logarithm of the number of employees) and age (Age), as primary controls. In order to account for the existence of alternative financing channels that may reduce the probability of firms being rationed by banks, we then control for firm's cash holdings (Liquidity Ratio, computed as cash holdings over total assets) and internal cashflow (Cashflow). Moreover, as the firm's financial and economic condition may significantly affect bank credit availability, we include the firm's level of indebtedness, proxied by the leverage indicator (Leverage, computed as total debt over equity), the interest coverage ratio (Interest Coverage Ratio, computed as earnings before interests and taxes over interest expenses), and the return on investments (ROI). While the firm's leverage should increase firm risk and the likelihood of rationing (Jensen and Meckling, 1976), both the interest coverage ratio and the return on investments measure the firm's ability to repay the loan and should be positively associated with the availability of credit (Ferri and Murro, 2015). Another financial indicator that we account for in the econometric specification is the tangibility of the firm's assets (Asset Tangibility, measured by tangible fixed assets over total assets), which is a good proxy for the pledgeability of collateral guarantees and should reduce firms' financing constraints (Almeida and Campello, 2007). Finally, in order to mitigate endogeneity concerns, we control for two additional firm features: the exporter status of the company, which should increase the probability of firms experiencing credit restrictions because of the difficulty of national financial intermediaries to assess the risk related to foreign activities (Exporter, a dummy variable equal to one if the firm sells part of its production abroad, and zero otherwise); and the ownership share of the first shareholder (Ownership Concentration), as a proxy for the existence of agency conflicts that should adversely affect firm's access to credit.

Following the banking literature, we also control for a set of bank-firm relationship features: the number of bank relationships enjoyed by the firm (Number of Banks), and the length of its main lending relationship (Relationship Length). The first variable should increase the probability of firms experiencing credit rationing because of the existence of non-exclusive lending ties; conversely, the length of the firm's main lending relationship is a good indicator of the information acquired by the main bank about the borrowing firm and it is usually positively associated with credit availability (Berger and Udell, 2006; Ferri and Murro, 2015).

Finally, we control for a set of industrial and geographical control variables. In particular, we include the growth rate of value added (Value Added, at the NUTS-3 level), the Herfindhal index of the bank branches, which is a proxy for the level of competition in the bank lending market (HHI, at the NUTS-3 level), and the index of external financial dependence of the

firm's industry developed by Rajan and Zingales (1998), that account for the different degree of dependence of industrial sectors on external sources of finance (Rajan and Zingales Index). In addition, to control for cyclical conditions at the industry and geographical levels, we add regional dummies (at the NUTS-2 level) and industry dummies (at the NACE 2-digit level), both interacted with survey dummies (one for each wave of the Survey on Italian Manufacturing Firms).

4.3 Econometric specification

To test our predictions, we start building an empirical model that estimates the probability of firms being rationed in the bank lending market. Denote y_i^d as firm i's desired amount of credit and y_i^a as the actual amount of credit given to firm i, the firm is rationed any time $y_i^* = (y_i^d - y_i^a) > 0$.

Thus, we can model the probability of rationing as:

$$y_i = \begin{cases} 1 & if\ y_i^* > 0 \\ 0 & otherwise \end{cases} \tag{1}$$

$$y_i^* = \alpha X_i + \beta Z_i + u_i \tag{2}$$

where y_i denotes, alternatively, one of the credit rationing indicators described in section 4.2.1, i.e. Weak Rationing and Strong Rationing; X_i is the measure of firm i's ownership structure presented in section 4.2.2; Z_i is a vector of exogenous covariates; u_i is the residual. As our dependent variables are dummy variables taking values zero and one, we estimate Equation (2) by maximum likelihood probit regressions.

5 Results

5.1 Baseline results

Table 3 shows Probit regressions for the likelihood of weak (columns 1-3) and strong rationing (columns 4-6).[4] In columns (1) and (4) we report the results for our main measure of family ownership (Family Firm). In the other columns, as a robustness check, we use the two alternative proxies of family ownership described in section 4.2.2 (Family Control and Family Firm 20%). After controlling for various firm characteristics and province fixed effects, we find that family firms are 1.7 percent more likely to be weak credit rationed than non-family firms (column 1). The marginal effect is quite significant, both statistically and economically, as the

[4]The difference between the number of firms in the sample and the final number of observations is due to missing values in the employed variables.

average of weak rationing is 13.3 percent. Given that family businesses represent 77.6 percent of sample firms, our result implies that weak credit rationing is 13.7 percent for family firms and 12 percent for non-family owned businesses. The results are very similar when we consider family control as proxy of family ownership and when we restrict the definition of family firms to those companies whose family owners own more than 20 percent. The estimated marginal effects are, respectively, 0.019 (statistically significant at 99 percent; column 2) and 0.014 (statistically significant at 95 percent; column 3). The coefficients are smaller, but still significant, for strong rationing (columns 4-6): family firms are 0.5 percent more likely to experience strong credit restrictions in comparison to non-family owned businesses (statistically significant at 90 percent). As the average of strong rationing is 3.7 percent, this means that strong credit rationing is 3.8 percent for family owned firms and 3.3 percent for non-family owned businesses.[5]

As for the control variables, estimation results indicate that firm size (Size) reduces the probability of experiencing credit restrictions. The marginal effects are -0.017 (statistically significant at 99 percent) and -0.003 (statistically significant at 95 percent) for weak and strong credit rationing, respectively. Cash holdings and internally generated cashflow (Liquidity Ratio and Cashflow) also mitigates strong and weak credit rationing (all the estimated marginal effects are statistically significant at 99 percent): companies relying on internal capital and liquid resources may be associated with a reduced need for additional borrowing and a better credit quality assessment. As expected, firm leverage and ownership concentration increase the probability of firms being credit restricted. As reported in column (1), the marginal effects for weak credit rationing are 0.168 (statistically significant at 99 percent) and 0.023 (statistically significant at 95 percent). The exporter status of the company also raises the likelihood of experiencing credit restrictions. However, the marginal effects reported in Table 3 are statistically significant only for the strong rationing measure (columns 4-6). Finally, contrary to our expectations, the Asset Tangibility variable is positive and statistically significant, both for weak and strong credit restrictions.

Regarding the bank-firm relationship characteristics, in line with the current literature, regression results indicate that the number of banking relationships enjoyed by the firm increases the probability of experiencing credit restrictions, while the length of the bank-firm relationship significantly reduces the likelihood of firms being rationed by banks. The marginal effects for weak credit rationing are 0.004 (statistically significant at 99 percent) and -0.008 (statistically significant at 90 percent), respectively. Finally, as for the characteristics of the local environment, the Herfindahl-Index on bank branches and provincial value added do not significantly affect the probability of firms being credit rationed.

[5]The marginal effects for Family Control and Family Firm 20% are, respectively, 0.004 (statistically significant at 90 percent; column 5) and 0.003 (not statistically significant; column 6).

5.2 Robustness checks

The probit estimates discussed above might be severely affected by endogeneity problems. First, financial constraints may trigger changes in firm ownership structure. Second, although in our regressions we control for a large set of factors that may affect credit availability, it is still possible that some unobserved variables simultaneously affect firm ownership and credit rationing. As in our sample family ownership is almost persistent over time, concerns about reverse causality issue are somewhat reduced.[6] Conversely, omitted variables bias may strongly affect our baseline findings. In order to account for this problem, in this section we perform a set of robustness tests that should reduce endogeneity concerns. First, we include an additional set of control variables that should be related to the probability of firms experiencing credit restrictions: (i) Group, a dummy variable equal to one if the company belongs to a business group and zero otherwise, which measures intra-group financing and should be negatively related with credit rationing; (ii) Listed, a dummy variable equal to one if the company is listed in the stock market and zero otherwise, which is a proxy for both firm transparency and its ability to attract external financing and should be negatively associated with credit rationing; (iii) High School Graduates, a continuous variable computed as the number of high school graduate employees over the total number of employees, measuring the level of human capital and skills of the company, which should improve firm's creditworthiness and credit availability; (iv) R&D, a dummy variable that takes the value of one if the firm made expenditures on R&D in the three-year period covered by the survey, and zero otherwise, which is a rough proxy of firm riskiness and opacity and should be positively associated with the probability of firms experiencing credit rationing.[7] Second, we run our baseline regressions on a matched sample of family and non-family businesses.[8] Estimation results are presented in Table 4 and strongly support the adverse impact of family ownership on firms' credit availability.

Starting with the additional set of controls (columns 1-6), the reported marginal effects confirm the relevance of the added variables in explaining the probability of firms being credit rationed. First, listed companies are 4.9 and 1 percent less likely of experiencing weak and strong credit restrictions in comparison to firms not listed in the stock market (statistically

[6] Minetti et al. (2015b), by employing the same dataset and considering those companies included in all the waves of the Survey on Italian Manufacturing Firms (from 1995 to 2006), find that family ownership is stable for 80 percent of family businesses.

[7] As these variables significantly reduce the number of observations because of missing values, we do not include them in the baseline regressions.

[8] We build a sample of family and non-family firms that are the most similar, by adopting propensity score matching. Matched firms were selected without replacement using all matching firms within the predefined propensity score distance (caliper=0.0001). As additional robustness, we also use the control firm with the closest propensity score (nearest neighbor), without resampling or distance restrictions. Estimation results are qualitatively and quantitatively similar and are available upon request.

significant at 99 and 95 percent, respectively). Second, as expected, an increasing share of high school graduate employees is significantly associated with a lower probability of firms being weak and strong credit rationed.[9] Finally, companies investing in R&D expenditures are 1.5 percent more likely to experience weak credit restrictions when compared to companies not investing in research and development activities (statistically significant at 95 percent). Regarding the family ownership dummy (Family Firm), the estimated marginal effects indicate that family ownership increases by 1.3 and 0.4 percent the probability of firms being weak and strong credit rationed, respectively (both statistically significant at 90 percent; columns 1 and 4). The results are very similar when we employ family control as proxy of family ownership (Family Control) and when we restrict the definition of family businesses to those companies whose family owners own more than 20 percent of equity shares (Family Firm 20%).[10]

Columns (7)-(12) of Table 4 report the estimation results for the matched sample of family and non-family owned businesses. Probit estimates support our previous findings. First, family ownership positively affects the probability of firms experiencing both weak and strong credit restrictions: family firms are 3.1 percent more likely of being weak credit rationed and 0.8 percent more likely to experience strong credit restrictions (statistically significant at 99 and 90 percent, respectively; columns 7 and 10). Similar results are found when the alternative definitions of family ownership are employed. Family control increases by 3.7 percent the probability of firms being weak credit restricted (statistically significant at 99 percent; column 8), whereas companies whose family owners own more than 20 percent of equity shares are 3.4 and 0.8 percent more likely of experiencing weak and strong credit rationing in comparison to other firms (statistically significant at 99 and 90 percent, respectively; columns 9 and 12).

To further mitigate the endogeneity concern and assess the relative importance of possible omitted variables bias, we follow Altonji et al. (2005) and Beck et al. (2018). More specifically, we analyze how the coefficient of Family Firm changes once we include our set of covariates. If this change is substantial, then it is more likely that adding more currently unobservable covariates would further reduce the estimated impact. Conversely, if coefficients turn out to be stable when adding controls, then we can more confidently exclude omitted variables bias. In order to measure coefficient stability, we calculate the ratio between the coefficient in the regression including controls (numerator) and the difference between this coefficient and one derived from a regression without covariates (denominator). [11] This ratio amounts to 2.64 and 2.42 for the specifications in columns (1) (Weak Rationing) and (4) (Strong Rationing)

[9] The estimated marginal effects are -0.045 and -0.010 for weak and strong credit rationing (statistically significant at 99 and 95 percent, respectively).

[10] The marginal effects for Family Control and Family 20% are 0.015 (statistically significant at 95 percent; column 2) and 0.010 (not statistically significant; column 3) for weak rationing, and 0.004 (statistically significant at 90 percent; column 5) and 0.002 (not statistically significant; column 6) for strong rationing.

[11] We run both regressions on the same sample of firms, i.e. the one composed by those firms with non-missing control variables.

of Table 3. By way of comparison, Altonji et al. (2005) estimate a ratio of 1.43 which they interpret as evidence that unobservables are unlikely to explain the entire effect they document. Following their argument, we conclude that, also in our study, it is unlikely that unobserved heterogeneity can explain away the adverse impact of family ownership on credit rationing that we find.

5.3 Disentangling the ownership-credit rationing link

In this section, we test some channels through which family ownership affects the probability of firms experiencing credit restrictions. First, we focus on family owners' relational capital (relationship lending channel), which should improve firms' credit availability (Cucculelli et al., 2019). Then, we analyze the role played by family firms' opacity and agency conflicts, which should exacerbate the probability of firms being credit rationed.

5.3.1 Family ownership and relationship lending

As the literature suggests, the web of relationships built over time by the family firms' founders are crucial factors in running a firm successfully (see, e.g., Rose, 2000; Braggion, 2011). By investing large amounts of resources in nurturing interpersonal relationships, family firms can capture public resources, avoid expropriations and improve their economic performance (Salvato and Melin, 2008; Amore and Bennedsen, 2013; Bunkanwanicha et al., 2013).

A well-established result in the banking literature is that the existence of exclusive lending relationships improves firms' access to credit and investment spending (Herrera and Minetti, 2007; Liberti and Mian, 2009). Hence, among the webs of relationships family firms may invest in, one of the most useful may be the one with their lenders. Coherently with this view, in Table 5, we test whether the impact of family ownership on the probability of experiencing credit restrictions change when strong lending relationships exist. Following the banking literature, we measure relationship lending in four different ways. First, as bank-firm proximity reduces asymmetric information and the existence of financing constraints (Alessandrini et al., 2008; Presbitero and Zazzaro, 2011), in columns (1)-(2) of 5, firms are categorized as having a Local (Non-Local) Bank if the firm's main bank is (not) located in the same province of the company. Estimation results indicate that family firms with non-local banks are 3.4 percent more likely to experience weak credit rationing than non-family businesses belonging to the same subsample (statistically significant at 99 percent; Panel A, column 2). Conversely, family ownership does not significantly affect the probability of firms being weak credit rationed in the case of companies having local banks (Panel A, column 1). Similar results are found for strong credit rationing: the estimated marginal effect of the Family Firm dummy is 0.014 (statistically significant at 99 percent) for the subsample of firms having non-

local banks, and 0.001 (not statistically significant) for the subsample of companies dealing with local financial institutions (Panel B, columns 1-2). Elsas (2005) shows that relationship banks usually finance a large share of the firm's total debt. Hence, in columns (3)-(4) of Table 5, we further split our sample based on the share of bank credit supplied by the firm's main bank. Estimation results indicate that family ownership does not significantly affect weak and strong credit rationing in the subsample of firms enjoying more exclusive lending relationships (column 3, Panels A and B). Conversely, family firms with low bank financing share are 1 percent more likely to experience weak credit rationing than non-family firms belonging to the same subsample (statistically significant at 90 percent; column 4, Panel A). The banking literature indicates that asymmetric information and credit rationing should be mitigated by repeated interactions between the borrower and the lender (Presbitero and Zazzaro, 2011). Hence, in columns (5)-(6) of Table 5, firms are classified according to the length of the lending relationship with their main bank. As expected, we find that family ownership does not significantly affect the probability of firms experiencing weak and strong credit restrictions in the subsample of companies enjoying long-lasting lending relationships (column 5, Panels A and B). On the contrary, family firms having short lending relationships are 2.9 percent more likely to be weak credit rationed (statistically significant at 95 percent) than non-family businesses belonging to the same subsample (column 6, Panel A). The last measure we employ to test the relational capital channel is the number of bank relationships enjoyed by the firm. As exclusive lending relationships should reduce asymmetric information problems, firms dealing with multiple banks may be more likely to experience credit restrictions. However, competition from additional informed banks eliminate the hold-up cost associated with exclusive lending relationships, with beneficial effects on the availability and cost of bank financing (Guiso and Minetti, 2010). To test the contradictory effect of this variable on the family ownership-credit rationing link, in columns (7)-(8) of Table 5, we classify firms as having more (less) than five lending relationships (the median value of the sample). Estimation results indicate that family firms dealing with less than five banks are 2.3 and 0.6 percent more likely to experience weak and strong credit rationing (both statistically significant at 95 percent) when compared to non-family businesses belonging to the same subsample (column 7, Panels A and B). Conversely, family ownership does not significantly affect the probability of firms being credit restricted in the subsample of companies with more than five lending relationships (column 8). Hence, the benefits of bank competition seem to outweigh the benefits associated with exclusive lending ties for family firms' access to credit.

Finally, in order to get some insights about the role played by the local banking market, in columns (9)-(10) of Table 5, we split our sample based on the level of concentration of the banking market where the firm operates. As reported in Panels A and B, family ownership positively affects the probability of firms experiencing weak and strong credit restrictions in

the subsample of companies operating in highly concentrated lending markets (column 9). The estimated marginal effects are respectively 0.031 (statistically significant at 99 percent) and 0.007 (statistically significant at 90 percent). Conversely, family firms do not significantly differ from non-family owned businesses when the analysis focuses on the subsample of companies operating in banking markets with low concentration.

In Panel C of Table 5, we test the validity of these results by estimating the interaction effects of our main independent variables. The reported coefficients support the results about local banks (for strong credit rationing), length of the bank-firm relation (for weak credit rationing), number of bank relationships (for both weak and strong rationing), and concentration of the bank lending market (for weak credit rationing). Hence, we confirm the existence of a relational capital or relationship lending channel. The adverse impact of family ownership on credit rationing is exacerbated by low bank competition and it is mitigated when companies have close and long-lasting lending relationships. In providing this evidence, we contribute to the recent literature on relationship lending during the crisis (Gobbi and Sette, 2014; Sette and Gobbi, 2015; Bolton et al., 2016). By highlighting a positive effect of relationship lending on credit availability, especially for family owned firms, we extend the validity of previous results to the years prior to the financial crisis.

5.3.2 Family ownership and firm opacity

Prior research indicates that family ownership positively influences firm opacity (Anderson et al., 2009; Chen et al., 2014). Controlling family members have incentives to conceal important company information to exploit their private benefits of control and expropriate minority shareholders. Moreover, by disclosing limited or distorted data, family owners avoid revelation of proprietary information to rivals, reduce direct accounting costs and mitigate non-family CEO compensation (Hermalin and Weisbach, 2012). From the bank's perspective, instead, firm opacity increases asymmetric information and monitoring efforts, thus reducing firms' credit availability and raising the cost of external financing (Berger and Udell, 2006; Ferri and Murro, 2015). In order to investigate whether firm opacity exacerbates the adverse impact of family ownership on credit rationing, in Table 6 we distinguish SMEs and large companies, and young and old firms.[12] Starting with firm size, in columns (1)-(2) of Table 6, firms are categorized as SMEs (Large Firms) if they have less (more) than 250 employees, 50 million € of total sales and 43 million € of total assets. Estimation results indicate that family ownership positively affects the probability of firms experiencing credit restrictions for the subsample of small and medium sized enterprises (column 1). Small family businesses are

[12] As highlighted by the finance literature (Berger and Udell, 2006; Guiso and Minetti, 2010; Ferri and Murro, 2015), young and small firms are less likely to be informationally transparent than large and old companies because of the lack of established track records.

2.2 and 0.7 percent more likely to be weak and strong credit rationed than small non-family firms (both statistically significant at 95 percent). Conversely, large family owned firms are 1.9 percent less likely to be weak credit rationed than non-family companies belonging to the same subsample (statistically significant at 90 percent; Panel A, column 2). Hence, family ownership significantly reduces the probability of firms being credit restricted when firms are more transparent and asymmetric information problems are mitigated. As for firm age, in columns (3)-(4) of Table 6, Young Firms (Old Firms) are defined as those companies operating for less (more) than 10 years. The marginal effects reported in column (3) of Panel A indicate that family ownership increases by 4.2 percent the probability of firms experiencing weak credit restrictions (statistically significant at 90 percent). On the contrary, family ownership does not significantly affect the credit rationing status of the subsample of mature firms (column 4).

In Panel C of Table 6, we test the validity of these findings by estimating the interaction effects of our main independent variables. The reported coefficients support the results about firm size, both for weak and strong credit rationing. When firm opacity is low, family ownership mitigates firms' financing constraints; conversely, when firm opacity and asymmetric information intensify, family ownership is found to increase the probability of firms being credit restricted. Hence, there exists an adverse combined effect of family ownership and firm opacity on companies' access to credit.

5.3.3 Family ownership and agency conflicts

Several studies show that the relation between ownership and firm value is nonlinear because of the monitoring and expropriation effects associated with ownership concentration (Pindado et al., 2011; Minetti et al., 2015b). Although family ownership often solves the classic owner-manager agency problem, family firms may experience higher conflicts between controlling and minority shareholders (Villalonga and Amit, 2006; Pindado et al., 2011; Peruzzi, 2017). This agency problem results mainly from the risk of wealth expropriation of minority shareholders by the owner family, who may pursue her own interests at the detriment of firm performance. In Table 7, we investigate whether these problems exacerbate the adverse impact of family ownership on bank credit availability. In particular, in columns (1)-(6) of Table 7, we split the sample based on the distribution of the first shareholder's ownership share. Starting with the quartile distribution of the ownership variable (columns 1-4), we find that family ownership increases the probability rationing only for the subsample of firms with highly concentrated ownership, whereas it is not statistically significant in the other cases. More specifically, family firms with high ownership concentration are 2.5 and 1.9 percent more likely to be weak and strong credit rationed in comparison to non-family businesses belonging to the same group (statistically significant at 90 and 99 percent, respectively). In columns (5)-(6) of Table

7, we further check the validity of these results by using a different subsample threshold, i.e. the median value of the first shareholder's ownership share. Probit estimations confirm our previous findings: family ownership increases the probability of firms experiencing credit rationing only for the subsample of firms with highly concentrated ownership (column 6). More specifically, when compared to non-family owned businesses, family firms are 2.1 and 1 percent more likely of being weak and strong credit restricted (both statistically significant ant 95 percent).

Maury and Pajuste (2005) show that a more equal distribution of votes among large blockholders has a positive effect on firm value, especially in family-controlled firms. In this situation, the second blockholder may monitor and contest the largest owner by preventing private benefit extraction (La Porta et al., 1999; Pindado et al., 2011). If the disciplining role exercised by other large investors leads family firms to invest more efficiently, the presence of a second large blockholder should mitigate the adverse impact of family ownership on credit rationing. Hence, in columns (7)-(8) of Table 7, we classify firms according to the presence of a second large blockholder, i.e. a second shareholder with more than 25 percent of ownership. The results reported in Panel A indicate that family ownership increases by 2.7 percent (statistically significant at 95 percent) the probability of experiencing weak credit rationing for the subsample of companies without a second large blockholder (column 8). Similar findings are obtained for the strong credit rationing definition (columns 7-8 of Panel B). Conversely, family ownership does not significantly affect the probability of firms experiencing credit restrictions for the subsample of companies with a second large shareholder who may monitor family owners' initiative (column 7, Panels A and B).

In Panel C of Table 7, we check the validity of these results by estimating the interaction effects of our main independent variables. The reported coefficients weakly confirm our main findings. Family ownership is detrimental for firms' access to credit when ownership concentration is high, but only for the strong rationing measure. In terms of weak credit restrictions, family firms with high ownership concentration are not significantly different from highly concentrated non-family businesses.

6 Conclusions

This paper studied the impact of family ownership on credit rationing in a non-crisis period. By analyzing a large sample of Italian manufacturing firms, we found that family firms are more likely to be credit restricted than non-family owned businesses. This finding is robust to different definitions of family ownership and estimation techniques, which partially accounted for endogeneity problems. We also investigated the channels affecting the family ownership-credit rationing link. Following the theoretical literature on family businesses, we studied

the role of family firms' relational capital, opacity and agency conflicts. Estimation results indicated that family ownership increases the probability of rationing for the subsamples of companies with higher opacity and ownership concentration. The adverse impact of family owners on credit availability is instead mitigated in firms with closer and long-lasting lending relationships.

These findings have some policy implications. First, the paper highlights the actions that family firms could implement to mitigate the probability of experiencing credit restrictions, such as reducing the level of firm opacity and ownership concentration. In this way, asymmetric information problems and agency conflicts could be attenuated with beneficial effects on credit availability. Second, consistently with some recent studies (Gobbi and Sette, 2014; D'Aurizio et al., 2015; Sette and Gobbi, 2015; Bolton et al., 2016; Cucculelli et al., 2019), our analysis confirms the crucial role of relationship lending for firms' access to credit. By building long-lasting and closer lending relationships, family firms may be able to overcome financing constraints. Finally, estimation results suggest that some policy interventions, like the deployment of public guarantees for lending to small businesses, might be desirable to foster family businesses access to finance and economic growth also during non-crisis periods.

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Tables and Figures

Figure 1: Ultimate owners in publicly traded European firms in 1999

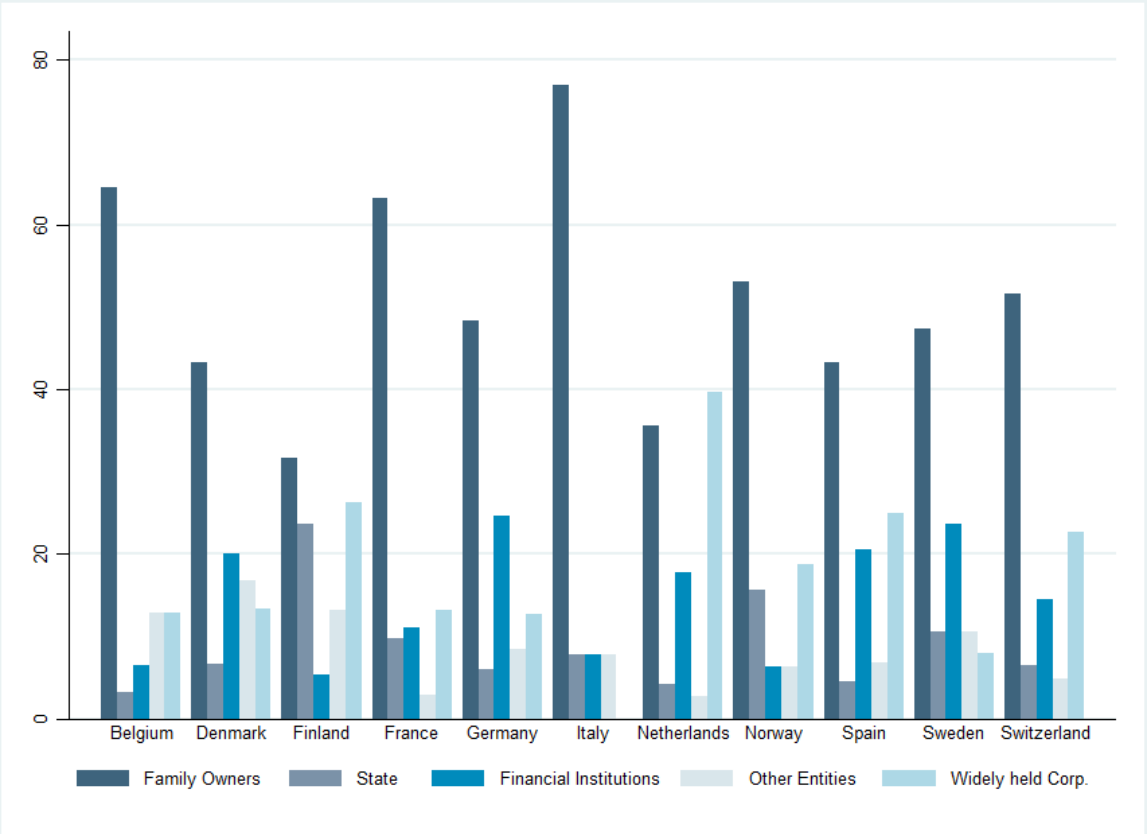
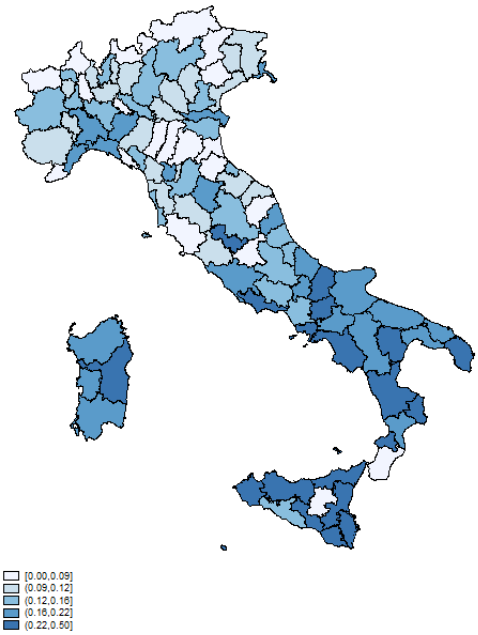
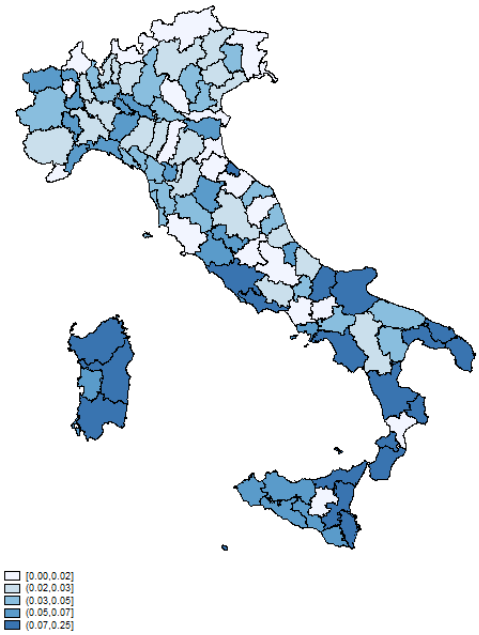


Figure 2: Credit rationing distribution across Italian provinces



Weak Rationing



Strong Rationing

Table 1: Variable definitions

Variable	Description and source
Weak Rationing	Dummy that takes the value of one if the firm was weakly rationed in the last year of the survey, and zero otherwise. (Source: SIMF)
Strong Rationing	Dummy that takes the value of one if the firm was strongly rationed in the last year of the survey, and zero otherwise. (Source: SIMF)
Family Firm	Dummy that takes the value of one if the main shareholder is a family or an individual, and zero otherwise. (Source: SIMF)
Family Control	Dummy that takes the value of one if the family owner has the control of the firm, and zero otherwise. (Source: SIMF)
Family Firm 20%	Dummy that takes the value of one if the main shareholder is a family or an individual and owns more than 20 percent of the company, and zero otherwise. (Source: SIMF)
Size	Total number of employees. (Source: BvD-AIDA)
Age	Number of years since firm's inception. (Source: BvD-AIDA)
Leverage	Ratio of total liabilities to equity (average over the three years of the survey). (Source: BvD-AIDA)
Liquidity Ratio	Ratio between cash holdings and total assets (average over the three years if the survey). (Source: BvD-AIDA)
Cashflow	Ratio of cashflow to total assets. (Source: SIMF)
Interest Coverage Ratio	Ratio of Earnings before interests and taxes (EBIT) to interest expenses. (Source: BvD-AIDA)
ROI	Ratio between net income and invested capital (average over the three years of the survey). (Source: BvD-AIDA)
Asset Tangibility	Ratio between tangible fixed assets and total assets (average over the three years of the survey). Source: BvD-AIDA)
Exporter	Dummy that takes the value of one if the firm sells part of its production abroad, and zero otherwise. (Source: SIMF)
Ownership Concentration	Ownership share of the firm's first shareholder. (Source: SIMF)
Number of Banks	Number of banks from which the firm borrows. (Source: SIMF)
Relationship Length	Length of the relationship with the main bank (in years). (Source: SIMF)
Value Added	Average growth rate of provincial value added. (Source: ISTAT)
HHI	Provincial Herfindahl index of bank branches. (Source: Bank of Italy)
Rajan and Zingales Index	Measure of external financial dependence proposed by Rajan and Zingales (1998).
Listed	Dummy that takes the value of one if the firm is listed in the stock market, and zero otherwise. (Source: SIMF)
High School Graduates	Number of high school graduate employees over the total number of employees. (Source: SIMF)
R&D	Dummy that takes the value of one if the firm made expenditures on R&D in the three-year period covered by the survey, and zero otherwise. (Source: SIMF)
2nd Blockholder	Dummy that takes the value of one if the second shareholder of the firm holds an ownership share larger than 25 percent, and zero otherwise. (Source: SIMF)
Local Bank	Dummy that takes the value of one if the firm's main bank is located in the same province of the company, and zero otherwise. (Source: SIMF)
Financing Share	Share of the firm's main bank financing. (Source: SIMF)

Table 2: Summary Statistics

	All firms			Ownership					Weak Rationing					Strong Ratio		
				Family Owned		Non-Family Owned			Rationed		Non-Rationed			Rationed		Non-Ra
	Mean	Std. Dev.	Obs.	Mean	Obs.	Mean	Obs.	t-test	Mean	Obs.	Mean	Obs.	t-test	Mean	Obs.	Mean
Dependent variables:																
Weak Rationing	0.133	0.339	16,350	0.136	12,504	0.125	3,652	-1.65								
Strong Rationing	0.037	0.189	16,377	0.037	12,522	0.038	3,661	0.33								
Ownership variables:																
Family Firm	0.776	0.417	17,223						0.788	2,156	0.772	14,000	-1.65	0.768	604	0.774
Family Control	0.722	0.448	16,868						0.740	2,135	0.718	13,755	-2.14	0.723	600	0.721
Family Firm 20%	0.710	0.454	16,887						0.725	2,135	0.708	13,767	-1.61	0.712	597	0.710
Control variables:																
Size	81.291	108.952	14,975	58.988	11,225	149.263	3,483	34.78	63.858	1,780	81.177	12,249	7.74	72.557	513	79.189
Age	26.677	20.785	17,225	26.378	13,228	27.232	3,738	2.17	24.388	2,129	26.962	14,034	5.80	25.030	594	26.673
Leverage	8.095	11.662	15,600	8.360	11,800	7.191	3,491	-5.35	10.362	1,767	7.622	12,694	-8.86	13.146	510	7.767
Liquidity Ratio	0.075	0.198	15,600	0.079	11,800	0.060	3,491	-7.19	0.048	1,767	0.078	12,694	10.92	0.032	510	0.076
Cashflow	0.059	0.041	15,596	0.057	11,796	0.064	3,491	8.90	0.044	1,767	0.061	12,690	18.32	0.035	510	0.060
Interest Coverage Ratio	11.715	40.494	15,574	12.433	11,777	8.848	3,488	-5.31	3.770	1,767	12.014	12,674	13.88	2.132	510	11.343
ROI	0.063	0.062	15,600	0.064	11,800	0.059	3,491	-4.62	0.047	1,767	0.065	12,694	13.26	0.035	510	0.064
Asset Tangibility	0.204	0.685	15,600	0.187	11,800	0.264	3,491	9.79	0.233	1,767	0.205	12,694	-1.01	0.166	510	0.210
Exporter	0.684	0.465	17,424	0.662	13,290	0.763	3,835	12.59	0.668	2,156	0.694	14,127	2.37	0.698	603	0.690
Ownership Concentration	0.571	0.281	16,300	0.513	12,674	0.773	3,621	52.06	0.570	2,072	0.567	13,308	-0.47	0.595	583	0.566
Number of Banks	5.437	3.628	17,082	5.073	13,102	6.719	3,744	20.85	5.727	2,167	5.523	14,150	-2.42	6.061	606	5.526
Relationship Length	16.642	11.932	15,457	16.950	11,864	15.495	3,435	-6.45	15.601	2,076	16.835	13,158	4.47	15.292	573	16.712
Value Added	0.040	0.029	17,177	0.040	13,070	0.038	3,803	-3.78	0.039	2,135	0.040	13,882	2.57	0.039	602	0.040
HHI	0.074	0.028	17,533	0.073	13,362	0.074	3,861	1.86	0.078	2,169	0.073	14,181	-6.35	0.077	608	0.074
Rajan and Zingales Index	0.364	0.315	17,514	0.355	13,346	0.393	3,858	6.35	0.353	2,167	0.365	14,165	1.60	0.334	607	0.364
Group	0.248	0.432	17,475	0.117	13,317	0.697	3,851	73.32	0.221	2,168	0.248	14,145	2.86	0.255	608	0.245
Listed	0.015	0.123	17,419	0.010	13,283	0.031	3,829	7.26	0.006	2,156	0.013	14,110	3.45	0.005	603	0.013
High School Graduates	0.429	0.309	12,227	0.431	9,206	0.413	2,928	-2.84	0.369	1,641	0.430	10,165	8.31	0.375	461	0.424
R&D	0.372	0.483	17,365	0.336	13,298	0.503	3,797	18.39	0.371	2,156	0.376	14,116	0.44	0.414	607	0.374

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Table 3: Family ownership and credit rationing: Baseline estimates

Probit Model	Weak Rationing			Strong Rationing		
	(1)	(2)	(3)	(4)	(5)	(6)
Family Firm	0.017**			0.005*		
	(0.008)			(0.003)		
Family Control		0.019***			0.004*	
		(0.007)			(0.002)	
Family Firm 20%			0.014**			0.003
			(0.007)			(0.002)
Size	-0.017***	-0.017***	-0.017***	-0.003**	-0.003**	-0.003**
	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Age	-0.003	-0.003	-0.003	0.000	-0.000	-0.000
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)
Leverage	0.168***	0.166***	0.167***	0.037***	0.036***	0.036***
	(0.025)	(0.025)	(0.025)	(0.010)	(0.010)	(0.010)
Liquidity Ratio	-0.166***	-0.167***	-0.166***	-0.107***	-0.105***	-0.104***
	(0.043)	(0.043)	(0.043)	(0.029)	(0.029)	(0.029)
Cashflow	-1.083***	-1.073***	-1.077***	-0.276***	-0.275***	-0.276***
	(0.114)	(0.114)	(0.114)	(0.067)	(0.067)	(0.067)
Interest Coverage Ratio	0.000	0.000	0.000	-0.005	-0.005	-0.005
	(0.000)	(0.000)	(0.000)	(0.004)	(0.004)	(0.004)
ROI	0.030	0.028	0.030	-0.046	-0.043	-0.043
	(0.074)	(0.074)	(0.074)	(0.031)	(0.031)	(0.030)
Asset Tangibility	0.077***	0.074***	0.074***	0.016**	0.016**	0.016**
	(0.019)	(0.019)	(0.019)	(0.007)	(0.007)	(0.007)
Exporter	0.008	0.009	0.009	0.005**	0.005**	0.005**
	(0.007)	(0.007)	(0.007)	(0.002)	(0.002)	(0.002)
Ownership Concentration	0.023**	0.022**	0.018	0.009**	0.007*	0.006*
	(0.012)	(0.011)	(0.011)	(0.004)	(0.004)	(0.004)
Number of Banks	0.004***	0.004***	0.004***	0.001***	0.001***	0.001***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Relationship Length	-0.008*	-0.008*	-0.008*	-0.003**	-0.003**	-0.003**
	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)
Value Added	0.150	0.155	0.156	0.052	0.052	0.053
	(0.121)	(0.121)	(0.121)	(0.041)	(0.041)	(0.041)
HHI	0.147	0.146	0.146	-0.048	-0.046	-0.046
	(0.129)	(0.129)	(0.129)	(0.046)	(0.046)	(0.046)
Rajan and Zingales	0.019	0.016	0.016	-0.008	-0.008	-0.008
	(0.017)	(0.017)	(0.017)	(0.006)	(0.006)	(0.006)
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,554	11,510	11,510	10,857	10,816	10,816
Pseudo R2	0.102	0.103	0.102	0.138	0.138	0.138

Notes: The table reports Probit marginal effects. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the firm level are in parentheses. All of the variables are defined in Table 1. Balance-sheet indicators refer to the survey three-year period. The variable Size is in logarithm. The variable Relationship Length is in logarithm. The variables Leverage and Interest Coverage Ratio are scaled by 100.

Table 4: Robustness checks

Probit Model	Full Sample: Additional Controls						Matched Sample					
	Weak Rationing			Strong Rationing			Weak Rationing			Strong Rationing		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Family Firm	0.013*			0.004*			0.031***			0.008*		
	(0.008)			(0.003)			(0.012)			(0.004)		
Family Control		0.015**			0.004*			0.037***			0.007	
		(0.007)			(0.002)			(0.012)			(0.004)	
Family Firm 20%			0.010			0.002			0.034***			0.008*
			(0.006)			(0.002)			(0.012)			(0.004)
Size	-0.019***	-0.018***	-0.019***	-0.003**	-0.003**	-0.003**	-0.023***	-0.022***	-0.022***	-0.008***	-0.008***	-0.008***
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)	(0.007)	(0.007)	(0.007)	(0.003)	(0.003)	(0.003)
Age	-0.005	-0.004	-0.004	-0.001	-0.001	-0.001	0.009	0.010	0.010	0.004	0.004	0.004
	(0.005)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)	(0.009)	(0.009)	(0.009)	(0.003)	(0.003)	(0.003)
Leverage	0.143***	0.142***	0.142***	0.028***	0.027***	0.027***	0.167***	0.169***	0.169***	0.038**	0.037**	0.037**
	(0.031)	(0.031)	(0.031)	(0.010)	(0.010)	(0.010)	(0.050)	(0.050)	(0.050)	(0.017)	(0.017)	(0.017)
Liquidity Ratio	-0.157***	-0.158***	-0.158***	-0.095***	-0.094***	-0.094***	-0.183**	-0.183**	-0.183**	-0.182***	-0.177***	-0.176***
	(0.043)	(0.043)	(0.043)	(0.034)	(0.034)	(0.034)	(0.079)	(0.079)	(0.079)	(0.044)	(0.044)	(0.043)
Cashflow	-0.933***	-0.922***	-0.927***	-0.239***	-0.240***	-0.241***	-1.368***	-1.347***	-1.355***	-0.339***	-0.336***	-0.333***
	(0.164)	(0.164)	(0.164)	(0.079)	(0.080)	(0.080)	(0.225)	(0.225)	(0.225)	(0.109)	(0.108)	(0.108)
Interest Coverage Ratio	-0.039***	-0.039***	-0.039***	-0.008**	-0.008**	-0.008**	0.000	0.000	0.000	-0.006	-0.007	-0.007
	(0.014)	(0.014)	(0.014)	(0.003)	(0.003)	(0.003)	(0.000)	(0.000)	(0.000)	(0.005)	(0.005)	(0.005)
ROI	0.105	0.104	0.106	-0.028	-0.027	-0.027	0.093	0.081	0.088	-0.085	-0.082	-0.083
	(0.066)	(0.066)	(0.066)	(0.027)	(0.027)	(0.027)	(0.146)	(0.146)	(0.146)	(0.072)	(0.070)	(0.070)
Asset Tangibility	0.069***	0.067***	0.067***	0.016**	0.016**	0.016**	0.085**	0.081**	0.081**	0.005	0.006	0.005
	(0.020)	(0.020)	(0.020)	(0.007)	(0.007)	(0.007)	(0.037)	(0.037)	(0.037)	(0.013)	(0.013)	(0.012)
Exporter	0.004	0.005	0.005	0.004	0.004*	0.004	0.018	0.017	0.017	0.009**	0.009**	0.009**
	(0.006)	(0.006)	(0.006)	(0.002)	(0.002)	(0.002)	(0.013)	(0.013)	(0.013)	(0.004)	(0.004)	(0.004)
Ownership Concentration	0.029***	0.027***	0.024**	0.010**	0.008**	0.008*	0.012	0.011	0.008	0.005	0.005	0.004
	(0.011)	(0.011)	(0.010)	(0.004)	(0.004)	(0.004)	(0.021)	(0.021)	(0.021)	(0.008)	(0.007)	(0.007)
Number of Banks	0.003***	0.003***	0.003***	0.001**	0.001**	0.001**	0.005***	0.005***	0.005***	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Relationship Length	-0.007*	-0.007*	-0.007*	-0.003*	-0.002*	-0.002*	-0.020***	-0.020***	-0.020***	-0.008**	-0.008**	-0.008**
	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.008)	(0.008)	(0.008)	(0.003)	(0.003)	(0.003)
Value Added	0.084	0.085	0.086	0.036	0.036	0.037	0.115	0.106	0.102	0.084	0.083	0.081
	(0.111)	(0.110)	(0.111)	(0.036)	(0.036)	(0.037)	(0.245)	(0.244)	(0.245)	(0.092)	(0.090)	(0.090)
HHI	0.114	0.115	0.114	-0.016	-0.014	-0.014	0.586**	0.591**	0.596**	0.089	0.095	0.096
	(0.115)	(0.115)	(0.115)	(0.039)	(0.039)	(0.039)	(0.239)	(0.239)	(0.240)	(0.097)	(0.095)	(0.095)
Rajan and Zingales	0.018	0.015	0.015	-0.007	-0.007	-0.007	0.034	0.035	0.035	-0.010	-0.010	-0.010
	(0.015)	(0.015)	(0.015)	(0.005)	(0.005)	(0.005)	(0.030)	(0.030)	(0.030)	(0.011)	(0.011)	(0.011)
Group	-0.002	-0.001	-0.004	0.000	-0.000	-0.001						
	(0.008)	(0.008)	(0.008)	(0.003)	(0.002)	(0.002)						
Listed	-0.049**	-0.049**	-0.049**	-0.010*	-0.010*	-0.010*						
	(0.019)	(0.019)	(0.019)	(0.005)	(0.005)	(0.005)						
High School Graduates	-0.045***	-0.045***	-0.045***	-0.010**	-0.010**	-0.010**						
	(0.012)	(0.012)	(0.012)	(0.005)	(0.005)	(0.005)						
R&D	0.016**	0.015**	0.015**	0.003	0.003	0.003						
	(0.007)	(0.007)	(0.007)	(0.002)	(0.002)	(0.002)						
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9,803	9,762	9,762	9,221	9,183	9,183	2,772	2,767	2,767	2,085	2,082	2,082
Pseudo R2	0.103	0.103	0.103	0.149	0.149	0.149	0.140	0.141	0.140	0.189	0.189	0.190

Notes: The table reports Probit marginal effects. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the firm level are in parentheses. All of the variables are defined in Table 1. Balance-sheet indicators refer to the survey three-year period. The variable Size is in logarithm. The variable Relationship Length is in logarithm. The variables Leverage and Interest Coverage Ratio are scaled by 100. In columns (7)-(12), matched firm are selected without replacement using all matching firms within the predefined propensity score distance (caliper=0.0001).

Table 5: Family ownership, relationship lending and credit rationing

Panel A: Weak Rationing										
Probit Model	Local Bank	Non-Local Bank	Financing Share > 30%	Financing Share ≤ 30%	Rel. Length > 10 yrs	Rel. Length ≤ 10 yrs	Number Banks ≤ 5	Number Banks > 5	High Conc. Lending Mkt	Low Conc. Lending Mkt
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Family Firm	0.012	0.034***	0.007	0.010*	0.005	0.029**	0.023**	0.012	0.031***	0.003
	(0.011)	(0.013)	(0.016)	(0.006)	(0.009)	(0.012)	(0.012)	(0.011)	(0.011)	(0.006)
+ Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,405	3,333	3,597	6,430	6,864	4,568	5,034	6,243	5,885	5,582
Pseudo R2	0.099	0.132	0.109	0.115	0.108	0.130	0.137	0.103	0.119	0.113
Panel B: Strong Rationing										
Probit Model	Local Bank	Non-Local Bank	Financing Share > 30%	Financing Share ≤ 30%	Rel. Length > 10 yrs	Rel. Length ≤ 10 yrs	Number Banks ≤ 5	Number Banks > 5	High Conc. Lending Mkt	Low Conc. Lending Mkt
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Family Firm	0.001	0.014***	0.009	0.004	0.005	0.001	0.006**	0.004	0.007*	0.003
	(0.004)	(0.004)	(0.006)	(0.004)	(0.003)	(0.001)	(0.004)	(0.005)	(0.004)	(0.004)
+ Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,073	2,762	3,153	5,631	6,071	3,938	3,975	5,558	5,168	4,691
Pseudo R2	0.157	0.229	0.163	0.160	0.146	0.159	0.189	0.132	0.173	0.132
Panel C: Interaction Terms										
Probit Model	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Family Firm	0.127*	0.353***	0.114**	0.128	0.160***	0.120	0.185***	0.310***	0.160***	0.152*
	(0.069)	(0.112)	(0.056)	(0.086)	(0.062)	(0.092)	(0.071)	(0.117)	(0.057)	(0.084)
Local Bank	0.155**	0.323***								
	(0.070)	(0.113)								
Family Firm * Local Bank	-0.027	-0.306**								
	(0.081)	(0.127)								
Fin.Share > 30%			0.163**	0.072						
			(0.070)	(0.108)						
Family Firm * Fin.Share > 30%			-0.083	0.005						
			(0.078)	(0.120)						
Rel.Length > 10 yrs					0.079	-0.111				
					(0.081)	(0.122)				
Family Firm * Rel.Length > 10 yrs					-0.121*	0.019				
					(0.076)	(0.114)				
Num.Banks > 5							0.139*	0.267**		
							(0.082)	(0.132)		
Family Firm * Num.Banks > 5							-0.140*	-0.261**		
							(0.082)	(0.129)		
Low Conc. Lending Mkt									0.113	-0.039
									(0.077)	(0.117)
Family Firm * Low Conc. Lending Mkt									-0.140*	-0.056
									(0.076)	(0.116)
+ Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,850	8,658	10,201	9,619	11,554	10,857	11,554	10,857	11,554	10,857
Pseudo R2	0.099	0.156	0.105	0.136	0.103	0.138	0.103	0.139	0.103	0.138

Notes: The table reports Probit marginal effects in Panels A and B, and regression coefficients in Panel C. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the firm level are in parentheses. Local Bank (Non-Local Bank) is a dummy variable equal to one if the firm's main bank is (not) located in the same province of the company. Financing Share is the share of the firm's main bank financing (30 percent is the median value of the sample). Relationship Length is the length of the relationship between the firm and its main bank. Number of Banks is the number of bank relationships enjoyed by the firm (5 is the median value of the sample). Firms are categorized as located in provinces with High Concentration of the Lending Market (Low Concentration of the Lending Market) if the HHI index (log) is above 0.068 (the median value of the sample).

Table 6: Family ownership, firm opacity and credit rationing

Panel A: Weak Rationing				
Probit Model	SMEs	Large Firms	Young Firms	Old Firms
	(1)	(2)	(3)	(4)
Family Firm	0.022**	-0.019*	0.042*	0.009
	(0.009)	(0.012)	(0.022)	(0.006)
+ Control Variables	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes
Observations	7,906	3,349	1,645	9,729
Pseudo R2	0.094	0.134	0.138	0.110
Panel B: Strong Rationing				
Probit Model	SMEs	Large Firms	Young Firms	Old Firms
	(1)	(2)	(3)	(4)
Family Firm	0.007**	-0.012	0.010	0.004
	(0.003)	(0.007)	(0.012)	(0.002)
+ Control Variables	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes
Observations	7,584	2,524	1,141	8,918
Pseudo R2	0.151	0.177	0.178	0.143
Panel C: Interaction Terms				
Probit Model	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing
	(1)	(2)	(3)	(4)
Family Firm	-0.184**	-0.286**	0.076	0.100
	(0.090)	(0.127)	(0.048)	(0.072)
SMEs	0.216**	0.077		
	(0.086)	(0.119)		
Family Firm * SMEs	0.323***	0.500***		
	(0.100)	(0.142)		
Young Firms			-0.030	-0.065
			(0.096)	(0.141)
Family Firms * Young Firms			0.108	0.153
			(0.096)	(0.140)
+ Control Variables	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes
Observations	11,553	10,857	11,554	10,857
Pseudo R2	0.106	0.142	0.103	0.138

Notes: The table reports Probit marginal effects in Panels A and B, and regression coefficients in Panel C. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the firm level are in parentheses. Firms are classified as SMEs (Large Firms) if they have less (more) than 250 employees, 50 million € of total sales and 43 million € of total assets. Firms are classified as Young Firms (Old Firms) if they have operated for less (more) than 10 years.

Table 7: Family ownership, agency conflicts and credit rationing

Panel A: Weak Rationing								
Probit Model	Own. Conc. I Quartile	Own. Conc. II Quartile	Own. Conc. III Quartile	Own. Conc. IV Quartile	Own. Conc ≤ 50%	Own. Conc >50%	2nd Blockholder	No 2nd Blockholder
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Family Firm	0.026	0.038	-0.009	0.025*	0.006	0.021**	0.008	0.027**
	(0.018)	(0.023)	(0.013)	(0.013)	(0.013)	(0.010)	(0.013)	(0.011)
+ Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,411	1,785	3,930	2,957	6,278	5,105	5,838	4,728
Pseudo R2	0.142	0.138	0.131	0.130	0.113	0.123	0.116	0.106

Panel B: Strong Rationing								
Probit Model	Own. Conc. I Quartile	Own. Conc. II Quartile	Own. Conc. III Quartile	Own. Conc. IV Quartile	Own. Conc ≤ 50%	Own. Conc >50%	2nd Blockholder	No 2nd Blockholder
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Family Firm	0.002	-0.008	-0.008	0.019***	-0.000	0.010**	0.000	0.013***
	(0.004)	(0.017)	(0.007)	(0.007)	(0.003)	(0.004)	(0.002)	(0.005)
+ Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,439	1,149	3,062	2,485	5,266	4,705	4,947	4,149
Pseudo R2	0.219	0.216	0.175	0.160	0.181	0.141	0.157	0.156

Panel C: Interaction Terms						
Probit Model	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing	Weak Rationing	Strong Rationing
	(1)	(2)	(3)	(4)	(5)	(6)
Family Firm	0.055	-0.020	0.039	-0.048	0.135**	0.204**
	(0.054)	(0.081)	(0.072)	(0.106)	(0.057)	(0.084)
Own. Conc. IV Quart.	-0.004	-0.095				
	(0.066)	(0.101)				
Family Firm * Own. Conc. IV Quart.	0.065	0.267**				
	(0.080)	(0.120)				
Own. Conc. > 50%			0.016	-0.070		
			(0.077)	(0.115)		
Family Firm * Own. Conc. > 50%			0.087	0.219*		
			(0.086)	(0.126)		
2nd Blockholder					-0.018	0.076
					(0.082)	(0.126)
Family Firm * 2nd Blockholder					-0.066	-0.182*
					(0.088)	(0.134)
+ Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry * Survey	Yes	Yes	Yes	Yes	Yes	Yes
Region * Survey	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,087	11,667	12,087	11,667	10,719	9,880
Pseudo R2	0.102	0.141	0.101	0.141	0.099	0.137

Notes: The table reports Probit marginal effects in Panels A and B, and regression coefficients in Panel C. Three, two and one star (*) mean, respectively, a 99, 95 and 90 percent level of significance. Standard errors clustered at the firm level are in parentheses. Ownership Concentration is the ownership share of the first controlling shareholder (50 percent is the median value of the sample). 2nd Blockholder is a dummy variable equal to one if the second shareholder holds an ownership share larger than 25 percent, and zero otherwise.