Board Gender Quotas and Female Borrowing: Evidence from Loan-Level Data*

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Abstract

We examine how female board representation influences banks' propensity to lend to female-led firms. Using the introduction of a mandatory gender quota in Italy and loan-level data, we find that as banks increase female board representation, they lend more to female-led firms, both on the extensive and intensive margins. These lending relationships extend to smaller firms but do not result in higher ex-ante or ex-post non-performing exposures. Additionally, we provide novel evidence of spillover effects from the board gender quota to rank-and-file employees, as banks promote more women. Higher promotion rates, in turn, are associated with greater female credit growth.

JEL Classifications: D22, G21, G32, J01, J71
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1 Introduction

Women often encounter systemic barriers in accessing financial resources across various markets such as corporate debt, mortgages, and venture capital.[1] These obstacles contribute to economic disparities, including lower home ownership rates and fewer opportunities to start or grow businesses. The underrepresentation of female entrepreneurs is particularly concerning, as it can result in resource misallocation, where viable women-owned firms struggle to secure financing. This inefficiency may not only curtail individual success but also stifles overall economic growth, diminishing innovation and job creation (Morazzoni and Sy, 2022).

A potential source of these disadvantages may be the low representation of women in the financial services sector. For example, Huang, Mayer, and Miller (2024) report that only 35% of loan officers are women, while Ceccarelli, Herpfer, and Ongena (2024) observe that only 20% of bankers are female. These disparities become more pronounced in senior positions. If male lenders – whether front-line loan officers or senior managers setting company-wide lending policies – display implicit or explicit biases favoring male borrowers, or struggle more with processing information on female-led firms, female borrowers could be denied credit, even when they present profitable investment opportunities. This raises a crucial question: does increasing the share of women on the supply side of capital improve financing outcomes for female borrowers?

In this paper, we examine the importance of increasing female representation on banks' boards in stimulating banks' propensity to lend to female-led firms. To address this question, we leverage the staggered introduction of a mandatory gender quota for the boards of publicly listed firms in Italy in 2012 ("Legge Golfo-Mosca"). This regulation required listed limited liability companies in Italy to increase the share of directors from the underrepresented

[1]Most studies document gender-related disadvantages in debt and equity markets. For example, Alesina, Lotti, and Mistrulli (2013) show that, despite similar levels of risk, female borrowers pay higher interest rates. Similarly, Delis, Hasan, Iosifidi, and Ongena (2022) document that male entrepreneurs seek loans more aggressively, resulting in higher firm performance. Finally, regarding equity financing, Ewens and Townsend (2020) and Hebert (2023) find that early-stage investors favour male over otherwise similar female entrepreneurs. Nevertheless, other papers do not detect such disadvantages (Asiedu, Freeman, and Nti-Addae, 2012; Asiedu, Kalonda-Kanyama, Ndikumana, and Nti-Addae, 2013; Ongena and Popov, 2016).

gender to 20% in the first board renewal after August 2012. The quota then gradually increased to 33% over the next two board renewals, which typically occur every three years. As a result, female board representation in listed banks rose significantly—by 16 percentage points—compared to unaffected non-listed banks.

We combine data from Italy's Credit Registry (CR) on all credit relationships of private firms from 2009 to 2019, along with detailed ownership information, to identify lending relationships between listed banks and female-led firms. We define a firm as female-led if women own more than 50% of its equity. Using a staggered difference-in-difference-in-differences (DDD) design, we compare the evolution of credit relationships between listed and non-listed banks, and both female- and male-led firms, following the introduction of gender quotas. Our analysis reveals a significant expansion in credit access for female-led firms compared to male-led firms: the likelihood of a listed bank forming a credit relationship with a female-led firm increases by 1.4 percentage points after the quota's implementation. Additionally, credit growth in these lending relationships rises by 0.7 percentage points, which corresponds to 5% of its interquartile range. This increase is particularly noteworthy given that female-led firms account for only 16% of credit relationships in Italy, despite representing 32% of all firms.

The change in lending to female firms raises important questions about the mechanisms through which female board representation influences lending to female-led firms. Our analysis consists of two parts. First, we investigate the effects of the gender quota on the banks' internal organization to better understand the drivers of the change in lending. Second, we examine the role of information asymmetries between banks and borrowers and whether the increase in lending to female-led firms had implications for the borrowers' default risk.

First, in the spirit of Bertrand, Black, Jensen, and Lleras-Muney (2018) and Maida and Weber (2022), we examine whether the increased share of female directors following the quota influenced banks' internal labor markets, potentially leading to greater lending to female borrowers. For instance, a higher representation of women on boards could enhance women's

promotion rates through gender-diverse human resource policies, mentorship opportunities, and leadership recommendations. Female directors may also serve as role models, highlighting the benefits of attaining top leadership positions.

For the empirical analysis, we use microdata from the Italian Pension Institute (INPS) covering all workers in Italian banks from 2009 to 2018. We investigate whether female employees in listed banks have a higher likelihood of promotion. Our findings show that in listed banks affected by the quota, the probability of a woman being promoted to middle management is 0.9 percentage points higher than in unlisted banks. This increase is substantial, given that only one-third of all middle managers are women. Consistent with the labor channel, we also find that the increase in lending to female borrowers is more pronounced in areas with higher female promotion rates following the quota.

Second, we investigate whether an increase in the share of women on the supply side of capital led to a change in the riskiness of lenders' loan portfolios. On the one hand, a higher share of female lenders could enhance information flows between banks and female borrowers through a homophily channel (Fisman, Paravisini, and Vig, 2017). For instance, female bankers may better understand the challenges and opportunities faced by female-led firms, fostering improved communication and trust between lender and borrower. This shared perspective could enable female bankers to more accurately assess the creditworthiness of female entrepreneurs, leading to better risk assessments and tailored financial products. By reducing information asymmetries, banks could lower screening and monitoring costs, allowing them to extend more credit to female-led firms without increasing overall portfolio risk. Alternatively, if loans to female-led firms after the quota were associated with higher risk, this would suggest a shift in banks' preferences, indicating that post-quota, they made a deliberate—and potentially costly—effort to increase lending to female firms.

We find that most new lending relationships are with small firms (i.e., micro firms and medium-sized firms - SMEs), where information asymmetries are typically highest. Moreover, we find that our results on the expansion of credit, both in the extensive (i.e., probability of a

new lending relationship) and intensive (i.e., credit growth) margin, do not manifest among riskier firms according to their credit rating. Lastly, we find no evidence of a decline in credit quality linked to the expansion of credit to female-led firms. Female-led firms receiving credit are not more likely to have a higher probability of default, nor does their exposure become more likely to end up as a non-performing loan (NPL).[2] Thus, our results contradict the hypothesis that the increase in lending to female borrowers is costly for banks, and they are inconsistent with the implementation of suboptimal lending policies following the introduction of the gender quota. Rather, our evidence suggests that the increase in lending to female-led firms has been a positive net present value opportunity for listed banks.

This paper contributes to different strands of the literature. First, while prior studies have established gender-related financing frictions (e.g., Muravyev, Talavera, and Schäfer, 2009; Bellucci, Borisov, and Zazzaro, 2010; Alesina, Lotti, and Mistrulli, 2013; Ongena and Popov, 2016; Beck, Behr, and Madestam, 2018; Morazzoni and Sy, 2022; Delis, Hasan, Iosifidi, and Ongena, 2022; Hebert, 2023), little is known about how these disparities can be overcome. We add to this literature by examining the role of a mandatory gender quota. Despite considerable evidence on the implications of mandatory gender quotas for firm performance, governance, exit, and director selection,[3] we lack evidence on whether these quotas affect lending decisions and, consequently, whether they result in spillover effects to (private) firms unaffected by quotas.[4] Using micro-level loan data from Italy, we show that the Italian gender quota has resulted in more lending from banks (more) exposed to the quota. This increase in lending

[2]To estimate the ex-ante probability of a defaulting loan, we estimate a logit model of default events in the credit registry prior to our sample (2007-2009) on firm's and loan's characteristics, and use these coefficients to predict NPLs in sample.

[3]See, for example, Ahern and Dittmar (2012), Matsa and Miller (2013), Bøhren and Staubo (2014), and Eckbo, Nygaard, and Thorburn (2022) for Norway, Fedorets, Gibert, and Burow (2019) for Germany, Rebérioux and Roudaut (2019) and Ferreira, Ginglinger, Laguna, and Skalli (2021) for France, Greene, Intintoli, and Kahle (2020), Hwang, Shivdasani, and Simintzi (2021), and von Meyerinck, Niessen-Ruenzi, Schmid, and Solomon (2022) for California, De Vita and Magliocco (2018), Baltrunaite, Cannella, Mocetti, and Roma (2023), Mazzotta and Ferraro (2020), and Ferrari, Ferraro, Profeta, and Pronzato (2022) for Italy, and Kuzmina and Melentyeva (2021) for a sample of seven European countries.

[4]Evidence on the effects of quotas on banks can be found in Del Prete and Stefani (2021) and Del Prete, Papini, and Tonello (2024), while Zaccaria, Schivardi, and Guiso (2024) provide evidence of horizontal spillovers on boards of private firms.

mostly pertains to female-led firms. Importantly, we do not find evidence that these lending relationships produce more non-performing loans.

Second, we expand the prior literature on mandatory quotas in two important ways. While there is considerable evidence on how gender quotas affect the composition and the skill set of the board of directors (e.g., Ahern and Dittmar, 2012; Greene, Intintoli, and Kahle, 2020; Ferreira, Ginglinger, Laguna, and Skalli, 2021; Hwang, Shivdasani, and Simintzi, 2021; Kuzmina and Melentyeva, 2021; von Meyerinck, Niessen-Ruenzi, Schmid, and Solomon, 2022), research on how top-level quotas affect the female labor market more broadly is scarce. A notable exception is Bertrand, Black, Jensen, and Lleras-Muney (2018), who found no robust evidence that, except for the directors themselves, other employees benefited from the introduction of the gender quota in Norway, a country with a relatively high degree of gender equality. Similarly, Maida and Weber (2022) examine the Italian gender quota and find small, but insignificant increases in the share of women in executive positions or among the top earners until 2016.[5] We add to this literature by documenting more female promotions to middle management in a country with greater gender inequality when compared to the Norwegian example. Furthermore, the prior literature on gender quotas has mostly examined direct implications for firms subject to a quota.[6] In contrast, our evidence is consistent with a spillover effect of mandatory quotas because the Italian gender quota does not directly apply to the borrowers themselves (as these are mostly private firms).

Finally, we contribute to the literature on the glass ceilings women face throughout their career progression. This line of research has examined gender-related differences in pay as well as hiring, promotion, and demotion practices (e.g., Neumark, Bank, and Van Nort, 1996; Blau and Kahn, 1997; Altonji and Blank, 1999; Goldin and Rouse, 2000; Ginther and Kahn, 2004; Blackaby, Booth, and Frank, 2005; Booth and Leigh, 2010; Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman, 2012; Azmat and Ferrer, 2017; Cullen and Perez-Truglia,

[5] Our results may differ because our study focuses on the banking sector, which may be even more conservative than regular Italian firms, giving greater room for improvements for female employees. Furthermore our study extends to 2019, providing banks with more time to adopt.

[6] One notable exception is Guiso, Schivardi, and Zaccaria (2024), who document spillovers to other boards.

2023; Bircan, Friebel, and Stahl, 2024) with similar gender gaps in the financial services industry (Egan, Matvos, and Seru, 2022; Huang, Mayer, and Miller, 2024; Benson, Li, and Shue, 2022; Ceccarelli, Herpfer, and Ongena, 2024). This literature has also investigated the effects women in leadership positions have on other female employees (e.g., Broder, 1993; Bertrand, Goldin, and Katz, 2010; Beaman, Duflo, Pande, and Topalova, 2012; De Paola and Scoppa, 2015; Bagues, Sylos-Labini, and Zinovyeva, 2017; Matsa and Miller, 2011; Kunze and Miller, 2017; Flabbi, Macis, Moro, and Schivardi, 2019; Périlleux and Szafarz, 2022; Fortin, Markevych, and Rehavi, 2024). We add to this literature by showing that an increase in the share of female directors results in more promotions of women in the male-dominated financial industry.

The rest of the paper is organized as follows. Section 2 presents the institutional details of the quota. Section 3 describes our data. Section 4 outlines the impact of the quota on female board representation in Italian banks. Sections 5 and 6 present the effect on lending and shed light on the mechanisms behind our findings. Finally, Section 7 concludes.

2 The Golfo-Mosca Law (Law 120/2011)

In response to a relatively low share of female directors, Italy enacted a mandatory gender quota on August 12, 2011, referred to as the Golfo-Mosca Law (Law 120/2011). The quota was first discussed in parliament on November 10, 2009, and became binding on August 12, 2012.[7] In contrast to the widely studied Norwegian gender quota, which gave firms five years for compliance, the Italian setting provides a tighter timeline, allowing for a relatively precise estimation of the effects of the quota.

In publicly-listed companies in Italy, board renewals generally occur every three years, with the majority of these renewals happening between March and June. The quota requires listed limited liability companies in Italy to increase the share of directors of the underrepresented gender to 20% in the first board renewal after August 2012. This share gradually increased to

[7] A timeline of the law can be found in A1.

33% in the subsequent two board renewals, and remained in place until 2022, when the law was originally set to expire. However, as of December 2019, the law has been amended to include three more renewals of the board (including the last one with a quota of one third), with a quota of 40% for the underrepresented gender.

The regulatory board of the Italian stock exchange, CONSOB, monitors compliance with the quota. In case a firm fails to meet its target, CONSOB issues a warning. If a firm remains non-compliant after four months, CONSOB issues a fine ranging from a minimum of EUR 100,000 to a maximum of EUR 1,000,000. After another three months of non-compliance the board is dissolved.

To identify the effect of the gender quota on bank lending to female-led firms, we exploit two characteristics of the reform, resulting in a staggered difference-in-differences (DID) design. First, the reform targeted listed banks, allowing us to partition Italian banks into two groups: treated (publicly-listed banks) and control (non-listed) banks. Second, the timing of the treatment varies because the reform's requirements became mandatory only after the listed banks' first board renewal, i.e., banks renewing their boards later experience a later treatment.[8]

Importantly, we add another dimension to our analysis by focusing on whether the borrowing firm is female-led. We define a firm as female-led if at least 50% of its equity is owned by women and focus on firms that never switch status to avoid confounding effects. Thus, our design becomes a staggered difference-in-difference-in-differences (DDD) approach, comparing the evolution of credit relationships between listed and non-listed banks and between female and male firms after the first board renewal following the introduction of the quota.

[8]The timing of the renewals is exogenous to the reform since it depends on the schedule of the bank.

3 Data

We obtain the universe of business loans originated in Italy from the credit registry at the Bank of Italy.[9] For each loan, we observe the date of origination, the amount, and the type of loan.[10] We limit our sample to loans to limited liability companies originated between 2009 and 2019.[11] Moreover, since lending policies are set at the ultimate parent level, we also consolidate lenders at the group level, using the structure of banking groups at the end of 2019.

From the Orbis database by Bureau Van Dijk we obtain information on equity owners of limited liability companies in Italy. Relying on the Italian fiscal code, Orbis records owners' identities, from which several demographic characteristics can be extracted.[12] We use this feature to identify female-led firms as those where 50% or more of their equity is owned by women. We are able to identify the yearly share of female-owned equity for all 1,524,175 Italian limited companies in Orbis between 2010 and 2019, for a total of more than 6.5 million firm-year observations. Thereof, 32% are female-led firms.

Data on board members of listed and non-listed banks between 2010 and 2019 is from the OR.SO. database by the Bank of Italy. We extract data for 21 banking groups whose bank holding company is listed and for 388 unlisted banks in the credit register. We obtain information on more than 23,000 directors between 2010 and 2019, and we collapse the data at the bank-year level, obtaining a balanced panel of female board representation of all Italian banks between 2010 and 2019.

The two main dependent variables are the probability a credit relationship is formed and credit growth, defined as the mid-point growth rate and capped between -2 and +2 to reduce

[9]The credit registry applies a reporting threshold of EUR 30,000. Consequently, all loans below this threshold are excluded from our sample.

[10]The credit registry distinguishes between term loans, self-revolving loans (e.g., credit lines), and auto-liquidating loans (e.g., factoring).

[11]We start in 2009 because then the reporting threshold decreased from EUR 75,000 (principal amount) to EUR 30,000.

[12]The procedure to identify the gender and age of owners and executives of Italian firms in Orbis follows Core (2024).

the influence of outliers:

$$\frac{\text{credit}_t - \text{credit}_{t-1}}{0.5 \times (\text{credit}_t + \text{credit}_{t-1})}. \tag{1}$$

The final set of variables relates to employee-level information obtained from the Italian Pension Institute (INPS). The employee-level data allows us to investigate the probability that an employee is female and the probability that a female employee is promoted to a middle manager. We consider both middle-level managers (Quadri, in Italian) and top-level managers (Dirigenti, in Italian).[13] The sample of Italian employees spans from 2009 to 2018, the maximum time span available in the database, and comprises more than 3 million observations.

Importantly, as we compare listed to unlisted banks, we need to ensure that differences in these groups of institutions do not spuriously drive our results. This is especially important since our period spans the sovereign debt crisis and the introduction of the TLTRO program, which unevenly affected banks of different sizes (Carpinelli and Crosignani, 2021). To minimize this risk, we focus on the top quartile of banks by credit volume as of 2009 (i.e., the year before our sample starts), resulting in a total sample of 34 banks, whereof 13 are listed and 21 non-listed.[14] Table 1 reports summary statistics for the samples of listed and non-listed banks. While we find these groups to substantially differ in size, listed and non-listed banks in our sample do not meaningfully differ in terms of risk-weighted assets, leverage, liquidity, and capital ratios. In addition, listed and non-listed banks share the same share of female employees, both in terms of regular employees, middle managers, and top managers. Thus, despite the size difference, listed and non-listed banks are relatively comparable. Later in the paper, we will examine whether these size differences could spuriously explain our results.

Table 2 reports univariate statistics for the main variables in our sample. The first set of variables characterizes the sample in terms of bank types and the ownership structure of

[13] According to the Italian Civil Code, middle-level managers ("Quadri") are employees that retain operative functions but also manage groups of other employees, while top-managers ("Dirigenti") are employees with ample autonomy and with purely managerial functions over an entire firm or one of its business units.

[14] All our results are robust to the inclusion of all Italian banks.

borrowers. Our sample includes 34 banks over ten years, with an average share of female-led firms in the banks' loan portfolio of 14%.[15]

The second set of variables pertains to loan-level information. Being larger, listed banks provide the majority of loans in the sample, and female-led firms receive approximately 16% of these loans. The average credit amount is roughly €1m, with the median being considerably smaller (€220k). Average credit growth in our sample is negative (-3%), likely due to the aftermath of the global financial crisis and the onset of the sovereign debt crisis in Italy.

Finally, 40% of bank employees are middle managers, while only 2% are top-level managers. In terms of the gender distribution, the share of women decreases with increasing levels of the corporate ladder. While women account for 43% of the bank employees in our sample, their share decreases to roughly 33% (0.13/0.40) within the middle management and less than 1% at the top level.

4 Female board representation in Italian banks

We first examine the impact of the gender quota on the composition of the board of directors of Italian listed banks. Panel A in Figure 1 plots the share of female directors in listed and non-listed banks around the introduction of the mandatory gender quota in Italy. We observe a strong increase in female board representation over the sample period. Before the enactment of the gender quota, the share of female directors in listed Italian banks was lower than 10%. In 2019, the end of our sample period, this share has increased to 35%, slightly above the mandatory quota of 33% and in line with the later increase in the quota to 40% in 2019.

Even though the quota does not apply to non-listed banks, these banks also experienced a small increase in the share of female directors after 2010, presumably due to a general time trend towards greater gender equality, consistent with the results of (Zaccaria, Schivardi, and Guiso, 2024). Importantly, the relatively stable share of female directors in both listed

[15] In the Internet Appendix, we re-estimate our analyses on the full sample of banks and show that our results are robust to sample selection.

and non-listed banks before the introduction of the quota suggests that the parallel trends assumption is not violated. Panel B shows that Italian banks did not increase their board size to accommodate more female directors after the quota was enacted. This implies that listed banks replaced some of their male directors, consistent with larger boards being detrimental to firm performance (Yermack, 1996; Jenter, Schmid, and Urban, 2023).

Next, we examine the effect of the quota more formally and run the following difference-in-differences (DID) regression:

$$\text{Female directors}_{b,t} = \beta \text{Listed}_b \times \text{Post}_{b,t} + \eta_b + \phi_t + \varepsilon_{b,t}, \tag{2}$$

where $\text{Female directors}_{b,t}$ is the share of female directors in bank b in year t. $\text{Post}_{b,t}$ is a dummy equal to 1 from bank's b first renewal of the board after August 2012, and 0 otherwise. As banks renew their boards at different points of time, the post period varies from bank to bank. Listed_b is a dummy equal to 1 if bank b is listed, and 0 otherwise. The coefficient of interest is β, the differential effect of the quota on listed and unlisted Italian banks. η_b and ϕ_t denote bank and year fixed effects, respectively. As the number of banks in the sample is relatively low, we report Discroll-Kraay standard errors in parentheses to avoid issues with the small number of clusters (Driscoll and Kraay, 1998; Abadie, Athey, Imbens, and Wooldridge, 2023).

Table 3 provides the estimates of Equation (2). In the most saturated version in Model 2, we find that the share of female directors in listed banks increases by 16 percentage points (p.p.) relative to unlisted banks. Model 3 extends the analysis to all Italian banks in Italy (as opposed to only the 34 largest banks) and the results barely change.

Panel A in Figure 2 plots regression estimates of the share of female directors on interactions of the listed dummy and time dummies along with the corresponding 95% confidence intervals. The time dummies are defined relative to the first renewal of the board after August 2012 ($t = 0$). The interaction for the last year before the first renewal represents the omitted category. The figure confirms the univariate plot in Figure 1. After the introduction of the

quota, there is an increasing share of female directors in listed Italian banks when compared to their unlisted counterparts. In the first board renewal, treated banks increase the share of female directors by roughly 10 p.p. relative to unlisted banks. The increase in the share of female directors in the second renewal ($t = 3$) is a bit smaller in magnitude, likely because unlisted banks also increased their female board representation (Figure 1).[16] Again, there is no indication that the parallel trends assumption is violated.

Lastly, Models 4 to 6 in Table 3 and Panel B of Figure 2 confirm that board size in listed banks does not change relative to unlisted banks after the quota. This suggests that listed banks increased the share of female directors by replacing male directors with women rather than by increasing the size of the board.

5 Bank lending around the quota

We next examine the impact of the gender quota on lending decisions to female-led firms. We start by looking at the formation of lending relationships. We estimate the following extensive margin-level equation:

$$\text{Lending Relation}_{b,f} = \beta \text{Listed}_b \times \text{Female majority}_f + \eta_b + \phi_f + \tau_t + \psi_{g,t} + \varepsilon_{b,f}, \qquad (3)$$

where $\text{Lending Relation}_{b,f}$ is dummy set to 1 if a credit relationship between bank b and borrowing firm f starts after the first board renewal after the quota, and 0 if the relationship is formed before that renewal. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. The main predictor is the interaction between Listed and Female majority.

η_b and ϕ_f denote bank and firm fixed effects, while τ_t are fixed effects for the year the relationship is formed and $\psi_{g,t}$ are fixed effects for the year of the relationship interacted with

[16] Note that in contrast to the univariate plot in Figure 1, the share of female directors seems to increase more abruptly. This is because of the staggered nature of the reform. In the regression analyses, we code the time dummies relative to the treatment year, i.e., the treatment for each listed bank takes place in $t = 0$.

female majority fixed effects (g). In essence, we rule out unobserved heterogeneity due to time-invariant firm and bank factors, as well as time-varying heterogeneity in aggregate and gender-specific borrowing conditions. Again, we use Discroll-Kraay standard errors (Driscoll and Kraay, 1998). This specification, which follows De Jonghe et al. (2020), analyzes whether the probability of starting a relationship in the post-reform period is higher for female-led firms in listed banks.

Table 4 presents the estimates for Equation (3). We observe that listed banks affected by the quota had a 1.2 p.p. higher probability of lending to female-led firms following the quota. This result remains robust when the model is augmented with more granular fixed effects. In addition, the coefficient in the fully saturated model (1.4 p.p., Model 3) corresponds to roughly 5% of all credit relationships that have been established after the first renewal post 2012 (25.6%).

Figure 3 illustrates the time dynamics of this effect. The first blue line represents the coefficient estimated on the sample of observations up to the first renewal of the board after the quota. The graph indicates that the effect becomes significant when including observations one year after the quota and remains constant over time as more years after the reform are added. We conclude that the effect materializes quickly following the reform. To further test the robustness of this result, and to examine potential pre-trends, we create fictitious years of board renewals up to 3 years before the true date and assess the impact of these placebo quotas (represented by the red lines). For example, the most right-hand red line assumes a placebo quota in the last year before the actual quota was enacted, excluding years after the true quota from the sample. If there were pre-trends in our outcomes, the red coefficients should be trending upward. The graph shows that the coefficients for the fictitious quotas are flat, suggesting that the effects takes place only after the actual implementation of the quota and it is not due to pre-trends in the outcome.

Next, we examine the effect of the quota on the intensive margin of credit by estimating

the following equation:

$$\begin{aligned} \text{CR}_{b,f,t} =& \beta_1 \text{Post}_{b,t} + \beta_2 \text{Listed}_b \times \text{Post}_{b,t} + \beta_3 \text{Post}_{b,t} \times \text{Female maj}_f + \\ &+ \beta_4 \text{Listed}_b \times \text{Post}_{b,t} \times \text{Female maj}_f + \eta_{b,f} + \phi_{b,t} + \psi_{f,t} + \varepsilon_{b,f,t}, \end{aligned} \tag{4}$$

where $\text{CR}_{b,f,t}$ represents mid-point credit growth (cf. Equation 1) between bank b and firm f in year t. The main coefficient of interest is β_4, which captures whether credit growth is larger for female-led firms with listed banks post-reform, relative to male-led firms and firms with relationships with non-listed banks. The model includes bank-firm, bank-year, and firm-year fixed effects, which allows us to isolate the supply-side component of this effect (Khwaja and Mian, 2005).[17]

Table 5 shows the results. From Models 1 to 3, we increasingly add more fixed effects until we arrive at the full saturation in Model 3, which includes bank-firm, bank-year, and firm-year fixed effects. Consistent with the result on the extensive margin, we observe that the gender quota had a positive and statistically significant impact on the amount of credit extended to female-led firms. Specifically, credit growth for female firms with listed banks after the board renewal (treated banks) increases by 0.7 percentage points in Model 3, or roughly 5% of its interquartile range.

In our analysis, a firm is classified as female-led if women held at least 50% of the borrowing firm's equity at the time of the treatment. To test the robustness of this definition, we explore alternative criteria for identifying female firms. In the Internet Appendix, Tables A2 and A3 present the results for both the extensive and intensive margins of female borrowing, using four alternative proxies for female firms:

- Female majority (switchers): A time-varying dummy variable equal to 1 if women own

[17] Adding firm-time fixed effects allows us to isolate supply from demand by controlling for unobserved demand-side variation at the firm-year level, capturing shifts in a firm's aggregate credit demand that might otherwise bias our estimates. A potential caveat with this approach is that it excludes single-bank relationships from the analysis. This concern is negligible for Italy given the prevalence of multiple lending relationships in the country (Detragiache, Garella, and Guiso, 2000; Gobbi and Sette, 2014). In our sample, around 58% of firms are multi-banked, which corresponds to 78% of observations.

more than 50% of the firm's equity and 0 otherwise.

- Mean equity: The share of the firm's equity held by women in the year before treatment.
- Equity: The time-varying share of the firm's equity held by women.
- Full owner: A time-varying dummy variable equal to 1 if women own 100% of the firm's equity and 0 otherwise.

Our findings indicate that the results for both the extensive and intensive margins are robust across these alternative definitions of female firms. The only exception is in Model 4 of Table A2, where the coefficient for Listed × Full owner is sizable but not statistically significant. This is likely due to the relatively small number of fully female-owned firms.

Furthermore, in Table A4, we reject the hypothesis that our findings reflect bank specialization (Paravisini, Rappoport, and Schnabl, 2023). For example, if female firms were active in specific industries (e.g., due to stereotypes as in Hebert, 2023), the observed increase in lending growth may reflect shifts in lending to these industries over time. To rule this out possibility, we follow the methodology of Benetton and Fantino (2021) and include a control variable for bank-industry specialization, interacted with *Post* and *Female majority*.

In Model 1 to 3, we define a dummy variable that equals one if the share of bank b's number of loans in the industry of firm f exceeds the bank's overall loan share at the national level. In Model 4 to 6, we define a dummy that equals one if the share of bank b's credit amount in the industry of firm f exceeds the bank's overall credit share at the national level. The intuition is that our specialization measures capture differential adjustments in quantities in industries where bank b specializes. We find that our results on credit growth remain unaffected by potential changes in bank specialization over time.

6 Mechanism

The effects documented in the previous section raise important questions about the mechanisms through which female board representation influences the lending decisions to female-led firms. We explore these mechanisms in this section. We start by analyzing the banks' internal labor markets to understand the organizational changes after the quota was enacted. We then look at the role of information asymmetries between lenders and borrowers. Finally, we examine the riskiness of the loans awarded to female firms after the quota to learn more about the frictions that prevented banks from giving out more loans to female firms in the first place.

6.1 Internal labor markets around the gender quota

Given that lending decisions are ultimately made by loan officers, it is crucial to explore whether increased female board representation has broader implications for the gender dynamics within the bank's organizational hierarchy, particularly because the (top-level) directors directly affected by the quota typically do not engage in lending decisions by themselves.[18] Therefore, we hypothesize that an increase in female directors also affects the bank's organization, potentially resulting in more female promotions. This, in turn, could lead to more lending to female-led firms.

Increasing female board representation could improve the promotion rates of women for several reasons. First, female directors may be more likely to advocate for human resources policies that support gender diversity and the career advancement for women. Second, they could act as mentors for other female employees, recommending women from their networks for leadership roles. Additionally, the presence of women on boards may serve as a signal for other women, demonstrating the benefits of reaching the highest levels of leadership.

So far, there is considerable evidence that women face challenges in terms of their career progression, particularly in the financial sector (e.g., Hospido, Laeven, and Lamo,

[18] Dittmann, Maug, and Schneider (2009) investigate bank employees sitting on boards of non-financial firms in Germany. They find that these directors promote their bank's business by engaging in lending activities.

2022; Lagaras, Marchica, Simintzi, and Tsoutsoura, 2023; Huang, Mayer, and Miller, 2024; Ceccarelli, Herpfer, and Ongena, 2024). In this regard, Kunze and Miller (2017) and Flabbi, Macis, Moro, and Schivardi (2019) suggest that female executives seem to be able to reduce the gender gap within their organizations. To this date, however, there is no evidence that gender quotas have career implications for other executives and, in turn, regular employees (Bertrand, Black, Jensen, and Lleras-Muney, 2018; Maida and Weber, 2022).

To examine the effect the gender quota had on the promotion rates of female bank employees, we estimate the following equation:

$$\begin{aligned}\text{Promotion}_{b,e,t} =&\beta_1 \text{Listed}_b + \beta_2 \text{Post}_{b,t} + \beta_3 \text{Listed}_b \times \text{Post}_{b,t} + \beta_4 \text{Female}_e \times \text{Listed}_b + \\ &+\beta_5 \text{Female}_e \times \text{Post}_{b,t} + \beta_6 \text{Female}_e \times \text{Listed}_b \times \text{Post}_{b,t} + \eta_{b,t} + \phi_e + \psi_{g,t} + \varepsilon_{b,e,t},\end{aligned} \tag{5}$$

where $\text{Promotion}_{b,e,t}$ represents a dummy indicating whether employee e in bank b was promoted to a middle manager in year t. $\eta_{b,t}$, ϕ_e, and $\psi_{g,t}$ are bank-year, employee, and gender-year fixed effects. The main predictor is the triple interaction between Post, Listed, and Female (a dummy variable indicating that employee e is a woman). We again use Driscoll-Kraay standard errors and restrict the sample to employee that are either rank-and-file or middle-managers. The specification analyzes whether the quota had a differential impact on the probability that a female employee becomes a middle manager.

Results from Equation (5) are in Table 6. Our findings reveal that in listed banks affected by the quota, the probability of a female employee being promoted to middle management increases by 0.9 p.p. This effect is robust to the inclusion of granular fixed effects, which helps to account for potential unobserved heterogeneity across different banks. Even more importantly, our specification always include fixed effects for the individual employee, which absorb differences across employees.

Although the quota improves the representation of women in middle management, its impact on higher roles remains ambiguous. In Model 4 of Table 6, we examine the probability

that a female middle manager is promoted to a top management position, restricting the sample to middle- and top-managers only. Albeit this effect is positive, it is not statistically significant, suggesting the presence of a potential glass ceiling in women's careers. This phenomenon reflects the challenges that women may face in advancing beyond middle management positions to top roles, even in environments where initial improvements in gender representation can be observed.

Figure 4 illustrates the dynamic impact of the gender quota on managerial promotions. The graph shows no significant pre-trends, reinforcing the causal interpretation of our findings. Notably, the quota's effect on promotions becomes significant after one year and then increases steadily over time. This indicates that the influence of the quota on managerial promotions is gradual, likely due to the time required for organizations to adopt changes in their internal labor market policies. Importantly, the time lag in female promotion rates aligns with the delayed increase in new female lending relationships, as shown in Figure 3. In addition, in Figure 5 we re-estimate the analyses on internal labor markets, intensive, and extensive margins of credit by region. The figure shows that regional variation in the change in female promotion rates after the quota aligns with regional heterogeneity in the increase in lending growth rates to female firms.

Next, we examine the effect of the quota on the wages of female bank employees. Table 7 builds on Model 3 in Table 6, but uses the natural logarithm of annual wages as the dependent variable. Model 1 includes all bank employees, while Models 2 to 4 separately analyze rank-and-file employees, middle managers, and top managers. We find that, after the quota, female bank employees affected by the quota earned, on average, 1.3% more compared to their male counterparts. This effect applies to all types of female employees, with the strongest effects among the most senior managers. While this may appear surprising at first, as there have not been more female promotions to top-level positions, it is consistent with a greater demand for female top managers after the quota, who may be poached from other banks or awarded directorships at other firms, increasing their negotiation power.

In Table 8, we investigate whether the quota has led to an increase in the hiring of female employees. This increase could be due to the poaching of female candidates from other industries, increased hiring from unlisted firms or banks not affected by the quota, or by women entering the labor force (e.g., as part-time employees or those previously unemployed). Models 1 and 2 suggests that the overall hiring of female employees, particular of junior female employees, has slightly increased, although this result is statistically insignificant at conventional levels. In contrast, the coefficient for middle managers is considerably smaller in magnitude (Model 3), and the coefficient for top managers is even negative (Model 4).

Taken together, the evidence suggests that female bank employees not only benefited from higher promotion rates but also enjoyed higher wages as a result of the gender quota. By contrast, it does not appear that the quota has led to increased hiring at more senior levels. Instead, these women are predominantly promoted within the organization, consistent with firm-specific human capital leading to mostly internal CEO appointments, as suggested by (Cziraki and Jenter, 2022). The results also align with a greater demand for well-qualified female employees, which, in turn, has contributed to higher wages at the very top.

Overall, the findings are consistent with the quota resulting in changes in the bank's internal labor markets. These findings contrast with previous studies on gender quotas in Norway and Italy (Bertrand, Black, Jensen, and Lleras-Muney, 2018; Maida and Weber, 2022), which found no improvements in female promotion rates or wages. One possible reason for this difference is that our study focuses on the Italian banking sector, which may be more conservative than both Norwegian firms (as in Bertrand, Black, Jensen, and Lleras-Muney, 2018) and regular Italian firms (as in Maida and Weber, 2022), leaving greater room for improvement for female employees. Additionally, our study extends through 2019, allowing more time for banks to adapt.

6.2 Information flows between banks and female firms

We next examine the role of information asymmetries between the banks and female-led borrowers. For example, female bankers may have a better understanding of the challenges and opportunities faced by female-led firm. This, in turn, can improve communication and trust between lenders and borrowers. A higher share of female bank employees would then result in better information flows between the banks and their female borrowers, allowing female bankers to better assess the creditworthiness of female entrepreneurs, leading to more accurate credit scores. Consequently, we would expect a more pronounced rise in lending to female-led firms with greater information asymmetries, i.e., firms for which improved information flows may be particularly relevant.

We examine this question in Table 9. The table represents relationship-level regressions of the probability of a new lending relationship (Models 1 to 3, in line with Table 4) and mid-point credit growth (Models 4 to 6, in line with Table 5). We split the sample according to borrower firm size following Eurostat criteria because reporting requirements are stricter for larger firms in Italy, resulting in a better information environment for larger firms: micro-sized enterprises have up to 10 employees, small and medium-sized enterprises (SMEs) have between 10 and 250 employees, whereas large enterprises have at least 250 employees.

In terms of the extensive margin results in Models 1 to 3, we find that new lending relationships are predominantly formed with smaller female-led borrowers. In contrast, there are fewer credit relationships with large female borrowers, although this effect is, despite its large magnitude, statistically insignificant. The results for the intensive margin suggest that the increase in credit is concentrated among SMEs, with insignificant changes in credit growth for micro-sized and large firms. Overall, these results seem to suggest that credit flowed more to female-led firms where information asymmetries are likely greater. Importantly, our split-sample analysis only considers size as a proxy of information asymmetries because of data limitations in measuring elements of soft information (e.g., private networks) about female entrepreneurs.

6.3 Riskiness of loans to female firms

The increase in lending to micro-sized firms and SMEs raises the question of whether the banks' lending portfolios have become riskier as a result. On the one hand, if an increase in female employees allowed for a better assessment of female borrowers' creditworthiness, this would lower the screening and monitoring costs for banks, enabling them to extend more credit to female-led firms without increasing the overall risk of their loan portfolio. On the other hand, if loans to female-led firms after the quota were associated with higher risk, this would indicate a shift in the banks' lending preferences, suggesting that post-quota, banks made a deliberate and potentially costly effort to increase their lending to female firms.

Our analysis is twofold. We first investigate whether the increase in female lending goes to firms that are ex-ante riskier. Second, we examine the ex-ante riskiness, cost and ex-post performance (NPL) of individual exposures. Similar to Table 9, Table 10 splits the sample into three types of firms: following Eurostat, firms are deemed risky if their credit score exceeds 6, vulnerable with a credit score between 5 and 6, and safe otherwise. The credit score is estimated by CERVED using accounting data from the firm's balance sheet and it is akin to an Altman Z-score (Altman, 1968).

We find that the increase in lending to female-led firms is concentrated among vulnerable, and to a lesser extent safe, firms, especially for the extensive margin. The result is consistent with the view that the increase in lending mostly pertains to firms for which exercising discretion is likely to be more important. While very risky firms may never receive credit, very safe will always be awarded with loans. Thus, the change in lending mostly stems from those firms for which additional, potentially soft information and discretionary judgment may be more relevant.

Second, we examine the riskiness, cost, and ex-post performance of individual exposures. For example, a firm may be deemed safe at the time of borrowing and over-borrow and increase the risk of financial distress ex-post. To measure the ex-ante riskiness of individual exposures we estimate a probability of default (PD) for each exposure in our sample. First,

we consider the universe of loans in the period 2007-2009 (i.e., before the start of our sample) and perform a logit regression of an indicator dummy for NPLs in a bank-firm relation on several firm, bank, and loan characteristics. We then use the coefficients estimated in such a regression to back out a PD for each exposure in out sample.

Next, we follow the methodology of Acharya, Bergant, Crosignani, Eisert, and McCann (2022) to estimate the cost for bank b to sustain a given exposure with firm f. As inputs, we use the size of the exposure and the PD as previously calculated. We then consider the natural logarithm of the resulting capital requirement as the cost to bank b. Lastly, we study whether the riskiness of exposures increases ex-post by analyzing the presence of NPLs up to two years in the future.

We present results on the outcomes of interest in Table 11, where the regression specification follows Equation (4). Model 1 examines predicted PDs, while Model 2 looks at the cost of capital of loans, measured by the logarithm of the amount of the exposure times its PD. Finally, Models 3 and 4 employ a dummy indicating the existence of an NPL in a bank-firm relationship. Model 3 looks at the status of the lending relationship in year t, while Model 4 investigates the cumulative probability of an NPL within 2 years after t. We do not find that exposure to female-led firms by listed banks after the quota have higher PDs nor higher costs in terms of capital requirements. Furthermore, we find no evidence that these exposures become more likely to end up as NPLs. Overall, our results suggest that the additional credit extended to female-led firms as a result of the quota is likely to represent positive investment opportunities for listed banks. This is suggestive of the quota being able, potentially through internal labor markets, to ease credit market frictions affecting female-led firms.

7 Conclusion

This paper investigates the impact of increased female representation on bank boards on lending practices toward female-led firms, using the mandatory gender quota introduced by

the "Legge Golfo-Mosca" in Italy as a natural experiment. Our findings contribute to the broader understanding of how gender diversity at the senior management level can influence credit market outcomes, particularly for female entrepreneurs.

Our analysis reveals that, following the introduction of the gender quota, listed banks significantly increased female representation on their boards. This regulatory shift had a substantial impact on their lending behavior. In response to the quota, listed banks exhibited a greater propensity to lend to female-led firms. Specifically, we observe a 1.4 percentage point higher likelihood of forming new credit relationships with female-led firms, alongside a 0.7 percentage point increase in credit growth for these firms. These lending relationships extend to smaller firms but do not result in higher ex-ante or ex-post non-performing exposures.

Overall, our findings underscore the potential of gender quotas to alter lending dynamics and enhance credit accessibility for female entrepreneurs. They suggest that diversifying leadership in financial institutions may help reduce gender-based barriers to capital access. Policymakers aiming to support female entrepreneurs should consider measures that increase women's presence in key financial roles.

To understand the mechanisms driving these changes, we investigate banks' internal labor markets. We find that the introduction of the gender quota is associated with a higher probability of female employees being promoted to middle management. This supports the idea that increased female representation on boards can influence internal promotion practices, reflecting spillover effects on employees not directly affected by the quota. Similarly, we find a positive effect of the quota's enactment on female employee wages.

Lastly, we document that the increase in credit is concentrated in firms where information asymmetries are likely greater, consistent with a homophily channel resulting from the increase in female representation in the hierarchy of listed banks. Conversely, we do not find that credit flows to riskier firms nor that it leads to riskier and non-performing exposures. These results highlight the complex interplay between board-level diversity, organizational outcomes, and the granting of credit.

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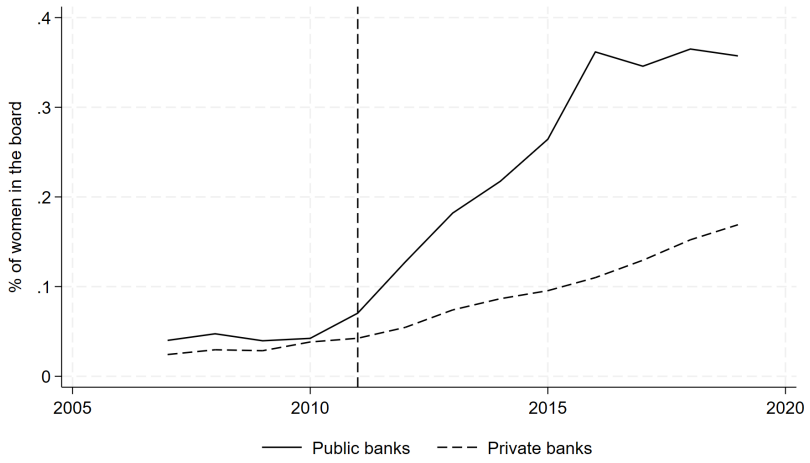
Figures

Figure 1: **Bank boards around the introduction of the gender quota**

Panel A plots the share of female directors in listed and non-listed banks around the introduction of the mandatory gender quota in Italy. Panel B plots the number of directors. The vertical dashed line indicates the year the gender quota was enacted (2011).

Panel A: Share of female directors



Panel B: Board size

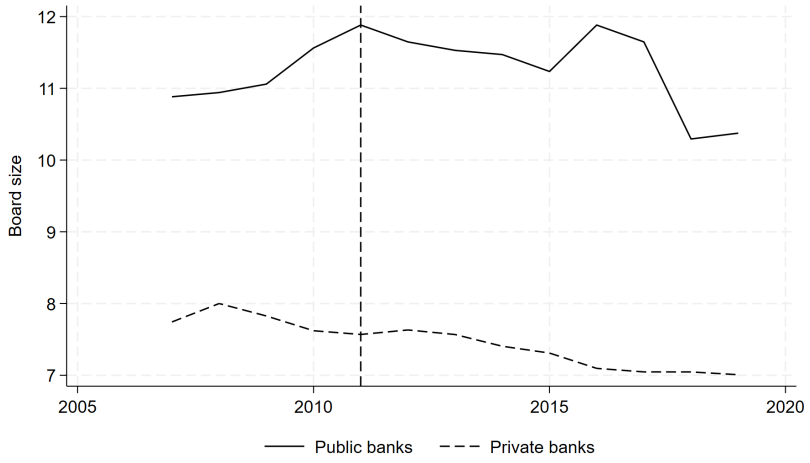
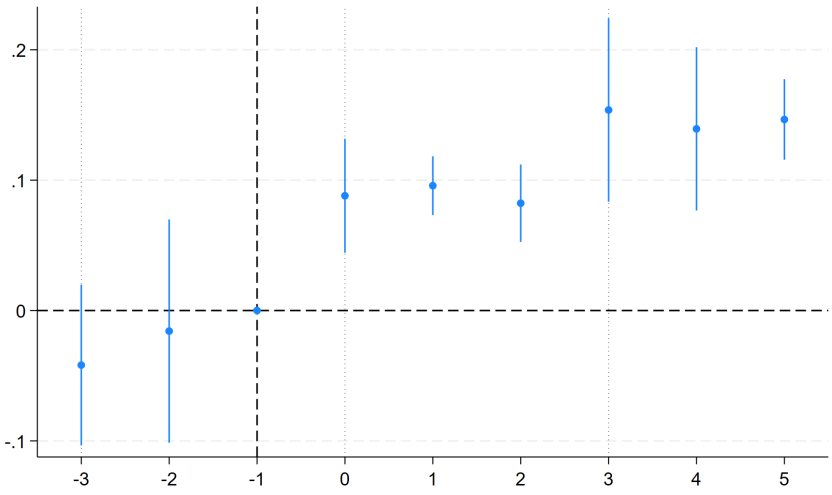


Figure 2: **Bank boards around the introduction of the gender quota: Post-estimation plot**

Panel A plots regression estimates of the share of female directors on interactions of the listed dummy and time dummies along with the corresponding 95% confidence intervals. The sample is restricted to the 34 banks with the largest lending portfolio in 2009. The time dummies are defined relative to the first renewal of the board after August 2012 ($t = 0$). The interaction for the last year before the first renewal represents the omitted category. Panel B follows Panel A but plots the number of directors.

Panel A: Share of female directors



Panel B: Board size

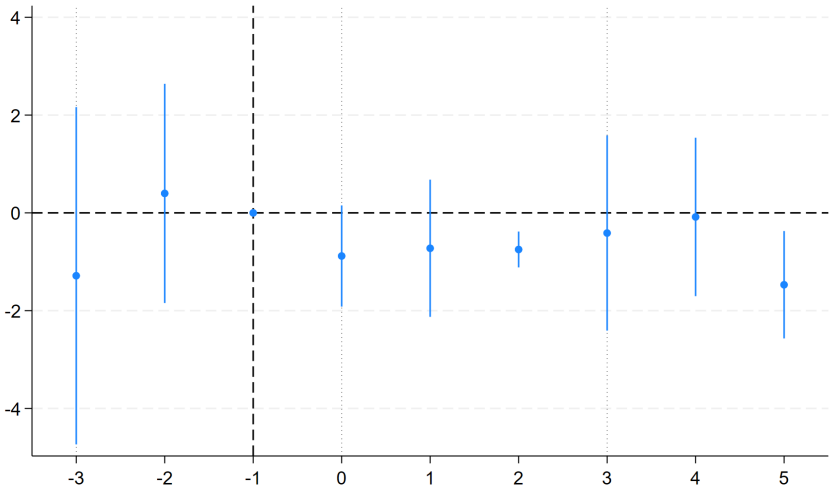


Figure 3: **Lending to female firms: Extensive margin**

This figure plots regression estimates for Equation (3). The first blue line represents the coefficient estimated from the sample of observations up to the first board renewal after the quota. Blue lines to the right incorporate additional years in the post-quota period. The red lines indicate fictitious board renewal years, extending up to three years before the first actual renewal after the quota. For example, the rightmost red line assumes a placebo quota in the final year before the actual quota was enacted, excluding post-quota years from the sample. Red lines further to the left shift the hypothetical treatment year progressively further back in time. The sample is restricted to the 34 banks with the largest lending portfolio in 2009.

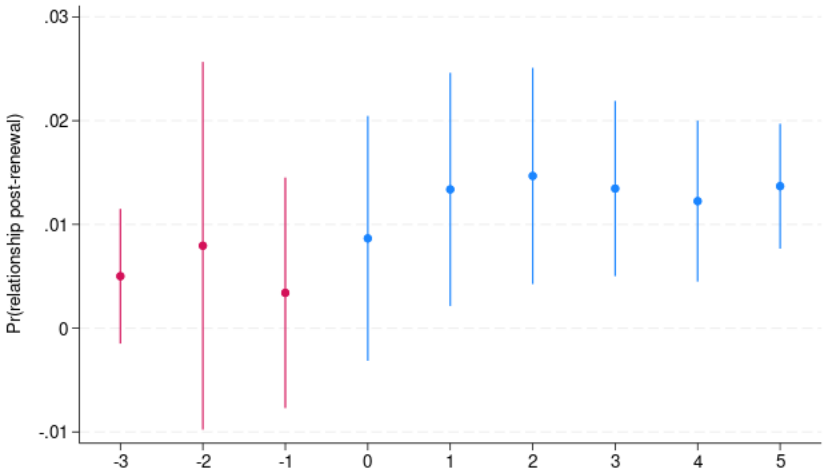


Figure 4: **Promotion rates of female bank employees around the gender quota**

This figure plots the dynamic version of Equation (5). The sample is restricted to the 34 banks with the largest lending portfolio in 2009. The regression is based on a heterogeneous treatment estimator. The omitted category is the year before the treatment.

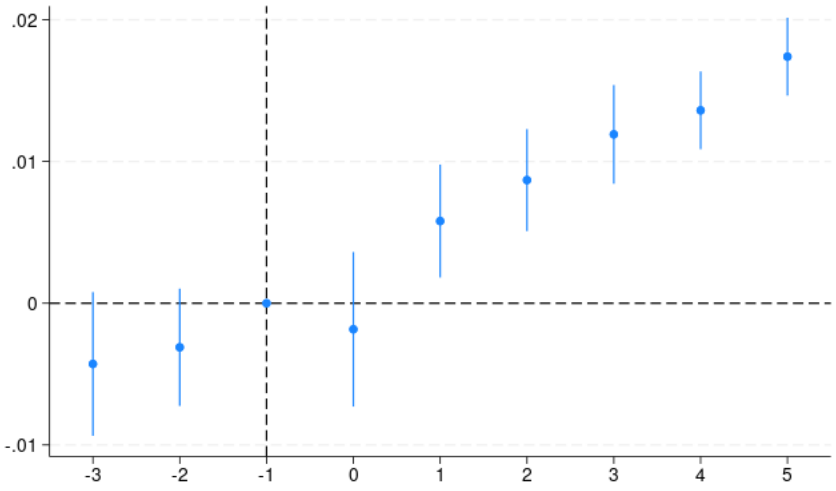
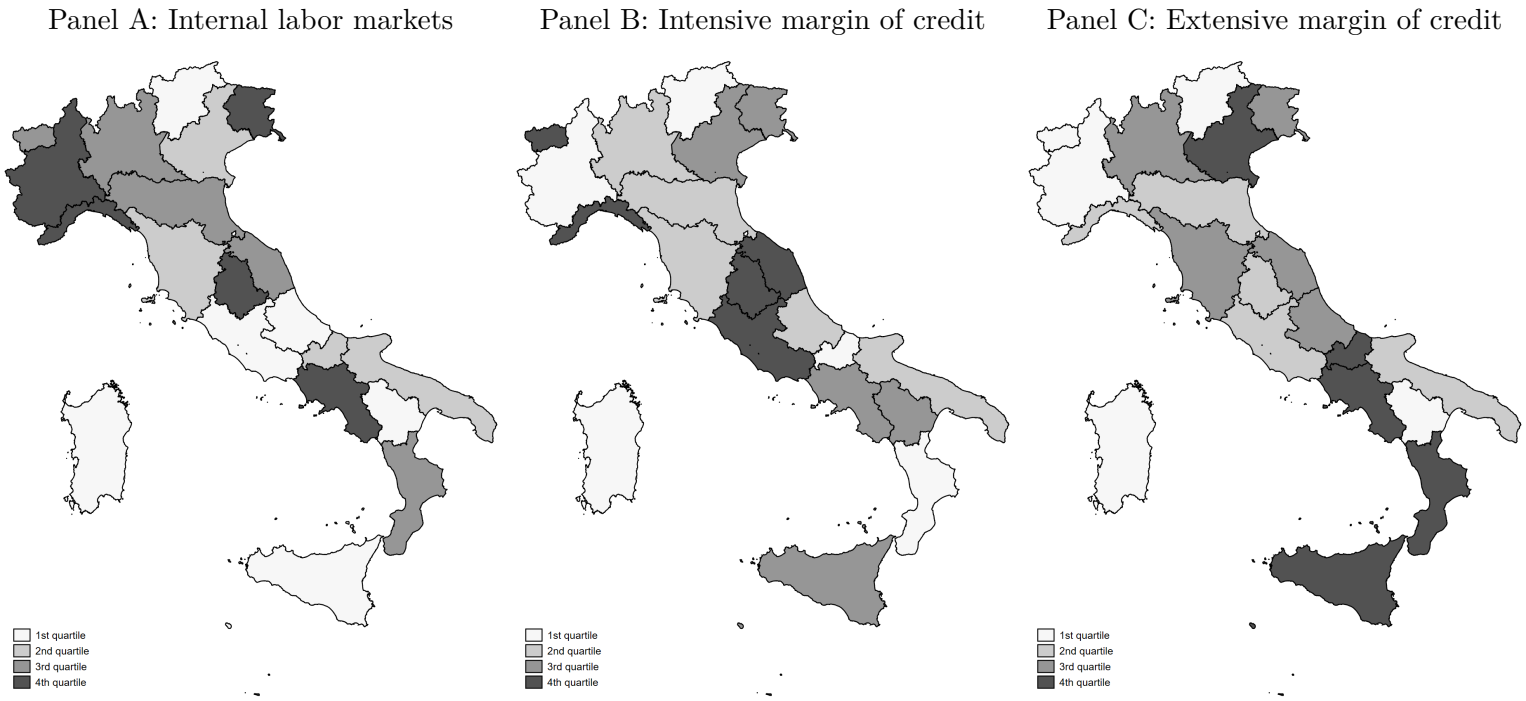


Figure 5: **Regional Effects - Labor market vs credit**

Panel A plots regression estimates, split by quartile, of Eq. (5) (internal labor markets) for each region separately. Panels B and C plot regression estimates, split by quartile, of Eq. (4) (intensive margin of credit) and Eq. (3) (extensive margin of credit) for each region separately. Darker shades correspond to stronger effects.



Tables

Table 1: **Balancing of covariates**

This table reports mean bank characteristics for listed (column 1) and non-listed banks (column 2). All characteristics are measured at the beginning of the sample in 2010. Column 3 reports the difference. Standard errors are in parentheses. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Non-listed bank (1)	Listed bank (2)	Difference (3)
Ln(Assets)	9.309	11.320	2.012***
	(1.311)	(1.511)	(0.527)
Ln(Credit Amount)	21.563	23.706	2.143***
	(1.424)	(1.284)	(0.471)
RWA	69.728	72.546	2.819
	(13.559)	(11.174)	(4.472)
Bank leverage	8.969	8.677	-0.292
	(2.022)	(2.317)	(0.810)
CAP ratio	13.274	12.340	-0.934
	(2.706)	(3.671)	(1.221)
TIER 1 ratio	10.653	9.745	-0.908
	(3.267)	(4.125)	(1.399)
LIQ ratio	7.960	6.910	-1.050
	(6.132)	(3.041)	(1.661)
Female employees	0.419	0.386	-0.034
	(0.076)	(0.092)	(0.030)
Female middle manager	0.262	0.269	0.007
	(0.093)	(0.078)	(0.029)
Female top manager	0.064	0.085	0.021
	(0.061)	(0.043)	(0.018)
N	21	13	34

Table 2: **Summary statistics**

This table reports summary statistics for the main variables. The first panel reports summary statistics at the bank-year level. The second panel refers to loan level information. The last panel relates to information at the employee level.

	N	Mean	SD	Median	Min	Max
Banks						
Listed banks	340	0.38	0.49	0.00	0.00	1.00
Share female majority firms	340	0.14	0.04	0.15	0.00	0.24
Number of loans	340	18,962	26,785	5,977	12.00	111,432
Ln (Credit amount)	340	22.37	1.66	22.13	18.04	25.41
Credit relationships						
Listed bank	4960461	0.72	0.45	1.00	0.00	1.00
Female majority firm	4960461	0.16	0.36	0.00	0.00	1.00
Pr(relationship post-renewal)	614002	0.51	0.50	1.00	0.00	1.00
Ln (Credit amount)	4960461	12.51	1.33	12.39	10.31	16.24
Credit growth	4960461	-0.03	0.36	0.00	-2.00	2.00
Employees						
Female	3149741	0.43	0.50	0.00	0.00	1.00
Middle manager	3149741	0.40	0.49	0.00	0.00	1.00
Top manager	3149741	0.02	0.15	0.00	0.00	1.00
Female middle manager	3149741	0.13	0.33	0.00	0.00	1.00
Female top manager	3149741	0.00	0.05	0.00	0.00	1.00

Table 3: **The effects of the quota on boards**

Bank-level regressions of the effects of the Italian gender quota on the composition of the board of directors. In columns 1 to 3, the outcome variable is the share of female directors. In columns 4 to 6, the outcome is the number of directors on the board. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. In columns 1, 2, 4, and 5 the sample is restricted to the 35 largest banks by lending in 2009, while columns 3 and 6 include all banks. Driscoll-Kraay standard errors are applied in all models except for columns 3 and 6, which cluster the standard errors at the bank level. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Share of female directors			Number of directors		
	(1)	(2)	(3)	(4)	(5)	(6)
Listed × Post	0.148***	0.156***	0.136***	-0.195	-0.484	-0.321
	(0.035)	(0.028)	(0.032)	(0.405)	(0.511)	(0.755)
Post	0.076***	-0.063**	0.013	-0.592	1.921***	0.821*
	(0.019)	(0.021)	(0.013)	(0.441)	(0.242)	(0.425)
Listed	0.053*			2.837***		
	(0.027)			(0.251)		
Bank FE	No	Yes	Yes	No	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
N	369	369	1534	369	369	1534
R^2	0.555	0.766	0.646	0.098	0.649	0.750
Mean Dep. Var.	0.118	0.118	0.104	11.70	11.70	8.811
S.D. Dep. Var.	0.134	0.134	0.122	4.219	4.219	3.486

Table 4: **Lending to female firms: Extensive margin**

Relationship-level regressions of the probability of a new lending relationship (firm-bank). The sample period is from 2010-2019. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Lending relationship		
	(1)	(2)	(3)
Listed × Female majority	0.012***	0.014***	0.014***
	(0.003)	(0.003)	(0.003)
Firm FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year Relationship FE	No	Yes	No
Year Relationship-Female Maj. FE	No	No	Yes
N	362074	362074	362074
R^2	0.305	0.777	0.777
Mean Dep. Var.	0.506	0.506	0.506
S.D. Dep. Var.	0.500	0.500	0.500

Table 5: **Lending to female firms: Intensive margin**

Relationship-level regressions of mid-point credit growth. The sample period is from 2010-2019. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Credit growth		
	(1)	(2)	(3)
Post	0.011*		
	(0.006)		
Listed × Post	-0.011		
	(0.009)		
Post × Female majority	-0.003	-0.002	-0.001
	(0.002)	(0.002)	(0.004)
Listed × Post × Female majority	0.003**	0.003**	0.007**
	(0.001)	(0.001)	(0.002)
Firm-Bank FE	Yes	Yes	Yes
Year FE	Yes	No	No
Bank-Year FE	No	Yes	Yes
Firm-Year FE	No	No	Yes
N	4857943	4857943	3715554
R^2	0.165	0.168	0.456
Mean Dep. Var.	-0.031	-0.031	-0.029
S.D. Dep. Var.	0.362	0.362	0.363

Table 6: **The effects of the quota on internal labor markets - promotions**

Employee-level regressions of the probability of being promoted to a middle manager or top manager. Model 1 includes all bank employees, while Models 2 to 4 separately analyze regular employees, middle managers, and top managers. The sample period is from 2009-2018. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female is a dummy equal to 1 if the worker is employee, 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Middle manager			Top manager
	(1)	(2)	(3)	(4)
Listed	-0.081***			
	(0.011)			
Post	0.065***			
	(0.016)			
Listed × Post	-0.016**			
	(0.006)			
Female × Listed	-0.007	-0.005	-0.007	0.029***
	(0.005)	(0.006)	(0.006)	(0.006)
Female × Post	-0.012**	-0.012***	-0.007**	-0.000
	(0.004)	(0.004)	(0.003)	(0.001)
Female × Listed × Post	0.008*	0.009**	0.009**	0.001
	(0.004)	(0.003)	(0.003)	(0.001)
Worker FE	Yes	Yes	Yes	Yes
Bank-Year FE	No	Yes	Yes	Yes
Female-Year FE	No	No	Yes	Yes
N	3057896	3057896	3057896	1300602
R^2	0.924	0.927	0.927	0.928
Mean Dep. Var.	0.405	0.405	0.405	0.051
S.D. Dep. Var.	0.491	0.491	0.491	0.221

Table 7: **The effects of the quota on internal labor markets - wages**

Employee-level regressions of the natural logarithm of annual wages. The sample period is from 2009-2018. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female is a dummy equal to 1 if the worker is female, 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Ln Wage			
	All	No Manager	Mid. manager	Top manager
	(1)	(2)	(3)	(4)
Female × Listed	0.015***	0.028	-0.001	0.001
	(0.004)	(0.017)	(0.005)	(0.064)
Female × Post	-0.014***	-0.011***	-0.011**	-0.015
	(0.004)	(0.003)	(0.004)	(0.014)
Female × Listed × Post	0.013**	0.010*	0.007***	0.032**
	(0.005)	(0.005)	(0.002)	(0.013)
Worker FE	Yes	Yes	Yes	Yes
Bank-Year FE	No	Yes	Yes	Yes
Female-Year FE	No	No	Yes	Yes
N	3080129	1789684	1216487	64343
R^2	0.844	0.698	0.731	0.334
Mean Dep. Var.	8.113	7.915	8.354	9.075
S.D. Dep. Var.	0.365	0.244	0.280	0.305

Table 8: **The effects of the quota on internal labor markets - hiring**

Employee-level regressions of the probability of an hiring happening after the renewal of the board. Model 1 includes all bank employees, Model 2 excludes managers, while Models 3 and 4 analyze hirings of middle managers and top managers, respectively. The sample period is from 2010-2018 and the sample is limited to hires. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female is a dummy equal to 1 if the worker is female, 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

Hiring	All	No Manager	Mid. Manager	Top Manager
	(1)	(2)	(3)	(4)
Listed × Female	0.006	0.004	0.002	-0.009
	(0.007)	(0.007)	(0.008)	(0.078)
Bank FE	Yes	Yes	Yes	Yes
Female-RelYear FE	Yes	Yes	Yes	Yes
N	67373	51670	13807	1895
R^2	0.780	0.778	0.789	0.776
Mean Dep. Var.	0.454	0.443	0.492	0.485
S.D. Dep. Var.	0.498	0.497	0.500	0.500

Table 9: **Firms' size and lending to female firms**

Relationship-level regressions of the probability of a new lending relationship (columns 1 to 3) and mid-point credit growth (columns 4 to 6). The sample is split based on firm size following Eurostat criteria. Micro-sized enterprises have up to 10 employees, SMEs have between 10 and 250 employees, whereas large enterprises have at least 250 employees. The sample period is from 2010-2019. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Post is a dummy equal to 1 from the first renewal of the board after 2011. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Lending relationship			Credit growth		
	Micro	SME	Large	Micro	SME	Large
	(1)	(2)	(3)	(4)	(5)	(6)
Listed × Female majority	0.012**	0.012**	-0.035			
	(0.004)	(0.005)	(0.051)			
Listed × Post × Female majority				-0.004	0.015***	0.008
				(0.005)	(0.003)	(0.017)
Post × Female majority				-0.000	-0.006*	-0.001
				(0.006)	(0.003)	(0.026)
Firm FE	Yes	Yes	Yes	No	No	No
Bank FE	Yes	Yes	Yes	No	No	No
Year Relationship-Female Maj. FE	Yes	Yes	Yes	No	No	No
Firm-Bank FE	No	No	No	Yes	Yes	Yes
Bank-Year FE	No	No	No	Yes	Yes	Yes
Firm-Year FE	No	No	No	Yes	Yes	Yes
N	126597	141054	9201	1184564	1981688	132414
R^2	0.784	0.770	0.768	0.525	0.425	0.364
Mean Dep. Var.	0.513	0.514	0.512	-0.028	-0.033	-0.033
S.D. Dep. Var.	0.500	0.500	0.500	0.334	0.373	0.433

Table 10: **Firms' riskiness and lending to female firms**

Relationship-level regressions of the probability of a new lending relationship (columns 1 to 3) and mid-point credit growth (columns 4 to 6). The sample is split based on firm riskiness following Eurostat criteria. Firms are deemed risky if their credit score exceeds 6, vulnerable with a credit score between 5 and 6, and safe otherwise. The sample period is from 2010-2019. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Post is a dummy equal to 1 from the first renewal of the board after 2011. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Lending relationship			Credit growth		
	Safe	Vulnerable	Risky	Safe	Vulnerable	Risky
	(1)	(2)	(3)	(4)	(5)	(6)
Listed × Female majority	0.010	0.021***	0.003			
	(0.006)	(0.007)	(0.007)			
Listed × Post × Female majority				0.009*	0.007	0.004
				(0.005)	(0.004)	(0.007)
Post × Female majority				0.001	-0.004	-0.003
				(0.007)	(0.005)	(0.008)
Firm FE	Yes	Yes	Yes	No	No	No
Bank FE	Yes	Yes	Yes	No	No	No
Year Relationship-Female Maj. FE	Yes	Yes	Yes	No	No	No
Firm-Bank FE	No	No	No	Yes	Yes	Yes
Bank-Year FE	No	No	No	Yes	Yes	Yes
Firm-Year FE	No	No	No	Yes	Yes	Yes
N	98143	104648	36068	1356852	1285485	540134
R^2	0.770	0.776	0.768	0.437	0.464	0.486
Mean Dep. Var.	0.560	0.499	0.442	-0.020	-0.034	-0.057
S.D. Dep. Var.	0.496	0.500	0.497	0.362	0.363	0.355

Table 11: **Predicted PD and non-performing loans**

Relationship-level regressions of predicted probability of default (PD), capital cost of loans, measured by the logarithm of the amount of the exposure times its PD, and non-performing loans (NPLs), measured by a dummy for the existence of an NPL in the relationship between the firm and the bank in year t. In Model 4, we focus on the cumulative probability of an NPL within 2 years after a lending relation is established. The sample period is from 2010-2019. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	PPD	Log(Cost)	NPL	NPL (f.2)
	(1)	(2)	(3)	(4)
Post × Female majority	-0.00005	0.0008	-0.001	-0.002**
	(0.00008)	(0.0117)	(0.001)	(0.001)
Listed × Post × Female majority	-0.0003	-0.00694	0.001	0.001
	(0.0008)	(0.0150)	(0.001)	(0.001)
Firm-Bank FE	Yes	Yes	Yes	Yes
Bank-Year FE	Yes	Yes	Yes	Yes
Firm-Year FE	Yes	Yes	Yes	Yes
N	4014215	4014215	3950503	3966072
R^2	0.885	0.862	0.556	0.699
Mean Dep. Var.	0.0154	8.050	0.024	0.045
S.D. Dep. Var.	0.0175	1.763	0.152	0.201

Internet Appendix

Table A1: **Timeline of the Golfo-Mosca Law (Law 120/2011)**

10/11/2009	First proposal in parliamentary commission. One-third of least represented gender, starting from first renewal after the law comes into effect.
30/06/2010	Proposal is sent to lower chamber. One-third of least represented gender, starting from first renewal after the approval of the law, but not before six months since inception, for three consecutive renewals.
02/12/2010	The lower chamber approves the proposal.
15/03/2011	The upper chamber approves a modified proposal. One-third of least represented gender, for three consecutive renewals. For the first renewal starting after one year since the inception of the law, the quota is one-fifth.
27/06/2011	The lower chamber re-approves the modified proposal by the upper chamber.
12/07/2011	The law is published in its final form. One-third of least represented gender, for three consecutive renewals. For the first renewal starting after one year since the inception of the law, the quota is one-fifth.
12/08/2012	The law is binding. Every renewal of the board from this time on must comply with one-fifth quota (and then one-third for two consecutive renewals)

Table A2: **Extensive margin results (alternative definitions of female ownership)**

Relationship-level regressions of the probability of a new lending relationship (firm-bank). The sample period is from 2010-2019. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority (switchers) is a time-variant dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Mean equity is share of the firm's equity held by women in our sample period. Equity is the time-varying share of the firm's equity held by women. Full owner is a time-variant dummy if the equity owned by women in the borrowing firm is 100%, and 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Lending relationship			
	(1)	(2)	(3)	(4)
Listed × Female majority (switchers)	0.0125***			
	(0.00303)			
Listed × Mean equity		0.000169***		
		(4.69e-05)		
Listed × Equity			0.000169**	
			(5.59e-05)	
Listed × Full owner				0.0149
				(0.0164)
Firm FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Year Relationship-Female FE	Yes	Yes	Yes	Yes
N	392942	347088	378616	343868
R^2	0.776	0.777	0.776	0.777
Mean Dep. Var.	0.509	0.512	0.510	0.502
S.D. Dep. Var.	0.500	0.500	0.500	0.500

Table A3: **Intensive margin results (alternative definitions of female ownership)**

Relationship-level regressions of mid-point credit growth. The sample period is from 2010-2019. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority (switchers) is a time-variant dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Mean equity is share of the firm's equity held by women in our sample period. Equity is the time-varying share of the firm's equity held by women. Full owner is a time-variant dummy if the equity owned by women in the borrowing firm is 100%, and 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Credit growth			
	(1)	(2)	(3)	(4)
Listed × Female majority (switchers)	-0.000418			
	(0.00288)			
Post × Female majority (switchers)	-0.000537			
	(0.00323)			
Listed × Post × Female majority (switchers)	0.00451**			
	(0.00141)			
Post × Mean equity		-3.64e-05		
		(3.72e-05)		
Listed × Post × Mean equity		8.91e-05**		
		(2.80e-05)		
Listed × Equity			-5.84e-05	
			(6.03e-05)	
Post × Equity			-2.44e-05	
			(4.06e-05)	
Listed × Post × Equity			7.86e-05**	
			(2.74e-05)	
Post × Full owner				-0.145***
				(0.0276)
Listed × Post × Full owner				0.0906*
				(0.0480)
Firm-Bank FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	No
Bank-Year FE	Yes	Yes	Yes	Yes
Firm-Year FE	Yes	Yes	Yes	Yes
N	4023700	4036437	4036437	3598822
R^2	0.457	0.457	0.457	0.454
Mean Dep. Var.	-0.0289	-0.0289	-0.0289	-0.0292
S.D. Dep. Var.	0.364	0.364	0.364	0.364

Table A4: **Lending to female firms: Intensive margin and bank specialization**

Relationship-level regressions of mid-point credit growth with additional controls for bank specialization as in Benetton and Fantino (2021). The sample period is from 2010-2019. Post is a dummy equal to 1 from the first renewal of the board after 2011. Listed is a dummy equal to 1 if the bank is listed, and 0 otherwise. Female majority is a dummy equal to 1 if the equity owned by women in the borrowing firm is above 50%, and 0 otherwise. Driscoll-Kraay standard errors are applied. *, ** and *** represent statistical significance at the 10%, 5%, and 1% level, respectively.

	Credit growth					
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.010			0.007		
	(0.006)			(0.007)		
Listed × Post	-0.011			-0.010		
	(0.009)			(0.009)		
Post × Female majority	-0.002	-0.002	-0.001	-0.002	-0.002	-0.003
	(0.002)	(0.002)	(0.005)	(0.002)	(0.003)	(0.005)
Listed × Post × Female majority	0.004**	0.003**	0.007**	0.003*	0.003*	0.007**
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	No	No	Yes	No	No
Bank-Year FE	No	Yes	Yes	No	Yes	Yes
Firm-Year FE	No	No	Yes	No	No	Yes
N	4848012	4848012	3712778	4848012	4848012	3712778
R^2	0.165	0.168	0.456	0.164	0.168	0.456
Mean Dep. Var.	-0.031	-0.031	-0.029	-0.031	-0.031	-0.029
S.D. Dep. Var.	0.362	0.362	0.363	0.362	0.362	0.363