Are Female Bosses a Path to Equality? Evidence of their incidence on Gender Gaps *

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Abstract

While a large body of literature has focused on identifying the causes of female under-representation in hierarchical positions, relatively little is known about the impact of female leadership within firms on gender outcomes among employees. Using 26 years of high-quality, matched employer-employee administrative data from Uruguay, this paper examines how the gender composition in hierarchical positions within firms influences employees' gender gaps. Our results indicate that a higher proportion of female bosses within firms is associated with narrower pay gaps. After accounting for unobserved heterogeneity through fixed effects for workers and bosses, we find that increasing female representation among managerial roles reduces the gender wage gap by 2.5 to 3.3 log points—approximately 15% of the 20 log points of the overall gender wage gap. This effect has become more pronounced recently, especially in firms with higher female representation in hierarchical positions. The effect is more significant for female workers in the lowest wage quintile than those in the highest quintile. Furthermore, we find that greater female representation in leadership positions increases the number of female workers through two channels: more women are hired, and fewer women leave the firms. Finally, we provide suggestive evidence that female bosses have the most substantial impact at the beginning of the employment relationship, reducing gender pay differences by 20% to 25%. However, they appear to have no significant effect on the promotion of female workers.

JEL Classification: D10, J16, J22
Key words: gender gaps, firms, bosses, wages

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1 Introduction

Despite significant advancements in female education and labor force participation, persistent gender disparities in labor market outcomes remain a major concern. While gender convergence in labor market outcomes accelerated until the 1990s, progress has since slowed down (Goldin et al., 2017; Olivetti and Petrongolo, 2017; Blau and Kahn, 2017; Goldin, 2014). Women continue to earn less than men and remain underrepresented in hierarchical positions within firms (Bertrand, 2018; Olivetti and Petrongolo, 2016). To address these disparities, a large body of literature has focused on identifying the causes of female under-representation in hierarchical positions and evaluating the effectiveness of policies targeting these issues, such as gender quotas in corporate boards (Maida and Weber, 2022; Dalvit et al., 2021; Bertrand et al., 2019; Kunze and Miller, 2017). These policies are argued to indirectly influence women's salaries by providing them with access to decision-making positions, reducing discrimination, improving matching productivity, and creating better working environments for female employees (Drechsel-Grau and Holub, 2024; Bertrand et al., 2019; Flabbi et al., 2019). However, our understanding of how increasing representation of women in decision-making roles within firm hierarchies impacts gender wage gaps among employees remains limited.

In this study, we investigate the influence of gender representation in hierarchical positions within firms on employee gender gaps. We focus on analyzing the relationship between the presence of female bosses in a firm and gender wage gaps among employees. Additionally, we explore the effects of female bosses on women's employment, assessing hiring and separation rates. Furthermore, we aim to identify the specific mechanisms driving these effects, providing insights into the factors that contribute to changes in gender disparities among employees.

Our analysis relies on a large database spanning over 26 years of mandatory notifications made by employers to the Social Security Administration for Uruguay. This database includes complete employment histories for all formal workers, enabling us to identify each employee's coworkers and bosses within their respective firms.[1] We investigate how female bosses affect gender gaps among employees by analyzing firms with varying gender compositions in the bosses groups. The analysis distinguishes three sub-periods, 1997–2004, 2005–2015, and 2016–2022, and uses four thresholds to evaluate the relationship between female representation on boards and the gender earnings gap among workers. To address this question, we estimate a two-way fixed effects regression that includes workers' and bosses' groups' fixed effects to account for unobserved heterogeneity. This approach enables us to measure how much the gender wage gap changes when bosses are female rather than male.

Our findings show that an increase in female representation among bosses groups is associated with a reduction of 2.5 to 3.3 log points in the female wage gap, which represents approximately 15% of the 20 log points of the overall gender wage gap. This effect becomes stronger over time, particularly when female participation in hierarchical positions is low. Moreover, we observe an increase in female worker participation in firms led by female bosses, driven by higher hiring

[1] We identify the group of bosses in each private firm based on declarations to the Social Security Administration, and to each firm j we assign a bosses' group at time t.

rates and lower separation rates. Additionally, our results suggest that female bosses may have a disproportionately larger effect on lower-paid women compared to higher-paid women.

We evaluate three complementary mechanisms that could be driving our results. First, we investigate whether the gender composition of bosses affects the initial wage workers receive upon entering a firm or, alternatively, affects the wages of incumbents. We find that the entry salary gender gap is reduced by between 20% and 25% in firms with female bosses representation, whereas female incumbents see only an 8% reduction. Second, we explore whether workers who remain longer in the same firm face a smaller penalty compared to those who switch firms. Our findings indicate that the effect is more pronounced for switchers, with female bosses reducing the gender gap by 2.6 to 3.3 log points. Lastly, we investigate differences in promotion rates, which could arise if male bosses are biased against or discriminatory toward female workers. We find no significant effects on the likelihood of promotion.

This paper contributes to a vast literature investigating the causes of the persistent gender inequalities in the labor market (Goldin, 2014; Blau and Kahn, 2017). With the increasing availability of databases connecting workers and employers over time, there has been a focus on analyzing the role of firms in explaining the gender wage gap, particularly in developed countries (Sondergeld and Wrohlich, 2023; Blau and Kahn, 2013; Hirsch, 2013; Bertrand, 2011; Cardoso and Winter-Ebmer, 2010). Specifically, we add to a strand of literature on the role of having women at top hierarchical positions in explaining gender differences in wages and promotions at firms. Using cross-country survey data from 15 European countries, Lucifora and Vigani (2022) find that female bosses are associated with reduced gender discrimination and with positive spillovers mainly on female subordinates and in jobs where female presence is also higher. Dalvit et al. (2021) focus on a French reform that imposed gender representation quotas in the board of directors and find that increasing female representation at the top of a firm's organization successfully reduced gender wage gaps and representation only at the upper layers of the firm. In the same line, using employer-employee matched data for private sector workplaces in Norway, Kunze and Miller (2017) find narrower gender gaps in promotions for women with more female bosses. This result is also confirmed by Cullen and Perez-Truglia (2023), which through an event-study analysis of manager rotation find that male employees assigned to male managers are promoted faster. Their study suggests that social interactions are the mechanisms that drive this effect. Our paper is closely related to the study by Drechsel-Grau and Holub (2024), who relying on data from a large firm, find that the sorting of men and women to different managers can explain a significant share of pay gaps. They show that performance ratings are more favorable to men if handled by a male manager and present suggestive evidence that the relevance of a manager's gender for pay gaps is driven by discrimination rather than same-gender complementarities in productivity. We use administrative data from social security in which we can link each worker with a bosses' group in each firm they work for, and analyze their working path in the firm and when switching to another firm in the formal labor market.

This paper makes three main contributions. First, having information on the full population of formal workers and firms allows us to provide an empirical characterization of female bosses'

role in the general labor market, overcoming the issues about the lack of representativeness of specific companies. Moreover, we expand upon existing research by analyzing gender differences of having different female participation among bosses, in private firms. Second, we contribute to understanding the mechanisms behind the role of bosses on gender gaps by focusing on how bosses' gender affects entrance wages and promotions within firms. Third, while most previous studies focus on rich countries, our paper provides evidence of the effect of having a higher proportion of female bosses in a middle-income country. Our findings may differ from those in developed countries, particularly European ones, due to the lower prevalence of gender equality practices compared to those in rich countries' firms. While working with administrative data is challenging in most developing countries, where informality rates are high, the large proportion of workers registered in social security in Uruguay allows us to use reliable administrative data to study the role of bosses' gender in explaining gender gaps in the labor market.

Lastly, our findings offer important considerations for the ongoing policy debate regarding the benefits of promoting a higher representation of women in hierarchical positions. This study complements a growing literature that suggests that policies that increase female representation in corporate leadership would have spillover benefits to women in lower ranks, thus contributing to overcoming the structural disadvantage for women and reducing the gender gaps in the labor market.

The remainder of the paper is organized as follows. Section 2 resumes the background of the wage policy in Uruguay and the evolution of the principles outcomes. Section 3 presents the database and main variables used in the analysis. Section 4 describes the empirical approach. Section 5 discusses the results on the effect of having female bosses on the gender outcomes at the firm, exploring some mechanisms that explain those results. Finally, Section 6 concludes.

2 Background

In this paper, we use social security administrative records for Uruguay from 1997 to 2022. During this period, we identify three distinct phases in the labor market.[2] The first phase, from 1997 to 2004, was characterized by a general deterioration in labor market indicators in the context of economic recession. Despite both a national minimum wage and collective bargaining were legally established, the government chose to keep the minimum wage at a low level, rendering it ineffective. Furthermore, since 1992, the government had stopped convening bargaining units.

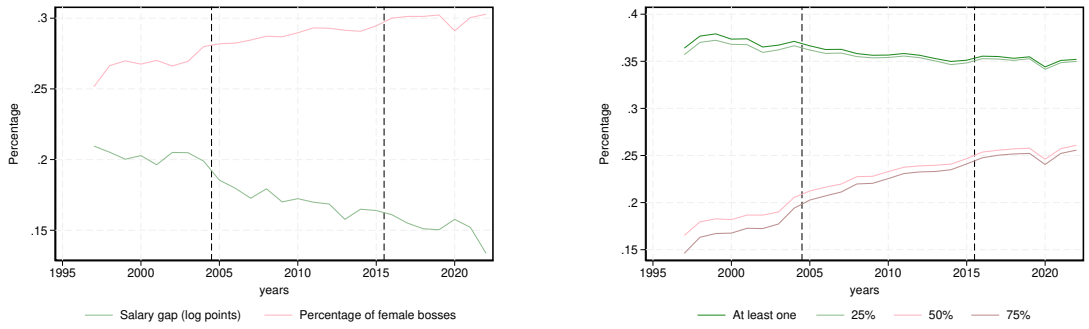
In 2005, the government raised the national minimum wage and reintroduced collective bargaining for all private-sector workers. Workers, employers, and the government negotiated wages, benefits, and other job conditions in more than 200 bargaining units. Between 2005 and 2015, labor market indicators improved significantly, driven by economic growth throughout most of the period and the government's reinstatement as a regulator and active promoter of employment policies.

[2]Further details on the evolution of Uruguay's labor market can be found in the Working Papers of the Instituto de Economía; Perazzo (2008); Carrasco et al. (2018, 2023).

From 2016 to 2022, the final period saw growth followed by a slowdown, culminating in a sharp contraction in 2020 due to the COVID-19 pandemic. Labor market indicators worsened from 2016 onward, with a more pronounced decline after 2019. A recovery began in 2021. The wage policy continued with both an increasing national minimum wage and active collective bargaining; however, real wages stagnated and even declined.

Figure 1 Panel A provides the evolution of gender gaps in Uruguay's private sector and the average representation of women in hierarchical positions over the same period. Over time, women's representation in bosses groups gradually increased, from around 25% in 1997 to over 30% in 2022. Simultaneously, the gender pay gap significantly narrowed, decreasing from 22% in 1997 to 10% in 2022. Considering the subperiods analyzed, during the first period, there was an increase in female participation in boss groups and a slight decrease in the gender gap; in the second period, both female representation in top positions and the gender gap improved; finally, in the third period, female representation remained constant, while the gender gap continued narrowing. Although the correlation between women's representation in managerial roles and the wage gap does not imply causation, the parallel trends suggest a potential relationship between the two variables. A similar pattern is observed when considering the firm perspective (Panel B). The evolution of female participation in top positions reveals an increase in the proportion of firms where women occupy 50% or 75% of bosses' roles. In contrast, the number of firms with lower female representation in these roles has decreased.

Figure 1: Evolution of the percentage of female bosses and the salary gap



(a) Female bosses and salary gap

(b) Female bosses by firm

Note: The left panel shows the evolution of the monthly salary gap between male and female workers (green) and the evolution of the percentage of female bosses in the total number of bosses (pink). The right panel shows how the gender composition of bosses' groups evolves across firms in the sample for four categories: at least one woman, 25%, 50% and 75%. The sample is composed of private firms with at least 10 employees. **Source**: Social Security administrative records from 1997-2022.

3 Data and main variables

This study uses data from administrative records of formal workers registered in the Social Security Agency of Uruguay (SSA). The large administrative dataset consists of monthly individual-

level observations based on mandatory notifications made by employers to social security over the period 1997 to 2022. Besides working with the full period, we will be working with three sub-periods which are: 1997-2004, 2005-2015, and 2016-2022. This decision is made based on the differences in the labor market described in the previous section.

Our sample comprises male and female workers aged between 18 and 65, employed in private firms of at least ten individuals. In our main estimates, we define bosses as those declared in social security as directors, owners, and managers who work in the company. In other words, we exclude those on the board of directors who have no activity. We call this definition the *registered position*. We identify a group of bosses at each time for each firm. Finally, using these definitions we construct different thresholds of female representation within a bosses' group: at least one woman in the group, at least 25%, 50%, and 75% of women in the group of bosses.

This database provides information about the workers' positions as well as certain individual characteristics. In particular, it contains information on monthly wages, the number of hours worked per week and days worked per month, gender, and year of birth.[3] We don't consider workers who lack information on salaries or monthly worked hours. Each worker has a firm identifier which allows matching with the firm's database.

Table 1 presents descriptive statistics of the sample for workers, bosses, bosses groups, and firms. We have 839,877 workers over 26 years, i.e., 6,422,777 observations, of which 41% are female workers. The average age (+2%) is slightly higher while tenure (+18%) is higher among men. Mean salary is on average higher among men (+45%), and monthly hours worked are closely similar (+4%). In addition, a total of 35,652 individuals hold hierarchical positions and women make up 31.6% of the bosses. Bosses show similar characteristics behind male and female. The first ones are just a little older (+1%) and have longer tenure (+7%). The proportion of women in bosses groups averages 30.3%, although the number of firms with more than 75% women in hierarchical positions reaches only 22%. Firms with at least equality between male and female bosses in their boards account for 23% of the sample, suggesting that women have a very low representation within bosses' groups.

[3]Based on information on hours worked per week and days worked per month we construct monthly hours. For those with missing information only on days, we assume a full month was worked. For those with information on days worked but not on hours, we assume an 8-hour workday. Finally, for those without information on any, we use the average of days or hours worked on the same firm by other employees.

Table 1: Descriptive Statistics for firms. Bosses defined by their registered position.

	Workers		Bosses		Bosses groups	Firms
	Men	Women	Men	Women		
Age	36.67	35.98	47.12	46.44		
	(11.80)	(11.29)	(10.31)	(10.55)		
Tenure	5.514	4.685	10.80	10.11		
	(7.035)	(6.087)	(8.970)	(8.158)		
Mean monthly salary	46148.1	33300.6				
	(53731.4)	(34887.3)				
Hours worked per month	152.1	144.2				
	(49.97)	(55.16)				
Num. of years as Boss			13.88	12.49		
			(9.377)	(8.126)		
Num. of years as Boss in firm			12.25	11.63		
			(7.274)	(7.084)		
Num. of firms as Boss in the period			1.300	1.172		
			(0.635)	(0.455)		
Mean age by group					45.81	
					(10.29)	
Mean tenure by group					8.601	
					(7.950)	
Total number of bosses by group					5.322	
					(6.568)	
Prop. female boss by group					0.303	
					(0.422)	
Prop. female boss in firm						0.290
						(0.415)
At least one female boss						0.362
						(0.481)
One quarter female bosses						0.358
						(0.479)
Mostly female bosses						0.231
						(0.421)
Three Quarters female bosses						0.222
						(0.416)
Observations	3756405	2666372	210503	89557	56382	223495
N of individuals	464898	374979	24402	11250	69184	43574

Note: We compute the descriptive statistics for our sample. We identify bosses as those registered as directors, owners, and managers in companies and who actually work in the company (Columns 3 and 4); for them, we show information about age, tenure, and their role as bosses in the same firm and the period. The first two columns show information about workers‘ age, tenure, monthly working hours, and wages. The fifth column shows information about the bosses groups, and the sixth column shows female participation in bosses groups by different thresholds. Only private firms with at least 10 employees are considered and both employees and bosses need to have worked for over 3 months. **Source**: Social Security administrative records from 1997-2022.

4 Empirical approach

To estimate the change in the gender gap when working for female bosses, we estimate an equation with dummy variables to identify the employee's sex and the proportion of females in the group of bosses. Additionally, we include the interaction between these dummy variables to estimate the effect of interest and run the following equation using Ordinary Least Squares.

$$Y_{ijt} = \delta_0 + \delta_1 \times female_i + \delta_2 \times femBoss_{ijt} + \omega \times female_i \times femBoss_{ijt} + \beta_1 X_{it} + Z_{ijt}\beta_2 + \nu_t + \epsilon_{ijt} \quad (1)$$

where Y_{ijt} is the log monthly salary received by the worker i in firm j at the year t. $female_i$ is a dummy taking value 1 if worker i is female. The coefficient δ_1 represents the gender gap in firms with only male bosses. $femBoss_{ijt}$ takes value 1 when the group of bosses of individual i in firm j at time t meets different pre-specified thresholds. We estimate four specifications considering different thresholds of female representation among the bosses: at least one, 25%, 50%, and 75%. By doing so, we can analyze whether a higher proportion of female heads has a different effect on wage gaps. The coefficient δ_2 represents the difference in earnings for a male working in a firm with female participation in the bosses' group compared to those working under a completely masculinized group. X_{it} represents the age of the individual i in the moment t and Z_{ijt} are controls for job position characteristics (tenure, part-time, and social security regime, number of workers in the firm, female participation in the firm, and industry). Finally, ν_t are time-fixed effects.

We are interested in the coefficient ω, which corresponds to the interaction term between $female_i$ and $femBoss_{ijt}$. The interaction is 1 if worker i is a woman and is employed under a group of bosses that includes female representation, and 0 otherwise. The coefficient ω captures the difference in gender gaps between female and male bosses. A positive ω implies that the presence of women in the boss group narrows the gender salary gap, favoring women.

In this initial specification, we can only quantify the extent to which the gender gap changes, but we are unable to determine whether male or female bosses are responsible. That is, if workers are sorted to bosses based on these unobserved characteristics, the estimate of ω is biased. To control for unobserved heterogeneity of both bosses and workers, we estimate a two-way fixed effect model, introducing workers (α_i) and a group of bosses fixed effects (ψ_{ijt}).[4]

$$Y_{ijt} = \gamma + \omega \times female_i \times femBoss_{ijt} + X_{it}\beta_1 + \alpha_i + \psi_{ijt} + \nu_t + \xi_{ijt} \quad (2)$$

ψ_{ijt} is a fixed effect of the composition of bosses of the individual i in the firm j at time t, and it changes each time that the composition of the group of bosses changes, due to exit or entry of at least one boss. As the worker fixed effects fully absorb the absolute level of the gender gaps, we identify by how much the gender wage gap changes when a proportion of bosses at the firm are females rather than males.

[4]We use a group of bosses fixed effect instead of firm fixed effects because the composition of boss groups changes whenever a new boss joins or an existing boss leaves.

The identification of ω comes from *switchers*, that is, workers who interact with different groups of bosses. There are two possible scenarios: a worker who switches firms or a worker who experiences a change in the composition of their group of bosses within the same firm. As bosses' groups change when even only one member does it, we observe that the level of bosses rotation is higher among large firms compared to the whole group of private firms (between 5% and 40% in the period). It could be argued that firms' decisions regarding the presence of female bosses on their boards are endogenous and respond to the decision of firms to include more women. However, the high number of rotations presented can be seen as evidence of the exogeneity of how boards are conformed. Figure A.1 shows the rotation of bosses' groups supporting our empirical strategy. We find in private firms between 8% and 30% of firms changing at least one of the members of their boards using the *registered position*, representing between 10% and 40% of workers.[5]This will be further discussed when robustness checks are performed.

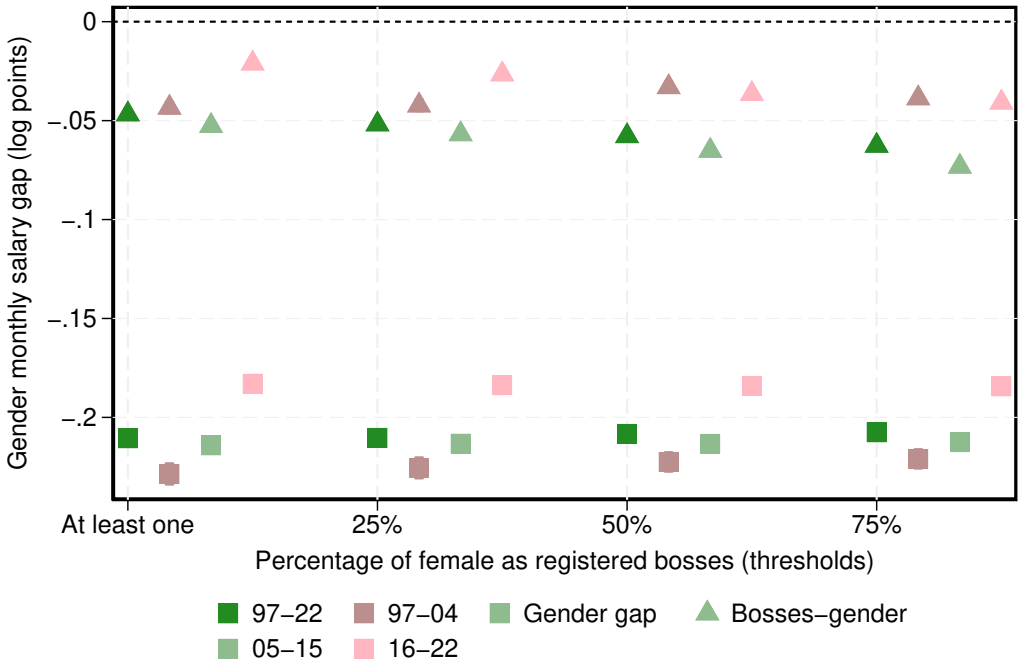
5 Results

In this section, our main objective is to document the effect of women's representation in boss groups on the gender salary gap and its underlying mechanisms. In Figure 2, we present the results of estimating Equation 1 on log salary in private firms across four thresholds of female participation in the bosses' group. Throughout the period from 1997 to 2022, we find a gender salary gap ranging from 18 to 23 log points (p-*value*=0.000), with a decreasing trend over time. In firms with female bosses, earnings are between 3.8 and 5.5 log points (p-*value*=0.000) lower compared to firms with male bosses. This difference also depends on the threshold of female representation considered. We observe a U-shaped trend over time and an increasing absolute disparity with higher female representation in the bosses' group (see Table A.1).

From these initial results, we document that while gender gaps are decreasing, they remain significant, and the gender composition of bosses continues to influence wage disparities over the 26 years of SSA records. Across the three periods of our analysis, we observe not only an increase in female participation in the formal labor market but also institutional changes that provide context for interpreting our results. Notably, during the second period, a massive wage policy was implemented, significantly limiting firms' ability to negotiate wages. A possible concern is that the most productive workers are sorted with bosses who pay higher wages. To address this issue, in Equation 2, we include bosses' and workers' fixed effects to control for the unobserved heterogeneity of workers and bosses. This ensures that they are comparable and that the estimated coefficients are unbiased.

[5]In Figure A.2, we show the rotation by firms and workers of the bosses' groups using the *relative position*. We find a higher level of rotation for both workers and firms, above 70% yearly in the private and public sectors.

Figure 2: Effect on monthly salary of being female & having female bosses



Note: We follow Equation 1. We graph the coefficients δ_1 (square) and δ_2 (triangle), interpreted as the effects on monthly salary of being female and having female bosses respectively. Information for three subperiods plus the whole period is graphed. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social security administrative records from 1997-2022.

The rest of this section is divided into four parts. First, we present the results of the main estimation of the impact of women bosses' representation on the salary gap and worker turnover. Second, we focus on three mechanisms of this impact: the role of entrance bargaining rather than incumbent bargaining, the gains from switching firms, and finally, whether female workers have a better promotion path. Third, we present additional results for effects across the distribution and distinguishing between feminized firms and industries. Finally, we conduct several robustness checks to explore different definitions, samples, and to support our identification strategy.

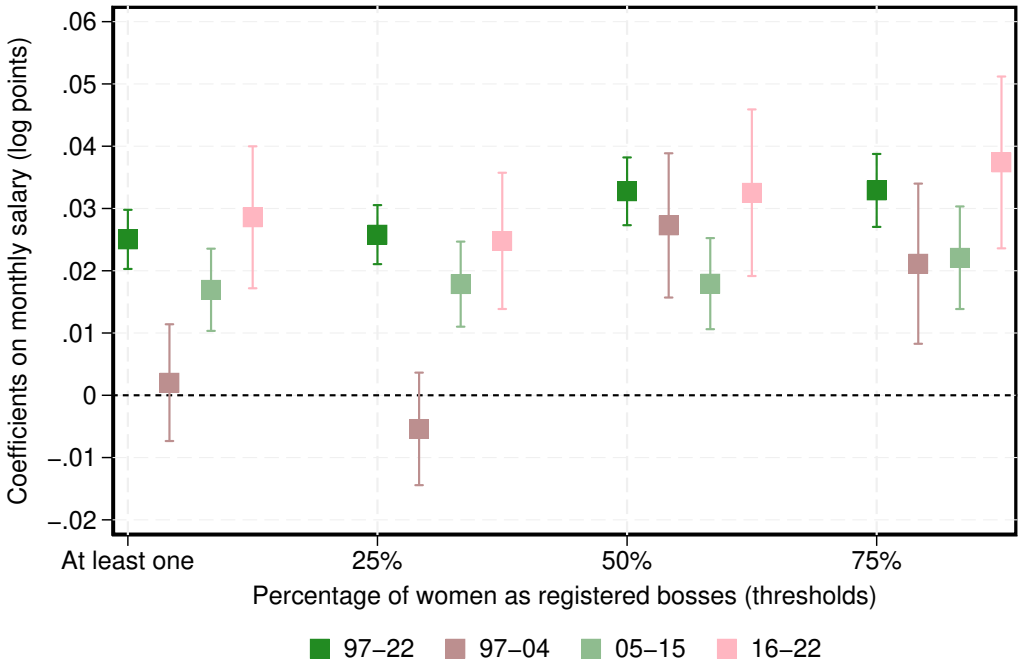
5.1 Main estimations

We present our preferred estimation of the interaction between female participation in bosses groups and worker sex (ω in Equation 2) in Figure 3. This estimation shows how monthly salaries change for female workers employed by firms with different proportions of women in the bosses group, relative to male workers while controlling for workers' and bosses' fixed effects (further details are provided in Table A.2).

Our findings suggest that gender representation in hierarchical positions influences firm behavior. We document a reduction of between 2.5 and 3.3 log points (p-$value$=0.000), representing approximately 15% of the 20 log points of the gender wage gap. These results align with those found by Sondergeld and Wrohlich (2023) for developed countries, who estimate a reduction of

14%. However, there is no previous evidence of female bosses reducing wage gaps in a large sample of private firms in a developing country over an extended period. Our findings show that an increase in female representation among boss groups is associated with a reduction in the female wage gap, with this effect becoming stronger over time, particularly when female participation in hierarchical positions is low.

Figure 3: Interaction between female workers and female representation in bosses group: Bosses defined by their registered position.



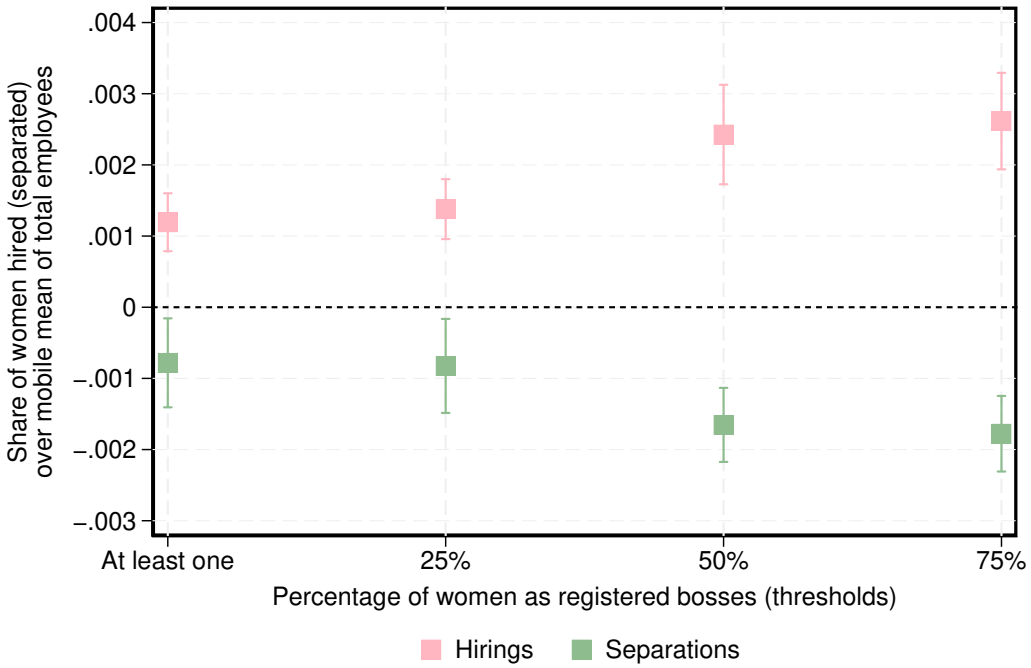
Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Bosses are defined as those who declare Social Security as directors, owners, and managers in companies and who work there. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. On top of the full period, three separate periods are shown. **Source**: Social Security administrative records from 1997-2022.

We also explore how the hiring and separation of female workers are affected by female participation in leadership roles. We aim to determine whether inequalities accumulate throughout the employment cycle and whether female leadership promotes the hiring of women or affects their disengagement. Our hypothesis is that the presence of female leaders reduces discrimination against women in hiring by diminishing the uncertainty about their abilities, thereby lowering statistical discrimination. Similarly, female leaders could foster a more favorable work environment for women, encouraging them to remain in their positions for longer periods. Therefore, female bosses could have a positive effect on women's hiring and a negative effect on their separation rates.

In our analysis presented in Figure 4, the presence of a higher proportion of women in hierarchical positions increases the number of female workers through both channels: more

women are hired, and fewer women leave the company. We find an increase of 0.1 to 0.4 percentage points (*p-values*=0.000) in the share of female workers in the hiring rate, representing an increase of between 1.2% and 4.7%, and a decrease of between 0.1 and 0.2 percentage points (*p-values*=0.000) in the separation rate, representing between 1.7% and 3.3%. We also observe an increasing trend in these effects as female leadership presence rises.[6] Then, if we consider the net change in hiring female workers, we reach a total effect between 3% and 8% among firms with female bosses.

Figure 4: Effects of female bosses on hirings and separations



Note: We follow a similar equation to Equation 1 with worker and bosses groups fixed effects, changing the dependent variable. Y_{itj} is defined as the share of women hiring/separations a firm had over the total number of hirings/separations respectively. A hiring is defined when an employee is in the company in year t but not in $t-1$. Similarly, a separation occurs when the employee is in the company on year t but not on $t+1$. The total number of hirings/separations is smoothed over a 3 year period. We graph the coefficient ω. Bosses are defined as those who declare in the Social Security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups, defined by their registered position (directors, owners, and managers in companies and who work in the company). Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2022.

In short, we find a general reduction in the gender pay gap among employees working for female bosses, with a slight increase in this effect over time and in firms with greater female representation. Additionally, there is an increase in female worker participation in firms with female heads, driven by higher hiring rates and lower separation rates.

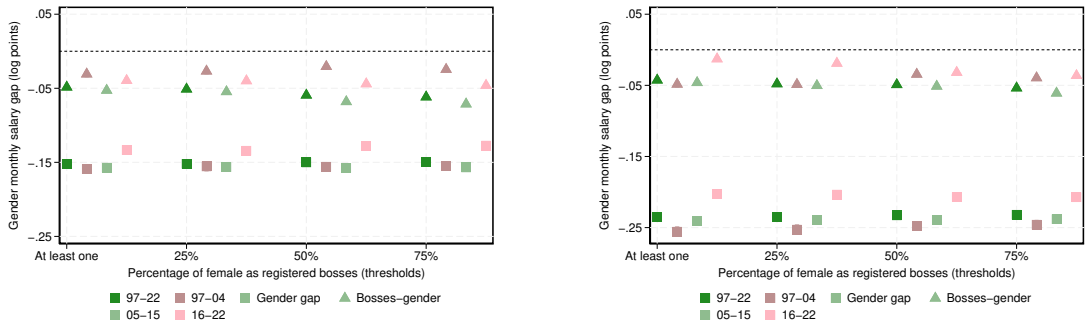
[6]The mean of the female representation in hiring rates is 0.0858 and in the separation is 0.06033 respectively.

5.2 Mechanisms

This section assesses three potential mechanisms that could explain our findings. First, female workers may receive higher entrance wages in firms with female bosses compared to firms with male bosses. This could indicate a bias or discrimination by male bosses against female workers' abilities, as reflected in gender differences in wages upon entry. Second, we explore whether workers who stay longer in the same firm experience a different reduction in their wage gap compared to those who switch firms. Finally, we investigate whether there is a difference in promotion rates; if male bosses are biased against female workers or discriminate against them, they may be less likely to promote female workers based on their abilities or performance.

To explore the first mechanism, we estimate Equations 1 and 2 for both entrants and incumbents. The panels in Figure 5 illustrate gender gaps (squares) and the role of bosses (triangles) for entrants in the left panel, and incumbents in the right panel based on Equation 1. Despite both groups showing a decrease in the gap over the period, entrants display significantly lower gender gaps, by 10 log points (p-*values*=0.000), compared to incumbents. The role of a feminized bosses group is similar between the two groups, and it is around 5 log points (p-*values*=0.000).

Figure 5: Effect on monthly salary of being female & having female bosses



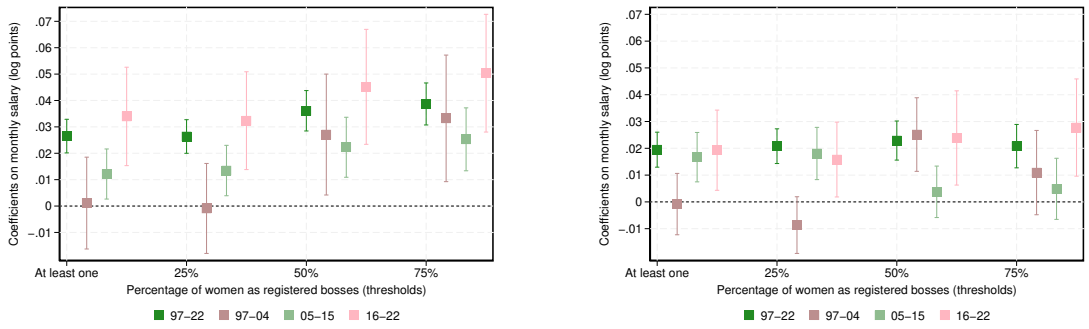
(a) Entrants

(b) Incumbents

Note: We follow Equation 1. We graph the coefficients δ_1 (square) and δ_2 (triangle), interpreted as the effects on the monthly salary of being female and having female bosses respectively. Information for three subperiods plus the whole period is graphed. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. Information is reported separately for entrant workers on the left panel (tenure over three months and under a year) and incumbent workers on the right panel(tenure over a year). **Source**: Social Security administrative records from 1997-2022.

Then, we estimate Equation 2 and present the coefficients ω in Figure 6. In the left panel, we show the gender gap in entry-level monthly salaries, which decreases by between 2.7 and 3.9 log points (p-*values* = 0.000) as the proportion of females in the managerial group increases. In the right panel, the impact on monthly incumbent salaries shows a reduction of between 1.9 and 2.1 log points (p-*values* = 0.000), also increasing with the female proportion. Since the gender gap at entry is smaller than for incumbents, the effect of having female bosses is between 17% and 25% for entrants, and around 8% for incumbents (more detailed information can be found in Tables A.3 and A.4).

Figure 6: Interaction between female workers and female representation in bosses group: Bosses defined by their registered position. Entrant and incumbent workers.



(a) Entrants

(b) Incumbents

Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω for entrants and incumbents. Bosses are defined as those who declare social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Information is reported separately for entrant workers on the left panel (tenure over three months and under a year) and incumbent workers on the right panel (tenure over a year). Only private firms with at least 10 employees are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2022.

The second mechanism that we explore is complementary; we aim to determine if workers who stay longer in the same firm face smaller penalties compared to those who switch firms. Both employers and workers value long-term job matches, as these enable investments in firm-specific human capital and the provision of additional benefits (Lazear, 1990). However, female workers tend to exhibit greater mobility, as formal jobs often impose requirements that may conflict with household responsibilities (Berniell et al., 2023). We classify workers as stayers or switchers over five periods of five years.[7] A stayer is defined as a worker who remains in the same job position throughout the entire period, whereas a switcher is a worker who holds at least two different job positions during that time.

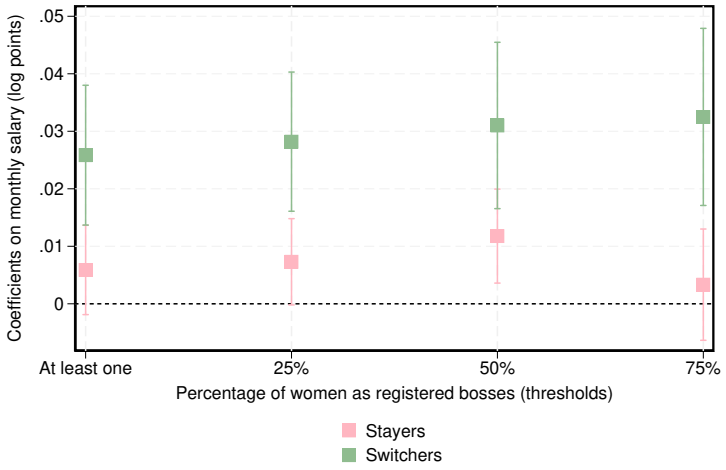
In Figure 7, we show that among switchers, the effect of having a female in a managerial position reduces the gender gap by between 2.6 and 3.3 log points ($p\text{-}value = 0.000$). For stayers, the gender gap is reduced by approximately 1 log point (with $p\text{-}values$ between 0.005 and 0.5).

Using a similar specification, Casarico and Lattanzio (2024) find no effect of the introduction of board quotas in Italy on the wages of new hires. These two mechanisms suggest that female workers and female bosses may negotiate more equitable wages at entry, whereas the wage gap reduction for incumbent female workers is smaller in percentage terms. This implies that the time of entry into the firm may be the most suitable moment to negotiate fairer wages. Additionally, female workers appear to benefit more from switching jobs than from remaining in stable positions. This pattern highlights potential challenges in implementing long-term egalitarian policies for female bosses.

Lastly, we explore whether female bosses are more likely to promote female workers than male

[7]The periods are 1997-2001, 2002-2006, 2007-2011, 2012-2016, and 2017-2021.

Figure 7: Stayers and switchers



Note: We follow equation 2 with worker and bosses groups fixed effects. We graph the coefficient ω. Bosses are defined as those who declare in the Social Security as directors, owners, and managers in companies and who work there. In the horizontal axis, there are different thresholds of female participation in the bosses group. Information is reported separately for stayers (workers who stayed at the same firm for a 5 year period) or switchers (workers who have more than one registered position in the 5 years but are always employed in that time). The periods are consecutive 5-year periods starting in 1997 and ending in 2021. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2021.

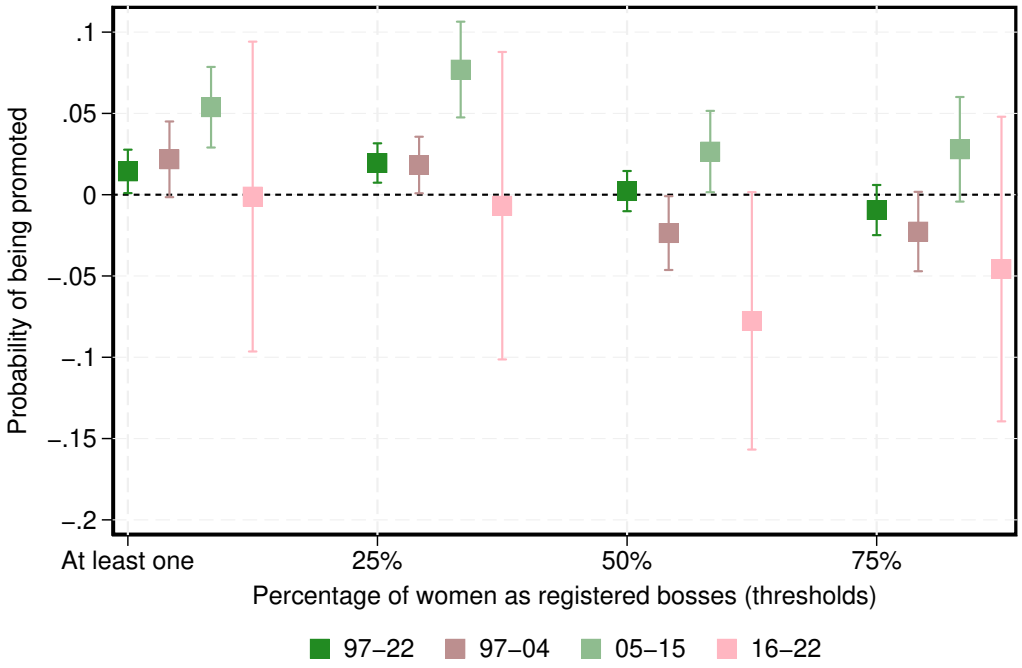
bosses. We run similar regressions to that of Equation 2, but in this case, the dependent variable takes value one if the individual receives a promotion in that year and zero otherwise. Following the approach of Bronson and Skogman-Thoursie (2019), we define a worker's promotion if she has an increase in nominal pay at least 30% higher than the average salary increase in the firm that year.[8] We found that 17% of private sector workers were promoted.

In Figure 8, we show the impact of having a female boss on the probability of a female worker being promoted. We observe that there is no significant effect across all our specifications. However, we find an increase of approximately 5 percentage points that implies an increase of 25% during the period 2005-2010, which coincides with the implementation of a wage policy where collective bargaining required the assignment of specific occupations to each worker.[9] In line with the evidence presented by Blanchard et al. (2024), we interpret that female bosses may assign better occupations to female workers, potentially improving their prospects in other firms.

Our results suggest that female bosses can narrow the gender gap when there is room for negotiation, either at entry into the firm or during periods of significant institutional change. For the Norwegian private sector, Kunze and Miller (2017) find that a standard deviation increase in the share of female bosses increases women's relative promotion rate by 0.5 percentage points, which represents a 7% increase in the promotion rate. In a large company in Southeast Asia,

[8] We restrict the sample of those workers working for the firm for at least 12 months.
[9] The average promotion rate in 2005-2010 was around 0.19

Figure 8: Gender and bosses groups interaction on promotion probability



Note: Following a similar equation to Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω, with as Y_{itj} as a variable with value 1 if the worker is promoted that year. A promotion is defined when a worker's salary increases by more than 30%, compared to the average salary increase in the firm. Only workers who were hired by a board with at least one female boss are considered. Bosses are defined as those who declare social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups). Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. On top of the full period, three separate periods are shown. **Source**: Social Security administrative records from 1997-2022.

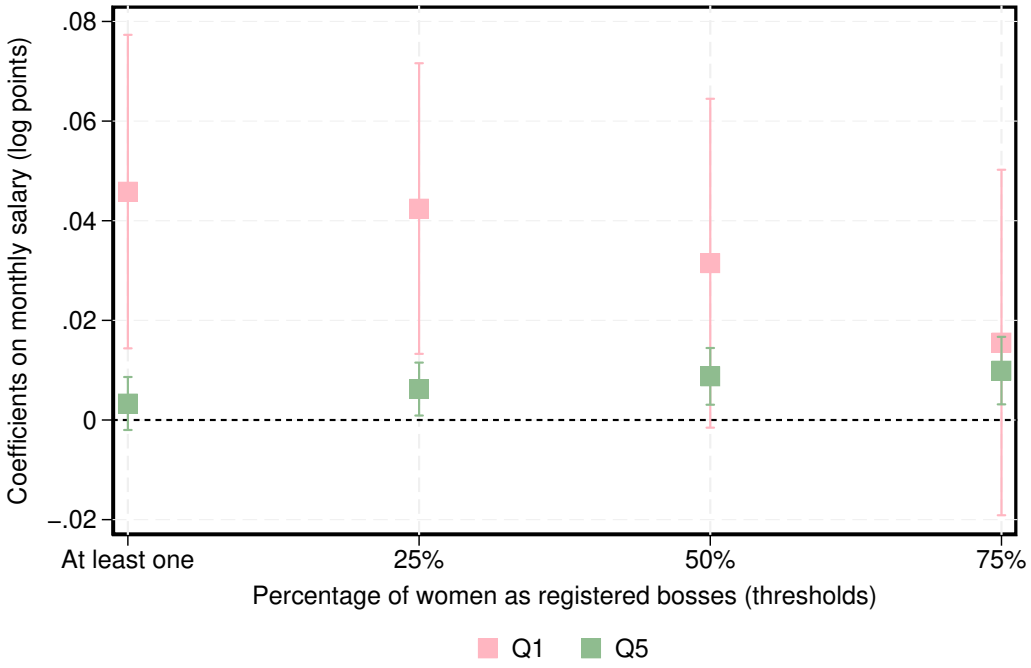
Cullen and Perez-Truglia (2023) found that following a change from a female to a male manager, male employees were promoted more quickly, with a 14.6% salary increase ten quarters after the change, compared to a female-to-female manager change.

5.3 Additional results

Effects along the distribution. We examine the effect of female bosses on the gender salary gap by analyzing employees' relative positions within the firm. Specifically, we analyze the impact of the gender gap separately for employees in the first quintile of the wage distribution and those in the fifth quintile. Although all estimated coefficients are positive—indicating that the presence of female bosses reduces the gender gap—the effect is greater for female workers in the first quintile than those in the fifth quintile, as shown in Figure 9. Female bosses appear to have a potentially larger effect on lower-paid women compared to higher-paid women. This difference is significant only when female representation among the managerial group is low,

with these workers reducing their gap by 4 log points.

Figure 9: Effects of female bosses on gender gap: quantiles Q1 and Q5



Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Bosses are defined as those who declare to Social Security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Results are estimated and reported separately for workers in the first and fifth quantile of earnings within their firm in a year. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. On top of the full period, three separate periods are shown. **Source**: Social Security administrative records from 1997-2022.

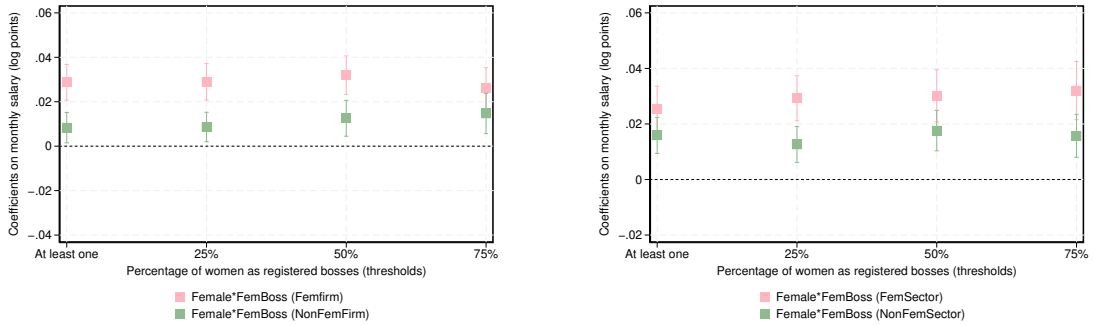
Feminized firms and industries. Figure 10 shows the results of estimating the same equation 2 but differentiating by industries and firms according to the relative number of women. That is, separately estimating the effect of exposure to female bosses in feminized industries and firms. We define feminized firms or industries as those in which female workers represent over 50% of the total and we explore whether the role of female bosses differs according to this definition.

When we examine the entire period, we observe the same positive trend: as female participation in boss groups increases, the gender gap narrows. This is true for both feminized and non-feminized firms (Panel A). However, the effect of female bosses is higher in feminized firms than in non-feminized ones and this difference is significant across almost all thresholds considered. When distinguishing between sub-periods, some particular patterns can be observed (see Figure A.3). Between 1997 and 2004, the effect of female bosses is only significant in feminized firms and when women make up 50% or more of leadership roles. The period from 2005 to 2015 is exceptional. Although no significant differences are observed between feminized and non-feminized firms, the presence of women in the bosses group is positive and significantly different

from zero only in non-feminized firms. Finally, during the 2016-2022 period, the effects become more heterogeneous depending on the type of firm. Female bosses' positive and significant effect on women's wages is observed only in feminized firms across all thresholds.

A similar pattern emerges when we observe feminized and non-feminized industries (Panel B). In the entire period, the effect of women in the bosses group was positive on women's salaries, which was higher in feminized industries. However, some heterogeneities can be found between periods (see Figure A.4). From 1997 to 2015 the effects of female bosses on women's salaries are not significantly different. In the last period, 2016-2022, the effect is only positive in feminized industries and cero in non-feminized ones.

Figure 10: Effects of female bosses on gender gap on monthly salary: Feminized firms and industries



(a) Feminized firms

(b) Feminized industries

Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Feminized firms are defined as those with over 50% of female presence. Feminized sectors are defined as those with over 50% of female presence. The pink squares represent ω in feminized firms/sectors while the green ones are for non-feminized. Bosses are defined as those who declare in the Social Security as directors, owners, and managers in companies and who work there. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2022.

5.4 Robustness check

We perform several robustness checks on our main findings by conducting alternative estimations. First, we estimate Equations 1 and 2 using an alternative outcome: the hourly wage. We do so to test if some of the differences can be explained by part-time workers. Then, we introduce a firm effect to reduce within-firm variability. Our preferred specification is with workers and bosses group fixed effect, in this case, we introduce also firm fixed effect. This specification reduces variability but gives us a within-firm estimation. Thirdly, we restrict the sample to firms with 100 or more employees and repeat the main estimations using an alternative definition of a boss: employees in the top 1% of earnings for each firm with more than 100 employees. Finally, we investigate the correlation of female participation using a dynamic approach and analyze whether there is endogeneity between the rise of female bosses and the increase in women's wages.

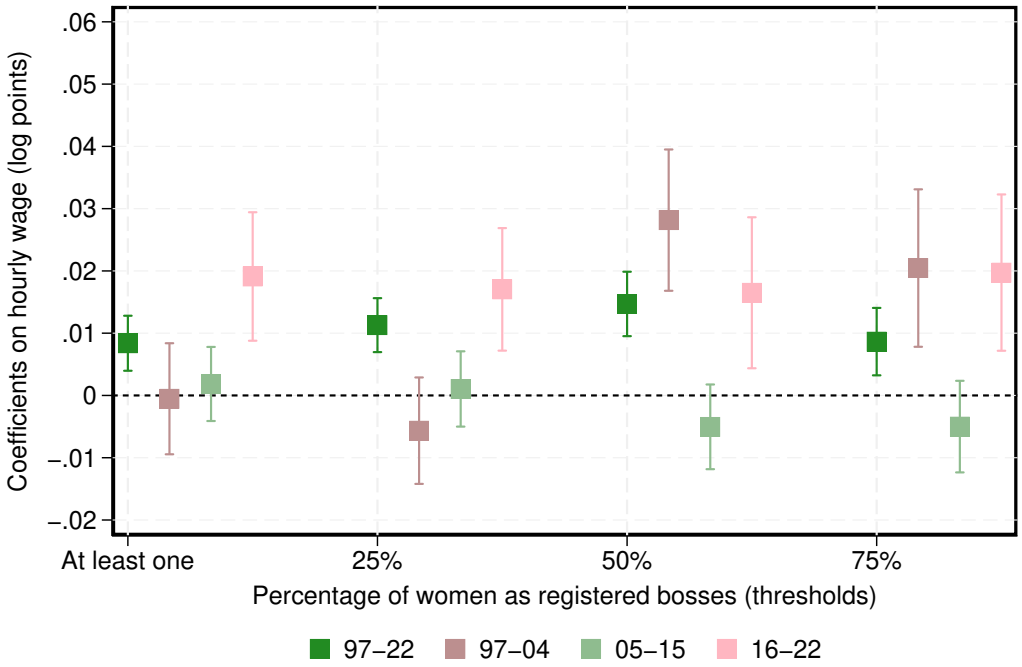
5.4.1 Hourly wages

Although in our main estimation, we control for part-time workers, we would still like to analyze if there are differences depending on the number of hours worked. Therefore in this section, we conduct a similar analysis using hourly wages as the dependent variable.

The gender hourly wage gaps under male bosses are between 14 and 20 log points (*p-value*=0.000) during the period, showing a strong decreasing trend over time (Figure A.5 and Table A.5). Similarly, there are lower hourly wages for females when working in firms with female participation in bosses groups, with a reduction of approximately 4 log points (*p-value*=0.000).

We conduct our preferred specification using hourly wages as the outcome, shown in Figure 11. Gender gaps with female representation in the bosses group are reduced by 1 to 2 log points (*p-value*=0.000), following a similar pattern to that observed in monthly salaries. These reductions represent between 5% and 14% of the gender gap. Although the reduction of the gender gap when considering hourly wages might seem smaller, the percentage of this reduction that can be accounted for by the presence of females in boss groups is very similar to that found when considering monthly salary.

Figure 11: Interaction between female workers and female representation in bosses group in private firms: Bosses defined by their registered position.

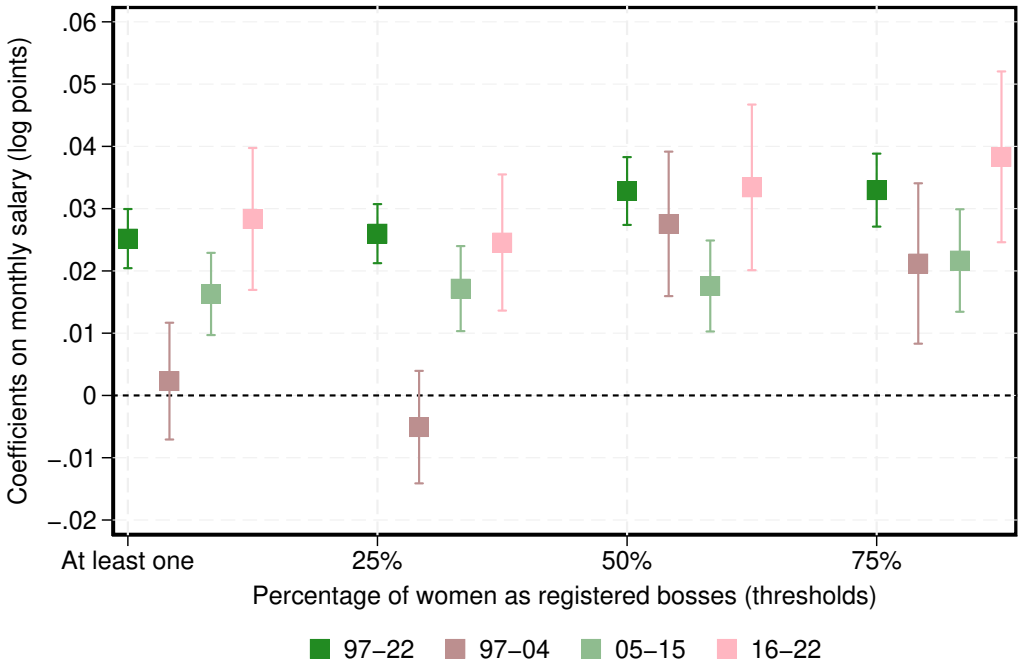


Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω, taking hourly wage as Y_{itj}. Bosses are defined as those who declare to Social Security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups, defined by their registered position (directors, owners, and managers in companies and who work in the company). Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. On top of the full period, three separate periods are shown. **Source**: Social Security administrative records from 1997-2022.

5.4.2 Firms fixed effects

We now estimate a model with worker, bosses' group, and firm fixed effects to further restrict the variation within firms. We find that female workers with female bosses experience a reduction in the gender gap of between 2 and 4 log points ($p\text{-}value$=0.000), that represent between 12% and 24% of the raw gap. Even with the reduced variation within firms, we continue to observe an improvement for female workers when they work under female bosses.

Figure 12: Effects of having female bosses on gender gap: monthly salary. Employee, firm and bosses' groups fixed effects.

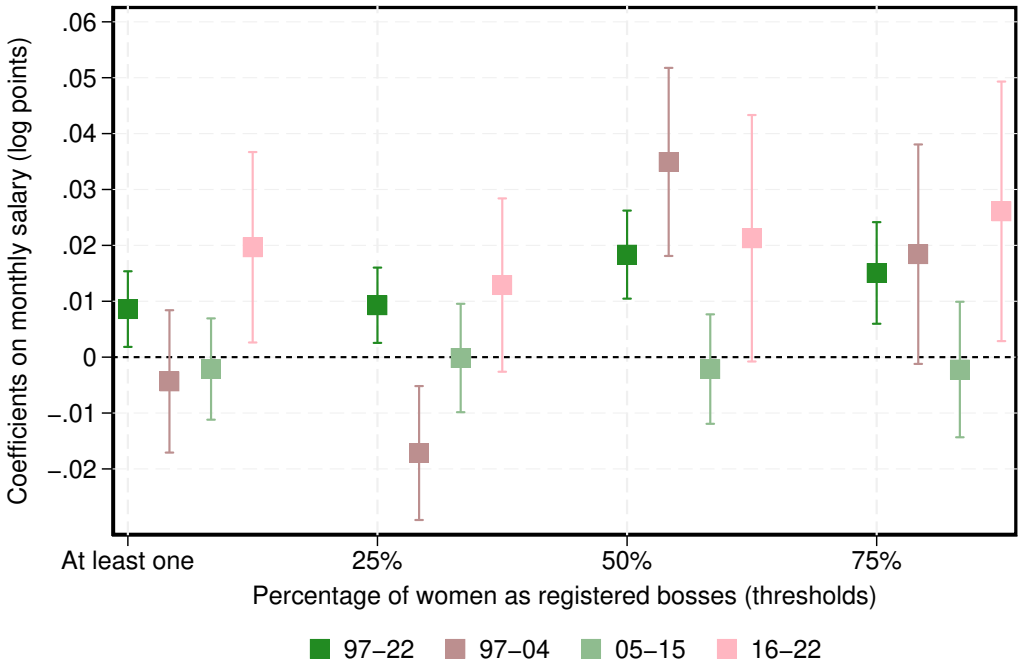


Note: We estimate a similar specification than in Equation 2 with worker and bosses groups fixed effects, and also including firm fixed effect. we graph the coefficient ω. Bosses are defined as those who declare to social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Information for three subperiods plus the whole period is graphed. Only private firms with at least 100 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2022.

5.4.3 Estimation for big firms

We perform a robustness analysis only with firms that have more than 100 employees with our preferred definition of bosses (*registered* position). We perform again our preferred specification the Equation 2 and show the main results in Figures 13. In this case, we documented a lower effect which is between 0.8 (*p-value*=**0.013**) and 1.8 log points (*p-value*=**0.000**), and with similar pattern than in the main estimation by period and female representation. So, even in large firms, we document that female workers receive a more equal salary in firms with female leaders.

Figure 13: Effects of having female bosses on gender gap: monthly salary. Firms with over 100 employees.

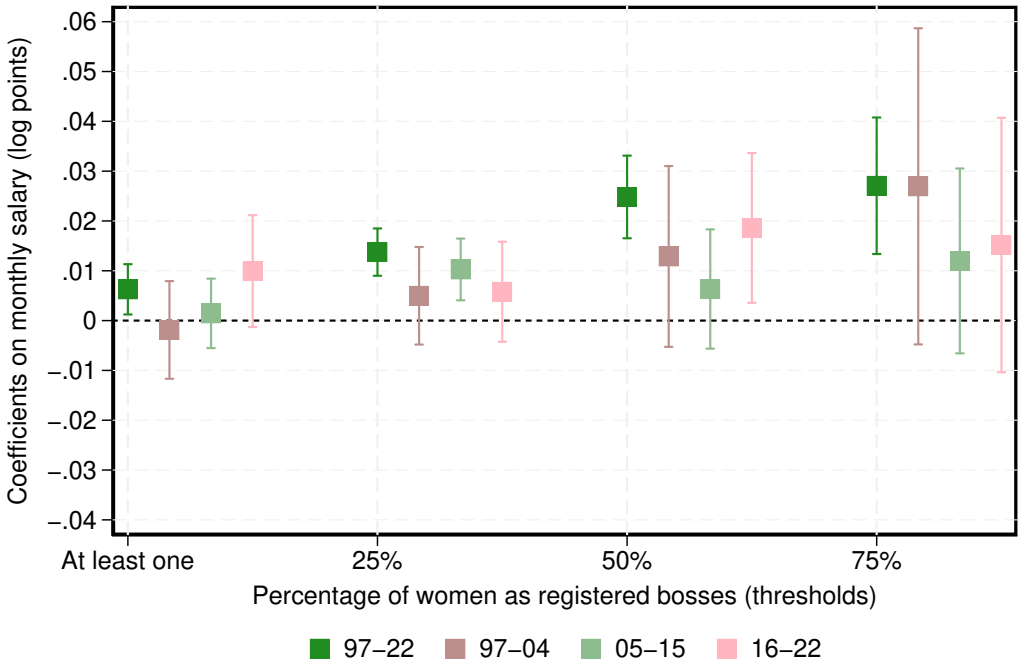


Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Bosses are defined as those who declare to Social Security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Information for three subperiods plus the whole period is graphed. Only private firms with at least 100 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2022.

One possible concern is that for large firms, defining bosses using the *registered* position may not be the most adequate method to capture those who are making the decisions. While in small firms it is clear that the owners or directors are also managers and direct supervisors, this may not be the case for large companies. In large firms, managers are typically those who play the main role in personnel decisions, including determining wages paid to male and female workers (Lucifora and Vigani, 2022; Cullen and Perez-Truglia, 2023).

To address this issue, we perform a robustness analysis by defining bosses as those workers in the top 1% of earnings for each firm with more than 100 employees (descriptives statistics are in Table A.6). We estimate Equation 2 and present the main results in Figure 14. We find a reduction in the gender gap of between 0.6 (p-*value*=**0.015**) and 2.7 (p-*value*=**0.000**) log points, which increases with female representation, although we do not observe a clear effect over time. This represents a decrement in the gender gap between 2.8% and 13.8%, having an increasing impact as females have more weight in the bosses group. Even with this alternative definition of bosses' groups based on salaries, we conclude that female workers are in a better position in these types of firms.

Figure 14: Effects of having female top 1% bosses on gender gap: monthly salary.



Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Bosses are defined as those who earn in the top 1% of wages in the firm. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 100 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. On top of the full period, three separate periods are shown. **Source**: Social Security administrative records from 1997-2022.

5.4.4 Dynamic analysis

Finally, we investigate the relationship between female participation in bosses groups and female worker performance using a dynamic approach. Specifically, we aim to exclude the possibility that a firm, in order to implement changes in its wage policy towards female workers, first includes female bosses on its board.

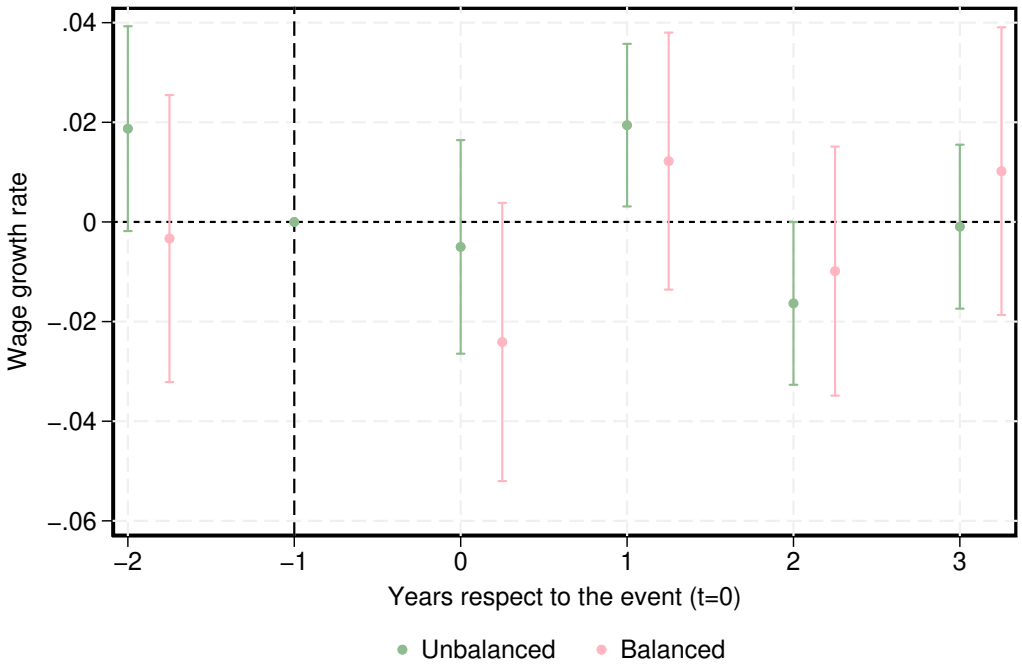
We set $t = 0$ as the year when the change in gender composition within the bosses group occurs. ΔY_{ijt} is the log monthly salary growth rate; female_i takes the value of one if worker i is female; $I_k(FemBoss_j = 1)$ is an indicator function that takes the value of one if the bosses group meets the feminized condition. α_i and γ_j represent worker and firm fixed effects, respectively, while X_{it} and Z_{jt} are time-variant worker and firm characteristics.

$$\Delta Y_{ijt} = \delta_1 \text{female}_i + \delta_{2k} \sum_{k=-2}^{k=3} I_k(FemBoss_j = 1) + \omega_k \sum_{k=-2}^{k=3} \text{female}_i \times I_k(FemBoss_j = 1) + \alpha_i + \gamma_j + X_{it}\beta_1 + Z_{jt}\beta_2 + \epsilon_{ijt} \tag{3}$$

We define a first treatment to determine whether a change in the gender composition within the bosses group affects the gender gap through an event study analysis. Particularly, we

estimate the change for firms that have an entirely male bosses group for at least two years, followed by the entrance of a female boss who remains for at least three years, resulting in a bosses group with at least one female. The estimations are shown in Figure 15. We do not find any change in wage growth as a female joins the bosses group.

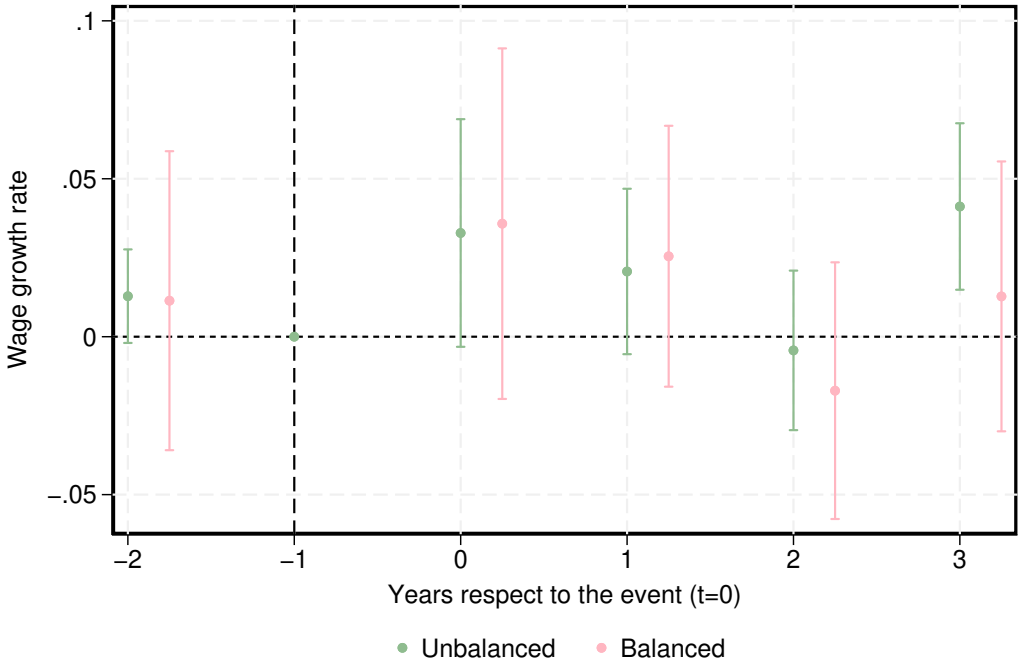
Figure 15: Effect of the entrance of a female boss in a completely masculinized group of bosses.



Note: Following Equation 3, we define the event $I_k(FemBoss = 1)$ as the entrance of a female boss (directors, owners, and managers in companies who work in the company) into a completely masculinized group of bosses. We graph the coefficient ω. The vertical axis shows the wage growth rate effect relative to $t = -1$, and the horizontal axis represents the years relative to the event. The dashed vertical line shows the year before the event. The green line considers a control group balanced by firms, while the pink line considers a control group balanced by both firms and workers. The control group is defined as firms with no female bosses during the period. Only private firms with at least 10 employees who worked for over 3 months are considered. A 95% confidence interval is shown. **Source**: Social Security administrative records from 1997-2022.

We define a second treatment as the change that occurs when a firm with no or few female bosses for at least two years experiences female entry, such that female bosses become the majority on the board and remain for at least three years. This estimation is shown in Figure 16. We do not find a clear effect on wage growth rates as the composition of the bosses group shifts to a female majority, either in the balanced or unbalanced sample. Thus, we can exclude the possibility of a mechanical effect.

Figure 16: Effect of the entrance of a female boss on a bosses group that turns the group into a female majority.



Note: Following Equation 3, we define the event $I_k(FemBoss = 1)$ as the entrance of a female boss (directors, owners, and managers in companies who work in the company) into a group that previously had less than 50% female bosses, after which females represent more than half of the bosses in the group. We graph the coefficient ω. The vertical axis shows the wage growth rate effect relative to $t = -1$, and the horizontal axis represents the years relative to the event. The dashed vertical line shows the year before the event. The green line considers a control group balanced by firms, while the pink line considers a control group balanced by both firms and workers. The control group is defined as firms where the percentage of female bosses was always less than 50%. Only private firms with at least 10 employees who worked for over 3 months are considered. A 95% confidence interval is shown. **Source**: Social Security administrative records from 1997-2022.

6 Conclusions

Using a large matched employer-employee dataset of Uruguayan private firms from 1997 to 2022, we investigate the effects of gender composition within the firm hierarchies on gender disparities among employees.

Our analysis contributes to the understanding of the role of bosses in shaping the level and dynamics of the gender pay gap, yielding two key findings. First, we show that the gender composition of bosses plays a significant role, with female bosses contributing to a reduction in gender pay gaps. This reduction becomes more pronounced as female representation in leadership increases. Second, we find that a higher proportion of women in hierarchical positions leads to an increase in the hiring of female workers and a decrease in the rate of women leaving the company. Moreover, female bosses seem to have a larger effect on lower-paid women compared to higher-paid women, with stronger effects observed in feminized firms and industries.

Then we explore the mechanisms underlying these results and find that having more women within the bosses group has a stronger effect on reducing the entry salary gender gap than on narrowing the wage gap among incumbents. Additionally, we find that gender differences in bosses-related inequality are more related to wage growth from firm-to-firm transitions rather than to promotions within firms.

Other mechanisms beyond those analyzed in this study may also play a role. For instance, differential transition patterns could be linked to wage changes following maternity, a penalty well-documented in Uruguay (Querejeta and Bucheli, 2023). However, little is known about the role of female bosses in shaping workers' transitions between firms after maternity. Future research on these issues could provide a deeper understanding of how the gender composition of bosses impacts the gender pay gap and inform us of the most adequate policies for promoting gender equity in the labor market.

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APPENDIX

A Appendix A

Table A.1: Effect on monthly salary of being female & having female bosses.

	(1) log(Salary)	(2) log(Salary)	(3) log(Salary)	(4) log(Salary)
Female	-0.208***	-0.208***	-0.210***	-0.211***
	(0.000)	(0.000)	(0.000)	(0.000)
Three Quarters female bosses	-0.0627***			
	(0.000)			
Mostly female bosses		-0.0578***		
		(0.000)		
One quarter female bosses			-0.0519***	
			(0.000)	
At least one female boss				-0.0468***
				(0.000)
Sector	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes
Social S. Regime	Yes	Yes	Yes	Yes
Contract type	Yes	Yes	Yes	Yes
Bosses fe	No	No	No	No
Workers fe	No	No	No	No
Observations	6716740	6716740	6716740	6716740
Individuals	1238440	1238440	1238440	1238440
R2	0.475	0.475	0.475	0.474

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: We follow Equation 1. We report the coefficients δ_1 (first line) and δ_2 (lines 2 to 5), interpreted as the effects on monthly salary of being female and having female bosses respectively. Only private firms with at least 10 employees who worked for over 3 months are considered. **Source**: Social security administrative records from 1997-2022.

Table A.2: Effects of having female registered bosses on monthly salary gender gap.

	(1) log(Salary)	(2) log(Salary)	(3) log(Salary)	(4) log(Salary)
Female x Three Quarters female bosses	0.0329***			
	(0.000)			
Female x Mostly female bosses		0.0328***		
		(0.000)		
Female x One quarter female bosses			0.0258***	
			(0.000)	
Female x Female boss				0.0250***
				(0.000)
Sector	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes
Social S. Regime	Yes	Yes	Yes	Yes
Contract type	Yes	Yes	Yes	Yes
Bosses fe	Yes	Yes	Yes	Yes
Workers fe	Yes	Yes	Yes	Yes
Observations	6422777	6422777	6422777	6422777
Individuals	945230	945230	945230	945230
R2	0.789	0.789	0.789	0.789

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note:Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Bosses are defined as those who declare in the social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups, defined by their registered position (directors, owners, and managers in companies and who work in the company). Only private firms with at least 10 employees who worked for over 3 months are considered. **Source**: Social security administrative records from 1997-2022.

Table A.3: Effects of having female registered bosses on monthly entrance salary gender gap.

	(1) log(Salary)	(2) log(Salary)	(3) log(Salary)	(4) log(Salary)
Female x Three Quarters female bosses	0.0387***			
	(0.000)			
Female x Mostly female bosses		0.0361***		
		(0.000)		
Female x One quarter female bosses			0.0264***	
			(0.000)	
Female x Female boss				0.0265***
				(0.000)
Sector	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes
Social S. Regime	Yes	Yes	Yes	Yes
Contract type	Yes	Yes	Yes	Yes
Bosses fe	Yes	Yes	Yes	Yes
Workers fe	Yes	Yes	Yes	Yes
Observations	1740463	1740463	1740463	1740463
Individuals	558580	558580	558580	558580
R2	0.779	0.779	0.779	0.779

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Following Equation 2 with worker and bosses groups fixed effects, we report the coefficient ω for entrants. Entrants are defined as those who have been in the company for less than a year. Bosses are defined as those who declare to the social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 10 employees who worked for over 3 months are considered. **Source**: Social security administrative records from 1997-2022.

Table A.4: Effects of having female registered bosses on monthly incumbent salary gender gap.

	(1) log(Salary)	(2) log(Salary)	(3) log(Salary)	(4) log(Salary)
Female x Three Quarters female bosses	0.0208***			
	(0.000)			
Female x Mostly female bosses		0.0229***		
		(0.000)		
Female x One quarter female bosses			0.0208***	
			(0.000)	
Female x Female boss				0.0195***
				(0.000)
Sector	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes
Social S. Regime	Yes	Yes	Yes	Yes
Contract type	Yes	Yes	Yes	Yes
Bosses fe	Yes	Yes	Yes	Yes
Workers fe	Yes	Yes	Yes	Yes
Observations	4277864	4277864	4277864	4277864
Individuals	631946	631946	631946	631946
R2	0.808	0.808	0.808	0.808

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Following Equation 2 with worker and bosses groups fixed effects, we report the coefficient ω for incumbents. Incumbents are defined as those who have been in the company for over a year. Bosses are defined as those who declare to the social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 10 employees who worked for over 3 months are considered. **Source**: Social security administrative records from 1997-2022.

Table A.5: Effects of having female registered bosses on hourly wage gender gap. Private firms

	(1) log(Hwage)	(2) log(Hwage)	(3) log(Hwage)	(4) log(Hwage)
Female x Three Quarters female bosses	0.00864**			
	(0.002)			
Female x Mostly female bosses		0.0147***		
		(0.000)		
Female x One quarter female bosses			0.0113***	
			(0.000)	
Female x Female boss				0.00838***
				(0.000)
Sector	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes
Social S. Regime	Yes	Yes	Yes	Yes
Contract type	Yes	Yes	Yes	Yes
Bosses fe	Yes	Yes	Yes	Yes
Workers fe	Yes	Yes	Yes	Yes
Observations	6422775	6422775	6422775	6422775
Individuals	945230	945230	945230	945230
R2	0.762	0.762	0.762	0.762

p-values in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

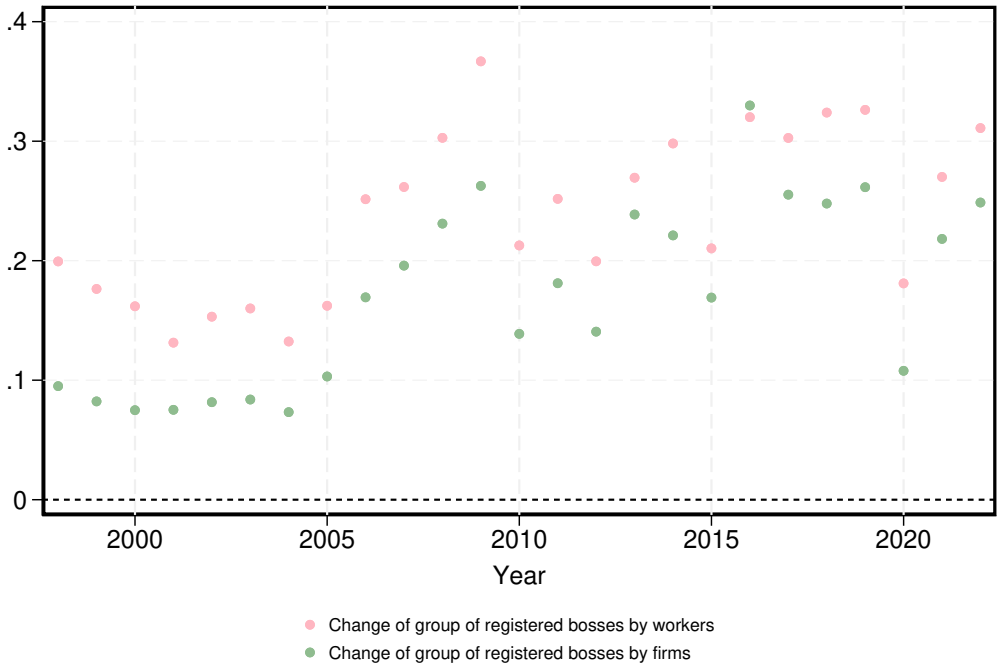
Note:Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω, taking hourly wage as Y_{itj}. Bosses are defined as those who declare in the social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups, defined by their registered position (directors, owners, and managers in companies and who work in the company). Only private firms with at least 10 employees who worked for over 3 months are considered. **Source**: Social security administrative records from 1997-2022.

Table A.6: Descriptive Statistics for private firms: bosses defined by relative position. (1997-2022)

	Workers		Bosses		Bosses groups	Firms
	Men	Women	Men	Women		
Age	36.80	35.89	49.42	47.28		
	(11.84)	(11.30)	(9.526)	(10.34)		
Tenure	6.192	5.194	10.48	10.88		
	(7.867)	(6.659)	(9.209)	(8.749)		
Mean monthly salary	54073.7	38727.1				
	(62777.0)	(39742.7)				
Hours worked per month	152.3	145.7				
	(48.34)	(51.73)				
Num. of years as Boss			12.23	11.10		
			(8.400)	(7.439)		
Num. of years as Boss in firm			11.24	10.64		
			(6.880)	(6.652)		
Num. of firms as Boss in the period			1.163	1.083		
			(0.449)	(0.363)		
Mean age by group					48.18	
					(9.390)	
Mean tenure by group					9.268	
					(8.363)	
Total number of bosses by group					5.174	
					(6.362)	
Prop. female boss by group					0.224	
					(0.366)	
Prop. female boss in firm						0.227
						(0.293)
At least one female boss						0.472
						(0.499)
One quarter female bosses						0.374
						(0.484)
Mostly female bosses						0.106
						(0.307)
Three Quarters female bosses						0.0611
						(0.240)
Observations	2299461	1600432	18718	5588	4698	20696
N of individuals	335081	256415	2537	793	6083	2830

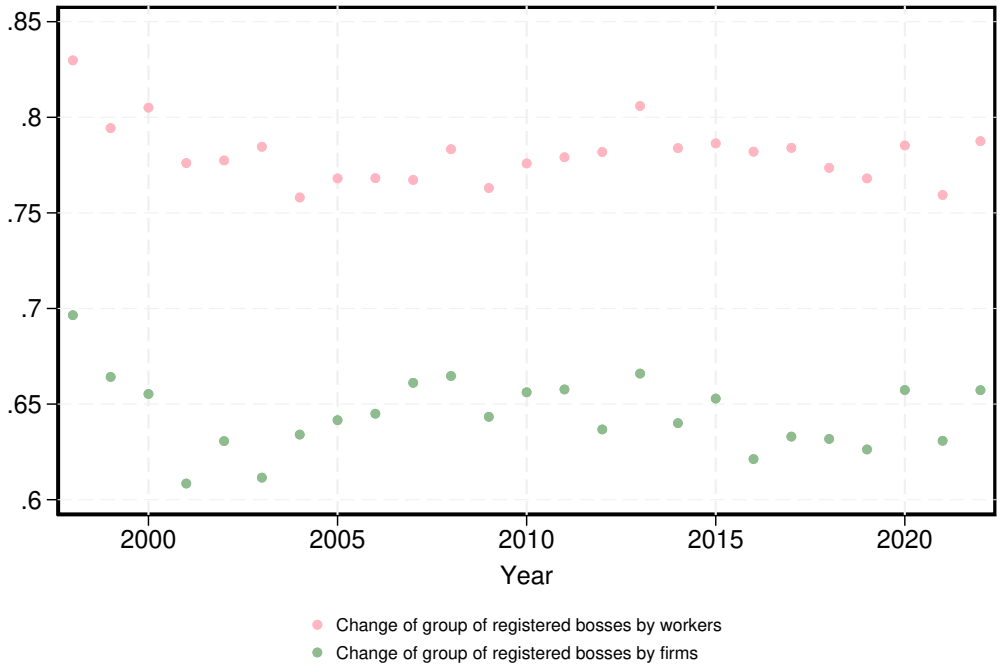
Note: We compute the descriptive statistics. We identify bosses as those who earn in the top 1% of wages in the firm (Columns 3 and 4); for them, we show information about age, tenure, and their role as bosses in the same firm and the period. The first two columns show information about workers' age, tenure, monthly working hours, and wages. The fifth column shows information about the bosses groups, and the sixth column shows female participation in bosses groups by different thresholds. Only private firms with at least 100 employees are considered and both employees and bosses need to have worked for over 3 months. **Source**: Social security administrative records from 1997-2022.

Figure A.1: Rotation of bosses groups by firm and worker



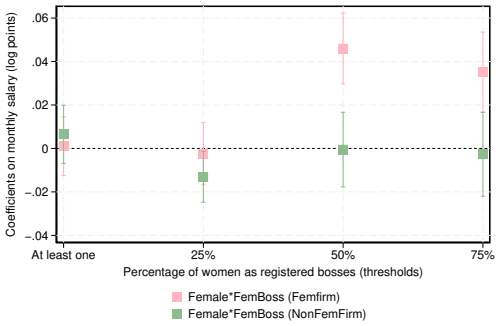
Note: We show the percentage of workers (pink) and private firms (green) who change at least one member of the group of bosses yearly. Bosses are defined as those who declare in the social security being directors, owners, and managers in companies and who work in the company. Only private firms with at least 10 employees are considered and both employees and bosses need to have worked for over 3 months.
Source: Social security administrative records from 1997-2022.

Figure A.2: Rotation of bosses groups by firm and worker (bosses with top 1% of wages)

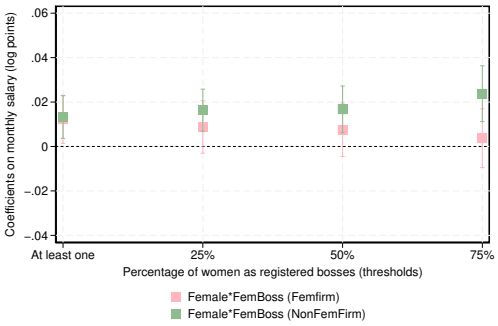


Note: We show the percentage of workers (pink) and private firms (green) who change at least one member of the group of bosses (top 1%) yearly. Only private firms with at least 100 employees are considered and both employees and bosses need to have worked for over 3 months.
Source: Social security administrative records from 1997-2022.

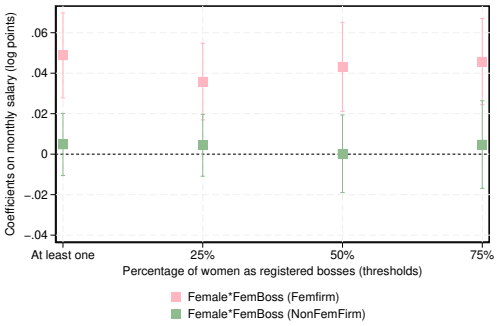
Figure A.3: Effects of female bosses on gender gap on monthly salary: Feminized firms



(a) 1997-2004



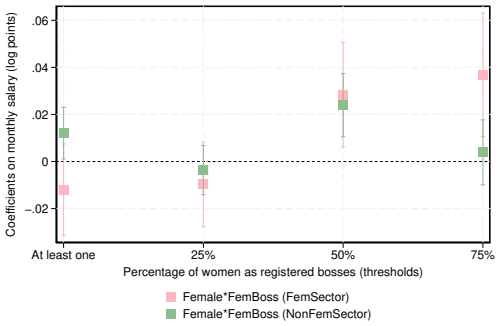
(b) 2005-2015



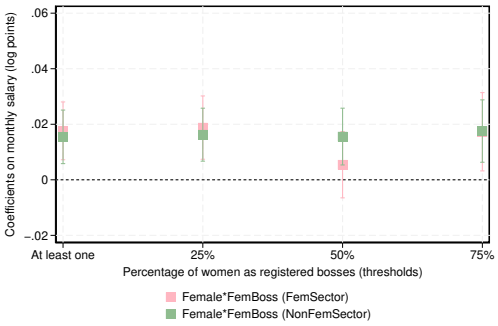
(c) 2016-2022

Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Feminized firms are defined as those with over 50% of female presence. The pink squares represent ω in feminized firms while the green ones are for non-feminized firms. Bosses are defined as those who declare in the social security being directors, owners, and managers in companies and who work in the company. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social security administrative records from 1997-2022.

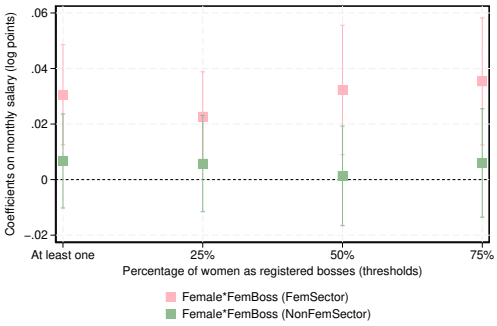
Figure A.4: Effects of female bosses on gender gap: Feminized industries



(a) 97-04



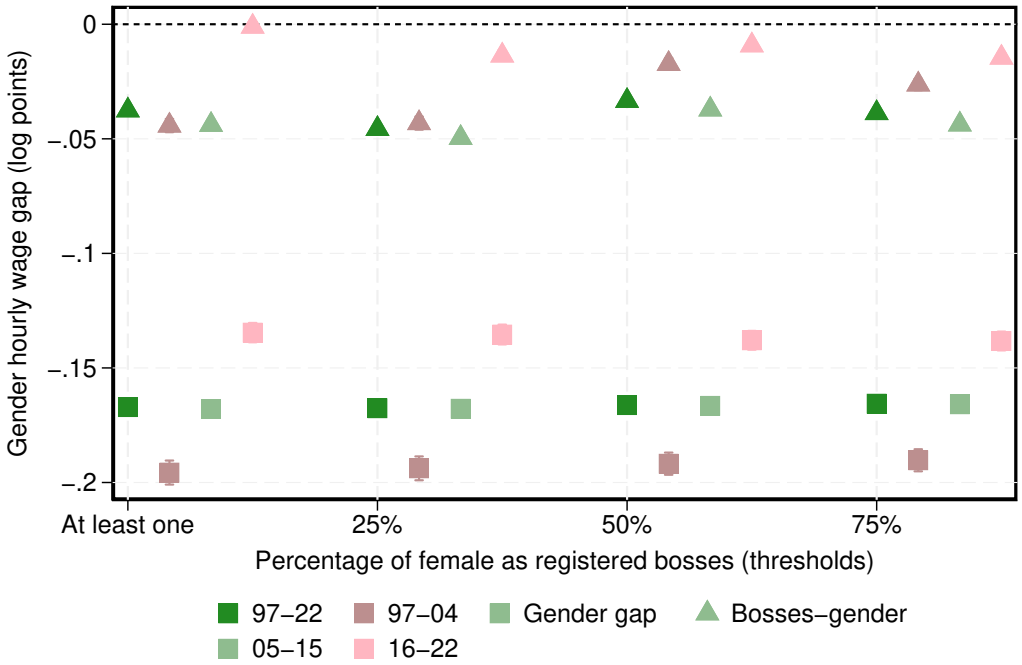
(b) 2005-2015



(c) 2016-2022

Note: Following Equation 2 with worker and bosses groups fixed effects, we graph the coefficient ω. Feminized sectors are defined as those with over 50% of female presence. The pink squares represent ω in feminized sectors while the green ones are for non-feminized sectors. Bosses are defined as those who declare in the Social Security as directors, owners, and managers in companies and who work there. In the horizontal axis, there are the different thresholds of female participation in bosses groups. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social Security administrative records from 1997-2022.

Figure A.5: Effect on hourly wage of being female & having female bosses



Note: We follow Equation 1, taking the hourly wage as Y_{itj}. We graph the coefficients δ_1 (square) and δ_2 (triangle), interpreted as the effects on monthly salary of being female and having female bosses respectively. Information for three subperiods plus the whole period is graphed. Only private firms with at least 10 employees who worked for over 3 months are considered. A confidence interval of 95% is shown. **Source**: Social security administrative records from 1997-2022.