Ca' Foscari
University
of Venice

Valeria Maggian
Giacomo Pasini
Paola Profeta
Ludovica Spinola

The gender composition of supervisor-subordinate dyads: career trajectories and compensation

The gender composition of supervisor-subordinate dyads: career trajectories and compensation

Valeria Maggian
Ca' Foscari University of Venice

Giacomo Pasini
Ca' Foscari University of Venice; NETSPAR

Paola Profeta
Bocconi University

Ludovica Spinola
University of Milano Bicocca

Abstract
Does the gender of the supervisor matter for career trajectories and compensation of both male and female subordinates? This paper exploits a fine-grained longitudinal personnel data on workers from an Italian insurance company over the period 2014-2021 and identifies the gender composition of supervisor-subordinate dyads.
Employing an individual fixed effect model, we show that while male and female supervisors evaluate similarly the performance of male and female subordinates, female supervisors are less likely to award one-off bonuses to both genders compared to their male counterparts. Additionally, both male and female subordinates are less likely of receiving promotions from employee to middle-manager when their supervisor is a woman compared to when their supervisor is a man. We interpret these findings as suggestive of female supervisors facing heightened scrutiny, leading to fewer promotions and bonuses being granted.

Keywords
gender gaps; career; workers' outcomes; leadership

JEL Codes
J16, J24, J31, M51, M52

Address for correspondence:
Valeria Maggian
Department of Economics
Ca' Foscari University of Venice
Cannaregio 873, Fondamenta S.Giobbe
30121 Venezia - Italy
e-mail: valeria.maggian@unive.it

The gender composition of supervisor-subordinate dyads: career trajectories and compensation[*]

Valeria Maggian[†], Giacomo Pasini[‡], Paola Profeta[§], Ludovica Spinola[¶]

Abstract

Does the gender of the supervisor matter for career trajectories and compensation of both male and female subordinates? This paper exploits a fine-grained longitudinal personnel data on workers from an Italian insurance company over the period 2014-2021 and identifies the gender composition of supervisor-subordinate dyads. Employing an individual fixed effect model, we show that while male and female supervisors evaluate similarly the performance of male and female subordinates, female supervisors are less likely to award one-off bonuses to both genders compared to their male counterparts. Additionally, both male and female subordinates are less likely of receiving promotions from employee to middle-manager when their supervisor is a woman compared to when their supervisor is a man. We interpret these findings as suggestive of female supervisors facing heightened scrutiny, leading to fewer promotions and bonuses being granted.

Keywords: gender gaps; career; workers' outcomes; leadership.
JEL codes: J16 J24 J31 M51 M52

[†]Ca' Foscari University of Venice, Department of Economics, Cannaregio 873, Fondamenta San Giobbe, 30121 Venice. E-mail: valeria.maggian@unive.it
[‡]Ca' Foscari University of Venice, Department of Economics. Cannaregio 873, Fondamenta San Giobbe, 30121 Venice. NETSPAR. E-mail: giacomo.pasini@unive.it
[§]Bocconi University. Via Roentgen 1, 20136 Milan. E-mail: paola.profeta@unibocconi.it
[¶]University of Milano Bicocca. Piazza dell'Ateneo Nuovo 1, 20126, Milan. E-mail: ludovica.spinola@unimib.it

1   Introduction

The under-representation of women in leadership positions is a well-recognized and persistent issue. Within hierarchical organizations, current leaders may significantly impact the trajectory of gender equality, possibly sustaining a harmful cycle of gender imbalance, when males are preferred over females for reasons different than merit. However, there is limited understanding of how the gender composition of supervisor-subordinate dyads correlates with outcomes for both male and female workers. This paper aims at filling this gap by employing a fine-grained longitudinal personnel dataset on employees, middle-managers and managers from an Italian insurance company over the period 2014-2021. Specifically, we analyze whether workers' performance assessment, the yearly one-off bonus, and the probability of receiving a promotion are related to the gender of the direct supervisor[1].

The exploration of an Italian-based company becomes particularly intriguing due to Italy's deeply entrenched conservative gender culture, which is reflected in its unfavorable gender statistics. Despite being among the early adopters of board gender quotas in Europe following Norway's lead (Ferrari et al., 2022), Italy faces a significant challenge as the participation rate of women in the labor force lingers at a mere 50%, the second to last in Europe[2].

Our analysis benefits from a novel and rich dataset in several ways. First, having complete information on employees, middle-managers and managers of the same firm over a 8-year period, we can study in detail the relationship between supervisors and subordinates and control for important features such as the share of women within an office, days off, days of maternity, days of parental leave. This is a clear advantage with respect to existing contributions which use either cross-sectional data (Lucifora and Vigani, 2022) or employer-employee panel data covering several firms within a country (Cardoso and Winter-Ebmer, 2010; Gagliarducci and Paserman, 2015; Abendroth et al., 2017; Kunze and Miller, 2017; Bertrand et al., 2019; Flabbi et al., 2019). Second, we have detailed information on performance evaluations and one-off bonuses, which are determined by the assessments of subordinates' supervisors and are typically not available, though they significantly impact the gender pay gap.

Using these data, we derive the organizational structure of the insurance company over the period 2014-2021. Specifically, we study how the interaction between the gender of the subordinate and that of his or her direct supervisor affect four different workers' outcomes:

---

[1] These outcomes are fully determined by direct supervisors, while other variables - the minimum and maximum workers' wages, the hours worked, and other workers' rights - are negotiated and defined at the National level "National Labour Collective Agreements" ("Contratti Collettivi Nazionali del Lavoro").

[2] According to the World Economic Forum (WEF), Italy ranks only 79th worldwide out of 146 countries in the 2023 Global Gender Gap Index, one place after Uganda and one before Mongolia (World Economic Forum, 2023).

the performance assessment; the yearly amount of one-off bonus; the probability of being promoted; the probability of being promoted from employee to middle-manager. We use an individual worker and time fixed effect model (TWFE model) and we account for the supervisor-subordinate dyads by interacting the gender of the subordinate with the gender of their direct supervisor. We further control for other observable time-varying workers' and offices' characteristics.

We find that female supervisors grant bonuses with significantly lower probability both to male and female workers compared to male supervisors. Moreover, both male and female workers' probability of being promoted from employees to middle-managers is significantly reduced when the supervisor is a woman rather than a man.

Contrary to the gender identity or social identity hypothesis (Cohen and Huffman, 2007; Cardoso and Winter-Ebmer, 2010; Kunze and Miller, 2017; Lucifora and Vigani, 2022), our findings do not support the notion that a higher representation of women in influential roles positively impacts the careers of other women, not they support the opposite "Queen bee" hypothesis, according to which women in leadership positions tend to disadvantage other women's careers.

Similarly, the "think manager-think male" paradigm (Schein, 1973), which suggests that a manager should display attitudes and characteristics typically associated with a masculine stereotype, including strengths and virtues (Mohan et al., 2022), does not provide a robust explanation of our results: while women may be more severe than men in granting one-off bonuses and promotions from employee to middle manager because conforming to masculine traits perceived as necessary for a leader (such as assertiveness, decisiveness, aggressiveness, efficiency, and competitiveness (Schein, 2001)), we do not find evidence of gender-biased judgments or promotions.

However, our results are consistent with the hypothesis that women in top positions are subject to more severe judgment and scrutiny compared to men. According to the findings of Chakraborty and Serra (2023), women anticipate potential negative judgments (i.e., backlash) more than men, leading them to shy away from leadership roles, and to act differently when in a leadership position. Consequently, our results could be interpreted as an outcome of the strict scrutiny and judgment faced by women supervisors in the company under study, where only 20% of supervisors are women. This intensified scrutiny may lead women to adopt a more cautious approach in awarding promotions and bonuses, aiming to demonstrate more efficient and meticulous behaviors.

The paper is organized as follows: next section develops our hypotheses and presents the previous findings, section three introduces the company, section four presents the data, section five shows descriptive evidence, section six presents the empirical analysis and results and section seven concludes.

2 Women's underrepresentation in leadership positions

The underrepresentation of women in top positions can be attributed to a combination of various factors, with the decisions made by firms playing a crucial role as, for example, in creating the so-called "glass ceiling", i.e. invisible obstacles that prevent women to reach top-level positions (Bertrand et al., 2019). Within this framework, firms might opt to promote only a selection of few individuals from a minority group, showcasing inclusivity, yet keeping the majority of the group excluded from high-level positions—a practice known as tokenism toward women (Smith and Parrotta, 2018; Santero-Sánchez and Núñez, 2022). Firms' behaviors are responsive to statistical discrimination[3]: since firms have imperfect information on workers' productivity, they infer productivity from statistical information on the group the workers belongs to. However, recent studies prompt a discussion around the concept of inaccurate statistical discrimination (Bohren et al., 2023), arguing that heuristics might play an important role in forming agents' incorrect beliefs. Further to this point, women are penalized if decision-makers rely on stereotypes or generalizations about women rather than evaluating them based on their merits, qualifications, or performance (Olson and Becker, 1983; Smith et al., 2013; Addison et al., 2014; Blau and Kahn, 2017; Conde-Ruiz et al., 2017; Flabbi et al., 2019). Women themselves can anticipate firms' behavior and adapt their choices accordingly. The "think manager-think male" hypothesis suggests that women avoid applying for leader positions as these are perceived as requiring masculine characteristics (Schein et al., 1996; Laguía et al., 2019). Haegele has documented that, compared to their male counterparts, women in lower-level positions are much less likely than men to apply for early-career promotions because leadership positions require to assume responsibility over a team (Haegele, 2024). Additionally, if women anticipate negative judgements, stringent scrutiny or backlash when they take decisions, they are induced to self-select out of leadership positions (Chakraborty and Serra, 2023).

Other hypotheses explaining the scarce presence of women in leadership positions are grounded in the supply side of the labour market, focusing on gender differences in competitive traits (Gneezy et al., 2003; Niederle and Vesterlund, 2007; Flory et al., 2015), risk preferences (Croson and Gneezy, 2009; Adams and Funk, 2012; Carter et al., 2017), self confidence (Kamas and Preston, 2012), ability to negotiate (Bowles et al., 2022; Bowles et al., 2007; Kray and Thompson, 2004) and redistributive policy preferences (Ranehill and Weber, 2022), with persistent gender stereotypes (Heilman, 2012) playing a fundamental role. Consequently, the share of women decreases at each career level, resulting in

---

[3] Most of the empirical studies refers either to the standard set-up of Gary S. (1971) [1957] or to the seminal statistical discrimination model of Phelps (1972). See also Arrow (1973) and Fryer Jr (2007) theoretical models on discrimination.

a phenomenon known as the leaking pipeline (Clark Blickenstaff, 2005; Fernandez-Mateo and Fernandez, 2016; Smith and Parrotta, 2018).

The presence of women in decision-making positions may in turn have an impact on women's careers and earnings and thus on gender gaps. On one side the presence of women in leadership positions is expected to contribute to the reduction of gender gaps, by fostering higher wages and advancing the careers of women, particularly if female supervisors demonstrate increased concern and attentiveness towards the outcomes of their female subordinates (Kunze and Miller, 2017; Lucifora and Vigani, 2022). On the other side, the "Queen Bee hypothesis"[4] posits that women in leadership roles, especially in male-dominated occupations, may assimilate into the existing male-dominated workplace culture, distancing themselves from other women and potentially hindering the career progression of female subordinates (Bednar and Gicheva, 2014; Flabbi et al., 2019).

The existing studies provide mixed evidence on these two opposite hypotheses.

Kurtulus and Tomaskovic-Devey (2012) and Matsa and Miller (2011) suggest a positive influence of a higher representation of women in top management on the presence of women in lower-level positions. Similarly, Kunze and Miller (2017), exploiting an employer-employee dataset on private sector workplaces in Norway, show that a higher representation of women in seven-hierarchical levels positively affects the promotion rates of subordinate female workers. More generally, Lucifora and Vigani (2022) use data from 15 European countries and report a reduction in gender gaps when the supervisor is a woman. Differently, Gagliarducci and Paserman (2015) find no significant association between the share of women in top management positions and workers'outcomes, while Abendroth et al. (2017), considering a sample of workers in German firms, observe that male supervisors tend to promote male workers, while women supervisors struggle to significantly influence gender inequality.

When considering the gender pay gap, Shin (2012) provides evidence of its reduction when the share of women in the compensation committee increases; the same effect is found following an increase in the share of women in management position or on corporate boards (Cohen and Huffman, 2007; Cardoso and Winter-Ebmer, 2010; Theodoropoulos et al., 2022). Flabbi et al. (2019) also detect a positive effect of women executives on women's wage distribution, but only at the top of it. Abraham (2017) finds that under less formalized pay systems the gender wage gap narrows for employees reporting to female, rather than male, managers. Differently than her study, which focuses only on the base salary, our investigation also takes into consideration performance evaluations and one-off bonuses, which are fundamental determinants of workers' wage. Our rich dataset indeed allows for a detailed analysis of the relationship between supervisors and workers:

---

[4] The phenomenon was first coined and described by Staines et al. (1974).

we employ a robust identification strategy that includes individual-fixed effects, controlling for relevant observable time-varying features that might affect the gender gap within organizations (i.e. the share of women within an office, days off, days of maternity, days of parental leave), a clear advantage with respect to existing contributions.

3   The company

We collaborate with an Italian insurance company listed on the Milan Stock Exchange. The company has set forth several internal goals aimed at achieving gender equality within a few years and has implemented significant programs of inclusion, equity and diversity. Thanks to its effort, the company stands out as one of the few Italian firms included in the gender equality index launched by Euronext in November 2022[5]. This index assesses EU companies across four categories - i.e., "gender balance in leadership and workforce"; "equal compensation and work-life balance"; "policies promoting gender equality"; and "commitment, transparency and accountability". Despite the actions aimed at reducing the gender gaps, women are still a minority in managerial positions of the firm. Out of 4.756 individuals, around the 24.3% of middle-managers and around 13.5% of managers are women[6], while the gender composition of workers is balanced (the percentage of women is around 51.5). We consider the share of women within each of the four levels of contractual status of workers defined by the "National Labour Collective Agreements" (corresponding to level III, IV, V, VI) and the two levels of middle-managers (business and senior levels) [7]. Descriptive statistics show that women represent between 46% and 31% of level III of employees, more than 50% of level IV and V and about 42% of level VI. The percentages of women in the business and senior middle-manager positions are, respectively, around 24% and 22%. Therefore, the unbalanced composition by gender is not only across employment contracts, but also within them, with the exception of the lowest level of employees[8]. We then consider the share of men and women who are supervisors, meaning they directly manage and are responsible for a unit within the company's hierarchical structure. At the head of each macro-unit there is a director (or Chief of the area), who is responsible for the area - i.e. Operating Officer, HR, Retail, Audit, Marketing, Business Transformation, etc. On average, women represent 33.3% of directors. The number and name of macro-units are not fixed over the period 2014-2021. The director supervises supervisors of the middle unit, of which 28.49% are females,

---

[5] https://www.euronext.com/en/about/media/euronext-press-releases/euronext-launches-gender-equality-indices.

[6] We do not consider in this percentage the directors, even though directors in our dataset are identified as managers.

[7] Notice that employee of level III is the lowest one and that when employees of level VI receive a promotion they change employment contractual status from employee to middle-manager of business level.

[8] Workers hired as III level employees are a tiny minority, between 18 and 40 units per year.

within the area. Supervisors of the middle unit in turn supervise supervisors of the offices, the smallest units of the area, where the percentage of women is about 22.25%. In some cases, the supervisor of the office is absent, hence the subordinates of these offices are directly supervised by the supervisor of the middle unit. In case of small macro areas, the director of the area directly supervises the supervisor of the office[9].

Table 1 shows summary statistics of the percentage of women in directors, managers and middle-managers positions and the percentage of female supervisors of the unit levels - macro unit (area), middle-unit and office unit over the years 2014-2021. In Appendix A, table 7 shows the share of women within each level of employment contractual status of employee and middle-manager over the same period.

---

[9] Appendix A illustrates a (fictitious) example of the internal hierarchy and structure of the company (figure 5)

Table 1: Summary statistics: percentage of women in the company positions over the period 2014-2021

		2014	2015	2016	2017	2018	2019	2020	2021
Percentage of women directors		25.0	33.3	40.0	33.3	30.0	33.3	35.7	33.3
Percentage of women managers		13.7	10.7	13.4	13.1	13.4	14.4	14.2	14.1
Percentage of women middle-managers		22.9	23.5	23.8	24.0	24.6	25.1	25.4	25.7
Percentage of women employees		51.6	51.4	51.3	51.2	51.3	51.5	51.6	51.9
Percentage of women supervisors									
	Middle unit	31.6	26.1	34.4	27.9	29.4	29.3	26.7	26.2
	Office unit	19.7	18.4	20.4	19.9	23.1	24.2	24.6	24.7
N. Workers		4,071	4,154	4,196	4,275	4,371	4,515	4,688	4,756

Each year, between June and July, a salary review takes place, where supervisors assign promotions and the amount of one-off bonus to their subordinates. Starting from 2018, supervisors also provide an individual assessment to subordinates' performance which takes into account the fulfillment of the assigned targets. The performance evaluations are done more than one year before the salary review and are due only to subordinates who have worked for at least 6 months in the considered year.

Contractual laws play an important role in defining the determination of promotions, bonus and performance evaluations. However, supervisors have discretion in identifying these variables. Specifically, while supervisors are expected to adhere to the 'Performance Management' process – i.e., the organizational mechanism aligning subordinates' objectives with the company's strategy and evaluating their results and behaviors over a specified period - they are the direct observers of their subordinates' work, and their judgements can be subjective. This bias could impact the gender payment gap, as promotions, one-off bonuses and performance assessments can indirectly affect workers' wages. Therefore, studying whether the gender composition of the supervisor-subordinate dyads influences workers' outcomes can provide important insights on mechanisms and features that hinder gender equality.

4   Data and descriptive statistics

We have access to the entire database of the firm's workers, from January 2014 to June 2021[10]. The firm transferred us the data with encrypted workers' identifiers to protect their privacy[11]. Identifiers allowed us to match workers across years and to construct our panel data. The data set includes, for each worker and each year, information on gender, date of birth, marital status, level of employment (part-time or full-time), employment contractual status (employee, middle-manager, manager) and levels within the employment contract. Moreover, we have data on gross annual wage, wage variation[12], promotion, one-off bonus and the amount of it. Furthermore, the company provides data on days off for holidays, sick leave and days off for other reasons separately. We create a variable that sums all the days off – i.e., total number of days off in a year.

The data set also comprises information on the number of children, on the date of birth of each child, on maternity leave, paternity leave and on parental leave. The Italian legislation provides five months of mandatory maternity leave around the child birth. The standard rule for mothers is to take two months off before the birth of their baby

---

[10] The dataset includes all those workers who were hired from 2014 to 2021, but it does not include workers who were fired or who decided to quit before 2021, no matter whether they were hired before or after 2014.

[11] We stipulate a private contract with the company to protect the workers' privacy.

[12] This is a dichotomous variable on whether the worker received an increase in wage, not a promotion.

and three months off after the childbirth but, upon medical authorization, mothers can decide to start their leave one month before the expected week of childbirth so to have four months of leave after it. Concerning the paternity leave, the number of compulsory days for fathers has increased from two days over the period 2013-2017, to ten days in 2021[13]. The parental leave, which is not mandatory, consists of ten months that either the mother or the father can ask within the first twelve years of the child[14].

For almost the entire sample (4.732 workers), we have information on workers' educational level and, in case they attended university, on the major. From 2018 to 2020 we also know the performance assessments, which is done by the direct supervisor more than one year before the salary review. The assessment ranges between 1 (not sufficient) and 5 (excellent)[15]. We exclude workers for which we have no information on gender for the entire period. Overall, we have information on 4.756 workers, included the directors. Tables 2 and 3 report summary statistics on female and male workers' outcome variables (performance assessments, one-off bonuses and their average amounts, promotions and promotions from level VI employee to middle-manager) over the period 2014-2021. In Appendix A, we report summary statistics for time-varying characteristics of workers and office unit (table 8).

---

[13] Fathers were entitled to two days of paternity leave in 2018 and to five days of paternity leave in 2019.

[14] The parental leave can be extended to eleven months if the father opts for a parental leave period, continuous or not, of more than three months (Legislative Decree n.151/2001, art. 32).

[15] In providing the evaluation, supervisors follow guidelines given by the company. The possible evaluations are 1 = not sufficient; 2 = to improve; 3 = in line with the expectations; 4 = expectations exceeded; 5 = excellent

Table 2: Summary statistics: female workers' outcomes over the period 2014-2021

Year		2014		2015		2016		2017		2018		2019		2020		2021	
N. of Women		1,849		1,874		1,888		1,913		1,961		2,032		2,118		2,155	
		mean	(sd)	mean	sd	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)
Average performance assessment																	
	level III employee	.	.	.	.	.	.	.	.	2.5	(0.71)	2.8	(0.50)	2.8	(0.50)	.	.
	level IV employee	.	.	.	.	.	.	.	.	2.9	(0.65)	3.0	(0.59)	3.0	(0.64)	.	.
	level V employee	.	.	.	.	.	.	.	.	3.1	(0.63)	3.1	(0.65)	3.1	(0.59)	.	.
	level VI employee	.	.	.	.	.	.	.	.	3.4	(0.66)	3.4	(0.66)	3.5	(0.63)	.	.
	middle-manager business	.	.	.	.	.	.	.	.	3.5	(0.59)	3.6	(0.67)	3.7	(0.62)	.	.
	middle-manager senior	.	.	.	.	.	.	.	.	3.8	(0.54)	3.9	(0.55)	4.0	(0.70)	.	.
	manager	.	.	.	.	.	.	.	.	3.9	(0.53)	4.0	(0.63)	4.2	(0.58)	.	.
Percentage one-off bonus (y/n)																	
	level III employee	0.4	(0.51)	0.2	(0.38)	0.3	(0.47)	0.4	(0.52)	0.7	(0.52)	0.2	(0.41)	0.6	(0.55)	0.2	(0.50)
	level IV employee	0.3	(0.44)	0.3	(0.45)	0.3	(0.47)	0.3	(0.47)	0.3	(0.46)	0.3	(0.46)	0.1	(0.35)	0.2	(0.39)
	level V employee	0.3	(0.46)	0.4	(0.48)	0.4	(0.49)	0.4	(0.49)	0.4	(0.49)	0.5	(0.50)	0.3	(0.44)	0.4	(0.49)
	level VI employee	0.3	(0.47)	0.3	(0.48)	0.3	(0.47)	0.5	(0.50)	0.4	(0.49)	0.4	(0.49)	0.3	(0.46)	0.3	(0.47)
	middle-manager business	0.4	(0.49)	0.4	(0.49)	0.5	(0.50)	0.6	(0.48)	0.6	(0.50)	0.5	(0.50)	0.5	(0.50)	0.5	(0.50)
	middle-manager senior	0.6	(0.50)	0.5	(0.51)	0.6	(0.51)	0.8	(0.44)	0.7	(0.46)	0.7	(0.47)	0.7	(0.47)	0.7	(0.47)
	manager	0.8	(0.40)	1.0	(0.00)	0.9	(0.26)	0.9	(0.25)	1.0	(0.00)	1.0	(0.22)	0.0	(0.00)	1.0	(0.00)
Amount one-off bonus																	
	level III employee	478.3	(553.15)	185.5	(457.61)	309.8	(628.02)	363.1	(567.59)	867.0	(926.27)	84.2	(203.72)	640.4	(829.07)	138.2	(274.50)
	level IV employee	378.0	(776.79)	447.2	(793.18)	543.1	(960.69)	481.0	(829.97)	446.6	(771.30)	506.5	(875.27)	187.5	(550.08)	278.8	(684.09)
	level V employee	583.6	(997.25)	705.8	(1023.51)	699.0	(978.58)	740.5	(975.50)	800.7	(1038.55)	840.6	(991.01)	443.9	(886.77)	694.6	(908.74)
	level VI employee	847.6	(1498.34)	899.0	(1452.84)	780.0	(1211.39)	1061.9	(1286.43)	1022.1	(1325.13)	948.8	(1245.55)	713.3	(1231.25)	720.2	(1327.65)
	middle-manager business	1687.3	(2490.98)	1810.8	(2723.50)	2048.4	(2443.11)	2582.1	(2640.69)	2544.5	(2850.24)	2257.3	(2634.39)	2107.8	(2706.65)	1961.3	(2274.29)
	middle-manager senior	4683.3	(5137.70)	3563.4	(4704.54)	4687.3	(4896.44)	4972.7	(3187.75)	4785.6	(3751.90)	4997.7	(3996.18)	4442.6	(3441.01)	4161.2	(3275.69)
	manager	27122.4	(17651.93)	37134.4	(17945.86)	39597.1	(33206.50)	39941.4	(27299.23)	48381.2	(41666.66)	48934.7	(40582.58)	0.0	(0.00)	44006.1	(27152.60)
Percentage promotions	all	0.06	(0.23)	0.05	(0.23)	0.07	(0.26)	0.06	(0.24)	0.06	(0.23)	0.05	(0.22)	0.04	(0.19)	0.05	(0.22)
Percentage promotions	from employee to middle-manager	0.02	(0.15)	0.03	(0.16)	0.02	(0.14)	0.00	(0.06)	0.01	(0.11)	0.02	(0.13)	0.01	(0.08)	0.02	(0.12)

Table 3: Summary statistics: male workers' outcomes over the period 2014-2021

Year		2014		2015		2016		2017		2018		2019		2020		2021	
N. of Men		2,222		2,280		2,308		2,362		2,410		2,483		2,570		2,601	
		mean	(sd)	mean	sd	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)
Average performance assessment																	
	level III employee	.	.	.	.	.	.	.	.	2.5	(1.29)	2.7	(0.58)	2.5	(0.71)	.	.
	level IV employee	.	.	.	.	.	.	.	.	2.8	(0.66)	3.0	(0.75)	2.8	(0.68)	.	.
	level V employee	.	.	.	.	.	.	.	.	3.0	(0.61)	3.1	(0.71)	3.1	(0.69)	.	.
	level VI employee	.	.	.	.	.	.	.	.	3.4	(0.69)	3.4	(0.68)	3.4	(0.68)	.	.
	middle-manager business	.	.	.	.	.	.	.	.	3.4	(0.69)	3.5	(0.66)	3.5	(0.69)	.	.
	middle-manager senior manager	.	.	.	.	.	.	.	.	3.6	(0.68)	3.6	(0.68)	3.8	(0.67)	.	.
Percentage one-off bonus (y/n)																	
	level III employee	0.2	(0.44)	0.3	(0.48)	0.3	(0.47)	0.2	(0.44)	0.2	(0.45)	0.2	(0.40)	0.1	(0.30)	0.0	(0.00)
	level IV employee	0.3	(0.45)	0.3	(0.44)	0.3	(0.48)	0.3	(0.45)	0.3	(0.45)	0.3	(0.46)	0.2	(0.37)	0.2	(0.38)
	level V employee	0.4	(0.49)	0.4	(0.50)	0.5	(0.50)	0.4	(0.50)	0.4	(0.49)	0.5	(0.50)	0.3	(0.43)	0.4	(0.49)
	level VI employee	0.5	(0.50)	0.4	(0.50)	0.4	(0.50)	0.5	(0.50)	0.5	(0.50)	0.5	(0.50)	0.4	(0.48)	0.5	(0.50)
	middle-manager business	0.5	(0.50)	0.4	(0.50)	0.5	(0.50)	0.6	(0.49)	0.5	(0.50)	0.6	(0.49)	0.5	(0.50)	0.5	(0.50)
	middle-manager senior manager	0.6	(0.49)	0.6	(0.50)	0.6	(0.50)	0.6	(0.49)	0.6	(0.50)	0.7	(0.47)	0.6	(0.49)	0.6	(0.48)
Amount one-off bonus																	
	level III employee	277.0	(556.29)	358.6	(647.95)	607.9	(1146.14)	370.0	(756.10)	375.8	(710.68)	228.1	(606.44)	73.6	(240.91)	0.0	(0.00)
	level IV employee	512.2	(986.66)	374.0	(722.10)	688.6	(1366.41)	446.4	(870.27)	486.2	(939.00)	549.8	(1015.53)	352.9	(953.24)	249.5	(625.07)
	level V employee	892.6	(1385.56)	900.8	(1198.29)	874.1	(1058.08)	843.3	(1120.08)	791.3	(1034.01)	878.3	(1078.42)	483.5	(1018.99)	830.0	(1238.12)
	level VI employee	1579.9	(2039.50)	1321.3	(1798.29)	1137.9	(1534.04)	1268.4	(1447.71)	1371.6	(1616.27)	1300.1	(1472.03)	1007.8	(1795.26)	1320.8	(2147.20)
	middle-manager business	2740.1	(3415.20)	2260.5	(3148.54)	2135.2	(2585.47)	2262.3	(2319.35)	2433.7	(2746.36)	2531.3	(2591.15)	2031.4	(2732.04)	2181.8	(3078.23)
	middle-manager senior manager	5284.2	(5081.93)	5076.0	(5309.53)	4662.2	(5048.90)	3918.1	(3575.12)	4358.2	(4388.34)	4905.6	(3872.46)	4180.5	(3756.07)	3993.1	(4082.20)
		29541.9	(19628.58)	34812.7	(27933.37)	41830.0	(52695.23)	42457.7	(59353.66)	55745.4	(123747.07)	53760.4	(110951.23)	0.0	(0.00)	45255.1	(56711.62)
Percentage promotions	*all*	0.05	(0.22)	0.06	(0.24)	0.07	(0.26)	0.05	(0.22)	0.05	(0.21)	0.05	(0.21)	0.03	(0.17)	0.03	(0.17)
Percentage promotions	*from employee to middle-manager*	0.0	(0.19)	0.0	(0.17)	0.0	(0.17)	0.0	(0.09)	0.0	(0.10)	0.0	(0.11)	0.0	(0.12)	0.0	(0.14)

The average performance evaluation is similar for male and female subordinates, and it increases with increasing employment contractual status (employee, middle-manager, manager) and levels within the employment contract. Male employees, middle-managers and managers have a slightly greater probability of receiving a one-off bonus than their female counterparts, with the same gender imbalance observed also when considering its average amount. Notice that both male and female managers opted not to receive a bonus in 2020, the initial year of the pandemic crisis. Starting from 2020, the amount of one-off bonus for both employees and middle-managers is drastically reduced due to Covid-19 crisis. The percentage of promotions are similar between men and women over the entire period. Instead, the likelihood of promotions from level VI employee to middle-manager is slightly lower for men than for women over the period 2014-2021.

We construct a dichotomous variable "supervisor" which takes value 1 whenever in that year the worker is a supervisor. Over the entire period under study, we know the office of each worker, while starting from 2018 we also identify the middle-unit and the macro-unit to which the office belongs.

Therefore, for the period 2014-2017, we match subordinates and supervisors by keeping the directors of the macro-units and the supervisors of the middle-units at time *t-1* the same as in time *t*, unless the variable for the supervisor is 0 or the worker has not been hired by the company yet. The same reasoning is applied when identifying the supervisors of supervisors of the middle-units among the director of the macro-units. For example, if in 2018 the supervisor of the middle-area "Legal protection" is supervised by the director of the macro-area "General Counsel", then also in 2017 the supervisor of the middle-area "Legal protection" is supervised by the same director. Similarly, we assign to supervisors of the offices the supervisors of the middle-unit that they have in the following year.

5 Descriptive analysis

In this section, we graphically examine the effect of the gender composition of the supervisor-subordinate dyad on our variables of interest. Specifically, Figure 1 shows the distribution of the performance assessments, which are available only for the period 2018-2020, over the five grades, by gender combinations of the supervisor - subordinate dyads. We observe that the distribution of evaluations received by male and female subordinates is similar and the performance assessment is not affected by the gender of the supervisor.

Figure 1: Distribution of performance considering the four gender combinations of the supervisor - subordinate dyads.
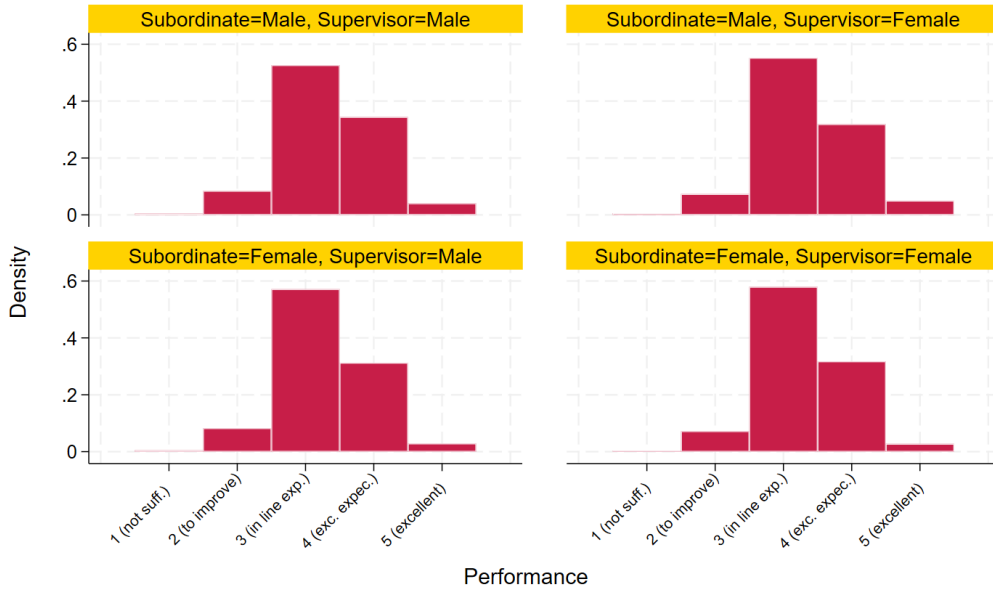
In Figure 2 we then focus on the average number of one-off bonus, with the outcome variable taking value 1 whenever in time t the worker i receives a one-off bonus and 0 otherwise. We pool together the observations on the yearly total amount of bonuses received over the period 2014-2021 excluding managers, because they received bonuses with greater frequency and they did not receive bonuses in 2020 (see Tables 2 and 3). However, including managers in the descriptive analysis does not change significantly our plots. In particular, we observe that female supervisors (the two right plots of Figure 2) on average grant less one-off bonuses to both male and female subordinates with respect to male supervisors (the two left plots of Figure 2).

Figure 2: Average number of one-off bonus considering the four gender combinations of supervisor-subordinate.
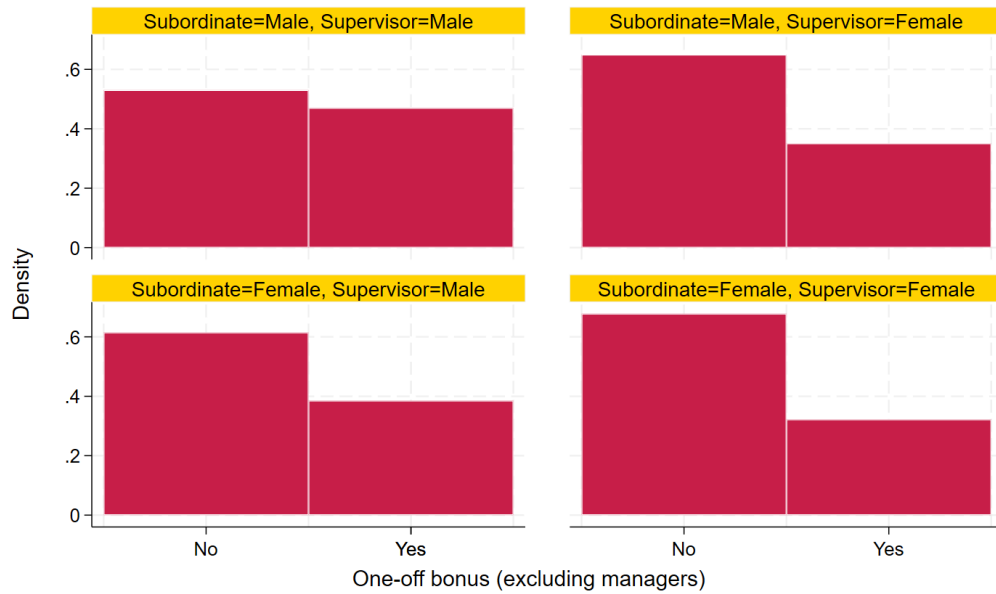
In Figure 3 we plot the kernel distributions of the total amount of one-off bonuses considering the four gender compositions of the supervisor-subordinate dyads, conditional on receiving the one-off bonus. As for the previous Figure 2, we excluded managers from this analysis because the amount of one-off bonus they receive is considerably higher than that received by both employees and middle managers. The only distribution among the four depicted in Figure 3 that seems to be different, although not significantly so, is the one related to male supervisors and male subordinates. However, we do not exclude that this results is driven by outlier observations, as the four plots of Figure 3 show peaks around the same amount of one-off bonus.

Figure 3: Distributions of the total amount of bonus, conditional on granting it, considering the four gender combinations of supervisor-subordinate.
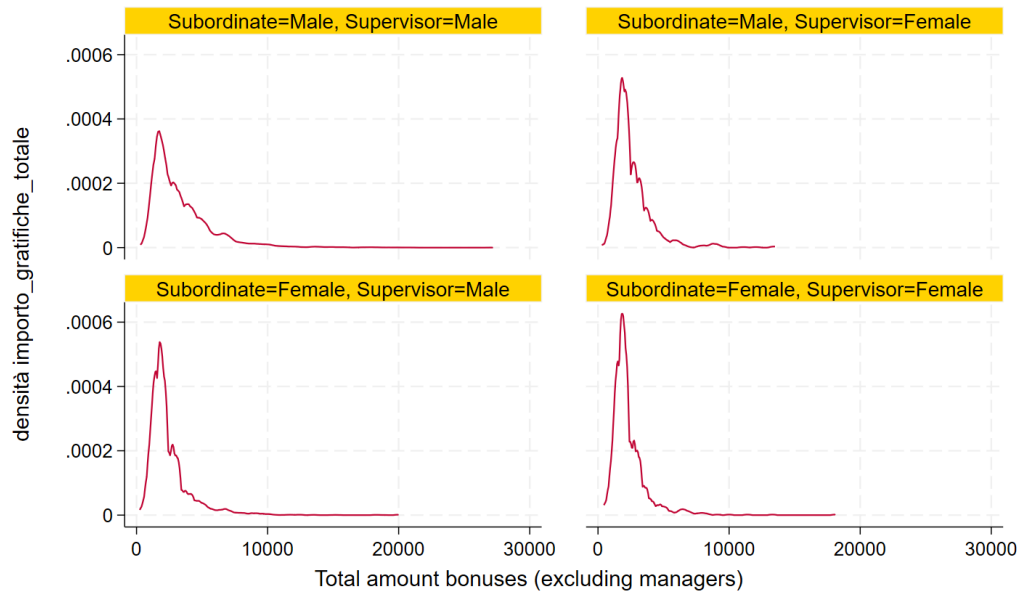
Finally, Figure 4, which depicts the average number of promotions of male and female subordinates by the gender of the supervisor between 2014 and 2021 (the variable promotion is a dichotomous variable that takes value 1 whenever in time t the subordinate i receives a career advancement and 0 otherwise), seems to suggest a higher rate of promotion of female subordinates than of male subordinates, when the supervisor is a male, while the opposite is true when the supervisor is a female. However the difference is not statistically significant.

Figure 4: Average promotions of male and female subordinates by the gender of the supervisor.
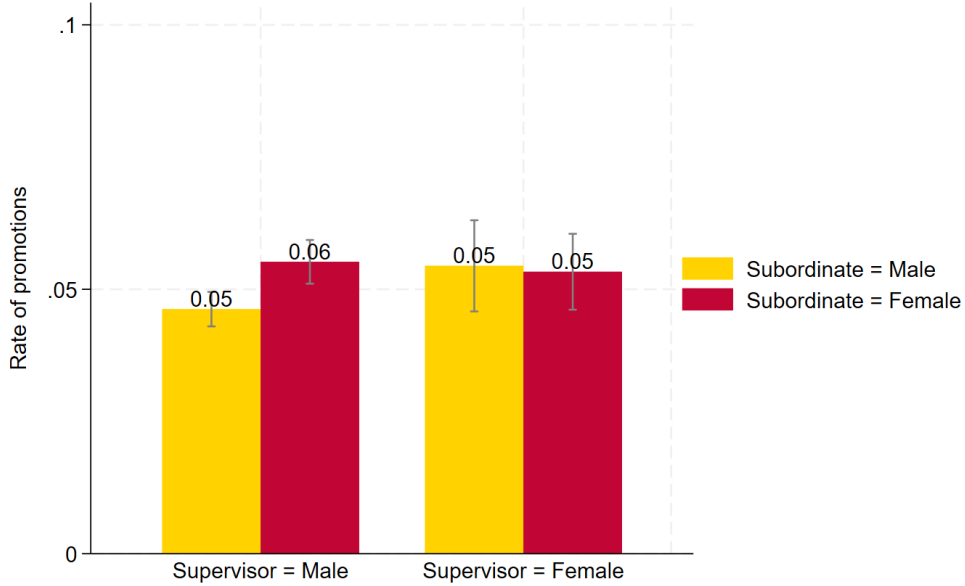
6 Empirical Analysis

6.1 Specification and identification

In our analysis, the unit of observation is a given worker i observed in year t. In order to study the effects of the gender composition of the supervisor-subordinate dyads on workers' outcomes, we estimate a set regressions of the following form:

$$y_{it} = \beta_1 \text{FemSupervisor}_{i,t} + \beta_2 \text{FemSupervisor}_{i,t} \times \text{Female}_i$$
$$+\theta_1 \text{WorkOffice}_{i,t} + \theta_2 \text{ShareFemOffice}_{i,t} + +\text{X}'_{i,t}\gamma + \delta_t + \eta_i + \varepsilon_{i,t} \tag{1}$$

where y_{it} is the dependent variable of interest: workers' performance evaluation, the probability of receiving a one-off bonus, the yearly total amount of one-off bonus (conditional on receiving it) or promotions. The variable $FemSupervisor_{i,t}$ indicates whether the subordinate i in time t is supervised by a female supervisor. To account for the gender composition of the supervisor-subordinate dyads we include the interaction between $FemSupervisor_{i,t} \times Female_i$, where $Female_i$ that takes value 1 if the subordinate is a woman and 0 otherwise. Our coefficients of interest are β_1 and β_2: the former accounts for the effect of having a female supervisor, conditional on being a male subordinate; the latter measures the difference between male and female subordinates and the difference of being supervised by a male and female supervisor – i.e., the difference in differences effect. Furthermore, we are interested in the sum of the two coefficients $(\beta_1 + \beta_2)$, which

indicates the difference between being supervised by a male and female supervisor for a female subordinate.

Female supervisors may supervise offices that have fewer subordinates or that have a high share of women. To account for this, we include two other controls: $WorkOffice_{i,t}$ that counts the number of subordinates within the office unit (supervisor excluded); and $ShareFemOffice_{i,t}$ that measures the share of women within the office unit (supervisor excluded).

$X_{i,t}$ include observable, time-varying individual characteristics: days of *maternity leave* by worker i in year t[16]; days of *parental leave* by worker i in year t; three age dummies (*age dummy 1* if workers are under 46, *age dummy 2* if workers are between 46 and 55, *age dummy 3* if workers are over 55); a dummy variable *full-time* that takes value 1 whenever the worker is employed full-time; *days off* by worker i in year t. *Maternity leave* compares the effect of taking an increasing number of days off for maternity by women who become mothers in period t with those that do not. Instead, *parental leave*, which can be asked by both parents and is not mandatory, measures the impact of asking an increasing number of parental leave days by both mothers and fathers. δ_t are year fixed effects[17], η_i are individual fixed effects.

We estimate the model with a Fixed effect estimator to control for unobservable time invariant characteristics, and thus the identification of the causal effect of interest comes from the within variation of the gender composition of the supervisor-subordinate's dyad: there is variation in $FemSupervisor_{i,t}$ if between period $t-1$ and t subordinate i moves from office X to office Y (and the gender of the supervisor is different), or the supervisor of the office where subordinate i works changes (and the new supervisor is of a different gender). A potential threat to identification is self selection, i.e. if female subordinates systematically choose to work for female supervisors (or for male supervisors). In the specific company we are analysing, this seems not to be an issue: horizontal mobility across offices is limited, employees move when they are promoted to middle managers. Moreover, homophily driven by supervisors (females supervisors systematically choosing female subordinates in their offices) does not create problems to our identification strategy because our point of view is the one of the subordinates: we have a sample of workers where we characterise the gender of the supervisor, not vice versa. A second potential threat to identification is selection due to non-random attrition. In our dataset, we only have workers hired either before or within the period 2014-2021 and who are still employed in 2021, we do not observe individuals who resigned or were laid off during

---

[16] The variable takes value 0 for male workers.

[17] In order to allow for more flexibility, as a robustness check we allowed for interactions between years dummies and subordinates' gender $Female_i$. Results, reported in table 9 in Appendix B.1. are in line with our main specification.

this period. If exits from the company's workforce is determined by gender, identification breaks down. However, this is unlikely to be an issue in our case. First, our sample includes temporary workers whose contract has not expired within the period 2014-2021 or has been converted into a permanent contract[18]. Furthermore, temporary workers are not given bonus nor promotions, hence are not relevant for our analysis. Second, Italian employment Protection Legislation impose high costs on discretionary dismissals of permanent workers. Third, over the period the company did not put in place any collective dismissals procedures. Finally, voluntary resignation is stable and low until 2020, equal to 0.53% and 0.57% for employees and middle-managers respectively- and about 0.6% for managers. An increase in the voluntary resignation has been registered in 2021 only for employees, but absolute figures remained low (1.13%).

6.2   Results

Table 4 provides the results of our estimations. Column 1 considers as dependent variable the performance assessments of subordinates, which ranges between 1 (not sufficient) and 5 (excellent)[19]; column 2 estimates the dichotomous variable that accounts for whether the subordinate received the one-off bonus (*bonus y/n*); column 3 estimates the natural logarithm of the total amount of one-off bonus[20].
Column 1 of table 4 shows that none of the coefficients of our main regressors, *FemSupervisor* and *FemSupervisor × Female*, are significant. Therefore, the gender composition of the supervisor-subordinate dyad has no effect on the performance evaluation. Instead, being older than 45 years significantly decreases the evaluation of performance. Moreover, women who take maternity leave receive a lower evaluation with compared to those who do not. Similarly, subordinates who take an increasing number of paternal leave days are penalised on their performance assessments. Also, asking for an increasing number of days off negatively affects the performance evaluation. Finally, the performance assessments have significantly increased in 2019 and in 2020 with respect to 2018.

When considering as outcome variable the dichotomous *bonus y/n* (column 2 of table 4), the coefficient of the regressor *FemSupervisor* is significant and negative. Since the coefficient of the interaction term is not significant, we interpret this result as a reduction of almost 4 percentage points in the probability of receiving a bonus for both male and female subordinates when the supervisor is a woman. This result is consistent with what we observe in figure 2: female supervisors grant one-off bonus with lower probability to subordinates, no matter their gender. Furthermore, we do not find that male supervisors

---

[18] In our sample we have 56 temporary workers of which 31 are intern.

[19] Recall that to receive a performance assessment the subordinate must have worked at least 6 months in the considered year.

[20] In both columns 2 and 3 we exclude bonuses assigned to managers. Including these observations would not significantly change our results.

are significantly more likely to award a bonus to male subordinates than to female ones. Column 2 shows that starting from 2016, the probability of receiving a bonus is higher compared to 2014, with the exception of 2020 due to the pandemic crisis. Moreover, an increasing number of paternity leave days and days off negatively affect the probability of being awarded a bonus. Being older than 45 years, with respect to being younger than 45 years, negatively affects the probability of receiving a bonus. Additionally, an increase in the number of subordinates within the office unit has a positive and significant effect on the chance of receiving a one-off bonus.

While the probability of receiving a bonus is affected by the gender of the supervisor, column 3 of table 4 shows that, conditional on earning the one-off bonus, its amount does not depend on the gender composition of the supervisor-subordinate dyads. Both men and women receive similar amounts of bonuses no matter the gender of their supervisor. This result corroborates the conjecture we stated in our descriptive analyses, in our previous section: the distribution of the amount of bonuses when both the supervisor and the subordinate are men presents a longer right-tail and a lower pick with respect to the other three gender combinations of supervisors-subordinates due to outlier observations.

Furthermore, column 3 of table 4 reports that being older that 55 years, an increasing number of days-off and a higher number of subordinates in the office unit negatively affect the amount of one-off bonuses.

Table 4: The effect of the gender composition of supervisor-subordinate dyad on workers' performance evaluations and one-off bonus.

	performance	bonus y/n (no manag)	log bonus (no manag)
	(1)	(2)	(3)
FemSupervisor	0.015	-0.038**	0.009
	(0.0416)	(0.0179)	(0.0233)
FemSupervisor × Female	-0.045	0.005	-0.006
	(0.0581)	(0.0226)	(0.0321)
Reference year:	*2018*	*2014*	*2014*
2015		0.003	0.066***
		(0.0097)	(0.0142)
2016		0.026***	-0.051***
		(0.0101)	(0.0149)
2017		0.084***	-0.014
		(0.0102)	(0.0157)
2018		0.080***	0.032**
		(0.0103)	(0.0159)
2019	0.027**	0.101***	0.070***
	(0.0107)	(0.0107)	(0.0162)
2020	0.065***	-0.036***	-0.014
	(0.0121)	(0.0108)	(0.0179)
2021		0.036***	-0.022
		(0.0123)	(0.0205)
Maternity leave	-0.005***	-0.000	-0.000
	(0.0009)	(0.0002)	(0.0002)
Parental leave	-0.002*	-0.003***	-0.000
	(0.0009)	(0.0002)	(0.0005)
Reference: Age dummy 1 (≤ 45)			
Age dummy 2 (≥ 46 and ≤ 55)	-0.105***	-0.036***	0.026
	(0.0337)	(0.0116)	(0.0173)
Age dummy 3 (≥ 56)	-0.126***	-0.065***	-0.117***
	(0.0468)	(0.0174)	(0.0275)
Full-time	0.086	0.028	0.036
	(0.0631)	(0.0209)	(0.0304)
Days off	-0.003***	-0.001***	-0.001***
	(0.0005)	(0.0001)	(0.0003)
WorkOffice	-0.000	0.002***	-0.004***
	(0.0019)	(0.0006)	(0.0010)
ShareFemOffice	0.043	-0.013	-0.011
	(0.0568)	(0.0174)	(0.0329)
Constant	3.364***	0.393***	7.785***
	(0.0701)	(0.0238)	(0.0382)
Individual FE	✓	✓	✓
R-squared	0.016	0.019	0.034
N	4,236	4,516	3,605

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the individual level are in parenthesis. Column 1: number of observations 11,689 (3 years). Column 2: number of observations 32,065 (8 years). Column 3: number of observations 13,010 (8 years).

Table 5 presents the results related to promotions. Column 1 shows that neither *FemSu-*

pervisor nor its interaction with the independent variable *Female* is significantly related to the probability of getting a promotion. Increasing days of maternity leave and parental leave is negatively related to the probability of a promotion, however the estimated coefficients are close to zero. Lastly, being employed full-time is positively related to the probability of a promotion, while an increasing number of days off reduces the probability of getting promoted.

We have so far considered all the possible promotions, pooling together promotions across levels within the same employment contractual status – i.e., levels III, IV, V and VI for employees, and level business and senior for middle-managers – and across employment contractual status. However, there is a significant difference between a worker who gets a promotion from level IV employee to a level V employee, compared to one who receives a promotion from level VI employee to a middle-manager business. Indeed, this difference lies in the prestige of the career advancement, in the burden of responsibility, and in wages increase, which are higher when a subordinate is promoted from employee to middle-manager than when considering a career advancement within the same employment contractual status. To delve deeper into this difference, we estimate equation 1, limited to level VI employees. The promotion variable takes value 1 if at time t the level VI employee i is promoted to middle-manager and 0 otherwise. As before, we include individual and time fixed-effects, and all the individual-time varying controls. Column 2 of table 5 shows that the coefficient of female supervisors is negatively related to the probability of receiving a promotion from level VI employee to middle-manager. Since the coefficient of $FemSupervisor$ is negative and significant, while that of the interaction term, $FemSupervisor \times Female$, is not, we interpret this result as women supervisors being stricter in awarding a promotion to higher position to both male and female subordinates. Starting from 2015, in each year the probability of receiving a promotion to higher positions is significantly higher than the reference year (2014). Moreover, being older than 55 years is negatively and significantly related to the probability of being promoted from employee to middle-manager. Interestingly, a higher percentage of women in the office has a significant and positive correlation with the likelihood of being promoted to a middle-managerial position.

Table 5: The effect of the gender composition of supervisor-subordinate dyad on promotions.

	promotion	promotion (level VI → middle-manager)
	(1)	(2)
FemSupervisor	0.008	-0.010*
	(0.0078)	(0.0061)
FemSupervisor × Female	-0.007	0.011
	(0.0104)	(0.0080)
Reference year:	*2014*	*2014*
2015	0.009*	0.015***
	(0.0053)	(0.0035)
2016	0.018***	0.020***
	(0.0054)	(0.0038)
2017	0.005	0.016***
	(0.0053)	(0.0031)
2018	-0.007	0.024***
	(0.0051)	(0.0038)
2019	-0.011**	0.028***
	(0.0052)	(0.0039)
2020	-0.029***	0.029***
	(0.0049)	(0.0037)
2021	-0.026***	0.037***
	(0.0058)	(0.0043)
Maternity leave	-0.000***	-0.000
	(0.0001)	(0.0001)
Parental leave	-0.001***	-0.000
	(0.0001)	(0.0001)
Reference: Age dummy 1 (≤ 45)		
Age dummy 2 (≥ 46 and ≤ 55)	0.004	-0.005
	(0.0053)	(0.0035)
Age dummy 3 (≥ 56)	0.017**	-0.022***
	(0.0074)	(0.0049)
Full-time	0.045***	0.003
	(0.0090)	(0.0033)
Days off	-0.000	-0.000
	(0.0001)	(0.0000)
WorkOffice	0.000	0.000
	(0.0003)	(0.0002)
ShareFemOffice	-0.006	0.018**
	(0.0086)	(0.0071)
Constant	0.016	-0.012**
	(0.0105)	(0.0059)
Individual FE	✓	✓
R-squared	0.006	0.012
N	4,574	2,032

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the individual level are in parenthesis. Column 1: number of observations 32,276 (8 years). Column 2: number of observations 12,305 (8 years).

Note that specifications 1-3 of table 4 and 1-2 of table 5 are computed using standard errors clustered at the individual level. In Appendix B.2 table 10 we estimate the same specification model adding a layer of cluster at the supervisor level to account for repeated information among subordinates exposed to the same supervisor. We obtain similar results, except when running the regression on the probability of being promoted from level VI employees to middle-manager. Indeed, when using the double-clustering, we observe that the coefficient of *FemSupervisor* is no more significant (see column 5 of table 10). However, since the coefficient and the standard error of *FemSupervisor* in column 5 of table 10 are not different from those in column 2 of table 5, this is due to the additional layer of cluster that leads the estimated model to lose power.

Summarising our results, while female supervisors are tighter than male supervisors in granting one-off bonuses to both male and female subordinates, they give similar amount when awarding them. The probability of being promoted is affected by the supervisor's gender only when restricting the analysis to promotions from level VI employees to middle-managers. These findings raise the following questions: does the fact that women supervisors are less likely than their male counterparts to grant bonuses and award promotions to middle-manager positions affect subordinates' productivity? In general, do our workers' outcome variables, which are determined by supervisors, affect their productivity? To address these, we consider as a measure of productivity the total number of days off taken by a worker i in time $t + 1$ (*Days off t+1*). Then, we estimate a set of regressions, with each of them including one of our workers' outcome variables as the regressor of interest. In addition to the gender of the supervisor, we include worker and time fixed effects, as well as the control variables considered in our main specification model 1, with the exception of the regressor *Days off*, due to potential endogeneity issues.

Tables 11 and 12 in Appendix B.3 report the estimation results, respectively, for the analysis restricted to female workers and for the analysis considering male workers only. In almost all specifications, we find no correlation between our workers' outcome variables and the total number of days off, except for when the outcome variable is the probability of receiving a bonus and we restrict the analysis to female workers only (see column 2 of table 11). Indeed, for this latter specification, we observe that receiving a bonus at time t for a female worker is positively correlated with the number of days off at time $t + 1$. Therefore, if a female worker receives a bonus, she will take more days off the following year. However, the coefficient of the variable *Bonus y/n* is significant at the 10% level, with the sample being drastically restricted. We conclude that, whether we consider female workers only or male workers only, there is no clear evidence of an effect of our workers' outcome variables on the total number of days off in year $t + 1$. Specifically, there does not appear to be an impact on worker's productivity from being promoted to middle-manager or from being awarded a bonus. Thus, the fact that women

supervisors are stricter regarding promotions to middle-manager and bonuses compared to male supervisors does not negatively impact worker productivity. On the contrary, it could be assumed that the "conservative" behavior of female supervisors has a positive effect on the company as a whole since the lower expenditure on bonuses and promotions leads to savings, without affecting the worker's productivity[21].

6.3   Intra-firm hierarchy analyses

In the following we investigate whether the gender of the supervisor's supervisor is related to the impact of the supervisor-subordinate dyad on workers' outcomes[22]. Specifically, we add to our main specification model 1 the triple interaction *FemSupervisor* × *Female* × *FemSupOfSup*, where *FemSupOfSup* is a dummy variable that takes value 1 if the supervisor of the supervisor is a woman and 0 otherwise.

In table 6 we present our estimation results. The performance evaluation of subordinates (column 1) is not related to the gender of the supervisor of the supervisor. Indeed, neither *FemSupOfSup* nor the triple interaction *FemSupervisor* × *Female* × *FemSupOfSup* are significant. Instead, taking a maternity leave and the number of days off are negatively associated with the supervisors' evaluations to subordinates, as well as being older than 45 years. Column 2 indicates that the likelihood of receiving a one-off bonus is inversely related with having a female supervisor, no matter the gender of the subordinate. However, neither the gender of the supervisor of the supervisor nor its interaction with the supervisor-subordinate dyad are significantly related to the probability of receiving a one-off bonus. Furthermore, being older than 45 years, parental leave, days off, and a higher share of women in the unit office are negatively associated with the probability of receiving a one-off bonus. Instead, an increasing number of subordinates in the office positively correlates with the probability of receiving a bonus. Column 3 shows that the total amount of the bonus, conditional on receiving it, is not associated with the gender of the supervisor of the supervisor. Moreover, the amount of one-off bonuses is negatively linked with the number of days off, the size of the unit office, and with subordinates being older than 55 years. Columns 4 of table 6 considers as outcome variable the likelihood of being promoted and shows that this probability is not linked with the gender of the supervisor of the supervisor. Maternity and parental leave are negatively associated with the probability of being promoted. Conversely, being older than 55 years, full-time employment and the work office size are positively correlated with the likelihood of receiving a promotion.

---

[21] As observed, there is a positive and (weakly) significant correlation between the probability of receiving a bonus and the total number of days off at $t+1$ when considering female workers. Nonetheless, this result is not in contrast with our conclusion: the restrictive behavior of female supervisors is not harmful to the company nor it affects negatively the worker's productivity

[22] We thank Prof. Danilo Cavapozzi for suggesting these additional intra-firm hierarchy analyses.

In column 5 we observe that the likelihood of receiving a promotion from level VI employee to middle-manager is not correlated neither with the gender composition of the supervisor-subordinate dyad nor with the gender of the supervisor's supervisor. Therefore, differently from what we observe in column 2 of table 5, when including the gender of the supervisor's supervisor in our analysis, the variable *FemSupervisor* is no more significant. Notwithstanding, the coefficient and the standard error of the *FemSupervisor* are not different from those of the same variable in column 2 of table 5. Therefore, we believe that this result is no more significant because the number of individuals who received a promotion from level VI employee to middle-manager over the period 2014-2021 are few and when we include the gender of the supervisor's supervisor the estimated model loses power. Furthermore, in each year of the period under study the probability of being promoted from level VI employee to middle-manager is higher than in 2014. Similarly, a higher share of women in the office is positively related with the probability of being promoted to higher positions, while being older than 55 years is negatively associated with it.

The results of the intra-firm hierarchy analyses indicate that the gender of the supervisor's supervisor is not significantly associated with any of our outcome variables, further confirming our main findings.

Table 6: Intra-firm hierarchy analyses: the gender of the supervisor's supervisor

	performance	bonus y/n (no manager)	log bonus (no manager)	promotion	promotion (level VI → middle-manager)
	(1)	(2)	(3)	(4)	(5)
FemSupervisor	0.032	-0.046**	0.015	0.012	-0.010
	(0.0474)	(0.0207)	(0.0259)	(0.0088)	(0.0071)
Female × FemSupervisor	-0.060	0.007	-0.005	-0.002	0.007
	(0.0660)	(0.0262)	(0.0359)	(0.0121)	(0.0088)
FemSupOfSup	0.073	-0.038	-0.069	0.038	0.008
	(0.1284)	(0.0480)	(0.0742)	(0.0247)	(0.0181)
Female × FemSupOfSup	0.113	0.072	0.088	-0.049	-0.006
	(0.1839)	(0.0650)	(0.1193)	(0.0362)	(0.0184)
FemSupervisor × FemSupOfSup	0.006	-0.071	0.118	-0.041	0.004
	(0.1785)	(0.0988)	(0.1251)	(0.0387)	(0.0185)
Female × FemSupervisor × FemSupOfSup	-0.435	0.008	-0.155	0.026	-0.004
	(0.3370)	(0.1207)	(0.1662)	(0.0548)	(0.0193)
Reference year: Reference year:	2018	2014	2014	2014	2014
2015		0.005	0.052***	0.011*	0.012***
		(0.0115)	(0.0158)	(0.0061)	(0.0036)
2016		0.018	-0.071***	0.018***	0.017***
		(0.0121)	(0.0167)	(0.0063)	(0.0040)
2017		0.089***	-0.008	0.000	0.012***
		(0.0123)	(0.0177)	(0.0061)	(0.0033)
2018		0.071***	0.030*	-0.007	0.017***
		(0.0119)	(0.0176)	(0.0057)	(0.0038)
2019	0.017	0.103***	0.087***	-0.013**	0.020***
	(0.0118)	(0.0124)	(0.0180)	(0.0058)	(0.0036)
2020	0.050***	-0.039***	-0.021	-0.030***	0.024***
	(0.0131)	(0.0124)	(0.0194)	(0.0055)	(0.0038)
2021		0.040***	-0.013	-0.027***	0.034***
		(0.0143)	(0.0224)	(0.0065)	(0.0045)
Maternity leave	-0.006***	-0.000	-0.000	-0.000***	-0.000
	(0.0011)	(0.0002)	(0.0003)	(0.0001)	(0.0000)
Parental leave	-0.001	-0.003***	-0.000	-0.001***	-0.000
	(0.0009)	(0.0003)	(0.0005)	(0.0001)	(0.0000)
Reference: Age dummy 1 (≤ 45)					
Age dummy 2 (≥ 46 and ≤ 55)	-0.119***	-0.041***	0.024	0.001	-0.005
	(0.0373)	(0.0132)	(0.0191)	(0.0061)	(0.0034)
Age dummy 3 (≥ 56)	-0.153***	-0.058***	-0.094***	0.015*	-0.021***
	(0.0506)	(0.0198)	(0.0295)	(0.0084)	(0.0047)
Full-time	0.050	0.003	0.038	0.045***	0.004
	(0.0670)	(0.0246)	(0.0350)	(0.0100)	(0.0047)
Days off	-0.003***	-0.001***	-0.001***	-0.000	-0.000
	(0.0005)	(0.0002)	(0.0003)	(0.0001)	(0.0000)
WorkOffice	-0.001	0.002**	-0.004***	0.001*	0.000
	(0.0020)	(0.0007)	(0.0011)	(0.0003)	(0.0002)
ShareFemOffice	0.015	-0.034*	-0.023	0.006	0.020**
	(0.0612)	(0.0208)	(0.0371)	(0.0098)	(0.0080)
Constant	3.428***	0.443***	7.734***	0.006	-0.013*
	(0.0751)	(0.0284)	(0.0434)	(0.0117)	(0.0069)
Individual FE	✓	✓	✓	✓	✓
R-squared	0.016	0.021	0.036	0.007	0.010
N	3,864	4,166	3,158	4,200	1,875

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the individual level are in parenthesis. Column 1: number of observations 10,086 (3 years). Column 2: number of observations 25,798 (8 years). Column 3: number of observations 10,827 (8 years). Column 4: number of observations 25,899 (8 years). Column 5: number of observations 10,533 (8 years).

6.4 Possible mechanisms

To summarise, we observe that the gender composition of supervisor-subordinate dyads significantly affects the total amount of bonus and the probability of promotion from level VI employee to middle-manager. Even though both male and female supervisors evaluate similarly the performance of male and female subordinates, female supervisors grant one-off bonus with lower probability than male supervisors to both male and female subordinates. Furthermore, female supervisors significantly reduce the probability of a promotion from level VI employee to middle-managers of both male and female subordinates compared to male supervisors.

Our results reject both the hypothesis that female supervisors favor the career of other women with respect to men and the opposite "Queen bee" hypothesis.
A possible mechanism consistent with our results relates to the organizational management of the firm. Specifically, it might be possible that female supervisors are more often at the head of marginal areas and offices of company. If these areas and offices systematically receive less funding than others, female supervisors are able to grant lower amount of bonuses and promotions from level VI employees to middle-manager with respect to their male counterparts. However, the company's internal policy establishes that the overall budget is divided up into offices proportionally to the number of workers. In other words, the funds are allocated ex ante to the different offices in proportion to the number of workers, so it can be excluded that women supervisors, possibly at the head of less important areas or offices, receive less resources to grant one-off bonuses and promotions.
Alternatively, the paradigm "think manager-think male", first introduced by Schein (1973), might explain why female supervisors are more severe than male supervisors in awarding one-off bonuses and promotions from employee to middle-managers. Empirical works in psychology, sociology, organization, business and management, have indeed tested and built up on the hypothesis that a leader or a supervisor should show attitude and characteristics mainly associated with a masculine stereotype, such as character strengths and virtues (Mohan et al., 2022) (see Brenner et al., 1989; Schein et al., 1996; Koenig et al., 2011; Heilman, 2012; Gupta et al., 2014; Junker and Van Dick, 2014; Gipson et al., 2017; Laguía et al., 2019; Roebuck et al., 2019). However, we observe that while strictness might be considered a masculine characteristic desirable for leadership, so that, within the think manager - think male approach, female supervisors should conform to it, we do not find evidence of gender-biased judgments or promotions.

Finally, a potential mechanism consistent with our results relies on women in powerful position being subject to a more severe judgement and scrutiny than men. Indeed, empirical and experimental works have reported that women in leadership position are evaluated stricter than men in several fields such as politics, academia, education, or-

ganization and business ([Beaman et al., 2009](); [Boring, 2017](); [Hengel, 2022](); [Abel, 2022](); [Egan et al., 2022]())[23]. Because of this, female supervisors might grant less promotions and bonuses to show a more efficient and meticulous behaviours.

7   Conclusions

Our paper investigates how the gender composition of supervisor-subordinate dyads relates to the assessment of performance, one-off bonuses and promotions.

We use a fine-grained longitudinal personnel data on workers from an Italian insurance company over the period 2014-2021 to match each subordinate to their direct supervisor and study how the gender composition of the dyad is related to outcomes of workers.

We find that the likelihood that female supervisors grant one-bonuses to both male and female subordinates is lower with respect to male supervisors. Male and female employers have a lower probability to be promoted to a middle-manager position when their supervisor is a woman with respect to a man. This difference does not reflect the performance assessments given by supervisors to subordinates, as male and female supervisors evaluate similarly male and female subordinates.

Our findings do not support the hypothesis that women leaders favor the career of other women, nor the opposite hypothesis that women tend to obstacle their female subordinates. Our results are consistent with the hypothesis that female supervisors are less likely than males to grant bonuses and promotions because expecting (correctly or not) to be subject to more severe scrutiny than men and show a conscientious behaviour as a consequence. Although our data do not allow to exclude that other possible mechanisms might also play a role in our results, such as females' willingness to conform to a masculine gender stereotype associated with a leadership position (i.e. if authority is associated with strictness as well), our results deliver new evidence on the style of female leadership.

Given that people management is a crucial aspect of managerial practices impacting performance ([Scur et al., 2021]()), our results are not only essential for addressing the under-representation of women but also for broader considerations in organizational effectiveness.

---

[23] For a more complete review see also [Chakraborty and Serra (2023)]()

Bibliography

Abel, M. (2022). Do workers discriminate against female bosses? *Journal of Human Resources*, pages 1120–11318R3.

Abendroth, A.-K., Melzer, S., Kalev, A., and Tomaskovic-Devey, D. (2017). Women at work: Women's access to power and the gender earnings gap. *ILR Review*, 70(1):190–222.

Abraham, M. (2017). Pay formalization revisited: Considering the effects of manager gender and discretion on closing the gender wage gap. *Academy of Management Journal*, 60(1):29–54.

Adams, R. B. and Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management science*, 58(2):219–235.

Addison, J. T., Ozturk, O. D., and Wang, S. (2014). The role of gender in promotion and pay over a career. *Journal of Human Capital*, 8(3):280–317.

Arrow, K. J. (1973). The theory of discrimination, s. 3-33 in: Orley ashenfelter und albert rees (hg.): Discrimination in labor markets. *The Theory of Discrimination, S*, pages 3–33.

Beaman, L., Chattopadhyay, R., Duflo, E., Pande, R., and Topalova, P. (2009). Powerful women: does exposure reduce bias? *The Quarterly journal of economics*, 124(4):1497–1540.

Bednar, S. and Gicheva, D. (2014). Are female supervisors more female-friendly? *American Economic Review*, 104(5):370–375.

Bertrand, M., Black, S. E., Jensen, S., and Lleras-Muney, A. (2019). Breaking the glass ceiling? the effect of board quotas on female labour market outcomes in norway. *The Review of Economic Studies*, 86(1):191–239.

Blau, F. D. and Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of economic literature*, 55(3):789–865.

Bohren, J. A., Haggag, K., Imas, A., and Pope, D. G. (2023). Inaccurate statistical discrimination: An identification problem. *Review of Economics and Statistics*, pages 1–45.

Boring, A. (2017). Gender biases in student evaluations of teaching. *Journal of public economics*, 145:27–41.

Bowles, H. R., Babcock, L., and Lai, L. (2007). Social incentives for gender differences in the propensity to initiate negotiations: Sometimes it does hurt to ask. *Organizational Behavior and human decision Processes*, 103(1):84–103.

Bowles, H. R., Thomason, B., and Macias-Alonso, I. (2022). When gender matters in organizational negotiations. *Annual Review of Organizational Psychology and Organizational Behavior*, 9(1):199–223.

Brenner, O., Tomkiewicz, J., and Schein, V. E. (1989). The relationship between sex role stereotypes and requisite management characteristics revisited. *Academy of management journal*, 32(3):662–669.

Cardoso, A. R. and Winter-Ebmer, R. (2010). Female-led firms and gender wage policies. *ILR Review*, 64(1):143–163.

Carter, M. E., Franco, F., and Gine, M. (2017). Executive gender pay gaps: The roles of female risk aversion and board representation. *Contemporary Accounting Research*, 34(2):1232–1264.

Chakraborty, P. and Serra, D. (2023). Gender and leadership in organisations: The threat of backlash. *The Economic Journal*, page uead110.

Clark Blickenstaff, J. (2005). Women and science careers: leaky pipeline or gender filter? *Gender and education*, 17(4):369–386.

Cohen, P. N. and Huffman, M. L. (2007). Working for the woman? female managers and the gender wage gap. *American sociological review*, 72(5):681–704.

Conde-Ruiz, J. I., Ganuza, J.-J., and Profeta, P. (2017). Statistical discrimination and the efficiency of quotas. *Documento de Trabajo*, page 04.

Croson, R. and Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic literature*, 47(2):448–474.

Egan, M., Matvos, G., and Seru, A. (2022). When harry fired sally: The double standard in punishing misconduct. *Journal of Political Economy*, 130(5):1184–1248.

Fernandez-Mateo, I. and Fernandez, R. M. (2016). Bending the pipeline? executive search and gender inequality in hiring for top management jobs. *Management Science*, 62(12):3636–3655.

Ferrari, G., Ferraro, V., Profeta, P., and Pronzato, C. (2022). Do board gender quotas matter? selection, performance, and stock market effects. *Management Science*, 68(8):5618–5643.

Flabbi, L., Macis, M., Moro, A., and Schivardi, F. (2019). Do female executives make a difference? the impact of female leadership on gender gaps and firm performance. *The Economic Journal*, 129(622):2390–2423.

Flory, J. A., Leibbrandt, A., and List, J. A. (2015). Do competitive workplaces deter female workers? a large-scale natural field experiment on job entry decisions. *The Review of Economic Studies*, 82(1):122–155.

Fryer Jr, R. G. (2007). Belief flipping in a dynamic model of statistical discrimination. *Journal of Public Economics*, 91(5-6):1151–1166.

Gagliarducci, S. and Paserman, M. D. (2015). Gender interactions in firm hierarchies: Evidence from linked employer-employee data. *Research in Labor Economics*, 41:343–375.

Gary S., B. (1971). *The Economics of Discrimination*. Chicago and London: University of Chicago Press, 1957., second edition.

Gipson, A. N., Pfaff, D. L., Mendelsohn, D. B., Catenacci, L. T., and Burke, W. W. (2017). Women and leadership: Selection, development, leadership style, and performance. *The Journal of Applied Behavioral Science*, 53(1):32–65.

Gneezy, U., Niederle, M., and Rustichini, A. (2003). Performance in competitive environments: Gender differences. *The quarterly journal of economics*, 118(3):1049–1074.

Gupta, V. K., Javadian, G., and Jalili, N. (2014). Role of entrepreneur gender and management style in influencing perceptions and behaviors of new recruits: Evidence from the islamic republic of iran. *Journal of International Entrepreneurship*, 12:85–109.

Haegele, I. (2024). The broken rung: Gender and the leadership gap. *arXiv preprint arXiv:2404.07750*.

Heilman, M. E. (2012). Gender stereotypes and workplace bias. *Research in organizational Behavior*, 32:113–135.

Hengel, E. (2022). Publishing while female: Are women held to higher standards? evidence from peer review. *The Economic Journal*, 132(648):2951–2991.

Junker, N. M. and Van Dick, R. (2014). Implicit theories in organizational settings: A systematic review and research agenda of implicit leadership and followership theories. *The Leadership Quarterly*, 25(6):1154–1173.

Kamas, L. and Preston, A. (2012). The importance of being confident; gender, career choice, and willingness to compete. *Journal of Economic Behavior & Organization*, 83(1):82–97.

Koenig, A. M., Eagly, A. H., Mitchell, A. A., and Ristikari, T. (2011). Are leader stereotypes masculine? a meta-analysis of three research paradigms. *Psychological bulletin*, 137(4):616.

Kray, L. J. and Thompson, L. (2004). Gender stereotypes and negotiation performance: An examination of theory and research. *Research in organizational behavior*, 26:103–182.

Kunze, A. and Miller, A. R. (2017). Women helping women? evidence from private sector data on workplace hierarchies. *Review of Economics and Statistics*, 99(5):769–775.

Kurtulus, F. A. and Tomaskovic-Devey, D. (2012). Do female top managers help women to advance? a panel study using eeo-1 records. *The Annals of the American Academy of Political and Social Science*, 639(1):173–197.

Laguía, A., García-Ael, C., Wach, D., and Moriano, J. A. (2019). "think entrepreneur-think male": a task and relationship scale to measure gender stereotypes in entrepreneurship. *International Entrepreneurship and Management Journal*, 15:749–772.

Lucifora, C. and Vigani, D. (2022). What if your boss is a woman? evidence on gender discrimination at the workplace. *Review of Economics of the Household*, 20(2):389–417.

Matsa, D. A. and Miller, A. R. (2011). Chipping away at the glass ceiling: Gender spillovers in corporate leadership. *American Economic Review*, 101(3):635–639.

Mohan, G., Seijts, G., and Miller, R. (2022). Does leader character have a gender? *Journal of Business Ethics*, pages 1–18.

Niederle, M. and Vesterlund, L. (2007). Do women shy away from competition? do men compete too much? *The quarterly journal of economics*, 122(3):1067–1101.

Olson, C. A. and Becker, B. E. (1983). Sex discrimination in the promotion process. *ILR Review*, 36(4):624–641.

Phelps, E. S. (1972). The statistical theory of racism and sexism. *The american economic review*, 62(4):659–661.

Ranehill, E. and Weber, R. A. (2022). Gender preference gaps and voting for redistribution. *Experimental Economics*, 25(3):845–875.

Roebuck, A., Thomas, A., and Biermeier-Hanson, B. (2019). Organizational culture mitigates lower ratings of female supervisors. *Journal of Leadership & Organizational Studies*, 26(4):454–464.

Santero-Sánchez, R. and Núñez, B. C. (2022). Pursuing equal pay for equal work: Gender diversity in management positions and the gender pay gap throughout the wage distribution. *BRQ Business Research Quarterly*, page 23409444221125239.

Schein, V. E. (1973). The relationship between sex role stereotypes and requisite management characteristics. *Journal of applied psychology*, 57(2):95.

Schein, V. E. (2001). A global look at psychological barriers to women's progress in management. *Journal of Social issues*, 57(4):675–688.

Schein, V. E., Mueller, R., Lituchy, T., and Liu, J. (1996). Think manager—think male: A global phenomenon? *Journal of organizational behavior*, 17(1):33–41.

Scur, D., Sadun, R., Van Reenen, J., Lemos, R., and Bloom, N. (2021). The world management survey at 18: lessons and the way forward. *Oxford Review of Economic Policy*, 37(2):231–258.

Shin, T. (2012). The gender gap in executive compensation: The role of female directors and chief executive officers. *The ANNALS of the American Academy of Political and Social Science*, 639(1):258–278.

Smith, N. and Parrotta, P. (2018). Why so few women on boards of directors? empirical evidence from danish companies in 1998–2010. *Journal of Business Ethics*, 147:445–467.

Smith, N., Smith, V., and Verner, M. (2013). Why are so few females promoted into ceo and vice president positions? danish empirical evidence, 1997–2007. *Ilr Review*, 66(2):380–408.

Staines, G., Tavris, C., and Jayaratne, T. E. (1974). The queen bee syndrome. *Psychology Today*, 7(8):63–66.

Theodoropoulos, N., Forth, J., and Bryson, A. (2022). Are women doing it for themselves? female managers and the gender wage gap. *Oxford Bulletin of Economics and Statistics*, 84(6):1329–1355.

Appendix

A. Summary statistics

Table 7: Summary statistics: percentage of women within each level of employment contractual status of employee and middle-manager over the period 2014-2021.

		2014	2015	2016	2017	2018	2019	2020	2021
Percentage of women employees									
	level III	46.2	40.6	44.0	38.1	33.3	35.3	31.3	30.8
	level IV	64.0	64.5	63.7	62.5	62.5	62.3	65.4	63.9
	level V	58.7	59.2	60.5	61.1	61.2	62.2	60.3	60.5
	level VI	40.5	40.4	41.0	41.9	42.3	42.6	43.5	44.6
Percentage of women middle-managers									
	business	23.4	23.8	24.0	24.4	24.7	25.7	26.0	26.5
	senior	20.7	22.7	22.8	22.0	24.8	22.4	22.4	23.0

Figure 5: An example of the internal hierarchy and structure of the insurance company
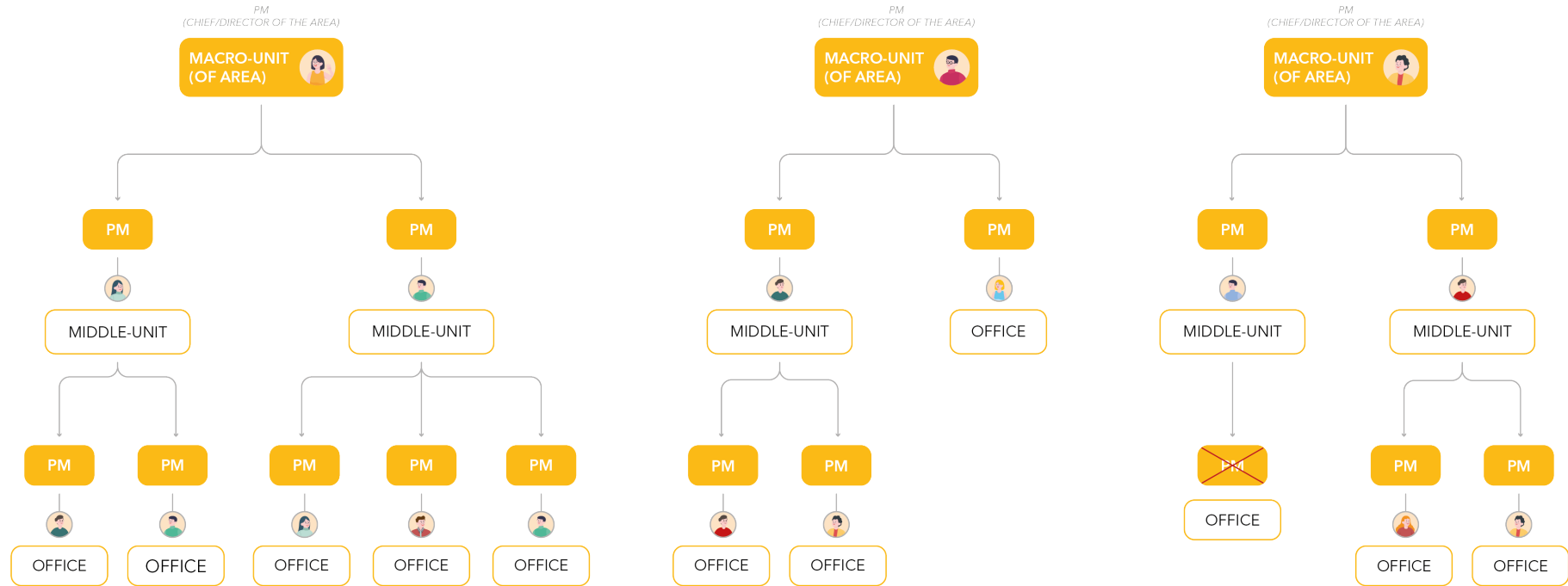
PM= People Manager
% female chief macro area=33,3
% female people manager middle unit: 28,49
% female people manager office=22,25

Table 8: Summary statistics of time-varying characteristics of workers and office unit over the period 2014-2021

Year		2014		2015		2016		2017		2018		2019		2020		2021	
		mean	(sd)	mean	sd	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)	mean	(sd)
Age																	
	female	42.6	(6.81)	43.6	(6.87)	44.5	(6.92)	45.4	(6.98)	46.1	(7.29)	46.6	(7.79)	46.9	(8.29)	47.7	(8.49)
	male	44.8	(6.97)	45.7	(7.04)	46.6	(7.14)	47.3	(7.37)	48.1	(7.58)	48.7	(7.91)	49.2	(8.40)	50.0	(8.50)
Maternity leave																	
	female	6.6	(27.06)	6.3	(26.57)	6.0	(26.69)	4.3	(21.94)	4.1	(21.96)	3.6	(18.68)	2.2	(14.87)	1.4	(11.99)
	male	0.0	(0.00)	0.0	(0.00)	0.0	(0.00)	0.0	(0.00)	0.0	(0.00)	0.0	(0.00)	0.0	(0.00)	0.0	(0.00)
Parental leave																	
	female	4.4	(17.87)	4.6	(18.13)	4.7	(18.20)	3.9	(15.24)	3.3	(14.19)	3.0	(14.28)	2.6	(12.26)	0.5	(5.05)
	male	0.1	(1.72)	0.1	(0.81)	0.1	(1.31)	0.2	(2.08)	0.1	(2.08)	0.1	(1.10)	0.1	(1.49)	0.0	(0.44)
Full-time																	
	female	0.8	(0.43)	0.7	(0.43)	0.7	(0.44)	0.7	(0.44)	0.7	(0.44)	0.7	(0.43)	0.8	(0.42)	0.8	(0.41)
	male	1.0	(0.08)	1.0	(0.08)	1.0	(0.09)	1.0	(0.09)	1.0	(0.09)	1.0	(0.10)	1.0	(0.09)	1.0	(0.09)
Days off																	
	female	47.2	(22.40)	50.4	(23.69)	45.5	(19.89)	46.4	(23.21)	48.1	(25.33)	49.8	(26.49)	43.4	(24.66)	10.3	(12.38)
	male	38.1	(18.56)	40.9	(18.35)	38.4	(15.00)	37.4	(18.93)	39.1	(20.75)	41.0	(19.59)	39.2	(23.79)	8.4	(13.62)
WorkOffice																	
	female	8.1	(6.00)	8.6	(6.34)	9.1	(5.97)	9.2	(6.28)	9.0	(6.44)	9.5	(6.66)	9.3	(5.83)	9.4	(5.99)
	male	7.6	(6.55)	8.0	(6.97)	8.2	(6.32)	8.0	(6.25)	7.9	(5.99)	8.3	(6.03)	8.6	(5.99)	8.7	(6.07)
ShareFemOffice																	
	female	0.7	(0.23)	0.7	(0.23)	0.6	(0.22)	0.6	(0.22)	0.6	(0.22)	0.6	(0.22)	0.6	(0.22)	0.6	(0.21)
	male	0.3	(0.26)	0.3	(0.26)	0.3	(0.27)	0.3	(0.26)	0.4	(0.26)	0.4	(0.26)	0.4	(0.25)	0.4	(0.25)

Note: Standard deviations in parenthesis. Maternity leave, parental leave, days off are right censored because we do not have information after June 2021.

B. Robustness checks

B.1 Estimation results with year dummies

In the following, we report the estimation results when including year dummies interacted with subordinate's gender (table 9). In particular, we consider the same specification model as the main one 1 and the outcome variables of table 4 and table 5 - i.e., performance evaluation (column 1), probability of receiving a bonus (column 2), amount of bonus (column 3), probability of promotion (column 4), and probability of promotion from employee to middle-manager (column 5).

Columns 1-5 of table 9 presents results that are similar to that of columns 1-3 of table 4 and that of columns 1-2 of table 5.

Table 9: Year dummies interacted with the subordinate's gender

	performance	bonus y/n (no manager)	log bonus (no manager)	promotion	promotion (level VI → middle-manager)
	(1)	(2)	(3)	(4)	(5)
FemSupervisor	0.018	-0.042**	0.012	0.008	-0.010*
	(0.0418)	(0.0180)	(0.0233)	(0.0079)	(0.0062)
FemSupervisor × Female	-0.052	0.012	-0.014	-0.008	0.012
	(0.0584)	(0.0228)	(0.0322)	(0.0105)	(0.0082)
Reference year:	2018	2014	2014	2014	2014
2015		-0.023*	0.041**	0.019***	0.014***
		(0.0133)	(0.0186)	(0.0071)	(0.0044)
2016		-0.005	-0.078***	0.025***	0.022***
		(0.0138)	(0.0197)	(0.0072)	(0.0051)
2017		0.047***	-0.058***	0.005	0.017***
		(0.0141)	(0.0210)	(0.0067)	(0.0042)
2018		0.044***	-0.010	-0.003	0.024***
		(0.0140)	(0.0213)	(0.0065)	(0.0048)
2019	0.017	0.074***	0.024	-0.006	0.028***
	(0.0140)	(0.0145)	(0.0219)	(0.0066)	(0.0049)
2020	0.047***	-0.066***	-0.065***	-0.025***	0.031***
	(0.0158)	(0.0147)	(0.0238)	(0.0060)	(0.0047)
2021		0.024	-0.089***	-0.027***	0.039***
		(0.0158)	(0.0250)	(0.0066)	(0.0054)
2015×Female		0.055***	0.068**	-0.020*	0.003
		(0.0194)	(0.0284)	(0.0105)	(0.0073)
2016× Female		0.065***	0.072**	-0.015	-0.003
		(0.0200)	(0.0295)	(0.0107)	(0.0075)
2017× Female		0.078***	0.114***	0.000	-0.004
		(0.0199)	(0.0309)	(0.0102)	(0.0060)
2018× Female		0.076***	0.107***	-0.009	-0.000
		(0.0198)	(0.0308)	(0.0096)	(0.0071)
2019× Female	0.022	0.057***	0.114***	-0.010	-0.002
	(0.0211)	(0.0200)	(0.0311)	(0.0094)	(0.0067)
2020× Female	0.040*	0.063***	0.126***	-0.008	-0.005
	(0.0229)	(0.0198)	(0.0342)	(0.0087)	(0.0061)
2021× Female	0.022	0.173***	0.002	-0.006	
	(0.0200)	(0.0316)	(0.0092)	(0.0075)	
Maternity leave	-0.005***	-0.000	-0.000	-0.000***	-0.000
	(0.0009)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Parental leave	-0.002*	-0.003***	-0.000	-0.001***	-0.000
	(0.0009)	(0.0002)	(0.0005)	(0.0001)	(0.0001)
Reference: Age dummy 1 (≤ 45)					
Age dummy 2 (≥ 46 and ≤ 55)	-0.108***	-0.036***	0.024	0.004	-0.005
	(0.0337)	(0.0116)	(0.0174)	(0.0053)	(0.0035)
Age dummy 3 (≥ 56)	-0.127***	-0.063***	-0.110***	0.017**	-0.022***
	(0.0468)	(0.0174)	(0.0276)	(0.0074)	(0.0049)
Full-time	0.076	0.033	0.034	0.044***	0.003
	(0.0632)	(0.0209)	(0.0299)	(0.0091)	(0.0031)
Days off	-0.003***	-0.001***	-0.001***	-0.000	-0.000
	(0.0005)	(0.0001)	(0.0003)	(0.0001)	(0.0000)
WorkOffice	-0.000	0.002***	-0.004***	0.000	0.000
	(0.0019)	(0.0006)	(0.0010)	(0.0003)	(0.0002)
ShareFemOffice	0.047	-0.013	0.001	-0.005	0.017**
	(0.0569)	(0.0173)	(0.0326)	(0.0086)	(0.0072)
Constant	3.368***	0.390***	7.773***	0.015	-0.012**
	(0.0701)	(0.0238)	(0.0377)	(0.0105)	(0.0058)
Individual FE	✓	✓	✓	✓	✓
R-squared	0.017	0.020	0.038	0.006	0.011
N	4,236	4,516	3,605	4,574	2,032

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the individual level are in parenthesis.

B.2 Estimation results with double-clustering

Table 10: Double Clustering at the subordinate and supervisor level

	performance	bonus y/n (no manager)	log bonus (no manager)	promotion	promotion (level VI → middle-manager)
	(1)	(2)	(3)	(4)	(5)
FemSupervisor	0.015	-0.038*	0.009	0.008	-0.010
	(0.0403)	(0.0204)	(0.0301)	(0.0073)	(0.0063)
FemSupervisor × Female	-0.045	0.005	-0.006	-0.007	0.011
	(0.0553)	(0.0223)	(0.0363)	(0.0101)	(0.0079)
Reference year: Reference year:	*2018*	*2014*	*2014*	*2014*	*2014*
2015		0.003	0.066***	0.009*	0.015***
		(0.0156)	(0.0235)	(0.0053)	(0.0037)
2016		0.026*	-0.051*	0.018***	0.020***
		(0.0158)	(0.0269)	(0.0050)	(0.0043)
2017		0.084***	-0.014	0.005	0.016***
		(0.0170)	(0.0365)	(0.0056)	(0.0038)
2018		0.080***	0.032	-0.007	0.024***
		(0.0163)	(0.0343)	(0.0048)	(0.0047)
2019	0.027	0.101***	0.070**	-0.011**	0.028***
	(0.0169)	(0.0184)	(0.0327)	(0.0054)	(0.0047)
2020	0.065***	-0.036**	-0.014	-0.029***	0.029***
	(0.0206)	(0.0165)	(0.0419)	(0.0048)	(0.0049)
2021		0.036*	-0.022	-0.026***	0.037***
		(0.0202)	(0.0360)	(0.0056)	(0.0071)
Maternity leave	-0.005***	-0.000	-0.000	-0.000***	-0.000
	(0.0009)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Parental leave	-0.002*	-0.003***	-0.000	-0.001***	-0.000
	(0.0009)	(0.0002)	(0.0005)	(0.0001)	(0.0001)
Reference: Age dummy 1 (≤ 45)					
Age dummy 2 (≥ 46 and ≤ 55)	-0.105***	-0.036***	0.026	0.004	-0.005*
	(0.0331)	(0.0119)	(0.0184)	(0.0058)	(0.0031)
Age dummy 3 (≥ 56)	-0.126***	-0.065***	-0.117***	0.017**	-0.022***
	(0.0452)	(0.0161)	(0.0284)	(0.0073)	(0.0049)
Full-time	0.086	0.028	0.036	0.045***	0.003
	(0.0658)	(0.0217)	(0.0321)	(0.0091)	(0.0032)
Days off	-0.003***	-0.001***	-0.001***	-0.000	-0.000
	(0.0006)	(0.0001)	(0.0003)	(0.0001)	(0.0000)
WorkOffice	-0.000	0.002*	-0.004**	0.000	0.000
	(0.0024)	(0.0010)	(0.0018)	(0.0003)	(0.0002)
ShareFemOffice	0.043	-0.013	-0.011	-0.006	0.018***
	(0.0566)	(0.0212)	(0.0443)	(0.0086)	(0.0067)
Constant	3.362***	0.393***	7.781***	0.015	-0.016**
	(0.0743)	(0.0274)	(0.0478)	(0.0108)	(0.0071)
Individual FE	✓	✓	✓	✓	✓
R-squared	0.579	0.323	0.690	0.031	0.199
N of workers' clusters	3,981	4,400	2,826	4,454	1,888
N of supervisors' clusters	572	769	664	770	662

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors are clustered both at the individual level and at the supervisor level and reported in parenthesis.

B.3 The effect of workers' outcome variables on their productivity

Table 11: The effect of workers' outcome variables on the number of days off at $t+1$ of female workers

Dependent variable: Days off t+1	(1)	(2)	(3)	(4)	(5)
Performance	-0.648				
	(0.5767)				
Bonus y/n		0.557*			
		(0.3209)			
Log bonus			0.669		
			(0.9736)		
Promotion				0.021	
				(0.5323)	
Promotion to middle-manager					-0.166
					(1.6048)
FemSupervisor	-0.685	-1.066	-0.405	-1.094*	-1.331
	(1.0841)	(0.6565)	(1.0830)	(0.6579)	(1.1382)
Reference year: Reference year:	2018	2014	2014	2014	2014
2015		-4.702***	-2.492**	-4.685***	-4.636***
		(0.4982)	(0.9754)	(0.4978)	(0.8422)
2016		-3.544***	-3.932***	-3.507***	-3.612***
		(0.4982)	(0.9608)	(0.4970)	(0.8742)
2017		-1.242**	-0.489	-1.170**	-1.748*
		(0.5506)	(0.9966)	(0.5485)	(0.9443)
2018		1.398**	1.740*	1.450**	1.031
		(0.6045)	(1.0342)	(0.6053)	(0.9871)
2019	-6.374***	-4.774***	-2.289**	-4.697***	-6.107***
	(0.4847)	(0.6432)	(1.0859)	(0.6413)	(0.9359)
2020	-39.397***	-38.613***	-35.717***	-38.601***	-38.809***
	(0.5248)	(0.5832)	(1.0341)	(0.5832)	(0.9405)
Maternity leave	0.094***	0.063***	0.076***	0.063***	0.050***
	(0.0230)	(0.0099)	(0.0186)	(0.0099)	(0.0173)
Parental leave	0.066**	0.036**	-0.001	0.035**	0.060***
	(0.0255)	(0.0141)	(0.0315)	(0.0142)	(0.0190)
Reference: Age dummy 1 (≤ 45)					
Age dummy 2 (≥ 46 and ≤ 55)	-0.190	-1.899**	-1.309	-1.921**	-1.921**
	(1.4166)	(0.8115)	(1.1891)	(0.8089)	(0.9618)
Age dummy 3 (≥ 56)	1.421	-1.988	-1.003	-1.994	-2.028
	(2.2136)	(1.4164)	(1.9866)	(1.4144)	(1.8739)
Full-time	0.078	1.003	0.332	1.024	0.677
	(1.7593)	(1.1105)	(1.8376)	(1.1114)	(1.5167)
WorkOffice	-0.116*	0.012	0.100	0.014	-0.070
	(0.0659)	(0.0482)	(0.0887)	(0.0483)	(0.0720)
ShareFemOffice	4.070	0.310	2.870	0.311	0.600
	(2.5115)	(1.2644)	(2.1142)	(1.2637)	(1.9391)
Constant	50.203***	49.704***	39.077***	49.822***	49.885***
	(3.2163)	(1.3867)	(7.9875)	(1.3779)	(1.9268)
Individual FE	✓	✓	✓	✓	✓
R-squared	0.728	0.454	0.424	0.454	0.557
N	1,962	2,075	1,616	2,084	833

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the individual level are in parenthesis.

Table 12: The effect of workers' outcome variables on the number of days off at $t+1$ of male workers

Dependent variable:					
Days off t+1	(1)	(2)	(3)	(4)	(5)
Performance	-0.267				
	(0.4899)				
Bonus y/n		0.283			
		(0.2519)			
Log bonus			-0.136		
			(0.4794)		
Promotion				-0.349	
				(0.4106)	
Promotion to middle-manager					-0.742
					(1.1545)
FemSupervisor	-0.354	-1.820***	-1.443	-1.839***	-1.710
	(1.0745)	(0.6784)	(1.0616)	(0.6792)	(1.2455)
Reference year: Reference year:	*2018*	*2014*	*2014*	*2014*	*2014*
2015		-2.502***	-2.536***	-2.466***	-2.417***
		(0.3380)	(0.5786)	(0.3344)	(0.5556)
2016		-3.266***	-3.250***	-3.218***	-3.308***
		(0.3733)	(0.5588)	(0.3710)	(0.5702)
2017		-1.543***	-1.128*	-1.489***	-2.102***
		(0.4443)	(0.6411)	(0.4401)	(0.7131)
2018	0.639	0.911	0.635	0.327	
		(0.4512)	(0.6185)	(0.4474)	(0.7177)
2019	-2.769***	-1.325**	-0.696	-1.236**	-2.412***
	(0.4173)	(0.6047)	(0.7154)	(0.5996)	(0.8556)
2020	-34.257***	-33.573***	-31.634***	-33.547***	-34.714***
	(0.4237)	(0.5295)	(0.7206)	(0.5273)	(0.7582)
Maternity leave				*	
				*	
Parental leave	0.267***	0.083*	0.096*	0.082*	0.073
	(0.0789)	(0.0425)	(0.0559)	(0.0423)	(0.0639)
Reference: Age dummy 1 (≤ 45)					
Age dummy 2 ($\geq 46 and \leq 55$)	-0.394	-0.878	-1.799**	-0.910	0.280
	(1.5317)	(0.6398)	(0.7549)	(0.6358)	(0.7792)
Age dummy 3 (≥ 56)	-0.193	1.341	-0.248	1.379	2.764**
	(1.9619)	(1.0639)	(1.2709)	(1.0556)	(1.3465)
Full-time	11.145	6.074	2.748	6.094	6.030
	(7.6131)	(6.9157)	(8.0688)	(6.9057)	(4.0606)
WorkOffice	-0.039	-0.008	0.059	-0.008	0.013
	(0.0786)	(0.0393)	(0.0474)	(0.0392)	(0.0466)
ShareFemOffice	1.863	0.060	1.392	0.126	-0.070
	(1.7632)	(1.1161)	(1.1646)	(1.0949)	(1.3441)
Constant	31.833***	36.554***	38.087***	36.479***	35.747***
	(7.8328)	(6.9481)	(8.8740)	(6.9401)	(4.1788)
Individual FE	✓	✓	✓	✓	✓
R-squared	0.714	0.434	0.470	0.434	0.519
N	2,264	2,382	1,878	2,428	1,120

Note: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the individual level are in parenthesis.