

# Are Male Bosses Bad for Women’s Careers? Evidence from a Multinational Corporation\*

Moritz Drechsel-Grau

Felix Holub

LMU Munich

WZB Berlin Social Science Center

January 2026

## Abstract

We study whether gender-based favoritism impedes women’s career progression using data from a European multinational corporation. Leveraging manager reassignments, we show that manager gender does not affect gender differences, neither in wage growth nor in promotion rates. Remarkably, this holds across a wide range of countries and departments, i.e., workforces that differ substantially in terms of gender norms, occupations, and gender composition, but are all subject to the same management practices and corporate culture. Analyzing performance and potential ratings, we find that manager gender only matters in low-stakes decisions that do not affect managers’ own career prospects.

## 1 Introduction

Gender equity in the labor market has improved considerably, but convergence has slowed down and substantial gender disparities persist. In particular, men are still heavily over-represented in corporate leadership positions ([Blau and Kahn, 2017](#); [McKinsey & Company, 2019](#)). While various factors help explain why the share of women declines rapidly with

---

\*We thank Manuel Bagues, David Card, Zoë Cullen, Florian Englmaier, Rosa Ferrer, Sebastian Findeisen, Guido Friebel, Nicola Fuchs-Schündeln, Emanuel Hansen, Laura Hospido, Attila Lindner, Claudia Macaluso, Andreas Peichl, Ricardo Perez-Truglia, Anna Raute, Sebastian Sieglöcher, Michèle Tertilt, Guillermo Uriz-Uharte, Ulrich Wagner, Fabian Waldinger, Andrea Weber, Nicolas Ziebarth, Florian Zimmermann, Ulf Zölitz, and audiences at various institutions, conferences, and workshops for helpful comments and suggestions. Support by the German Research Foundation (DFG) through CRC TR 224 (Projects A04 and B07) is gratefully acknowledged. The data used in this paper is proprietary and can only be accessed after signing a confidentiality agreement with the company. Moritz Drechsel-Grau: [moritz.drechsel-grau@econ.lmu.de](mailto:moritz.drechsel-grau@econ.lmu.de). Felix Holub: [felix.holub@wzb.eu](mailto:felix.holub@wzb.eu).

organizational hierarchy levels, an important concern is that the disproportionate share of men in top corporate ranks impedes the career progression of women due to gender-based favoritism.<sup>1</sup> Hence, if male managers favor male workers over their female colleagues, male leadership constitutes a structural disadvantage for women that reinforces gender pay gaps and perpetuates male leadership.

As interactions between employees and their direct managers are hidden behind firm boundaries, the concern that male leadership disadvantages women is largely grounded on anecdotal evidence (Lang, 2011; Annis and Gray, 2013). A notable exception is a recent study by Cullen and Perez-Truglia (2023), which provides causal evidence showing that male managers severely impede the career progression of their female subordinates at a bank in Southeast Asia because of exclusive social interactions—reminiscent of the notion of “old boys’ club” dynamics. Recent studies have also uncovered similar patterns in public-sector organizations (Bircan et al., 2024; Fortin et al., 2024). At the same time, many private-sector firms in high-income countries have invested significant resources to implement state-of-the-art management practices in order to improve productivity (Bloom and Van Reenen, 2007, 2010). As a central goal of these efforts is to ensure merit-based personnel decisions, it is unclear to what extent gender-based favoritism affects the career progression of male and female workers in well-managed firms.

In this paper, we analyze whether women face a penalty of having a male boss in a large European manufacturing firm that uses frontier technologies and state-of-the-art management practices. The fact that our firm operates establishments across the globe, and employs workers in a wide range of occupations allows us to analyze whether the role of gender-based favoritism varies across a wide range of contexts that differ substantially in terms of gender norms, occupations, and gender composition, but are all subject to the firm’s globally consistent management practices and corporate culture.

Our firm is a “typical” large corporation in developed economies in the sense that, (i) the share of female employees declines with each hierarchical rank, leading to substantial gender inequality while within-job pay gaps are small (Blau and Kahn, 2017), (ii) the firm uses structured processes for consistent hiring, compensation and promotion decisions, as well as transparent objective setting and performance reviews (Bloom and Van Reenen, 2011),

---

<sup>1</sup>We refer to gender-based favoritism as the tendency for managers to use their power to favor workers of the same gender independent of true performance and potential (Prendergast and Topel, 1996). Note that we do not investigate overall discrimination against women by all managers, but rather whether the degree of implicit or explicit bias against women is higher among male managers. In addition, we estimate the combined effect of negative discrimination of women by male managers and (ii) positive discrimination of men due to male-male homophily.

and (iii) the firm actively attempts to promote gender equity in order to increase firm performance by reducing misallocation of human capital (Hsieh et al., 2019).<sup>2</sup>

The personnel data span the years 2013 to 2019 and include 2.7 million worker-month observations. They contain information on wages, hierarchical ranks, and workers’ performance and potential ratings. Importantly, we are able to link each worker to his or her direct superior, who we refer to as *manager* or *boss*. In contrast to top executives, managers interact frequently with their workers, and play a pivotal role in their career progression. Among others, managers provide guidance and mentorship, evaluate workers’ performance and potential, are involved in wage re-negotiations, can push for workers to be promoted, or refer workers to job opportunities within the organization.

In the first part of the paper, we estimate female penalties of having a male boss in career progression using within-worker variation in manager gender created by the rotation of managers across teams. We first estimate how the gender difference in career progression, measured by log wages and hierarchical ranks (1–10), evolves in response to four different types of manager transition events, i.e., from female to male, female to female, male to male, or male to female managers. To separate the effect of a change in manager *gender* from the effect of a change in manager, we compare transitions that imply a change in manager gender to gender-neutral transitions. Hence, the female penalty of having a male boss (henceforth FPMB) quantifies how women’s careers evolve relative to men’s after a female-to-male switch, as opposed to a female-to-female switch, and how they fare relative to men after a male-to-female switch, as opposed to a male-to-male switch.

We find that male bosses do not impede women’s careers at our firm. That is, changes in manager gender have statistically insignificant and economically negligible effects on gender differences in wage growth and promotion probabilities. Even four years after a manager transition, our estimate for the FPMB in wages is only 0.04%. Throughout this entire effect window, the high precision of our estimates allows us to rule out that the FPMB in wages exceeds 1.2% at the 5% significance level. The same holds for hierarchical ranks, where the estimated FPMB coefficients during the four years following a change in manager gender range from  $-0.036$  to  $0.004$  ranks, and where rank-FPMBs greater than  $0.027$  can be rejected at the 5% significance level.

---

<sup>2</sup>Examples of structured management practices include the use of a globally consistent compensation framework where wage negotiations take place within job-specific wage bands (Culpepper and Associates, 2009), or the use of a performance–potential grid for talent evaluation and development (The Talent Strategy Group, 2023). All current Fortune 100 companies have committed to fostering diversity, equity, and inclusion (HRdive, 2022), and about one third of all S&P 500 companies tie executive compensation to DEI metrics e.g. Mercer (2022).

While the event study coefficients show that changes in manager gender are unrelated to differences between workers’ career trajectories leading up to manager transition events, we verify that the findings are not driven by (i) transitions that could theoretically be induced by individual workers, (ii) transitory events where the worker-manager link lasts for less than a year, and (iii) selective attrition. It is also important to note that our null results are not driven by mechanic career paths as there are substantial differences in career progression between workers conditional on worker and job characteristics, and managers have the most important voice in determining which workers climb the career ladder. These differences in career progression imply that our estimates are not only small in absolute value but also relative to the underlying variation in the data. At the 5% significance level, we can reject FPMBs of more than 13.8% of the within-worker standard deviation in log wages, or 7.0% of the standard deviation of four-year wage growth. For hierarchical ranks, the corresponding ratios are 11.3% or 5.5%.

In the second part of the paper, we ask whether the existence or absence of gender-based favoritism can be rationalized by country- or occupation-level differences in workforce composition. To address this question, we leverage the fact that our firm is a large multinational corporation that operates establishments in a wide range of countries and consists of various departments. This gives us variation in workforce composition conditional on firm-wide factors such as management practices, institutions, and corporate culture, which the firm implements consistently throughout the entire organization.

We first estimate FPMBs separately for a variety of countries or country groups, which differ substantially not only in terms of their economic development and labor market institutions, but also business cultures and social norms. However, even in the firm’s establishments in East Asian countries, where after-work events and drinking with colleagues and superiors are a prominent part of corporate culture (e.g. [Horak and Suseno, 2023](#)), the elevated potential for gender-based favoritism through exclusive social interactions does not translate into female career penalties of having a male boss. Overall, for all but one country group, Eastern Europe, we find no evidence of statistically or economically significant FPMBs. In addition, the limited variation in point estimates is entirely unrelated to the substantial country-level variation in gender biases regarding women’s rights and capabilities, as elicited in the World Value Survey.

We then separately estimate FPMBs for different departments, e.g., Manufacturing or R&D, which differ substantially in terms of occupations and the share of female workers while being subject to the same firm-wide management practices. As for the country-level analysis, there is no evidence of statistically or economically significant FPMBs in all departments.

Similarly, we can reject economically significant career FPMBs for all worker and manager age groups and across all hierarchical ranks. The universal absence of female career penalties of having a male boss across all parts of our multinational firm is indirect evidence that state-of-the-art management practices can effectively limit the kind of unfair and inefficient gender-based favoritism that may arise in settings with sub-par management practices.

In the third part of the paper, we study FPMBs in annual potential and performance ratings. While the firm’s people management practices do not vary across departments, countries or time, these ratings differ in terms of their organizational impact and hence in the effective degree of manager discretion. The forward-looking potential rating is highly consequential for workers’ future career progression and for the firm’s future productivity through the allocation of workers to jobs. In contrast, the backward-looking performance rating mainly scales workers’ annual bonus, but has a limited role in wage setting and promotion decisions. This difference in stakes is reflected in the talent review and development process. On the one hand, managers have to justify each of their potential ratings to other managers and the HR department in subsequent strategy and coordination meetings. On the other hand, they have full discretion over their performance ratings subject to fitting a target distribution at a more aggregate level.

In line with the results for wages and promotions, we find that women’s likelihood of receiving a high potential rating does not depend on the gender of their manager. However, relative to men, women receive significantly worse performance ratings when the manager is male rather than female. Interestingly, this is entirely driven by intermediate performance ratings, where decisions are less clear-cut and have a disproportionately low impact on workers’ bonus pay. In other words, when the manager is male, women are more likely to receive an average instead of a medium-high performance rating, but not less likely to receive a very high performance rating. The FPMB in performance ratings implies a 1.5% female penalty of having a male boss in terms of bonus pay. However, as workers’ annual bonus pay, in contrast to wages, only accounts for a small portion of total earnings, the FPMB in intermediate performance ratings has a negligible effect on annual earnings. More importantly, the systematic variation across outcomes corroborates the interpretation that differences in management practices and institutions can rationalize the existence or absence of female penalties of having a male boss.

Our paper contributes to several strands of the literature. Most importantly, we contribute to the large literature on gender inequality in the labor market, which identifies various factors underlying the gender gap in wages and career progression (e.g. [Bertrand, 2011](#); [Niederle and Vesterlund, 2011](#); [Goldin, 2014](#); [Card et al., 2016](#); [Azmat and Ferrer, 2017](#); [Blau and Kahn, 2017](#); [Kleven et al., 2019](#); [Sarsons et al., 2021](#); [Biasi and Sarsons,](#)

2022; Egan et al., 2022; Kline et al., 2022; Hägele, 2024). In particular, we add to our understanding of the role of male-dominated leadership for gender disparities.

Closest to our study, Cullen and Perez-Truglia (2023) provide causal evidence on substantial gender-based favoritism between workers and their direct managers in a Southeast Asian bank. This difference to our null result is particularly interesting given the close similarities in terms of the period of analysis and the intensity of potentially exclusive social interactions. Similarly, ongoing research by Bircan et al. (2024) and Fortin et al. (2024) find female penalties of having a male boss in government-owned institutions. Studies using cross-firm variation find that a higher share of female managers is related to reduced gender inequality in career progression in the US, Norway and Uruguay (Kurtulus and Tomaskovic-Devey, 2011; Kunze and Miller, 2017; Ceni et al., 2023). In contrast, Bertrand et al. (2019) and Maida and Weber (2022) show that a larger share of women on executive boards of Norwegian and Italian firms has no effect on overall gender equity. Other studies find mixed results using data from specific settings such as academia (Bagues et al., 2017; Card et al., 2020; Hospido and Sanz, 2021) or schools (Grissom et al., 2012; Biasi and Sarsons, 2022; Husain et al., 2024).

We contribute to this literature by providing the first causal evidence on whether gender-based favoritism can explain persistent gender inequality in career progression in well-managed private-sector firms. This setting is particularly relevant for at least two reasons. First, it is representative for many workers as large multinationals employ a substantial share of the workforce in developed economies. Second, it is an important benchmark to the extent that more and more firms will adopt today’s state-of-the-art management practices due to competitive pressure and learning (Bloom et al., 2019).

Our second contribution leverages the fact that our multinational firm operates establishments in many countries and employs workers in a wide range of departments. This allows us to study whether the role of gender-based favoritism varies systematically across heterogeneous workforces, which differ in terms of occupations and social norms, but are subject to the same firm-wide institutions and management practices. The documented absence of heterogeneity is in line with the literature showing important headquarter (country) effects or, more generally, invariability in firms’ decision making and management practices (Harrison and Scorse, 2010; Bloom et al., 2012; DellaVigna and Gentzkow, 2019; Hjort et al., 2022).

Our third contribution is that we study gender-based favoritism not only in wages and hierarchical ranks, but also in managers’ subjective performance and potential ratings of their employees. These rating decisions differ in their financial and organizational impact and thus the effective degree of manager discretion determined by decision processes and the

need for formal and informal justification. This is related to the literature on managers and their performance and potential ratings (e.g. Lazear et al., 2015; Frederiksen et al., 2017, 2019; Hoffman and Tadelis, 2021; Benson et al., 2023), as well as to a broader literature on favoritism in organizations and how they can be limited by the incentives implied by institutions, policies and management practices (Prendergast and Topel, 1996; Bloom and Van Reenen, 2011). In particular, our finding that gender-based favoritism is only observed in low-stakes decisions which do not affect managers’ own career incentives is in line with Bandiera et al. (2009), who find that managers stop favoring workers who they have social ties with once managers’ earnings are tied to team performance.

The remainder of the paper is structured as follows. Section 2 provides more information about the firm and describes the data. Section 3 presents the estimation approach. Section 4 documents the absence of an FPMB in career progression. Section 5 studies whether career FPMBs are systematically related to variation in workforce composition. Section 6 analyzes whether an FPMB exists in managers’ performance and potential ratings of their employees. Section 7 discusses our findings and concludes.

## 2 Data and Setting

### 2.1 The Firm

We use personnel data of a large multinational firm in the manufacturing sector. The firm ranks among the 250 largest European firms in terms of sales and employment and is an industry leader in an R&D-intensive sector. About a quarter of the firm’s workforce is located in its home country, but it has establishments in more than 50 countries around the world. For example, around 20% of the workforce is located in the United States. Employees at the firm work in over a hundred occupations in different departments including R&D, manufacturing, sales, and various overhead areas such as finance, strategy, and human resources.

Like many corporations nowadays, the firm has a proactive HR department that manages various aspects of the company’s workforce. Besides tracking and organizing employee data and making them accessible, the HR department designs and manages compensation schemes, administers the employee evaluation process, conducts succession planning for business-critical positions, guides personnel decisions, and manages talent development schemes. These workforce related institutions and management practices are implemented globally across all establishments. In addition, the HR department organizes workshops and events to promote the organization’s corporate culture. This entails promoting diversity,



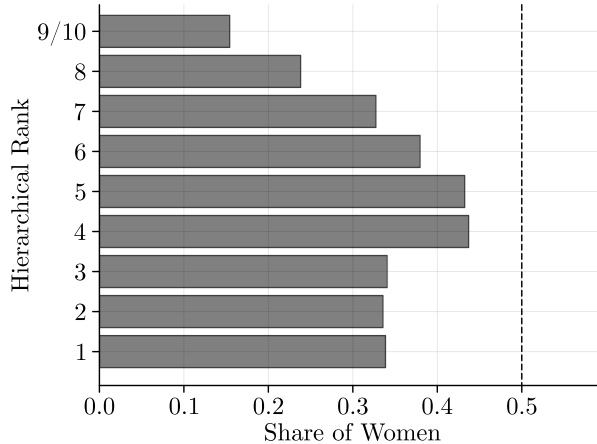


FIGURE 1: Gender composition across hierarchical ranks

*Notes:* The bars shows the share of women in each hierarchical rank. Ranks 1–3 consist mostly of production workers. Manager and specialist roles start at rank 4.

equity, and inclusion (DEI), which—like most corporations in developed countries—our firm has publicly committed to. While no explicit quotas are enforced or targeted, the share of women in management positions is part of the firm’s key performance indicators. The firm’s commitment to improve gender equality is reflected in its appearance on the survey-based lists of female-friendly workplaces published by [Forbes \(2023\)](#) and the [Financial Times \(2023\)](#).

Nevertheless, men still dominate the top ranks of the organizational hierarchy. Figure 1 shows that the share of women is low at the bottom (core production jobs), highest in entry-level white collar positions (ranks 4 and 5), and falls significantly when moving further up the hierarchy. This pattern is typical for many other firms. For the U.S., [McKinsey & Company \(2019\)](#) report female shares of 48%, 38%, and 22% at entry level, middle management, and C-level, respectively. At our firm, the shares at comparable ranks in the U.S. are 45%, 41%, and 30%. While the current gender composition across hierarchical ranks is highly path-dependent, reflecting past promotion decisions, women’s promotion probability is still significantly lower than men’s. In our data, women are 10% less likely to be promoted to a higher rank compared to men with the same job characteristics.

## 2.2 Workers and Managers

The most important feature of our dataset is that we observe the identity of each worker’s direct superior, who we refer to as *manager* or *boss*. At each point in time, every worker has a single manager. On average, managers oversee just over 5 direct subordinates at a given



point in time, with a median of 4 subordinates. The monthly probability of getting a new manager is 3.9%, implying that, on average, workers remain with a particular manager for just over two years.

Managers and workers interact frequently and regularly. Among others, managers communicate the firm’s and department’s objectives to their workers and, once per year, define expectations together with their workers. Throughout the year, managers assign workers to tasks and oversee their progress. Besides providing regular feedback all year long and working together on projects, there are two mandatory meetings between worker and manager: a mid-year review and the end-of-year appraisal meeting.

Managers play a pivotal role in workers’ career progression in several ways. First, each year managers decide whose wages to increase by how much subject to a budget constraint given by the HR department. Second, managers have to advocate for a worker to be promoted to a higher hierarchical rank. Third, they also need to argue for a worker to be reassigned to a higher-paying job within a hierarchical rank. For promotions to mid-level positions, managers have to get approval from the HR department, which naturally cannot grant every promotion demand. For top management roles, e.g., *Head of Sales North America*, a panel of managers decides how to fill existing positions or whether to create a new position at that level. Fourth, managers can use their personal networks to endorse their workers for internal vacancies if they seek to make a career change within the firm. However, managers are not involved in the formal hiring process, in which the hiring manager leads and assembles a panel that decides how to fill the vacancy. Fifth, managers serve as teachers and mentors to their workers. By assigning a certain worker to important and promising projects and providing guidance along the way, or simply by getting them in touch with other managers, they can substantially improve the career prospects of that worker (Lazear et al., 2015; Frederiksen et al., 2019; Jarosch et al., 2021; Herkenhoff et al., 2024; Bircan et al., 2024).<sup>3</sup>

In sum, a worker’s manager is the single most important person in the firm in terms of their career progression. However, their discretion is limited by the oversight of the HR department and their own career incentives. Ex-ante, managers need to justify promotion decisions to other managers in the department. Ex-post, they will be held accountable for their personnel decisions and the performance of their subordinates.

---

<sup>3</sup>While the importance of workers’ direct superiors is well documented in the literature, we can quantify the contribution of managers to workers’ wage growth using an Empirical Bayes shrinkage approach. In our firm, we find that managers explain 13.7% of the variation in four-year wage growth across workers that are comparable in terms of demographics, tenure, hierarchical rank, and occupation. Consistent with the fact that career development takes time, this share reduces to 10.1% for one-year wage growth and increases to 20.1% for four-year wage growth. Appendix Figure A.1 shows the distribution of manager value-added in four-year wage growth.

TABLE 1: Descriptive Statistics

	Mean	Std. Dev.	P25	P50	P75
<b>Worker Characteristics</b>					
Female	0.394	0.489	0.000	0.000	1.000
Age	40.9	9.3	33.0	40.0	48.0
Tenure	111.6	110.6	26.0	71.0	163.0
Hierarchical Rank	4.53	1.37	4.00	5.00	5.00
Wage [€]	53,360	43,129	26,345	43,278	72,644
<b>Manager Characteristics</b>					
Male Mngr.	0.712	0.453	0.000	1.000	1.000
Age Mngr.	44.7	8.1	39.0	45.0	51.0
Tenure Mngr.	138.2	115.2	41.0	110.0	207.0
Rank Mngr.	6.0	1.2	5.0	6.0	7.0
Wage Mngr. [€]	87,282	60,980	49,438	75,989	109,018
<b>Team Characteristics</b>					
Number of Coworkers	9.6	16.8	3.0	5.0	10.0

*Notes:* This table shows the mean, the standard deviation, and the 25th, 50th, and 75th percentile of selected variables for all workers in the sample. Tenure is expressed in months and hierarchical ranks range from 1 to 10. We convert all currencies to Euro using monthly exchange rates (IMF). Number of worker-month observations: 2,687,005. Appendix Table A.1 shows descriptive statistics for the subset of workers who are managers.

## 2.3 Data and Descriptive Statistics

Besides information on workers’ direct superiors, our data contain information on workers’ compensation, occupation, hierarchical rank (1–10), department, the work unit, establishment location, and certain demographic characteristics such as gender, age, or nationality. For our analysis, we restrict the data to regularly-employed active full-time employees aged 25 to 60. Our final sample consists of 2.7 million worker-month observations, 73 thousand unique workers and 17 thousand unique managers. Table 1 shows basic descriptive statistics.

Workers are on average 41 years old and have spent just over 9 years with the firm. While almost 40% of the firm’s workforce is female, only 29% of workers have a female manager, reflecting the lower share of women in top ranks. The average number of coworkers is 9.6 and at least 75% of workers have ten or less coworkers in their team. Workers’ managers are slightly older and more experienced, ranked above workers in the firm’s hierarchy, and earn over 60% higher wages.

We use both wages and hierarchical ranks to measure career progression. While the average difference in wages between adjacent ranks is about 30 log percent, there is significant

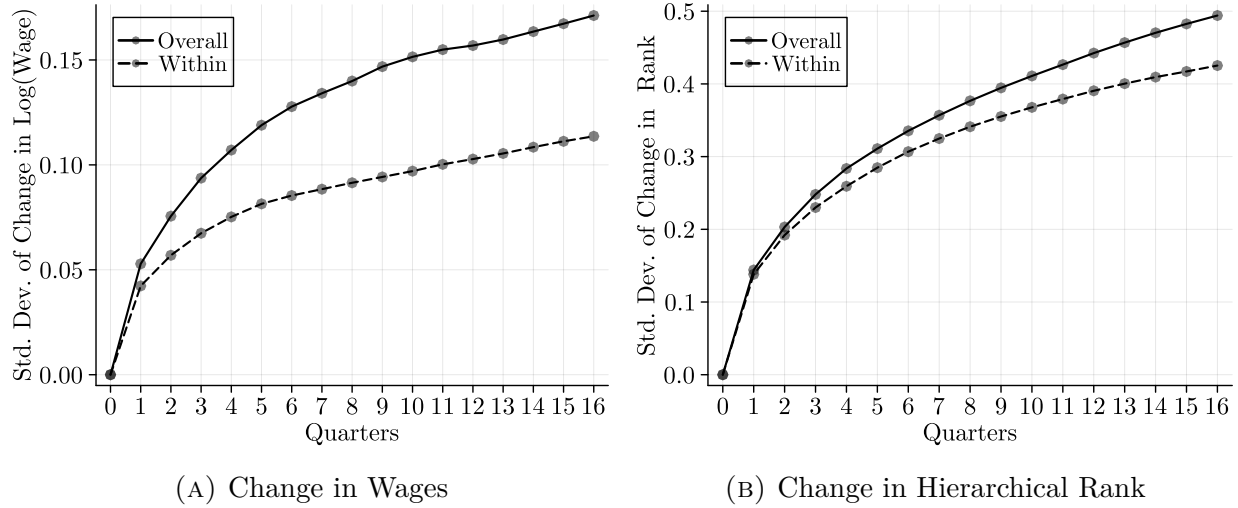


FIGURE 2: Variation in career progression

*Notes:* Solid lines show the standard deviation of within-worker changes in log wages (Panel A) and hierarchical ranks (Panel B) from quarter  $t$  to  $t + h$  for  $h = 0, \dots, 16$ . Dashed lines shows the residual variation after taking out country-by-period, department, job, age, and tenure fixed effects.

overlap between wage bands of adjacent ranks (Appendix Figure A.2). On the one hand, workers can experience substantial wage increases even without a step up in hierarchical rank. For example, 83% of wage-promotions of at least 10% happen without a corresponding change in hierarchical rank in a six month window around the wage jump. On the other hand, a promotion does not automatically trigger an instant increase in wages, but comes with increased responsibilities and decision-making power within the organization.

Over a period of four years, the average worker experiences an increase in log wages of 0.18 and an increase in hierarchical rank of 0.21 ranks. More importantly, Figure 2 shows that there is substantial variation in these measures of career progression. The solid line in Panel A shows that the cross-worker standard deviation of within-worker log wage growth amounts to about 0.17 when looking at a time horizon of four years. The dashed line shows that only part of this variation in career progression comes from initial differences across jobs, departments, or age groups: when comparing wage changes among workers of the same age and tenure, and starting out in the same establishment, job, and department, the standard deviation of residual log wage growth is still 0.11.

Panel B uses the change in workers' hierarchical rank as an alternative measure of career progression. Again, there is substantial variation, and an even larger share cannot be accounted for by taking out differences across different parts of the firm or groups of workers. Hence, throughout the firm, there is plenty of variation in wage growth, i.e., the careers of

some workers progress much faster than those of their coworkers. This also assures that there is substantial scope for managers to impact the career progression of their employees.

Note that this holds despite the fact that less than one fifth of all workers are covered by collective bargaining agreements (CBAs).<sup>4</sup> Importantly, CBAs only fix compensation for specific positions, but do not determine which workers are assigned to which positions and which workers are promoted to higher-paying jobs. That is, a large part of the variation in wage growth and all of the variation in rank growth is unaffected by the presence of CBAs.

### 3 Estimation Approach

Our goal is to analyze whether women face a career penalty of having a male boss. Hence, the question is not whether women’s careers progress more slowly than men’s, nor is it about whether male or female bosses generally have a different impact on workers’ careers. A female penalty of having a male boss (FPMB) represents an interaction effect of worker and manager gender, answering the question: are wage growth and promotion rates of female and male workers differentially affected by the gender of their manager?

The key issue complicating the estimation of a possible FPMB is that worker and manager gender are not matched randomly, especially in high-wage jobs. For example, if women were more likely to be supervised by male managers who happen to be good teachers and motivators, we would underestimate the FPMB because of unobserved manager heterogeneity. Similarly, if workers who exert a lot of effort were disproportionately male and sorted to male managers, we would overestimate the FPMB because of unobserved worker heterogeneity.

To eliminate bias from unobserved heterogeneity across different workers and across workers supervised by different managers, we exploit the panel structure of our linked worker-manager data. That is, we identify the female penalty of having a male boss from within-worker variation in manager gender over time while accounting for unobserved heterogeneity on the manager and worker level. Using an event study approach, we ask how the men’s and women’s wages evolve following a transition from one manager to another (as in [Cullen and Perez-Truglia, 2023](#)).

#### 3.1 Variation in Manager Gender

Where do these transitions come from? The variation in workers being supervised by different managers over time is primarily due to manager rotation, which is beyond the control of

---

<sup>4</sup>We cannot observe which workers are covered by a CBA, but we know that the share of covered workers varies heavily across countries and, as expected, most CBA-covered workers work in European countries and in manufacturing jobs.

individual workers. This practice of reassigning managers to different workers within an organization is widespread, especially in large corporations, as a means to develop well-rounded leaders.

For example, 79% of manager transitions occur without a simultaneous job change of the worker, and 81% take place while the worker remains in the same unit.<sup>5</sup> As a result, most manager transition events affect multiple workers at the same time. In particular, for 66.0% of the events, there is at least one coworker who experiences exactly the same manager transition in the same period. As managers are assigned directly to workers rather than units, it is common that two coworkers are reassigned from the same manager to two different managers in the process of manager rotations. This is the case for an additional 11.0% of events.<sup>6</sup>

To use as much plausibly exogenous variation in manager gender as possible, our baseline estimates are based on all manager transition events where the match between the worker and the outgoing or incoming manager lasts for at least one quarter. This includes events where workers are reassigned to different managers while concurrently moving to different positions. For example, workers who are promoted to a higher-ranked position and thus assigned to a new manager do not choose the new manager. However, it is interesting to ask whether women’s career progression slows down when the manager at the new position is male rather than female. According to HR managers at the firm, the change in manager is usually a by-product of the job change rather than vice versa. Importantly, the event study approach described below will allow us, by analyzing pre-trends, to test whether workers with strong wage growth are more likely to transition to managers of the same gender, possibly due to being more aware of the benefits of potential FPMBs. In addition, our robustness analysis confirms that the results do not change when we exclude events that coincide with a change in the worker’s unit or job, or when focusing on manager transitions that affect multiple workers. We also show that restricting attention to even more persistent events does not change the results.

### 3.2 Event-Study Design

When a worker is assigned to a new manager, there are four possible combinations of old and new manager gender: female-to-male ( $F2M$ ), male-to-female ( $M2F$ ), female-to-female ( $F2F$ ), and male-to-male ( $M2M$ ). In our sample, we observe 76,213 manager transitions,

---

<sup>5</sup>The median unit consists of 10 workers and the average unit size is 60 workers. The distribution is skewed to the right because of a small number of large logistics units.

<sup>6</sup>For example, if a manager is re-assigned to take on projects and supervise workers in a different area of the firm, his or her workers who remain in their positions are allocated to those managers who remain in their area.

among which there are 13,994  $M2F$  transitions, 12,345  $F2M$  transitions, 39,640  $M2M$  transitions, and 10,234  $F2F$  transitions. Appendix Tables A.2, A.3, and A.4 provide summary statistics by event status for workers, outgoing managers and incoming managers, respectively.<sup>7</sup>

More formally, let  $\mathcal{E} = \{M2F, M2M, F2M, F2F\}$  be the set of transition events and let  $G_m \in \{M, F\}$  be the gender of manager  $m$ , where  $m(i, t)$  is the manager of worker  $i$  at time  $t$ . We define  $M2F_{it}$  as an indicator function that equals one if  $G_{m(i,t-1)} = M$ ,  $G_{m(i,t)} = F$ , and  $m(i, t-1) \neq m(i, t)$ . All other events are defined analogously. We then regress the outcome  $Y_{it}$ , worker  $i$ 's log wage or hierarchical rank in period  $t$ , on leads and lags of these four events interacted with worker gender. We control for worker fixed effects,  $\alpha_i$ , manager fixed effects,  $\alpha_m$ , gender-specific period fixed effects,  $\alpha_{g(i)t}$ , and country-by-period fixed effects,  $\alpha_{c(it)t}$ . This gives rise to the following estimation equation

$$Y_{it} = \sum_{E \in \mathcal{E}} \sum_{k \in \mathcal{K}} \left( \phi_E^k female_i + \mu_E^k male_i \right) B(E, i, t, k) + \alpha_i + \alpha_{m(i,t)} + \alpha_{g(i)t} + \alpha_{c(i,t)t} + \epsilon_{it} \quad (1)$$

where  $\mathcal{K} = \{-(F+1), -F, \dots, L, L+1\}$  indexes the set of binned leads and lags for each event  $E \in \mathcal{E}$ . The function  $B(E, i, t, k)$  constructs the binned event indicators as follows:

$$B(E, i, t, k) \equiv \begin{cases} \sum_{s < -3F} E_{i,t-s} & \text{if } k = -(F+1) \\ \sum_{s=3(k+1)-1}^{3k} E_{i,t-s} & \text{if } k = -1, \dots, -F \\ E_{it} & \text{if } k = 0 \\ \sum_{s=3(k-1)+1}^{3k} E_{i,t-s} & \text{if } k = 1, \dots, L \\ \sum_{s > 3L} E_{i,t-s} & \text{if } k = L+1 \end{cases} \quad (2)$$

where  $F = 10$  and  $L = 16$ , such that we consider an effect window of two and a half years before and four years after manager transition events. We use the term *binned* event indicators because we aggregate monthly leads and lags into quarterly leads and lags. For example, instead of estimating a separate coefficient for the 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> monthly lags of a given event indicator, we abstract from within-quarter heterogeneity and estimate one coefficient for the sum of these three lags,  $B(E, i, t, 3)$ . This is done to speed up the estimation, address collinearity concerns, and improve the readability of the resulting event study graphs.

---

<sup>7</sup>Around 56% of all workers experience at least one change in manager and the workers who never experience such a change are similar in terms of gender, age, tenure, wage, or hierarchical rank (Appendix Table A.2). In addition, workers with  $M2F$  events are very similar to workers experiencing  $F2M$  transitions. Outgoing and incoming managers are also very similar, but male managers have slightly higher tenure and wages.

Following the recommendation by [Schmidheiny and Siegloch \(2023\)](#), we restrict the effect window by including absorbing bins that contain the sum of all observable events outside the effect window, i.e., more than  $F$  quarters before or  $L$  quarters after the event. This implicitly assumes that the dynamic treatment effects are constant in the distant past and future.<sup>8</sup> Due to the inclusion of worker and manager fixed effects, we set all eight coefficients in period  $k = -1$  and the coefficient for male workers with an  $F2M$  event in period  $k = 0$  to zero. Standard errors are clustered at the worker and manager level.

**FPMBs as Double Differences.** Having estimated these eight sets of event study coefficients, the FPMB is constructed in a way that separates the effect of getting a boss with a different gender from the effect of getting a new boss. That is, we are interested in the gender-specific effect of an  $F2M$  switch relative to an  $F2F$  switch and, analogously, the gender-specific effect of an  $M2F$  switch relative to an  $M2M$  switch. For example,  $\phi_{F2M}^k - \phi_{F2F}^k$  captures how wages of women who experience a transition from a female to a male manager evolve relative to the pre-switch period, compared to wages of women who transition from one female to another female manager. If this difference is negative, women’s wage growth suffers when transitioning from a female to a male manager. However, the same may be the case for men. We therefore focus on how this difference ( $F2M$  vs.  $F2F$  for women) compares to the analogous difference for men. In particular, if the double difference

$$\Delta_{F2M}^k \equiv \underbrace{(\phi_{F2M}^k - \mu_{F2M}^k)}_{F2M: \text{ women} - \text{ men}} - \underbrace{(\phi_{F2F}^k - \mu_{F2F}^k)}_{F2F: \text{ women} - \text{ men}} \quad (3)$$

is negative, we interpret this as a female penalty of having a male boss (FPMB): replacing a female manager with a male manager (instead of another female manager) results in weaker wage growth for women relative to men  $k$  quarters after the transition. Similarly for  $M2F$  relative to  $M2M$  switches: if

$$\Delta_{M2F}^k \equiv \underbrace{(\phi_{M2F}^k - \mu_{M2F}^k)}_{M2F: \text{ women} - \text{ men}} - \underbrace{(\phi_{M2M}^k - \mu_{M2M}^k)}_{M2M: \text{ women} - \text{ men}} \quad (4)$$

is positive, we take this as evidence of an FPMB as women’s wages grow more strongly than men’s wages following a male-to-female transition (instead of a male-to-male transition). We will often combine those double differences into an “average” double difference,

$$\Delta^k \equiv (\Delta_{F2M}^k - \Delta_{M2F}^k)/2 \quad (5)$$

---

<sup>8</sup>The alternative would be to drop observations outside the effect window which is not suitable for our setting with multiple events per unit with potentially overlapping effect windows.



and interpret  $\Delta^k < 0$  as an FPMB  $k$  quarters after the transition. Intuitively, this composite measure quantifies how much women lose relative to men after a female-to-male switch, as opposed to a female-to-female switch, and how much they gain after a male-to-female switch, as opposed to a male-to-male switch.

**Interpretation.** A female penalty of having a male boss captures the tendency for managers to favor workers of the same gender. A couple of clarifying remarks may be helpful. First, note that an FPMB can reflect explicit or implicit favoritism, i.e., choices based on conscious or unconscious preferences or biases (Bertrand et al., 2005). Both types of favoritism can affect whether women’s careers progress slower than men’s through their managers’ employee evaluations and endorsements, mentoring efforts, or inclination to grant raises or promotions.

Second, the FPMB does not attempt to investigate overall discrimination against women by all managers, but rather whether the degree of implicit or explicit bias against women is higher among male managers compared to female managers. If gender differences exist, but do not vary across workers of male and female managers, the FPMBs defined in Equations 3, 4, and 5 are zero.<sup>9</sup> Hence, FPMBs measure the effects of differential biases by manager gender.

Third, since we as researchers—just like the workers and their managers in our data—lack an objective measure of performance, we do not know whether male bosses treat their workers differently based on gender, or whether female bosses do so, or whether both exhibit such behavior. Hence, a female penalty of having a male boss measured using the double differences above,  $\Delta^k < 0$ , captures the *combined effect* of (i) stronger negative discrimination of women by male managers compared to female managers (e.g., Egan et al., 2022), and (ii) stronger positive discrimination of men by male managers (male-male homophily) relative to female managers (e.g., Alan et al., 2025).

Finally, we use the term *female penalty of having a male boss* rather than for example *male-male favoritism* because, from the perspective of female employees, both negative and positive discrimination constitute a penalty of having a male boss relative to their male coworkers. This is particularly important in the context of promotion decisions, which implicitly or explicitly have tournament character. In other words, whatever the underlying discriminatory patterns of favoritism may be,  $\Delta^k < 0$  means that women’s careers would benefit relative to their male colleagues from having more female managers.

---

<sup>9</sup>Conversely, if we do not estimate a significant FPMB, this could in principle reflect either the absence of gender-based favoritism or equal discrimination against women by both male and female managers.

## 4 Female Career Penalties of Having a Male Boss

This section presents the results on the effects of manager gender on career progression of male and female workers, measured using both wages and hierarchical ranks. Following [Cullen and Perez-Truglia \(2023\)](#), the vertical axes of all plots span two within-worker standard deviations of the outcome variable in either direction to facilitate the interpretation of magnitudes relative to the variation in our data, across outcomes, and across studies.

### 4.1 Wages

As workers' wages are the most comprehensive and commonly used measure for career progression, we start with wages. Figure 3 plots the estimated change in the gender wage gap (women – men) around each of the four manager transition events. Panel A focuses on events where the outgoing manager is female. The two lines capture the two terms in Equation 3, i.e., the change in the gender gap in log wages before and after  $F2M$  and  $F2F$  switches. Panel B focuses on the components in Equation 4, i.e., manager changes where the outgoing manager is male.

For all four types of events, there is no sign of differential pre-trends in wage differences between men and women leading up to a manager transition. This suggests that men and women do not sort to managers of their own or opposite gender depending on prior wage growth. More importantly, the post-transition coefficients already foreshadow the key finding of our analysis: men and women are not differentially affected by any type of manager transition. While this outcome might be anticipated for gender-neutral transitions between managers of the same gender, it also holds true for transitions involving a change in manager gender. Our estimates are precise enough that the 95% confidence bands allow us to reject effects of manager gender on gender gaps of more than 2% in absolute value over a period of four years.

Figure 4 shows our main objects of interest, the sets of double-difference coefficients that measure the FPMB in wages. The blue line in Panel A plots  $\Delta_{M2F}^k$ , the evolution of women's wages relative to men's wages around the change from a male to a female manager ( $M2F$ ), and relative to this difference the control group of workers who transition from a male to another male manager ( $M2M$ ). Recall that, for transitions from male to female managers, we interpret positive coefficients of the double difference as a female penalty of having a male boss. The orange line in Panel A depicts  $\Delta_{F2M}^k$ , the female-male wage differential around the change from a female to a male manager ( $F2M$ ), relative to the control group who transitions from a female to another female manager ( $F2F$ ). Here, negative coefficients correspond to an

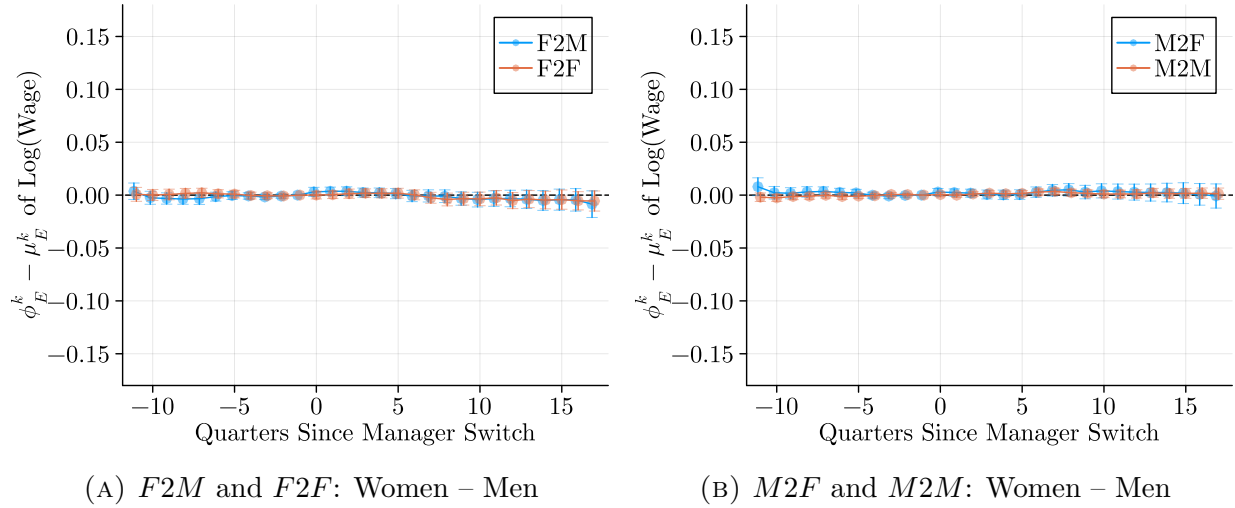


FIGURE 3: Effects of manager transitions on gender differences in wages

*Notes:* Lines depict the difference between changes in women’s and men’s wages relative to the period prior to the manager switch for each type of manager transition based on the estimation of Equation 1 for log wages. The within-worker standard deviation of log wages is 0.09 and the standard deviation of the four-year (within-worker) change in log wages is 0.17. Error bars represent 95% confidence bands.

FPMB in wages. Panel B shows the average double difference,  $\Delta^k$ , where negative coefficients indicate an FPMB. The average double difference is the most comprehensive measure of the FPMB as it combines estimates based on all four events.

Our estimates reject the hypothesis that women in our data face a statistically significant wage penalty of having a male boss. Four years after the manager transition, the point estimate for the average double difference in wage effects is  $-0.04\%$  with a standard error of  $0.59\%$ . The precisely estimated coefficients allow us to put tight bounds on the sequence of average double-difference coefficients: Throughout the four years following a change in manager gender, the 95% confidence intervals never include values outside of  $[-1.2\%, 1.1\%]$ , such that female wage-penalties of more than  $1.2\%$  can be rejected at the 5% significance level.

Given that our point estimates are essentially zero, it is uninformative to relate their magnitude to some benchmark. However, the bounds of the tight confidence bands reveal that our estimates reject even moderate female wage penalties of having a male boss. That is, even if the true FPMB was equal to the most extreme value covered by our 95% confidence bands,  $1.2\%$  after four years, one would have to reject substantial FPMBs. For example, the value does not exceed (i)  $6.6\%$  of the average log wage growth over this time horizon, (ii)  $7.0\%$  of the standard deviation in four year log wage growth, (iii)  $12.1\%$  of the P95–P5 range of the standard deviation of four year log wage growth across workers starting out with the

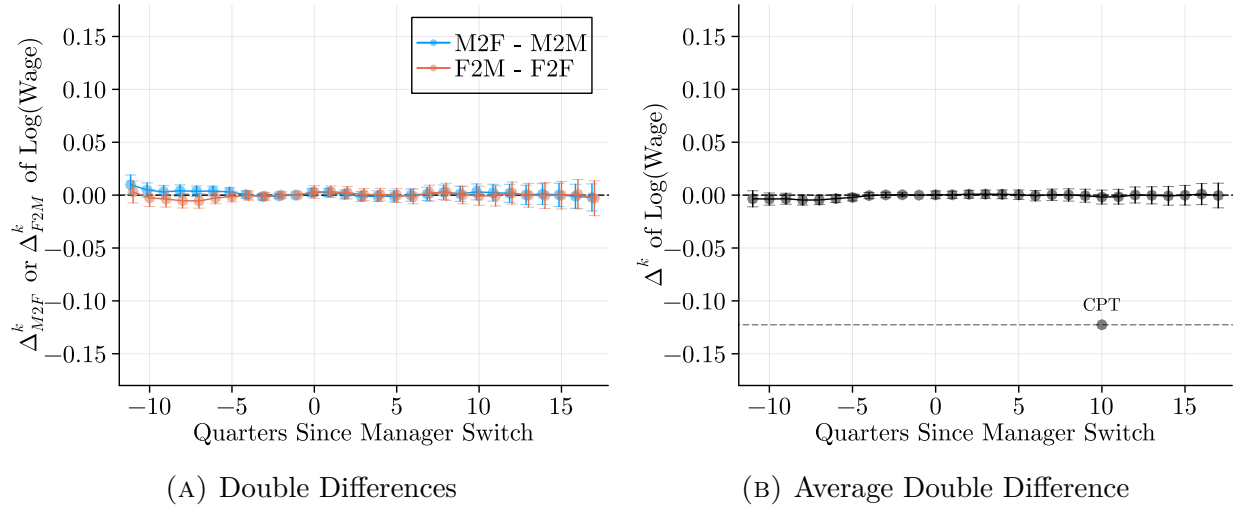


FIGURE 4: FPMBs in wages

*Notes:* Lines depict the two sets of double differences (Panel A) and the average double difference (Panel B) based on the estimation of Equation 1 for log wages. The black dot on the dashed horizontal line shows the FPMB estimated by CPT after ten quarters translated to log wages. CPT do not have access to precise wage information but rely on changes between 26 pay grades. They estimate an FPMB of 0.54 pay grades where one pay grade corresponds to a mean difference in log wages of 0.227 (Appendix C.1 in CPT). Hence, an FPMB of 0.54 pay grades translates into an FPMB in log wages of 0.123 ( $= 0.54 \times 0.227$ ). Error bars represent 95% confidence bands.

same job, demographics and manager, or (iv) 13.8% of the within-worker standard deviation in log wages.

Hence, this null effect was not to be expected based on what we know about managers' impact on workers' careers and the fact that there is substantial variation in career progression across workers—even when comparing workers who share the same age, tenure, job characteristics, and manager (Figure 2).

A complementary way of contextualizing our results is to compare our results to those in Cullen and Perez-Truglia (2023) who estimate the ten-quarter female wage penalty of having a male boss for employees of a Southeast Asian bank. In stark contrast to our precisely estimated null effect, their estimates imply a female wage penalty of having a male boss of 12.3% ten quarters after a manager transition, as illustrated by the black dot on the dashed horizontal line in Panel B. The difference in results remains large when interpreting estimates in relation to the respective within-worker standard deviation of the outcome variables. While the 95% confidence bands in our setting reject FPMBs *above* 13.8% of the within-worker standard deviation of log wages four years after the transition, the estimates for the Southeast Asian bank reject FPMBs *below* 70% of the within-worker standard deviation in pay grades after 2.5 years.

## 4.2 Hierarchical Ranks

While wages are the key object of interest, it is important to investigate whether manager gender plays a role in rank-promotion decisions. A worker’s hierarchical rank is arguably a more direct measure of influence within the organization. After all, one key question is why women do not climb firms’ hierarchy ladders as quickly as men and whether male leadership is both cause and consequence of this phenomenon. As promotions occur less frequently—the average monthly promotion probability is 0.6% and 81.3% of all workers never experience a promotion in our sample period—we may fail to detect the impact of manager gender on this aspect of career progression when analyzing the average FPMB in wages. As there are only ten hierarchical ranks and the majority of large wage jumps occur independent of rank-promotions, women may climb the firm’s wage ladder without climbing up hierarchical ranks, whereas men may do both. In this case, women may experience a rank-FPMB even though there is no wage-FPMB.

In Figure 5, we examine whether an FPMB exists in rank-promotions by using the worker’s hierarchical rank (1 to 10) instead of the log wage as the dependent variable. Panel A shows the two double differences and Panel B shows the average double difference. We again find no evidence that women are less likely to be promoted than men when the manager is male rather than female. If anything, the point estimates suggest a very small female advantage of having a male boss at the end of the effect window of four years. However, all coefficients are economically and statistically indistinguishable from zero. The 95% confidence bands for the average double difference rule out rank-FPMBs of over 0.027 hierarchical ranks four years after a manager transition. This corresponds to 11.3% of the within-worker standard deviation in hierarchical ranks and 5.5% of the standard deviation across workers in the within-worker change in hierarchical rank.

In sum, we can reject significant female career penalties of having a male boss in our data from a large European corporation. This holds for both channels through which manager impact workers’ careers. Relative to female managers, male managers neither favor men in wage re-negotiations within hierarchical ranks, nor do they promote fewer women up the firm’s hierarchical ladder.

## 4.3 Robustness

Our finding that manager gender does not affect differences between men and women in career progression is robust to various alternative specifications. For each robustness check, we focus on the average double difference in order to maximize statistical power and for ease of interpretation.

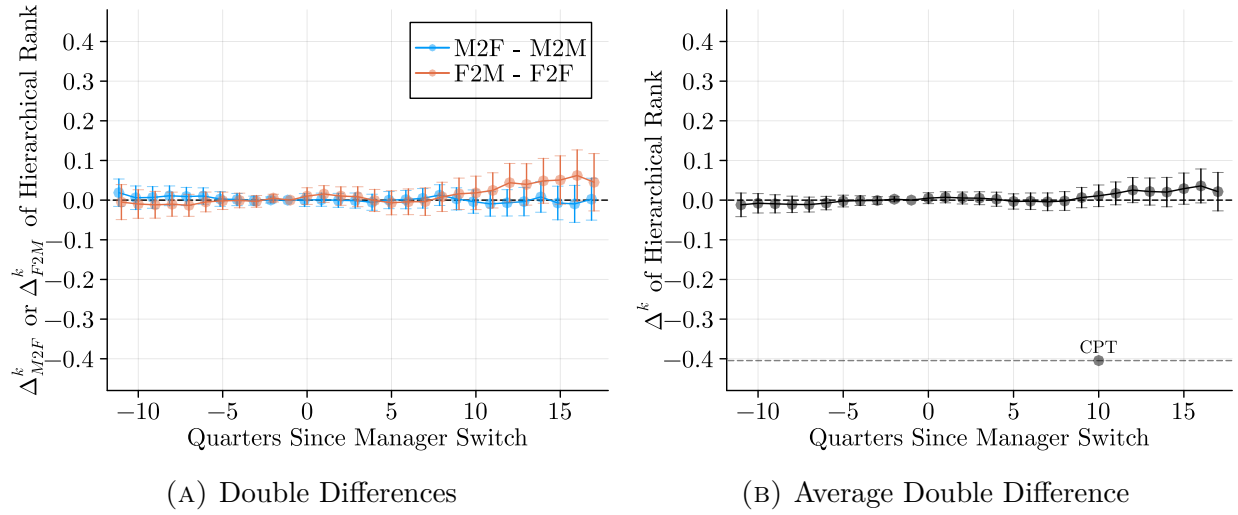


FIGURE 5: FPMBs in hierarchical ranks

*Notes:* Lines depict the two sets of double differences (Panel A) and the average double difference (Panel B) based on the estimation of Equation 1 for hierarchical ranks. The black dot on the dashed horizontal line shows the FPMB estimated by CPT after ten quarters translated to units of our hierarchical rank variable using the relationship between pay grades and wages in CPT (slope of 0.227, Appendix C.1 in CPT) and the relationship between hierarchical ranks and wages in our data (0.303, see Appendix Figure A.2). Hence, an FPMB of 0.54 pay grades translates into an FPMB in hierarchical ranks of 0.40 ( $= 0.54 \times (0.227/0.303)$ ). The within-worker standard deviation of hierarchical ranks is 0.24 and the standard deviation of the ten-quarter change in hierarchical ranks is 0.49. Error bars represent 95% confidence bands.

**Variation in Manager Gender.** Some manager transition events coincide with a change in job or unit, e.g., because workers apply to new positions through the internal job market. The flat pre-trends in our baseline estimates already inform us that workers who experience manager transition events are not selected based on their past career trajectory. Nevertheless, if there were a female wage penalty of having a male boss ( $\Delta^k < 0$ ), we would mistakenly estimate a null effect if workers who experience disproportionately low wage growth in the future actively sort themselves to managers of the same gender.

We thus test whether potentially worker-induced variation in manager gender biases our results by excluding all manager transition events that coincide with a job or unit change, or that only affect a single worker. A job or unit change occurs when a worker moves to a new job or unit between  $t - 1$  and  $t$ . Single worker events are those cases where a worker does not have any colleague who also changes from the same manager in period  $t - 1$  to the same manager in period  $t$ . To exclude variation from the subset of manager transitions that coincide with such moves, we set the respective transition events to zero. Excluding events with concurrent job changes, unit changes or single-worker events affects about 21.0%, 19.0%, and 34.0% of all events, respectively.<sup>10</sup>

Appendix Figure A.3 shows that none of these alternative specifications leads to significant changes in the event study coefficients. Note that this is not particularly surprising given the flat pre-trends in our baseline estimates, but also because any bias from endogenous worker-manager matches would have to exactly offset the true effect in order to rationalize the precise null effect we estimate based on all manager transition events.

**Persistence of Manager Changes.** Recall that the event-study approach estimates the FPMB off of manager changes but not necessarily off of *persistent* manager changes. If workers are assigned new managers very frequently, a switch to a male manager may not translate into substantially more time spent under a male manager relative to a switch to a female manager. In addition, if most managers stay with their teams only for short episodes and if it takes time to build personal relationships that give rise to gender-biased favoritism, our estimation strategy would underestimate the FPMB from longer episodes under the same manager.

In the four years following a manager switch, workers spend on average 2.09 years with their new superior and 3.03 years with managers of the new gender.<sup>11</sup> Relative to workers

---

<sup>10</sup>While we do not have access to application data from the internal job portal, we know from conversations with HR personnel at the firm that such worker-induced moves rarely occur within work units and usually entail a change in workers' job codes. Appendix Table A.5 shows very similar distributions of event types for these more restrictive subsets of manager transition events.

<sup>11</sup>Appendix Figure A.4 shows the survival function for worker-manager pairs after a manager switch.



experiencing a gender-neutral *M2M* switch, workers with an *M2F* switch spend on average 2.30 less years with a female manager over the following four years. Similarly, *F2M* switches expose workers to an extra 2.17 years under a male manager relative to *F2F* switches.

While different manager switches do translate into substantial variation in exposure to male or female managers, we need to make sure that less persistent events do not cover up sizeable FPMBs following more persistent changes in manager gender. In our baseline specification, we include all manager transitions where workers and managers spend at least one quarter together before and after the switch. We now include only those manager transitions where the new and old manager-worker pair lasts for at least six or twelve months. Appendix Figure A.5 shows that our null result extends to these more persistent manager switches, leaving us confident that our findings are not an artifact of attenuation bias due to transitory manager switches.

**Proximity.** As our firm has many establishments all over the world, workers and manager do not need to work in the same location. In fact, about 15% of workers have superiors located in a different establishment. While these workers and managers interact frequently as part of their job, they do not have the opportunity to socialize over lunch or during coffee breaks. Hence, there is less room for potentially exclusive social interactions which have been shown to be an important source of gender-based favoritism. On the flip side, implicit favoritism due to biased beliefs may be more relevant in settings where managers have less information about their workers. Bohren et al. (2019) show that discrimination against women declines as evaluators become more informed.

We thus analyze whether our estimate of the FPMB differs between workers who share the same location with their manager and those that work in separate locations by interacting the event variables in Equation 1 with indicators for working the same location. Appendix Figure A.6 shows that our estimate of the FPMB in wages and hierarchical ranks is essentially zero for both high- and low-proximity cases. If anything, the statistically insignificant point estimates for low-proximity cases would imply a larger FPMB suggesting that the impact of social interactions may be dominated by information frictions and unconscious biases.

**Indirect Superiors.** Finally, while the gender of workers’ direct superiors does not matter for gender wage gaps, one may ask whether the gender of workers’ indirect superiors, i.e., the superiors of the direct superiors, matters. While we know that direct superiors have the most impact on workers’ careers, indirect superiors may also have an important voice, particularly for promotions. To test for differential biases among indirect superiors, we run the same

event study analysis as before, but with the indirect superiors. Appendix Figure [A.7](#) shows that there is again no female penalty of having a male boss for wages.

## 4.4 Turnover

Even though we do not find evidence for female career penalties of having a male boss, workers could express dissatisfaction with their boss by leaving for another team within the firm or leaving the firm altogether. It is thus important to ask whether gender differences in turnover are affected by manager gender.

In contrast to career outcomes, we cannot use the event-study approach to study turnover for two reasons. First, workers may experience multiple events and because the outcome variable depends on the manager at the time of the event. Second, as firm exit is observed at most once, we cannot include worker fixed effects or estimate pre-trends.

Instead, we employ a local projection approach where we estimate the gender-specific effect of the four transition events on an indicator variable that equals one if the worker is still with the newly assigned manager  $k$  quarters after the transition. We provide details in Appendix [B](#).

Figure [6](#) shows no evidence of statistically or economically significant differential turnover by worker and manager gender. This also shows that our main results are not biased by selective attrition, i.e., the concern that women who leave the firm would have experienced a career penalty in wages or promotions had they stayed around.

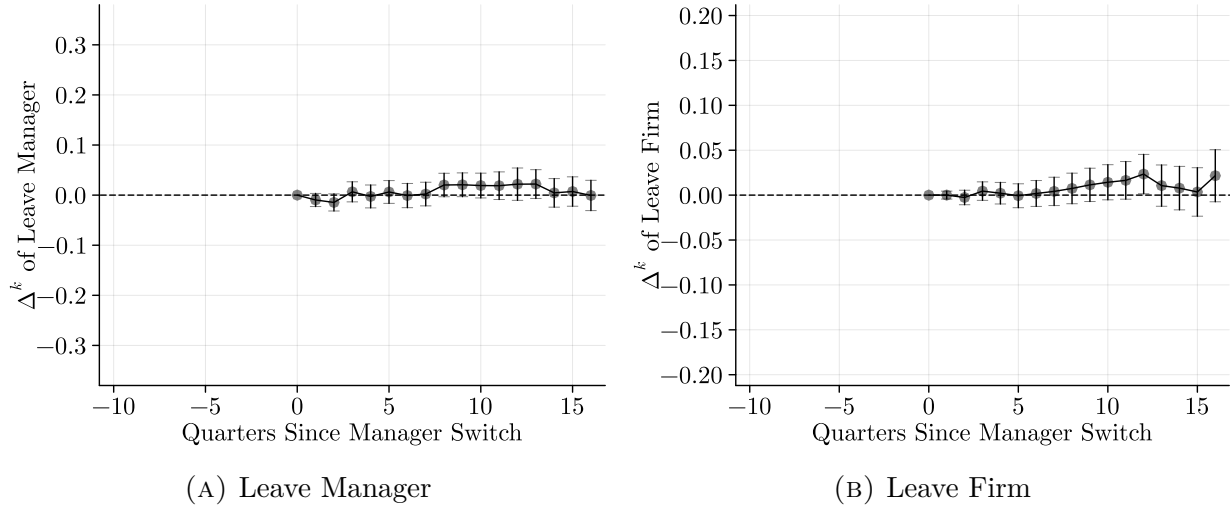


FIGURE 6: Turnover: Leaving the Manager or the Firm

*Notes:* This figure shows the average double difference from estimating local projections for an indicator variable taking value one if the worker’s manager in  $t+3k$  is different from the manager in  $t$ ,  $Y_{it}^k = \mathbb{1}\{m(i, t+3k) \neq m(i, t)\}$ , where  $k$  denotes quarters, or if the worker has left the firm  $k$  quarters after the transition. In Panel B, we replace the worker fixed effect by job, department, and age fixed effects. The within-worker standard deviation of changing managers between consecutive months is 0.19 and the standard deviation of the indicator variable for leaving the firm equals 0.11. The error bars display the 95% confidence bands.

## 5 FPMBs across Different Contexts

Our baseline results show that, on average, there is no female career penalty of having a male boss in our firm. Given that this is a highly desirable result, can we understand why there is no gender-based favoritism in this setting? To shed light on this, we now analyze the role of workforce composition as opposed to global management practices—a catch-all term we use to refer to firm-specific institutions, culture, and processes. This distinction is crucial since management practices reflect firms’ choices and, in contrast to workforce composition, can be adjusted more easily and more quickly.

To address this question, we leverage the fact that (i) our firm is a large multinational corporation that operates establishments in a wide range of countries and consists of various departments, and (ii) the firm uses a globally consistent set of management practices in all establishments and departments. This allows us to analyze whether female career-penalties of having a male boss differ significantly and systematically across heterogeneous workforces that are all exposed to the same management practices, or whether our null result holds universally despite differences in workforce composition, pointing to an important role for institutionalized practices. Besides heterogeneity across countries and departments, we also investigate heterogeneity by manager age, worker age, and hierarchical rank.

## 5.1 Empirical Approach

In order to study heterogeneity in FPMBs across a wide range of sub-groups, we estimate a set of binary interactions for each dimension of heterogeneity in order to keep the estimation feasible. Consider a categorical variable  $H$  with discrete and finite support  $\mathcal{H}$ , such as countries or departments. We then study each category  $h$  separately as if it was a binary interaction where  $-h$  denotes all realizations of  $H$  not equal to  $h$ . That is, for each realization  $h \in \mathcal{H}$ , we estimate the following model:

$$\begin{aligned} Y_{it} = & \sum_{E \in \mathcal{E}} \sum_{k \in \mathcal{K}} \left( \phi_{E,h}^k \text{female}_i + \mu_{E,h}^k \text{male}_i \right) B(\mathbf{1}_{H=h} \times E, i, t, k) \\ & + \sum_{E \in \mathcal{E}} \sum_{k \in \mathcal{K}} \left( \phi_{E,-h}^k \text{female}_i + \mu_{E,-h}^k \text{male}_i \right) B(\mathbf{1}_{H \neq h} \times E, i, t, k) \\ & + \alpha_i + \alpha_{m(i,t)} + \alpha_{g(i)t} + \alpha_{c(i,t)t} + \epsilon_{it}, \end{aligned}$$

where the binned event indicators  $B(\mathbf{1}_{H=h} \times E, i, t, k)$  and  $B(\mathbf{1}_{H \neq h} \times E, i, t, k)$  are defined as in Equation 2, now grouping six instead of three months. Note that we differentiate between  $h$  and  $-h$  at the time of the manager transition rather than at time  $t$  when the outcome is realized. In addition, we set manager transitions to zero if they coincide with a change in  $H$ . This means, for example, that we only study manager transition events where workers are in the same country or department just before and just after the switch.

For each sub-group  $h$  in  $\mathcal{H}$ , we construct the average double difference measure of the FPMB using the coefficients with the subscript  $h$ ,  $\Delta_h^k$ , where each set comes from a separate regression. In the following, we focus on the cumulative female-penalty of having a male boss four years after the change in manager gender for each sub-group of workers. That is, we show estimates of  $\Delta_h^{4\text{yr}}$ , the average double difference four years after the manager switch, for all groups  $h \in \mathcal{H}$  in one figure. We focus on the end of the effect window to allow as much time as possible for any potential effect to unfold. Appendix Figure A.9 shows that the average effects across all post periods are qualitatively similar, but slightly smaller in absolute value. Appendix Figures A.10 and A.11, show the ten-quarter and average pre-transition coefficients, respectively. As in the baseline estimates, there is no evidence of statistically significant and economically meaningful pre-trends in these group-specific average double differences.

## 5.2 Countries

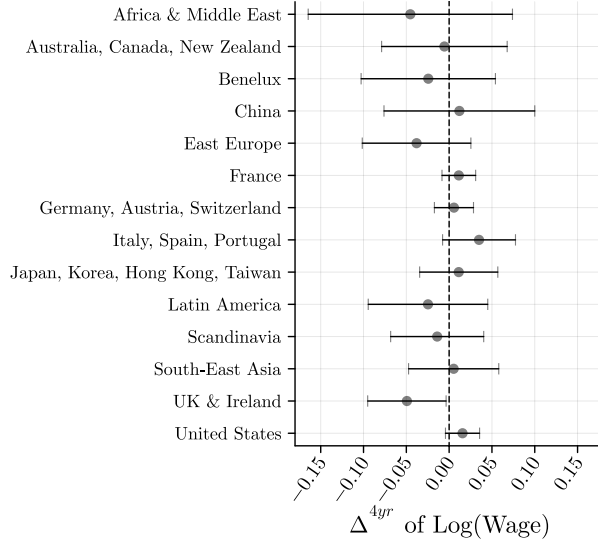
Our multinational firm has establishments in over 50 countries across the globe. These countries and regions differ not only in terms of their economic development and labor market institutions, but also in terms of social norms, in particular gender norms. For example, while after-work drinking with superiors and colleagues is typically informal and optional in Western countries, it is often a crucial part of corporate culture in East Asian countries, intended to reinforce group cohesion and hierarchical relationships, and frequently considered an extension of professional responsibilities. Research in sociology and business ethics as well as abundant anecdotal evidence suggests that such corporate drinking culture exacerbates male favoritism by creating networking and bonding opportunities that are predominantly male-dominated, excluding women from informal mentoring, and career advancement opportunities (Nemoto, 2013; Georgiadou and Syed, 2021; Horak and Suseno, 2023).

Figure 7 shows estimates of the average double difference in wages and hierarchical ranks ten quarters after the manager transition for 18 countries and regions. With the exception of the UK and Ireland, all country-specific point estimates for wages are statistically insignificant and no single point estimate exceeds 5%. For hierarchical ranks, we find no statistically significant point estimate in any country, although the estimates are less precise.

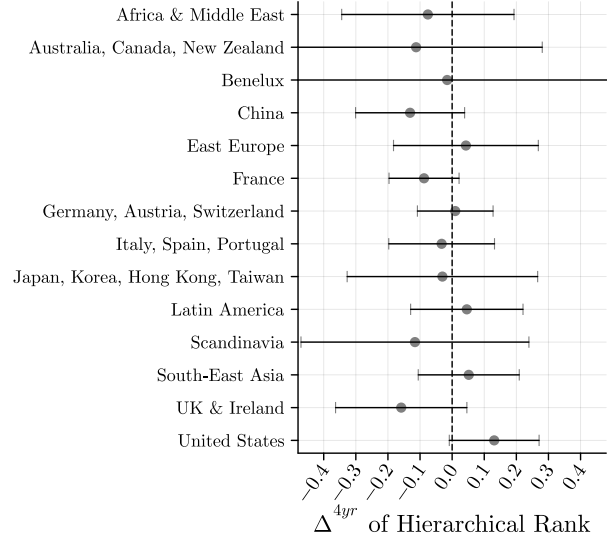
To examine the potential link between FPMBs and gender norms more systematically, we relate our country-specific estimates to the Gender Social Norms Index (GSNI, United Nations Development Programme, 2023), which measures, based on data from the World Value Survey, the fraction of a country’s population with biased views on whether men and women have equal rights and capabilities.<sup>12</sup> Approximately one third of the firm’s workforce is located in low-GSNI, i.e., low-bias, countries such as the UK, Scandinavia or Germany, where less than 40% of the population believes that women do not possess equal rights and capabilities. Conversely, one third of the firm’s workforce is in high-GSNI countries such as China, Mexico or South Korea, where more than 75% of the population exhibit such gender biases. Strikingly, Panels C and D, which plot the GSNI against the FPMB estimates, show that the limited variation in the estimated average double differences appears entirely unrelated to the prevalence of biased norms in the respective countries’ populations. The same holds for the relationship with GDP per capita (Appendix Figure A.13).

---

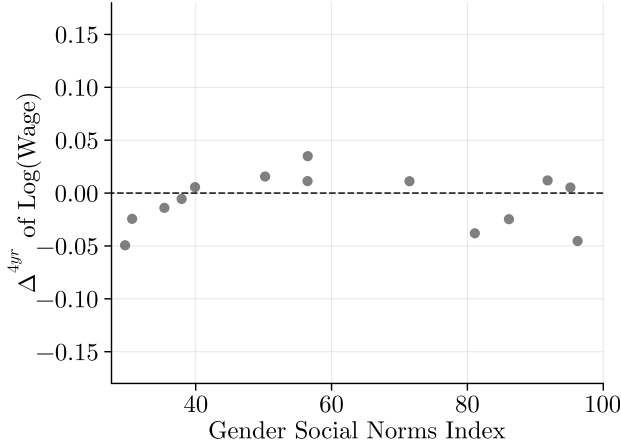
<sup>12</sup>Appendix Figure A.12 shows that the firm’s workforce is spread out fairly evenly across countries in terms of the GSNI, which is calculated as the proportion of World Value Survey respondents who exhibit at least one bias in seven survey questions on whether men and women have the same rights and abilities in different dimensions (politics, education, business, physical integrity).



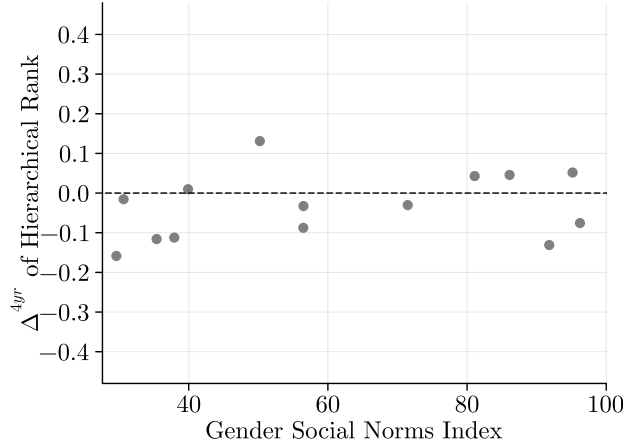
(A) Wages



(B) Hierarchical Ranks



(C) Wage Effects & Gender Norms



(D) Rank Effects & Gender Norms

FIGURE 7: Career-FPMBs across countries

*Notes:* Figure shows heterogeneity in the average double difference four years after a manager switch for log wages (Panel A) and hierarchical ranks (Panel B). Panels C and D show the relationship between the point estimates in Panels A and B and the countries' Gender Social Norms Index (GSNI) which is based on the World Value Survey ([United Nations Development Programme, 2023](#)). The GSNI measures the share of respondents in each country who exhibit at least one bias in seven survey questions on whether women have equal rights and capabilities. The average shares for country groups are weighted based on the number of observations, excluding countries lacking WVS data. Error bars represent 95% confidence bands.

### 5.3 Departments

Different departments such as R&D, HR, Finance, Commercial, or Manufacturing perform distinct sets of tasks in the firm’s production function and therefore comprise different sets of occupations that attract workers who differ in terms of skill sets, personality traits, and gender. Appendix Table A.6 shows that, in our firm, 70% of all employees and 56% of managers in Human Resources are women. In contrast, the share of female workers in Manufacturing is as low as 24%, with the share of female managers at 18%. These compositional differences may also lead to differences in the potential importance of gender based favoritism.

However, Panels A and B of Figure 8 show that, with the exception with Procurement & Supply Chain, there is no evidence for statistically significant FPMBs in any of the firm’s departments. Again, no single point estimate would imply an FPMB in wages above 5.0%. Panel B shows a qualitatively similar but more noisy picture for hierarchical ranks. Panels C and D show that the factors that contribute to the variation in female shares across departments do not rationalize the limited variation in the estimated department-specific average double differences.

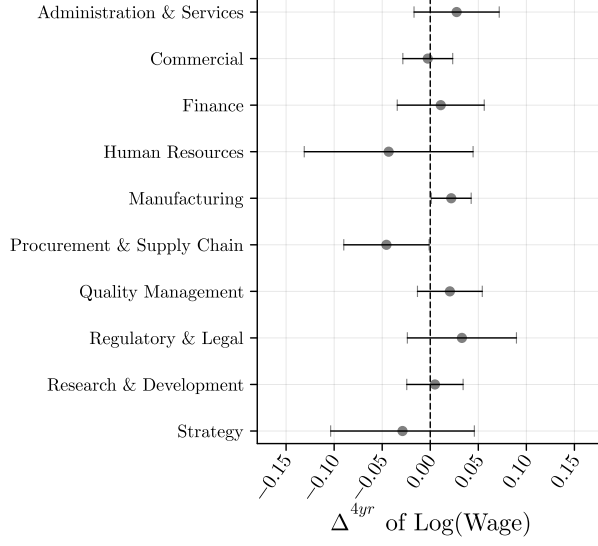
### 5.4 Hierarchical Ranks, Manager Age, and Worker Age

Next, we investigate heterogeneity across hierarchical ranks. In higher ranks, personal relationships, mentoring, or trust are arguably more relevant and individual performance is often more difficult to observe, which may be conducive to gender-based favoritism. At the same time, relatively few employees work in such high-rank positions, such that any potential FPMB at the top of the firm’s hierarchy would not show up in the average FPMB.

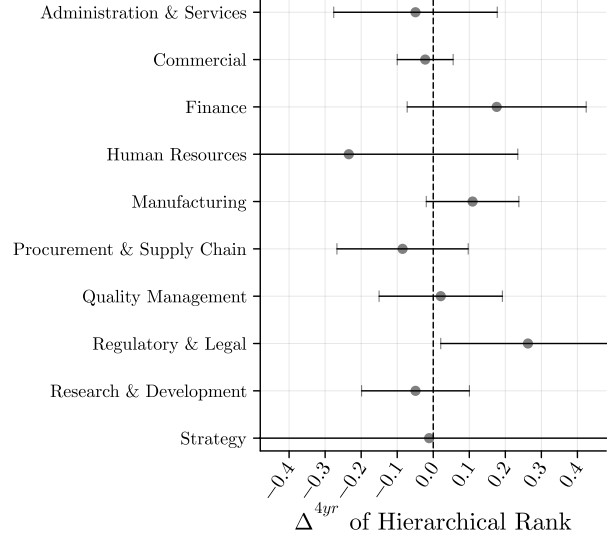
Given that gender norms change over time (e.g. Brewster and Padavic, 2000; Scarborough et al., 2019), we also ask whether there are significant FPMBs for workers with older managers. Finally, we analyze whether career penalties of having a male boss exist for young women who typically bear the bulk of the burden associated with child care. Even independent of taste-based favoritism, this would lead to FPMBs if male bosses are worse at creating family-friendly work environments that allow workers to be productive despite scheduling constraints due to child care obligations.

However, Figure 9 shows that there is very limited heterogeneity in our estimates along any of these three dimensions despite substantial compositional differences between these groups (see Appendix Table A.7). No single point estimate is statistically significant or implies an economically meaningful FPMB. At the very top of the firm hierarchy, there is

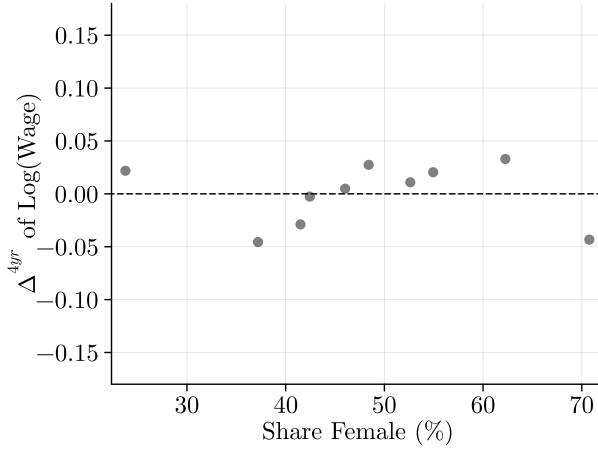




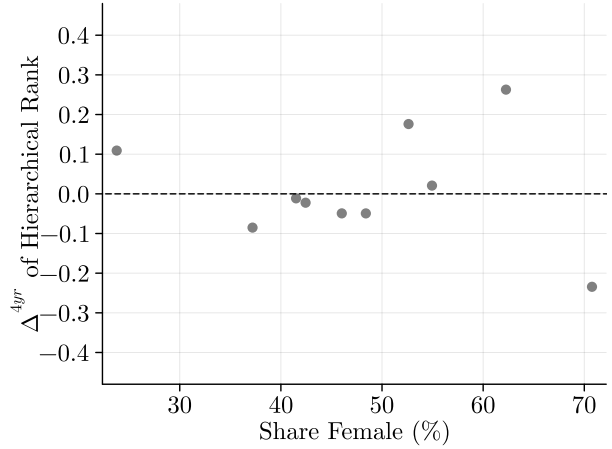
(A) Wages



(B) Hierarchical Ranks



(C) Wage-FPMBs & Female Shares



(D) Rank-FPMBs & Female Shares

FIGURE 8: Career FPMBs across departments

*Notes:* Figure shows heterogeneity in average double differences four years after a manager switch for log wages (Panel A) and hierarchical ranks (Panel B). Panels C and D show the relationship between the point estimates and departments' shares of female employees. Error bars represent 95% confidence bands.

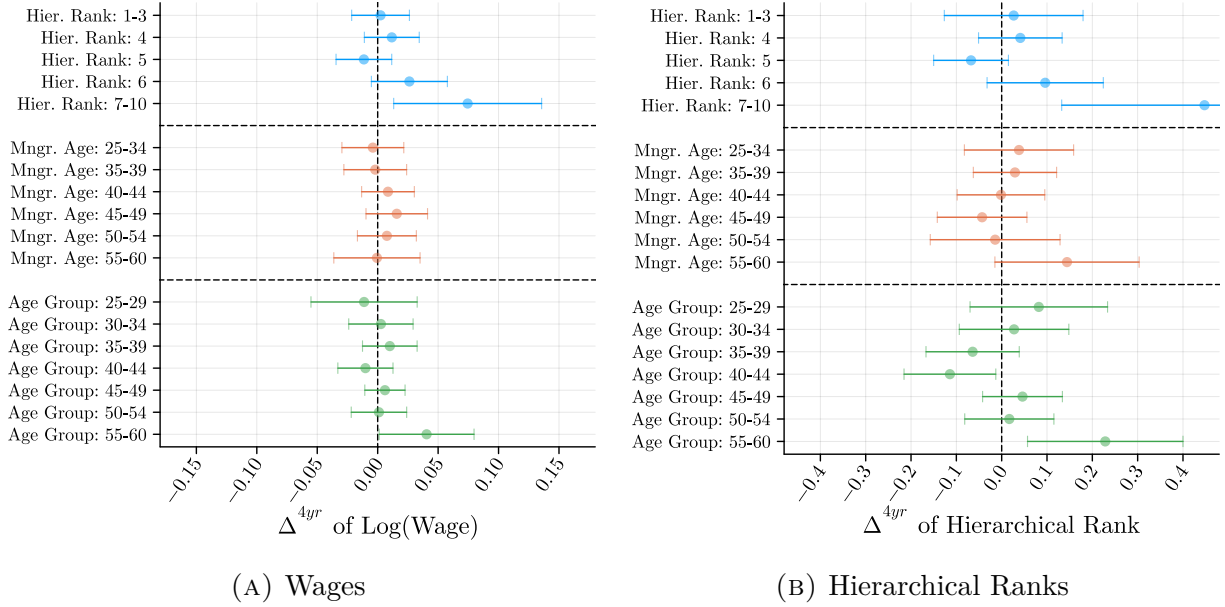


FIGURE 9: Heterogeneity by hierarchical rank, and worker and manager age

*Notes:* Figure shows heterogeneity in the average double difference four years after a manager switch for log wages (Panel A) and hierarchical ranks (Panel B). Error bars represent 95% confidence bands.

even evidence that the women’s careers progress faster than men’s under male managers relative to female managers.<sup>13</sup>

## 5.5 Implications

In sum, we do not find female career penalties of having a male boss in a wide range of contexts within our firm. In addition, the variation in estimated FPMBs across countries, departments, hierarchical ranks, and worker or manager age is not only quantitatively small, but also entirely unsystematic.

This lack of systematic variation across heterogeneous workforces within the firm is hard to rationalize with positive selection into our firm. Even though the workers at our firm may well hold less biased gender norms compared to the population from which they are hired, this would still translate into muted but systematic variation in FPMBs unless the firm exclusively hires workers who would never engage in any form of gender-based favoritism.

Hence, while firm-level factors must be critical in explaining our results, the specific composition of our firm’s workforce is unlikely to play a significant role. Instead, the universal

<sup>13</sup>Given the number of tested coefficients, this may also be statistical noise. However it would also be consistent with the so-called “queen bee” phenomenon, whereby female managers in male-dominated organizations distance themselves from junior women (Staines et al., 1974; Derks et al., 2016; Arvate et al., 2018).

absence of female career penalties of having a male boss is indirect evidence that the firm’s globally consistent management practices and intent to promote diversity effectively limit gender-based favoritism.

## 6 FPMBs in Performance and Potential Ratings

In this section, we turn our attention to managers’ subjective performance and potential evaluations of their employees. This complements the analysis of wage and promotion decisions in two ways. First, while promotion and wage decisions require coordination and approval, the annual rating decisions are made solely by workers’ direct superiors. This allows us to directly study one of the many ways managers influence workers’ careers. Second, these rating decisions differ in terms of visibility and impact on future personnel decisions, and therefore in the degree of managers’ effective discretion via their own career incentives.

### 6.1 Ratings: Process and Impact

At the end of the first quarter of every calendar year, workers’ direct superiors hand out two distinct ratings, one for past performance and one for future development potential. Performance ratings are backward-looking and determine workers’ annual bonus pay whereas potential ratings are forward-looking and impact career progression and talent development. The use of such two-dimensional employee ratings is very common, particularly in large firms (Benson et al., 2023).

The performance rating evaluates to what extent a worker has achieved their objectives that were agreed upon at the beginning of the preceding year. Managers rate workers’ performance on a 5-point scale ranging from ‘far below expectation’ to ‘far above expectation’. We refer to these as (*very*) *low*, *average*, and (*very*) *high*. Appendix Table A.8 shows the distribution of these ratings. The majority of workers receive the *average* rating, 10.6% and 19.7% receive the intermediate ratings *low* and *high*, and only 1.2% and 2.7% of workers receive the extreme ratings of *very low* and *very high*, respectively. While the HR department provides benchmark rating distributions, it remains up to the manager whether to adjust ratings in this calibration step and, importantly, which ratings to adjust. After submitting the final performance ratings, managers communicate the performance rating to their employees, and explain the rationale behind their decision in a mandatory appraisal meeting. It is important to note, however, that performance ratings do not require formal approval by HR or higher management.<sup>14</sup>

---

<sup>14</sup>This process is standard. According to a survey of more than 300 companies, over 80% of firms have formal review and evaluation processes (The Talent Strategy Group, 2023), with most of them evaluating

The potential rating indicates whether a manager believes that a worker would be willing and capable to perform well in higher-ranked positions with more complexity and responsibilities. Workers can have development potential only within, beyond, or far beyond their current role. We refer to these as *low*, *high*, and *very high* potential ratings. Appendix Table A.8 shows that about 18.4% of workers are believed to have high potential, and about 1.6% of workers are viewed to have very high potential, so to be fit for roles far beyond their current role. While the potential rating is also determined by the manager, there are some important differences compared to performance ratings. First, there is no recommended share of so-called “high potentials” to target each year. Second, while managers have to justify performance ratings to their employees, potential ratings require more internal justification, as managers are supposed to get informal feedback from peer managers and higher management. In addition, the potential rating needs to be discussed and confirmed in talent development and succession meetings which take place later in the year and involve the HR department and other managers. As a consequence, the potential rating is only implicitly communicated to workers. Instead, workers and managers make plans for future development, e.g., through performance improvement, skill acquisition, or building a strategy on how to get to the next level.

Higher performance and potential ratings are both associated with significantly higher wage growth and promotion probabilities. However, the career impacts of potential ratings are roughly twice as large compared to performance ratings. For example, receiving a *high* instead of a *low* potential rating is associated with an average two-year wage increase of 3.3% while a *high* performance rating increases wages only by about 1.9%. In contrast, performance ratings are key determinants of workers’ annual bonus pay, which is partly contracted and partly contingent on the performance rating, but unaffected by potential ratings. Appendix C contains further details on the impacts of potential and performance ratings on careers and bonus pay.

## 6.2 Estimation Approach

We now analyze whether there exist female penalties of having a male boss in terms of potential and performance ratings. As afore-mentioned, we have access to information on workers’ bonus pay for a subset of 115,438 of the 232,151 worker-year observations. We thus focus on this subsample with non-missing rating and bonus information throughout this section. Appendix Table A.9 shows descriptive statistics for this annual subsample.

---

workers annually on a five- or six-point scale for performance ratings, and calibrating ratings to make them more comparable.

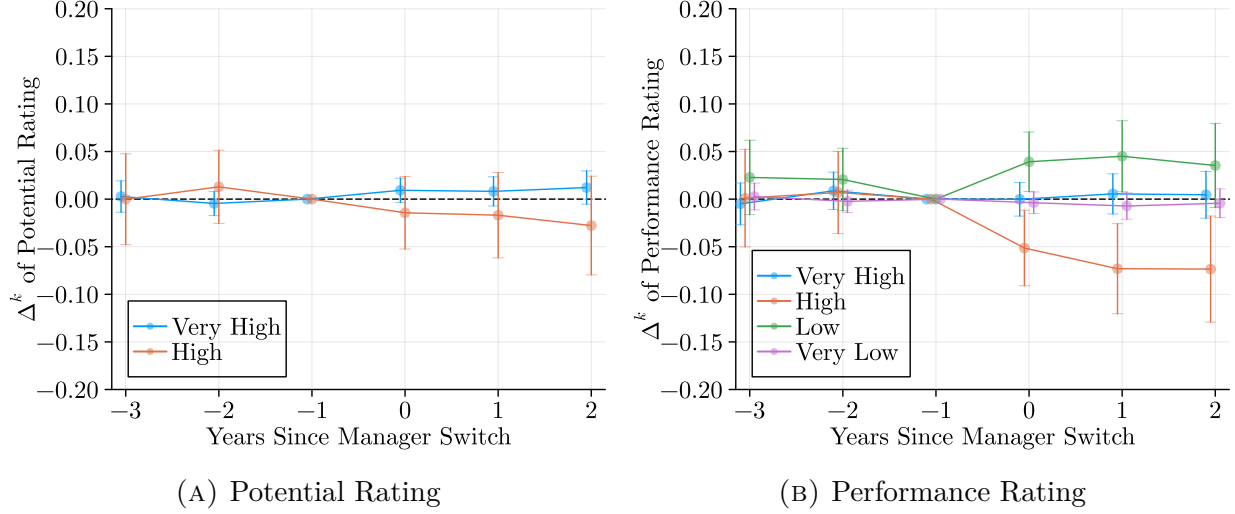


FIGURE 10: FPMs in performance and potential ratings

*Notes:* Figure shows average double differences for different potential and performance ratings in Panels A and B. The scale of the vertical axes corresponds to two within-worker standard deviations in the indicator for very low performance, 0.10, the lowest value among all performance rating indicators (Very High: 0.13, High: 0.30, Low: 0.25). The indicator for very high potential has a within-worker standard deviation of 0.09 (High: 0.27). Error bars represent 95% confidence bands.

Our approach mirrors the one used for studying FPMs in career progression. As ratings and bonus pay are determined only once per year, we apply an analogous event study approach to a yearly dataset. In particular, manager transition events occur when a worker changes managers between consecutive evaluation periods. The effect window covers three years before and after the manager transitions. We estimate a set of linear probability models—one for each possible realization of the respective rating. Figure 10 shows how the likelihood of receiving different ratings changes for women relative to men when the manager is male rather than female.

### 6.3 Results

In line with the main results in Section 4, Panel A of Figure 10 shows that there is no FPM in potential ratings. If anything, the point estimates would suggest that, following a manager transition to a male manager, the probability that female workers receive a *very high* rating increases. However, these point estimates are statistically indistinguishable from zero.

In contrast, Panel B documents a female penalty of having a male boss in performance ratings. Compared to men, women are less likely to receive a *high* and more likely to receive a *low* rating when evaluated by a male boss, rather than a female one. Compared to men, women’s probability of receiving a *high* (but not *very high*) performance rating decreases

by up to 7.3 percentage points after a transition to a male manager. Similarly, women are 4.5 percentage points more likely to receive a *low* rating when the manager is male. Given that the baseline probabilities for receiving a *high* or *low* rating are 19.7% and 10.6%, these effects are substantial changes in the probability mass distribution of performance ratings. Importantly, the figure also shows that women’s relative likelihood of receiving a *very low* or *very high* rating is unaffected by the gender of the manager.

Hence, women receive relatively worse performance ratings from male managers, and this effect is entirely driven by intermediate rather than extreme ratings, i.e., by decisions at the margin between an *average* rating and *low* and *high* ratings, rather than by workers whose performance is at the margin to *very low* or *very high* ratings. Extreme decisions differ from intermediate decisions in at least three ways that may rationalize this. First, the financial stakes are higher due to the non-linearity in the performance-contingent bonus factor. While the bonus factor increases by 25% when workers receive a *high* rather than an *average* rating, it goes up by 75% (56 log percent) when the worker receives a *very high* rating. Second, extreme ratings, by construction, are more visible and require more justification. Third, there is arguably less ambiguity in extreme cases, making it harder to justify an inappropriate rating. Hence, higher stakes and salience likely lead managers to pay more attention to extreme decisions which reduces the potential impact of implicit discrimination due to unconscious biases (Bertrand et al., 2005).

A natural question to ask is how this FPMB in (intermediate) performance ratings and the substantial impact of performance ratings on wages and rank-promotions (Appendix Figure C.1) can be reconciled with the lack of an FPMB in career progression documented in Section 4. To see why both sets of results are consistent, we scale the shift in the probability mass distribution of performance ratings implied by the average double difference coefficients in Panel B of Figure 10 with the impact of performance ratings on wage growth.<sup>15</sup> The implied value of only  $-0.26\%$  is comfortably within the narrow 95% confidence band,  $[-1.2\%, 1.1\%]$ , of the average double difference for our baseline estimates, which captures all channels through which managers impact career progression of their workers (Panel B of Figure 4). Intuitively, the direct wage effects of performance ratings are not large enough for moderate shifts in the probability mass distribution of performance ratings to generate sizeable effects on wage growth or the likelihood of getting promoted.

---

<sup>15</sup>For each realization  $r$  of the performance rating, we multiply the FPMB 1.5 years after a manager transition,  $\Delta_r^1$ , with the impact of that rating on 2.5 year wage growth relative to the average rating,  $\beta_r$ . These terms are obtained averaging the impacts reported in Appendix Figure C.1 over potential ratings weighted by the number of workers in each cell. The sum over all realizations of the performance rating,  $\sum \Delta_r^1 \beta_r$ , measures the direct wage effect of the FPMB in performance ratings.

This is not the case for bonus pay. Recall that the performance rating’s bonus impact, the bonus factor, is an order of magnitude greater than the wage impact (Panel C of Appendix Figure C.1). Compared to a 1.9% increase in future wage growth, a *high* performance rating increases current bonus pay by 25%. We use a similar approach to transform the FPMB in performance ratings into an FPMB in workers’ individual bonus factor. In particular, we estimate a single event study with the individual log bonus factor as the outcome variable.

Appendix Figure A.14 shows that women’s performance-induced bonus factor mechanically declines by 1.5% relative to men’s bonus factor when the manager is male rather than female. This FPMB is borderline statistically significant at the 5% level and statistically significant at the 10% level. The average double difference for the actual bonus pay closely tracks that for the bonus factor.

Given that bonus pay does not account for more than 20% of pay for 95% of workers (see Appendix Figure A.15), the FPMB in bonus pay does not translate into a meaningful FPMB in total earnings, not even in the short run. For the average worker, the 1.5% FPMB in bonus pay increases the FPMB in earnings by only 0.3%.

## 7 Discussion and Conclusion

Is male leadership in firms self-perpetuating because male bosses favor male employees at the expense of women? Using personnel data of a large European multinational firm, this paper presents causal evidence on this question from a typical labor market setting.

The first result of our analysis is that we reject the hypothesis that women experience significant career penalties of having a male boss: neither do women’s wages fall behind men’s wages, nor are women less likely to be promoted to higher hierarchical ranks when their manager is a man. This result is fundamentally different from the findings in Cullen and Perez-Truglia (2023) who present convincing evidence that careers of women at a Southeast Asian bank progress substantially slower when the manager is male because of so-called “old boys’ clubs dynamics”, i.e., exclusive social interactions between male workers and male bosses during or after work that lead to gender-specific favoritism. Our null result implies that opportunities for social interactions between workers and their managers are necessary but, fortunately, not sufficient for gender-based favoritism to affect workers’ career progression.

The second result of our analysis is even more striking: Leveraging the breadth of our data, we show that the limited variation in our estimated female career penalties of having a male boss is entirely unrelated to variation in workforce composition within our firm. That is, the neutrality of manager gender for gender gaps in career progression holds almost



universally across different countries and departments, which differ significantly in terms of gender norms, and gender and occupational composition respectively. Hence, compositional differences are unlikely to rationalize the discrepancy between our results and those in [Cullen and Perez-Truglia \(2023\)](#).<sup>16</sup>

Instead, our results suggest that firm-specific factors, such as management practices and corporate culture, play an important role. Corporate management practices vary significantly across countries and firms, and are a crucial determinant of firm productivity ([Bloom and Van Reenen, 2007](#); [Bloom et al., 2014](#)). Although firms' primary objective is to maximize profitability, achieving this goal requires fostering equity and fairness in personnel decisions to optimally allocate workers to jobs ([Hsieh et al., 2019](#)). Put differently, a central goal of good management practices is to hire, compensate, and promote workers based on ability rather than gender, race, tenure, or social connections. Hence, any finding of gender-based favoritism implies that the management practices and institutions in the respective settings are sub-par. Such sub-par management practices are particularly common in developing countries, small firms, and publicly-owned organizations ([Bloom and Van Reenen, 2010](#)).

In contrast, our large European corporation would rank towards the top of the management score distribution and uses the same set of management practices throughout all departments and establishments. The absence of gender-based favoritism throughout our firm is thus consistent with the firm's efforts to purge personnel decisions of favoritism and promote workforce diversity. While future research will have to determine which policies are necessary to limit favoritism, three aspects of the firm's people management practices seem particularly relevant.

First, the firm promotes diversity, equity, and inclusion as a central part of its corporate culture. Events to raise awareness of implicit discrimination, mentoring programs, or networks for underrepresented groups make issues surrounding inclusion and fairness in personnel decisions particularly salient. The emphasis on diversity is also reflected in the fact that gender balance is a key performance indicator affecting executive compensation, and that alignment with the firm's corporate culture is an important requirement for promotions into management roles.

Second, employees' annual bonus pay is linked to their individual performance relative to clearly defined and agreed-upon individual objectives. While managers' performance ratings of their employees are subjective, they need to be justified and are tracked to guide future personnel decisions. In addition, managers receiving performance-contingent bonus pay have

---

<sup>16</sup>Similar to [Cullen and Perez-Truglia \(2023\)](#), other studies also document FPMBs for teachers ([Biasi and Sarsons, 2022](#); [Husain et al., 2024](#)) and other public sector employees ([Bircan et al., 2024](#); [Fortin et al., 2024](#)).

an incentive promote workers based on ability instead of social connections. This is in line with [Bandiera et al. \(2009\)](#) who show that managers do not favor workers based on social connections if they receive performance-pay.

Third, personnel decisions follow standardized processes, involve different stakeholders within the organization, and are guided by easily accessible employee data, including information on past and current performance and potential ratings.<sup>17</sup> Transparency and the need for justification limit managers’ effective discretion in personnel decisions and thereby prevent managers from favoring certain workers independent of their ability.

Data on managers’ annual performance and potential ratings of their subordinates allow us to analyze outcomes with varying degrees of financial and organizational impact, where managers have different levels of formal and informal discretion. Consistent with the absence of female career penalties of having a male boss, manager gender does not matter for gender gaps in high-stakes potential ratings and highly visible extreme performance ratings. Interestingly, however, we do find evidence that gender biases differ between male and female managers for intermediate performance ratings, i.e., those decisions with the lowest financial stakes and no need for justification in front of other stakeholders. This difference across outcomes with varying degrees of financial and organizational impact, and formal and informal discretion, corroborates the notion that corporate institutions can eliminate structural disadvantages of male leadership for women’s careers.

In this sense, our null result is a constructive one. While differences in individual gender biases between male and female managers may persist, the necessary tools to stop them from translating into favoritism in personnel decisions exist. To the extent that firms have an intrinsic incentive to adopt good management practices to succeed in a competitive environment, one may expect that self-perpetuating male leadership will become less prevalent simply because favoritism is costly (e.g. [Becker, 1957](#); [Ashenfelter and Hannan, 1986](#); [Black and Strahan, 2001](#)). For example, recent research by [Kline et al. \(2022\)](#) and [Kline et al. \(2024\)](#) finds that gender discrimination in applicants’ contact rates is negligible for most Fortune 500 firms in the US and that discrimination is concentrated among a small group of employers.

On the flip side, cross-firm dispersion in management quality within countries is rather persistent (e.g. [Bloom et al., 2019](#)). While the 500 largest firms in the US—which are most similar to our firm—employ almost one quarter of the US workforce ([US Census Bureau, 2021](#)), future research will have to determine whether our results for a large multinational corporation translate to other firms based in developed economies, and in particular to

---

<sup>17</sup>For example, internal vacancies must be announced via an internal job portal, promotion decisions to higher ranks have to be discussed and agreed upon by a panel of managers and HR business partners, and managers have to justify the potential evaluations of their subordinates vis-à-vis other stakeholders.

smaller firms without pro-active HR departments. In addition, it will be important to identify which management practices are particularly successful in reducing favoritism, and whether corporate culture plays an important role above and beyond specific practices and procedures.

Finally, it is important to emphasize that gender disparities in career outcomes persist within our firm as women remain underrepresented in management positions and continue to have lower promotion rates. At first glance, this may appear at odds with the view that the firm’s personnel practices effectively eliminate inefficient biases from personnel decisions. We consider this interpretation unlikely for a number of reasons. First, persistent gaps in promotion rates may reflect supply side gender differences in application behavior or job preferences, which have been shown to be important drivers of gender gaps (e.g. [Buser et al., 2014](#); [Hospido et al., 2022](#)). Second, current gender pay gaps largely reflect past personnel decisions implying that gender-based favoritism prior to our sample period may have contributed to the remaining disparities. Our results do imply, however, that male over-representation no longer affects current promotion decisions and hence the future evolution of gender gaps. In line with this and the firm’s reputation as a female-friendly workplace ([Forbes, 2023](#); [Financial Times, 2023](#)), the share of females in management positions at our firm has been steadily increasing throughout our sample period (Appendix Figure [A.16](#)). Between 2015 and 2019, the share of female managers at our firm rose by 5.46 p.p. (17.0%)—a substantially larger increase than the average 1.46 p.p. (4.2%) increase across a sample of 590 US firms studied by [McKinsey & Company \(2019\)](#) over the same period.

## References

- Alan, Ş., G. Çörekçioğlu, M. Kaba, and M. Sutter (2025). Female Leadership and Workplace Climate. *Management Science*.
- Annis, B. and J. Gray (2013). *Work with Me: The 8 Blind Spots Between Men and Women in Business*. Macmillan.
- Arvate, P. R., G. W. Galilea, and I. Todescat (2018). The queen bee: A myth? the effect of top-level female leadership on subordinate females. *The Leadership Quarterly* 29(5), 533–548.
- Ashenfelter, O. and T. Hannan (1986). Sex Discrimination and Product Market Competition: The Case of the Banking Industry. *The Quarterly Journal of Economics* 101(1), 149–173.
- Azmat, G. and R. Ferrer (2017). Gender Gaps in Performance: Evidence from Young Lawyers. *Journal of Political Economy* 125(5), 1306–1355.
- Bagues, M., M. Sylos-Labini, and N. Zinovyeva (2017). Does the Gender Composition of Scientific Committees Matter? *American Economic Review* 107(4), 1207–1238.
- Bandiera, O., I. Barankay, and I. Rasul (2009). Social Connections and Incentives in the Workplace: Evidence From Personnel Data. *Econometrica* 77(4), 1047–1094.
- Becker, G. S. (1957). *The Economics of Discrimination*. University of Chicago Press.
- Benson, A., D. Li, and K. Shue (2019). Promotions and the Peter Principle. *The Quarterly Journal of Economics* 134(4), 2085–2134.
- Benson, A., D. Li, and K. Shue (2023). Potential and the Gender Promotion Gap. *mimeo*.
- Bertrand, M. (2011). Chapter 17 - New Perspectives on Gender. In D. Card and O. Ashenfelter (Eds.), *Handbook of Labor Economics*, Volume 4, pp. 1543–1590. Elsevier.
- Bertrand, M., S. E. Black, S. Jensen, and A. Lleras-Muney (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.
- Bertrand, M., D. Chugh, and S. Mullainathan (2005). Implicit Discrimination. *The American Economic Review* 95, 94–98.
- Biasi, B. and H. Sarsons (2022). Flexible Wages, Bargaining, and the Gender Gap. *The Quarterly Journal of Economics* 137(1), 215–266.
- Bircan, Ç., G. Friebel, and T. Stahl (2024). Gender Promotion Gaps in Knowledge Work: The Role of Task Assignment in Teams. EBRD Working Paper 291, EBRD.
- Black, S. E. and P. E. Strahan (2001). The Division of Spoils: Rent-Sharing and Discrimination in a Regulated Industry. *American Economic Review* 91(4), 814–831.
- Blau, F. D. and L. M. Kahn (2017). The Gender Wage Gap: Extent, Trends, and Explanations. *Journal of Economic Literature* 55(3), 789–865.
- Bloom, N., E. Brynjolfsson, L. Foster, R. Jarmin, M. Patnaik, I. Saporta-Eksten, and J. Van Reenen (2019). What Drives Differences in Management Practices? *American Economic Review* 109(5), 1648–83.

- Bloom, N., R. Lemos, R. Sadun, D. Scur, and J. Van Reenen (2014). JEEA-FBBVA Lecture 2013: The New Empirical Economics of Management. *Journal of the European Economic Association* 12(4), 835–876.
- Bloom, N., R. Sadun, and J. Van Reenen (2012). Americans Do IT Better: US Multinationals and the Productivity Miracle. *American Economic Review* 102(1), 167–201.
- Bloom, N. and J. Van Reenen (2007). Measuring and Explaining Management Practices Across Firms and Countries. *The Quarterly Journal of Economics* 122(4), 1351–1408.
- Bloom, N. and J. Van Reenen (2010). Why Do Management Practices Differ across Firms and Countries? *Journal of Economic Perspectives* 24(1), 203–24.
- Bloom, N. and J. Van Reenen (2011). Chapter 19 - Human Resource Management and Productivity. In D. Card and O. Ashenfelter (Eds.), *Handbook of Labor Economics*, Volume 4, pp. 1697–1767. Elsevier.
- Bohren, J. A., A. Imas, and M. Rosenberg (2019). The Dynamics of Discrimination: Theory and Evidence. *American Economic Review* 109(10), 3395–3436.
- Brewster, K. L. and I. Padavic (2000). Change in Gender-Ideology, 1977–1996: The Contributions of Intracohort Change and Population Turnover. *Journal of Marriage and Family* 62(2), 477–487.
- Buser, T., M. Niederle, and H. Oosterbeek (2014). Gender, competitiveness, and career choices. *The Quarterly Journal of Economics* 129(3), 1409–1447.
- Card, D., A. R. Cardoso, and P. Kline (2016). Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women. *The Quarterly Journal of Economics* 131(2), 633–686.
- Card, D., S. DellaVigna, P. Funk, and N. Iriberri (2020). Are Referees and Editors in Economics Gender Neutral? *The Quarterly Journal of Economics* 135(1), 269–327.
- Ceni, R., E. Galván, and C. Parada (2023). Gender Gaps and the Role of Female Bosses: Evidence from Matched Employer-Employee Administrative Data. Documentos de Trabajo (working papers) 23-06, Instituto de Economía - IECON.
- Cullen, Z. and R. Perez-Truglia (2023). The old boys’ club: Schmoozing and the gender gap. *American Economic Review* 113(7), 1703–1740.
- Culpepper and Associates (2009). Salary Range Structure Practices. Technical report.
- DellaVigna, S. and M. Gentzkow (2019). Uniform Pricing in U.S. Retail Chains. *The Quarterly Journal of Economics* 134(4), 2011–2084.
- Derks, B., C. Van Laar, and N. Ellemers (2016). The queen bee phenomenon: Why women leaders distance themselves from junior women. *The Leadership Quarterly* 27(3), 456–469.
- Egan, M., G. Matvos, and A. Seru (2022). When Harry Fired Sally: The Double Standard in Punishing Misconduct. *Journal of Political Economy* 130(5), 1184–1248.
- Financial Times (2023). FT-Statista Diversity Leaders ranking and full methodology.
- Forbes (2023). World’s Top Companies for Women.

- Fortin, N. M., M. Markevych, and M. Rehavi (2024). Closing the Gender Pay Gap in the US Federal Service: The Role of New Managers. Mimeo.
- Frederiksen, A., L. B. Kahn, and F. Lange (2019). Supervisors and Performance Management Systems. *Journal of Political Economy* 128(6), 2123–2187.
- Frederiksen, A., F. Lange, and B. Kriechel (2017). Subjective Performance Evaluations and Employee Careers. *Journal of Economic Behavior & Organization* 134, 408–429.
- Georgiadou, A. and J. Syed (2021). The interaction between gender and informal social networks: An East Asian perspective. *Human Resource Management Journal* 31(4), 995–1009.
- Goldin, C. (2014). A Grand Gender Convergence: Its Last Chapter. *American Economic Review* 104(4), 1091–1119.
- Grissom, J. A., J. Nicholson-Crotty, and L. Keiser (2012). Does my Boss’s Gender Matter? Explaining Job Satisfaction and Employee Turnover in the Public Sector. *Journal of Public Administration Research and Theory* 22(4), 649–673.
- Harrison, A. and J. Scorse (2010). Multinationals and Anti-sweatshop Activism. *American Economic Review* 100(1), 247–73.
- Herkenhoff, K., J. Lise, G. Menzio, and G. M. Phillips (2024). Production And Learning In Teams. *Econometrica* 92(2), 467–504.
- Hjort, J., X. Li, and H. Sarsons (2022). Across-Country Wage Compression in Multinationals. Working Paper 26788, National Bureau of Economic Research.
- Hoffman, M. and S. Tadelis (2021). People Management Skills, Employee Attrition, and Manager Rewards: An Empirical Analysis. *Journal of Political Economy* 129(1), 243–285.
- Horak, S. and Y. Suseno (2023). Informal networks, informal institutions, and social exclusion in the workplace: Insights from subsidiaries of multinational corporations in korea. *Journal of Business Ethics* 186, 633–655.
- Hospido, L., L. Laeven, and A. Lamo (2022). The Gender Promotion Gap: Evidence from Central Banking. *The Review of Economics and Statistics* 104(5), 981–996.
- Hospido, L. and C. Sanz (2021). Gender Gaps in the Evaluation of Research: Evidence from Submissions to Economics Conferences. *Oxford Bulletin of Economics and Statistics* 83(3), 590–618.
- HRdive (2022). Once neglected, DEI initiatives now present at all Fortune 100 companies. Technical report.
- Hsieh, C.-T., E. Hurst, C. I. Jones, and P. J. Klenow (2019). The Allocation of Talent and U.S. Economic Growth. *Econometrica* 87(5), 1439–1474.
- Husain, A. N., D. A. Matsa, and A. R. Miller (2024). Do Male Workers Prefer Male Leaders? An Analysis of Principals’ Effects on Teacher Retention. *Journal of Human Resources* 59.
- Hägele, I. (2024). The Broken Rung: Gender and the Leadership Gap. *mimeo*.
- Jarosch, G., E. Oberfield, and E. Rossi-Hansberg (2021). Learning From Coworkers. *Econometrica* 89(2), 647–676.

- Kleven, H., C. Landais, J. Posch, A. Steinhauer, and J. Zweimüller (2019). Child Penalties Across Countries: Evidence and Explanations. Working Paper 25524, National Bureau of Economic Research.
- Kline, P., E. K. Rose, and C. R. Walters (2022). Systemic Discrimination Among Large U.S. Employers. *The Quarterly Journal of Economics* 137(4), 1963–2036.
- Kline, P., E. K. Rose, and C. R. Walters (2024). A Discrimination Report Card. *American Economic Review* 114(8), 2472–2525.
- Kunze, A. and A. R. Miller (2017). Women Helping Women? Evidence from Private Sector Data on Workplace Hierarchies. *The Review of Economics and Statistics* 99(5), 769–775.
- Kurtulus, F. A. and D. Tomaskovic-Devey (2011). 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).
- Lang, I. H. (2011). Co-Opt the Old Boys’ Club: Make It Work for Women. *Harvard Business Review*.
- Lazear, E. P., K. L. Shaw, and C. T. Stanton (2015). The Value of Bosses. *Journal of Labor Economics* 33(4), 823–861.
- Maida, A. and A. Weber (2022). Female Leadership and Gender Gap within Firms: Evidence from an Italian Board Reform. *ILR Review* 75(2), 488–515.
- McKinsey & Company (2019). Women in the Workplace. Technical report.
- Mercer (2022). ESG Metrics in Executive Incentive Plans at S&P 500 Companies. Technical report.
- Nemoto, K. (2013). Long Working Hours and the Corporate Gender Divide in Japan. *Gender, Work & Organization* 20(5), 512–527.
- Niederle, M. and L. Vesterlund (2011). Gender and Competition. *Annual Review of Economics* 3(1), 601–630.
- Peter, L. and R. Hull (1969). *The Peter Principle*. Souvenir Press.
- Prendergast, C. and R. H. Topel (1996). Favoritism in Organizations. *Journal of Political Economy* 104(5), 958–978.
- Sarsons, H., K. Gërxhani, E. Reuben, and A. Schram (2021). Gender Differences in Recognition for Group Work. *Journal of Political Economy* 129(1), 101–147.
- Scarborough, W. J., R. Sin, and B. Risman (2019). Attitudes and the Stalled Gender Revolution: Egalitarianism, Traditionalism, and Ambivalence from 1977 through 2016. *Gender & Society* 33(2), 173–200.
- Schmidheiny, K. and S. Siegloch (2023). On Event Studies and Distributed-Lags in Two-Way Fixed Effects Models: Identification, Equivalence, and Generalization. *Journal of Applied Econometrics* 38, 695–713.
- Staines, G., C. Tavis, and T. E. Jayaratne (1974). The queen bee syndrome. *Psychology Today* 7(8), 55.

- The Talent Strategy Group (2023). Global Performance Management Report 2023. Technical report.
- United Nations Development Programme (2023). 2023 gender social norms index (gsni).
- US Census Bureau (2021). 2021 SUSB Annual Data Tables by Establishment Industry.
- Walters, C. (2024). Empirical Bayes methods in labor economics. In *Handbook of Labor Economics*, Volume 5, pp. 183–260. Elsevier.



# Supplemental Appendix

For online publication only.

## A Additional Tables and Figures

TABLE A.1: Descriptive Statistics for Managers

	Mean	Std. Dev.	P25	P50	P75
Female	0.328	0.470	0.000	0.000	1.000
Age	43.8	7.8	38.0	44.0	50.0
Tenure	120.0	104.9	35.0	92.0	177.0
Rank	5.97	1.09	5.00	6.00	6.00
Wage [€]	86,905	59,050	48,692	79,690	110,198
Nr. Subordinates	5.1	5.7	2.0	4.0	6.0

*Notes:* This table shows the mean, the standard deviation, and the 25th, 50th, and 75th percentile of selected variables for managers. Tenure is expressed in months and hierarchical ranks range from 1 to 10. We convert all currencies to Euro using monthly exchange rates (IMF).

TABLE A.2: Descriptive Statistics for Different Manager Transitions

	Ever Had Event?		Current Event				
	No (1)	Yes (2)	No Event (3)	M2M (4)	M2F (5)	F2M (6)	F2F (7)
Nr. of Workers	32,077	40,994	73,071	24,761	12,952	11,328	7,515
Nr. of Obs.	774,780	1,912,225	2,610,792	39,640	13,994	12,345	10,234
Female	0.394 (0.489)	0.394 (0.489)	0.393 (0.488)	0.299 (0.458)	0.489 (0.500)	0.490 (0.500)	0.644 (0.479)
Age	40.9 (9.8)	40.9 (9.1)	40.9 (9.3)	40.4 (9.1)	40.1 (9.1)	39.8 (9.0)	39.0 (9.2)
Tenure	102.2 (116.1)	115.3 (108.1)	111.9 (110.8)	106.2 (104.7)	97.6 (102.1)	93.9 (99.5)	86.9 (97.6)
Wage [€]	51,915 (46,146)	53,946 (41,831)	53,381 (43,104)	53,447 (47,558)	53,269 (42,185)	53,287 (41,216)	47,948 (33,548)
Rank	4.47 (1.37)	4.56 (1.38)	4.53 (1.38)	4.59 (1.41)	4.55 (1.38)	4.60 (1.35)	4.40 (1.18)
Number of Coworkers	9.2 (14.2)	9.8 (17.7)	9.6 (16.8)	8.1 (12.8)	10.9 (23.1)	10.5 (21.6)	7.1 (11.8)

*Notes:* This table shows the mean and standard deviation of selected variables among workers with and without any event (columns 1-2) and across different event types (columns 3-7). The statistics in columns 4-7 are computed in the month just before the manager transition.

TABLE A.3: Descriptive Statistics for Different Manager Transitions: Outgoing Managers

	Ever Had Event?		Current Event				
	No (1)	Yes (2)	No Event (3)	M2M (4)	M2F (5)	F2M (6)	F2F (7)
Female	0.381 (0.486)	0.317 (0.465)	0.325 (0.468)	0.000 (0.000)	0.000 (0.000)	1.000 (0.000)	1.000 (0.000)
Age	44.4 (8.0)	43.8 (7.7)	43.9 (7.8)	44.7 (7.7)	44.5 (7.7)	42.8 (7.6)	42.4 (7.6)
Tenure	118.8 (106.6)	123.1 (104.6)	122.7 (105.1)	135.5 (111.9)	121.0 (105.0)	108.1 (91.3)	106.9 (92.6)
Wage [€]	74,923 (46,404)	88,639 (59,958)	86,646 (57,218)	97,489 (69,492)	104,717 (69,140)	91,312 (61,765)	84,469 (53,871)
Rank	5.7 (0.9)	6.0 (1.1)	6.0 (1.1)	6.2 (1.3)	6.3 (1.2)	6.1 (1.1)	5.9 (1.1)
Number of Subordinates	3.1 (3.2)	5.1 (5.7)	4.9 (5.5)	7.9 (10.0)	7.7 (8.9)	6.3 (7.2)	6.2 (5.7)

*Notes:* This table shows the mean and standard deviation of selected variables among managers with and without any event (columns 1-2) and across different event types (columns 3-7). Statistics refer to the manager just before the transition. The statistics in columns 4-7 are computed in the month just after the manager transition.

TABLE A.4: Descriptive Statistics for Different Manager Transitions: Incoming Managers

	Ever Had Event?		Current Event				
	No (1)	Yes (2)	No Event (3)	M2M (4)	M2F (5)	F2M (6)	F2F (7)
Female	0.381 (0.486)	0.317 (0.465)	0.325 (0.469)	0.000 (0.000)	1.000 (0.000)	0.000 (0.000)	1.000 (0.000)
Age	44.4 (8.0)	43.8 (7.7)	43.9 (7.8)	43.8 (7.8)	41.7 (7.6)	43.3 (7.8)	41.4 (7.7)
Tenure	118.8 (106.6)	123.1 (104.6)	122.9 (105.0)	125.6 (109.7)	98.7 (88.2)	110.7 (99.5)	97.2 (88.8)
Wage [€]	74,923 (46,404)	88,639 (59,958)	86,944 (58,236)	94,863 (75,693)	90,151 (62,434)	100,393 (65,936)	82,270 (54,989)
Blue Collar	0.007 (0.081)	0.003 (0.057)	0.004 (0.060)	0.005 (0.072)	0.009 (0.092)	0.003 (0.056)	0.010 (0.097)
Rank	5.7 (0.9)	6.0 (1.1)	6.0 (1.1)	6.1 (1.3)	6.0 (1.2)	6.2 (1.2)	5.9 (1.1)
Number of Subordinates	3.1 (3.2)	5.1 (5.7)	4.9 (5.5)	7.1 (8.0)	5.7 (6.4)	6.8 (8.2)	5.4 (5.0)

*Notes:* This table shows the mean and standard deviation of selected variables among managers with and without any event (columns 1-2) and across different event types (columns 3-7). Statistics refer to the manager just after the transition. The statistics in columns 4-7 are computed in the month just after the manager transition.

TABLE A.5: Distribution of Event Types

	Distribution of Events				Nr. of Events
	<i>M2M</i>	<i>M2F</i>	<i>F2M</i>	<i>F2F</i>	
Baseline (All Events)	0.518	0.184	0.163	0.134	69,410
Excl. Unit Changes	0.519	0.183	0.161	0.137	56,497
Excl. Job Changes	0.517	0.184	0.161	0.138	56,030
Excl. Single Worker Events	0.525	0.184	0.156	0.135	45,747

*Notes:* This table shows the distribution of the four possible event types and the number of events for different restrictions on which events are considered. Single worker events are manager transitions where only one worker is assigned from one particular manager to another particular manager in a given period.

TABLE A.6: Summary Statistics for Heterogeneity Analysis

	Female	Age	Male Mngr.	Coworkers	Wage	Rank
<b>A. Countries</b>						
Africa & Middle East	0.452	38.2	0.668	4.4	35,458	4.98
Australia, Canada, New Zealand	0.593	42.9	0.558	3.3	66,730	4.96
Benelux	0.505	39.2	0.584	4.7	60,579	4.69
China	0.515	33.2	0.620	5.5	26,350	4.79
East Europe	0.639	39.6	0.533	4.7	30,137	5.01
France	0.509	41.8	0.642	10.7	43,658	4.14
Germany, Austria, Switzerland	0.288	42.9	0.806	10.9	72,258	4.53
Italy, Spain, Portugal	0.476	43.2	0.603	9.5	46,229	4.41
Japan, Korea, Hong Kong, Taiwan	0.319	40.2	0.811	7.9	48,339	4.46
Latin America	0.458	39.8	0.677	17.8	25,548	4.37
Scandinavia	0.531	45.7	0.587	2.1	72,019	5.20
South-East Asia	0.549	36.9	0.544	11.2	20,975	4.39
UK & Ireland	0.425	41.3	0.634	6.2	48,018	4.26
United States	0.434	43.1	0.672	6.9	78,573	4.72
<b>B. Departments</b>						
Administration & Services	0.425	43.3	0.767	6.8	61,260	4.62
Commercial	0.423	39.2	0.697	6.8	45,851	4.97
Finance	0.524	39.4	0.604	5.0	57,573	5.07
Human Resources	0.702	40.2	0.476	3.5	70,387	5.32
Manufacturing	0.235	41.7	0.824	18.8	45,797	3.58
Procurement & Supply Chain	0.370	41.7	0.725	7.7	45,884	4.03
Quality Management	0.548	40.1	0.506	6.7	56,324	4.61
Regulatory & Legal	0.622	41.8	0.487	3.7	83,020	5.74
Research & Development	0.457	41.3	0.649	5.5	72,826	4.92
Strategy	0.413	41.7	0.699	5.0	95,730	6.03

*Notes:* This table shows summary statistics across sub-groups of the workforce in terms of countries and departments.

TABLE A.7: Summary Statistics for Heterogeneity Analysis (ctd.)

	Female	Age	Male Mngr.	Coworkers	Wage	Rank
<b>A. Hierarchical Rank</b>						
1-3	0.339	41.1	0.754	20.9	32,383	2.63
4	0.437	38.0	0.679	8.5	34,720	4.00
5	0.433	40.3	0.676	6.0	49,176	5.00
6	0.380	43.8	0.723	4.2	84,858	6.00
7-10	0.287	47.0	0.786	2.8	148,760	7.46
<b>B. Manager Age Groups</b>						
25-34	0.419	37.3	0.650	11.5	35,652	3.83
35-39	0.431	38.2	0.645	8.4	41,641	4.36
40-44	0.422	40.2	0.682	8.1	50,211	4.59
45-49	0.379	42.0	0.731	11.1	58,070	4.67
50-54	0.358	43.1	0.759	9.7	63,321	4.76
55-60	0.348	44.3	0.810	9.4	68,795	4.75
<b>C. Age Groups</b>						
25-29	0.436	27.3	0.671	11.2	30,794	3.89
30-34	0.421	32.1	0.683	9.6	37,954	4.32
35-39	0.415	37.0	0.699	9.0	48,329	4.63
40-44	0.398	42.0	0.720	9.3	58,718	4.78
45-49	0.370	47.0	0.731	9.6	65,175	4.77
50-54	0.351	51.9	0.750	9.5	69,848	4.71
55-60	0.333	57.1	0.746	9.1	71,996	4.58

*Notes:* This table shows summary statistics across sub-groups of the workforce in terms of hierarchical ranks, manager age, and worker age.

TABLE A.8: Frequency Distribution of Performance and Potential Ratings

Performance	Potential			Total
	Low	High	Very High	
Very Low	0.012	0.000	0.000	0.012
Low	0.103	0.002	0.000	0.106
Average	0.565	0.087	0.005	0.657
High	0.110	0.080	0.008	0.198
Very High	0.009	0.015	0.003	0.027
Total	0.800	0.184	0.016	

*Notes:* This table shows the joint and marginal frequency distributions of performance and potential ratings.

TABLE A.9: Descriptive Statistics for Annual Data

	Mean	Std. Dev.	P25	P50	P75
<b>Worker Characteristics</b>					
Female	0.400	0.490	0.000	0.000	1.000
Age	41.7	9.3	34.0	41.0	49.0
Tenure	123.4	113.7	32.0	88.0	182.0
Hierarchical Rank	4.72	1.52	4.00	5.00	6.00
Wage [€]	64,757	45,908	35,777	56,064	84,924
<b>Manager Characteristics</b>					
Male Mngr.	0.700	0.458	0.000	1.000	1.000
Age Mngr.	45.5	8.1	40.0	46.0	51.0
Tenure Mngr.	149.6	117.5	49.0	122.0	221.0
Rank Mngr.	6.3	1.3	5.0	6.0	7.0
Wage Mngr. [€]	103,953	72,359	63,235	90,331	125,810
<b>Team Characteristics</b>					
Number of Coworkers	7.7	10.6	2.0	5.0	9.0

*Notes:* This table shows the mean, standard deviation, the 25th, 50th, and 75th percentile of selected variables for the sample of worker-years with non-missing information on ratings and bonus pay ( $N = 115,438$ ). Data are from March of each year.

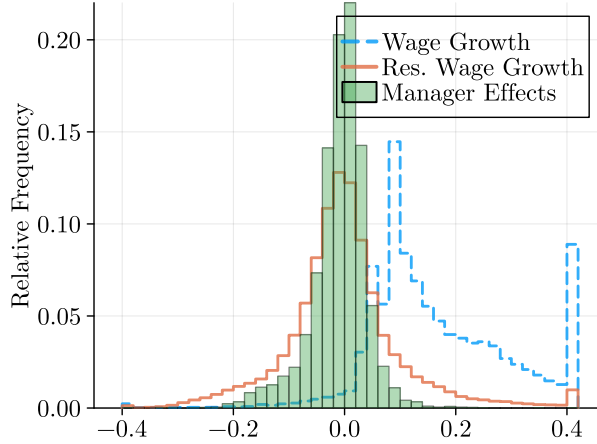


FIGURE A.1: Manager Value Added in Four-Year Wage Growth

*Notes:* This figure plots the distribution of manager value-added to workers' four-year wage growth (green histogram). The blue dashed line shows the distribution of (nominal) wage growth. The orange solid line shows the residual distribution after partialling out fixed effects for gender-by-age, tenure in years, country-by-month, and rank-by-department (controlling for manager fixed effects). The standard deviation of wage growth is 0.170, the standard deviation of residual wage growth is 0.124, and the standard deviation of manager value-added is 0.056. Manager value-added is computed using an Empirical Bayes shrinkage procedure (Walters, 2024): First, we partial out fixed effects for gender-by-age, tenure in years, country-by-month, and rank-by-department (controlling for manager fixed effects). Second, we compute average residual wage growth for each worker-manager pair and take the average over all pairs for each manager. Third, we shrink these estimates in order to account for upward-bias in the variance of manager value-added due to sampling noise.

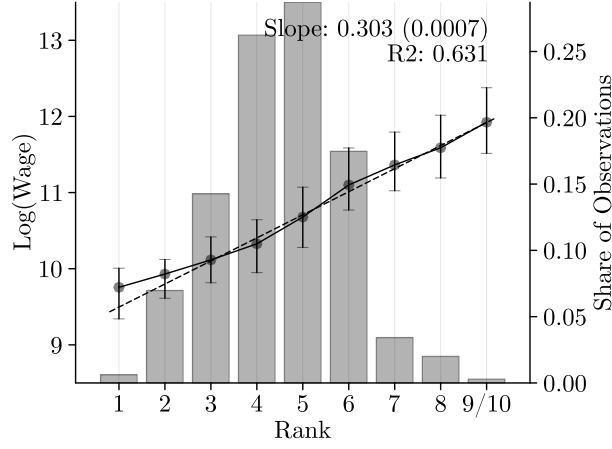


FIGURE A.2: Wages and hierarchical ranks

*Notes:* The average wage, the range between the 10th and 90th percentile for each hierarchical rank, and a linear fit are plotted on the left vertical axis. The share of observations in each hierarchical rank is plotted on the right vertical axis. Ranks 9 and 10 are grouped together.

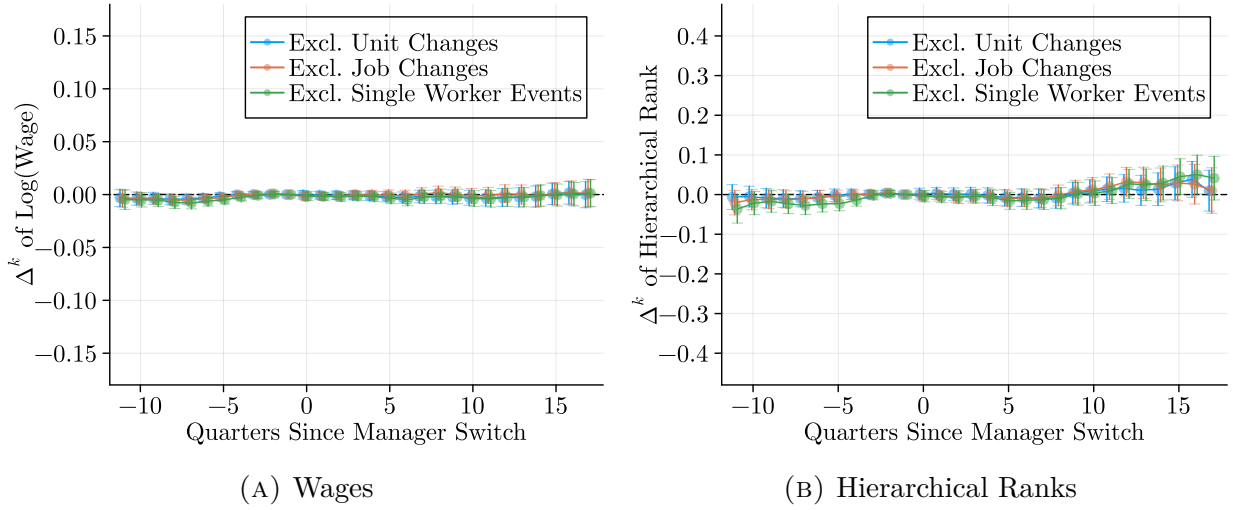


FIGURE A.3: Robustness: Excluding Events with Concurrent Changes in Job or Unit, or Events Affecting only One Worker

*Notes:* This figure shows the average double differences estimated using only events that do not go along with a change in the worker's job or unit, or that affect only one worker. Panel A show the effect on log wages and Panel B on hierarchical ranks. The error bars display the 95% confidence bands.



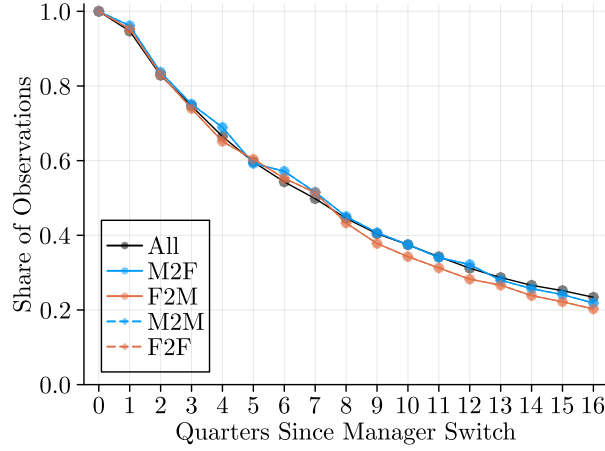


FIGURE A.4: Persistence of Manager-Worker Pairs

*Notes:* This figure shows the share of newly formed worker-manager pairs that last for 1, 2, ..., 16 quarters following the event. Only observations with a manager transition event in the current period are included. The black lines show the results for all events, the blue and orange solid lines show the results following *M2F* and *F2M* events. The blue and orange dashed lines show the results following *M2M* and *F2F* events.

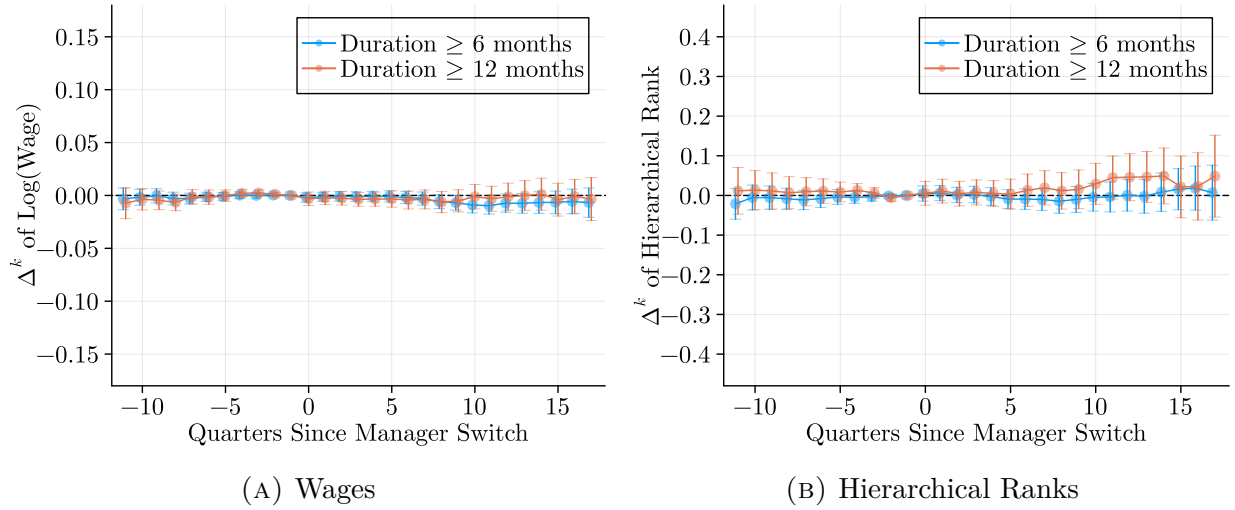


FIGURE A.5: Robustness: Excluding Transitory Events

*Notes:* This figure shows the average double differences estimated using only events that involve worker-manager pairs that last for at least 6 or 12 months. Panel A shows the effect on log wages and Panel B on hierarchical ranks. The error bars display the 95% confidence bands.

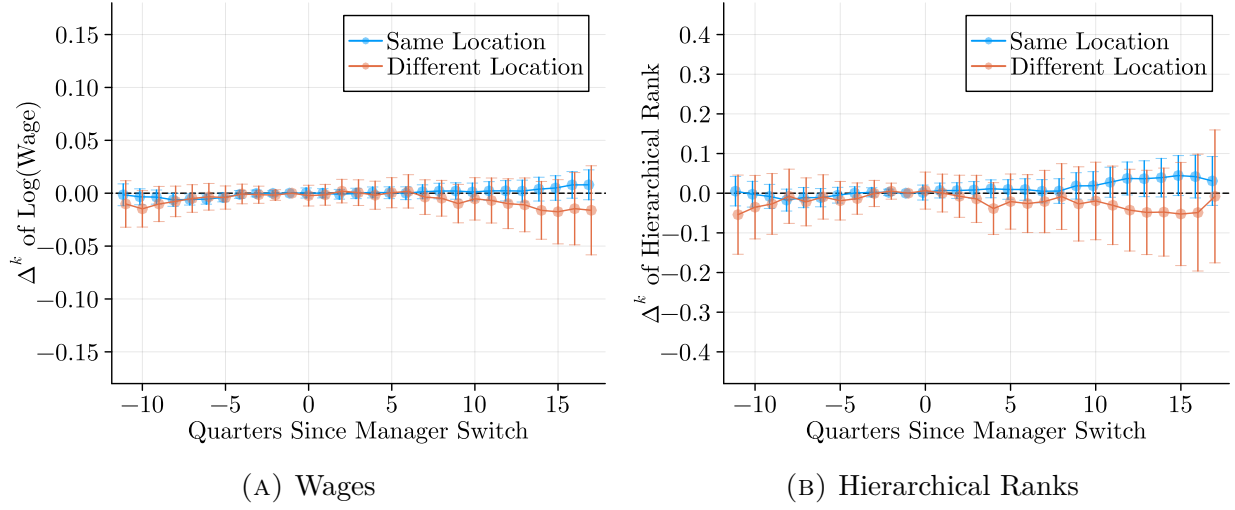


FIGURE A.6: Robustness: Spatial Proximity of Workers and Managers

*Notes:* This figure shows separate average double differences depending on whether the worker and his or her manager work in the same location. Panel A shows the effect on log wages and Panel B on hierarchical ranks. The error bars display the 95% confidence bands.

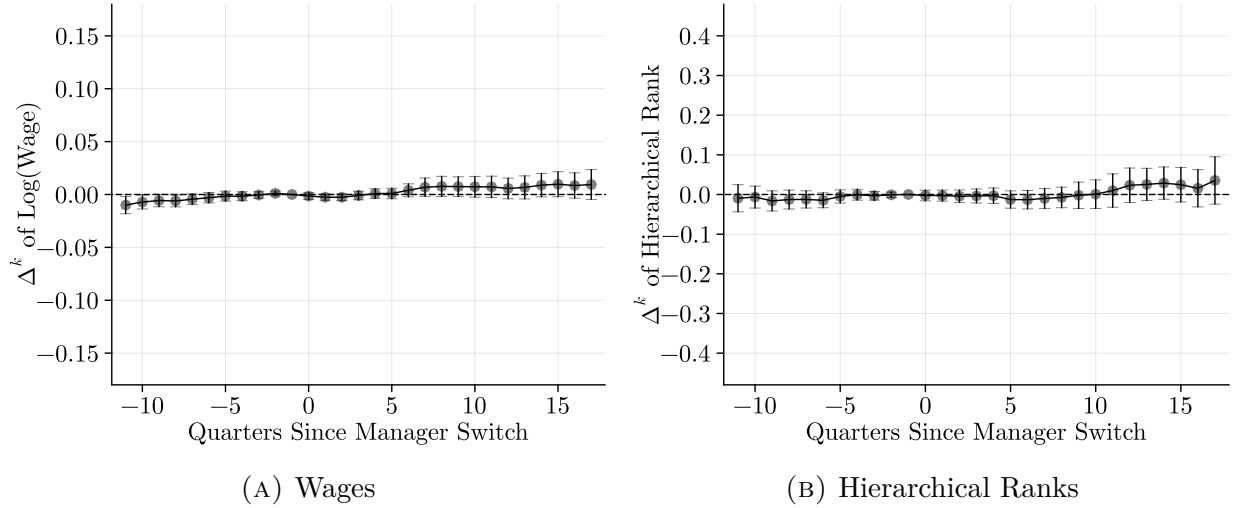


FIGURE A.7: Robustness: Indirect Superiors

*Notes:* This figure shows the average double differences estimated using indirect superiors instead of direct superiors to define manager switching events. Panel A shows the effect on log wages and Panel B on hierarchical ranks. The error bars display the 95% confidence bands.

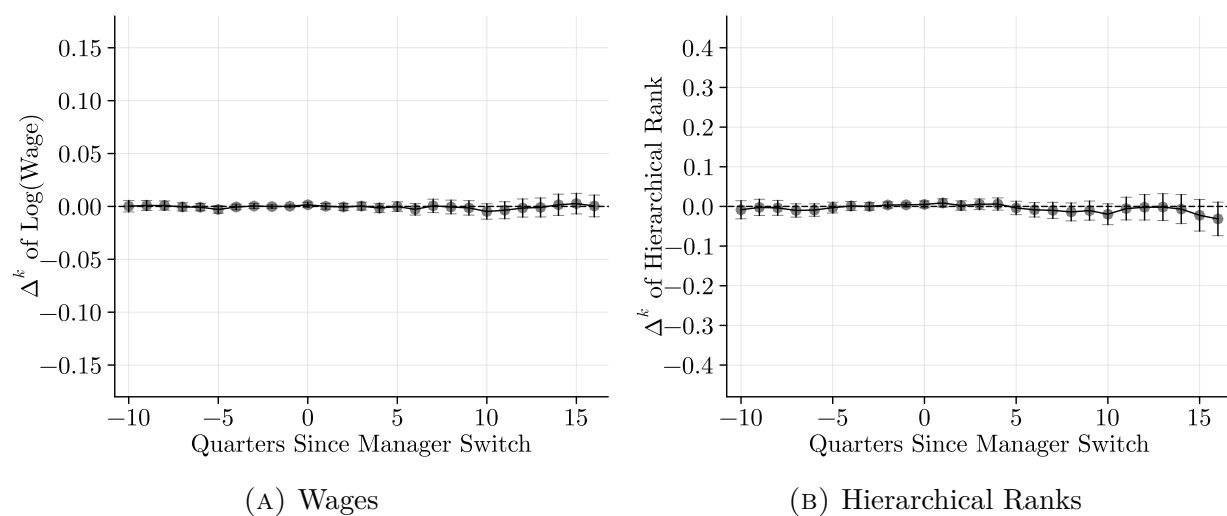
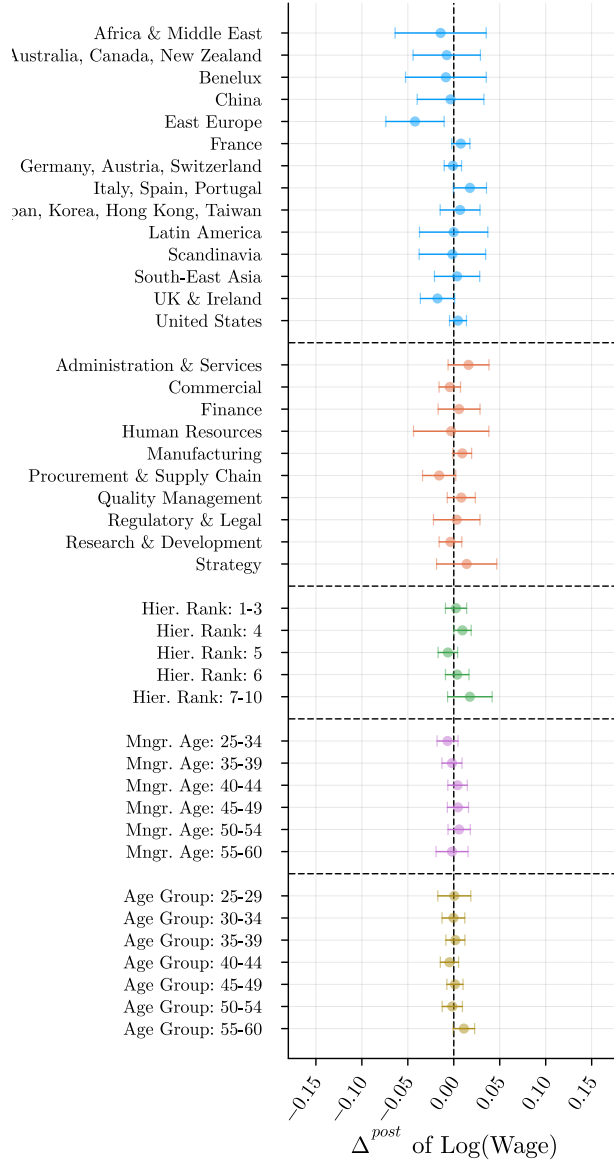
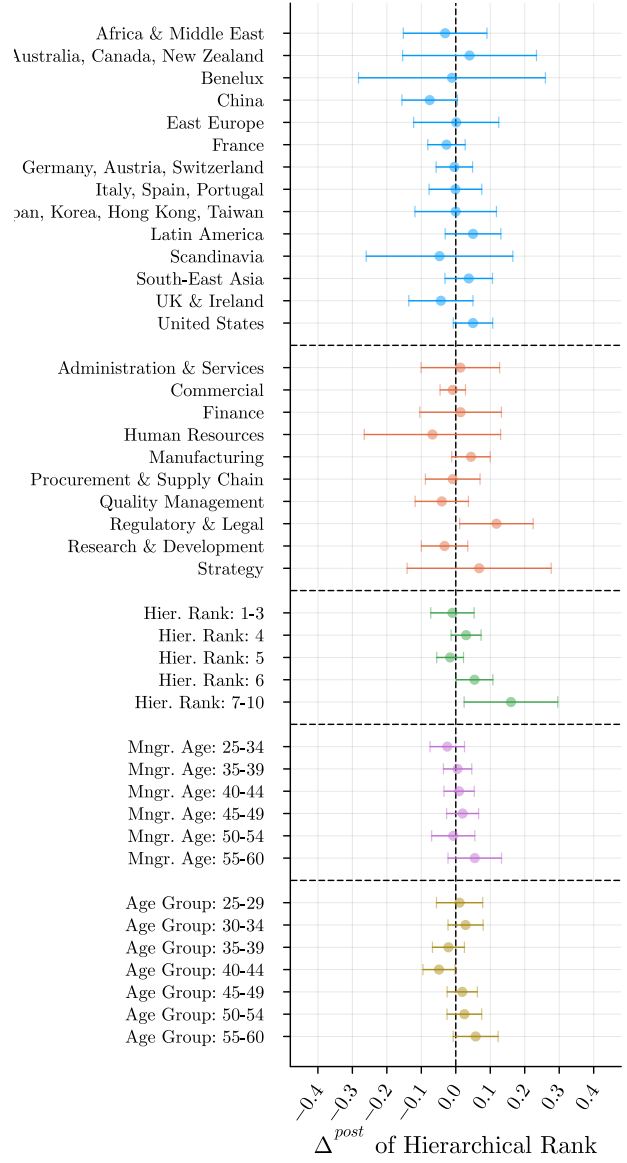


FIGURE A.8: Local Projections

*Notes:* This figure shows the average double difference from estimating local projections for the change in log wage or hierarchical rank between period  $t + h$  and period  $t - 1$ . The error bars display the 95% confidence bands.



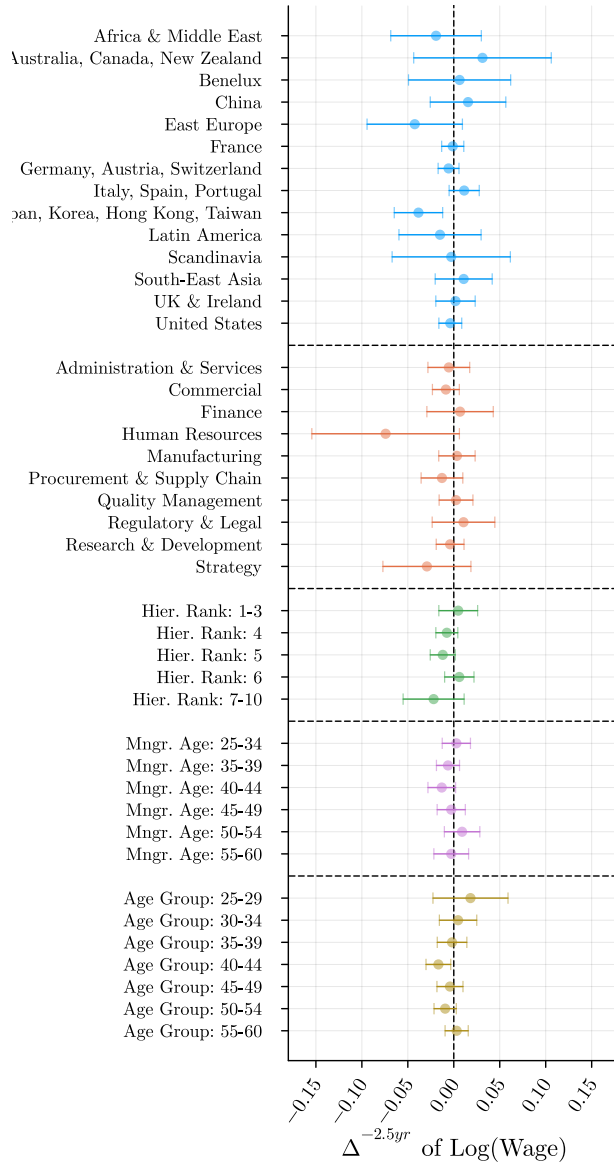
(A) Wages



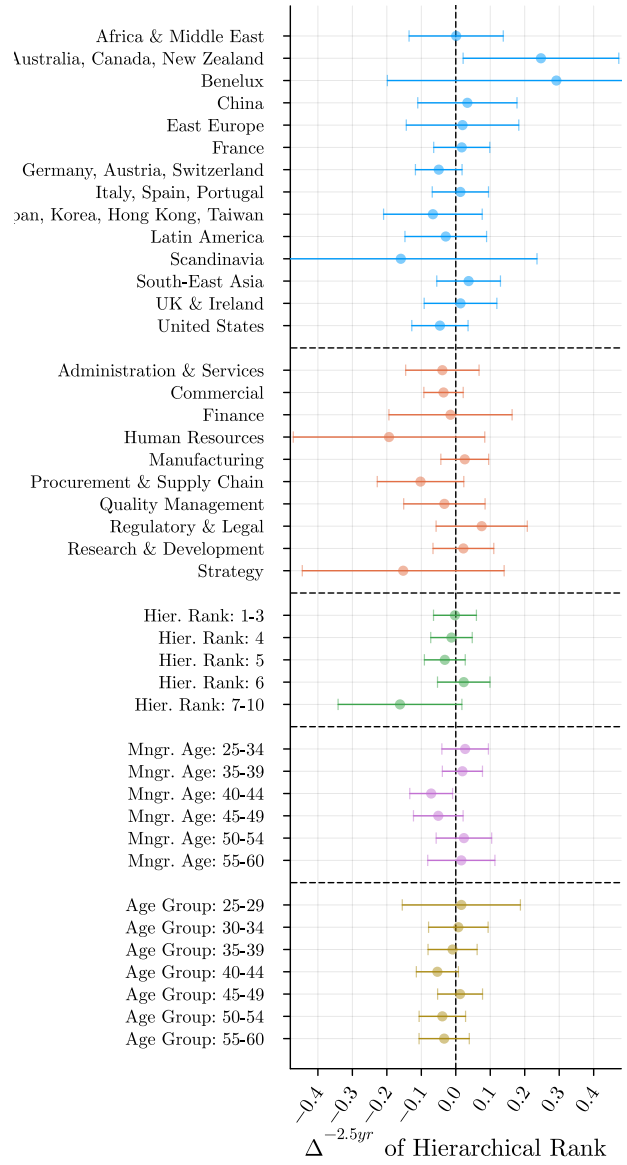
(B) Hierarchical Ranks

FIGURE A.9: Heterogeneity Analysis: Average of Post-Transition Coefficients

*Notes:* This figure shows the average of the estimated post-event coefficients,  $\Delta^{post}$ , for each sub-group used in the heterogeneity analysis. A positive estimate indicates that women experience higher wage growth during the four years after the time of the event. The error bars display the 95% confidence bands.



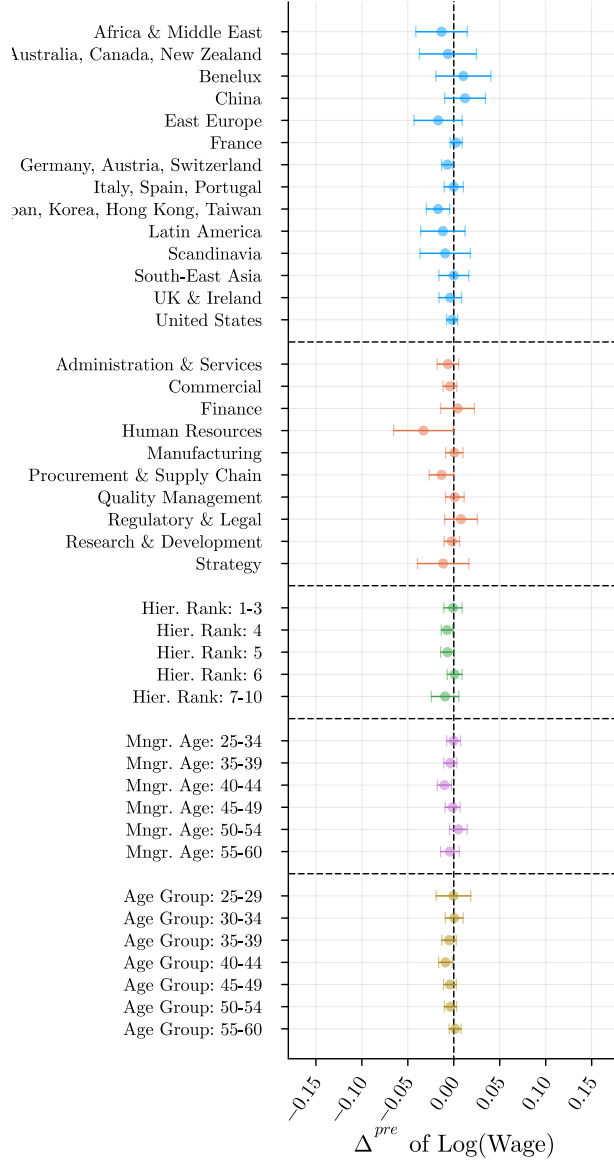
(A) Wages



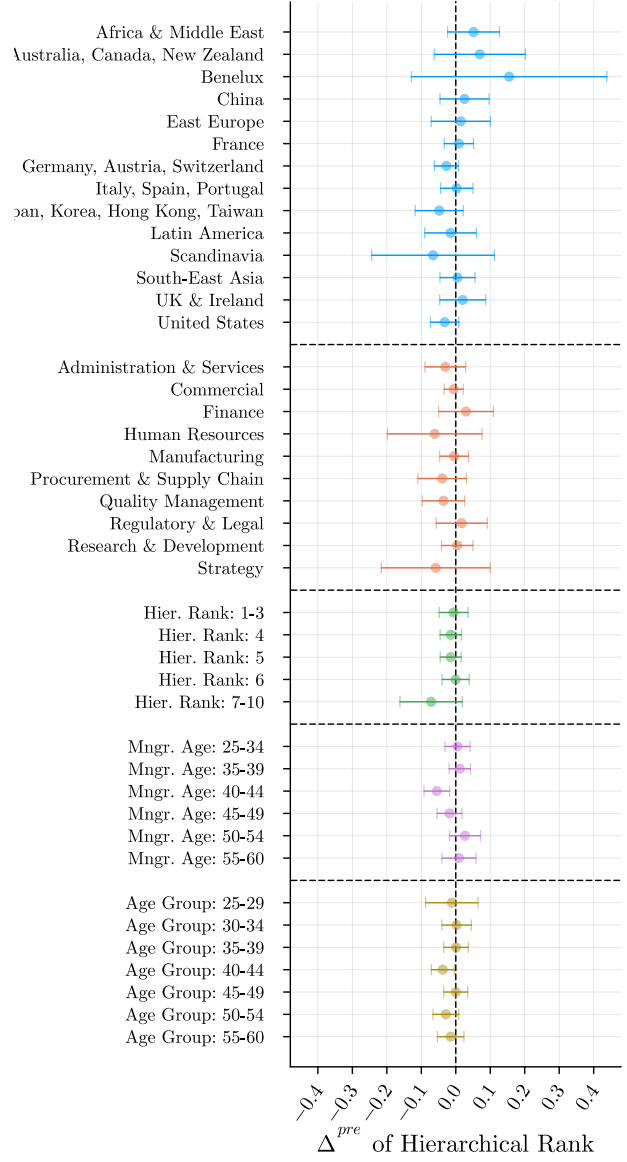
(B) Hierarchical Ranks

FIGURE A.10: Pre-Trends in Heterogeneity Analysis: 2.5-Year Pre-Transition Coefficients

*Notes:* This figure shows the leading estimate of the average double difference 2.5 years prior to the event,  $\Delta^{-2.5yr}$ , for each sub-group used in the heterogeneity analysis. A positive estimate indicates that women experience lower wage growth than men during the 2.5 years prior to the event and the time of the event. The error bars display the 95% confidence bands.



(A) Wages



(B) Hierarchical Ranks

FIGURE A.11: Pre-Trends in Heterogeneity Analysis: Average of Pre-Transition Coefficients

*Notes:* This figure shows the average of the estimated pre-event coefficients,  $\Delta^{pre}$ , for each sub-group used in the heterogeneity analysis. A positive estimate indicates that women experience lower wage growth during the four years after the time of the event. The error bars display the 95% confidence bands.

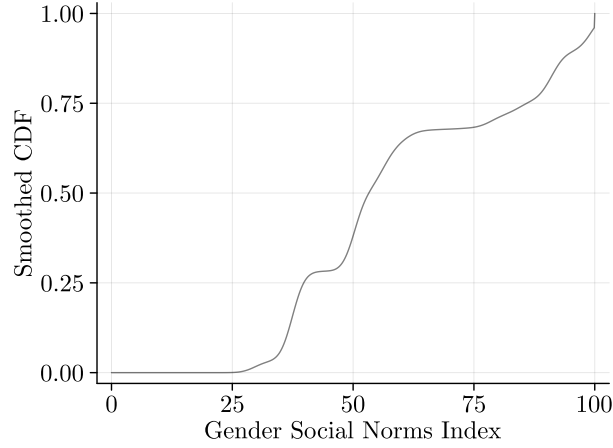


FIGURE A.12: Cumulative distribution of the Gender Social Norms Index (GSNI) for workers in our firm ([United Nations Development Programme, 2023](#))

*Notes:* Each worker is assigned the GSNI value from their country of residence. The GSNI measures the proportion of World Value Survey respondents in a country who exhibit at least one bias in seven survey questions regarding gender equality in politics, education, business, and physical integrity. Workers from countries without a reported GSNI are excluded. To protect the firm's identity, we add noise to each observation, drawn from a normal distribution with a standard deviation of 2.

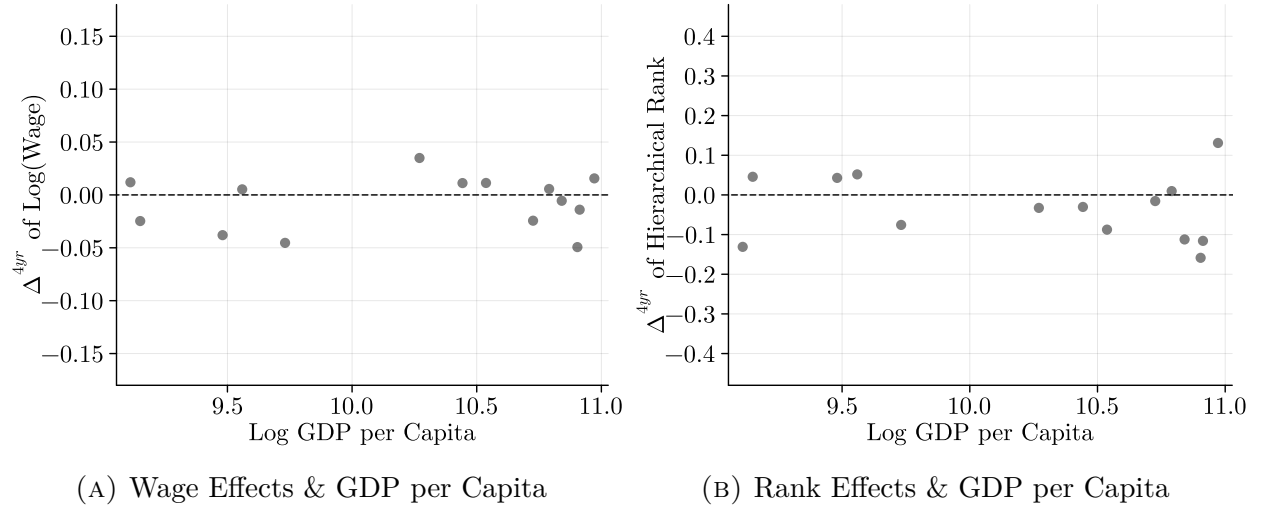


FIGURE A.13: Career-FPMBs across Countries: Relationship with GDP

*Notes:* This figure shows heterogeneity in the average double difference 4 years after a manager switch across countries. Panels A and B show the bivariate relationship between the estimates for log wages or hierarchical ranks and the countries' log GDP per capita. The averages for country groups are weighted based on the number of observations in our dataset.

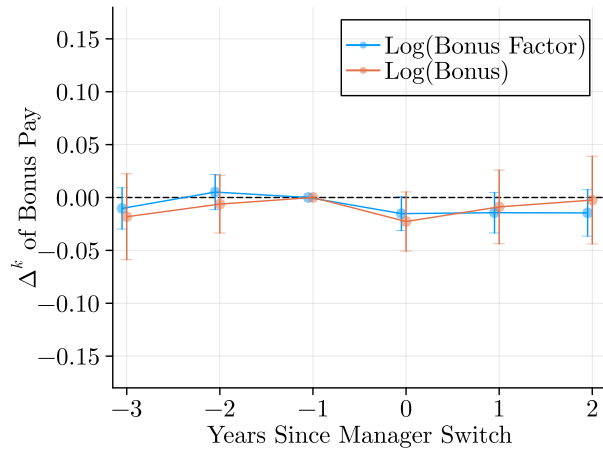


FIGURE A.14: Event Study Estimates: Bonus Pay

*Notes:* This figure shows average double differences for annual bonus pay. The error bars display the 95% confidence bands.

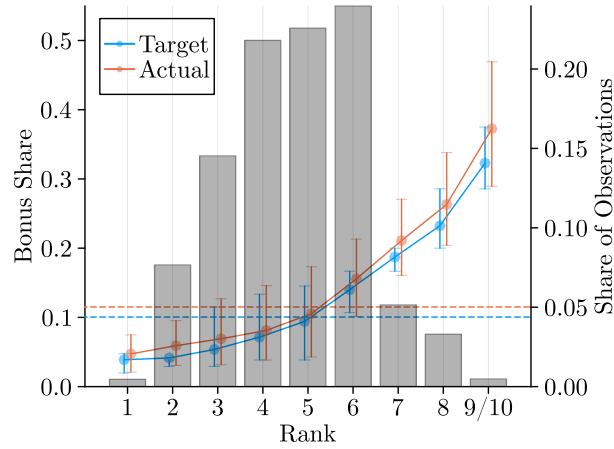


FIGURE A.15: Relationship between bonus share and hierarchical rank

*Notes:* This figure shows the average targeted and actual bonus share by hierarchical rank along with the range between the 10th and 90th percentile. The share of observations by hierarchical rank is plotted on the right y-axis.



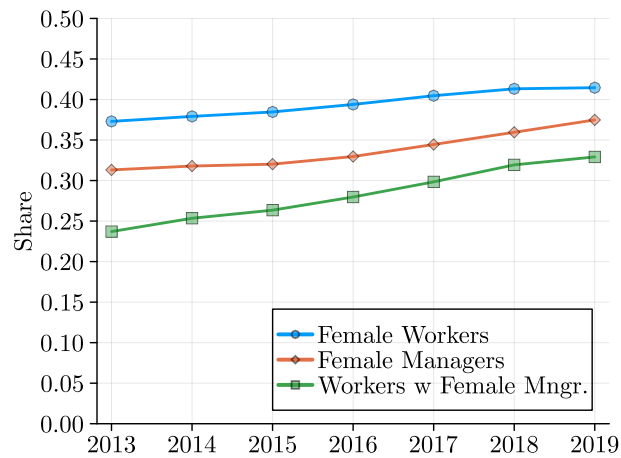


FIGURE A.16: Share of Female Managers

*Notes:* This figure shows the share of female workers, the share of female managers, and the share of workers with a female manager over time.

## B Turnover

To test for differential turnover by worker and manager gender, we ask whether the likelihood of leaving the manager or the firm changes differentially for men and women following the four manager transition events. In contrast to the previous event study analyses, we employ a local projection approach where we estimate the gender-specific effect of the four transition events on an indicator variable that equals one if the worker is still with the newly assigned manager  $k$  quarters after the transition. Doing this for  $k = 1, 2, \dots, 10$  quarters traces out inverse survival functions for each transition event and for men and women. As with the event-study approach, we then combine the eight sets of coefficients into average double differences to check whether women are more likely to leave the manager or firm when the manager is male.

In particular, we estimate equations of the following form for  $k = 1, 2, \dots, 10$ :

$$Y_{it}^k = \sum_{E \in \mathcal{E}} (\phi_E^k E_{it} female_i + \mu_E^k E_{it} male_i) + X_{it}'\beta + \alpha_{m(i,t)} + \alpha_{g(i)t} + \alpha_{c(it)t} + \epsilon_{it} \quad (\text{B.1})$$

where  $Y_{it}^k$  is an indicator variable taking value one if the worker's manager in  $t + 3k$  is different from the manager in  $t$ , or if the worker has left the firm in  $t + 3k$ . The vector of control variables  $X_{it}$  includes job and department fixed effects when analyzing firm exit where we cannot include a worker fixed effect. When analyzing the probability of leaving the manager,  $X_{it}$  is simply a worker fixed effect. The rest of the variables are defined as in Equation 1. Note also that this estimation approach yields virtually the same result for wages as the event study design as shown in Appendix Figure A.8.

## C Career Impact of Performance and Potential Ratings

Performance and potential ratings play an important role for subsequent career progression and current bonus pay, as can be seen from Figure C.1. Panels A and B show how differences in ratings translate into differences in wage and rank growth over the following 2.5 years among workers who are observationally equivalent at the time of the rating. In particular, we regress the change in log wages or hierarchical ranks between the last month before and 2.5 years after the evaluation period on a wide range of control variables and a set of rating indicators—one for each combination of performance and potential rating. The mode combination of average performance and low potential is the reference category.<sup>18</sup> The performance rating is displayed on the horizontal axis and the different colors represent the three potential ratings.

Both higher performance and potential ratings are associated with significantly higher wage growth and promotion probabilities. However, differences in potential ratings are more predictive of future career progression than differences in past performance.<sup>19</sup> For example, compared to the reference group with average performance and low potential, a high potential rating predicts a wage increase by 3.3% while a high performance rating increases wages only by about 1.9%. In almost all cases, workers would prefer a higher potential rating over a better performance rating for their career progression. For promotions to higher hierarchical ranks, this difference is even more pronounced.

In contrast, performance ratings are key for determining workers' annual bonus pay. Workers' annual bonus payments are partly contracted and partly contingent on the performance rating. Just like the wage, the targeted bonus amount is part of the contract and can be re-negotiated at any time. It specifies the annual amount a worker will receive on top of their base wage if firm-level and individual performance is as expected. On average, the contracted annual bonus target accounts for roughly 10.1% of total earnings.<sup>20</sup> This amount is scaled up or down by an aggregate factor to align the overall amount of bonus pay with the firm's overall performance, and an individual factor that is a function of workers' performance rating for the past year.

The mapping from performance rating to individual bonus factor is public knowledge, implying that, conditional on the aggregate and individual performance factor, the actual bonus payment must not fall below the contracted amount. Panel C of Figure C.1 shows the difference in individual log bonus factors between all observed combinations of performance and potential ratings. Note

---

<sup>18</sup>The regression accounts for year-specific age, country, department, unit, and job fixed effects at the time of the rating.

<sup>19</sup>The rationale behind this discrepancy is that firms do not want to promote workers with good performance in their current job, but workers with good expected performance at the next level, in order to avoid the fallacy of the *Peter Principle* (Peter and Hull, 1969; Benson et al., 2019).

<sup>20</sup>Appendix Figure A.15 shows the distribution of the targeted and actually realized share of bonus pay in total earnings across the firms hierarchy.

that there is no variation in bonus pay across potential ratings after conditioning on the performance rating. Compared to workers with an average performance rating, workers with a high or very high performance rating can expect 22 and 56 log percent higher bonus pay, respectively. In contrast, receiving a low or very low rating lowers the individual bonus factor by 16 and 69 log percent.

In sum, performance ratings mainly affect annual bonus payments, whereas potential ratings are a key input in the decisions about which workers to assign to leadership positions within the organization. As bonus pay accounts for only about one tenth of the firm's total wage bill and does not affect future wage payments, performance rating are a relatively low-stakes decision compared to potential ratings, which are highly consequential for the firms personnel decisions and thereby future productivity.

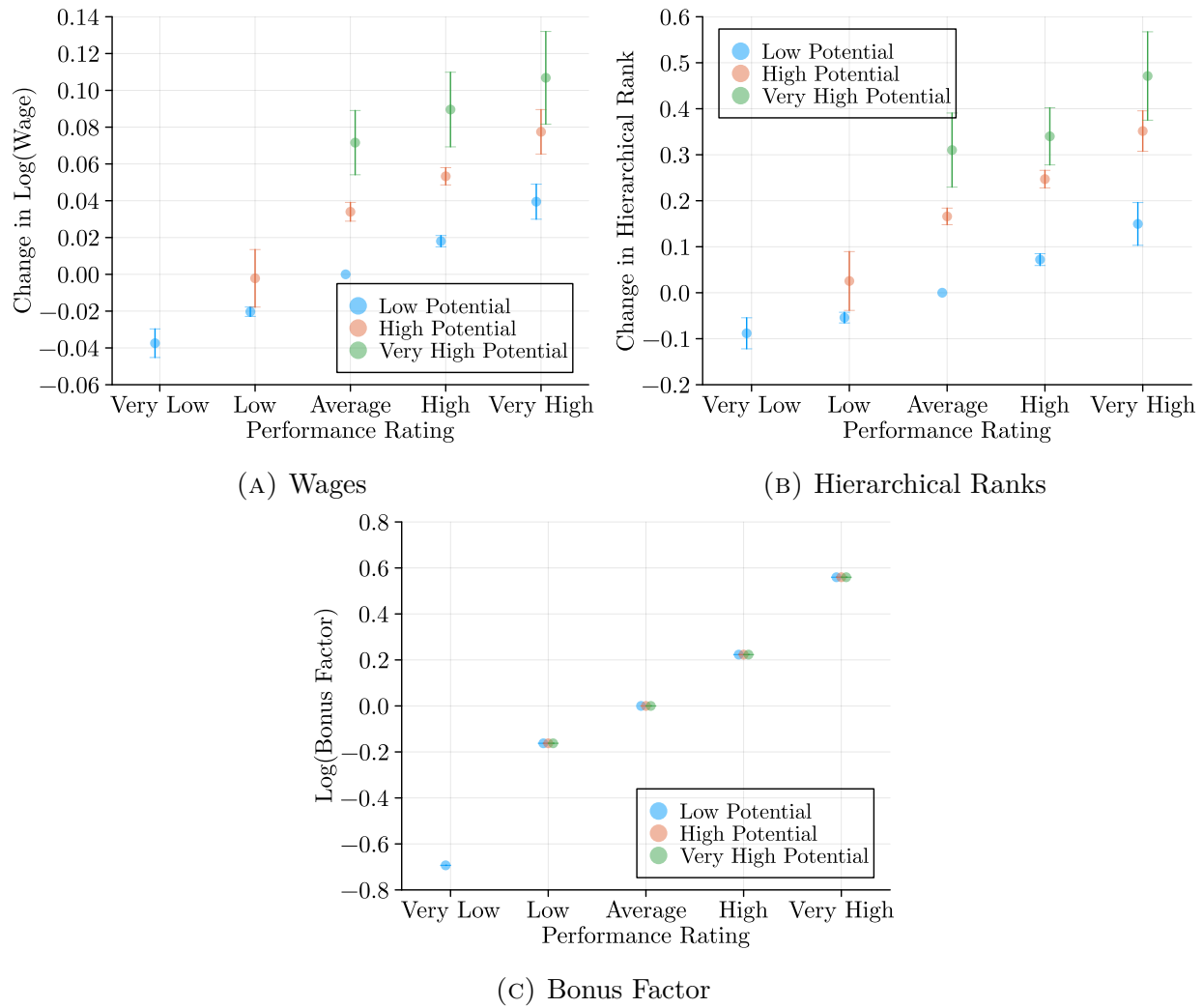


FIGURE C.1: Impact of Performance and Potential Ratings

*Notes:* This figure shows impacts for three different outcomes. The horizontal axis refers to the performance rating and the colors to the potential rating. Rating combinations with fewer than 30 observations are excluded. Panel A shows the mean 2.5-year wage growth. Panel B shows the mean difference in the probability of receiving a rank-promotion. These differences are estimated by regressing the respective outcome variable on indicators for each combination of ratings and age, job, unit, country, and department fixed effects. The error bars display the 95% confidence bands. Panel C shows the difference in the individual log bonus factor relative to the reference group of workers with average performance ratings.