The Old Boys’ Club
Schmoozing and the Gender Gap

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Abstract

Offices are social places. Employees and managers take coffee breaks together, go to lunch, hang out over drinks, and talk about family and hobbies. In this study, we provide evidence that employees’ social interactions with their managers can be advantageous for their careers and that this phenomenon can contribute to the gender pay gap. We use administrative and survey data from a large financial institution. We conduct an event-study analysis of manager rotation to estimate the causal effect of managers’ gender on their employees’ career progressions. We find that male employees assigned to male managers were promoted faster in the following years than male employees assigned to female managers; female employees, on the contrary, had the same career progression regardless of their managers’ gender. These differences were not accompanied by any differences in effort or performance, and they explain a third of the gender gap in promotions at this firm. Then, we provide evidence suggesting that these effects were mediated by the social interactions between male employees and male managers. First, we show that the effects were present only among employees who worked in close proximity to their managers. Second, we show that the effects coincided with an uptick in the share of breaks taken with the managers. Third, we estimate the impact of social interactions on career progression using quasi-random variation induced by smoking habits. When male employees who smoke transitioned to male managers who smoke, they took breaks with their managers more often and were subsequently promoted at higher rates than male smokers who transitioned to non-smoking managers. The boost in socialization and promotion rates closely mirrors the pattern among male employees assigned a male manager.

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1 Introduction

Workplaces are social places. Employees and managers often discuss all sorts of non-work related topics, such as sports, family, and movies. These personal interactions extend outside of office hours, such as during lunch, smoking, or coffee breaks. Through these interactions, employees form social bonds with their managers. In this study, we explore whether these social bonds influence employees’ careers and whether they can help explain the gender pay gap.

Women have a harder time than men climbing the corporate ladder. Among U.S. corporations, 48% of entry-level employees are women, but female representation falls to 38% at middle-management, 22% at the C-Suite level, and 5% at the CEO level (McKinsey & Company, 2019). Improvement has been agonizingly slow over the last several decades. The gap in internal promotion rates accounts for the vast majority of the gender pay gap at the population level (Bronson and Thoursie, 2019). Not only is this unfair, it is inefficient, as misallocation of talent slows economic growth (Hsieh et al., 2019).

A growing literature has investigated what causes women to lag behind men in the corporate world. According to the “old boys’ club” hypothesis, this gap arises in part because men can schmooze, network, and interact with more powerful men in ways that are less accessible to women.¹ This mechanism can create a self-perpetuating cycle: male managers promote a disproportionate share of male employees, who continue promoting other men.

Ample anecdotal evidence suggests that the old boys’ club is real (Lang, 2011; Lee, 2014; Elting, 2018). For example, 81% of women say that they feel excluded from relationship-building at work, and many also feel excluded from after-work hours socializing (Gray and Barbara, 2013). Some women even believe that being able to use the men’s bathroom would give them an advantage at work (Lee, 2014). Despite all the anecdotes, however, there is little quantitative evidence showing that the old boys’ club exists. The self-selection of those who engage in social activities creates a number of research challenges to isolating the impact of social interactions. In this study, we propose a quasi-experimental approach for testing this hypothesis and provide novel evidence based on data from a large financial organization.

We partnered with a large commercial bank in Asia (referred to hereinafter as the firm) with millions of customers, billions of dollars in assets and in revenues, and thousands of employees. The firm is typical in that female representation drops off at higher levels: 75% of entry-level employees are women, which falls to 61% in middle management, 25% at the C-Suite level, and 0% at the CEO and company board levels. Indeed, the gender gaps in pay and promotion rates at the firm are similar to those documented for other corporations in both developed and developing countries.

We have rich sources of administrative data spanning four years (2015-2018) and 14,736 unique employees, 1,269 of whom had a managerial role at some point. These records include the employees’ pay grades, the floor their desks are on, the managers to which they were assigned, as well as measures of effort and performance. We also conducted a series of surveys to measure other

¹ The term “old boys’ club” was coined in reference to the British elite who attended certain public schools together. In current popular language, the term references the preservation of social elites in general.
aspects of the employees’ lives, such as whether they take breaks with their managers, whether they know the manager’s favorite sports team, as well as their smoking status to supplement annual health exam reports.

We start by measuring the effect that the manager’s gender has on the careers of the employees working under that manager. In an ideal experiment, we would randomize employees to male and female managers and then measure the effects on their career progression in subsequent years. According to the old boys’ club prediction, those assigned to a male manager would benefit the careers of the male employees more than the female employees. Obviously, it would be much too costly and disruptive for any real-world company to randomly shuffle its employees and managers. Instead, we exploit the naturally occurring rotation of managers between teams. These manager transitions are not literally decided by a coin toss, but anecdotal evidence and supporting empirical tests suggests that they can be as good as random.

Our identification strategy is based on event-study analysis. The identification leverages the timing of manager transitions and comparisons between different types of transitions. For example, consider two teams, each managed by a female manager. One of these teams then transitions from the female manager to a male manager, and the other team transitions from the female manager to a different female manager. We can compare the outcomes of the male employees each month leading up to the manager transition date and each month after the transition. As both teams are affected by a manager transition, this design nets out the effect of the transition. The hypothesis is that transitioning to a male manager, relative to transitioning to the female manager, results in better promotion prospects for the male employees but has no effect (or little effect) on the promotions of female employees.

We focus on manager transitions that are out of the control of the employee. The typical case is a manager rotating laterally to a different team. Our data comprises 8,670 transition events involving 6,021 unique employees and 690 unique managers. Events are uniformly distributed across the four years, and they affect employees at every level. Whether the employee has an event and the type of event (e.g., transitioning from a female to a male manager) are largely unrelated to the characteristics of the employee, the incoming manager and the outgoing manager.

We find that male employees are promoted more quickly after they transition from a female to a male manager: at 10 quarters after such a manager transition, male employees’ pay grades were 0.60 points (p-value = 0.003) higher than those of male employees who transitioned from a female manager to a different female manager. This 0.60 point increase in pay grade is equivalent to a 14.6% increase in salary. By contrast, female employees experienced similar promotion rates regardless of whether they transitioned from a male manager to a female manager or from a male manager to another male manager.

We provide two main robustness checks for our identification strategy. First, we analyze the reverse transition. In the baseline results presented above, we look at employees who “lose” a male manager (i.e., transitioning from a male manager to a female manager versus transitioning from a male manager to a different male manager). Next, we look at employees who “gain” a male manager (i.e., transitioning from a female manager to a male manager versus transitioning from a female manager to a different female manager). The expectation is that the effects of gaining
a male manager should be roughly a mirror image the effects of losing a male manager, in terms of both timing and magnitude. This is a sharp test, in the sense that the coefficients are identified by a disjoint set of transition events and thus there are no “mechanical” reasons why the results should mirror each other. Indeed, we find that the effects of losing a male manager are in the opposite direction of the effects of gaining a male manager, and they are similar in terms of timing and magnitude. Male employees who transition to a female manager (relative to transitioning to another male manager) end up with a pay grade that is 0.30 points lower at 10 quarters later (p-value = 0.032), whereas the evolution of pay grades for female employees is unrelated to the manager’s gender.

The second robustness test is based on placebo events. We reproduce the whole analysis, but instead of focusing on gender as the relevant characteristic of managers and employees, we focus on a characteristic that we know ex ante should not be relevant: whether someone was born on an even or odd date. In other words, we would not expect that managers born on an odd date would be beneficial to the careers of their subordinates. We reproduce the whole event-study analysis, but instead of slicing the data based on manager and employee genders, we focus on their birth dates. This test rules out mechanical reasons why our event-study framework would generate spurious effects, and allows us to assess whether our standard errors are adequate. As expected, we find that the estimates are close to zero, statistically insignificant, and precisely estimated.

We define the male-to-male advantage as the effect of male managers (relative to female managers) on the careers of male employees (relative to female employees). Our preferred estimate, based on the transitions in both directions, indicates that the male-to-male advantage in pay grade is highly statistically significant (p-value<0.001) and economically large (0.65 pay grades at 10 quarters after the event). In back of the envelope calculations, we estimate that removing the male-to-male advantage would reduce the gender gap in pay grades by 40%.\(^2\)

We show that the male-to-male advantage cannot be explained by differences in retention or performance. One potential explanation is that male managers are better at retaining male employees. However, when we estimate the effects of manager transitions on the probability of staying at the firm, we find point estimates that are close to zero, statistically insignificant, and precisely estimated. Another potential explanation is that male employees work harder and more productively under male managers than they would under female managers. For example, male managers might be better than female managers at motivating and monitoring male employees, or male employees may be more responsive to the directions of their male bosses. Contrary to this interpretation, when we estimate the effects of the manager transitions on measures of effort (the number of days worked and the number of hours spent in the office) and performance (the employee’s own sales revenues), we find point estimates that are close to zero, statistically insignificant, and precisely estimated.

Next, we provide evidence on the role of social interactions in the male-to-male advantage in promotions. For example, male employees may use their interactions to gain their managers’ sympathy and favor. Male managers also may learn more about their male employees during the interactions and thus be better able to identify their potential. Such interactions may make the

\(^2\) For more details, see Section 4.6.
accomplishments and efforts of male employees more noticeable to the manager or may give the male employees opportunities for self-promotion. During interactions with their managers, male employees may learn useful information, such as which tasks or training are more conducive to promotions.

The first test of the social interactions channel exploits the fact that physical proximity is a necessary condition for social interactions. Alternative channels for the male-male advantage, such as statistical discrimination or in-group biases, should not depend on physical proximity. If driven by socialization, the male-to-male advantage should be stronger when manager and employee pairs work in close physical proximity; by contrast, the effects should be smaller, or even null, when the manager does not work in physical proximity to the employee. We categorize positions by the physical proximity with the manager using administrative data on office locations as well as survey data asking employees if their managers work in physical proximity. Consistent with the social interactions channel, we find that the male-to-male advantage is large and statistically significant when the managers and employees work in close physical proximity but approximately zero and statistically insignificant if they do not work in close proximity.

Second, we collect survey data on the frequency of social interactions between employees and their managers. We ask a sub-sample of the firm to report how often they share breaks with their managers. Finding a male-to-male advantage in this form of social interactions would constitute suggestive evidence of the schmoozing mechanism. Indeed, we find that male employees are significantly more likely to share work breaks with their manager after transitioning from a female manager to a male manager (relative to transitioning from a female manager to another female manager). Female employees, on the contrary, are equally likely to spend breaks with male and female managers.

Third, we provide evidence that social interactions in this firm translate into a promotion advantage among male employees. In the ideal experiment, we would flip a coin to decide which male employees get to socialize more with their male managers. According to the schmoozing channel, the male employees who get to socialize more with their male managers would be promoted faster. While the ideal experiment is not feasible, we exploit quasi-experimental variation based on co-smoking habits. We collected data on the smoking habits of the employees and their managers. 33% of male employees and 37% of male managers smoke.3 We conduct an event-study analysis of the rotation of managers, but this time focusing on their smoking habits instead of their gender. We conjectured that when a male employee who smokes transitions to a male manager who also smokes, they will interact more because of shared smoking breaks. And, according to the schmoozing channel, that increase in social interactions will translate into higher promotion rates.4 Consistent with our conjecture, we find a smoker-to-smoker advantage in the frequency of social interactions. After transitioning from a non-smoking manager to a smoking manager (relative to transitioning to another non-smoking manager), smoking employees end up spending more breaks with their new managers; in contrast, there is no effect on non-smoking employees. Indeed, the

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3 The smoking rates are negligible among women, and thus we focused this analysis on males only.
4 This part of the analysis is based on a sub-sample (males for whom we can infer smoking status) comprising 1,094 unique employees, 250 unique managers and 1,499 unique manager transitions.
magnitude of the smoker-to-smoker advantage in shared breaks is similar to the corresponding male-to-male advantage reported above. Most important, we show that these manager transitions affect promotion rates too: after transitioning from a non-smoking manager to a smoking manager (relative to transitioning to another non-smoking manager), the smoking employees are promoted faster; in comparison, there is no effect on the pay grade of non-smoking employees. This evidence indicates that, consistent with the schmoozing channel, the increased social interactions caused by co-smoking translates into higher promotion rates. By contrast, the increased social interactions do not affect performance (employees’ sales revenue) or effort (hours spent working in the office or absenteeism).

This study is related to various strands of literature. Most important, it is related to a literature on the role of social interactions at work. Despite the universality of socializing in the workplace, relatively little is known about the returns of these personal interactions and whether these returns differ by gender. Cai and Szeidl (2018) provide experimental evidence that increasing the connections between business owners can increase firm productivity. There is also evidence of spillovers between business school classmates and executives (Shue, 2013; Lerner and Malmendier, 2013; Agarwal et al., 2016; Field et al., 2016). There is evidence that the managers’ social skills affect employee turnover Hoffman and Tadelis (2020). In the context of fruit-pickers, managers with fixed pay will favor workers with whom they share a connection, to the detriment of firm productivity (Bandiera et al., 2010, 2009). And in the context of politics, public officials may capitalize on their political and personal networks to gain influence (Cruz and Tolentino, 2019; Xu, 2018; Bertrand et al., 2018; Voth and Xu, 2019).

We contribute to this literature by providing novel evidence on the career and productivity consequences of social interactions in the corporate world. This is a context for which there is abundant anecdotal evidence on the importance of social interactions and its effects on the gender pay gap, yet little quantitative evidence. The lack of evidence is probably due to data challenges (e.g., personal interactions are difficult to measure and also sensitive information) as well as challenges with causal identification (e.g., social interactions are highly endogenous). We address both of these challenges. First, we provide causal evidence based on quasi-experimental variation in the gender and smoking habits of the managers. Furthermore, we collected unique sources of administrative and survey data about social interactions and physical proximity in a real corporation that spans culturally distinct regions.

Our paper more broadly contributes to the large literature on the gender wage gap (Goldin, 2014). There is a consensus that the majority of this gap is due to differences in promotion rates (Bertrand, Goldin, and Katz, 2010; Manning and Swaffield, 2008; Goldin, Kerr, Olivetti, and Barth, 2017). By one careful account, the gap in internal promotion rates can account for approximately 70% of the gender pay gap by the age of forty-five (Bronson and Thoursie, 2019). Several explanations have been provided for these differences in promotions. Most related to our study, there

Another related study is Lleras-Muney et al. (2019), showing that friendships accumulated during high school can have lasting impacts on labor market outcomes. Also, Mengel (Mengel) use a laboratory experiment to show that men and women both engage in networking but men develop closer connections.

Some examples include the marriage market incentives (Bursztyn, Fujiwara, and Pallais, 2017), cultural norms
are some studies on the role of the gender of superiors in the education industry, with mixed results. On the one hand, male teachers in public schools are more satisfied with their jobs and more likely to remain working at a school if it is has a male, rather than female, principal (Grissom, Nicholson-Crotty, and Keiser, 2012; Husain, Matsa, and Miller, 2018). On the other hand, female referees and female committee members in academia do not increase the odds of acceptance of female-authored papers or promotion of female candidates (Bagues, Sylos-Labini, and Zinovyeva, 2017; Card, Dellavigna, Funk, and Iriberri, 2019).

We contribute to this literature by showing that the gender of managers can be a major source of gender pay gaps in the corporate world – this mechanism explains around one-third of the gender pay gap in the firm that we study. To the best of our knowledge, Kunze and Miller (2017) provides the only related evidence in the context of a corporation. The authors use data from a private firm in Norway to measure the association between the gender of managers and the outcomes of their employees. They found that the gender gap in promotions is significantly larger in establishments with a higher share of male superiors. We contribute to this literature in at least three ways. First, we provide causal estimates with the use of quasi-experimental methods. Second, we provide novel evidence about a specific mechanism, social interactions, for which there is abundant anecdotal evidence yet it has been largely ignored in the literature on the gender pay gap. Third, we provide evidence on the limited productivity advantages of socialization between managers and employees despite the fact that they generate career advantages for certain employees.

Although we offer evidence from a specific firm, the firm’s establishments span regions with distinct cultural heritage, allowing us to examine heterogeneity by gender norms. Moreover, our methodology is not specific to our setting. The rotation of managers is a common practice in large organizations, and the data on pay grades, assignments, and demographics could be obtained for most firms. Thus, our research design can be applied in other firms from different industries and countries to identify the contexts in which the male-to-male advantage is most pervasive. Our study already provides suggestive evidence that the male-to-male advantage may be exacerbated in some occupations (i.e., in which the manager and the employee work in close proximity with each other) and regions (i.e., where stronger gender norms prevail).

The rest of the paper proceeds as follows. Section 2 summarizes the research design and our econometric specification. Section 3 presents the institutional context for this study and describes the data. Sections 4 and 5 present the results. Section 6 concludes.

(Bursztyn, Gonzalez, and Yanagizawa-Drott, 2018; Alesina, Giuliano, and Nunn, 2013; Jayachandran, 2020), recognition for group work (Sarsons, 2017; Isaksson, 2019; Sarsons et al., 2019), differences in aspirations and performance (Azmats and Ferrer, 2017), the child penalty (Schönberg and Ludsteck, 2014; Bertrand et al., 2010; Kleven et al., 2019; Kuziemko et al., 2018), preference for flexible hours (Wasserman, 2018) and household work more generally (Cortés and Pan, 2019).

7 Other related studies look at gender roles among peers instead of among managers (Dahl et al., 2018; Hill, 2017; Karpowitz et al., 2020) and at the role of other demographics besides gender, such as race (Mas and Moretti, 2009; Bandiera et al., 2010; Giuliano et al., 2011; Hjort, 2014; Glover et al., 2017).

8 A related literature studies whether female representation at the very top of the firm, such as owners, CEOs, and chairs, can affect the female employees working at those companies (Bell, 2005; Bertrand et al., 2019; Cardoso and Winter-Ebmer, 2010; Dalvit et al., 2018; Flabbi et al., 2019).
2 Research Design

2.1 Conceptual Framework

Our analysis revolves around the effects of manager characteristics on the subsequent career progressions of their employees. For example, we want to measure whether male employees fare better after transitioning from a female to a male manager and whether employees who smoke are promoted faster when they transition from a non-smoking to a smoking manager. To estimate these manager effects, ideally we would randomize employees to their managers. As this type of experiment is not feasible, we instead exploit naturally occurring variations in manager assignments generated by the rotation of managers within the organization. Rather than assuming that these natural manager transitions are as good as random changes, we test that assumption using an event-study analysis. The formal econometric framework for the event-study analysis is provided below.

2.2 Effects of Manager’s Gender

Let $y_{i,t}$ be a generic outcome, where the subscripts $i$ and $t$ denote employees and time, respectively. The main outcome in our analysis is the employee’s pay grade, but we also consider other outcomes such as firm exit, effort, and performance.

The transition between two managers can result in one of four different types of gender transitions. Let $J_G$ denote the set of these types: $J_G = \{F2M, F2F, M2F, M2M\}$, where $F2M$ denotes a transition from a female manager to a male manager, $F2F$ denotes a transition from one female manager to another female manager, and so on. Let $D_{i,t+s}^j$ denote the traditional event-study variables that indicate the periods leading up to and following a transition event. For example, $D_{i,t+s}^j$ is an indicator variable that equals 1 if individual $i$ experiences an event of type $j$ in period $t+s$.

The event-study regression relates the outcome variable to the event-study dummies:

$$y_{i,t} = \sum_{j \in J_G} \sum_{s \in S} \beta_{F,j,s} \cdot F_i \cdot D_{i,t+s}^j + \sum_{j \in J_G} \sum_{s \in S} \beta_{M,j,s} \cdot (1 - F_i) \cdot D_{i,t+s}^j + \gamma_i + \eta_{i,t} + \delta_{t}^F + \delta_{t}^M + \varepsilon_{i,t}$$

Note that we interact the event-study dummies with a gender indicator ($F_i$) to estimate event-time coefficients for men ($\beta_{M,j,s}^M$) and women ($\beta_{F,j,s}^F$) separately. The set $S$, the event-study window, spans from 30 months before the event to 30 months after the event (this time window is due to the length of our panel data). We include the usual absorbing dummies at extremes of $\leq -31$ and $\geq +31$ months (Stevenson and Wolfers, 2006). In the event-study graphs, we aggregate these monthly coefficients to the quarterly level for ease of presentation. The omitted categories in $S$ are the three months prior to the event (i.e., -3, -2, and -1 months), aiding our visual depiction at the quarterly frequency. This baseline specification includes employee fixed effects ($\gamma_i$), manager fixed effects ($\eta_{i,t}$) and gender-specific month effects ($\delta_{t}^F$ and $\delta_{t}^M$). In this study, we always use two-way clustering of the standard errors at the team and manager levels.

To isolate the impact of a change in manager gender from a change in manager more generally,
we always compare employees undergoing manager transitions where one of those transitions results in a change of manager gender and the other does not. For example, we compare the effects of transitioning from a female manager to a male manager versus the effects of transitioning from a female manager to a different female manager. In the case of male employees, the object of interest is \( \beta_{M,F}^{F,M} - \beta_{M,F}^{M,F} \), where \( s \) indicates the time since (or until) the transition date. In the case female employees, the corresponding object of interest is \( \beta_{F,F}^{F,M} - \beta_{F,F}^{M,F} \). Hereinafter, we refer to these objects as the \textit{single-differences}, because they are differences between types of transitions.

What we capture with the single-difference estimates is the impact of receiving a male manager relative to the impact of receiving a new female manager. However, we are ultimately interested in whether the effects of manager gender differ for male and female employees. For example, if male managers increase pay grades for male and female employees alike, that would not constitute evidence of a male-to-male advantage. Thus, we must take the difference of the single-difference estimates between male and female employees: \( (\beta_{F,F}^{F,M} - \beta_{F,F}^{M,F}) - (\beta_{M,F}^{F,M} - \beta_{M,F}^{M,F}) \). A positive difference would be consistent with a male-to-male advantage. We refer to these estimates as the \textit{double-differences}, because they take differences first with respect to types of transitions and second with respect to the employee’s own gender.

The key assumption is that, prior to the transitions, male and female employees were on the same pay-grade trajectories. The event-study framework provides a natural test of the identifying assumption: we can assess the evolution of the outcome in each month before the date of the transition to confirm if the trends were truly parallel before the event date.

The manager transitions provide an additional validation check, based on the principle that transitions in the opposite direction should result in approximately the opposite effects. In the previous example, we discussed the effects of “gaining” a male manager (i.e., what happens when an employee transitions from a female manager to a female manager, relative to what would have happened if the employee transitioned from a female manager to another female manager). Likewise, we can measure the effects of “losing” a male manager (i.e., what happens when an employee transitions from a male manager to a female manager, relative to what would have happened if the employee transitioned from a male manager to another male manager). The expectation is that the effects of gaining a male manager should roughly mirror the effects of losing a male manager in terms of timing and magnitude. Because these coefficients are identified by a disjointed set of transition events, there are no mechanical reasons why the results should mirror each other.

To maximize statistical power, we estimate the average male-to-male advantage using all four types of gender transitions. That is, we average the double-difference estimates from “gaining” a male manager and the (negative of) the double-difference estimates from “losing” a male manager: \( \frac{1}{2} \left\{ (\beta_{F,F}^{F,M} - \beta_{F,F}^{M,F}) - (\beta_{M,F}^{F,M} - \beta_{M,F}^{M,F}) - \left[ (\beta_{M,F}^{F,M} - \beta_{M,F}^{M,F}) - (\beta_{M,F}^{F,M} - \beta_{M,F}^{M,F}) \right] \right\} \). We refer to this object as the \textit{dual-double-difference}.

When interpreting the event-study results, there are a few caveats to keep in mind. First, our estimates measure a reduced form effect of an increased but likely transitory exposure to a given managerial gender. As time goes by, many reasons explain why an employee ends up with a manager of a different gender. For example, the employee may be promoted to a different position and assigned a manager of a different gender, or the employee may move laterally to another team.
with a manager of a different gender. In this sense, our estimates will under-estimate the effect of the manager’s gender: if the employee were to stay with the new manager gender forever, the effects would presumably be even stronger. In practice, this is a minor concern, as we find gender transitions to be persistent over time.

A second caveat is that our framework cannot disentangle whether male managers are favorable to male employees or female managers are dis-favorable to male employees. Indeed, this challenge is not unique to our methodology or to our context. Even in a randomized controlled trial, we could compare male managers versus female managers only, because there are no gender-neutral managers to compare against. Likewise, the favorable or dis-favorable conditions may be due to the behavior of the employee, the behavior of the manager, or both. For example, male employees may do better under male managers because the managers treat them better or because the employees are more attentive to them.

### 2.3 Placebo: Effects of Manager’s Birthday-Evenness

As a robustness check, we reproduce the analysis, but instead of focusing on gender as the relevant characteristic of managers and employees, we focus on a characteristic that we know ex ante should not be relevant: whether someone was born on an even or odd date. This placebo test is designed to rule out mechanical reasons why our event-study framework would generate spurious effects. This placebo analysis can also be used to assess whether our standard errors are adequate: e.g., if we found statistically significant coefficients, it would suggest that the inference is misleading. Let $O_i$ be an indicator variable that equals 1 if the employee was born on an even day and 0 otherwise. The regression of interest is identical to the main specification from equation (1), except that gender is replaced everywhere by the birthday-evenness:

$$y_{i,t} = \sum_{j \in J_E} \sum_{s \in S} \beta^O_{j,s} \cdot D^j_{i,t+s} + \sum_{j \in J_E} \sum_{s \in S} \beta^E_{j,s} \cdot (1 - O_i) \cdot D^j_{i,t+s} + \gamma_i + \eta_{i,t} + \delta^E_t + \delta^O_t + \epsilon_{i,t}$$

(2)

where $J_E$ is the set of manager transitions $J_E = \{E2O, E2E, O2E, O2O\}$: $E2O$ denotes a transition from a manager with an even birthday to a manager with an odd birthday, and so on. We identify analogous single-difference, double-difference, and dual-double-difference estimates for these placebo events. For example, the following single-difference estimate measures how the odd-birthday employee reacts to gaining an odd-birthday manager (i.e., transitioning from an even-birthday manager to an odd-birthday manager, relative to transitioning from an even-birthday manager to another even-birthday manager): $\beta^O_{E2O,s} - \beta^O_{E2E,s}$. We use the following double-difference estimate to measure the odd-to-odd advantage: $(\beta^O_{E2O,s} - \beta^O_{E2E,s}) - (\beta^E_{E2O,s} - \beta^E_{E2E,s})$.

In the results section, we present an additional placebo test measuring if the transitions in the manager’s gender affect even-birthday and odd-birthday employees differentially.
2.4 Effect of Manager’s Smoking Habits

We also directly evaluate a non-gender shock to social interactions. Intuitively, we begin by restricting to the sample to male employees and male managers. We then compare two teams, each led by a non-smoking manager. One team transitions to a smoking manager, and the other team transitions to a different non-smoking manager. We compare the differential effects of the transitions for smoking employees and for non-smoking employees separately. The prediction is that transitioning to the smoking manager should benefit the subsequent career of the smoking employees, whereas it should not affect, or less prominently affect, the careers of the non-smoking employees.

We use a variant of the same specification to identify the smoker events, based on the restricted sample of male employees and male managers. Again, the event-study specification is identical to that in equation (1), except that the gender status is replaced everywhere by the smoker status:

\[
y_{it} = \sum_{j \in J_S} \sum_{s \in S} \beta_{j,s}^S \cdot S_i \cdot D_{i,t+s}^j + \sum_{j} \sum_{s \in S} \beta_{j,s}^N \cdot (1 - S_i) \cdot D_{i,t+s}^j + \eta_i + \epsilon_{i,t} \tag{3}
\]

where \( J_S \) is the set of the types of manager transitions \( J_S = \{N2S, N2N, S2N, S2S\} \). For instance, \( N2S \) denotes a transition from a non-smoking manager to a manager who smokes. Again, we define analogous single-difference, double-difference, and dual-double-difference estimates for these manager transitions. For example, the following single-difference estimate measures how smoker employees react to gaining a smoker manager (i.e., transitioning from a non-smoker manager to a smoker manager, relative to transitioning from a non-smoker manager to another non-smoker manager): \( \beta_{N2S,s}^S - \beta_{N2N,s}^S \). Likewise, we can use the following double-difference estimate to measure the smoker-to-smoker advantage: \( \beta_{N2S,s}^N - \beta_{N2N,s}^S - (\beta_{N2S,s}^N - \beta_{N2N,s}^N) \).

3 Institutional Context and Data

3.1 Institutional Context

We collaborated with a private commercial bank in Asia. To keep the identity of the firm secret, we refrain from providing exact information about its characteristics. This bank spans several culturally distinct regions and has millions of customers, billions of dollars in assets and in revenues, and thousands of employees. Although we do not claim that this firm is representative of all firms in the world, we have evidence that this is not an extreme context. The firm may be unusual for the financial sector in that a majority (64%) of its employees are female. Besides that, the gender gaps at this organization are average by U.S. standards. The gender pay gap at this firm (26%) is close to the average of similar-sized firms in the financial sector in the United States (31%). The firm is typical in that men and women in a given position get paid similarly. The bulk of the gender pay gap thus is due to differences in positions among men and women. For example, 75% of firm employees at the entry-level are female, and that fraction falls to 61% in middle management, 25%.

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9 Results based on wage rates for men and women working in the financial sector in firms with over 1,000 employees, as reported in Yildirimaz et al. (2019).
at the C-Suite level, and 0% at the CEO level. Data for U.S. corporations suggest a similar drop from 48% of female employees in entry-level positions to 38% in middle management, 22% in C-Suite positions, and 5% in CEO positions (McKinsey & Company, 2019).

When looking at the regions where the firm operates as a whole, the gender gaps are similar to those in the United States. For example, the gender gap in labor force participation (8.5%) is similar to the one in the United States (13.2%). According to survey data, the gender norms also are not unusual. For example, data from the 2006 World Value Survey suggest that 12% of women in the firm’s country describe work as unimportant or of little importance, and the respective share is 19% in the United States. In Section 4.5, we leverage variation in gender norms across culturally distinct regions where the firm operates to examine the mediating role of local norms.

3.2 Administrative Data: Pay Grade

We collaborated with different divisions of the organization to create a centralized and anonymous database of every employee in the firm. We constructed a monthly panel spanning four years, from January of 2015 to December of 2018. This panel includes 14,736 unique employees, 1,269 of whom have been assigned to a manager role at some point. Finally, 64% of the employees are female, and 49% of the managers are female.

Our main outcome variable is pay grade. This outcome ranges from 41 to 66 and is the best measure of the vertical career progression in the organization, and the metric over which managers have the most direct input. Indeed, employees commonly use pay grades as a measure of their rank in the firm in conversations with other employees. An increase in pay grade is associated with a promotion, or increase in responsibilities. Conditional on an increase in pay grade, there is an 84% chance of a change in position title; in comparison, there is a 1% chance of a change in position title when there is no pay grade increase. Variation in pay grade suggests that, consistent with anecdotal evidence, there is ample opportunity for upward mobility in the firm. Among the 7,622 employees who worked at the bank during the full sample period of four years, 50% experienced at least one pay grade increase, and 16% experienced more than one increase.

Due to the sensitive nature of the data, we do not have the exact compensation details for the whole sample of employees. However, for a different project on a different topic (Cullen and Perez-Truglia, 2018), we have a cross-section of the pay grades and base salaries of employees in a given month (March of 2017). According to these data, there is a strong linear relationship between the logarithm of salary and the pay grade (results presented in Appendix A.1). The slope of the relationship (0.227) indicates that a 1-point increase in pay grade is associated with a 25% increase in salary \((e^{0.227} - 1)\). The \(R^2\) of the regression (0.83) also indicates that pay grade explains the vast majority of variation in salaries.

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10 Labor force participation data come from the World Bank Databank and International Labour Organization ILOSTAT database. These 2017 figures are the most recent for which male and female labor force participation data are available in both countries.

11 HR personnel often carry out the precise salary negotiation within the range determined by pay grade, using market benchmark data.
Although the setting involves employees competing for promotions, employees are not necessarily competing with their teammates. There are no limits on the number of employees on a team that can be promoted, and different employees from the same team may seek promotions into different positions. Indeed, these employees compete for promotions with employees from other teams in the firm, and as the company routinely hires new employees, they also implicitly compete with outside candidates.\footnote{More specifically, there is both a high employee turnover (12.5\% yearly) and growth in the number of employees (5.9\% yearly).}

### 3.3 Other Outcomes: Attrition, Effort, and Performance

We know the dates when the employees join and exit the company, which allows us to construct a dummy variable for employee attrition. We also have some measures of effort and performance. The first measure of effort is the number of days worked. We construct this measure using data from the human resources divisions on absences. We subtract the number of absences, including parental leave, sick days, and vacation days, from the total number of workdays in the month. We use an additional measure of effort to complement the administrative data: the number of hours spent in the office. However, we measure this outcome only for employees working in the headquarters offices (29\% of the sample), as those employees clock in and out using an electronic card-swipe system that is strictly enforced by security personnel. We use these time stamps to calculate the average number of hours in the office. Finally, our measure of performance is based on the 38\% of employees who have a sales role. We measure sales performance based on their sales revenues. The bank uses an official formula to aggregate an employee’s sales across all products (e.g., credit cards, loans, mortgages) by mapping each product to the expected revenue generated from the sale. We use these data to construct a monthly sales performance index.

### 3.4 Manager Assignments

Because a single employee may consider more than one person to be his or her manager, we identify the most relevant manager as the one who has the most power over the employee. We use longitudinal data from the firm’s organizational chart to link each employee to a manager in each month that the employee appears in the sample. The employee-manager assignment is constructed using a simple, two-step algorithm: identify the employee’s team, and then identify the “director” of that team.\footnote{In cases where the team has no directors listed in the organizational chart, we assign the team to the director listed at the next highest level in the organizational chart hierarchy.} To validate our manager assignments, we conducted a survey of the sales and distribution division (described in Section 3.6). We asked employees to identify the managers who “have directly influenced your key performance indicator and pay grade.” In the month of the survey, December 2017, 91\% of the managers we identify using the organization chart also are reported by the employees to be their managers.\footnote{Our comparison is restricted to pairs in the administrative organization chart that remain together for one year or more. When we include all pairs, even those who have been together for just one month, we still find substantial...}
The managers tend to be significantly above their subordinates in the firm’s hierarchy. For example, the modal (mean) distance between managers and their employees is 5 (5.3) pay grades. The manager typically can influence the careers and daily lives of the employees in various ways. Most importantly, the manager provides key input in decisions to promote employees. Even if the employee is not promoted, the manager still provides input that influences employee raises and bonuses. The manager also has discretion to distribute workload across team members. Even if the work hours are rigid, such as for a tellers, the manager still has latitude to approve leaves of absences or late days.

### 3.5 Manager Transitions

Employees can change managers over time for a variety of reasons. Some of those reasons are under the control of the employee and thus likely endogenous. For example, employees may be promoted to a higher position and thus assigned to a different team with a different manager, or an employee who dislikes his or her manager may ask to be transferred to another team. In this study, we focus on manager transitions that are outside the control of the employee. The most typical case occurs when managers rotate laterally across different teams, but also include instances when the team’s manager is promoted to a higher position or accepts a position at a different firm and a replacement is necessary.

In identifying these exogenous transition events in the data, we impose a few conditions. We require that the new manager must assume responsibility for all employees in the team. In other words, the whole team, rather than a specific employee, experiences the manager transition. We also exclude managers who are temporary replacements by requiring the new manager to remain with the team for at least one quarter, and we exclude events in which more than half of the team members changed at the transition event. In the results section, we show that the results are robust under different criteria for the definition of the transition events.

We use the event-study framework to assess whether the manager transitions are exogenous. Anecdotal evidence suggests that this exogeneity is plausible. As part of corporate strategy, managers are expected to gain experience in all areas of banking. For this reason, managers are transitioned across teams within divisions and across divisions to gain exposure to new people and activities; for example, a manager from HR may move to a team in IT and vice versa. By the time they reach the position of senior vice president, most managers will have directed teams in most divisions. When managers quit or request a transfer, they are required to give thirty days’ notice, and the set of candidates available to fill the role in time is (anecdotally) very small and sometimes empty. This shortage contributes helps explain why banks reward managers who are willing to transfer quickly from distant divisions and why job postings for every managerial level of the bank can be found on the internal and external company dashboards.

Over the span of our data, we identify 8,670 events involving 6,021 unique employees and 690 unique managers. These events are distributed uniformly over the four-year panel (e.g., see Appendix Figure A.2.i). 41% of employees experience at least one event at some point in the overlap: 78% of the managers we identify also are listed by the employee.
four-year period, but only 13% experience two or more events. Each event will affect on average 9.75 employees, and the inter-quartile range of events affects teams of 3 and 10 employees. In Appendix A.2 we show that the sample of employees who experience a manager transition (41%) is quite representative of the whole firm in observable characteristics. Moreover, we show that the characteristics of employees and managers are similar across the different types of manager transitions.

When we define placebo events or smoker events, the manager transitions are the same, but we categorize those events differently, basing them on manager’s birthday-evenness or smoking habits instead of gender. By construction, the number of placebo events equals the number of gender events. Because the smoker analysis is based on a subsample (male employees and managers for whom we could infer smoking status), the number of smoking events is smaller than the number of gender events. As for gender events, we find that the placebo events and smoker events are largely homogeneous over time and across individuals (see also Appendix A.2).

3.6 Survey Data: Relationship with Managers

We collected self-reported data on manager assignments to validate our method of identifying managers through the administrative data. To obtain data on relationship between employees and their managers, we distributed a survey to the employees in the largest division: sales and distribution. Sales and distribution comprise 62% of the firms employees, and 100% of employees outside of headquarters. Appendix B includes a sample of the survey instrument. The survey asks respondents to list managers who “directly influenced your key performance indicator and pay grade either in your current position or past positions”. They could select up to six managers. The rest of the survey asked a series of questions (described in the following sections) for each manager listed by the respondent.

We invited 4,847 employees by email to complete the survey in December 2017. Appendix B includes a sample of the emailed invitation. The head of the sales and distribution division requested full participation from employees and gave permission to conduct the survey during work hours. We emphasized that answers to these survey questions would not be revealed to co-workers or managers. A total of 3,345 employees completed the survey, implying a 70% response rate. The modal respondents reported information on their last three managers. The final dataset contained 9,068 employee-manager pairs.

3.7 Proximity to the Manager

To investigate the social interaction mechanism, we split positions by whether the employee works in physical proximity to the manager. For employees working in the headquarters offices, we use card swipe data provided by the security division. These data include information about the floor

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15 We were able to coordinate a detailed survey with the Sales and Distribution division because of the strong relationship we built with the head of that division.

16 If they had more than six managers to list, we asked employees to prioritize the most important ones since 2015.
where the employee works, which we use to calculate the share of employees of each position who work on the same floor as their managers. We split these positions by whether the position averages exceed or fall below the median. As a result, roughly half of the employees are categorized as higher-proximity and the other half as lower-proximity. In the higher-proximity positions, 80% of employees work on the same floor as their manager, compared to only 8% among the lower-proximity positions.

Security data are not available for positions outside headquarters. Thus, we included a question in the manager relationship survey to supplement these data. The question was repeated for each manager whom the employee identified in the survey. We asked “How often are (or were) you physically working near <manager name> (i.e. same floor and area)?”. Respondents could choose from the following options: “Every day or most days (4-6 times per week)”, “Some days (2-3 times per week) ”, or “Infrequently”. Similar to the procedure for the swipe data, we calculate the average proximity of each position and then split positions by whether their average exceeds or falls below the median. Using this method, we categorize 62% of the position titles in the sales and distribution division for which survey data were collected. By construction, half of these employees are categorized as higher-proximity and the other half as lower-proximity.17

### 3.8 Frequency of Social Interactions

A third goal of the survey is to measure social interactions between employees and managers. For each manager listed by the employee, we ask, “Out of 10 work breaks (including lunch or random breaks), how many would include [Manager’s Name]?”.18 We construct a simple variable that equals the fraction of breaks shared with the manager.19 To assess whether employees and managers discuss personal matters, we ask respondents to share their favorite sport teams and to guess the favorite sport team of their managers. For the pairs of employees and managers who responded to the survey, we measure the accuracy of the employee’s answers to this question.

### 3.9 Smoking Habits

We measure the smoker status of employees and their managers in two ways. We use data on smoking status from the 2017 annual health exam that occurs onsite during the workday and a corresponding online workplace health survey with the same questions and framing. To complement the previously described data comprising snapshots of employees working in September 2017, we use two additional supplemental surveys.

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17 In the higher-proximity positions, 88% of employees report working with their manager every day or most days, compared to only 65% of employees in the lower-proximity positions.
18 We ask the question about a share of 10 breaks, rather than asking about the overall number of breaks, to minimize the incentive to under-report so as to appear more focused and productive. The downside is that we do not have a measure of the overall number of minutes spent together in a given week.
19 The survey also asks about an alternative form of social interactions with the manager: “Of the last 10 emails you sent to [Manager’s Name], how many included some part that was personal?” However, there is too little variation in this outcome to be useful for the analysis: the average share of personal emails is just 5%. We suspect employees may have under-reported this type of behavior for fear of violating company policy.
Section 3.6 describes the survey of manager relationship, which includes a question about whether the employee and their current and past managers smoke. Additionally, we deployed a 2-minute survey exclusively about smoking. Appendix C includes a sample of this survey. This survey asks about the respondent’s own smoking status and the smoking status of current and past co-workers, including those who left the bank prior to the annual health exam. We emailed invitations to the survey on February 2018, and the invitation included information about cash prizes to be raffled to survey respondents. We invited a total of 6,022 employees and had a response rate of 39%.

If an employee appears in the 2017 annual health exam data, we use his or her response to assign the smoker status. For employees who do not appear in the annual health exam data, we impute their smoker status using the crowdsourced survey data. Using this method, we assign smoking status to 57% of employees from the main sample. Of those, 59% (33% of the sample) are classified using their annual health exam, and the remaining 41% are classified using crowdsourced data.

Moreover, in Appendix A.16 we show the results are robust to the use of alternative thresholds.

4 Results: Effects of Manager’s Gender

In this section, we document the effects of manager gender on the employee’s career progression.

4.1 Descriptive Analysis

Before diving into the event-study analysis, we provide some simple descriptive evidence on the association between past exposure to male managers and the employee’s subsequent promotions. Let $\Delta P_{i,t}$ be employee $i$’s change in pay grade from $t$ at 10 quarters later. Let $S_{i,t-1}$ indicate the employee’s recent exposure to male managers (i.e., the fraction of the past year that employee $i$ was assigned to a male manager). Consider the following regression:

$$\Delta P_{i,t} = \alpha_0^M \cdot (1 - F_i) + \alpha_1^M \cdot S_{i,t-1} \cdot (1 - F_i) + \alpha_0^F \cdot F_i + \alpha_1^F \cdot S_{i,t-1} \cdot F_i + \beta \cdot T_{i,t} + \rho P_{i,t} + \varepsilon_{i,t}$$ (4)

Note that we interact $S_{i,t-1}$ with a gender indicator ($F_i$) to estimate the relationship separately for male and female employees. The regression includes basic control variables: the employee’s tenure ($T_{i,t}$) and, to flexibly compare employees who started at the same level, fixed effects for initial pay grade ($\rho P_{i,t}$).

Figure 1 presents the results in binned scatterplot form. The x-axis indicates if the employee is assigned to a female (towards the left) or male (towards the right) manager. The y-axis indi-
cates the change in pay grade 10 quarters later. This figure suggests that women are promoted at roughly similar rates under male and female managers ($\alpha_F = 0.056$, p-value<0.001). In contrast, male employees are promoted substantially faster under male managers than they are under female managers ($\alpha_F = 0.380$, p-value<0.001). More precisely, Figure 1 shows that when employees are assigned mostly (i.e., above 75% of the time) to female managers, they tend to be promoted at the same rate, regardless of whether they are female or male. The gender gap is small (0.022 pay grades) and statistically insignificant (p-value=0.403). On the contrary, when employees are assigned mostly (i.e., above 75% of the time) to male managers, then the male employees are promoted 0.30 pay grades higher than female employees (p-value<0.001).

The evidence from Figure 1 suggests that female and male employees receive equal treatment under female managers, but male managers promote their male employees faster than their female employees. This evidence, however, is subject to the usual concerns with causal inference. For example, it is possible that the share of male managers correlates with manager, employee, or position characteristics that are favorable to the promotion of male employees. In the following sections, we address these causality concerns with the event-study analysis of manager transitions.

4.2 Event-Study Analysis

We start by comparing the pay grade effects from transitioning from a female to male manager relative to transitioning from a female manager to another female manager. Figure 2.a presents the results based on the econometric framework described in Section 2. This event-study graph shows the evolution of pay grades in each of the 10 quarters leading up to a manager transition and the 10 quarters after the manager transition. We present coefficients for female employees (red squares) and male employees (blue circles) separately. The quarter before the event (-1) corresponds to the omitted category, and thus the corresponding coefficient is always zero by construction.

When inspecting Figure 2.a, note that these coefficients refer to differences across transition types. As a result, a coefficient of zero in the post-treatment period does not imply that employees remain in the same pay grade; rather, it indicates similar growth rates of pay grades across employees transitioning from female to male managers versus employees transitioning from female to female managers. This context has ample upward mobility, meaning that employee pay grades increase over time.

Figure 2.a shows that, in the 10 quarters prior to the transition, the coefficients are similar in magnitude between male employees and female employees, confirming that female and male employees share similar trends prior to the manager transition. On the contrary, the evolution of

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22 We focus on the single-difference estimates to isolate the effects of the change of gender from the effects of changing manager per se. For reference, Appendix A.3 reports the raw coefficients $\beta_{M,F,j,s}$ and $\beta_{F,F,j,s}$, that is, without “differencing” between transition types.

23 The most important fact is that there are no systematic trends. Having said that, some of the pre-treatment gender differences are statistically significant (most notably, at quarter 4 before the transition the difference p-value is 0.022). This is probably spurious: given the large number of falsification coefficients presented in the paper, a minority of them are expected to be statistically significant just by chance. In any case, as discussed below, the pre-treatment coefficients are consistently close to zero for the transitions in the opposite direction (from male to female managers).
pay grades diverge substantially between male and female employees after the transition date. On the one hand, male employees advance further in the organization after being assigned to a male manager, relative to how they would have fared if they instead were assigned to female managers. At 10 quarters after the transition, pay grades among men exceed those among women by 0.65 points (p-value < 0.001), roughly equivalent to a salary that is 15% higher,\textsuperscript{24} when transitioning from a female manager to a male manager (relative to transitioning from a female manager to a different female manager). An alternative way of illustrating the magnitude of this effect is to compare it to a baseline: 10 quarters after experiencing a manager transition employees gain an average of 0.96 pay grades (for details, see Appendix A.1).

On the other hand, Figure 2.a shows that female employees do not advance similarly after being assigned to male managers, relative to being assigned to female managers. Female employees have pay grades that are 0.043 points (p-value = 0.736) lower at 10 quarters after transitioning from a female to a male manager (relative to transitioning to a different female manager).\textsuperscript{25} Moreover, this coefficient of -0.043 points for female employees is statistically significantly different from the corresponding coefficient of 0.60 for male employees (p-value<0.001).

Now, we assess the robustness of the identification strategy by analyzing the manager transitions in the opposite direction. Figure 2.b is equivalent to Figure 2.a, except that it corresponds to the opposite type of transition (comparing a transition from a male manager to a female manager minus the transition from a male manager to a different male manager). Keep in mind that the coefficients are identified by a disjointed set of transition events, and thus there are no “mechanical” reasons why the results should mirror each other. A comparison of Figures 2.a and 2.b indicates that, as expected, the effects of “losing” a male manager are the opposite of the effects of “gaining” a male manager, both in terms of timing and order of magnitude. For example, Figure 2.a indicates that male employees gain 0.60 points (p-value < 0.001) at 10 quarters after gaining a male manager. In turn, Figure 2.b indicates that male employees lose 0.30 points (p-value = 0.031) at 10 quarters after losing a male manager.

Figure 3 presents the double-difference estimates described in Section 2. Intuitively, the coefficients from Figure 3.a correspond to the difference between the male and female coefficients from Figure 2.a. Figure 3.a shows that at 10 quarters after the transition, the male-to-male advantage amounts to 0.65 pay grades, which is not only highly statistically significant (p-value<0.001) but also economically large. Figure 3.b is equivalent to Figure 3.a, except that it corresponds to the transitions in the opposite direction. According to Figure 3.b, there is a statistically significant (p-value=0.001) male-to-male advantage of 0.44 pay grades at 10 quarters after the transition. This point estimate of 0.44 is smaller in magnitude than the corresponding estimate of 0.65 from Figure 3.a, but we cannot reject the null hypothesis that these two coefficients are equal (p-value= 0.343).

In Figure 3.c, we present the dual-double-difference estimates. Intuitively, Figure 3.c corre-

\textsuperscript{24}A single pay-grade increase is associated with a log increase of 0.227 (Appendix A.1), and thus a 0.65 pay grade increase should be equivalent to a salary that is 15% ($= e^{0.65 \cdot 0.227} - 1$) higher.

\textsuperscript{25}Although this evidence suggests that promotions among male employees do not crowd out promotions among female teammates, it also does not imply that male employees do not crowd out anyone. Indeed, male employees are probably crowding out other employees in the same position but on different teams, as well as external hires.
sponds to the average male-to-male advantage implied by Figures 3.a and 3.b. The estimated male-
to-male advantage amounts to 0.54 pay grades at 10 quarters after the transition (p-value<0.001). Unsurprisingly, this point estimate is in the middle of the corresponding point estimates from Figures 3.a and 3.b. However, these estimates combine their variation and are thus more precisely estimated than the corresponding coefficients from Figures 3.a and 3.b on their own. As a result, we use the dual specification to maximize statistical power, such as when measuring the heterogeneity of the effects.

Given that we have the most statistical power for the dual-double-difference specification, we can use it to explore the timing of the effects. First of all, notice that there is a significant jump in the first quarter after the manager switch: the coefficient corresponding to +1 quarters after the switch is 0.10, and statistically significant (p-value=0.006). Note also that the male-to-male advantage grows smoothly over time, which happens mechanically because while some employees may happen to be up for promotion right after the manager switch, most employees are months or sometimes years away from their next promotion opportunity at the time of the switch. Just like in academia, this company reviews promotions at the end of the year, and depending on the position some employees may be considered up for promotion every other year or so.

To illustrate this better, we can compare the size of the male-to-male advantage relative to the average change in pay grade at each time horizon. In the first four quarters after a manager transition, the male-to-male advantages are estimated at 0.10, 0.10, 0.12, and 0.16 (each of them statistically significant, with p-values of 0.006, 0.032, 0.022, and 0.012). The average pay grade change in each of the first four quarters after a manager transition were 0.05, 0.15, 0.25, and 0.34, respectively. The male-to-male advantage grows stronger during the second year: in the fifth through eight quarters after the transition, the male-to-male advantages are estimated at 0.20, 0.21, 0.30, and 0.38 (each of them statistically significant, with p-values of 0.011, 0.016, 0.001, and <0.001. For comparison, the average pay grade change in the fifth through eight quarters after a manager transition were 0.47, 0.56, 0.67, and 0.75. The male-to-male advantage seems to taper off in the third year: the point estimates for the ninth and tenth quarters are 0.48 and 0.54 (both p-values < 0.001), with their difference being small and statistically insignificant. For comparison, the average pay grade change in the ninth and tenth quarters after a manager transition were 0.84 and 0.96.

In the appendix, we report some additional robustness checks. In Appendix A.4, we measure the persistence of gender transitions. Appendix A.5 shows that the results are similar under alternative specifications; including controls for employee characteristics and specifications with and without manager fixed effects. Appendix A.6 shows that the results are robust under alternative definition of events, such as excluding the largest events. Appendix A.7 shows that the results are robust if we restrict the sample to employees who joined the firm before the start of the panel. In Appendix A.8, we show that the results are robust if we focus on the employees’ first transition event only.
4.3 Placebo Analysis: Birthday-Evenness

As a placebo test, we reproduce the whole analysis, but instead of focusing on gender as the relevant characteristic of managers and employees, we focus on a characteristic that we know ex ante should not be relevant: whether someone was born on an even or odd date. This placebo provides a useful sanity check. First, it helps rule out mechanical reasons why our event-study framework would generate spurious effects. Second, this placebo analysis can be used to assess whether our standard errors are conservative enough.

Figure A.9.i is equivalent to Figure 2, but it is based on birthday-evenness instead of gender. Figure 4.a compares transitions from an even-birth date manager to an odd-birth date manager versus transitions from an even-birth date manager to another even-birth date manager. We directly present double-difference coefficients for odd-birth date employees relative to even-birth date employees.

As expected, Figure 4.a shows no significant difference between the two types of transition, either before or after the event. For instance, at 10 quarters after transitioning from an even-birth date to an odd-birth date manager (relative to another even-birth date manager), the difference between the pay grades of odd-birth date and even-birth date employees is close to zero (0.06), statistically insignificant (p-value=0.518), and precisely estimated. Moreover, we can reject the null hypothesis that this coefficient for odd-birth date employees the same as the corresponding coefficient of 0.65 estimated for male employees in Figure 2.a (p-value=0.001). Moreover, Figure 4.b shows that the results are virtually the same if we use the transitions in the opposite direction (i.e., odd-to-even instead of even-to-odd). For the sake of brevity, we report the single-difference and dual-double-difference estimates in Appendix A.9.

In Appendix A.10, we also show that the results are robust to an alternative placebo specification that combines the gender of the manager with the birthday-evenness of the employees. We take the same gender transitions of the managers from the previous section and show that, despite strong heterogeneity with respect to the gender of the employee, there is no significant heterogeneity with respect to the birthday-evenness of the employee.

Ideally we could replicate the results using an alternative characteristic, such as race or ethnicity, that would provide another shared demographic trait against which to benchmark the gender results. Unfortunately, in our context, racial and ethnic diversity are too limited for such a benchmark.

4.4 Effects on Attrition, Effort and Performance

Male employees may reach higher positions under male managers because they are less likely to leave the firm, work longer hours, or perform better than their female counterparts. Alternatively, the male-to-male advantage may be the consequence of favoritism without accompanying productivity justifications. To probe these factors, we measure the effects of manager transitions on additional outcomes. Figure 5 presents the results under the dual-double-difference specification, which combines all transition types and thus maximizes statistical power. Each panel of Figure 5 is equivalent to Figure 3.c, except it uses a different dependent variable instead of pay grade. As we use different dependent variables, we follow Hastings et al. (2019) by setting the scale of each graph at
approximately twice the within-individual standard deviation. For example, the within-individual standard deviation in pay grade is about 0.5, so in the event-study graphs for that dependent variable the y-axis ranges from -1 to 1. This hopefully allows for a more intuitive comparison between event-study graphs that involve different outcomes.

Figure 5.a shows the effects on the probability of leaving the firm (i.e., a dummy variable that equals 1 for every month after the employee leaves the firm). When using this specific dependent variable, there is an extra challenge for the event-study analysis. By construction, employees do not experience manager transitions after they leave the company. We can still estimate the post-treatment coefficients, but we cannot estimate the pre-treatment coefficients. We address this common challenge in event-study analysis by using the standard approach of assigning hypothetical events to individuals who left the firm (Kleven et al., 2019). To do this, we take advantage of the fact that after an employee leaves the firm, the employee’s former team still exists. Thus, we take the transition events experienced by the team and assign them to the employee, even if the employee no longer works for the firm.

Figure 5.a shows that, consistent with the assumption of balanced pre-trends, the coefficients preceding the transition date are close to zero, precisely estimated, and statistically insignificant. The evidence also indicates a lack of male-to-male advantage on attrition: the post-event coefficients are also close to zero, precisely estimated, and statistically insignificant. For example, at 10 quarters after the event, the male-to-male coefficient for attrition is close to zero (-0.3 percentage points), statistically insignificant (p-value = 0.667), and precisely estimated. On average, the probability of leaving the firm at 10 quarters after an event is 35 percentage points. Thus, the estimated effect of less than one percentage point is quite small relative to that baseline.

Next, we assess whether there is a male-to-male advantage in employee effort or performance. For example, male managers may be better role models than female managers for male employees (Kofoed and McGovney, 2019), or perhaps male managers are better than female managers at communicating with or monitoring male employees. Figure 5.b shows the event-study graph with the (logarithm of) the monthly number of days worked as the dependent variable. The coefficients are close to zero, statistically insignificant, and precisely estimated. For example, the male-to-male advantage at 10 quarters after the transition is close to zero (0.012 log points), statistically insignificant (p-value = 0.313), and precisely estimated. We can interpret the magnitude as a percentage increase of <1% in the days worked. This difference is tiny compared with the magnitude of the male-to-male advantage in pay grades reported in Figure 3.c, which is roughly equivalent to a 13% salary difference.

Figure 5.c presents the results for the other measure of effort: (the logarithm of) the average number of hours spent in the office, according to security log data for employees working at headquarters (43% of the sample). Again, we find no male-to-male advantage on time spent in the office.

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26 Hastings et al. (2019) perform a similar normalization but use the inter-quartile range instead.

27 To allow for familiar scales, we use round numbers. For example, the within-individual standard deviation of pay grade is 0.479, so instead of using a range from -0.958 to 0.958, we use a range from -1 to 1.

28 A single pay-grade increase is associated with a log increase of 0.227 (Appendix A.1), and thus a 0.54 pay-grade increase should be equivalent to a salary that is 13% ( = e^{0.54\times 0.227} − 1) higher.

29 In Appendix A.13, we report the effects on paygrade for this same subsample. The effects are less precisely estimated.
The point estimates are close to zero, statistically insignificant, and precisely estimated. For example, at 10 quarters after the transition, the male-to-male advantage is small (relative to the within-individual standard deviation) and statistically insignificant (p-value = 0.822).

Figure 5.d presents the effects on sales revenue for the subsample of employees who have a sales role (42% of the sample). The point estimates are again close to zero, statistically insignificant, and precisely estimated. For instance, at 10 quarters after the transition, the male-to-male advantage is small (relative to the within-individual standard deviation) and statistically insignificant (p-value = 0.790).

In sum, the analysis presented in this section indicates that the higher promotion rates that male employees enjoy under male managers are not accompanied by any differences in attrition, effort, or performance, compared to female employees.

A related mechanism could be that male managers are better able to discern the best candidates to promote by virtue of their social interactions with their male employees (Brogaard et al., 2014). If male managers were systematically better at allocating tasks or roles to male employees through an information advantage, in most circumstances this would translate into higher sales revenue, the firm’s bottom line. We do not find this to be true even 10 quarters after the manager switch. In Appendix A.11.1, we focus on a sample of employees, junior sales associates, for whom their post-promotion productivity is revealed ex-post through their sales performance. We show that, across men and women, the employees who are promoted by male managers are on average significantly less productive than those promoted by female managers in their subsequent sales roles, while overall rates of promotion do not differ significantly.

In the appendix, we present some additional robustness checks. For instance, the results presented here are based on the dual-double-difference specification. In Appendix A.12, we show that the results are robust when looking at two directions of the transitions (i.e., gaining and losing a male manager) separately.

4.5 Heterogeneity by Gender Norms

The effects of manager gender could be mediated by social norms about gender roles (Jayachandran, 2020). For example, in more chauvinistic contexts, male managers may be more prone to spending time, becoming friends with and promoting their male employees. While we do not have data on the gender norms at the individual level, we take advantage of geographic variation.

The employees of the firm work in hundreds of geographically dispersed branches and two corporate towers, one in the "northern region" and one in the "southern region". There are sharp

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30 In Appendix A.13, we report the effects on paygrade for this same subsample. The effects are less precisely estimated but still follow the basic patterns from the whole sample.

31 As shown in Appendix A.11, the results are robust to using the inverse hyperbolic sine transformation. As this outcome equals zero a non-trivial fraction of the time, we cannot use the logarithm of sales revenues as a dependent variable. We use the inverse hyperbolic sine transformation instead, which can be interpreted like a log transformed variable, as \( \text{arcsinh}(x) \rightarrow \ln(2x) = \ln(2) + \ln(x) \) rapidly.

32 According to the asymmetric information story, the marginal employee who is promoted by a male manager should ex-post be more productive than the marginal employee promoted by a female manager.
differences in the cultural and institutional past between the northern and southern regions that
could generate persistent differences in gender norms. Anecdotally, southerners are more western-
ized due to early European colonization while northerners are more communist-influenced due to
Chinese rule. Based on these roots and prior research on persistent gender differences between East
and West Germany by Boelmann, Raute, and Schönberg (2020), we expect the southern regions to
have stronger and more unequal gender norms around roles at work.

Indeed, these anecdotal accounts are supported by different sources of data. First, the gender
gap in the labor force participation is three times as large in the southern regions (5 percentage
points) as in the northern regions (16 percentage points). The anecdotal accounts are also sup-
ported by survey measures of gender norms. The most recent wave of the World Values Survey
covered the country where the firm is located and included a relevant question on the role of gen-
der in business leadership. Respondents were asked whether they agree with the statement “Men
make better business executives than women do” in a scale from “strongly disagree” to “strongly
agree.” Among respondents in the top income quartile (which is the most relevant population for
the employees in our firm), 52% of men agreed with the statement that they men are better business
executives than women. This is roughly 12 percentage points higher (or 31% higher) than the share
of men in the northern regions who agreed with this statement (difference p-value = 0.016).

For the purpose of the heterogeneity analysis, we split units between the northern and southern
regions using data on the birthplace of employees. A unit is categorized as northern if the modal
employee in that unit was born in one of the northern provinces under greater communist-influence.
Under this categorization, 68% of employees work in northern units and the remaining 32% work in
the southern units. Employees are broadly similar between the northern and southern units in terms
of their observable characteristics. A slightly greater share of the workers in the northern units are
male (32% relative to 30%) or have a college degree (86% relative to 78%), and the average worker
in a northern unit works in a slightly larger unit (100 workers relative to 77) – for more details, see
Appendix A.17. Using the firm’s pay grade data, we find that the gender pay gaps is 39% higher
in the southern units than in the northern units (1.1 pay grade gap in the south versus 0.8 pay grade
gap in the north, p-value of the difference=0.016). The sign of this difference is consistent with the
anecdotal accounts of the difference in gender norms between the north and the south.

Figure 6 presents the heterogeneity of results between northern and southern units. To maxi-
mize statistical power, we estimate the same dual-double-difference model from Figure 3 but split
the set of event dummies in two: one set for the northern units and another set for the southern
units. Figure 6.a presents coefficients for the southern units and Figure 6.b presents coefficients
for the northern units. Figure 6.a shows a significant male-to-male advantage in the southern units
(where there are stronger gender norms), while Figure 6.b shows that the male-to-male advantage
is smaller and less statistically significant in the northern units. For example, at 10 quarters after
the transition the male-to-male advantage in pay grade is 0.69 (p-value<0.001) in the south (Fig-
ure 6.a ), compared with 0.44 (p-value=0.001) in the north (Figure 6.b). This specific difference

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33 These figures were calculated from the most recently available census data (from 2009).
34 The difference is similar, but less precisely estimated, among female respondents. For more details, see Appendix
A.17

24
must be taken with a grain of salt because, although large, it is not precisely estimated and thus is statistically insignificant (p-value= 0.269). The difference between Figure 6.a and Figure 6.b are consistent in direction and magnitude for all the time horizons. In sum, the evidence suggest that while the effects are present in both the northern and southern units, they are more pronounced in the southern units, where there are stronger gender norms.

4.6 Interpreting the Magnitude of the Effects

Next, we discuss the economic magnitude of the male-to-male advantage. Under the assumption that our findings are due to a positive effect of male managers on male employees, we compute what would happen to the overall gender gap if we were to remove this male-to-male advantage. The unconditional gender gap in pay grade in our setting is approximately 0.90 pay grades. As 66% of male employees have male managers, the gender pay gap would be reduced by 0.36 pay grades (= 0.54 · 0.66) if the male-to-male advantage were removed. That is, removing the male-to-male advantage would reduce the gender pay gap by 40% (from 0.90 to 0.54 pay grades).

We can also compare our findings to the results from related studies. However, we must take these comparisons with a grain of salt due to obvious differences in context and research design (e.g., we rely on quasi-experimental methods). The closest related study is Kunze and Miller (2017), which is based on data on white-collar employees from a private firm in Norway. Consistent with our findings, they find that the gender gap in promotions is higher in establishments where the share of male superiors is higher. We also provide a quantitative comparison to Kunze and Miller (2017). They report a gender gap in promotion rates of 3.3 percentage points (page 772). That gap is 2 percentage points larger in establishments with 100% male superiors, relative to establishments with 0% male superiors (column (1) of Table 2). We can use the estimates from Kunze and Miller (2017) in an equivalent counterfactual analysis as the above. Since 83% of managers in their sample are male, this gap can explain 50% = 0.83 · 2 3 of the gender gap in promotions. This is in the same

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35 For example, looking at the effects 4 quarters after the transition, the male-to-male advantage is estimated at 0.29 pay grades in the south (p-value=0.010) vs. 0.09 pay grades in the north (p-value=0.205).
36 As discussed in Section 2, our specification cannot distinguish whether the male-to-male advantage is driven by favorable treatment from male managers, unfavorable treatment by female managers, or a combination of both. The descriptive analysis presented in Section 4.1, however, suggests that the favorable treatment by male managers is a more likely explanation.
37 This figure is estimated using a cross section of the bank in the last period of our sample (December, 2018).
38 This exercise combines all types of manager transition. The resulting magnitude would be bit larger if we used the transitions starting with a male manager only (it would explain 48% of the gender gap, instead of 40%) or the transitions starting with a female manager only (it would explain 32%).
39 One caveat with this interpretation is that if some effects were due to a negative effect of female managers on male employees, then the effects on the gender pay gap would be smaller and the 40% reported here could be considered an upper bound. In the extreme case where all effects are due to negative effects of female managers on male employees, then removing these manager effects should actually increase the gender pay gap, as male employees’ pay grades would increase and female employees’ would remain unaffected. As discussed throughout, we did not find any supporting empirical evidence of a negative bias of female managers against male employees.
40 While their preferred interpretation is that the difference is due to female managers helping female employees, they also describe the indeterminacy between women helping women or men helping men given the absence of a gender-neutral benchmark. Our evidence instead suggests that male managers help male employees.
order of magnitude as our baseline estimate of 40% presented above.

Our finding that women do not benefit from having female managers echoes results from earlier studies in non-corporate contexts: female referees and female committee members do not increase the odds of acceptance of female-authored papers or promotion of female candidates (Bagues et al., 2017; Card et al., 2019); and female teachers in public schools show similar job satisfaction and turnover rates whether working in schools run by female principals or male principals (Grissom et al., 2012; Husain et al., 2018).

Last, to contextualize this effect size further, we turn to a result that is well established in the literature: the so-called “motherhood penalty”. From the administrative HR data, we are able to identify workers who take maternity leave at any point in our sample. Women are entitled to six months of maternity with partial pay, and in our sample, the average leave is 22 weeks (4.5 months). Looking at the same December 2018 cross section, we find that the gap between men and women who never take maternity leave is 0.83 pay grades. When this gap is measured instead using women who ever take maternity leave, the gap is 31% larger or 1.09 pay grades. The difference is highly statistically significant with a p-value of p < 0.001.41 While we do not have an instrument to causally estimate the impact of childbirth and maternity leave on the pay gap, the unconditional difference in means is similar to the carefully estimated gender gap in Kleven et al. (2019), which grows between 20% to 30% over four years after birth. Overall, this constitutes suggestive evidence that the male-to-male advantage in this firm may be in the same order of magnitude as the motherhood penalty (Schönberg and Ludsteck, 2014; Kleven et al., 2019).

5 Results: Social Interactions Channel

We use social interactions as an all-encompassing term to refer to a family of mechanisms featuring face-to-face, personal interactions between employees and their managers. For example, male managers may become emotionally attached to male employees over time and thus feel increasing pressure to promote them. Perhaps male employees use the interactions to gain the manager’s sympathy and schmooze their way into promotions. Socializing with the manager may make the accomplishments and efforts of employees more salient to the manager, thus making those employees more likely to be rewarded with a promotion. With more frequent interactions, male managers might better identify potential among their male employees (Brogaard et al., 2014). Male employees also may use the time spent with their manager to claim credit and engage in self-promotion (Sarsons et al., 2019; Isaksson, 2019; Coffman et al., 2019). Male employees may get favorable treatment from managers by getting assigned tasks that are more conducive to promotions (Lehmann, 2013; Babcock et al., 2017). It is also possible that male managers are more willing to work alongside with and train their male subordinates, compared with their female subordinates (Ranganathan, 2019).

41 We measure maternity leave using the HR records of the firm. This is a rough estimate. For example, it is possible that some employees had children before they joined the company. It is also possible that employees became parents without formally logging parental leave with HR.
In each of the following sections, we provide suggestive evidence that the male-to-male pay grade advantage operates at least partially through the social interactions channel, and that these social interactions are not accompanied by higher employee productivity or the managers’ enhanced ability to discern and promote more productive employees.

5.1 Heterogeneity by Proximity to the Manager

The first test of the social interactions channel exploits heterogeneity according to proximity to the manager. If socializing with the manager plays an important role, then we should observe stronger effects for employees whose jobs require frequent face-to-face interactions with the manager (Bandiera et al., 2009).

Recall from Section 3.7 that we use a combination of administrative and survey data to split positions into higher and lower proximity to the manager. An example of a high-proximity position is customer support specialist, who normally sit in a specific location near the manager. An example of a low-proximity position is the sales and quality development director, who usually travels between branches and reports back to the manager by phone or email. We were able to successfully classify the proximity for a large majority (88.2%) of the employees in the sample.

Figure 7 presents the heterogeneity results. To maximize statistical power, we estimate the same dual-double-difference model from Figure 3. However, rather than having a single set of event dummies, we split this set in two: one set for high-proximity positions and another for low-proximity positions. Figure 7.a presents coefficients from high-proximity events, and Figure 7.b presents coefficients from low-proximity events. Figure 7.a shows a significant male-to-male advantage when the employee works in high proximity to the manager. Figure 7.b further shows that the male-to-male advantage is close to zero and statistically insignificant when the employee works in a low proximity environment. For example, Figure 7.a indicates that at 10 quarters after the transition, the male-to-male advantage in pay grade is 0.76 (p-value<0.001) in the high-proximity group, compared with 0.21 (p-value=0.178) in the low-proximity group, and their difference is statistically significant (p-value=0.013).

In the appendix, we present some additional robustness checks. In the baseline results presented above, we estimate the dual-double-difference estimator that combines all types of transitions and thus maximizes the statistical power. In Appendix A.14, we show that the results are robust when looking at transitions in each direction (i.e., a “gain” or a “loss” of a male manager). Similarly, to maximize power, our measure of proximity combines administrative data and survey data. In Appendix A.14, we show that the results are robust even when looking at the administrative and survey measures of proximity separately.

In Appendix A.14.1 we compare the observable characteristics across those low and high proximity groups and show that, although not large, there are some systematic differences. One potential concern is that the differences in results between high and low proximity groups stem partially from differences along those other characteristics. We provide evidence against this concern. We repli-

42 In Appendix A.13, we report the effects on paygrade for this same subsample. The effects are almost identical as for the whole sample.
cate the analysis using propensity score matching to maintain balance along critical observables, including position pay grade, position share male, and position share sales roles and average sales revenue.\footnote{We selected these observables based on a study by Bandiera et al. (2009) showing that managers exhibit favoritism under low powered incentives in particular, so we are careful to re-weight so that the incentive schemes and masculinity across the two groups are balanced.} We show that the results are practically identical after re-weighting.

## 5.2 Effects on the Time Spent with the Manager

If the social interactions channel plays a role, we should observe that male employees interact more with their managers after transitioning to a male manager (relative to transitioning to another female manager). To test this hypothesis, we use our survey measure of social interactions: the fraction of the last ten breaks that the employee took that was shared with his or her manager.

Although the share of breaks taken with the manager is probably not the perfect measure of social interactions, we start by providing some suggestive evidence that it contains some meaningful variation. First, we show that employees who spend more breaks with their managers get to know them better. Among the 3,072 employee-manager pairs for whom both the manager and employee responded to our survey (so that we can determine if the employee guessed the manager’s preference correctly), we find that spending more breaks with the manager is positively associated with an accurate guess about their favorite sports team. The association is highly statistically significant (p-value < 0.001) and large in magnitude: increasing the share of breaks taken with the manager from 0% to 100% is associated with a 44% increase in the probability of correctly guessing the manager’s favorite team (from 25 to 36 percentage points). Moreover, we show that our measure of shared breaks is correlated to promotion rates. Among the 5,047 employee-manager pairs for which the employee answered our survey, we find that spending breaks with the manager is positively associated with promotions. This correlation is not only statistically significant (p-value = 0.014), but also economically significant: increasing shared breaks from 0% to 100% is associated with an additional increase of 0.1 pay grade.\footnote{For a binned scatterplot of these two relationships, see Appendix Figure A.15.ii.}

Next, we assess whether male employees change the shared breaks with their managers after transitioning to a male manager. Ideally, we would implement the same quarterly event-study analysis that we employ for the outcomes measured with administrative data. Unfortunately, due to the smaller sample size, that is not feasible for this survey outcome. For instance, although the analysis of pay grades is based on 374,913 observations (employee-month pairs), the dataset on share of breaks has only 9,068 observations (employee-manager pairs).\footnote{The smaller sample size is due to two reasons. First, we collected survey data on a minority of employees. Second, even among surveyed employees, we measure their social interactions only at a handful of points in time (as opposed to the monthly data for four years from the administrative records).} Instead, we use a stylized version of the event-study framework tailored to the smaller survey dataset.

We follow the same notation from Section 2.2, with a few differences. The first difference is that, instead of the employee-level pair, observations are denoted by employee-manager pair, where $i$ denotes the employee and $m$ the manager, respectively. Let $Share_{i,m}$ be the share of breaks that
employee \( i \) took with manager \( m \). Consider the following regression:

\[
Share_{i,m} = \sum_{j \in J_G} \beta_{j, \text{post}}^F \cdot F_i \cdot D_{i,m}^j + \sum_{j \in J_G} \beta_{j, \text{post}}^M \cdot (1 - F_i) \cdot D_{i,m}^j + \sum_{j \in J_G} \beta_{j, \text{pre}}^F \cdot F_i \cdot D_{i,m+1}^j + \sum_{j \in J_G} \beta_{j, \text{pre}}^M \cdot (1 - F_i) \cdot D_{i,m+1}^j + \delta_{\text{post}}^F + \delta_{\text{post}}^M + X_{i,m} \gamma + \varepsilon_{i,m}
\]

(5)

\( D_{i,m}^j \) is a dummy variable that equals 1 if individual \( i \) experiences an event of type \( j \) from manager \( m - 1 \) to manager \( m \). As in Section 2.2, we interact these dummies with gender indicators to allow the effects to be gender-specific. The coefficients \( \beta_{j, \text{post}}^F \) and \( \beta_{j, \text{post}}^M \) are intended to capture the change in social interactions after the employee transitions to the new manager. In turn, \( D_{i,m+1}^j \) is a dummy variable that equals 1 if individual \( i \) experiences an event of type \( j \) from manager \( m \) to manager \( m + 1 \). The coefficients next to these variables (\( \beta_{j, \text{pre}}^F \) and \( \beta_{j, \text{pre}}^M \)) are intended to provide the usual tests for pre-trends: they measure whether future manager transitions affect the employee’s social interactions with the current manager. Additionally, the regression includes gender-specific time effects (\( \delta_{\text{post}}^F \) and \( \delta_{\text{post}}^M \)) and a set of basic controls (\( X_{i,m} \)): unit size, manager’s pay grade, and position title dummies.

Figure 8 presents the results from the stylized event-study analysis. Figure 8.a presents the results for the gender manager transitions. The findings suggest that social interactions may play a role in the male-to-male promotion advantage. The coefficients for the male employees are consistent in sign with the effects on pay grades reported in the previous section. The male coefficient labeled “after transition” corresponds to the effects following a transition. For male employees, the share of breaks taken with the manager increases by 15 percentage points (p-value=0.017) after transitioning from a female manager to a male manager, relative to transitioning from a female manager to another female manager. This coefficient is statistically and economically significant: it is almost as large as the within-employee standard deviation of the dependent variable (17.4 percentage points). The corresponding falsification test is reported in Figure 8.a as the coefficient labeled “before transition”. As expected, the falsification coefficients is close to zero (0.2 percentage points) and statistically insignificant (p-value=0.987).

For female employees, in contrast, there is no robust evidence that the share of breaks with the manager changed as a result of a change in gender of the manager. This evidence also aligns with the lack of female-to-female advantage in promotions. One possible interpretation is that female managers socialize equally with female and male employees, thus offering no advantages to one gender. Another possible interpretation is that even if male and female employees spend equal time with their manager, gender differences may still occur in their ability to convert those interactions into a higher promotion probability. That is, female employees may be less successful than male employees at taking advantage of opportunities to schmooze with managers.

We also validate this research design by estimating the stylized event-study with our placebo

\footnote{Figure 8.a shows that even though for female employees the “after transition” coefficient (-8 percentage points) is statistically significant (p-value = 0.037), it is probably spurious because it is almost identical to the corresponding falsification coefficient (-11 percentage points, p-value=0.080).}
events. Figure 8.b presents the results. As expected, both even-birthday and odd-birthday employees are equally likely to share breaks with their manager after transitioning from an even-birthday manager to an odd-birthday manager (relative to transitioning from an even-birthday manager to another even-birthday manager).

5.3 Co-Smoking Shocks to Social Interactions

For a final test of the social interactions channel, ideally we would flip a coin to determine the frequency of social interactions among male employees and male managers. According to the schmoozing channel, the male employees assigned to socialize more with their male managers should be promoted faster. Although this ideal experiment is not feasible, we exploit quasi-experimental variation based on the transitions between non-smoker and smoker managers.

We conjecture that for an employee who smokes, having a manager who also smokes can increase the frequency of their social interactions due to shared smoking breaks. We start by using the survey measure of shared breaks to test this conjecture. Figure 8.c is equivalent to Figure 8.a except focusing on smoking status rather than gender. The results from Figure 8.c confirm the conjecture that sharing a smoking habit constitutes a significant shock to social interactions between an employee and manager. The “after transition” coefficient indicates that male employees who smoke increase the share of breaks taken with their managers by 25 percentage points (p-value = 0.002) after transitioning from a non-smoking male manager to a smoking male manager (relative to transitioning from a non-smoking male manager to another non-smoking male manager). In contrast, the corresponding coefficient for non-smoking employees is close to zero (-3 percentage points) and statistically insignificant (p-value=0.702). Moreover, the falsification coefficients, labeled “before transition”, are close to zero and statistically insignificant, both for the smoker and non-smoker employees.

These results confirm that a shared smoking habit increases socialization between an employee and manager. According to the social interactions channel, this increased socialization should result in higher promotion rates for those employees. To test this hypothesis, we estimate the event-study effects of smoker-manager transitions on pay grades. Figure 9 presents the results, which are identical to Figure 2, except focusing on manager smoking status rather than manager gender. Note that the event-study coefficients from Figure 9 (on smoker transitions) are substantially less precisely estimated than the corresponding coefficients from Figure 2 (on gender transitions), due to differences in sample sizes. The smoker analysis is limited to male employees and managers, who constitute less than half the sample, and is further limited to employees and managers for whom data on smoking status is available. Thus, the analysis of smoker transitions are based on a sample size (94,750 observations) that is roughly a quarter of the sample size used for gender transitions (380,964 observations).

Figure 9.a compares the pay grades of male employees who transition from a male manager who does not smoke to a male manager who smokes (relative to transitioning from a male manager who does not smoke to another male manager who does not smoke). Prior to the event date, the coefficients for the smoking employees (denoted by the violet triangles) are statistically indistin-
guishable from the coefficients for the non-smoking employees (denoted by the orange diamonds). This evidence indicates that the assumption about parallel trends holds. In contrast, after the transition date, the evolution of pay grades starts to gradually diverge between smoking and non-smoking employees. At 10 quarters after transitioning to a smoker manager (relative to transitioning to another non-smoker manager), the pay grades of smoker employees increase by an additional 0.70 points (p-value=0.002). In contrast, the corresponding point estimate is close to zero (0.07) and statistically insignificant (p-value=0.722) for the non-smoking employees.

We also examine the reverse smoker-status transitions: among everyone who starts with a smoking manager, we compare those who transition to a non-smoking manager versus those who transition to another smoking manager. Unfortunately, these types of transitions are much less common, resulting in estimates that are highly imprecisely estimated. Figure 9.b presents the results. The point estimates have the expected sign, indicating that smoker employees are less likely to be promoted as a result of losing their smoking manager. However, the point estimates are somewhat smaller in magnitude, less precisely estimated, and thus statistically insignificant.

For a more direct measurement of the smoker-to-smoker advantage, Figure 10 presents the double-difference estimates. Figure 10.a corresponds to the difference of coefficients between smoking and non-smoking employees from Figure 9.a. At its peak in the 8th quarter after the transition, the smoker-to-smoker advantages is estimated at 0.84 pay grades (p-value < 0.001) and remains 0.63 pay grades (p-value= 0.035) 10 quarters after the transition. Figure 10.b corresponds to the manager transitions in the opposite direction; the smoker-to-smoker advantage of 0.37 pay grades is statistically insignificant at its peak 7 quarters out, with a p-value of 0.117. Figure 10.c presents the dual-double-difference estimates, which combine the transitions in both directions. Due to noisy estimates in the late quarters of the manager transitions with an outgoing smoking manager, the estimated smoker-to-smoker advantage at 10 quarters is somewhat understated (0.30 pay grades, p-value = 0.145). However, in quarters 7, 8, and 9, the smoker-to-smoker advantage is large (0.49, 0.49, and 0.44) and statistically significant (p-values 0.003, 0.013, and 0.029).

We also present productivity results for smoking events in Appendix A.12. We find no evidence of differential performance (sales revenue) or effort (hours worked in the office, retention or absenteeism) after the manager switch. If the smoking managers were better at allocating tasks or roles to smokers through an information advantage gained during smoking breaks, in most circumstances this would translate into higher sales revenue within 10 quarters after the manager switch. However, we find no evidence of allocation improvements; mean sales revenue across smokers and non-smokers remains constant across manager switch events and the variance remains constant as well.

The surprising similarly-sized boost in social interactions arising from a match in smoking status and a match between males allows for a simple comparison of subsequent patterns of employee promotions. Both the timing and magnitude of the smoker-to-smoker advantage are similar to those of the male-to-male advantage reported in the previous section. The smoker-to-smoker advantage in the share of breaks together (a 25 percentage point increase, from Figure 8.c is comparable in magnitude to the corresponding male-to-male advantage (15 percentage points, from Figure 8.a) – we cannot reject the null hypothesis that these two effects are equal (p-value=0.360). At 10 quarters
after the transition, the smoker-to-smoker advantage (0.63 pay grades, from Figure 10.a) is statistically indistinguishable from the corresponding male-to-male advantage (0.65 pay grades, from Figure 3.a), with a p-value of the difference 0.956.

In the appendix, we present some additional robustness checks. Given the differences by gender in rates of smoking (33% of men smoke, and less than 5% of women smoke), a natural question is whether the male-to-male advantage arises purely because of co-smoking between men. In Appendix A.15, we show that only a small fraction of the male-to-male advantage can be attributed directly to the smoker-to-smoker advantage. Smoking-breaks are likely just one of several social outlets men share. Appendix A.16 further shows that the results are robust using a different criteria to code the smoker status.

6 Conclusions

We test the old boys’ club hypothesis using data from a real-world corporation. At this firm, manager rotations across teams are common and create transitions in the gender of the manager that are largely out of the employee’s control. We use an event-study analysis of these manager transitions to show that male employees are promoted at a faster rate when assigned to male manager than when assigned to a female manager. Women, in turn, are promoted at the same rate whether they are assigned to a male or female manager. The magnitude of this male-to-male advantage in promotions explains over one-third of the gender gap in pay grades, but it cannot be explained by gender differences in attrition, effort, or performance.

We provide evidence that social interactions play a role in the male-to-male advantage in promotions. The effects of male managers on male employees is only evident in positions where managers and employees work in close physical proximity, which is a necessary condition for the social interactions channel. We show that the male-to-male advantage in promotions coincides with an increase in the frequency of social interactions with the manager. Furthermore, we provide evidence that social interactions are important even among male employees: when male employees who smoke transitioned to male managers who smoke, they took breaks with their managers more often and were subsequently promoted at higher rates.

Thus far we have evidence that some contextual features may be important for the male-to-male advantage. In the case where the employee and manager are physically distant, such as in traveling sales roles or when the manager is assigned to sit on a different floor than the employee, the male-to-male advantage disappears. We also find that two regions of the country with distinct cultural norms and attitudes toward gender equality predicts differences in the male-to-male advantage at work. In the region with long-standing communist rule and more equal gender roles, the male-to-male advantage is weaker than in regions colonized early by Europe, where people tend to believe men are better equipped for executive roles.

Our identification strategy can be applied to other contexts. The rotation of managers is common in large corporations, and the data necessary for the analysis, such as pay grades, demographics, and manager assignments, are likely collected and preserved by most large organizations. We
hope this methodology will be applied to other firms, countries, and industries, which will help to
generalize the findings and identify where the male-to-male advantage is most pervasive and why.

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33


**Figure 1:** Link between Past Exposure to Male Managers and Future Pay Grade Changes

Notes: See Section 4.1 for details about the regression specification. This binned scatterplot shows the relationship between the share of male managers in the previous year and the change in pay grade at 10 quarters later. Results based on employees who are in the panel for at least 14 quarters (so that we can compute the left-hand-side and right-hand-side variables without truncation). The red squares correspond to the female employees while the blue circles correspond to the male employees. The analysis uses the following control variables: the employee’s seniority, an indicator variable for the employee’s gender and initial pay grade fixed effects. The 95% confidence intervals are represented by the shaded areas.
Figure 2: Effects of Manager’s Gender on Pay Grade: Single-Differences Estimates

a. Female to Male Manager  minus Female to Female Manager

b. Male to Female Manager  minus Male to Male Manager

Notes: See Section 2 for details about the regression specification. Each panel plots single-difference estimates $\beta_{g \text{Gender Transition, } t} - \beta_{g \text{Same Gender, } t}$ where $g \in \{\text{Male, Female}\}$ indexes the gender of the employee and the subscript indexes the transition event type and time since the event. All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). Panel (a) corresponds to the difference between transitions from a female manager to a male manager and transitions from a female manager to another female manager. 2,712 employees (729 Male & 1,983 Female) experience events: 1,417 transitions from a female manager to a male manager and 1,916 from a female manager to another female manager. Panel (b) corresponds to the difference between transitions from a male manager to a female manager and transitions from a male manager to another male manager. 4,157 employees (1,309 Male & 2,848 Female) experience events: 1,571 transitions from a male manager to a female manager and 3,766 from a male manager to another male manager. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee. The within-employee standard deviation of the dependent variable is 0.475.
Figure 3: Effects of Manager’s Gender on Pay Grade: Double-Differences Estimates

Notes: See Section 2 for details about the regression specification. All coefficients are estimated from the same regression that includes 380,964 observations of 14,638 workers (5,193 Male & 9,445 Female). The dependent variable is the pay grade of the employee. The estimates shown in the graph are based on the coefficients of the event-study variables. The coefficients shown in panel (a) correspond to the double-differences \((\beta^M_{F2M,t} - \beta^M_{F2F,t}) - (\beta^F_{F2M,t} - \beta^F_{F2F,t})\) where \(\beta^M\) and \(\beta^F\) are effects for male and female workers, respectively and \(F2M, F2F\) are manager transition events from female to male managers and from one female manager to another, respectively. Panel (b) is equivalent to panel (a), but based on the comparison between transitions from a male manager to a female manager and from a male manager to another male manager: \((\beta^M_{M2F,t} - \beta^M_{M2M,t}) - (\beta^F_{M2F,t} - \beta^F_{M2M,t})\). Panel (c) corresponds to the average between the coefficients from panel (a) and the (negative value of) the coefficients from panel (b). This “symmetric” double-differences estimates is then \(\frac{1}{2} \{(\beta^M_{F2M,t} - \beta^M_{F2F,t}) - (\beta^F_{F2M,t} - \beta^F_{F2F,t}) - [(\beta^M_{M2F,t} - \beta^M_{M2M,t}) - (\beta^F_{M2F,t} - \beta^F_{M2M,t})]\}\). The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure 4: Placebo: Double-Difference Estimates

Notes: All coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (7,533 Even BD & 7,105 Odd BD). Panel (a): 4,536 employees (2,385 Even BD & 2,151 Odd BD) experience events: 3,014 transitions from a even-birthday manager to a odd-birthday manager and 3,131 from a even-birthday manager to another even-birthday manager. Panel (b): 4,244 employees (2,155 Even BD & 2,089 Odd BD) experience events: 2,922 transitions from a odd-birthday manager to a even-birthday manager and 2,453 from a odd-birthday manager to another odd-birthday manager. Panel (c): Panel (c) corresponds to the average between the coefficients from panel (a) and the (negative value of) the coefficients from panel (b). This “symmetric” double-differences estimates is then $\frac{1}{2}\{(\beta^E_{O2O,t} - \beta^E_{E2E,t}) - (\beta^O_{E2O,t} - \beta^O_{E20,t}) - [(\beta^E_{O2E,t} - \beta^E_{O20,t}) - (\beta^O_{O2E,t} - \beta^O_{O20,t})]\}$. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee. The within-employee standard deviation of the dependent variable is 0.475.
Figure 5: Dual-Double-Differences Estimates: Additional Outcomes

a. Firm Exit

b. Log(Days Worked)

c. Log(Work Hours)

d. Sales Revenues

All coefficients were estimated from a single regression including 359,225 observations of 14,601 employees (5,157 Male & 9,444 Female). 6,579 employees (2,046 Male & 4,533 Female) experience events: 1,865 transitions from a female manager to a male manager (F2M): 2,106 F2F, 1,770 M2F, 4,243 M2M. The within-employee standard deviation of the dependent variable is 0.177.

All coefficients were estimated from a single regression including 352,282 observations of 14,154 employees (4,913 Male & 9,241 Female). 5,647 employees (1,697 Male & 3,950 Female) experience events: 1,261 transitions from a female manager to a male manager (F2M): 572 F2F, 542 M2F, 1,701 M2M. The within-employee standard deviation of the dependent variable is 95.1.

All coefficients were estimated from a single regression including 136,341 observations of 6,244 employees (1,814 Male & 4,430 Female). 2,444 employees (611 Male & 1,833 Female) experience events: 581 transitions from a female manager to a male manager (F2M): 572 F2F, 542 M2F, 1,701 M2M. The within-employee standard deviation of the dependent variable is 0.138.

All coefficients were estimated from a single regression including 104,215 observations of 4,875 employees (1,881 Male & 2,994 Female). 1,677 employees (581 Male & 1,096 Female) experience events: 370 transitions from a female manager to a male manager (F2M): 690 F2F, 548 M2F, 588 M2M. The within-employee standard deviation of the dependent variable is 0.208.

All coefficients were estimated from a single regression including 136,341 observations of 6,244 employees (1,814 Male & 4,430 Female). 2,444 employees (611 Male & 1,833 Female) experience events: 581 transitions from a female manager to a male manager (F2M): 572 F2F, 542 M2F, 1,701 M2M. The within-employee standard deviation of the dependent variable is 95.1.

Notes: See Section 2 for details about the regression specification. These results are based on the symmetric specification reported in panel (c) of Figure 3, which combines data on the four types of gender transitions. The only difference is that in this figure, instead of pay grade, we use different dependent variables: in panel (a) the dependent variable is an indicator that takes the value 1 in every month after the employee left the firm (these results include additional events after the employees left the firm); in panel (b) the dependent variable is the logarithm of the total number of days worked in the month (inferred from data on approved leaves of absence); in panel (c) the dependent variable is the logarithm of the average number of hours worked in a given month (inferred from data on swipes in and out of the building, and available for headquarter employees only); in panel (d) the dependent variable is the sales revenue (available for employees with sales roles only) normalized to have mean 100. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure 6: Effects of Manager Gender on Pay Grade: Heterogeneity by North/South Birthplace (Dual-Double-Differences Estimates)

Notes: See Section 2 for details about the regression specification. These results use the symmetric specification reported in panel (c) of Figure 3, based on the four types of gender transitions. We split the events in two subsets: South and North, based on the birthplace of the modal worker in the unit. All coefficients are estimated from the same regression with 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). 1,890 employees (566 Male & 1,324 Female) in predominantly-southern units (panel (a)) experience events. There are 496 transitions from a female manager to a male manager (F2M): 482 F2F, 399 M2F, and 1,284 M2M. 4,225 employees (1,297 Male & 2,928 Female) in predominantly-northern units (panel (b)) experience events: 893 transitions from a female manager to a male manager (F2M): 1,396 F2F, 1,130 M2F, and 2,424 M2M. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee. Confidence intervals in panel (a) are trimmed at +1.
Figure 7: Effects of Manager Gender on Pay Grade: Heterogeneity by Proximity to the Manager (Dual-Double-Differences Estimates)

a. Events with Higher-Proximity Managers

b. Events with Lower-Proximity Managers

Notes: See Section 2 for details about the regression specification. These results use the symmetric specification reported in panel (c) of Figure 3, based on the four types of gender transitions. The only difference is that we split the events in two subsets: high and low proximity events, based on whether the position of the employee in the month of the event was of higher or lower proximity to the manager. All coefficients are estimated from the same regression with 360,239 observations of 13,814 employees (4,912 Male & 8,902 Female). The higher-proximity events (panel (a)) affect 2,983 employees (1,043 Male & 1,940 Female), with 743 transitions from a female manager to a male manager and 617 transitions from a female manager to a male manager (F2M): 1,075 F2F, 754 M2F, 1,508 M2M. The lower-proximity events (panel (b)) affect 3,056 employees (783 Male & 2,273 Female), with 743 transitions from a female manager to a male manager and 762 transitions from a female manager to a male manager (F2M): 751 F2F, 742 M2F, 2,182 M2M. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure 8: Effects of Manager Transitions on the Share of Breaks Taken with the Manager

### a. Female to Male Manager

- **minus** Female to Female Manager

<table>
<thead>
<tr>
<th>Share of Breaks with Manager</th>
<th>Before Transition</th>
<th>After Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Employee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Employee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All coefficients were estimated from a single regression including 4,843 observations of 2,638 employees (698 Male & 1,940 Female). 411 employees (82 Male & 329 Female) experience events: 235 transitions from a female manager to a male manager and 241 from a female manager to another female manager. The within-employee standard deviation of the dependent variable is 0.174.

### b. Even to Odd Manager

- **minus** Even to Even Manager

<table>
<thead>
<tr>
<th>Share of Breaks with Manager</th>
<th>Before Transition</th>
<th>After Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Even BD Employee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odd BD Employee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All coefficients were estimated from a single regression including 4,947 observations of 2,648 employees (1,352 Even BD & 1,296 Odd BD). 813 employees (429 Even BD & 384 Odd BD) experience events: 418 transitions from a even-birthday manager to a odd-birthday manager and 494 from a even-birthday manager to another even-birthday manager. The within-employee standard deviation of this outcome is 0.174. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.

### c. Non-Smoking to Smoking Mgr.

- **minus** Non-Smoking to Non-Smoking Mgr.

<table>
<thead>
<tr>
<th>Share of Breaks with Manager</th>
<th>Before Transition</th>
<th>After Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Smoking Employee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking Employee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All coefficients were estimated from a single regression including 1,287 observations of 699 workers (176 smoker & 523 Non-smoker). 193 employees (50 Smoking & 143 Non-Smoking) of these workers experience a transition event. There are 49 transitions from a non-smoking manager to a smoking manager and 157 from a non-smoking manager to another non-smoking manager. The within-individual standard deviation of this outcome is 0.159.

Notes: Regression results with the share of breaks. See Section 5.2 for full econometric specification. Panel (a): This regression includes 4,843 observations of 2,638 workers (698 Male & 1,940 Female). 411 employees (82 Male & 329 Female) of these workers experience a transition event. There are 235 transitions from a female manager to a male manager and 241 from a female manager to another female manager. Panel (b): This regression includes 4,947 observations of 2,648 employees (1,352 Even BD & 1,296 Odd BD). 813 employees (429 Even BD & 384 Odd BD) experience events: 418 transitions from a even-birthday manager to a odd-birthday manager and 494 from a even-birthday manager to another even-birthday manager. Panel (c): This regression includes 1,287 observations of 699 workers (176 smoker & 523 Non-smoker). 193 employees (50 Smoking & 143 Non-Smoking) of these workers experience a transition event. There are 49 transitions from a non-smoking manager to a smoking manager and 157 from a non-smoking manager to another non-smoking manager. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure 9: Effects of Manager’s Smoking Habits on Pay Grade: Single-Differences Estimates

a. Non-Smoking to Smoking Manager minus Non-Smoking to Non-Smoking Manager

All coefficients were estimated from a single regression including 94,728 observations of 2,907 employees (966 Smoking & 1,941 Non-Smoking). 912 employees (275 Smoking & 637 Non-Smoking) experience events: 287 transitions from a non-smoking manager to a smoking manager and 939 from a non-smoking manager to another non-smoking manager. The within-employee standard deviation of the dependent variable is 0.517. 95 CI are trimmed at −1 and 1.

b. Smoking to Non-Smoking Manager minus Smoking to Smoking Manager

All coefficients were estimated from the same regression that includes 94,728 observations of 2,907 employees (966 Smoking & 1,941 Non-Smoking). The dependent variable is the pay grade of the employee. The estimates shown in the graph are based on the coefficients of the event-study variables. The orange diamonds correspond to the coefficient for non-smoking employees, while the lavender triangles correspond to the coefficients for smoking employees. Panel (a) corresponds to the difference between transitions from a non-smoker manager to a smoker manager versus transitions from an non-smoker manager to another non-smoker manager. 912 employees (275 Smoking & 637 Non-Smoking) experience events. There are 287 transitions from a non-smoking manager to a smoking manager and 939 from a non-smoking manager to another non-smoking manager. Panel (b) corresponds to the difference between transitions from a smoker manager to a non-smoker manager versus transitions from a smoker manager to another smoker manager. 464 employees (198 Smoking & 266 Non-Smoking) experience events, comprised of 296 transitions from smoker manager to non-smoker manager and 276 from a smoker manager to another smoker manager. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.

Notes: See Section 2 for details about the regression specification.
Figure 10: Effects of Manager’s Smoking Habits on Pay Grade: Double-Differences Estimates

- **a. Non-Smoker to Smoker minus Non-Smoker to Non-Smoker**
  - Smoking – Non-Smoking

- **b. Smoker to Non-Smoker minus Smoker to Smoker**
  - Smoking – Non-Smoking

- **c. Dual-Double-Differences: Combined (a) and (b)**
  - Smoking – Non-Smoking (Dual)

Notes: See Section 2 for details about the regression specification. All coefficients are estimated from the same regression that includes 94,750 observations of 2,907 employees (966 Smoking & 1,941 Non-Smoking). The dependent variable is the pay grade of the employee. The estimates shown in the graph are based on the coefficients of the event-study variables. The green triangles correspond to the difference between the coefficient for smoking employees and non-smoking employees. Panel (a) corresponds to the difference between transitions from a non-smoker manager to a smoker manager and transitions from a non-smoker manager to another non-smoker manager (as in panel (a) of Figure 9). The estimates shown in Panel (a) are the double-differences estimates \((\beta_{N2S}^S - \beta_{N2N}^S) - (\beta_{N2S}^N - \beta_{N2N}^N)\). Panel (b) corresponds to the difference between transitions from a smoker manager to a non-smoker manager and transitions from a smoker manager to another smoker manager (as in panel (b) of Figure 9). The estimates shown in Panel (b) are the double-differences estimates \((\beta_{S2N}^S - \beta_{S2S}^S) - (\beta_{S2N}^N - \beta_{S2S}^N)\). Panel (c) corresponds to the average between the coefficients from panel (a) and the (negative value of) the coefficients from panel (b). The dual-double-differences estimates shown in (c) are then \(\frac{1}{2}\left\{((\beta_{N2S}^S - \beta_{N2N}^S) - (\beta_{N2S}^N - \beta_{N2N}^N)) - ((\beta_{S2N}^S - \beta_{S2S}^S) - (\beta_{S2N}^N - \beta_{S2S}^N))\right\}\). The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Online Appendix

A  Additional Results and Robustness Checks

A.1  Descriptive Statistics: Changes in Pay Grade

In the body of the paper, we use the pay grade of the employee as the main outcome. In this section, we provide descriptive statistics about the main outcome of interest.

In Figure A.1.i, we show that there is a tight and linear relationship between pay grade and the logarithm of salary. The slope of the relationship (0.227) indicates that a 1-point increase in pay grade is associated with a 25% increase in salary \(= e^{0.227} - 1\). Note also that the \(R^2\) of the regression (0.83) is quite high, implying that pay grade explains the vast majority of the salary variation at the firm.

We show the timing of pay grade changes following a manager transition. While promotions/changes in pay grade are concentrated during two times of the year, May and October, they appear much more evenly distributed when we plot the timing relative to manager transitions. The reason for this is that manager transitions are evenly distributed throughout calendar time, so promotion season can fall anytime after the transition. In Figure A.1.ii.a, we present a binned scatter plot with an overlaid linear trend line of the change in pay grade since a manager transition. This relationship tracks the linear trend closely; which is consistent with the underlying mechanics of the manager transitions and pay grade changes. In Figure A.1.ii.b, we produce the equivalent figure but with the x-axis being the time since the employee joined the firm (instead of the time since the last manager transition). This relationship is also linear. After approximately 10 quarters, the conditional expectation of change is pay grade is equal to 1.

A.2  Additional Event Study Descriptive Statistics

In the body of the paper we provide descriptive statistics about the transitions in manager’s gender. In this section we present the corresponding statistics about the transitions in manager birthday, and smoking status.

A.2.1  Baseline Descriptive Statistics

One relevant question is whether the sample of employees who experience a manager transition (41%) is representative of the whole firm. Columns (1) and (2) of Table A.3 compare the characteristics of employees who do and do not experience at least one transition (and the characteristics of the incoming and outgoing managers). The samples are almost identical in age and education. The sample of employees with transitions are slightly more likely to be female, to have lower pay grades and belong to the S&D division, which is natural given that those types of employees and positions have higher turnover and rotation.
Another question is whether the characteristics of employees and managers are similar across the different types of manager transitions. This answer is not necessary for the identification strategy: the critical condition is that the evolution of the outcomes are parallel, not that the levels are the same. However, comparing the levels gives a sense of how plausible the parallel trends are. Columns (3) and (4) of Table A.3 compare transitions from female to male managers and transitions from female to female managers. The characteristics of employees and their incoming and outgoing managers are similar between the two event types. Columns (5) and (6) are equivalent to columns (3) and (4), but for transitions in the opposite direction (i.e., from male to female managers and from male to male managers). Again, the characteristics of employees and managers are remarkably similar across the two transition types.

A.2.2 Descriptive Statistics: Placebo Events

The placebo transitions are similarly uniformly distributed across the panel. We see balance across events both in terms of the number of transitions per manager (Figure A.2.ii.b) and size (Figure A.2.ii.c).

Similarly, there is balance across transition type in terms of pay grade, age, and the share that are male and attended college (Appendix Table A.4). However, we do see that outgoing even-to-even birthday and odd-to-odd birthday managers are more likely to be male, as are workers who go through transitions starting with an odd birthday manager. This is a good reminder that even in the face of “as good as random” assignment, we can still find random variation across groups.

A.2.3 Smoking Events

Like the placebo events, the smoking events are also essentially uniformly distributed throughout the panel (Figure A.2.iii). The share of “eligible” workers who have events (males with known smoker status) is similar to the share that have events in the larger sample (50% of this sample have smoking events, 41% of employees in the broader sample have gender transition events). As with the main sample, the set of workers in this sample who have events are similar to those who do not, and workers who experience transition events are similar across events. As we show in Table A.5, employees are largely similar in terms of age and likelihood of having a college degree. The relatively small population of workers who transition from a smoking manager to another smoking manager are slightly older and less likely to have a college degree. While the differences in means are statistically significant, they are economically small; the average worker with a smoker-to-smoker transition is about 31 years old (those with a smoker-to-non-smoker event are 30 on average) and 88% of these workers have a college degree (compared to 88% of those with a smoker-to-non-smoker transition).

Importantly, we do not rely on balance in these levels for identification, rather we rely on parallel trends. In Figure 10.b, we present double-difference estimates of the difference between smoking and non-smoking employees transitioning smoker to non-smoker relative to those who transition from a smoker to another smoker. In these estimates, the confidence intervals are wide, but we do not find evidence for significantly different pretends. Further, when we combine these
estimates, with those from transitions that start with a non-smoking manager (Figure 10.a) and present the dual-double-differences (Figure 10.c), we find no evidence that our results are biased by differential pre-trends. For this reason, this minor imbalance in these attributes is not a threat to our identification strategy.

A.3 Robustness Check: Underlying Transition Event Studies

In this section, we present the underlying event dummy estimates for each gender transition event individually, before combining coefficients to create single-differences, double-differences and dual-double-differences. Consider our baseline single-difference event-study design, presented in Figure 2 and discussed throughout the paper. The coefficients in this single-differences are simply the coefficients in the “Female to Male” event-study (panel a, Figure A.3.i) minus from those in the “Female to Female” event-study (panel b, Figure A.3.i).

Before discussing individual results, note that the interpretation of these coefficients is different than those in the single- and double-differences estimates that we report throughout the main text of the paper. In particular, the coefficients should be understood as estimates of the effect of transitioning, for example, from a female manager to a male manager, relative to not experiencing a manager transition. This is contrast to the single- and double-difference results, which adjusts for the effect of transitioning managers per se and estimates the effect of transitioning to a manager of a certain gender relative to transitioning to a manager of the other gender. In this way, the main specification has the advantage of allowing us to abstract away from the effects of transitioning managers per se, and allows us to focus on the differences associated with transitioning to a manager of one gender or the other.

It is also important to note that we have no gender-neutral, “unbiased” comparison group. That is, we can only observe the emergent outcomes under male and female managers; we cannot evaluate what these outcomes should be in the absence of a gendered lens. We are now comparing male and female workers who experience a particular event to everyone who does not experience that particular event. The outcomes in the reference category may still be affected by the genders of workers and their managers.

With this in mind, we turn to the gender transition events. In Figure A.3.i.a we present transitions from one female manager to another. We see that the effect on female employees is statistically indistinguishable from zero before and after the transition, but that the estimate after 10 quarters is large and statistically significant for male employees (0.44 p-value = 0.007). The estimated effects for men after changing from one female manager to another female manager are nowhere statistically distinguishable from zero. However, after 10 quarters the point estimates is in the expected direction the effect on the pay grades of male employees is negative (-0.16, p-value = 0.194). For female employees, the point estimate is similar in magnitude, but because of the greater precision afforded by the greater share of females in the sample, this estimate is statistically significant (0.19, p-value = 0.050).

In Figure A.3.i.c, we show the estimates for transitions from a male manager to a female manager. The point estimate for male employees after 10 quarters is negative and statistically significant
(-0.20, p-value = 0.062). The estimate for female employees is similar.

This negative estimate for males 10 quarters after the event presented in Figure A.3.i.a and Figure A.3.i.c is very similar in magnitude to the positive effect (+0.26, p-value =0.069) presented in Figure A.3.i.b. Indeed, regardless of direction, we see similar timing in the effects in panels a, b, c; in all of these transitions, effects are generally not visible until 7 or 8 quarters after the event. Figure A.3.i.d is then an outlier in the following respect - it is the only transition event that does not follow this timing pattern, and it is the only transition event for which the effect on male or female employees is never statistically significant.

A.4 Descriptive Statistics: Duration of Manager Transitions

Our event-study specification defines events based on the manager in the month of the transition (the incoming manager) and the month before (the outgoing manager). However, the new manager may stay with the team for as little as one quarter or throughout the rest of the panel. To aid our interpretation of the impact of the new manager, we describe in more detail the expected amount of time that the employee spends under a new male or female manager.

The graphs in this section measure the share of workers that are paired with a manager of a particular type (male/female, even/odd birthdays, smoker/non-smoker) in the quarters after a transition event. These graphs can be likened to a “first stage” for the event-study: we show the manager transition indeed increases exposure to the gender of the new manager.

We report this graph for gender events (Figure A.4.i), placebo events (Figure A.4.ii), and smoking events (Figure A.4.iii). For gender events, we can interpret the coefficient each quarter as the additional share of workers with a male (female) manager. That is, in Figure A.4.i.a, we report the single-differences estimates for transitions from a female to a male manager netting out transitions from one female manager to another female manager. In the first quarter, we interpret a point estimate of roughly 75% to mean that workers who transition from a female to a male manager are roughly 75 percentage points more likely to work under a male manager than their counterparts who transition from one female manager to another. That the estimates for male and female employees are very similar in every period suggests that there is not significant sorting of employees to (away from) managers of the same (opposite) gender in the quarters after a transition.

The estimates in Figures A.4.ii and A.4.iii can be interpreted analogously: for placebo events as the additional share of workers working under a manager with an odd (even) birthday, and for smoking events the additional share with a smoking (non-smoking) manager.

Note that nowhere is the coefficient identically one. We allow workers to rotate freely out of the unit (and to a different manager) immediately following the event. However, on average, the events are highly predictive of the type of manager long after the event. We see, for example that one year after the event, employees who move from a female to male manager are 50 percentage points more likely to be working under a male manager than their peers who move from a female to female manager. Even after the full 10 quarters, men who transition from a female to a male are about 25 percentage points more likely to be working under a male manager than their peers who transition from a female manager to another female manager.
In Appendix A.6 we show that the magnitude of the effect increases when we apply additional restrictions on the share of the unit that stays through the event or that stays through the first quarter after the event.

### A.5 Robustness Check: Removing Manager Fixed Effects

In the body of the paper, we show that that managers are very similar in observable characteristics across event transitions (see Table A.3). However, there may still be concern that differences in manager characteristics other than gender have a role to play in differential promotion rates; in the body of the paper we include manager fixed-effects to address this concern. In this section, we show that estimates without these fixed effects are very similar to the baseline, as are specifications that directly include controls for the.

In Figure A.5.i.a, we replicate the main specification for comparison; recall that the male-to-male advantage after 10 quarters using all four types of manager transition events is 0.54. The differences across specification are negligible. In Figure A.5.i.b when we estimate the male-to-male advantage without manager fixed effects, we recover a point estimate of 0.52 after 10 quarters. In Figure A.5.i.c, we add in controls for the division, unit size, and age and exclude manager fixed effects; we estimate a male-to-male advantage of 0.48 after 10 quarters.\(^\text{47}\) Finally in Figure A.5.i.d, we add in controls for the division, unit size, and age and include manager fixed effects. We then estimate a male-to-male advantage of 0.44 after 10 quarters. However, even the difference between the two panels with the greatest difference (panels a and d) is insignificant (p-value of difference 0.51). We cannot reject the null hypothesis that the estimates are the same under all of these specifications.

The set of incoming managers are well-balanced across gender (and within gender, across event transitions types). As we show in Table A.3, the differences are negligible in levels, and negligible relative to the standard deviations. To the extent that differences across managers affect our estimates, they do not do so significantly; including these fixed effects thus makes our estimates more precise and greater in magnitude.

### A.6 Robustness Check: Additional Restrictions on Transition Events

In our main specification, we say that a unit experiences a manager transition event in some month if the manager is replaced by a new manager who stays with that unit for at least one quarter. This excludes cases where a very transient substitute manager takes over for brief leave spells. In our main specification, we do not place any restrictions on concurrent employee moves. In this section, we impose additional restrictions on the percent of the unit that stays: in particular, we can require a) that 90% of employees in the unit in the month before the event stay through the manager transition or that b) 80% of these employees remain in the unit after three months. Finally

\(^{47}\)Note that the other variables in Table A.3 are either invariant within individuals and therefore included in the individual fixed effects (i.e. college) or are the key variables (i.e. pay grade and gender).
we present a version of the main specification that lifts the restriction on the share of workers that must stay through the event – which in our baseline specification is 50%.

We can also ensure that these effects are not driven by a small set of large “outlier” events; we can replicate our results after ignoring the largest (i.e. most affected employees) 5% or 10% of events.48

Recall that transition events are defined at the unit level, as a check against endogenous manager changes (i.e. a worker-initiated transfer). The point estimates in the baseline specification may thus be biased towards zero by employees who quickly move out of the unit and have only minimal exposure to the new manager. As we apply restrictions on employee moves, we reduce the share of workers who never directly experience the new manager (i.e. they transition out of the unit in the same month that the unit experiences an event) or “weak” matches (i.e. they transition out of the unit in the month after the new manager arrives). When we apply these restrictions on transitions, we see that the point estimates increase in magnitude.

In Figure A.6.i.b, we require that 90% of the unit stays through the event. With this restriction, the male-to-male advantage after 10 quarters increases to 0.67 from 0.54 in the main specification. However, this more restrictive definition of events does cause our power to decrease; we go from 3,160 employees with events in our main specification (A.6.i.a) to only 1,693. With this reduced precision, we are unable to reject the null hypothesis that this effect is the same as the estimate in our main specification (p-value = 0.57).

In Figure A.6.i.c we apply an alternative restriction on worker mobility, this time requiring that 80% of the workers in the unit in time of the event stay through three months (one quarter). Under this restriction, we lose less power; we have 2,182 employees with events. The point estimate 10 quarters after the event increases slightly to 0.56 (from a baseline of 0.54), well within the range we would expect to see under the assumption that we observe the same effect as in the main specification.

In Figure A.6.i.d we remove the baseline restriction that 50% of the unit stays through the event. The point estimate 10 quarters after the event decreases slightly to 0.51 (from a baseline of 0.54), but the two estimates are statistically indistinguishable.

When we drop the largest 5% (Figure A.6.ii.b) the point estimate decreases slightly to 0.42. When we drop the largest 10% of events (Figure A.6.ii.c), the estimate after 10 quarters decreases slightly to 0.40. Even in panel c, however, the difference between this estimate and the baseline estimate does not approach statistical significance (p-value of difference = 0.530).

A.7 Robustness Check: Restricting the Event-Study to a Single Cohort

Throughout the paper, we discuss the timing of the gender gap in promotions: that the gender gap becomes visible in late quarters. Since our panel covers 48 months, there is a mechanical restriction on the workers that identify these medium-run effects. That is, since the 10 quarter estimate is the average of the estimates in months 28, 29, and 30, only workers with a start date before the 20th

48 When we apply these restrictions, we do not drop observations from the panel. Rather, we drop events. That is, the number of observations stays constant, but the number of employees experiencing events decreases.
month in the panel can identify these coefficients. Even for workers who are in the panel in all
periods, these coefficients are identified only from events that occur before the 20th month of the
panel. In this section, we show that these composition effects do not drive our results by replicating
our analysis on a single cohort of workers.

We restrict to the cohort of workers who start before the panel window, January 2015. In
principle, any of these individuals are eligible to appear in any of these periods. We present results
for this specification in Figure A.7.i. We retain roughly one half of the individuals who experience
a transition event of any kind. We replicate the main specification in panel a; in panel b we estimate
that the male-to-male advantage after 10 quarters in this sample is somewhat larger (0.64 pay
grades) than the baseline of 0.54. However, this difference is not statistically significant (p-value
of difference 0.578). Thus, restricting to this cohort has little effect on our estimates.

A.8 Robustness Check: Workers with Multiple Events

In the body of the paper, we treat each transition event as discrete and independent. However, it
is possible that there is path dependence (or auto-correlation) in these events. That is, if having a
transition event sets an employee on a certain “path” that causes her to experience more transitions
more rapidly, the estimated long run effect of the first event reflects the effects of these additional
events. For example, consider a male employee who experiences a transition from a female to male
manager. He is promoted more quickly than a male coworker who transitions from one female
manager to another female manager. As a result of his promotion to a higher-ranked male manager,
he (possibly) experiences more frequent male-to-male manager transitions. His counterpart who
was a male that was paired with another female manager is not promoted and experiences relatively
more female-to-female manager transitions.

In this section, we show that this path dependence is not qualitatively important in identifying
overall effects. First, we look only at the event that each employee experiences (discarding events
beyond the first). Then, we impose an even stricter restriction and drop entirely from the sample
any employee who experiences more than one transition event during the panel.

The initial random assignment to a male manager rather than a female manager places the
two on different career trajectories. It may also bias the effect of the next transition event they
experience. That is, the incoming manager of the next event is (often) the outgoing manager of the
first event. Therefore, even if manager transitions are exogenous, there may still be bias that arises in
our estimates if the events are serially correlated in this way.

Simply considering the distribution of events reveals that the extent of this bias is quite limited;
roughly two-thirds of the employees who have events have only one event. We show in Figure A.8.i
that the main results are robust to excluding the second or third events that an employee experiences.
These results are nearly identical to the baseline. Using all four types of manager transitions, we

49 The correlation between the two is not exactly one, because there can be endogenous manager transitions that are not
considered events. That is, a worker could have an initial transition event of a female manager to a male manager,
transfer to different unit with a female manager (endogenously) and then have second transition event of a female
manager to another female manager.
estimate a male-to-male advantage of 0.52 (p-value = 0.001) 10 quarters after the event.

In Figure A.8.ii we show the results are robust to the more aggressive step of dropping from the sample entirely any individuals who experience more than one event. Under this restriction, our estimate is again nearly identical. Using all four types of manager transitions, we estimate a male-to-male advantage of 0.55 (p-value = 0.001) 10 quarters after the event.

A.9 Event-Study Analysis: Additional Placebo Results

In the main paper, we show that the double-differences estimates for employees with odd and even birthdays are not statistically differentiable from zero (Figure 4). In this section, we can present the underlying single-difference estimates, which reflects the difference between employees with even (or odd) birthdays who experience a given pair of transition events.

In Figure A.9.i.a, we present single-difference estimates for workers with even and odd birthdays the effect of a transition from a manager with an odd birthday to a manager with an even birthday relative to another manager with an odd birthday. Nowhere are these estimates statistically differentiable from zero. In the tenth quarter after the event, the point for employees with an odd-birthday is small and statistically insignificant (0.16, p-value = 0.104), as is the point estimate for employees with an even-birthday (0.037, p-value = 0.733).

In Figure A.9.i.b we present the analogous single-difference estimates for transitions from a manager with an even birthday to managers with an odd-birthday, relative to transitioning to another manager with an even birthday. Just as in panel a, these estimates are nowhere statistically significant. In the tenth quarter after the event, the point for employees with an odd-birthday is small and statistically insignificant (0.02, p-value = 0.877), as is the point estimate for employees with an even-birthday (-0.05, p-value = 0.608).

A.10 Alternative Placebo: Gender Event Transitions by Employee Birthday

Throughout, we discuss placebo results with the as good as random odd/even birthday groupings. In this section, we present an alternative placebo where we split employees by odd and even birthday and consider the impact of manager gender transition events on employees according to their birthdays. In this way, we directly test for statistical artefacts within the baseline gender events.

We show that pairings between employees with an odd birthday, and a male manager follow the same trajectory as employees with an even birthday paired with a male manager, as well as employees with an odd birthday and a female manager. Thus, the key event study result in this paper, with gender pairings between employee and manager, cannot be explained by an artifact of the manager gender transitions alone. Only when we consider the gender pairings of managers and employees do we see differences across groups in the effect of transition events.

In Figure A.10.i, we present single-difference estimates for employees with odd and even birthdays. In panel (a), we show that difference between transitioning from a female manager to a male manager and transitioning from a female manager to another female manager is nowhere statistically significant for employees with an odd birthday (0.10 at 10 quarters, p-value = 0.506) or an
even birthday (0.14 at 10 quarters, p-value = 0.325). We see in panel b that this is also true in the quarters after the transition events that start with a male manager. The estimated difference between transitioning from a male manager to a female manager rather than from one male manager to another male manager is small and statistically insignificant for both employees with an odd birthday (0.088 at 10 quarters, p-value = 0.386) and an even birthday (-0.027 at 10 quarters, p-value = 0.379).

However, we do see evidence of an economically modest, but statistically significant pre-trend for these transition events that start with a male manager. In particular, the point estimate for employees with an even birthday is positive and statistically significant at level $\alpha = 0.05$ in quarters -8, -9, and -10. In the first pre-period in $t = -10$, the point estimate is moderately large (0.33) and significant (p-value 0.010). While these estimates are distinguishable from zero, the difference between odd and even birthday employees is only of borderline statistical significance. At $t = -10$, the difference is 0.18 with a p-value of 0.093.

In Figure A.10.ii we present double-difference estimates for the same transitions. We show that the difference between the estimates after the transition event for workers with an even/odd birthdays is never significant for the pair of transitions with an outgoing female manager (panel a, for example, the difference is 0.009 at 10 quarters with a p-value = 0.949) or male manager (panel b, difference of -0.079 at 10 quarters, p-value = 0.463). However, in both panels we see some evidence of a pre-trend in the earliest quarters (-10 and -9).

This pre-trend is more clear in the dual-double-differences estimate (panel c), and is statistically significant in quarters -10 (p-value = 0.011) and -9 (p-value = 0.045). This provides a helpful bound on the magnitude of pre-trends we may expect to see simply based on random sampling, especially given that sample size decreases as we move farther away from the event (i.e. towards the beginning (end) of the pre (post) period). This pre-trend is greater in magnitude than the pre-trends that we observe in our main specification, and is much more tenuous (i.e. lesser in magnitude, less precisely estimated) than post-period effects that we identify elsewhere.

### A.11 Alternative Measures of Productivity and Effort

In our main results, we include several transformed variables. In this section, we show that the results are robust to alternative presentations of these variables.

In the body of the paper, we report days worked per month outcome in logs; we therefore necessarily drop observations with zero observed workdays. We can include these zeroes by instead reporting in Figure A.11.i.a the percent of days worked per month. This increases the number of observations in our sample by less than 5% and unsurprisingly does not change results substantively.

In the body of the paper, we report sales in levels, after normalizing the measure to have mean 100.\textsuperscript{50} Since this data is skewed, in this section we normalize sales revenues using the arcsinh (inverse hyperbolic sine) transform, which is defined at zero but otherwise has similar properties to

\textsuperscript{50} We do this for confidentiality concerns with our institutional partner (i.e. to avoid sharing confidential information about their compensation structure) and for ease of interpretation.
the log transformation. In Figure A.11.i.b we present the dual-double-difference estimates of this measure. Like the results in the paper, these estimates are small and nowhere distinguishable from zero.

A.11.1 Asymmetric Information and Productivity Post-Promotion

In principle, it is possible that male managers use social interactions with their male employees to identify the strongest candidates for promotion. If these social interactions serve to reduce information asymmetry, we would expect male managers to be better at identifying and promoting skilled workers than female managers.

To test whether the marginal promotion under a male manager is indeed of higher quality empirically, it is critical to use a metric that explicitly captures the firms objective, and not just a proxy of productivity, as the manager may learn something through schmoozing that the econometrician does not observe. Fortunately, we observe sales revenue generated for sales associates, which is precisely the outcome that the firm would like to optimize for these positions.

Additionally, across the several types of sales positions, there is a common career ladder from junior and senior sales associates. This allows us to restrict our attention to the pool of junior sales associates that are eligible for a promotion to senior sales associate, and track their performance after the promotion. We further restrict to junior sales associates working with managers that arrive via an exogenous transition event. This sample contains 2,372 junior sales associates overseen by 399 managers, 215 (54%) of whom are male. 304 of these junior sales associates are promoted to senior associates.

We find that, contrary to the asymmetric information story, the employees who are promoted by male managers are on average significantly less productive than those promoted by female managers. Moreover, they promote similar shares of employees as their female counterparts, suggesting the marginal employee promoted under a male manager is also less productive.

The sales revenue metric is normalized to have mean 100. Employees promoted by female managers average monthly sales revenues over the subsequent six months of 151 (s.e.=49), and those promoted by male manager managers exhibit average monthly sales revenue of 63 (s.e.=6). The averages are statistically different (p-value =0.076). See Table A.6 for additional information.

A.12 Additional Transition Events: Productivity and Effort

In the body of the paper, we present dual-double-difference estimates for productivity and effort outcomes. In this section, we present the underlying double-difference estimates for the same productivity and effort outcomes - firm exit (quits), sales revenue and days and hours worked, as well as the same outcomes for smoking transitions.

In Figure A.12.i we compare men and women going from a female to a male manager with those going from one female to another; we do not find a significant effect on any outcome. The estimates for firm exit (panel a) and days worked (panel b) are precisely estimated, close to zero, and statistically differentiable from zero nowhere. The estimates for work hours (panel c) and sales
revenues (panel d) are also close to zero, but are less precisely estimated and have wider confidence bands. Recall that the sample for the work hours is significantly limited to a subset of employees who work in the headquarters, as even within the headquarters, we do not have reliable swipe data for all employees. In panel d, there is some evidence that sales revenues for male employees decrease relative to their female peers in the months immediately following an event. However, these estimates are noisy and return to zero in later quarters. We do, however, find no evidence to suggest that sales revenues increase for males relative to their female peers in the months after the switch event.

In Figure A.12.ii we compare men and women going from a male to a female manager with those going from a male to another male manager. The results are qualitatively similar; we do not find a significant effect on any outcome. As with the outgoing female manager transitions, we do have reduced power on the work hours outcome (panel c) that is derived from swipe data, which is reflected in standard errors that are wide. Additionally, the confidence intervals for the sales revenue (panel d) do exclude zero from time to time, and are slightly negative. Again, these estimates are imprecisely estimated. That the point estimate are slightly negative for the set of events with outgoing female (Fig. A.12.i) and male (Fig. A.12.ii) managers suggests that one or both are spurious. It would be strange if sales decreased for male employees relative to female employees after “gaining” a male manager and after “losing” a male manager.

We also present for the first time productivity results for smoking events in Figure A.12.iii. As is to be expected, standard errors are wider than we find in the case of gender events, and the point estimates show slightly more variation. In particular, power is very low for our hours worked outcome (panel c), since we further restrict the smoking subsample to those workers who are in the headquarters and have observed swipes in and out. However, we find no clear evidence of differential performance or effort after the manager switch.

### A.13 Robustness Check: Consistency Across Subsamples

Throughout the paper, we make references to outcomes that are only observed for a subset of the employees in our sample. Physical proximity to the manager is only available for workers in a subset of positions, work hours (imputed from ID card swipes) are only available for a subset of workers in the headquarters, and sales data are only available for a subset of workers in the sales and distribution division.\(^{51}\) In this section, we replicate the main pay grade result in each of these subsamples.

We first replicate the main double-differences specification from Figure 3.a in Figure A.13.i.a to facilitate comparison with the male-to-male advantage across subsamples. In Figure A.13.i.b, we present pay grade results restricted to workers in positions that we can split into high and low physical proximity to their manager. These estimates are more similar in precision to the baseline, as we observe 5,324 workers in high and low proximity positions with events. The point estimate

\(^{51}\)Sales and work hour results are discussed in Section 4.4 for the main specification and in Appendix A.12 for additional transition events. Recall the physical proximity variable is defined at the position level, as a composite of two measures (see Section 5.1 and Appendix A.14 for more information).
after 10 quarters is very slightly lower than in the main specification (0.53, compared to 0.54 in the main specification), but this difference is not statistically significant. In Figure A.13.i.c, we present pay grade results restricted to workers in the headquarters. We observe only 2,657 such workers with events and have greatly reduced power. While the estimated male-to-male advantage is of lesser magnitude (0.41, again compared to 0.54 in the main specification), it is still highly statistically significant (p-value 0.003, p-value of difference with baseline = 0.511). This sample includes all workers in the headquarters even if their swipe data are unavailable.

In Figure A.13.i.d, we present the pay grade results for employees in the sales sample. In this sample, we observe 2,444 workers with events. The estimated male-to-male advantage is 0.47 after ten quarters. While the 95% confidence intervals are relatively wider as a result of the smaller sample, this estimate is still statistically significant (p-value = 0.029).

This sample differs from the sample on which we directly measure the sales outcome in that we continue to observe pay grade for workers who switch out of sales in the quarters after the event; we only observe sales outcomes for employees in the months in which they work in sales. In panels c and d, we choose to present estimates for the set of workers for which the productivity outcome could be observed. This allows us to test for heterogeneity across subdivisions of the bank while limiting the loss in power associated with switching to an even smaller sample.

A.14 Robustness Check: Additional Estimates of Proximity to the Manager

In Section 5.1 we show that our central result – the male-to-male advantage – is driven by males who work in close physical proximity to their managers. For the sake of power and for brevity, we present the dual-double-differences estimate in the main body. In this section, we present the underlying double-differences estimates.

In Figure A.14.i Panel I, we present the double-differences estimate for events with an outgoing female manager. The male-to-male advantage for workers who are closer to their manager is 1.15 and 1.07 in quarters 9 and 10 (p-value < 0.001 in both periods), nearly twice the baseline estimate of 0.54. The estimate is statistically significant in all quarters. In the lower proximity sample in panel I.b, however, nowhere is the estimate statistically differentiable from zero. The estimate after 10 quarters is 0.10 (p-value = 0.700).

In Panel II of Figure A.14.i, we present the analogous double-differences estimate for events that have an outgoing male manager. In panel II.a, we present dual-differences results for male employees in close proximity to their manager transitioning from a male manager to a female manager (relative to transitioning to a female manager). The estimates in the 9th and 10th quarters are stable at -0.40 and -0.44 (p-values 0.022 and 0.016, respectively). We can make two observations about this estimate of the male-to-male advantage. First, when we estimate the male-to-male advantage among workers who are close to their managers (panels I.a and II.a of Figure A.14.i52), we estimate a greater male-to-male advantage when we look at “gained” male managers than “lost” male managers, which is a pattern that we also observe in the baseline estimates.53 Secondly, we

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52 These results are unified and presented as a dual-double-difference in panel a of Figure 7.
53 See, for example, panels a and b of Figure 3.
note that the double-difference estimates after 10 quarters for the subset of workers who work in proximity to their manager are greater in magnitude than the baseline estimates for the “gaining” a male manager (1.07, compared to 0.54) and stable for “losing” a male manager (-0.44 in both specifications). As with the set of employees with an outgoing female manager, there is no evidence of a male-to-male advantage for employees with an outgoing male manager who do not work in proximity to their manager (estimate of -0.32, p-value = 0.101, after 10 quarters).

In the results until this point, we have combined two sources of data on physical proximity. In this section, we show that these results hold for both samples individually.

First, we consider the survey measures. Within the Sales and Distribution division, we derive a position-level proximity measure from individual responses to a survey question “how often are (or were) you physically working near [Manager’s Name]?”. We present these results in Panel I of Figure A.14.ii. Since the sample sizes are smaller, in general the confidence intervals are wider for the event studies discussed in this section. Nevertheless, when we consider workers in close proximity to their manager according to this measure, we see that the male-to-male follows roughly the same path. By the tenth quarter, the point estimate is large (0.72) and highly statistically significant (p-value = 0.001). In comparison, in the low proximity group, there is no evidence of the male-to-male advantage; nowhere is the event-study estimate positive. After 10 quarters, the estimate is very close to zero and statistically insignificant (p-value = 0.990).

When we separately consider the administrative records, we find strikingly similar results. We present results for this measure in Panel II of Figure A.14.ii; here, the gradual evolution of the male to male advantage is clearly visible in the high-proximity group. Indeed, we see that this advantage smoothly increases appears over the course of ten quarters. By quarter ten, the estimate is large (0.66) and highly statistically significant (p-value < 0.001). Note that this is very close to the estimate when the sample is split into high and low proximity using the survey data. Among workers who are not in close physical proximity to their managers, there is only weak evidence of a male-to-male advantage. In quarter 10, the estimate is moderate in size, but statistically significant (0.32, p-value 0.054). This point is an outlier, and nowhere does the 95% confidence interval exclude zero. For example, in quarters 8 and 9, the estimates are much smaller (0.09, p-value = 0.491 and 0.18, p-value = 0.227), and the estimates in earlier quarters are smaller still.

In the body of the paper, we combine these two samples for additional power and precision, but the result is robust to using either measure on its own. That this is robust to both measures is striking - there is very little overlap between the samples and while the measures are similar, they imply different definitions of physical proximity. In Section 3.6, we discuss the survey instrument. The question admits some degree of subjectivity in what is meant by “physically working near”. The variation then comes from how often (days per week) this subjective standard of physical proximity is met. In the administrative records, we have the more objective measure of whether or not they work on the same floor. We can think of ways in which these two definitions may be in conflict - for example, a manager and employee who work on different floors but have regular team meetings before lunch may spend more time together than a worker and manager with desks at opposite ends.

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54 In Section 3, we discuss the swipe data that is available in the headquarters.
of the same floor. That the results under both of these measures, and across both of these samples are consistent is strong evidence that proximity to a manager is an economically significant driver of the baseline male-to-male advantage.

### A.14.1 Proximity to the Manager: Adjusting for Differences Between High and Low Proximity Positions

In Table A.7, we show the differences between different employee characteristics in high and low proximity positions. While the differences between all of the characteristics are statistically significant (in large part due to the precision of the estimates) there are two characteristics upon which we focus. We may be particularly concerned that the high-proximity positions appear to also be higher pay grade, and more male. That is, is may not be proximity per se that accounts for the increased male-to-male advantage, rather that the male-to-male advantage is more pronounced in these positions at the top of the hierarchy relative to those at the bottom. The imbalance in the share of the positions that are male also makes inference more difficult, as it may be that the male-to-male advantage is more pronounced in more heavily male environments.

To address these concerns, we estimate an alternative specification of these proximity results using a re-weighted panel. First, we restrict to observations of workers in the months they experience a manager transition event classifiable as high or low proximity and fit a logistic (logit) probability model in which we estimate the probability of being in a high-proximity position condition on the characteristics of interest: pay grade, gender and sales. We include sales to address a concern that promotion decisions are different (i.e. potentially more “objective”) in a setting in which “objective” performance outcomes are available.

In order to avoid re-weighting based on the outcomes, we calculate propensity-score weights using the predicted probability of being in a high-proximity position conditional on individual’s characteristics in the month of the transition event. Then, we assign every observation of a given individual the propensity-score weight described above, so that the weights do not vary within individuals.

In Panel B of Table A.7, we show the distribution of these same characteristics after re-weighting. The gap in average pay grade in the month of the event falls from 2.2 to 0.37, which is a 83% reduction. The gap in the share of the unit that is male also significantly, from 13 percentage points to 4.5 percentage points, a 65% reduction. Additionally the age gap is functionally eliminated, which is unsurprising, as age is likely highly correlated with seniority (pay grade) and gender.

When we estimate the proximity results with these weights, we find that the estimates are remarkably similar to the baseline (unweighted) estimates. We present these results in Figure A.14.iii. In panel a, we present the results for workers who are physically closer to their managers; while there is some slight movements in the point estimates (increasingly slightly from 0.66 to 0.71 in quarter 8, decreasing slightly from 0.76 to 0.73 in quarter 10) the estimates are remarkably robust. If we compare panel b of Figure A.14.iii to the baseline in Figure A.14.i, we see that the line ap-

55 For workers without an event, we look at their characteristics in the last month in which observe them in the panel, following the estimates reported in Table A.7
pears to have been slightly smoothed – the point estimate in the final quarter is less of an outlier (decreasing from 0.21 to 0.17) and the point estimates in the earlier quarters increase slightly (i.e. from 0.09 to 0.16 in quarter 7.) However, all of this movement is well within the 95% confidence interval, and in this re-weighted version – as in the main specification – nowhere does the 95% confidence interval exclude zero.

A.15 Gender and Smoker Events

In the body of the paper, we present the gender and smoke status events separately; in this section, we estimate the familiar gender transition differences, but include a full vector of controls for smoking transitions. That is, in addition to the set of interacted event-study indicator variables that separately identify manager gender transition events for male and female employees, we include in the regression the full set of interacted event-study indicator variables that separately identify manager smoke status transition events for smoking and non-smoking employees.

In Figure A.15.i, we place side-by-side the event-study analysis of transitioning to a male manager, with and without the full vector of smoker events controls. In panel b, we restrict to the sample of events that we can include in panel c. On this sample, we estimate the male-to-male advantage at 0.58 pay grades after 10 quarters. In panel c, we introduce the full vector of controls for the smoke-status transitions. The point estimate falls to 0.50 after 10 quarters, but we cannot reject the null that these estimates are the same (p-value = 0.659). In Figure A.15.iii we show that the share of breaks together measure is unaffected by adding controls for smoker events.

The most simple explanation for this is that male smokers are a relatively small share of the observations. The share of men in this sample who smoke is 33%, but this subsample is 75% percent female and only 2.8% percent of females smoke, so we have only 308 unique smoking workers, only 45 of whom transition to a smoking boss.

We may expect controlling for the “co-smoking” effect to adjust our estimate of the “co-male” effect downwards. We simply do not observe enough variation in smoking status in this sample for the “co-smoking” effect to explain all of the variation associated with gender. Under 3% of the transitions from a female to male manager involve a smoker going to a smoking manager; under 0.2% percent of the female to female transitions are smokers going to a smoking manager. Mechanically, it is implausible that the 1.3% of transitions that are smokers moving to a smoking manager would explain any significant share of the variation.

A.16 Robustness Check: Alternative Coding of Smoker Data

In Section 3.9, we discuss how smoking and non-smoking workers are identified. Recall that we identify smoker status based on self reports and peer reports. In our main specification, we consider workers without self reports a smoker if more than one third of their peers report them a smoker. This maximizes overlap between self-reports and peer reports for workers with both available. In this section, we test the sensitivity of our results to our definition of smoke status. In particular, we consider extreme allocations of the group of workers who 1) do not self report and 2) have
conflicting crowdsourced reports, i.e. at least one peer each who reports them as smoker and a non-smoker.

Under the threshold used in the main specification, crowdsourced reports are more accurate for self-reported non-smokers (84%) than for self-reported smokers (65%). While we only rely on the the crowdsourced reports for a minority of the sample, this provides important validation for this measure. We need not expect that employees know the smoking habits of their peers; empirically, many of them do.

The majority of males coded as a smoker or non-smoker are unambiguous; of the males who do not self report, only 27% (11% of men with a smoking status) have at least one “non-smoker” and “smoker” crowdsourced report. We must then choose how to allocate these 11% of males who do not self-report and have conflicting crowdsourced reports. In our main specification, we consider workers without self reports a smoker if more than one third of their peers report them a smoker. This maximizes overlap between self-reports and peer reports for workers with both available.

We show in this section that our results are robust to even the most extreme thresholds for self-reports. We test the extreme cases where we allocate all of the workers with conflicting peer reports as smokers or as non-smokers. 21% of people flip their smoker status when we raise the threshold to require all reports indicate the person is a smoker and 9% flip status when we lower the threshold to any smoker report. In both of these extreme cases, our results hold. In Figure A.16.i, we estimate the smoker-to-smoker advantage using the set of manager transitions with an outgoing non-smoking manager. The transitions with an outgoing smoking-manager are again a smaller set of events, and as such the estimates are very imprecise and are not reported.

In Figure A.16.i.a we code all workers with any peer reports of “smoker” as smokers. The estimated smoker-to-smoker advantage is 0.72 after 10 quarters; though this is larger than the baseline estimate of 0.63, this change is not statistically significant. When we code as smokers only those with all peer reports “smoker”, we lose precision as we now have only 131 smokers who experience a transition event. Because of this, the 95% confidence interval for the effect after 10 quarters includes zero (p-value = 0.100). However, the estimates in quarters 8 and 9 exclude zero (estimates of 0.72, p-value = 0.028 and 0.65, p-value = 0.013), following the pattern in some other results using this set of transitions.

A.17 Robustness Check: Additional Information Regarding Regional Differences

In Table A.8, we show that workers born in the northern and southern regions of the country are roughly similar in observable characteristics. Note because of our sample size, these figures are all very precisely estimated, so these differences are statistically significant, though in practice these estimates seem qualitatively similar.

In Table A.9 we present responses from the 2006 World Values Survey, which is the most recent year for which data for this country are available. In order to maximize representativeness for our sample, we limit to respondents in the top income quartile.

We show how attitudes toward the statement “Men make better business executives than women
do” vary across regions. Men in the south of the country are 12 percentage points (31%) more likely to agree or strongly agree with the statement than men in the north (difference p-value = 0.016). Women in the south are also slightly more likely to agree with the statement (6.4pp or 17%) but the difference is not statistically significant (p-value 0.245).
Figure A.1.i: Relationship between Pay Grade and Salary

Notes: The above presents a binned scatter plot of log base salary against pay grade in March of 2017. We use this cross section of the bank’s employees as we have access to their base salary from related work (Cullen and Perez-Truglia, 2018).
Notes: In a) we present binned scatter plots with linear trend lines of the change in pay grade against time elapsed since a manager transition event. The change in pay grade is simply the pay grade in some quarter pay grade minus the pay grade at the time of the event. In (b), we fit a hazard function where the event is defined as change in pay grade and individuals can have multiple events. Time on the x-axis is time in the panel; the y-axis is the cumulative hazard function. We interpret this figure as the expected number of pay grade changes (i.e. promotions) conditional on being in the the panel for a given period of time. Note that this will be mechanically less than the expected change in pay grade, as a promotion that involves an increase of multiple pay grades is treated as a single “change in pay grade” for the purposes of fitting the hazard function.
Figure A.2.i: Descriptive Statistics about the Manager Transition Events

a. Distribution Over Time

b. Events per Manager

c. Event Size

Notes: Panel (a) presents counts of the number of observations (i.e. workers) that experience a manager transition event in each quarter. Panel (b) presents counts of the number of times a manager appears as the incoming manager for a transition event; most managers never “cause” an event by transitioning to a new unit. Panel (c) presents the event size (i.e. number of workers in a unit) distribution by event type. That is, it shows the share of a given event type that affects a given number of employees. The number of employees affected is simply the number of employees who are in the unit for the outgoing manager’s last month and the incoming manager’s first month. The corresponding tables for smoker and placebo manager transitions are available in Appendix Figures A.2.iii and A.2.ii, respectively.
Figure A.2.ii: Descriptive Statistics about Placebo Events

a. Distribution Over Time

b. Events per Manager

c. Event Size

Notes: Panel (a) presents counts of the number of observations (i.e. workers) that experience a manager transition event in each quarter. Panel (b) presents counts of the number of times a manager appears as the incoming manager for a transition event; most managers never “cause” an event by transitioning to a new unit. Panel (c) presents the event size (i.e. number of workers in a unit) distribution by event type. That is, it shows the share of a given event type that affects a given number of employees. The number of employees affected is simply the number of employees who are in the unit for the outgoing manager’s last month and the incoming manager’s first month.
Figure A.2.iii: Descriptive Statistics about Smoker Events

a. Distribution Over Time

b. Events per Manager

c. Event Size

Notes: Panel (a) presents counts of the number of observations (i.e. workers) that experience a manager transition event in each quarter. Panel (b) presents counts of the number of times a manager appears as the incoming manager for a transition event; most managers never “cause” an event by transitioning to a new unit. Panel (c) presents the event size (i.e. number of workers in a unit) distribution by event type. That is, it shows the share of a given event type that affects a given number of employees. The number of employees affected is simply the number of employees who are in the unit for the outgoing manager’s last month and the incoming manager’s first month.
Figure A.3.i: Pay Grade, Gender Transition Events

a. Manager Transition: Female to Male

b. Manager Transition: Female to Female

c. Manager Transition: Male to Female

d. Manager Transition: Male to Male

Notes: See Section 2 for details about the regression specification. Each panel plots underlying event-study estimates $\beta_{\text{Gender Transition}}$, where $g \in \{\text{Male, Female}\}$ indexes the gender of the employee and the subscript indexes the transition event type and time since the event. All coefficients are estimated from the same regression including 380,964 observations of 14,638 workers (5,193 Male & 9,445 Female). The dependent variable is the pay grade of the employee. The red squares correspond to the coefficients for female employees, while the blue circles correspond to the coefficients for male employees. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.4.i: “First Stage”: Gender Events

Notes: All coefficients were estimated from a single regression including 366,882 observations of 14,439 employees (5,083 Male & 9,356 Female). Panel a. 3,156 employees (818 Male & 2,338 Female) experience events: 1,845 transitions from a female manager to a male manager and 2,117 from a female manager to another female manager. Panel b. 4,396 employees (1,395 Male & 3,001 Female) experience events: 1,670 transitions from a male manager to a female manager and 4,164 from a male manager to another male manager. The within-employee standard deviation of the dependent variable is 0.189. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.4.ii: “First Stage”: Placebo Events

Notes: All coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (7,533 Even BD & 7,105 Odd BD). In panel (a), 3,940 employees (2,011 Even BD & 1,929 Odd BD) experience events: 2,611 transitions from a odd-birthday manager to a even-birthday manager and 2,188 from a odd-birthday manager to another odd-birthday manager. In panel (b), 4,161 employees (2,171 Even BD & 1,990 Odd BD) experience events: 2,555 transitions from a even-birthday manager to a odd-birthday manager and 2,709 from a even-birthday manager to another even-birthday manager. The within-employee standard deviation of the dependent variable is 0.245. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
**Figure A.4.iii: “First Stage”: Smoking Events**

**a. Non-Smoker to Smoker**

minus Non-Smoker to Non-Smoker

![Graph showing smoking events for non-smoker to smoker transition.]

**b. Smoker to Non-Smoker**

minus Smoker to Smoker

![Graph showing smoking events for smoker to non-smoker transition.]

Notes: All coefficients were estimated from a single regression including 90,965 observations of 2,894 employees (965 Smoking & 1,929 Non-Smoking). Panel (a): 912 employees (275 Smoking & 637 Non-Smoking) experience events, 287 from a non-smoking manager to a smoking manager and 939 from a non-smoking manager to another non-smoking manager. Panel (b): 464 employees (198 Smoking & 266 Non-Smoking) experience events, 296 transitions from a smoking manager to a non-smoking manager and 276 from a smoking manager to another smoking manager. The within-employee standard deviation of the dependent variable is 0.158. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.5.i: Pay Grade Double-Differences Estimates, Alternate Specifications

Notes: All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,021 employees (1,839 Male & 4,182 Female) experience events: 1,417 transitions from a female manager to a male manager (F2M): 1,916 F2F, 1,571 M2F, 3,766 M2M. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.6.i: Additional Restrictions on Event Transitions: Female to Male (Dual-Double-Difference)

a. Baseline (50% Stay Through Event)

b. 90% Stay Through Event

c. 80% Stay Through Three Months

d. No Threshold

Notes: For each panel, coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). In each panel, we have a different number of events, based on varying restrictions on the share of the unit that stays through the event. In panel c, we restrict based on the share of the unit that is the same from the month before the event to three months after the event. Panel (a): 6,021 employees (1,839 Male & 4,182 Female) experience events: 1,417 transitions from a female manager to a male manager (F2M): 1,916 F2F, 1,571 M2F, 3,766 M2M. Panel (b): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 3,691 employees (1,046 Male & 2,645 Female) experience events: 849 transitions from a female manager to a male manager (F2M): 1,067 F2F, 904 M2F, 1,793 M2M. Panel (c): 5,064 employees (1,528 Male & 3,536 Female) experience events: 1,084 transitions from a female manager to a male manager (F2M): 1,513 F2F, 1,257 M2F, 2,937 M2M. Panel (d) 6,492 employees (1,991 Male & 4,501 Female) experience events: 1,845 transitions from a female manager to a male manager (F2M): 2,117 F2F, 1,670 M2F, 4,164 M2M. The within-employee standard deviation of the dependent variable is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
**Figure A.6.ii:** Drop Largest Events: Female to Male (Dual-Double-Difference)

**a. Main Specification**

-1.00  -0.75  -0.50  -0.25  0.00  0.25  0.50  0.75  1.00

Pay Grade

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Quarters Relative to Manager Switch

Male − Female (Dual)

All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,021 employees (1,839 Male & 4,182 Female) experience events: 1,417 transitions from a female manager to a male manager (F2M): 1,916 F2F, 1,571 M2F, 3,766 M2M. The within-employee standard deviation of the dependent variable is 0.475.

**b. Drop Largest 5% of Events**

-1.00  -0.75  -0.50  -0.25  0.00  0.25  0.50  0.75  1.00

Pay Grade

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Quarters Relative to Manager Switch

Male − Female (Dual)

All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,410 employees (2,004 Male & 4,406 Female) experience events: 1,867 transitions from a female manager to a male manager (F2M): 2,045 F2F, 1,643 M2F, 4,172 M2M. The within-employee standard deviation of the dependent variable is 0.475.

**c. Drop Largest 10% of Events**

-1.00  -0.75  -0.50  -0.25  0.00  0.25  0.50  0.75  1.00

Pay Grade

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Quarters Relative to Manager Switch

Male − Female (Dual)

All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,149 employees (1,894 Male & 4,255 Female) experience events: 1,650 transitions from a female manager to a male manager (F2M): 1,967 F2F, 1,643 M2F, 4,046 M2M. The within-employee standard deviation of the dependent variable is 0.475.

Notes: Panel (a): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,536 employees (2,012 Male & 4,524 Female) experience events: 1,846 transitions from a female manager to a male manager (F2M): 2,120 F2F, 1,745 M2F, 4,291 M2M. Panel (b): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,334 employees (1,989 Male & 4,345 Female) experience events: 1,867 transitions from a female manager to a male manager (F2M): 1,967 F2F, 1,643 M2F, 4,172 M2M. Panel (c): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 5,999 employees (1,823 Male & 4,176 Female) experience events: 1,632 transitions from a female manager to a male manager (F2M): 1,844 F2F, 1,643 M2F, 4,001 M2M. The within-employee standard deviation of the dependent variable is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
**Figure A.7.i:** Effects on Pay Grade, Present in First Month of Panel: Dual-Double-Differences Estimates

**a. Main Specification**

-1.00
-0.75
-0.50
-0.25
0.00
0.25
0.50
0.75
1.00
Pay Grade

Female − Male

-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
0
+1
+2
+3
+4
+5
+6
+7
+8
+9
+10
Quarters Relative to Manager Switch

Male − Female (Dual)

Notes: All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). Panel (a): 3,160 employees (819 Male & 2,341 Female) experience events, 1,846 from a female manager to a male manager and 2,120 from a female manager to another female manager. Panel (b): 4,489 employees (1,458 Male & 3,031 Female) experience events, 1,745 from a male manager to a female manager and 4,291 from a male manager to another male manager. The within-employee standard deviation of the dependent variable is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.8.i: Effects on Pay Grade, Employee’s First Event: Dual-Double-Differences Estimates

a. Main Specification

b. Limited to Employee’s First Event

Notes: Panel (a): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,536 employees (2,012 Male & 4,524 Female) experience events: 1,846 transitions from a female manager to a male manager (F2M): 2,120 F2F, 1,745 M2F, 4,291 M2M. Panel (b): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,536 employees (2,012 Male & 4,524 Female) experience events: 1,685 transitions from a female manager to a male manager (F2M): 2,006 F2F, 1,479 M2F, 3,850 M2M. The within-employee standard deviation of the dependent variable is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.8.ii: Effects on Pay Grade, Employees with At Most One Event: Double-Differences Estimates

a. Main Specification

b. Employees with At Most One Event

Notes: Panel (a): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,536 employees (2,012 Male & 4,524 Female) experience events: 1,846 transitions from a female manager to a male manager (F2M): 2,120 F2F, 1,745 M2F, 4,291 M2M. Panel (b): all coefficients were estimated from a single regression including 374,106 observations of 14,483 employees (5,160 Male & 9,323 Female). 6,381 employees (1,979 Male & 4,402 Female) experience events: 1,530 transitions from a female manager to a male manager (F2M): 2,095 F2F, 1,678 M2F, 4,211 M2M. The within-individual standard deviation of pay grade is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.9.i: Placebo Analysis: Birthday-Evenness (Single-Differences Estimates)

a. Even to Odd BD Manager
   minus Even to Even BD Manager

b. Odd to Even BD Manager
   minus Odd to Odd BD Manager

Notes: See Section 2 for details about the regression specification. All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (7,105 Odd BD & 7,533 Even BD). The dependent variable is the pay grade of the employee. The estimates shown in the graph are based on the coefficients of the event-study variables. The orange circles correspond to the coefficient for odd-BD employees, while the purple squares correspond to the coefficients for even-BD employees. Panel (a) corresponds to the difference between transitions from an even-BD manager to an odd-BD manager and transitions from an even-BD manager to another even-BD manager. 4,161 employees (2,171 Even BD & 1,990 Odd BD) experience events, comprised of 2,555 transitions from a even-birthday manager to a odd-birthday manager and 2,709 from a even-birthday manager to another even-birthday manager. Panel (b) corresponds to the difference between transitions from an odd-birthday manager to an even-birthday manager versus transitions from an odd-birthday manager to another odd-birthday manager. 3,940 employees (2,011 Even BD & 1,929 Odd BD) experience events, comprised of 2,611 transitions from a odd-birthday manager to a even-birthday manager and 2,188 from a odd-birthday manager to another odd-birthday manager. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee. The within-employee standard deviation of pay grade is 0.475.
Figure A.10.i: Alternative Placebo: Manager Gender Transition Events, Single-Difference

Notes: All coefficients were estimated from a single regression including 380,964 observations of 14,638 workers (7,533 Even BD & 7,105 Odd BD). Panel (a): 3,160 of these workers experience a transition event (1,623 Even BD & 1,537 Odd BD). There are 1846 transitions from a female manager to a male manager, 2120 from one female manager to another female manager. The within individual standard deviation of pay grade is 0.475. Panel (b): 4,489 of these workers experience a transition event (2,316 Even BD & 2,173 Odd BD). There are 1745 transitions from a male manager to a female manager, 4291 from one male manager to another male manager. The within individual standard deviation of pay grade is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.10.ii: Alternative Placebo: Manager Gender Transition Events, Double-Differences

Notes: All coefficients were estimated from a single regression including 380,964 observations of 14,638 workers (7,533 Even BD & 7,105 Odd BD). Panel (a): 3,160 of these workers experience a transition event (1,623 Even BD & 1,537 Odd BD). There are 1,846 transitions from a female manager to a male manager, 2,120 from one female manager to another female manager. Panel (b): 4,489 of these workers experience a transition event (2,316 Even BD & 2,173 Odd BD). There are 1,745 transitions from a male manager to a female manager, 4,291 from one male manager to another male manager. Panel (c): 6,536 of these workers experience a transition event (3,371 Even BD & 3,165 Odd BD). There are 1,846 transitions from a female manager to a male manager, (F2M): 2,120 F2F, 1,745 M2F and 4,291 M2M. The within individual standard deviation of pay grade is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
**Figure A.11.i: Alternative Productivity Measures: Dual-Double-Differences**

**a. Percent Days Worked**

![Graph of Percent Days Worked](image)

**b. Sales Revenue (IHS)**

![Graph of arcsinh(Sales Revenue)](image)

Notes: Panel (a): all coefficients were estimated from a single regression including 355,223 observations of 14,251 employees (4,948 Male & 9,303 Female). 6,198 employees (1,886 Male & 4,312 Female) experience events: 1,683 transitions from a female manager to a male manager (F2M): 1,975 F2F, 1,664 M2F, 3,894 M2M. The within-employee standard deviation of the dependent variable is 0.103. Panel (b): all coefficients were estimated from a single regression including 136,342 observations of 6,244 employees (1,814 Male & 4,430 Female). 2,766 employees (716 Male & 2,050 Female) experience events: 838 transitions from a female manager to a male manager (F2M): 626 F2F, 642 M2F, 1,985 M2M. The within-employee standard deviation of the dependent variable is 2.21. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
All coefficients were estimated from a single regression including 359,225 observations of 14,601 employees (5,157 Male & 9,444 Female). 3,173 employees (835 Male & 2,338 Female) experience events: 1,865 transitions from a female manager to a male manager and 2,106 from a female manager to another female manager. The within-employee standard deviation of the dependent variable is 0.177.

All coefficients were estimated from a single regression including 352,282 observations of 14,154 employees (4,913 Male & 9,241 Female). 2,512 employees (667 Male & 1,845 Female) experience events: 1,261 transitions from a female manager to a male manager and 1,766 from a female manager to another female manager. The within-employee standard deviation of the dependent variable is 0.208. 95 CI are trimmed at −.4 and .4.

All coefficients were estimated from a single regression including 136,341 observations of 4,875 employees (1,881 Male & 2,994 Female). 881 employees (260 Male & 621 Female) experience events: 370 transitions from a female manager to a male manager and 690 from a female manager to another female manager. The within-employee standard deviation of the dependent variable is 0.138.

All coefficients were estimated from a single regression including 359,225 observations of 14,601 employees (5,157 Male & 9,444 Female). 3,173 employees (835 Male & 2,338 Female) experience events: 1,865 transitions from a female manager to a male manager and 2,106 from a female manager to another female manager. The within-employee standard deviation of the dependent variable is 0.177.

All coefficients were estimated from a single regression including 352,282 observations of 14,154 employees (4,913 Male & 9,241 Female). 2,512 employees (667 Male & 1,845 Female) experience events: 1,261 transitions from a female manager to a male manager and 1,766 from a female manager to another female manager. The within-employee standard deviation of the dependent variable is 0.208. 95 CI are trimmed at −.4 and .4.

Notes: In Figure 5, we present dual-double-differences results; in this figure, we present the underlying double-differences results for manager events that start with a female manager. In panel (a), the dependent variable is an indicator that takes the value 1 in every month after the employee left the firm (these results include additional events after the employees left the firm); in panel (b), the dependent variable is the logarithm of the total number of days worked in the month (inferred from data on approved leaves of absence); in panel (c), the dependent variable is the logarithm of the average number of hours worked in a given month (inferred from data on swipes in and out of the building, and available for headquarter employees only); in panel (d) the dependent variable is the sales revenue (available for employees with sales roles only) normalized to have mean 100. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.12.ii: Male to Female (versus Male to Male), Double-Differences Estimates

a. Firm Exit

b. Log(Days Worked)

c. Log(Work Hours)

d. Sales Revenues

Notes: In Figure 5, we present dual-double-differences results; in this figure, we present the underlying double-differences results for manager events that start with a male manager. In panel (a), the dependent variable is an indicator that takes the value 1 in every month after the employee left the firm (these results include additional events after the employees left the firm); in panel (b), the dependent variable is the logarithm of the total number of days worked in the month (inferred from data on approved leaves of absence); in panel (c), the dependent variable is the logarithm of the average number of hours worked in a given month (inferred from data on swipes in and out of the building, and available for headquarter employees only); in panel (d) the dependent variable is the sales revenue (available for employees with sales roles only) normalized to have mean 100. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.12.iii: Non-Smoker to Smoker (versus Non-Smoker to Non-Smoker), Dual-Double-Differences Estimates

a. Firm Exit

b. Log(Days Worked)

c. Log(Work Hours)

d. Sales Revenues

Notes: See Section 2 for details about the regression specification. This figure replicates 5, but for smoking transitions. In panel (a), the dependent variable is an indicator that takes the value 1 in every month after the employee left the firm (these results include additional events after the employees left the firm); in panel (b), the dependent variable is the logarithm of the total number of days worked in the month (inferred from data on approved leaves of absence); in panel (c), the dependent variable is the logarithm of the average number of hours worked in a given month (inferred from data on swipes in and out of the building, and available for headquarter employees only); in panel (d) the dependent variable is the sales revenue (available for employees with sales roles only) normalized to have mean 100. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.13.i: Heterogeneity (Dual-Double-Differences)

**a. Employees in Main Sample**

All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,021 employees (1,859 Male & 4,162 Female) experience events: 1,417 transitions from a female manager to a male manager (F2M): 1,916 F2F, 1,571 M2F, 3,766 M2M. The within-employee standard deviation of the dependent variable is 0.475.

**b. Employees in Proximity Data Sample**

All coefficients were estimated from a single regression including 335,443 observations of 10,717 employees (3,590 Male & 7,127 Female). 5,324 employees (1,551 Male & 3,773 Female) experience events: 1,258 transitions from a female manager to a male manager (F2M): 1,171 F2F, 1,429 M2F, 3,452 M2M. The within-employee standard deviation of the dependent variable is 0.520.

**c. Employees in Swipe Data Sample**

All coefficients were estimated from a single regression including 178,808 observations of 7,602 employees (3,251 Male & 4,351 Female). 2,657 employees (1,021 Male & 1,636 Female) experience events: 618 transitions from a female manager to a male manager (F2M): 1,273 F2F, 788 M2F, 1,046 M2M. The within-employee standard deviation of the dependent variable is 0.475.

**d. Employees in Sales Sample**

All coefficients were estimated from a single regression including 162,879 observations of 6,269 employees (1,821 Male & 4,448 Female). 2,444 employees (611 Male & 1,833 Female) experience events: 581 transitions from a female manager to a male manager (F2M): 572 F2F, 542 M2F, 1,701 M2M. The within-employee standard deviation of the dependent variable is 0.601.

Notes: See Section 2 for details about the regression specification. In panel (a), we present again the main specification for reference; in panel (b), we limit to workers in positions that we can code as high or low proximity to the manager; in panel (c), we limit to workers in the headquarters, which is where we observe swipes in and out; in panel (d) we limit to workers who are in a sales position in the month in which they experience a manager transition. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.14.i: Heterogeneity by Proximity to the Manager (Double-Differences Estimate)

I. FEMALE TO MALE MANAGER minus FEMALE TO FEMALE MANAGER

a. Closer

b. Farther

Notes: See Section 2 for a formal discussion of the event-study specification. All estimates presented above are estimated on the same regression. To normalize across groups, we estimate coefficients for the pre-period separately for the high and low proximity groups, and explicitly difference the smoothed estimate for \( q = -1 \) out of each panel. Mechanically, the coefficients for both groups and the double-differences are then 0 in the pre-period. We estimate the high and low proximity event coefficients on the same regression; in both panels, we categorize events as high or low proximity based on the position of the worker in the month they experience a transition event. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.14.ii: Effects on Pay Grade by Proximity to the Manager: Dual-Double-Differences Estimates

I. SELF-REPORTED PHYSICAL PROXIMITY TO MANAGER

(a) Closer

(b) Farther

All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female), 2,122 employees (741 Male & 1,381 Female) experiencing events: 519 transitions from a female manager to a male manager (F2M): 565 F2F, 393 M2F, 1,358 M2M. The within-employee standard deviation of the dependent variable is 0.475. 95 CI are trimmed at −1 and 1.

II. ASSIGNED TO WORK ON SAME FLOOR AS MANAGER

(a) Closer

(b) Farther

All coefficients were estimated from a single regression including 380,959 observations of 14,638 employees (5,193 Male & 9,445 Female), 2,195 employees (444 Male & 1,751 Female) experiencing events: 481 transitions from a female manager to a male manager (F2M): 433 F2F, 557 M2F, 1,604 M2M. The within-employee standard deviation of the dependent variable is 0.475.

Notes: See Section 5.1 for a general discussion of our proximity measure and Appendix A.14 for details about this figure. In this figure, we separately present the survey (top half) and administrative (bottom half) measures of proximity that are combined in our main specification presented in Figure 7. Panel (I): we code positions as “closer” (“farther”) if the average worker in that position self-reports spending more than (less than) 4.5 days a week working in close physical proximity with their manager. Panel (II): we code positions as “closer” (“farther”) if more than (less than) 33% of workers in that position work on the same floor as their manager. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.14.iii: Effects on Pay Grade by Proximity to the Manager: Dual-Double-Differences Estimates (Propensity Score Weighted)

a. Closer

b. Farther

Notes: See Section 2 for details about the regression specification. These results use the same specification presented in Figure A.14.i, based on the four types of gender transitions. We additionally reweight individuals following the procedure outlined in Appendix A.14.1. All coefficients are estimated from the same regression with 357,832 observations of 13,690 employees (4,814 Male & 8,876 Female). 2,944 employees (1,012 Male & 1,932 Female) experience events while in a high-proximity position (panel (a)). There are 617 transitions from a female manager to a male manager (F2M): 1,072 F2F, 754 M2F, 1,472 M2M. 3,056 employees (783 Male & 2,273 Female) experience events while in a low-proximity position (panel (b)). There are 762 transitions from a female manager to a male manager (F2M): 751 F2F, 742 M2F, 2,182 M2M. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee. Confidence intervals in panel (a) are trimmed at +1.
Figure A.15.i: Pay Grade: Female to Male, Smoke Controls

Notes: Panel (a): all coefficients were estimated from a single regression including 380,964 observations of 14,638 employees (5,193 Male & 9,445 Female). 6,536 employees (2,012 Male & 4,524 Female) experience events: 1,846 transitions from a female manager to a male manager (F2M): 2,120 F2F, 1,745 M2F, 4,291 M2M. Panel (b): all coefficients were estimated from a single regression including 296,330 observations of 8,373 employees (2,907 Male & 5,466 Female). 5,208 employees (1,620 Male & 3,588 Female) experience events: 1,421 transitions from a female manager to a male manager (F2M): 1,764 F2F, 1,438 M2F, 3,355 M2M. Panel (c): all coefficients were estimated from a single regression including 296,330 observations of 8,373 employees (2,907 Male & 5,466 Female). 5,208 employees (1,620 Male & 3,588 Female) experience events: 1,421 transitions from a female manager to a male manager (F2M): 1,764 F2F, 1,438 M2F, 3,355 M2M. The within-employee standard deviation of the dependent variable is 0.475. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
**Figure A.15.ii:** Correlates of Share of Breaks Taken with the Manager

**a. Knowledge of Manager’s Favorite Sport’s Team**

![Graph showing the correlation between Share of Breaks with Manager and P(Correct Guess)](attachment:image)

Slope: 0.112 (0.033) \[N = 3,072\]

**b. Change in Pay Grade Under Manager**

![Graph showing the correlation between Share of Breaks Taken with Manager and Pay Grade Change with Manager](attachment:image)

Slope: 0.077 (0.061) \[N = 2,773\]

**Notes:** Binned scatterplots with overlaid linear fits. In both panels, the x-axis corresponds to the share of the last 10 breaks that the employee took with the manager (as reported in the survey data). In panel (a), the dependent variable (y-axis) is a dummy variable for whether the worker correctly guesses the manager’s favorite sports team (as reported in the survey data). In panel (b), the dependent variable (y-axis) is the change in pay grade while working for the manager (computed from the administrative records). That is, \(\delta_{i,m} = p_{i,m,T_m} - p_{i,m,t_0}\) where \(p_{i,m,T_m}\) is the pay grade of worker \(i\) in the final month \(T_m\) she works for manager \(m\), and \(p_{i,m,t_0}\) is the pay grade of worker \(i\) in the first month she works for manager \(m\). The standard errors of the slopes are presented in parentheses and are two-way clustered by manager and employee. The number of observations (i.e., employee-manager pairs) are reported in brackets.
Figure A.15.iii: Share Breaks: Female to Male, Smoke Controls

a. Baseline Specification

b. Smoke Status Events Included

Notes: In both panels, all coefficients were estimated from a single regression including 4,843 observations of 2,638 employees (698 Male & 1,940 Female). 430 employees (83 Male & 347 Female) experience events: 254 transitions from a female manager to a male manager and 243 from a female manager to another female manager. Since the survey that we use for the share of breaks outcome also includes smoking status, there is no sample reduction when we add controls for transitions in manager smoke status. Thus, the only difference between panel a and panel b is that the regression estimated in panel b includes controls for manager smoke status, interacted with the employee’s smoke status. The within-employee standard deviation of the dependent variable is 0.174. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee.
Figure A.16.i: Non-Smoker to Smoker, Alternative “Smoker” Thresholds

Notes: Panel (a): all coefficients were estimated from a regression including 94,750 observations of 2,907 employees (1,229 Smoking & 1,678 Non-Smoking). 928 employees (348 Smoking & 580 Non-Smoking) experience events: 287 transitions from a non-smoking manager to a smoking manager and 960 from a non-smoking manager to another non-smoking manager. Panel (b): all coefficients were estimated from a single regression including 94,750 observations of 2,907 employees (366 Smoking & 2,541 Non-Smoking). 928 employees (131 Smoking & 797 Non-Smoking) experience events: 287 transitions from a non-smoking manager to a smoking manager and 960 from a non-smoking manager to another non-smoking manager. The within-employee standard deviation of the dependent variable is 0.517. The 95% confidence intervals are presented in brackets, with two-way clustering by manager and employee. Confidence intervals are trimmed at +1.
Table A.1: Reason for Manager Transition

<table>
<thead>
<tr>
<th></th>
<th>New Hire</th>
<th>Promotion</th>
<th>Lateral Move</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quit</td>
<td>29</td>
<td>49</td>
<td>71</td>
</tr>
<tr>
<td>Promotion</td>
<td>25</td>
<td>64</td>
<td>50</td>
</tr>
<tr>
<td>Lateral Move</td>
<td>70</td>
<td>138</td>
<td>185</td>
</tr>
</tbody>
</table>

Notes: Outgoing managers are defined as the manager of unit in the month before a transition event; incoming managers are those who are assigned to a unit in the month of the event. We say that an outgoing (incoming) manager quit (was hired) if they quit (were hired) in the six months after (before) the transition. Similarly, we code a transition a promotion if there is a change in pay grade in the three months before or after the event. Manager transition events that do not coincide with a change in pay grade or an exit/entry, as defined above, are coded as lateral moves.

Table A.2: Types of Manager Changes, Smoking Events

<table>
<thead>
<tr>
<th></th>
<th>New Hire</th>
<th>Promotion</th>
<th>Lateral Move</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quit</td>
<td>9</td>
<td>16</td>
<td>29</td>
</tr>
<tr>
<td>Promotion</td>
<td>10</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Lateral Move</td>
<td>23</td>
<td>30</td>
<td>148</td>
</tr>
</tbody>
</table>

Notes: Outgoing managers are defined as the manager of unit in the month before a transition event; incoming managers are those who are assigned to a unit in the month of the event. We say that an outgoing (incoming) manager quit (was hired) if they quit (were hired) in the six months after (before) the transition. Similarly, we code a transition a promotion if there is a change in pay grade in the three months before or after the event. Manager transition events that do not coincide with a change in pay grade or an exit/entry, as defined above, are coded as lateral moves.
### Table A.3: Characteristics of the Managers and Employees, by Type of Manager Transition

#### Employees

<table>
<thead>
<tr>
<th>Had Event?</th>
<th>Female to ...</th>
<th>Male to ...</th>
<th>Female to ...</th>
<th>Male to ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Unique Individuals</td>
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<td>56021</td>
<td>1627</td>
<td>1320</td>
</tr>
<tr>
<td>Pay Grade</td>
<td>49.066</td>
<td>48.849</td>
<td>49.020</td>
<td>48.810</td>
</tr>
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<td>(2.68)</td>
<td>(2.56)</td>
<td>(2.45)</td>
<td>(2.68)</td>
<td>(2.53)</td>
</tr>
<tr>
<td>Male (%)</td>
<td>0.352</td>
<td>0.281</td>
<td>0.240</td>
<td>0.293</td>
</tr>
<tr>
<td>(0.48)</td>
<td>(0.45)</td>
<td>(0.43)</td>
<td>(0.46)</td>
<td>(0.42)</td>
</tr>
<tr>
<td>Age</td>
<td>29.814</td>
<td>30.082</td>
<td>30.073</td>
<td>30.725</td>
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<td>(5.25)</td>
<td>(5.21)</td>
<td>(5.39)</td>
<td>(5.00)</td>
<td>(5.38)</td>
</tr>
<tr>
<td>College (%)</td>
<td>0.907</td>
<td>0.884</td>
<td>0.893</td>
<td>0.888</td>
</tr>
<tr>
<td>(0.29)</td>
<td>(0.32)</td>
<td>(0.31)</td>
<td>(0.32)</td>
<td>(0.33)</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.777</td>
<td>0.807</td>
<td>0.808</td>
<td>0.810</td>
</tr>
<tr>
<td>(0.42)</td>
<td>(0.39)</td>
<td>(0.39)</td>
<td>(0.39)</td>
<td>(0.40)</td>
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<tr>
<td>S&amp;D</td>
<td>0.559</td>
<td>0.680</td>
<td>0.499</td>
<td>0.708</td>
</tr>
<tr>
<td>(0.50)</td>
<td>(0.47)</td>
<td>(0.50)</td>
<td>(0.46)</td>
<td>(0.48)</td>
</tr>
<tr>
<td>IT</td>
<td>0.187</td>
<td>0.060</td>
<td>0.169</td>
<td>0.009</td>
</tr>
<tr>
<td>(0.39)</td>
<td>(0.24)</td>
<td>(0.37)</td>
<td>(0.09)</td>
<td>(0.12)</td>
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<tr>
<td>Unit Size</td>
<td>99.616</td>
<td>83.276</td>
<td>92.523</td>
<td>64.886</td>
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<td>(144.36)</td>
<td>(93.89)</td>
<td>(115.51)</td>
<td>(82.54)</td>
<td>(89.57)</td>
</tr>
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</table>

#### Managers (Incoming)

<table>
<thead>
<tr>
<th>Had Event?</th>
<th>Female to ...</th>
<th>Male to ...</th>
<th>Female to ...</th>
<th>Male to ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
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<tr>
<td>Unique Individuals</td>
<td>579</td>
<td>690</td>
<td>205</td>
<td>128</td>
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<td>Pay Grade</td>
<td>53.445</td>
<td>53.604</td>
<td>53.749</td>
<td>54.298</td>
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<td>(2.05)</td>
<td>(2.04)</td>
<td>(2.17)</td>
<td>(2.26)</td>
<td>(2.04)</td>
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<tr>
<td>Male (%)</td>
<td>0.476</td>
<td>0.508</td>
<td>0.000</td>
<td>1.000</td>
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<td>(0.50)</td>
<td>(0.50)</td>
<td>(0.00)</td>
<td>(0.00)</td>
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<td>Age</td>
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<td>35.050</td>
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<td>(4.81)</td>
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<td>(4.27)</td>
<td>(4.57)</td>
<td>(4.35)</td>
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<tr>
<td>College (%)</td>
<td>0.985</td>
<td>0.960</td>
<td>0.946</td>
<td>0.974</td>
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<td>(0.12)</td>
<td>(0.20)</td>
<td>(0.23)</td>
<td>(0.16)</td>
<td>(0.26)</td>
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<td>Bus/Fin Major</td>
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<td>0.774</td>
<td>0.729</td>
<td>0.737</td>
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<tr>
<td>(0.41)</td>
<td>(0.42)</td>
<td>(0.45)</td>
<td>(0.44)</td>
<td>(0.41)</td>
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<tr>
<td>S&amp;D</td>
<td>0.566</td>
<td>0.634</td>
<td>0.448</td>
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<td>(0.50)</td>
<td>(0.48)</td>
<td>(0.50)</td>
<td>(0.49)</td>
<td>(0.49)</td>
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<tr>
<td>IT</td>
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<td>(0.16)</td>
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<td>(0.13)</td>
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<tr>
<td>Unit Size</td>
<td>69.379</td>
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</tr>
<tr>
<td>(72.60)</td>
<td>(55.47)</td>
<td>(73.52)</td>
<td>(48.30)</td>
<td>(53.93)</td>
</tr>
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</table>

#### Managers (Outgoing)

<table>
<thead>
<tr>
<th>Had Event?</th>
<th>Female to ...</th>
<th>Male to ...</th>
<th>Female to ...</th>
<th>Male to ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Unique Individuals</td>
<td>620</td>
<td>649</td>
<td>193</td>
<td>123</td>
</tr>
<tr>
<td>Pay Grade</td>
<td>53.324</td>
<td>53.786</td>
<td>53.678</td>
<td>53.667</td>
</tr>
<tr>
<td>(1.93)</td>
<td>(2.24)</td>
<td>(2.09)</td>
<td>(2.28)</td>
<td>(2.40)</td>
</tr>
<tr>
<td>Male (%)</td>
<td>0.434</td>
<td>0.576</td>
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<td>0.000</td>
</tr>
<tr>
<td>(0.50)</td>
<td>(0.49)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Age</td>
<td>36.483</td>
<td>35.936</td>
<td>36.208</td>
<td>36.347</td>
</tr>
<tr>
<td>College (%)</td>
<td>0.976</td>
<td>0.975</td>
<td>0.956</td>
<td>0.958</td>
</tr>
<tr>
<td>(0.15)</td>
<td>(0.16)</td>
<td>(0.21)</td>
<td>(0.20)</td>
<td>(0.16)</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.806</td>
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<td>0.758</td>
</tr>
<tr>
<td>(0.40)</td>
<td>(0.41)</td>
<td>(0.44)</td>
<td>(0.43)</td>
<td>(0.39)</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.585</td>
<td>0.642</td>
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</tr>
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<td>(0.49)</td>
<td>(0.48)</td>
<td>(0.50)</td>
<td>(0.50)</td>
<td>(0.48)</td>
</tr>
<tr>
<td>IT</td>
<td>0.089</td>
<td>0.029</td>
<td>0.024</td>
<td>0.017</td>
</tr>
<tr>
<td>(0.28)</td>
<td>(0.17)</td>
<td>(0.15)</td>
<td>(0.13)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>Unit Size</td>
<td>71.118</td>
<td>70.212</td>
<td>64.322</td>
<td>62.750</td>
</tr>
<tr>
<td>(72.52)</td>
<td>(51.48)</td>
<td>(69.48)</td>
<td>(45.48)</td>
<td>(48.80)</td>
</tr>
</tbody>
</table>

Notes: This table presents summary statistics for employees and managers and demonstrates balance of covariates across event types, and between the groups who do and do not experience events. Since workers and managers can experience multiple events, the sum of unique individuals for all four events can be greater than the total count of unique individuals, and the “Yes” column need not be equal to the mean of the four event columns. Outgoing managers are defined as the manager of unit in the month before a transition event; incoming managers are those who are assigned to a unit in the month of the event. For event columns, we show the average of employees and managers in the month they experience events; for those who never experience an event we show the average of all such individuals across their tenure at the bank.
### Table A.4: Descriptive Statistics, Placebo Events

<table>
<thead>
<tr>
<th>Employees</th>
<th>MANAGERS (INCOMING)</th>
<th>MANAGERS (OUTGOING)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Had Event?</strong></td>
<td><strong>Even to . . .</strong></td>
<td><strong>Odd to . . .</strong></td>
</tr>
<tr>
<td>Unique Individuals</td>
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<td>Yes</td>
</tr>
<tr>
<td>Pay Grade</td>
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<td>6947</td>
</tr>
<tr>
<td>Age</td>
<td>0.354</td>
<td>0.295</td>
</tr>
<tr>
<td>Male (%)</td>
<td>30.022</td>
<td>29.837</td>
</tr>
<tr>
<td>Male (%)</td>
<td>0.904</td>
<td>0.890</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.764</td>
<td>0.814</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.555</td>
<td>0.676</td>
</tr>
<tr>
<td>IT</td>
<td>0.156</td>
<td>0.101</td>
</tr>
<tr>
<td>Unit Size</td>
<td>81.333</td>
<td>108.640</td>
</tr>
<tr>
<td>(128.50)</td>
<td>(114.49)</td>
<td>(111.76)</td>
</tr>
</tbody>
</table>

Notes: This table presents summary statistics for employees and managers and demonstrates balance of covariates across event types, and between the groups who do and do not experience events. Since workers and managers can experience multiple events, the sum of unique individuals for all four events can be greater than the total count of unique individuals, and the “Yes” column need not be equal to the mean of the four event columns. Outgoing managers are defined as the manager of unit in the month before a transition event; incoming managers are those who are assigned to a unit in the month of the event. For event columns, we show the average of employees and managers in the month they experience events; for those who never experience an event we show the average of all such individuals across their tenure at the bank.
### Table A.5: Descriptive Statistics, Smoke Status Transition Events

#### EMPLOYEES

<table>
<thead>
<tr>
<th>Event</th>
<th>Had Event?</th>
<th>Non-Smoking to Smoker</th>
<th>Smoking to Non-Smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Non-Smoking</td>
</tr>
<tr>
<td></td>
<td>1380</td>
<td>1094</td>
<td>646</td>
</tr>
<tr>
<td>Pay Grade</td>
<td>50.071</td>
<td>49.562</td>
<td>49.498</td>
</tr>
<tr>
<td>Male (%)</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Pay Grade</td>
<td>50.071</td>
<td>49.562</td>
<td>49.498</td>
</tr>
<tr>
<td>Male (%)</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>College (%)</td>
<td>0.903</td>
<td>0.915</td>
<td>0.921</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.603</td>
<td>0.774</td>
<td>0.859</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.418</td>
<td>0.737</td>
<td>0.831</td>
</tr>
<tr>
<td>IT</td>
<td>0.161</td>
<td>0.096</td>
<td>0.046</td>
</tr>
<tr>
<td>Unit Size</td>
<td>59.109</td>
<td>77.964</td>
<td>95.661</td>
</tr>
</tbody>
</table>

#### MANAGERS (INCOMING)

<table>
<thead>
<tr>
<th>Event</th>
<th>Had Event?</th>
<th>Non-Smoking to Smoker</th>
<th>Smoking to Non-Smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Non-Smoking</td>
</tr>
<tr>
<td></td>
<td>338</td>
<td>250</td>
<td>145</td>
</tr>
<tr>
<td>Pay Grade</td>
<td>53.707</td>
<td>53.742</td>
<td>53.574</td>
</tr>
<tr>
<td>Male (%)</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>College (%)</td>
<td>0.986</td>
<td>0.982</td>
<td>1.000</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.716</td>
<td>0.818</td>
<td>0.858</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.648</td>
<td>0.869</td>
<td>0.932</td>
</tr>
<tr>
<td>IT</td>
<td>0.161</td>
<td>0.096</td>
<td>0.046</td>
</tr>
<tr>
<td>Unit Size</td>
<td>60.101</td>
<td>78.833</td>
<td>82.993</td>
</tr>
</tbody>
</table>

#### MANAGERS (OUTGOING)

<table>
<thead>
<tr>
<th>Event</th>
<th>Had Event?</th>
<th>Non-Smoking to Smoker</th>
<th>Smoking to Non-Smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Non-Smoking</td>
</tr>
<tr>
<td></td>
<td>382</td>
<td>206</td>
<td>97</td>
</tr>
<tr>
<td>Pay Grade</td>
<td>53.349</td>
<td>53.742</td>
<td>53.772</td>
</tr>
<tr>
<td>Male (%)</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Age</td>
<td>36.198</td>
<td>35.990</td>
<td>35.919</td>
</tr>
<tr>
<td>College (%)</td>
<td>0.988</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.740</td>
<td>0.840</td>
<td>0.904</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.697</td>
<td>0.871</td>
<td>0.965</td>
</tr>
<tr>
<td>IT</td>
<td>0.101</td>
<td>0.067</td>
<td>0.026</td>
</tr>
<tr>
<td>Unit Size</td>
<td>63.104</td>
<td>77.280</td>
<td>84.430</td>
</tr>
</tbody>
</table>

**Notes:** This table presents summary statistics for employees and managers and demonstrates balance of covariates across event types, and between the groups who do and do not experience events. Since workers and managers can experience multiple events, the sum of unique individuals for all four events can be greater than the total count of unique individuals, and the “Yes” column need not be equal to the mean of the four event columns. Outgoing managers are defined as the manager of unit in the month before a transition event; incoming managers are those who are assigned to a unit in the month of the event. For event columns, we show the average of employees and managers in the month they experience events; for those who never experience an event we show the average of all such individuals across their tenure at the bank.
Table A.6: Sales Performance Following a Promotion, by Gender of Manager and Employee

<table>
<thead>
<tr>
<th></th>
<th>SALES PERFORMANCE</th>
<th></th>
<th>P(PRIMARYTION)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales Revenue</td>
<td>Any Sales</td>
<td>Linear Model</td>
<td></td>
</tr>
<tr>
<td>Promoted by a Female Manager</td>
<td>151.428</td>
<td>0.942</td>
<td>0.123</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(48.905)</td>
<td>(0.019)</td>
<td>(0.021)</td>
<td></td>
</tr>
<tr>
<td>Promoted by a Male Manager</td>
<td>63.371</td>
<td>0.852</td>
<td>0.092</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.491)</td>
<td>(0.046)</td>
<td>(0.008)</td>
<td></td>
</tr>
<tr>
<td>P-Value of Difference</td>
<td>0.076</td>
<td>0.075</td>
<td>0.168</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>304</td>
<td>304</td>
<td>2,974</td>
<td></td>
</tr>
</tbody>
</table>

Notes. We restrict to employees who are junior sales associates when they experience a manager transition event. We then define a promotion as an change in position title from a junior sales associate to a senior sales associate. We then split these promotions by the gender of the manager with whom the employee was working when he or she was promoted. If the promotion coincides with a change in managers, we split by the gender of the manager in the month before the transition (i.e. the manager in the last month in which the employee is in a junior sales position). In column 1, we report the mean sales for employees in the six months after a promotion from junior sales associate. In column 2, we report the probability that we observe any sales by an employee in the six months after a promotion. Finally, in column 3, we consider all employee - manager pairs that are 1) the result of exogenous transitions and 2) and report the probability that the employee is ever promoted from a junior sales associate to a senior sales associate by that manager. Standard errors are two-way clustered by manager and individual.
### Table A.7: Employee Characteristics: High and Low Proximity Positions

<table>
<thead>
<tr>
<th></th>
<th>Low Proximity</th>
<th>High Proximity</th>
<th>Diff. P-val</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PANEL A: Unweighted Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pay Grade</td>
<td>47.653</td>
<td>49.845</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Male</td>
<td>0.298</td>
<td>0.427</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Age</td>
<td>26.990</td>
<td>29.417</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>College</td>
<td>0.831</td>
<td>0.883</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.869</td>
<td>0.721</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.879</td>
<td>0.453</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>IT</td>
<td>0.037</td>
<td>0.201</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Unit Size</td>
<td>64.743</td>
<td>92.416</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>N. Positions</td>
<td>333</td>
<td>956</td>
<td>–</td>
</tr>
<tr>
<td>N. Employees</td>
<td>6,580</td>
<td>6,299</td>
<td>–</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Low Proximity</th>
<th>High Proximity</th>
<th>Diff. P-val</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PANEL B: Weighted Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pay Grade</td>
<td>48.945</td>
<td>49.313</td>
<td>0.001</td>
</tr>
<tr>
<td>Male</td>
<td>0.376</td>
<td>0.421</td>
<td>0.023</td>
</tr>
<tr>
<td>Age</td>
<td>28.574</td>
<td>28.706</td>
<td>0.466</td>
</tr>
<tr>
<td>College</td>
<td>0.825</td>
<td>0.877</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.849</td>
<td>0.731</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.747</td>
<td>0.484</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>IT</td>
<td>0.043</td>
<td>0.188</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Unit Size</td>
<td>69.176</td>
<td>93.245</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>N. Positions</td>
<td>333</td>
<td>956</td>
<td>–</td>
</tr>
<tr>
<td>N. Employees</td>
<td>6,580</td>
<td>6,299</td>
<td>–</td>
</tr>
</tbody>
</table>

**Notes.** We estimate these characteristics following a similar approach as in Table A.3. For workers who experience an event while in a position that can be categorized as high or low proximity, we consider their characteristics in the month in which they experience the event. For workers who never experience transition events, we average over all the months in which they are in positions classifiable as high or low proximity.
Table A.8: Employee Characteristics: Modal Birthplace of Employees in the Unit

<table>
<thead>
<tr>
<th>Northern Region</th>
<th>Southern Region</th>
<th>Diff. P-val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay Grade</td>
<td>49.187</td>
<td>48.578</td>
</tr>
<tr>
<td>Male</td>
<td>0.324</td>
<td>0.304</td>
</tr>
<tr>
<td>Age</td>
<td>28.553</td>
<td>29.528</td>
</tr>
<tr>
<td>College</td>
<td>0.857</td>
<td>0.774</td>
</tr>
<tr>
<td>Bus/Fin Major</td>
<td>0.769</td>
<td>0.854</td>
</tr>
<tr>
<td>S&amp;D</td>
<td>0.536</td>
<td>0.786</td>
</tr>
<tr>
<td>IT</td>
<td>0.146</td>
<td>0.082</td>
</tr>
<tr>
<td>Unit Size</td>
<td>99.773</td>
<td>76.961</td>
</tr>
<tr>
<td>N. Units</td>
<td>1734</td>
<td>845</td>
</tr>
<tr>
<td>N. Employees</td>
<td>15,313</td>
<td>6,223</td>
</tr>
</tbody>
</table>

Table A.9: Gender Attitudes by Region

<table>
<thead>
<tr>
<th>Panel A: Men</th>
<th>Northern Region</th>
<th>Southern Region</th>
<th>Diff. P-val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men are Better Business Exec’s</td>
<td>0.393 (0.035)</td>
<td>0.515 (0.050)</td>
<td>0.016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Women</th>
<th>Northern Region</th>
<th>Southern Region</th>
<th>Diff. P-val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men are Better Business Exec’s</td>
<td>0.385 (0.037)</td>
<td>0.449 (0.055)</td>
<td>0.245</td>
</tr>
</tbody>
</table>

Notes. These responses come from the 2006 World Values Survey, which is the most recent year for which data for this country are available. We limit to respondents in the top quartile of the income distribution. *Men are Better Business Exec’s* is an indicator for whether the respondent indicates they “agree” or “agree strongly” with the statement “Men make better business executives than women do.”
Dear Leslie Knope,

Please help us learn about what determines your performance evaluation and promotion opportunities. All survey responses are completely confidential. Your answers and your participation will not be shared with your co-workers or manager. If you have any issues please contact Jerry Gergich, Thank you in advance for your participation!

Sincerely,

XXXXX Chief Economist   Email: XXXXX  Address: XXXXX

☐ Please click here to confirm that you are Leslie Knope, click "Next" to proceed with the survey
Please select all the managers that have directly influenced your KPI and PC [Pay Grade] either in your current position or past positions? You are allowed to select up to 6 managers. If you have more than 6, please prioritize the most important and recent ones since 2015 until the present. If your manager is not on the list, please type their name and their position in the box.

- Chris Traeger
- April Ludgate
- Ben Wyatt
- Shauna Malwae-Tweep
- Craig Middlebrooks
- Joan Callamezzo
Next, we will ask you 6 questions about your most recent managers. All questions refer to the time when your manager was actively your boss, which could in some cases be in the past.

**Note: The following section is repeated for every manager selected in the previous section**

How often are (or were) you physically working near April Ludgate (i.e. same floor and area)?

- Everyday or most days (4-6 times per week)
- Some days (2-3 times per week)
- Infrequently

Out of 10 work breaks (including lunch or random breaks), how many would usually include April Ludgate?

*Slider: select 0 to 10*

Of the last 10 emails you sent to April Ludgate, how many included some part that was personal?

*Slider: select 0 to 10*

Do you and April Ludgate both smoke?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>I smoked during the time we overlapped</td>
<td></td>
<td></td>
</tr>
<tr>
<td>He/she smoked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We smoked together sometimes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In your opinion, what football team does April Ludgate enjoy? (You can choose multiple choices)

- Prefers Golf
- Prefers Tennis
- Manchester United
- Barcelona
- Real Madrid
- Bayern Munich
- Manchester City
- Arsenal
- Chelsea
- Liverpool
- Juventus
- Tottenham Hotspur
- Paris Saint-Germain
- A.C. Milan
- Prefers a team which is not listed
- Prefers none. He/She does not watch football
How many years have you smoked? (Enter 0 if never)

*Numeric Entry*

What football team is your favorite? (You can choose multiple choices)

- Prefers Golf
- Prefers Tennis
- Manchester United
- Barcelona
- Real Madrid
- Bayern Munich
- Manchester City
- Arsenal
- Chelsea
- Liverpool
- Juventus
- Tottenham Hotspur
- Paris Saint-Germain
- A.C. Milan
- Prefers a team which is not listed
- Prefers none. I do not watch football
## Appendix: Smoke Status Survey

### Question 1
Please answer if your following co-workers were smokers? If yes, please let us know if they started smoking before or after joining the bank?

<table>
<thead>
<tr>
<th>Was he/she a smoker?</th>
<th>If yes, when did he/she start smoking?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>I do not know Before joining bank After joining bank I do not know</td>
</tr>
<tr>
<td>No</td>
<td>I do not know</td>
</tr>
<tr>
<td>I do not know</td>
<td></td>
</tr>
</tbody>
</table>

- **Leslie Knope**
- **Donna Meagle**
- **Andy Dwyer**
- **Jerry Gergich**
- **Ann Perkins**

### Question 2
Do you smoke now?
- Yes
- No
- I do not want to answer this question

### Question 3
What age did you start smoking?
- I do not want to answer this question or [Numeric Entry]