Closing the Gender Pay Gap in the US Federal Service: The Role of New Managers

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This paper estimates the causal effect of managerial homophily (getting a same-sex manager) on employee pay using over 30 years of payroll data from the US Federal Civil Service. Exploiting the appointment of new managers in an event study design, we find that same-sex managers are particularly important for female employees, whose pay increases by an additional 1.5 log points relative to male counterparts. A novel finding is that these effects are largest for employees in less routine jobs, even within education levels. We conclude that even highly regimented pay systems are not immune to discretionary managerial actions.

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I. Introduction

The US gender pay gap considerably narrowed over the last forty years, albeit at a slower pace in the 2010s. However, the share of the pay gap unexplained by traditional employee characteristics has been growing overall (Blau and Kahn, 2017), and in the US Federal civil service (Figure 1).[1] Recent research has thus emphasized the role of firm-level factors, such as the under-representation of women in high-productivity firms (Card, Cardoso, and Kline, 2016). Women are also under-represented in management, lagging considerably behind the female labor forces they supervise (McKinsey, 2019). In the US federal service, the female management share has increased steadily over time, yet it still under-represents its female workforce (Figure 1).[2] We look beneath the glass ceiling and focus on the impacts of managerial homophily on their employees. During the period we study, 45% of female federal employees encountered same-sex managers while that percentage was 65% for male federal employees. We ask: What effect does a same-sex supervisor have on their employees' careers and pay trajectories?

Using over 30 years of rich longitudinal data from the US Federal civil service, we estimate the effects of managerial homophily on employees' residual pay by exploiting the appointment of new same-sex managers at local offices in an event-study design. The US government is often touted as a pay equity success story. It has highly regimented administrative pay scales which theoretically limit the scope for homophily and demographic characteristics to affect pay. Even in this favorable setting, we find that female employees still benefit from the appointment of same-sex managers. In the years following the appointment of a new same-sex manager, female employees' residual pay grows by up to 1.5 log points more than it does for male employees following the appointment of a male manager (herein the "differential homophily" effect).[3] We show below that managerial homophily leads to higher promotion rates and occupational upgrading. These effects are economically significant and robust.

The breadth of the Federal civil service is a key advantage of our setting. The US federal civil service employs over 1 million people each year, spread geographically in close to 75,000

[1] Figure 1 plots the raw gender pay gap over time. It decreased from 22 to 11 log points between 1987 and 2014. Also shown is the pay gap adjusted for gender differences in observed human capital (education), occupation, and age. A sizeable gap, the vertical distance between the two curves (shaded area), remains unexplained. As the two curves evolve in parallel, the unexplained gap as a share of the raw gap increases over time: from 13% to 37% in Panel A and from 25% to 50% in Panel B. The precise samples are defined below.

[2] The female share of management in the US federal service increased from 24% in 1987 to 38% in 2014, while the female employee share remained fairly stable at around 48%. For comparison, women comprise 38% of middle managers in US corporations (McKinsey, 2019).

[3] We include traditional human capital variables as explanatory factors – age, tenure, education, and occupations. We also control for locality pay and offices. Pay grades and levels are excluded as we show they are a key mechanism through which same-sex managers affect disparate pay by gender.

unique local offices and across 500 different occupations with varying levels of female representation and pay.[4] This enables us to go beyond the existing literature, which typically focuses on a single firm or industry, and identify where same-sex managers matter most. Indeed, a novel finding is that the differential homophily effects vary with the nature of the employee's work; they are the largest in less routine jobs, even within education levels. Such workers may have less objectively measurable productivity, leading to more subjective evaluations. This result echoes Mastrorocco and Tesso's (2023) finding that personal connections reduced costly monitoring of remote US Civil Service employees in the 19th century.[5] Far from being an artifact of a bygone age, we document differential homophily effects across presidential eras: in fact, they have become more important as the female workforce became more highly educated and moved from clerical jobs into administrative careers (Goldin, Katz, and Kuziemko, 2006), and into less routine jobs.

Our paper thus contributes to the broad literature on the role of managers in worker careers by outlining the circumstances under which managerial homophily in the workplace is most consequential. Managers can impact workers' careers and compensation through several mechanisms, including direct effects on worker productivity (Adhvaryu, Nyshadham, and Tamayo, 2022), assignment of promotable tasks (Babcock et al., 2017), and managers' evaluation abilities and leniency (Frederiksen, Kahn, and Lange, 2020). Another important channel operates through workplace homophily,— the tendency of individuals to gravitate towards those like themselves. When interacting with people like themselves, individuals update their beliefs faster (Golub and Jackson, 2012), are more likely to make professional referrals (Zeltzer, 2020), are happier subordinates (Husain et al., 2021, and Grissom et al., 2012) and may exert more effort (Spenkuch, Teso and Xu, 2023).[6]

The most closely related paper to our study is Cullen and Perez-Truglia (2023), which estimates the effect of managers using data from a Southeast Asian firm, where gender roles are likely more traditional. It also uses an event-study design to document the promotion advantage of employees who are socially close to their immediate supervisors; such employees also tend to be of the same gender.[7] Cullen and Perez-Truglia (2023) document a significant male homophily

[4]The OPM data include the employees' agency, sub-agency, and duty stations – the physical locations where the employees work. We define a local office or workplace as the agency-sub-agency-duty station where the employee works. Their occupations range from equipment operators earning $20,000 per year to aerospace engineers earning over $120,000 per year.

[5]After technological advances reduced monitoring expenses, bureaucratic and merit-based hiring became the norm.

[6]Homophily can occur along any dimension. Most of the empirical employment literature focuses on gender, likely due to its ready availability in administrative data sets.

[7]That is consistent with Castilla's (2011) earlier finding that workers' performance evaluations improve when they rotate to a manager of the same-sex.

advantage, finding that "male managers promote a disproportionate share of male employees" (p.1704). In their context, female employees' career growth is stunned by differential treatment from their male supervisors and the relative ineffectiveness of female supervisors.

In contrast, we find female managers in the US civil service are highly effective at obtaining substantial pay and grade increases for both female and male employees. Like Cullen and Perez-Truglia (2023), we find that, under male managers, female employees experience slower residual wage growth than male employees. The combination of these two mechanisms makes same-sex managers more important for female employees' career growth. Differential promotion rates, particularly early in one's career, are a key contributor to the gender pay gap (Bertrand, Goldin, and Katz, 2010; Bronson and Thoursie, 2022).

This paper also contributes to the growing literature on the conditions under which women in leadership are more or less successful at improving women's pay. High level "diversity" initiatives, such as improving female representation on boards of directors, have been shown to have small if any, trickle-down effects on female employees' wages (e.g., Bertrand et al., 2019; Dalvit, Patel, and Tan, 2021; Maida and Weber, 2022).[8] Recent lab, field, and natural experiments suggest that critical mass is a key factor for women in leadership (e.g., Bagues, Sylos-Labini, and Zinovyeva, 2017; Born, Ranehill,and Sandberg, 2022) and could explain the mixed results in the literature. Our findings are consistent with larger differential homophily effects in settings where women have achieved a critical mass either at the co-worker or managerial levels. Our extensive workplace controls enable us to distinguish them from higher-level initiatives.

Finally, our central finding sounds a cautionary note for hopes that replacing performance pay and employee negotiations with algorithmic pay systems will close the gender pay gap. Our results show that administrative pay systems may simply provide the illusion of a cure. Management diversity, on the other hand, may improve pay equity across different pay-setting regimes. Consistent with this, Biasi and Sarsons (2022) show that moving from seniority pay to performance pay led to a re-emergence of the gender pay gap in Wisconsin teachers' salaries, an effect that was muted in schools with female principals or supervisors.

We exploit the appointment of new managers in an event study design.[9] We observe

[8] In corporate settings across several countries, studies have found a general positive impact of female leadership on female employees' wages and promotion rates. See, for Portugal: Cardoso and Winter-Ebmer (2010), for Norway: Kunze and Miller (2017), for Italy: Flabbi et al. (2019), and for Germany: Bhide (2019).

[9] We have access to all quarters of data and observe managerial changes every quarter, something not available in the synthetic data from the Office of Personnel Management obtained through the Barrientos et al. (2018) initiative.

these employees over the course of their federal careers, but do not observe the exact pairing of employees and supervisors and thus focus on changes in managerial teams within each office. Our event of interest is the appointment of a new manager at the office, and treatment occurs when the new manager is of the same-sex as the employee. Thus the same managerial appointment in a particular office will correspond to a same-sex treatment for some employees and to an opposite-sex treament for others. Our event-study sample comprises employees experiencing their first managerial team change.[10] Our identifying assumption is that whether the first new manager is of the same-sex as the employee is conditionally exogenous. We condition on a host of fixed effects, including office-year fixed effects, which also control for the effects of executives at the sub-agency and agency levels, individual-office fixed effects, and quarter-year fixed effects. This exogeneity assumption is supported by parallel pre-event trends between female and male homophily effects. Therefore, we argue that our differential homophily effects are plausibly causal.

Since a new manager may only impact a portion of the office's employees, our estimates will correspond to an Intent-to-Treat (ITT) estimate for any individual employee. Our preferred estimates focus on the 80% of offices with up to 5 managers and at least 10 employees (approximately 3 managers and 25 employees, on average). In those settings, a single managerial change results in a sizeable share of employees experiencing a change in supervision. As we focus on offices with progressively larger managerial sizes, we find that the magnitude of the differential homophily effects diminishes but retains statistical significance. We complement our event-study analysis with a TWFE-DiD of log pay residuals and several other outcomes, including GS grade, office switches, employee retention, and occupational changes.

Finally, we match our data on the share of same-sex managers with data from the 2008-2014 Federal Employee Viewpoint Surveys (FEVS), an annual survey of US federal employees. Consistent with our findings on pay, female employees' self-reported perceptions of job satisfaction, including pay satisfaction and opportunities for career advancement, are higher when the share of same-sex managers is above the median. These results are in keeping with recent studies finding a positive impact of female leadership on workplace climate (Tate and Yang, 2015; Lucifora and Vigani, 2022; Alan, Corekcioglu, Kaba, and Sutter, 2023).

The remainder of the paper is organized as follows. In Section II, we provide background on the evolution of pay setting in the federal civil service and the role of managerial assessments.

[10]We focus our estimation on the effect of the first new manager who arrives at the office during each worker's tenure to avoid confounding it with the effects of subsequent managerial transitions.

In Section III, we summarize the unique features of the longitudinal administrative data we use. In Section IV, we outline our estimation and identification strategy. Section V reports the event study and difference-in-differences estimates and discusses threats to identification and the robustness of the results. Section VI addresses alternate explanations, and section VII concludes.

II. Pay Setting in the US Federal Service

The Federal pay-setting system is codified in a series of bills. Because of the large number of employees involved, around 1.5 million, any pay increases also have considerable budgetary repercussions. As a result pay increases have involved direct Presidential intervention since the 1970s.[11] Below we provide a brief overview of key features of the Federal civilian employee pay-setting process partly based on Buckley (2009).

A. General Pay Schedule

The Pendleton Civil Service Act of 1883 created of a merit system for Federal employment. The Classification Acts of 1923 and 1949 linked salaries to duties and applied consistent standards across Federal agencies, creating the "General Schedule" (GS) of pay. It has been suggested that this bureaucratic system helps insulate the civil service from politics (Johnson and Libecap, 1989). Standardizing compensation should also limit the scope for demographic pay disparities.

The core of the GS classification system establishes 15 pay grades, which we observe. They are based on the position's difficulty, responsibility, and required qualifications (e.g. education). Some discretion in the assignment of initial grade at hiring can still be exercised through "superior qualification actions," which are more commonly given to men (OPM, 2014a). The base pay within each GS grade is set at one of 10 fixed levels, called steps, which we cannot observe.[12] Employees with acceptable performance progress through the steps following statutory waiting periods (usually one to three years). Quality Step Increases (QSIs), additional step increases for outstanding performance, can also be awarded, with a limit of one QSI per year. Employees in occupations with job ladders may advance non-competitively to higher steps and grades at fixed intervals, generally after at least a year. However, advancement to the highest grade that an employee is eligible for may be discretionary and competitive. Therefore one possible way for

[11] The Federal Pay Comparability Act of 1970 allowed for GS pay adjustments via executive action.

[12] Table A.1 in Appendix A displays the GS salary table for 2012 (rates frozen at 2010 levels) in the form of a matrix of 15 grades by 10 steps. It shows that increases along the steps (columns) range from 2.4% to 3.3%, while increases across the grades (rows) for step 1 range from 8.7% to 18.1%. In practice, as illustrated in Appendix Figure A.3., the basic pay for GS grades 5 and 12 show more than the prescribed 10 steps, owing in large part to the locality pay adjustment, which we discuss below.

gender pay disparities to emerge is through differentential performance evaluations and associated discretionary pay increases. There are several alternative pay plans to the GS schedule. They primarily cover highly specialized workers (e.g. air traffic controllers). They have different salary grids, but otherwise function similarly. Around 20% of all federal employees are paid under non-GS plans (10% in our estimation sample). Our main estimates are unchanged when we restrict the sample to GS employees.

Beyond job classification and career progression, the overall salary grid is also adjusted for the cost of living over time and across locations. The Federal Employees Pay Comparability Act (FEPCA) of 1990 introduced locality-based pay to address challenges in recruitment and retention in high-wage areas. It also set a timetable for making Federal pay more competitive with private sector wages for employees doing comparable work in the same locality.[13] We begin our analysis by stripping locality-year fixed effects from employees' pay to absorb the yearly variation in locality pay adjustments as explained in Section III below.

FEPCA also set up a process for yearly general increases in Federal pay. These pay adjustments are reviewed annually by Congress, which may legislate a different adjustment from the one authorized by the President. Political attitudes towards federal compensation have varied over time. During most of Clinton and Bush 43, Congress generally exceeded the President's adjustment, but the Obama Era was marked by pay freezes and small (1%) adjustments.[14] We thus expect presidential cycles to influence the level of general pay increases, which may affect individual employees' abilities to seek and obtain personal adjustments.

In summary, federal civil service employees are paid according to an administrative pay system. Grade increases, QSIs, and statutory increases in the federal pay schedule and locality pay adjustments can all result in salary increases. In the analyses below, we will control for the latter and other bureaucratic determinants to isolate the potential role of managers in helping

[13]Initially, there were just 29 locality areas; thirteen new locality areas were added in 2016, and there are currently 47 locality areas – regions where employees receive higher salaries. Beginning in January 1994, annual salary adjustments for most GS employees consisted of a general cost-of-living adjustment equal to the BLS Employment Cost Index (ECI) minus one-half percentage point and a local-specific adjustment of "no less than one-fifth of the amount needed to reduce the pay disparity with private industry salaried in the locality involved to 5 percent." Because some of the required locality adjustments exceeded 30 percent they were initially only partially implemented, and FEPCA plans extended into the 2000s (Table 1-1 of CRS (2010)).

[14]From 1994 to 2009 Congress approved amounts equal to or higher than the President's proposed adjustment. Alternative plans were submitted for pay increases effective in 1995-98, 2001, 2003-05, 2007, 2008, and from 2010 to 2017. In 2008, following a failed attempt at introducing pay-for-performance (PFP) President George W. Bush implemented a 3.5% pay increase for most federal employees via executive order. In contrast, under the "Campaign to Cut Waste," President Barack Obama implemented a 3–year pay freeze from 2011 to January 2014, with increases limited to 1% each year and again in 2015. GAO (2021) provides a comparison of pay locality increases proposed by the Federal Pay Council, the President's Agent and Congress' alternative plans for 2015 to 2019.

individual employees move along the pay grid.

B. The Role of Managers

Each manager supervises 5 to 10 employees, on average. In addition to assigning tasks and providing supervision, managers evaluate their supervisees' performance and recommend them for step and grade increases. One component of this process is providing performance ratings. Contrary to popular belief, the federal service does link financial rewards to performance, not just tenure. Between 1988 and 2003 employees with "outstanding" performance ratings received raises that were two-thirds of a percentage point higher than those with "less than fully successful" ratings and these ratings had measurable effects up to two years later (Oh and Lewis, 2013).

There is no minimum time under a supervisor before an employee can receive a performance rating, but the appraisal programs establish a minimum appraisal period. It is typically a year, but can vary by agency.[15] Specifically, managers have to implement the five phases of the performance management cycle: "1) planning work and setting expectations; 2) continually monitoring performance; 3) developing the capacity to perform; 4) rating periodically to summarize performance; and 5) rewarding good performance" (OPM, 2017). This rigorous and analytical appraisal process should dampen the effects of homophily (see Blair-Loy et al. 2022).

Yet, despite relatively constrained pay setting procedures, Federal pay has varied by race, sex, and locality more than can be explained by observed measures of qualifications (e.g., Lewis and Oh, 2009). Droganova (2018) shows that the gender gap in federal employees' wages and promotions is correlated with the share of female managers in the office. Specifically, it favors men in offices where all the supervisors are male and women in offices where all the supervisors are women. Women also start at a higher initial grade and progress faster in offices with all female management teams. Instrumental variables estimates exploiting manager retirements provide suggestive evidence in the same direction; however, that analysis is limited by the instrument's strength.

III. Data

A. Employment Data

The primary data source for the paper is quarterly administrative payroll data made public by the US Office of Personnel Management (OPM) under the Freedom of Information Act

[15]Off-cycle ratings can be given when a within-grade increase (WGI) decision is inconsistent with the employee's most recent rating.

(FOIA). We focus our analysis on civilian white-collar salaried permanent employees working for the federal government between 1982 and 2014.[16]

The OPM data provides details on each employee's federal employment history and pay, including their place of employment, given by agency, sub-agency, and duty station (office location). For brevity, we simply refer to the employee's agency-sub-agency-duty-station as their office.[17] The data also contains information on each employee's job, including their detailed occupation and employment type (e.g., full, part-time, salaried, or hourly). We follow employees over the course of their careers in the federal service, including any moves across roles, offices, and agencies. Importantly, the data includes a rarely available "supervisory status" variable (6 levels) to distinguish managers from employees. Finally, the data contains quarterly information on each employee's compensation, most notably the government pay schedule under which they are paid (herein called the pay plan), their grade in that pay plan, and their pay.[18]

We supplement the quarterly data with HR data collected at the time the employee was hired and when they separated from government employment. These data include the individual's age, education, and reason for separation from the federal government (e.g., retirement). These data also include information on prior federal service for employees returning to government service after a period in the private sector. Because these hiring data are only available beginning in 1982, we begin our sample then. Our aim is to follow workers as they progress through their careers. Therefore, we also impose a cohort restriction and only keep workers born in or after 1955 – the post-Pill cohorts.[19] A data appendix provides additional details on the construction of the OPM data and each of the variables we use. [20]

The data released by OPM does not have employee race or gender but does include first and last names for most.[21] Therefore, we imputed gender based on employees' names. OPM

[16]White collar workers form the overwhelming majority of employees in the Federal Civil Service, just under 10% were blue-collar workers in 2013.

[17]In the OPM data, the "duty station" is the physical location of the office where the employee works. Multiple federal agencies or sub-agencies can be located in the same physical office building. As we are interested in the employee's immediate office environment, we code each agency-sub-agency-duty station combination as a unique duty station and refer to it as an office.

[18]The workers in our data are paid under 112 separate pay schedules, but most workers (around 80% in the full data and 90% in the "All Offices" sample, which imposes the cohort, minimum office employee size, and minimum employee tenure restrictions outlined below) are paid under the GS schedule. We observe each employee's pay grade, but not their step within the pay grade.

[19]The full sample encompassing all workers is used to calculate office characteristics (e.g. number of employees, gender mix of employees and managers, the appointment of new managers, etc).

[20]The data appendix is available upon request.

[21]The Fedscope [https://www.fedscope.opm.gov/] provides the agency-level make-up separately by race and gender without intersectionality. Among the 20 largest agencies, the correlation between Black employee shares and female employee shares is 0.37.

redacted the names of all employees in sensitive occupations, primarily in law enforcement, regulatory agencies, or security roles. We were unable to impute gender for those employees and therefore exclude all employees in such workplaces (e.g., the Inspector General's office). We were able to successfully impute the gender of 70% of those whose full names were provided by OPM.[22] We exclude those whose gender we could not identify (see data appendix) from the employee sample, but we include all managers irrespective of our ability to impute their gender. The data appendix details the gender imputation and the excluded sub-agencies.

To ensure that we have enough observations to estimate office fixed effects, we restrict our sample to offices with at least 10 employees. We also restrict the sample to employees who work for the government for at least five years to ensure we observe them for multiple periods in the event study.[23] Both minimum office employee size and minimum employee tenure restrictions remove noise from the estimation but do not otherwise meaningfully affect the estimates below. We call the sample that imposes cohort, minimum office employee size, and minimum employee tenure restrictions the "All Offices" sample. The "All Offices" sample consisting of approximately 18 million quarter-year observations from about 250,000 unique female employees and 200,000 unique male employees across more than 10,000 offices is our primary sample when estimating log pay residuals with more precision, as discussed below. The "Up to 5 managers" sample is a sub-sample of "All Offices" that is limited to offices with at most 5 managers. It consists of 2 million quarter-year observations from approximately 80,000 unique female and male employees spread across almost 10,000 offices. In our event studies, we further restrict the sample to employees who have experienced the appointment of a first new manager, as explained in section III.B.

The key variables and sample characteristics from the "Up to 5 managers" sample, for all employees and those in the"Event study" subsamples are summarized in Table 1. Like in the broader labor market, there is a roughly 15% raw gender pay gap among the workers in our sample. The average female employee earns $50,000 per year and the average male employee earns roughly $7,000 more (Table 1A). A portion of the raw gender disparity can be explained by differences in human capital, such as education. The overwhelming majority of white-collar

[22]We imputed gender based on the frequency of the first name in male and female babies born in the employee's birth cohort in the Social Security Name files. Names were coded as being indicative of gender if at least 85% of babies born in the employee's cohort with the name had the same gender. We cross-validated our gender imputation algorithm with an extract of the EHRI-SDM data from 1992-2012 from Vilhuber (2018), including information on employee gender. In the sub-sample contained in both data sets, our gender imputation algorithm accurately classifies 95.11% of males and 99.24% for female employees.

[23]This last restriction implies that our data set corresponds to a continuously refreshed panel that omits high-frequency employee churning (those employed for less than five years). Thus, our gender gap measures will differ from the ones typically obtained from cross-sectional data.

federal employees have at least some college education, but male employees are slightly more educated (Table 1B).[24]

B. Managers

Women's presence in management grew alongside their employment shares during our study period (Figure 1). By 2014, 38% of managers were women, up from 24% in 1987. Despite these increases, women remain under-represented in management: in our data, women make up 45% of employees but only about 30% of managers (Table 1C). In addition to the inter-temporal variation, there is substantial variation in female management shares across agencies and across offices within agencies in each period, ranging from 0% to 100%.[25]

Our data on managers is extracted from the same archive of federal employee data used for workers. It is a distinct non-overlapping extract and includes managers whose gender we could not identify (about 18% of the manager sample).[26] We identify the new managers in each office by comparing the list of all employees designated as having managerial responsibilities in each office in each quarter. We define a new manager as a new person appearing on the managerial list in an office for the first time. These new managers are roughly split between employees who previously worked in the office in non-managerial roles and those who served as managers in other offices within the federal service (47% each).[27] Six percent were hired from outside the federal service. We refer to new managers not employed in a particular office in the quarter prior to their appointment as "external hires".

To avoid the confounding effects of previous managerial changes, our main event of interest is the first managerial change an employee experiences during their federal employment.[28] For the managerial transition to have a meaningful impact, employees need sufficient time with their initial new manager to be evaluated. We, therefore, only count an employee as having experienced a managerial transition if the employee has worked in the federal service for at least 6 months prior to the transition.[29] The "new same-sex manager" variable is equal to 1 if the employee

[24] In our data, 86% of male workers have at least some college education compared with only 79% of female workers. Male workers are also more likely to have graduate degrees.

[25] Appendix Figure A.1 displays the female management and employe shares for 12 large agencies in 1995 and 2014.

[26] Workers who become managers in the event window are excluded from the employee sample. Appendix Table A.2 summarizes the characteristics of managers. Managers and employees are defined using the supervisory status variable provided by the OPM. Managers are denoted with codes that meet definitions of Supervisor or Manager, Supervisor (CSRA), Management Official (CSRA), Leader, or Team Leader.

[27] See A.3 for percentages by gender.

[28] We have also estimated event studies using the arrival of the second manager as an event. The same-sex effects associated with the second manager, regardless of employee gender, are not substantial. The results can be found in Figure A.12 and Table A.21.

[29] Estimates are virtually indistinguishable if treatment is defined as the first new managerial appointment after 1 year of

and the first new manager at their office have the same sex, leaving opposite-sex managers and managers with unobserved sex in the base group.[30] Under this definition, around 40% of female and male employees experience a first new manager over the course of the sample period and approximately 40% of women's and 60% of men's first new managers are of the same-sex.

IV. Identification strategy

This section details the events we exploit and the rich specification our data allows us to estimate. Given the under-representation of women in management, our focus is the differential impact of managerial homophily on women's and men's pay. We leverage managerial turnover to estimate the changes in female employees' pay following the appointment of a new same-sex manager in comparison to the changes in pay in the male counterpart pairing. Our event of interest is the appointment of a first new manager, and treatment occurs for the sub-set of employees who are the same sex as their first new manager. We focus on the first managerial appointment to avoid confounding it with the effects of subsequent managers. The fully saturated model presented below allows us to estimate all four employee-manager pairings (two same-sex and two opposite-sex) simultaneously and derive any desired contrasts.

As explained in Section II above, federal pay setting involves several components that affect pay but are outside the scope of managers' control, such as employee characteristics and locality pay premia. We therefore employ a conditional exogeneity estimation strategy similar to the covariate adjustment strategy suggested by Freyaldenhoven, Hansen, and Shapiro (2019) who advocate correcting for potential confounds by first residualizing outcomes using covariates unaffected by the event.[31] We begin our estimation by constructing a log pay residual for each employee– the pay purged of the observable characteristics of employees, offices, and localities. We then conduct our event-study analysis using quarterly and yearly events. We also estimate managerial homophily effects across several sub-samples based on employee and office characteristics, and across presidential eras. In addition, we complement the event-study analysis with a two-way fixed-effects difference-in-differences (TWFE-DiD) analysis of the overall effect of the appointment of same-sex managers on residual log pay, promotions, retention (office moves), and occupational changes. We test the robustness of the estimates using the newly proposed estimators for staggered treatment effects (Borusyak et al., 2021).

service.

[30] We show below that our results are robust to excluding the managers of unobserved genders.

[31] We show below that our results are robust to estimating the event study in a single step without residualizing covariates.

A. Estimation of Unexplained Pay Variation

An important component of pay for many employees from 1994 onward comes from locality-specific pay adjustments for living standards in different localities, which have become more granular over time. As explained above, following FEPCA, locality pay adjustments became a substantial component of pay increases. Localities contain multiple offices, and the number of offices nearly doubled over our period. Because of frequent locality and locality premium changes, including office fixed effects alone would be insufficient. We, therefore, begin by using the "All Offices" sample to separately estimate locality-purged pay for each year.[32]

We then use the locality-purged pay to estimate pay unexplained by observable characteristics, again estimating the regression separately by calendar year for the "All Offices" sample[33]

$$\hat{w}_{iqy} = X'_{iqy}\beta_y + \theta_{dy} + \omega_{iqy}, \quad y = 1987, ..., 2014, \tag{1}$$

where $\hat{w}_{iqy}$ is the residual stripped of locality pay for individual i in quarter q and year y, X_{iqy} are observable characteristics, including age, education, occupation, a part-time indicator, and tenure.[34] Office fixed effects, θ_{dy}, capture the common features of offices, such as size and the female employee share, that are shared by all employees at the office in a particular year y. Since offices are defined at the agency-sub-agency-duty station level, as described in Section III, office fixed effects also control for the effects of executives at the sub-agency and agency levels. We denote the resulting log pay residual as $\hat{\omega}_{iqy}$. Estimating the effects of observables by calendar year corresponds to a model with a full set of interactions between the explanatory variables and years.

Figure 2 presents the residual pay from equation 1, averaged in each year by gender (solid symbols) for our sub-sample of offices with at most 5 managers. The distance between the average male and female residuals, which hovers between 1.9 and 3.1 log points, corresponds to the average unexplained pay gap each year. One potential mechanism behind these unexplained disparities

[32] Using the "All Offices' sample, we estimate locality pay regressions: $W_{iqy} = \theta_{ly} + w_{iqy}, \quad y = 1987, ..., 2014$, where W_{iqy} is log annual pay for an individual i in quarter q and year y, and θ_{ly} are imputed locality fixed effects in a regression for year y, as described in the Data Appendix-A.

[33] Out of an abundance of caution, we estimated equation 1 on the full sample to ensure we would have meaningful samples for each office year. Our point estimates and their precision are robust to performing the entire analysis on the event study sample (e.g. estimating equation 1) on the event study sample). See Figure A.5 and Table A.5.

[34] The part-time indicator is equal to 1 in each quarter-year in which the employee worked less than full-time. OPM defines part-time permanent workers as those working between 16 and 32 hours a week. The salaries provided by OPM are annualized full-time salaries, not pay, and do not mechanically fluctuate with hours worked. OPM notes a number of circumstances in which employees may choose to work part-time including illness and "to balance routine and/or unexpected work and family demands" (https://www.opm.gov/policy-data-oversight/hiring-information/part-time-and-job-sharing/). 16% of federal employees in the "All Offices" sample work part-time at some point in their careers.

is observationally equivalent male and female workers moving through the grid at different paces. Indeed, when we include the endogenous pay plans and grades (hollow symbols), the male and female residuals are much closer to each other. The endogenous pay grid hides the underlying gender pay gap. Thus, Figure 2 illustrates a key point: most (85%) of the unexplained pay gap over time operates through workers placement on the pay grid, a decision heavily influenced by their managers. Below we present evidence that new managers help employees move up the grid, therefore illustrating that placement in the grid has a discretionary component. In the case of race, Aneja and Guo (2022) show that employment segregation in the Wilson Era was effectively implemented through downward placement in the occupational grid.

B. Event study DiD

Our preferred event-study sample is restricted to employees who eventually receive a first new manager in an office with at most 5 managers prior to the managerial appointment.[35] We estimate the differential (DiD) event-study effects of a new manager of the same-sex as the employee, NSM_{idt}, on the log pay residuals, $\hat{\omega}_{itq}$, obtained from equation 1 in an event study design with fixed effects for year-quarter and individual-office (TWFE), that is, we allow each individual's fixed effect to vary when they switch offices.[36] Specifically, we estimate:

$$\begin{aligned}\hat{\omega}_{itq} = \delta_k \cdot \mathbb{I}^{Event} \cdot NSM_{idt} + \delta_k^f \cdot \mathbb{I}^{Event} \cdot F_i \cdot \ NSM_{idt} \\ + \alpha_k \cdot \mathbb{I}^{Event} + \alpha_k^f \cdot \mathbb{I}^{Event} \cdot F_i + \gamma_i + \lambda_q + \varepsilon_{itq},\end{aligned} \tag{2}$$

where $\hat{\omega}_{itq}$ denotes the pay residual from equation 1 for an individual i in event time t and calendar year-quarter q and where $\mathbb{I}^{Event}$ is a vector of event times.[37] The indicator variable F_i denotes female employees and is used in interactions (the first-order coefficients are absorbed by the individual fixed effects). Thus α_k and α_k^f capture the pay dynamics around a new manager's appointment. The indicator variable NSM_{idt} is equal to one when the new manager is of the same sex as the employee, thus δ_k and δ_k^f capture managerial homophily effects at event time

[35] Employees who have yet to receive their first new manager act as controls. In the 14% of cases where more than 1 manager arrives in the same quarter, we consider both new managers. It is possible, therefore, that both male and female employees could see a new same-sex manager arrive in their office at the same time, although this is rare. The estimates are robust to excluding all employees who receive multiple new managers in close succession, as shown in section V.B.

[36] About 40% of employees switch offices at some point in the event study sample. Estimates are robust to restricting each individual to a single fixed effect (see section V.B).

[37] The vector of event times includes 16 event-quarter indicators before and after the event in event studies with quarterly event times and four event-year indicators before and after the event in event studies with yearly even times. The event time prior to treatment, $k = -1$ is our base period and its coefficient is set to zero. Event-quarter indicator $k = -17$ and event-year indicator $k = -5$ are absorbing indicators equal to one for periods preceding quarter $k = -16$ and year $k = -4$. Event-quarter indicator $k = +15$ and event-year indicator $k = +4$ are absorbing indicators equal to one for periods following quarter $k = +15$ and year $k = +3$. We report estimates for event quarters from -16 to $+15$ and event years from -4 to $+3$ and omit the lower and upper absorbing event times in the figures.

$k = t$. The fixed effects γ_i and λ_q denote individual fixed effects that vary with office moves and calendar year-quarter fixed effects, respectively. Event years correspond to four consecutive quarters prior to and following treatment.[38] The event study residual is denoted by ε_{itq}.

An important advantage of this specification is that it allows us to easily recover the dynamics of all four possible pairings on log pay residuals. The total effects of a new female manager on female employees' residual pay are the sum of all coefficients: $\delta_k + \delta_k^f + \alpha_k + \alpha_k^f$ (the female homophily effects). The analogous effects for male employees are $\delta_k + \alpha_k$ (the male homophily effects).[39] The differential effects of homophily on female employees is the difference in the homophily effects on female employees minus the effects on male employees: $\delta_k^f + \alpha_k^f$.[40]

As explained earlier, we focus on each employee's first managerial transition to obtain as clean and comparable an estimate as possible. The effects of a same-sex manager correspond to the effect of an appointment of a same-sex manager at the employee's office. They could affect the office as a whole or only the employees they directly supervise. One advantage of this ITT set-up is that it excludes any reshuffling of individual supervision assignments within an office due to manager-employee match quality, productivity, or similar confounding sorting.

V. Event-study DiD Results

We begin by presenting our main results for our preferred event-study sample. We then investigate heterogeneity in treatment effects in order to understand when and for whom same-sex managers have the greatest impact on pay. This is followed by a discussion of the robustness of the estimates and of potential threats to identification including balance of the observed characteristics of employees and offices by sex of the new manager and analyses of the sensitivity of the estimates to key specification and sample choices.

[38] Depending on when treatment occurs, event years might not be equivalent to calendar years. For example, if an office receives a new manager in the second quarter of the year 2000, the event year 0 is defined as 4 quarters prior to and including the event quarter, thus including the last two quarters of 1999 and the first two quarters of 2000. The first event year following treatment is then captured by the last two quarters of the year 2000, and the first two quarters of the year 2001, and so on.

[39] The opposite sex effects on female employees omit the same-sex coefficients and are $\alpha_k + \alpha_k^f$, while those on male employees also omit the female interaction coefficients leaving α_k.

[40] We can also compute the effect of female managers on the gender pay gap as: $\alpha_k^f + \delta_k + \delta_k^f$, and the effects of male managers on the gender pay gap as: $\alpha_k^f - \delta_k$. Thus the differential effect of female versus male managers on the gender pay gap is: $2 \cdot \delta_k + \delta_k^f$. The intuition behind the expression is that when the female managers' effect on male pay is turned on the homophily effect is absent. The total effects of new managers on the gender pay gap would account for all four cases, weighted by their relative frequency, which varies over time.

A. Main Results

Figure 3 depicts our main event study results: the top panels display event study estimates using the more detailed quarterly event times, and the bottom panels use yearly event times, our preferred more concise specification.[41] The solid orange line plots the residual pay of female employees before and after the appointment of a new same-sex manager ($\delta_k + \delta_k^f + \alpha_k + \alpha_k^f$). The blue line depicts the analogous residual pay curve for male employees who receive a new same-sex manager ($\delta_k + \alpha_k$).[42] Table 2 reports the corresponding point estimates with standard errors (clustered at the office level). All employees, male and female, are on an upward pay trajectory early in their careers when new managers arrive (Table 2, column 3). The residual growth in pay (the new manager coefficients) in the pre-period is the same for male and female employees and is independent of the new manager being of the same-sex. In the period prior to the new manager's arrival, the α^f, δ, and δ^f coefficients are negligible and insignificant (Figure A.2A and Table 2). The differential homophily effect is the vertical distance between the two curves (plotted in Figures 3B and 3D with standard errors). It nets out any pay growth around the arrival of new managers (event time effects) and is a cleanly identified treatment effect.[43]

Our first novel finding is that women benefit from the appointment of a new same-sex manager at their workplace (Figure 3A and 3C) and that new same-sex managers are more important for their pay trajectories than for men's. Following the appointment of a new same-sex manager, female employees' pay grows 1.5 log points more than male employees' (Figure 3B and D).[44] It is important to note that female managers are more successful than male managers at improving the pay trajectories of all employees. This result contrasts with the often feared negative impacts of female managers on male pay. This is in contrast to Cullen and Perez-Trugia (2023) on the impact of managers on the pay grades of their employees in a Southeast Asian banking firm. They find that "male employees do better under male managers than under female managers" (p. 1728). In both our setting and theirs, male managers are not gender-neutral in promoting the careers of their employees.

[41] Figure A.2A graphs the raw coefficients. Figure A.2B provides the resulting estimates for the two same-sex cases and Figure A.2C contains the analogous estimates for the two opposite-sex cases. Female managers get larger raises for all their employees than male managers.

[42] The pay growth following the appointment of these new managers is sizeable, consistent with grade increases. The event-time indicators, the α_k, capture a pre-existing pay growth pattern common to male and female employees. The homophily gender gaps we focus on display no such pre-trends.

[43] A new same-sex manager is also a new manager. We, therefore, focus on the total effect that includes the differential effect on female employees of both new managers (α^f) and same-sex managers (δ^f). This is a conservative choice. The estimates are more than twice as large if one only considers the same-sex female employee interaction, δ^f (Table 2 column 2). A positive estimate indicates the homophily effect on employee residual pay is larger for female employees.

[44] Estimates are nearly identical in the GS pay plan subsample (Figure A.4).

Educational attainment is a key factor in employees' initial GS grades and promotion ceilings.[45] Figure 4A and 4B present the estimates splitting the sample into employees with less than and at least a Bachelor's degree. The differential impact appears to be driven by more educated employees. The same-sex effect for female employees with at least a Bachelor's degree is roughly 3 log points higher than male employees' same-sex effect. There is no gender difference in the same-sex effect for those with less education, and the male homophily effect is similar across education groups (Table B.2). This could reflect that highly educated employees are eligible for a wider range of pay grades and benefit from larger pay increases by moving up a grade (e.g., 16 to 18 log points for each grade increase from GS-12 to GS-15). It is also possible that discretion plays a larger role in their duties and evaluation.

To gain insight into these competing mechanisms (scope vs discretion for pay increases), we estimate the new same-sex manager effects for those whose work involves more or less routine cognitive tasks. Managers may have less latitude to evaluate the performance of workers who perform codified work, such as compliance officers, than that of workers whose work is less routine, such as occupational therapists. To that end, we construct a custom occupational crosswalk between the 4-digit federal service occupation codes and the 7-digit O*NET occupation codes. We then use Acemoglu and Autor's (2011) "routine cognitive" scores (see Data Appendix–B). We coded occupations in the federal service with median or above-median routine cognitive scores as being more routine jobs, and those below-median were coded as being less routine jobs.[46]

Figure 4C and 4D show less routineness amplifies the education results: the differential homophily effect on women comes from those in jobs with less routine tasks. Another substantive finding is that, even within education groups, the differential homophily effects are driven by women in jobs with less routine tasks (Figure 5), even among employees with less than a Bachelor's degree. Similar reasoning applies to comparing occupations in which employees have considerable discretion or independence in how they perform their work and those in which they do not. In Appendix Figure A.9, we compare the differential impact of managers across lower and higher intensity levels of four task measures. We find differential impacts that decrease in magnitude from routine cognitive (base measure) to non-routine cognitive analytical (still

[45]Individuals with a high school diploma and no additional experience typically qualify for GS-2 positions, those with a Bachelor's degree – for GS-5 positions, and those with a Master's degree – for GS-9 positions.

[46]White-collar occupations in the federal service have routine cognitive scores ranging from little routineness -2.7 (e.g., occupational therapists) to a lot of routineness 2.1 (e.g., nuclear medicine technician), with a median of zero (e.g., library technician or research laboratory mechanic). Note we do not observe within-occupation changes in cognitive routineness; changes over time arise as the share of non-routine occupations increases. For example, when clerical jobs are replaced by administrative support positions.

large and significant), non-routine cognitive interpersonal and independence (smaller and less significant).[47]

Over the period we study, women's education has increased considerably (Black and Juhn, 2000) as did the share of non-routine cognitive occupations (Acemoglu and Autor, 2011). The female management share has also increased. During the Reagan-Bush Era, 72% of men's new managers were men, while only 39% of women's new managers were women. By the Obama Era, male employees still received disproportionately more new male managers, but the gap had narrowed to 65% and 47%, respectively. Figure 6 presents our estimates by presidential era: Reagan and Bush 41 (1987–1992), Clinton (1993-2000), Bush 43 (2001–2008), and the first six years of Obama (2008-2014).[48] At first blush, the effects of female homophily seem to steadily increase across the eras, but could be the result of the above demographic and employment changes.

The differential effect of having a same-sex manager on female and male employees evolves over eras alongside female employees' places in the federal workforce, linked to changes in women's education and jobs As shown in Figure 6, estimates are noisier in the earliest era (Reagan-Bush 41), likely due to the initial seam of our sample. Male employees appear to benefit relatively more than female employees from having a same-sex manager. The homophily effects converge in Clinton Era and then are significantly stronger for women in the Bush 43 Era. They remain positive in the Obama Era, but the overall effects are dampened for everyone, likely due to the 2011-2014 pay freeze that severely constrained managerial discretion.

To disentangle composition effects from actual changes in homophily premia across eras, Figure 6 also includes the presidential era estimates for workers in less routine occupations, the group driving the earlier effects.[49] Among those in less routine jobs, the overall and differential homophily effects are fairly stable before 2001 but show larger increases in the Bush era. This result is consistent with Deming (2017) who finds increasing returns to non-cognitive skills, in particular social skills, in the 2000s. It also suggests that the growth in the differential homophily effects across eras reflects job changes among female employees rather than changes in managerial homophily effects.

Next, we ask if the effects of same-sex managers vary with the composition of the office

[47] See Data Appendix - O*NET Task Data for a description of the precise O*NET measures used to construct the indexes.

[48] The Reagan and Bush era runs into the seam of our data and has a smaller sample compared to the later presidential eras: 4,205 compared with 6,670 in Clinton, 14,823 in Bush 43 and 8,593 in Obama.

[49] Appendix Figure A.10 similarly singles out employees with at least a college degree.

(Figure 7), which impacts women's homophily effects far more than men's. We use the initial same-sex share (from the first two-quarters of employees' tenure) to split the sample into employees in offices with an above and below the median share of same-sex employees (47%) . The male homophily effects are unaffected by the composition of their offices. In contrast, the female homophily effects are much larger in offices with above median initial same-sex (female) employee shares.[50] A similar but less stark pattern emerges when one compares the homophily effects across offices with above and below-median initial same-sex manager shares (46%). New same-sex managers increase female employees' pay the most when they are appointed in offices with above-median initial same-sex (female) manager shares. Once again, the effects are largest for those in jobs with less routine tasks (Figure A.8). These results are consistent with previous research (e.g., Flabbi et al., 2019) finding that female managers are relatively more effective at improving women's pay in more female-friendly environments.

In order to gain more insight into the mechanisms underlying our results we next ask whether the effects vary with the type of manager appointed. Gender norms around women's role in the workplace have shifted across cohorts, leading one to wonder whether younger generations are more immune to homophily. While we did not find substantial differences in effects across presidential eras above, we nonetheless reproduce our estimates by manager age. We compare those who are 35 or younger when they first become managers (the first quartile) to those who are older than 35 (Figure 8B). The estimates for the former are less precise, but the point estimates are indistinguishable, suggesting that generational change will not eliminate the gender pay gaps.[51] This also suggests younger managers in the federal civil service are likely different from "fast track" managers in the private sector (Minni, 2022).

Finally, we compare the effects of new same-sex managers who are new to both the role and the office (external appointments) to those who worked in the office prior to their managerial appointment (internal appointments). Roughly half of the new managers we observe are external appointments. External appointments maybe more arms length and have fewer social ties with their employees, at least initially. Consistent with recent studies demonstrating the importance of social ties in the workplace (Cullen and Perez-Truglia, 2022), our estimates of differential homophily effects are noticeably smaller when the new manager is an external hire (Figure 8A),

[50] As a result, the differential homophily effects are positive in above-median same-sex share offices and negative in below-median same-sex share offices.

[51] The average and median new manager is approximately 45 years old. We failed to find any statistically significant differences across a number of manager age splits including those that isolated the oldest managers.

although the differences are not statistically significant.

A disadvantage of our sample is the inability to match employees and direct managers. Figure 8C explores the sensitivity of our results across offices of different managerial sizes. The estimates decrease in magnitude as the number of managers increases. This is what one would expect in a dose-response as a new same-sex manager in a larger office likely directly affects a smaller share of the workers. This dose-response relationship is inconsistent with the effects stemming from some broader policy goal and is more consistent with managers having direct effects on the employees they supervise. Some new managers replace former ones, while others expand the team. To distinguish between these effects, we focus on offices with a single managerial change. The differential homophily effects (Figure 8D) in this subsample are similar to our main results. We find that managerial additions appear to have larger effects than managerial replacements, but they are not statistically different.

B. Threats to Identification and Sensitivity of Estimates

Our estimation strategy uses management turnover as a natural experiment. It is natural to ask whether the offices where male and female managers are appointed are comparable before their appointment. If, for example, women were more likely to be appointed as managers as part of a remediation scheme in offices with worsening gender gaps, our estimates would conflate the effect of same-sex managers on women with the circumstances of their appointment. Fortunately, that does not appear to be the case. The gender pay gaps are stable before a new manager and a new same-sex manager is appointed (the coefficients on the female employee interactions are 0 in the pre-event period, Table 2). It is also reassuring that external hires are not driving our results, as one might choose to bring in new leadership from outside the office when attempting to correct a problematic workplace culture or environment (Figure 8A).

Another possible concern is that the appointment of female managers was part of some higher level gender initiative that also led to improvements in women's career trajectories. If that were the case, we might expect to see systemic effects from all female managers on all female employees. Instead, our effects are driven by offices that already have a critical mass of female managers and employees (Figure 7) and by employees in occupations where managerial attention and support are likely to be most important—those with less routine tasks. Additionally, the dose-response pattern we see as managerial team size varies is more consistent with the direct effect of managers.

One can never prove the absence of relevant unobserved variables, but we offer balance tables showing both employees and offices with new male and new female managers and the workers with new same and opposite-sex managers appear comparable in the preceding year (Table 3). Female employees who get new female managers have the same salaries, unexplained pay gaps, education levels, and federal job tenure as female employees who get new male managers (Table 3, columns 1 and 2, and columns 5 and 6). One notable exception is the share of female employees in the office – female managers are appointed at offices that have more female employees. This fixed and stable difference that should be absorbed by the office fixed effects from the yearly pay regressions and not affect the event-study estimates. Additionally, while the stock of existing male and female managers differs modestly on observables, most notably education, and birth cohort, newly appointed male and female managers have indistinguishable observable characteristics (Table A.2).

Consistent with the appointment of new male and female managers being independent of trends in their offices, our estimates are robust to numerous combinations of controls and fixed effects. Panel A of Figure 9 reproduces the main differential homophily effects from Figure 3D alongside estimates from specifications that include individual fixed effects that are no longer allowed to vary when individuals change offices (as they were in the base specification) and estimates that entirely exclude office fixed effects in the estimation of log pay residuals. The overall pattern of results is unchanged across these alternative specifications, and the estimates are similar.

Roughly 40% of employees in the event-study sample change offices at some point in their government service. While getting a new manager may be a motivation for changing jobs, our results are not driven by office moves. The effects are largely indistinguishable when the sample is restricted to employees who only work at one office during their careers (Figure 9B), and as shown below, the arrival of same-sex managers has, at most, a negligible effect on the rate of office moves. The estimates are also robust to excluding part-time workers and those with any part-time spells during their careers.[52] The estimates are also robust to using the event-study subsample for both stages of the estimation (Figure A.5), and to collapsing the first and second stages into a single estimation (Figure 9B).[53] Figure 9C shows that our results are robust to

[52]There are notable gender differences in the incidence of spells of part-time work: 12% of employees have at least one spell of part-time work during their federal careers in the event-study sample (16% of female employees compared with only 7% of male employees). The estimates are virtually identical when the sample is restricted to employees who only work full-time throughout their federal careers.

[53]Even the standard errors from the single step estimation do not meaningfully differ in the single step and two estimations

the exclusion of managers of unidentified gender. Finally, Figure 9D shows that our homophily results vanish in the placebo where we match employees and managers on the basis of odd or even birth years.

C. Mechanisms: Grades and Occupations

Compensation is an aggregate measure of workers' advancement. We next examine the direct effect of same-sex managers on the components directly affecting employee pay. In the highly structured federal system, managers can impact pay through merit increases in pay steps and expedited grade increases (our proxy for promotions). Managers may expand effort directly obtaining pay step or grade increases for their subordinates or direct them to the occupational upgrades required for such increases. We next test whether employees receive more pay grade increases and experience more occupational changes following the appointment of a new same-sex manager at their office.

Step increases can occur in consecutive years, but occupation and pay grade changes are less frequent. Because each government pay scale has a different number and spacing of pay grades, we focus this analysis on the 90% of employees paid according to the GS pay scale. The average GS-pay-plan employee in our sample experiences just over three pay grade increases and 0.75 occupational changes during the observation period. We therefore estimate the cumulative effect of same-sex managers on promotions using a two-way fixed effects difference-in-differences (TWFE-DiD) approach. As in the event studies, we limit the sample to those receiving a new manager during the observation period. We present estimates for residualized pay for comparison.[54] For example, we estimate the impact of same-sex managers on residualized pay grade, P_{itq}, in TWFE-DiD among employees under the GS-schedule:

$$
\begin{aligned}
P_{itq} = {} & \delta Post_{it} \cdot NSM_{idt} \cdot + \delta^{f} Post_{it} \cdot F_i \cdot NSM_{idt} + \alpha Post_{it} + \alpha^{f} Post_{it} \cdot F_i \\
& + \gamma_i + \lambda_t + \epsilon_{itq},
\end{aligned} \tag{3}
$$

where F_i is an indicator that equals 1 if the employee is female and NSM_{idt} is an indicator that equals 1 if the employee's first new manager is the same-sex as them and 0 otherwise. $Post_{it}$ takes on the value 1 after the new manager arrives and 0 before (replacing the event time indicators). The individual fixed effects, γ_i, absorb the first-order effects of F_i. We include both the new

(Table B.14, column 5).

[54] For comparability with the event-study, the log pay residual is the remainder after controlling for location, age, education, tenure, part-time status, occupation, and office FEs in yearly regressions. GS grade is residualized using the same controls.

manager effect, α, and quarter-year fixed effects, λ_t, because employees, even in the same office, get treated at different times throughout the year. The pre- and post-treatment periods include all years from 1987 to 2014.

Table 4 presents the resulting estimates for six outcomes of interest among employees at offices with up to 5 managers. In addition to the estimated coefficients of the arrival of a first new manager, α and α^f, and the estimated coefficients of the same-sex manager treatment, δ and δ^f, we present the sum of estimates (with standard errors) of female managerial homophily, $\alpha + \alpha^f + \delta + \delta^f$, male managerial homophily, $\alpha + \delta$, and of the difference between the two – differential homophily, $\alpha^f + \delta^f$. We confirm the robustness of our estimates to the recently identified issues with parallel pre-trend assumptions in staggered TWFE-DiDs (see, for example, Callaway and Sant'Anna, 2021, and Borusyak, 2021).[55] We use Borusyak's (2021) heterogeneous effects estimator to compute estimates separately by sub-group. Specifically, we compute the same-sex manager effect separately for male and female employees. The resulting estimates and their difference are in Table 4, columns 3, 6, and 9.

For reference and comparability with our earlier estimates, we begin by providing estimates for the GS pay scale employee sub-sample using the pay residual variable used in the earlier event study analysis (Panel A). Mirroring the event study results, the TWFE-DiD estimates show that female employees' residual pay increases roughly 1.5 log points more than male employees' pay following the appointment of a new same-sex manager (1.4 log points with TWFE and 1.6 log points with Borusyak's heterogeneous treatment effects estimator (Table 4, columns 2 and 3). The inclusion of occupation in the controls leads to more conservative estimates. Our estimated effects are indeed almost 1 log point larger (Panel B) when we do not control for it, likely an overestimate given that pay varies by occupation. This comparison emphasizes the need to consider occupational changes as an outcome variable.

Next, we turn to the effect of new same-sex managers on pay grade. Once again, female employees see faster progression following the appointment of a new same-sex manager – female employees see their residual GS grade increase by 0.15 more (roughly 10% of a standard deviation) than male employees who receive a same-sex manager (Table 4 Panel C). Reassuringly, TWFE and Borusyak's heterogeneous effects method produce virtually identical estimates. These grade changes appear to be responsible for over 60% of the differential increase in women's residual

[55] Borusyak's (2021) DiD estimator is unbiased and efficient in staggered DiD settings, including those in which the already treated observations serve as problematic controls in two-way fixed effect estimation.

wages following the appointment of a same-sex manager (Table A.19).

One way employees can increase their pay grades is to move into new roles with additional responsibilities or upgrade their skills. Managers could provide guidance about such opportunities, and favorable assessments could facilitate occupational upgrades; they could also simply reclassify existing positions. We cannot observe the exact tasks of each worker, but we observe their detailed occupation (4 digits) and occupational status.[56] To that end, we estimate Equation 3 replacing the dependent variable with an indicator equal to one when the worker's occupational code changes. We find that female employees experience significantly more occupation code changes overall and in comparison to male employees following the appointment of new same-sex managers (Table 4D and 4E). Female employees experience approximately 0.10 more occupation category changes and 0.04 more 4-digit occupation changes after the appointment of a new same-sex manager than men (the average number of occupation category and 4-digit occupation changes observed in our data are 0.26 and 0.33, respectively).

Getting a same-sex manager has a larger impact on women's careers, and this is reflected in employee retention. Female employees are significantly more likely than their male counterparts to still be working in the Federal government 3 years after receiving a new same-sex manager (Table A.20), although the effect is small.[57] There is no meaningful increase in office moves within the federal service following the appointment of new same-sex managers, all the point estimates are less than 0.01 on a mean of 0.32 (Table 4F).

D. Employee Sentiment

Managers' roles in workplaces extend beyond formal employee performance reviews. We seek to test whether employees' subjective views align with our objective finding that women's presence on management teams improves women's career trajectories. The Federal Employee Viewpoint Survey (FEVS) is administered by OPM and made mandatory by the National Defense Authorization Act in 2004. The Act specifies that the employees' survey is to assess leadership and management practices and provide a representative snapshot of employee experiences and perceptions of agency management (OPM, 2014b).[58] It is regularly used by the government

[56] We observe the following broad occupation status: Professional, Administrative, Technical, Clerical, and Other white-collar occupations. Moves from a clerical to administrative jobs would present opportunities for further increases in pay.

[57] To study exits from the federal service, we collapse the data into two snapshots: tenure 4 quarters prior to the new manager's arrival and 12 quarters after. We then estimate a two-period DID shown in Table A.20, which also contains estimates for all of the outcomes discussed above. These results are similar to the uncollapsed DiD.

[58] The FEVS takes an annual probability sample from the population of permanent federal employees. Each year's sampling frame is designed to produce results that are representative of the federal workforce overall, and at the agency and sub-agency

to evaluate human resource policies and programs. Each iteration of the survey contains demographic information on the respondents along with their responses to questions about their workplace experiences.

We link our OPM data on women's presence in management teams to FEVS data to examine the relationship between women's presence in management and employees' experiences in the workplace. Because the FEVS is an anonymous survey, we cannot link individual respondents to their payroll data. Instead, we link each employee's survey responses to the characteristics of the management teams at their agencies. For comparability with the preceding event-study analysis, we restrict the sample to the 29 agencies that appear in that sample and in the OPM survey.[59] The FEVS Public Release Data Files began in 2006. We use the 2006-2014 surveys in the analysis that follows.

For conciseness, we present the results for six FEVS items that speak to management effectiveness: "(1) Considering everything, how *satisfied* are you with your *job*? (2) Considering everything, how *satisfied* are you with your *pay*? (3) How satisfied are you with the *recognition* you receive for doing a good job? (4) My supervisor/team leader provides me with opportunities to demonstrate my *leadership skills*. (5) Supervisors/team leaders in my work unit support *employee development*. (6) Prohibited Personnel Practices (for example, illegally *discriminating* for or against any employee/applicant, obstructing a person's right to compete for employment, knowingly violating veterans' preference requirements) are *not tolerated*" (OPM, 2014b).

Table 5 presents OLS estimates of employee sentiment regressed on indicators for the respondent being a female employee, the majority of her agency's management being of the same sex, their interaction and agency and year fixed-effects. The dependent variables are on a 5-point scale, with 5 indicating the most satisfaction or agreement. The regression estimates show a significant female disadvantage across the survey questions, with the notable exception of pay satisfaction, which, although negative, is not significant. As in the event studies, the estimates show a differential homophily effect for female employees. Having a high share of same-sex managers is more important for female employees than for men. These results complement our event-study estimates showing that same-sex managers matter more for women's pay and careers. Importantly, they show the importance of a critical mass of women in management for intangibles

levels. Originally administered as the Federal Human Capital Survey (FHCS) in 2002, it was administered bi-annually until 2010, when it became an annual survey. The 98-item survey covers eight topic areas: personal work experiences, work unit, agency, leadership, satisfaction, work/life, and demographics. Additional information on the FEVS is available at: https://www.opm.gov/fevs/about/

[59] We use the survey weights provided by OPM (OPM, 2014b).

such as leader opportunities and employee development.

VI. Discussion

We estimate the causal effect of differential managerial homophily on the pay of men and women, purged from deterministic (e.g., locality adjustments) and human capital (e.g., education) considerations. We argue that for any particular employee in the office, whether the first new manager is of the same sex as the employee or not is as good as random. This assumption is supported by the parallel trends in the pay trajectories of female and male employees prior to the arrival of their new manager and the balance in observed characteristics of the employees who received same and opposite-sex managers. We also show that new female and male managers are comparable and that they are assigned to similar offices (Table A.2 and Table 3). These tests help alleviate concerns that new managers could be appointed as part of a remediation scheme targeting problematic workplaces. Indeed, the gender pay gaps are found to be stable prior to the appointment of new same-sex managers, as evidenced by the zero coefficients on the female employee interactions (Table 2). The parallel pay trajectories prior to the event also do not show any sign of an Ashenfelter dip.

Further, the treatment effect heterogeneity we observe is inconsistent with any potential remediation scheme. We do not find that managers appointed from outside of the office, or in offices with few female managers, or who are younger give higher raises to female employees. Pay raises appear larger when managers are internally promoted (Figure 8A), when there is a critical mass of employees or managers in the office (Figure 7), but not when they are relatively young (Figure 8B). Lastly the dose-response pattern (Figure 8C) is consistent with managers having direct effects and is not what one would expect to see from higher level initiatives. Our results are more consistent with the gender homophily hypothesis we propose at the outset. In addition, employees whose jobs are less routine benefit from larger pay increases across education levels (Figure 5) and Presidential eras (Figure 6). This suggests that managers can exercise more discretion in these cases.

The range of the effects of managerial homophily on residualized pay appears large but its magnitude is consistent with pay grade increases. Indeed when we explore the mechanisms by which new managers raise pay, our TWFE-DID analysis confirms larger pay grade increases for women getting new same-sex managers, and increases in the probability of occupational upgrading (Table 4). We do not know what motivates new managers to expend effort to improve

their employees' pay. An important issue in the literature on the US federal service is employee retention we find modest effects on retention and no meaningful effect of managerial changes on office switching within the government (Table 4). Admittedly, it is limited by the fact that we cannot follow workers after they leave the federal service (unlike Foster *et al.*, 2020). We have chosen to assess the impact of immediate supervisors and, thus, cannot speak to the potential effects of higher-level management initiatives, which are beyond the scope of the paper. Nevertheless, many expected larger effects during the Democratic Obama Era. We did not find that to be the case, but that may be due to the pay freezes implemented during that era.

Some statistical theories of discrimination emphasize the noisiness or bias in the productivity signal of the minority group by comparison with the majority group to explain the pay or promotion differentials. These theories would be compatible with the fact that female managers sort through the noisiness of the signal for all workers better than male managers (Figure A.2). This homophily differential is heightened when employees work in less routine jobs (Figure 4).

VII. Conclusion

The US Federal civil service provides an advantageous environment to study the potentially gendered impact of new managers on the pay of white-collar subordinates. A wide-ranging and well-documented set of rules and legislation constrains federal pay setting, with compliance closely monitored by a strong union and large bureaucracy. Yet, federal pay varies more with gender and race than can be explained by observed qualifications (Olson et al, 2000; Lewis and Oh, 2009; Oh and Lewis, 2013). We show that the demographic diversity of managers plays a role in these disparities.

We use over thirty years of rich longitudinal data containing over 15,000 employees' first managerial team changes to estimate the causal effect of managerial homophily on employees' career trajectories. Our event-study results show that the appointment of the first same-sex managers has substantial effects on women's pay. The differential homophily effect on residual pay is approximately 1.5 log points. This is roughly equivalent to half a step increase within a pay grade and is close to half the average residual gender gap of 2.7 log points (Table 1, row 3). The movement of women into managerial roles has reduced the homophily imbalance: At the end of our period, 48% of female employees' new managers were women, up from only 36% at the beginning. Because these homophily effects and the accompanying occupational upgrades happen early in female employees' careers and have become more frequent over time, the long-

term impacts on the gender pay gap are likely larger.[60] Our estimates are robust to alternate samples, specifications, controls, fixed effects, and treatment definitions.

Our analysis of treatment heterogeneity makes a new and important contribution. We identify the circumstances under which managers are most effective at increasing employees' pay. The effectiveness of managers is more variable than previously thought; it is inextricably linked to the nature of jobs. We find substantial treatment effects heterogeneity by occupational routineness, even within education level. We find the largest effects for women in occupations with less routine tasks—where there is potentially more scope for discretionary evaluation. The homophily gender differentials are also larger when newly appointed managers come from internal appointments, who may have more established social ties with their workers. As the Presidential era analyses illustrate, managerial homophily has grown in importance in women's career trajectories as they have gained more education and occupations with less routine tasks have become more prevalent. Artificial intelligence is likely to heighten the spread between less routine and more routine jobs in the future.

We confirm the differential promotion (pay grade) mechanism behind these residual pay increases by directly estimating the effect of homophily on pay grade increases. Following the appointment of a first new manager, female employees receive significantly more pay grade increases if that manager is of the same sex. The actions through which female managers speed the progression of female employees are beyond the scope of this paper and are a fruitful topic for future research. Such actions could include assigning "promotable" tasks, making employees more likely eligible for performance-related pay increases. It is also possible that female employees are more effective at self-promotion or more likely to pursue pay increases when they have a female manager.

These findings sound a cautionary note for studies that estimate pay disparities conditional on pay grade or algorithmic score or job title. When the inputs into an algorithmic or deterministic pay setting are the product of discretionary decisions by human actors, the adoption of algorithmic or deterministic pay settings will formally incorporate these biased disparities. Then the adoption of these schemes will mask and deceptively rationalize disparities instead of eliminating them. That is indeed the case here. Figure 2 plots the unexplained pay gap with and

[60] Formally estimating the total impact would require a structural dynamic model that accounts for the cumulative effects of each of the managers each employee is exposed to through their entire federal career. This is beyond the scope of this study.

without accounting for workers' potentially endogenous pay grades. It shows that the assignment of men and women to pay plan grades appears to "close the gender pay". Most (85%) of the unexplained pay gap over time operates through workers' placement on the pay grid – a decision heavily influenced by their managers and their gender.

Our findings also provide insights into the effects of policy innovations aimed at reducing the gender gap. Policies such as bans on asking about salary history at hiring and pay transparency initiatives (Baker et al., 2019) have focused on giving employees the knowledge to improve their salary position. Pay transparency policy and salary history bans may increase employees' current barganining power, but they will not prevent disparities in promotions and roles from influencing future pay. Our results show the critical role managers play in their employees' progress through career and salary ladders, particularly early in their careers.

The federal service encompasses a wide range of occupations and industries; however, we can only speculate as to the effects of female managers in the private sector. The civil service's pay system is, on average, more highly regulated and deterministic than many of those found in the private sector. Gender gaps in managers' assessments of subordinates are larger on more subjective measures (e.g. employee's potential) than on more concrete measures such as past productivity (Benson, Li and Shue, 2022). It is thus likely that, if anything, direct supervisors play an even larger role in career progression in the private sector.

A disheartening aspect of the narrowing of the gender pay gap over the last forty years is the increasing share of the pay gap unexplained by traditional employee-based characteristics, particularly at the upper end of the wage distribution (Fortin et al., 2017). Given the historical under-representation of women in management, our findings suggest managers are a key hidden factor in the previously unexplained gender gap.

References

Acemoglu, Daron, and David Autor 2011. "Skills, tasks, and technologies: Implications for employment and earnings." In *Handbook of labor economics* vol. 4, pp. 1043-1171. Elsevier.

Adhvaryu, Achyuta, Anant Nyshadham, and Jorge Tamayo. 2022. "An anatomy of performance monitoring."

Alan, Sule, Gozde Corekcioglu, Mustafa Kaba, and Matthias Sutter. 2023. "Female leadership and workplace climate." MPI Collective Goods Discussion Paper 2023/9.

Aneja, Abhay, and Guo Xu. 2022. "The costs of employment segregation: Evidence from the federal government under Woodrow Wilson." *Quarterly Journal of Economics* 137(2): 911–958.

Babcock, Linda, Maria P. Recalde, Lise Vesterlund, and Laurie Weingart 2017. "Gender differences in accepting and receiving requests for tasks with low promotability." *American Economic Review* 107(3): 714–747.

Bagues, M., M. Sylos-Labini, and N. Zinovyeva 2017. "Does the Gender Composition of Scientific Committees Matter?" *American Economic Review* 107(4), 1207–1238

Baker, M., Halberstam, Y., Kroft, K., Mas, A., and Messacar, D. 2019. "Pay transparency and the gender gap" NBER Working Paper No. w25834). National Bureau of Economic Research.

Barrientos, Andrés F., Alexander Bolton, Tom Balmat, Jerome P. Reiter, John M. de Figueiredo, Ashwin Machanavajjhala, Yan Chen, Charley Kneifel, and Mark DeLong. 2018. "Providing access to confidential research data through synthesis and verification: An application to data on employees of the US federal government." *The Annals of Applied Statistics* 12(2): 1124–1156.

Bertrand, Marianne, Claudia Goldin, and Lawrence F. Katz 2010 "Dynamics of the gender gap for young professionals in the financial and corporate sectors." *American Economic Journal: Applied Economics* 2(3): 228–255.

Bertrand, Marianne, Sandra E. Black, Sissel Jensen, and Adriana Lleras-Muney. 2019. "Breaking the glass ceiling? The effect of board quotas on female labour market

outcomes in Norway." *Review of Economic Studies,* 86(1): 191-239.

Benson, Alan, Danielle Li, and Kelly Shue. 2022. "'Potential' and the gender promotion gap." Discussion Paper.

Bhide, Anita 2019. "Do Female Executives Reduce Gender Gaps?" JMP Stanford University.

Biasi, Barbara, and Heather Sarsons. 2022 "Flexible Wages, Bargaining, and the Gender Gap." *Quarterly Journal of Economics,* 137(1): 215-266.

Black, Sandra E., and Chinhui Juhn. 2000. "The rise of female professionals: Are women responding to skill demand?." *American Economic Review,* 90(2): 450–455.

Blair-Loy, Mary, Olga V. Mayorova, Pamela C. Cosman, and Stephanie I. Fraley. 2022 "Can rubrics combat gender bias in faculty hiring?." *Science 377* (6601): 35-37.

Blau, Francine D., and Lawrence M. Kahn. 2017. "The gender wage gap: Extent, trends, and explanations." *Journal of Economic Literature,* 55 (3): 789-865.

Born, Andreas, Eva Ranehill, and Anna Sandberg 2022 "Gender and willingness to lead: Does the gender composition of teams matter?." *Review of Economics and Statistics* 104(2): 259–275.

Borusyak, Kirill, Xavier Jaravel, and Jann Spiess. 2021 "Revisiting event study designs: Robust and efficient estimation." arXiv preprint arXiv:2108.12419 (2021).

Bronson, Mary Ann, and Peter Thoursie. 2022. "The Wage Growht and Within-Firm Mobility of Men and Women: New Evidence and Theory." Mimeo.

Buckley, John E. 2009 "Fifty years of BLS surveys on Federal employees' pay." *Monthly Labor Review* 132: 36.

Callaway, Brantly, and Pedro HC Sant'Anna 2021 "Difference-in-differences with multiple time periods." *Journal of Econometrics* 225(2): 200–230.

Card, David, Ana Rute Cardoso, and Patrick Kline. 2016 "Bargaining, sorting, and the gender wage gap: Quantifying the impact of firms on the relative pay of women," *Quarterly journal of economics* 131(2): 633–686.

Cardoso, Ana Rute, and Rudolf Winter-Ebmer. 2010. "Female-led firms and gender wage policies." *Industrial & Labor Relations Review,* 64 (1): 143-163.

Castilla, Emilio J. 2011. "Bringing managers back in: Managerial influences on workplace inequality." *American Sociological Review* 76(5): 667–694.

Congressional Research Service (CRS) 2010. "Federal White-Collar Pay: FY2009 and FY2010 Salary Adjustments "CRS Report for Congress RL34463.

Cullen, Zoë, and Ricardo Perez-Truglia. 2023 "The old boys' club: Schmoozing and the gender gap." *American Economic Review* 113(7): 1703-1740.

Dalvit, Nicolas, Aseem Patel, and Joanne Tan. 2021. "Intra-firm hierarchies and gender gaps." *Labour Economics* : 102029.

Deming, David J. 2017. "The growing importance of social skills in the labor market." *Quarterly Journal of Economics* 132(4): 1593–1640.

Droganova, Maria 2018. "Women Working for Women: Career Advancement and the Gender Wage Gap in the U. S. Federal Government". Available at SSRN: https://ssrn.com/abstract=3074466 or http://dx.doi.org/10.2139/ssrn.3074466

Flabbi, Luca, Mario Macis, Andrea Moro, and Fabiano Schivardi 2019. "Do female executives make a difference? The impact of female leadership on gender gaps and firm performance." *The Economic Journal* 129 (622): 2390-2423.

Fortin, Nicole M., Brian Bell, and Michael Böhm 2017. "Top earnings inequality and the gender pay gap: Canada, Sweden, and the United Kingdom." *Labour Economics* 47: 107–123.

Foster, Lucia, Julia Manzella, Erika McEntarfer, and Danielle H. Sandler. 2020. "Employment and earnings for federal government economists: Empirical evidence by gender and race." *AEA Papers and Proceedings,* 110: 210–14.

Frederiksen, Anders, Lisa B. Kahn, and Fabian Lange 2020 "Supervisors and performance management systems." *Journal of Political Economy* 128(6): 2123–2187.

Freyaldenhoven, Simon, Christian Hansen, and Jesse M. Shapiro. 2019. "Pre-event trends in the panel event-study design." *American Economic Review,* 109(9): 3307–38.

Goldin, Claudia., Katz, Lawrence F., and Kuziemko, Ilyana. 2006. "The homecoming of American college women: The reversal of the college gender gap." *Journal of Economic Perspectives,* 20(4): 133-156.

Golub, Benjamin, and Matthew O. Jackson 2012. "How homophily affects the speed of learning and best-response dynamics." *Quarterly Journal of Economics* 127(3): 1287–1338.

Grissom, Jason A., Jill Nicholson-Crotty, and Lael Keiser 2012. "Does my boss's gender matter? Explaining job satisfaction and employee turnover in the public sector." *Journal of Public Administration Research and Theory* 22(4): 649–673.

Husain, Aliza N., David A. Matsa, and Amalia R. Miller 2021. "Do male workers prefer male leaders? An analysis of principals' effects on teacher retention." *Journal of Human Resources* 1118-9838R2.

Johnson, Ronald N. and Gary D. Libecap 1989. "Bureaucratic Rules, Supervisor Behavior, and the Effect on Salaries in the Federal Government," *Journal of Law, Economics, & Organization,* 5 (1): 53–82.

Kunze, Astrid, and Amalia R. Miller 2017 "Women helping women? Evidence from private sector data on workplace hierarchies." *Review of Economics and Statistics,* 99(5): 769-775

Lewis, G. B. and Oh, S. S. 2009. "A Major Difference?: Fields of Study and Male-Female Pay Differences in Federal Employment." *American Review of Public Administration,* 39(2):107–24.

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

Maida, A. and Weber, A. 2022. "Female leadership and gender gap within firms: Evidence from an Italian board reform," *Industrial & Labor Relations Review,* 75(2): 488–515.

Mastrorocco, Nicola, and Edoardo Teso 2023. "State Capacity as an Organizational Problem. Evidence from the Growth of the US State Over 100 Years." No. w31591. National Bureau of Economic Research.

McKinsey Global Institute 2019. "The future of women at work" https://www.mckinsey.com/featured-insights/gender-equality/the-future-of-women-at-work-transitions-in-the-age-of-automation

Minni, Virginia 2022. "Making the Invisible Hand Visible: Managers and the Allocation of Workers to Jobs." LSE JMP, mimeo.

Olson, Craig A., Donald P. Schwab, and Barbara L. Rau. 2000. "The effects of local market conditions on two pay-setting systems in the federal sector." *Industrial & Labor Relations Review,* 53(2): 272–289.

Oh, Seong Soo, and Gregory B. Lewis. 2013. "Performance ratings and career advancement in the US Federal Civil Service." *Public Management Review* 15(5): 740–761.

Spenkuch, Jörg L., Edoardo Teso, and Guo Xu. 2023. "Ideology and performance in public organizations." *Econometrica* 91(4): 1171–1203.

Tate, Geoffrey, and Liu Yang. 2015 "Female leadership and gender equity: Evidence from plant closure." *Journal of Financial Economics,* 117(1): 77–97.

U.S. Government Accountability Office (GAO) 2009. "Womens Pay - Gender Pay Gap in the Federal Workforce Narrows as Differences in Occupation, Education, and Experience Diminish,"Report GAO-09-279.

U.S. Government Accountability Office (GAO) 2021. "Human Capital –Administration and Implementation of the General Schedule Locality Pay Program,"Report GAO-22-104580.

U.S. Office of Personnel Management(OPM) 2014a. "Government-wide Strategy on Advancing Pay Equality in the Federal Government."

U.S. Office of Personnel Management(OPM) 2014b. "Technical Report: Results From The 2014 Federal Employee Viewpoint Survey. "

U.S. Office of Personnel Management(OPM) 2017. "A Handbook for Measuring Employee Performance. . "

Vilhuber, Lars 2018 "Office of Personnel Management (OPM) extract of EHRI - FOIA Request 2013-06654, doi:10.7910/DVN/27927, Harvard Dataverse

Zeltzer, Dan 2020 "Gender homophily in referral networks: Consequences for the medicare physician earnings gap." *American Economic Journal: Applied Economics* 12(2): 169–197.

Figures and Tables

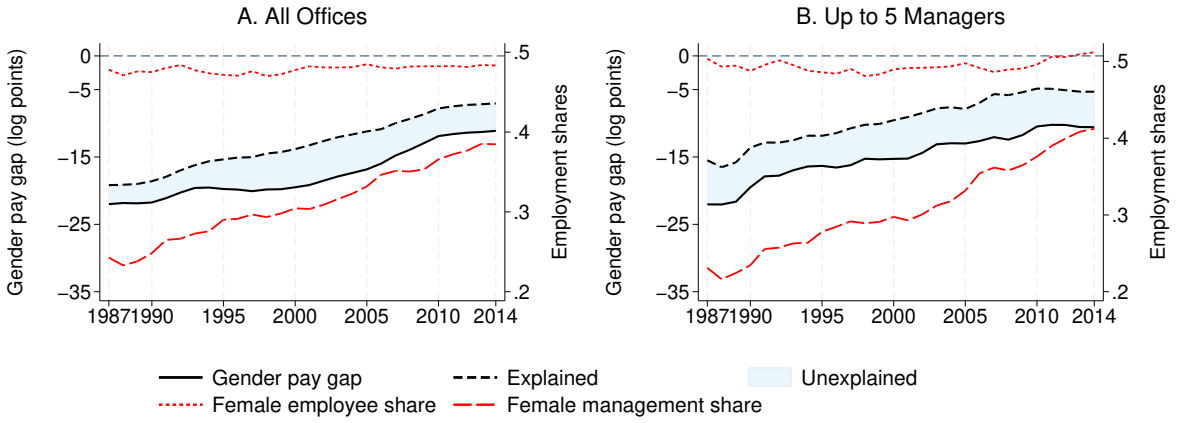

FIGURE 1. GENDER PAY GAP AND FEMALE EMPLOYMENT

Note: The "All offices" sample in Panel A is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees, and born in the year starting 1955. Panel B further restricts the sample to offices with no more than 5 managers. The "Explained" pay gap is the gender pay gap that can be explained by locality FE, education, occupation, age, and age^2. Both female management share and female employee share are based on the managers and employees whose gender we were able to identify.

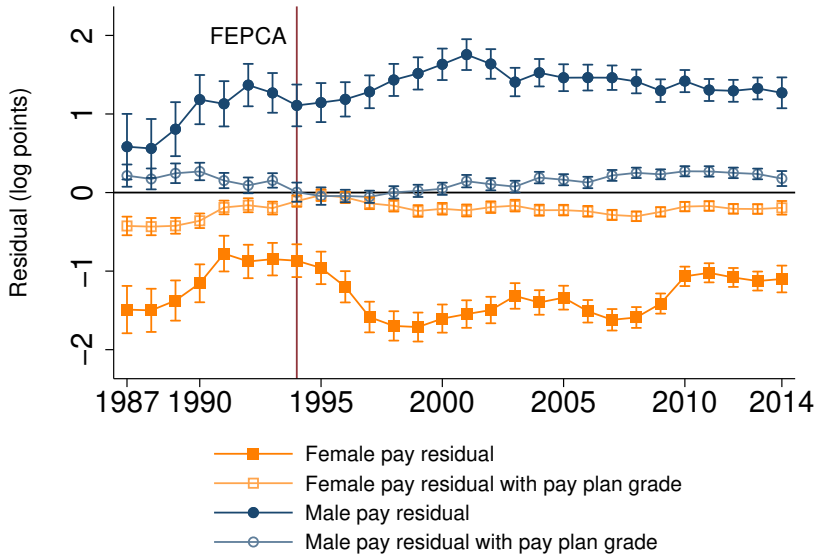

FIGURE 2. PAY RESIDUALS BY GENDER

Note: The sample is the "Up to 5 managers" as defined in Figure 1B. Female and male pay residuals are from yearly regressions of individuals' log pay on localities of offices, birth year bins, education, tenure, occupation, and office FEs. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

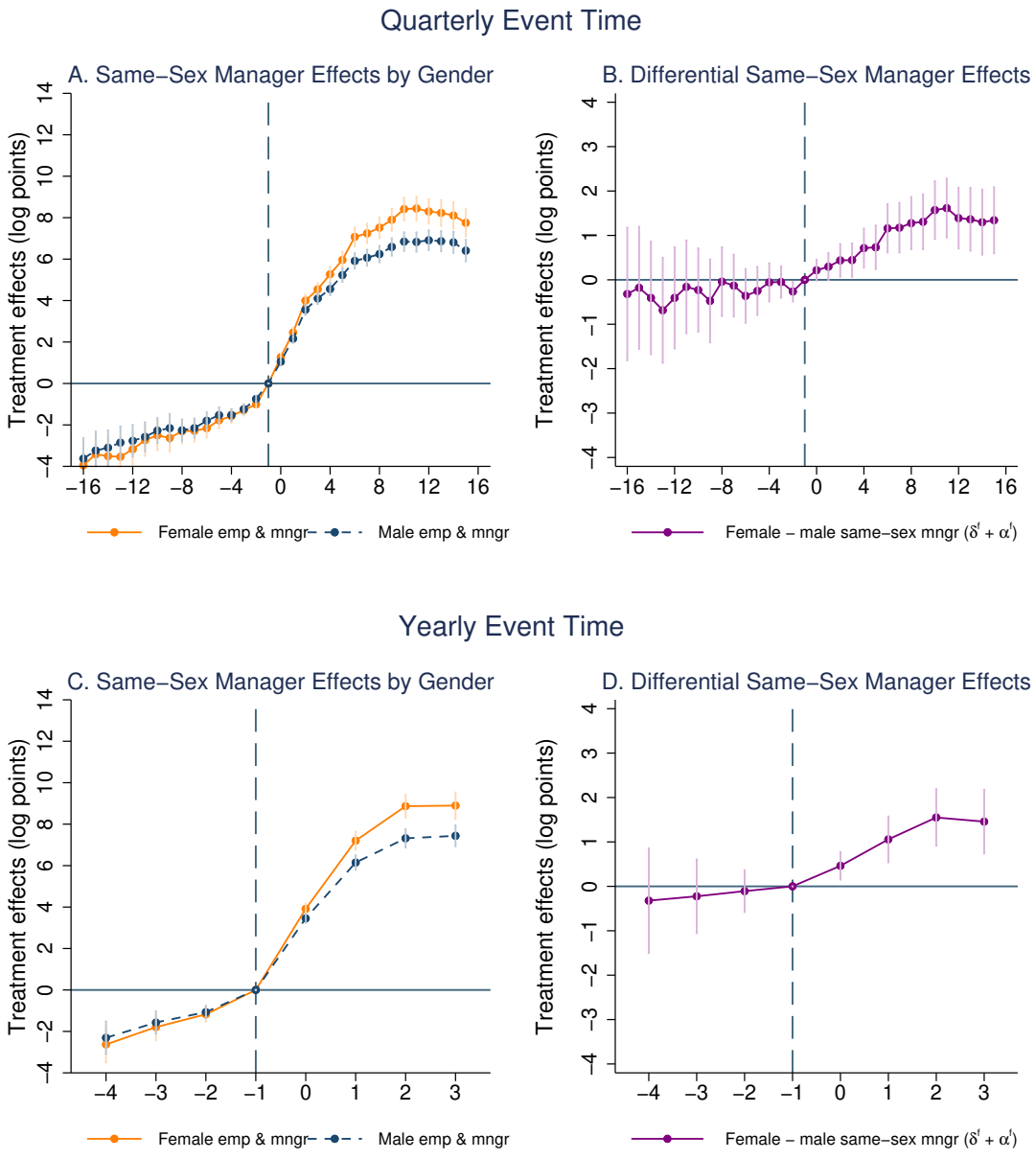

FIGURE 3. EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS

Note: The event-study sample is the sub-sample of employees in the "Up to 5 managers" sample who receive a first new manager. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Point estimates and standard errors are reported in Tables 2 and B.1. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

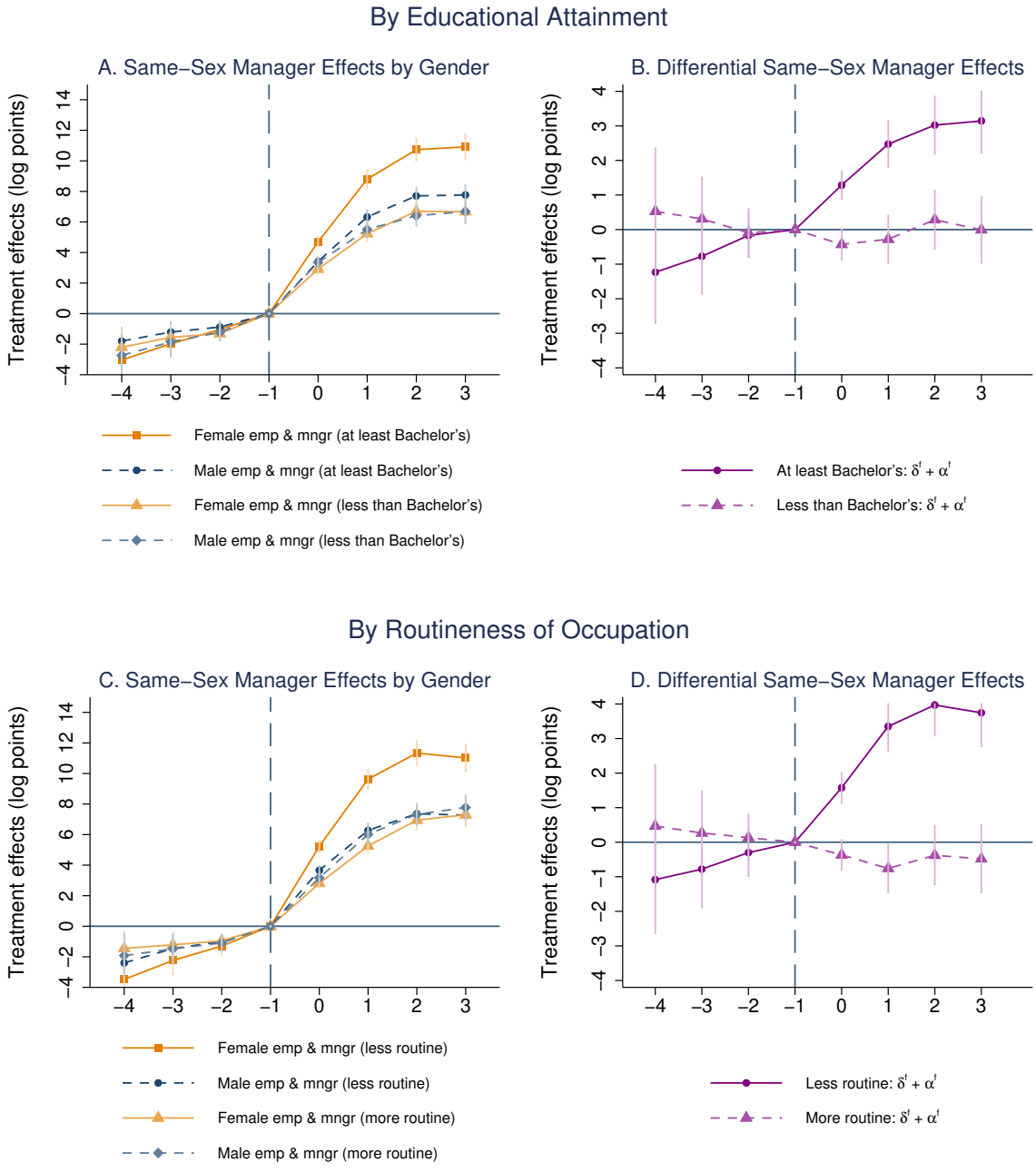

FIGURE 4. EVENT STUDY ESTIMATES BY EDUCATIONAL ATTAINMENT AND OCCUPATIONAL ROUTINENESS

Note: Treatments effects and specification are defined as in Figure 3. Panels A and B split the sample from Figure 3 into employees with at least a Bachelor's degree and those with less than a Bachelor's degree. Panels C and D split the sample from Figure 3 into employees by routineness of occupations, defined by below-median and above-median or median routine cognitive O*NET index. Point estimates and standard errors are reported in Tables B.2 and B.3. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

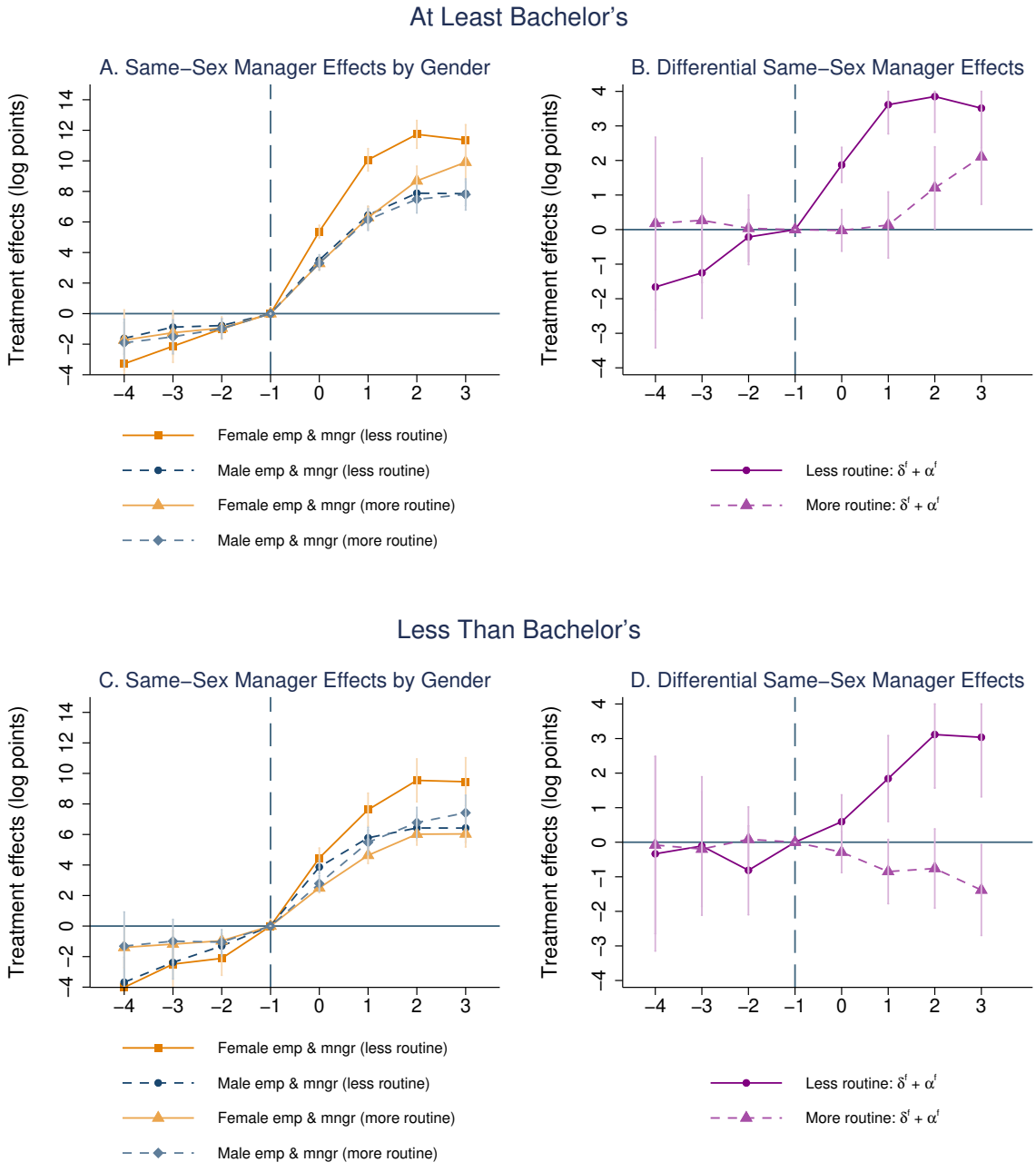

FIGURE 5. HETEROGENEITY OF OCCUPATIONAL ROUTINENESS ESTIMATES BY EDUCATIONAL ATTAINMENT

Note: Treatments effects and specification are defined as in Figure 3. Panels A and B split employees with at least a Bachelor's degree from Figure 4 into employees with less routine and more routine occupations. Panels C and D split employees with less than a Bachelor's degree from Figure 4 into employees with less routine and more routine occupations. Less routine and more routine occupations are as defined in Figure 4. Point estimates and standard errors are reported in Tables B.4 and B.5. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

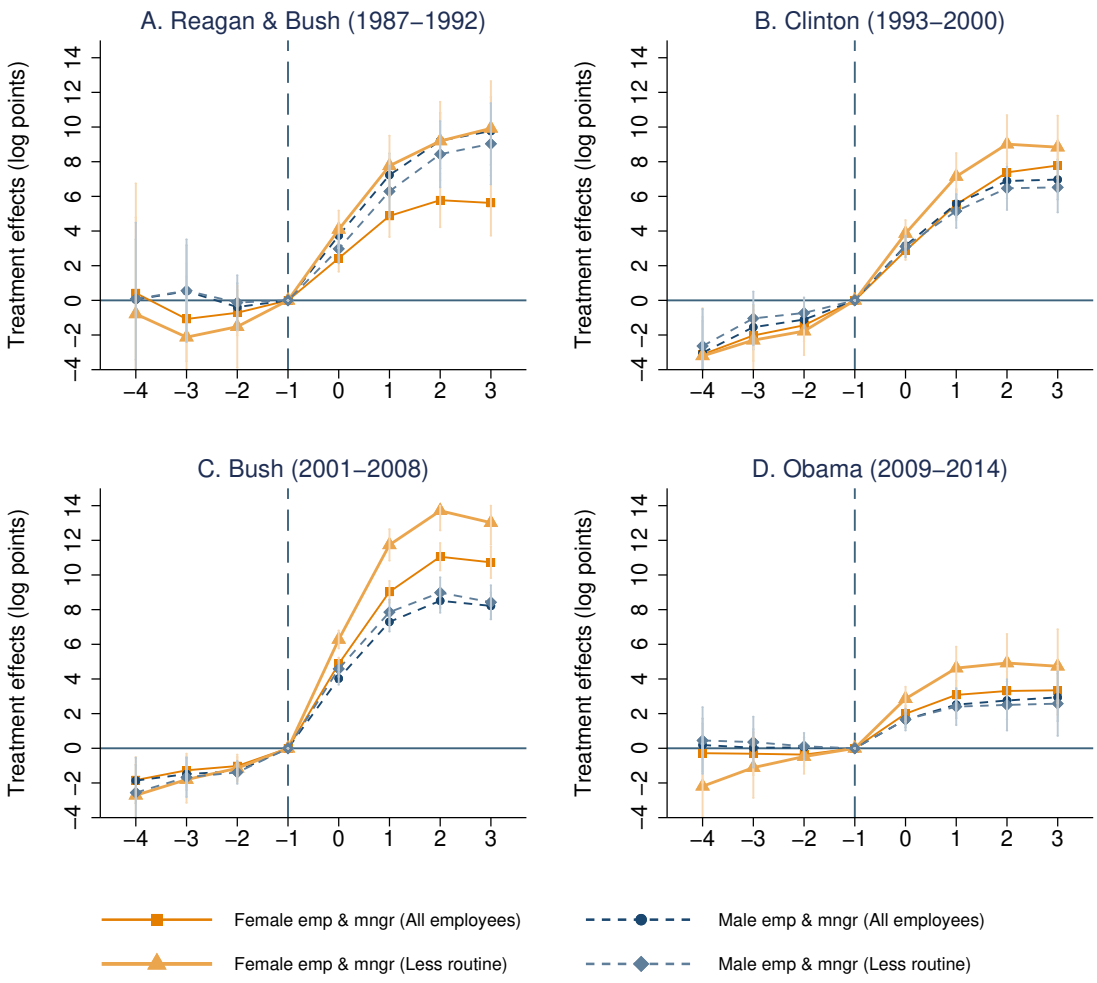

FIGURE 6. EVENT STUDY ESTIMATES BY PRESIDENTIAL ERAS

Note: Treatments effects and specification are defined as in Figure 3. The Figure displays estimates for each presidential era. Employees are assigned to the era they received their first new manager. There are 4,205 employees in the Reagan and Bush (1987-1992) sample, 6,670 employees in the Clinton (1993-2000) sample, 14,823 employees in the Bush (2001-2008) sample, and 8,593 employees in the Obama (2009-2014) sample. The subsample of employees with less routine occupations is defined in Figure 4. There are 2,223 employees in the Reagan and Bush (1987-1992) era, 3,872 employees in the Clinton (1993-2000) era, 8,495 employees in the Bush (2001-2008) era, and 4,651 employees in the Obama (2009-2014) era. Point estimates and standard errors are reported in Tables B.6, B.7, B.8, and B.9. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

FIGURE 7. EVENT STUDY ESTIMATES BY INITIAL SHARE OF SAME-SEX MANAGERS AND EMPLOYEES

Note: Treatments effects and specification are defined as in Figure 3. Panels A and B split the sample from Figure 3 into employees with at least a median and below median share of same-sex employees (i.e. 47.45%) in the first two quarters of employees' tenure. Panels C and D split the sample from Figure 3 into employees with at least a median and below median share of same-sex managers (i.e. 45.65%) in the first two quarters of employees' tenure. Point estimates and standard errors are reported in Tables B.10 and B.11. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

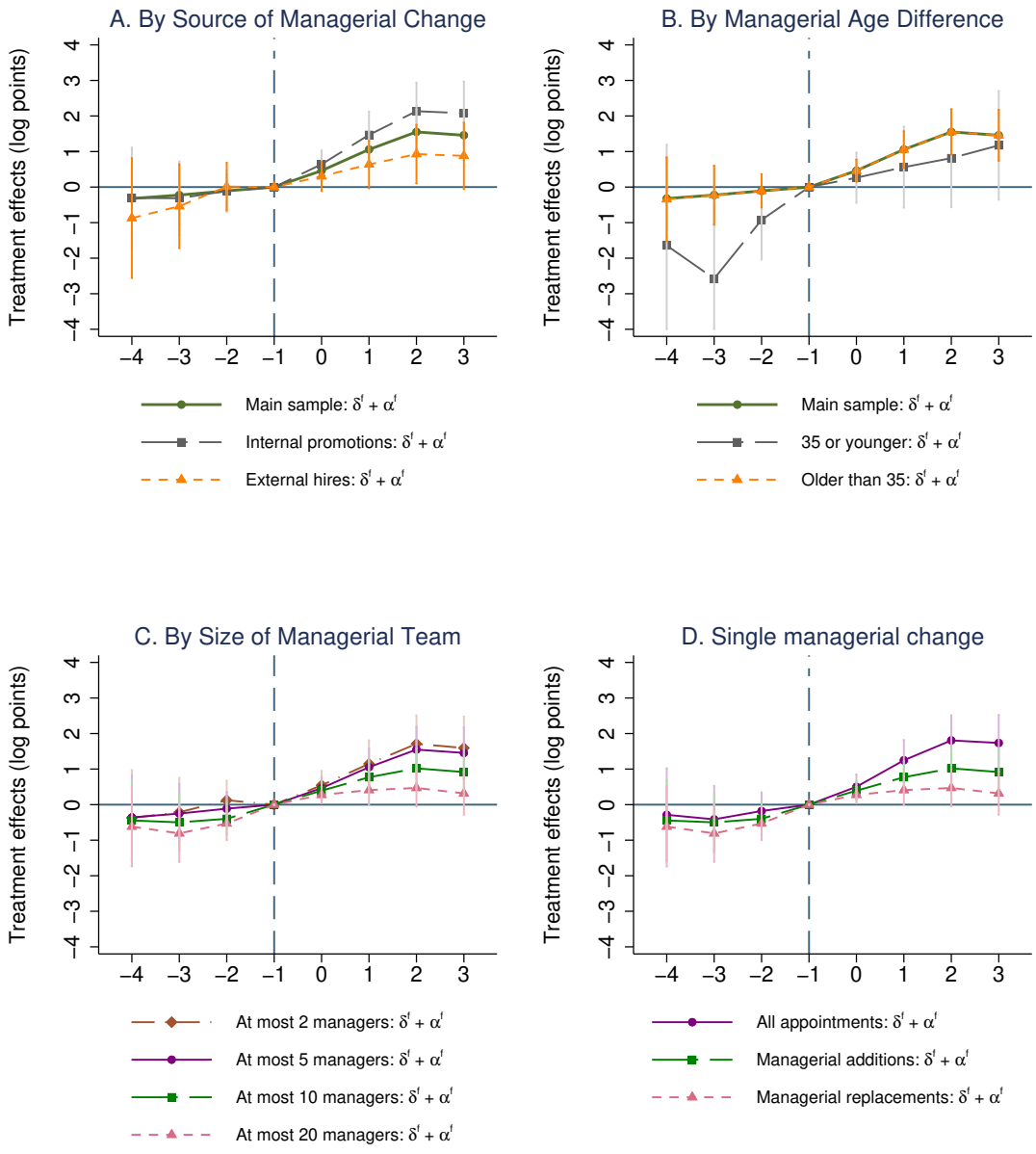

FIGURE 8. DIFFERENTIAL HOMOPHILY EFFECTS: HETEROGENEITY BY MANAGERIAL CHANGE

Note: Treatments effects and specification are defined as in Figure 3. Each line plots differential homophily effect estimates from a separate regression using equation 2. **"Main Sample"** is the event-study sample and reproduces the differential homophily effect from Figure 3B for reference. Panel A splits the event study sample by the manager's previous location of employment. The **"external hires"** estimates are from employees whose new manager had not previously worked at the office, and **"internal hires"** are from employees whose new managers had previously worked at the office as employees. Panel B splits the event study sample by the age of the new manager at appointment. The **"35 or younger"** and **"older than 35"** estimates are from the subsamples of employees whose new manager was that age at appointment. Panel C splits the event study sample by the size of managerial and includes all employees working in offices with **at most 2, 5, 10, and 20 managers** in the quarter prior to getting a first new manager. Panel D includes employees treated with only a single new manager. **"All appointments"** include all single managerial changes, **"Managerial additions"** include managerial appointments that expand managerial teams, and **"Managerial replacements"** include managerial appointments after which the size of a managerial team remains the same or decreases. Point estimates and standard errors are reported in Tables B.12 and B.13 . Vertical bars represent 95% confidence intervals with standard errors clustered by office.

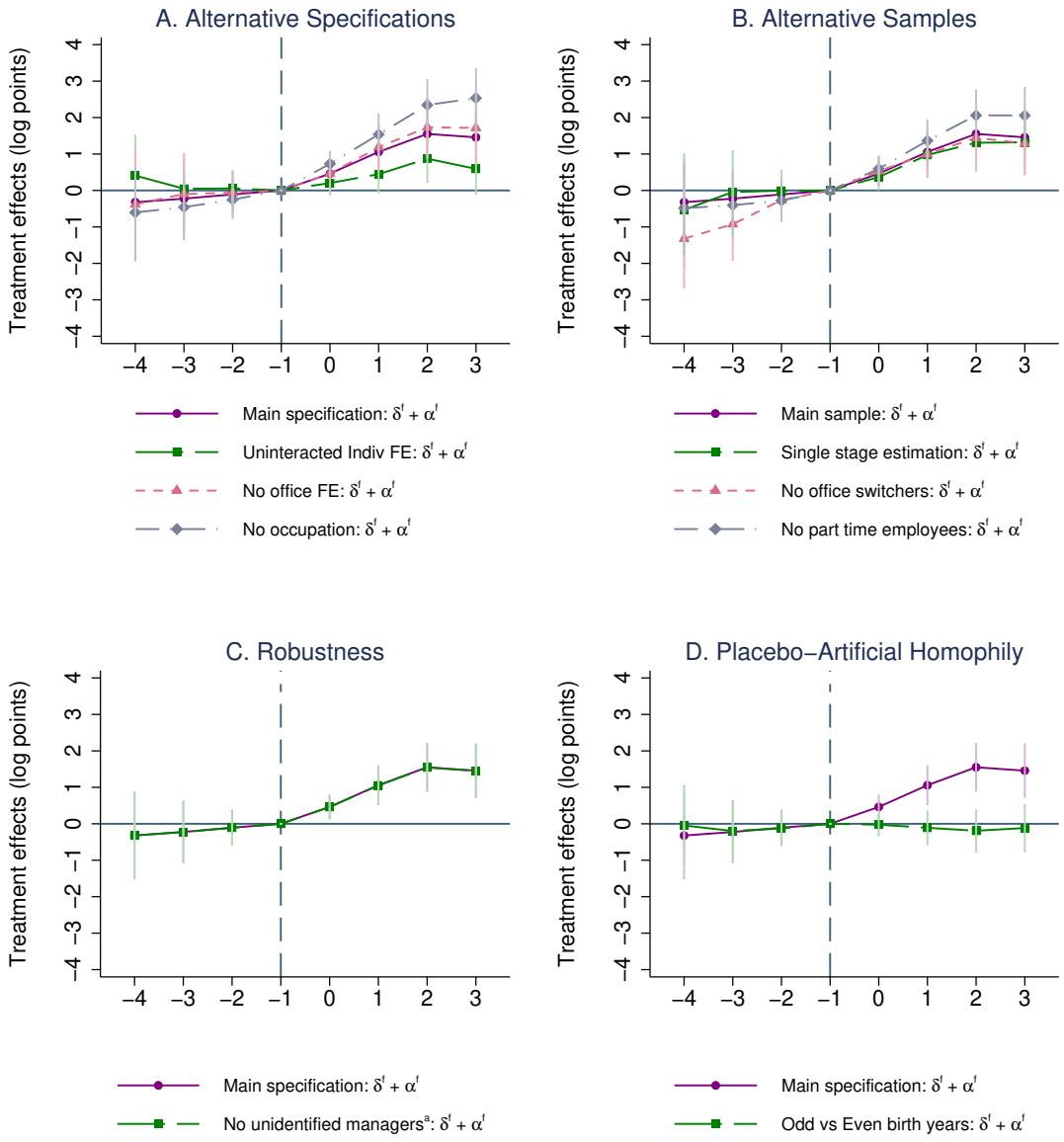

FIGURE 9. SENSITIVITY ANALYSIS: DIFFERENTIAL HOMOPHILY EFFECTS

Note: Treatments effects and specification are defined as in Figure 3. Each line plots differential homophily effect estimates from a separate regression using equation 2. **"Main Sample"** is the event-study sample and reproduces the differential homophily effect from Figure 3B for reference. Panel A uses **"uninteracted individual FE"** instead of individual-office FEs. **"No office FEs"** estimates exclude office FEs in the first stage, but include individual-office FEs in the second stage. **"No occupation"** does not include any occupation controls in stage 1. In Panel B, **"one stage estimation"** estimates the event study in one stage on the event study sample by adding first stage controls to the second stage. **"No office switchers"** excludes 40% of employees that switch offices at any point in the sample. **"No part-time employees"** excludes the 8% of employees who have a part-time spell during their federal service. In panel C, **"No unidentified managers"** excludes managerial appointments of unidentified gender. The estimates are nearly identical to the estimates in the "main specification". Panel D shows a **placebo test**, in which the treatment effects are redefined as getting a new manager of odd vs even birth year. Point estimates and standard errors are reported in Table B.14 and B.15. Vertical bars represent 95% confidence intervals with standard errors clustered by office.
a Estimates in the "no unidentified managers" specification overlap with the estimates in the "main specification".

Table 1—Descriptive statistics – Offices Up to 5 Managers

Sample	Female employees		Male employees	
	All employees	Event study	All employees	Event study
	(1)	(2)	(3)	(4)
	Panel A: Outcomes			
Salary	50,633	50,051	57,781	57,142
	(23,654)	(22,949)	(26,090)	(25,714)
Log salary	10.72	10.72	10.86	10.85
	(0.48)	(0.47)	(0.47)	(0.46)
Unexplained log salary (x100)[a]	-1.32	-1.66	1.38	1.10
	(17.48)	(17.49)	(18.35)	(18.49)
N pay plan changes	0.02	0.01	0.03	0.02
	(0.29)	(0.14)	(0.23)	(0.22)
N grade changes (GS sample)	2.98	3.05	2.78	2.91
	(1.96)	(1.93)	(1.84)	(1.82)
	Panel B: Individual characteristics			
Birth year 1955-1960	0.22	0.19	0.23	0.20
	(0.42)	(0.39)	(0.42)	(0.40)
Birth year 1960-1965	0.24	0.21	0.25	0.23
	(0.43)	(0.41)	(0.43)	(0.42)
Birth year 1965-1970	0.21	0.21	0.21	0.21
	(0.41)	(0.41)	(0.41)	(0.41)
Birth year 1970-1975	0.14	0.16	0.14	0.16
	(0.35)	(0.37)	(0.35)	(0.37)
Birth year 1975-1980	0.10	0.12	0.09	0.11
	(0.30)	(0.33)	(0.29)	(0.31)
Birth year 1980+	0.08	0.10	0.07	0.09
	(0.27)	(0.30)	(0.26)	(0.28)
Education: High school or less	0.21	0.20	0.14	0.14
	(0.41)	(0.40)	(0.35)	(0.35)
Education: Some college	0.30	0.29	0.21	0.19
	(0.46)	(0.45)	(0.40)	(0.39)
Education: Bachelor's degree	0.36	0.40	0.48	0.49
	(0.48)	(0.49)	(0.50)	(0.50)
Education: Graduate degree	0.12	0.12	0.18	0.18
	(0.33)	(0.32)	(0.38)	(0.38)
Tenure (years)	8.69	7.29	9.09	7.87
	(6.60)	(5.93)	(6.73)	(6.24)
	Panel C: Workplace characteristics			
Female employee share at office	0.44	0.46	0.37	0.38
	(0.22)	(0.21)	(0.22)	(0.21)
Female management share at office	0.28	0.30	0.25	0.26
	(0.31)	(0.31)	(0.30)	(0.29)
N offices	9,890	6,925	9,280	6,457
N unique individuals	43,663	16,852	39,350	14,265
N individuals with part time spell	5,521	2,770	1,877	987
N treated individuals	16,852	16,852	14,265	14,265
N person quarters	1,178,351	723,911	990,484	594,845

Note: The "Up to 5 managers" sample has the same tenure, office size, and cohort restrictions as in Figure 1B. The event study sample further restricts the sample to employees who experienced an appointment of a first new manager, as explained in section III.B. Panel C is at the office–quarter level. Standard deviations are in parentheses.

[a] Unexplained log pay is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details.

Table 2—Event Study Estimates: Effects of First New Managers

Event year	New same-sex mngr (δ)	New same-sex mngr*female (δ^f)	New mngr (α)	New mngr*female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)
-4	-0.09	-0.69	-2.22***	0.36	-0.32
	(0.63)	(0.88)	(0.50)	(0.62)	(0.60)
-3	-0.06	-0.74	-1.51***	0.51	-0.22
	(0.47)	(0.64)	(0.38)	(0.46)	(0.42)
-2	-0.03	-0.57	-1.04***	0.46*	-0.11
	(0.25)	(0.35)	(0.20)	(0.25)	(0.24)
0	-0.62***	1.16***	4.07***	-0.70***	0.46***
	(0.17)	(0.24)	(0.14)	(0.16)	(0.16)
1	-1.29***	2.62***	7.44***	-1.56***	1.06***
	(0.27)	(0.39)	(0.23)	(0.25)	(0.26)
2	-1.93***	3.67***	9.25***	-2.12***	1.55***
	(0.33)	(0.48)	(0.29)	(0.32)	(0.33)
3	-2.08***	3.77***	9.52***	-2.31***	1.46***
	(0.37)	(0.54)	(0.34)	(0.36)	(0.37)
N offices	8,377	8,377	8,377	8,377	8,377
N unique individuals	31,117	31,117	31,117	31,117	31,117
N person-qtrs	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756

Note: The event-study sample is the sub-sample of employees in the "Up to 5 managers" sample who receive a first new manager. All event study specifications include quarter-year and individual-office FEs, see event-study equation 2. Estimates are event-year treatment effects reported in log points. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 3.
Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

TABLE 3—BALANCE: PRE-EVENT YEAR EMPLOYEE AND WORKPLACE CHARACTERISTICS

Sample	Female employees		Male employees	
	New female mngr	New male mngr	New female mngr	New male mngr
	(1)	(2)	(3)	(4)
	Panel A: Outcomes			
Log salary	10.45	10.42	10.58	10.58
	(0.44)	(0.46)	(0.43)	(0.46)
Unexplained log salary (x100)[a]	-7.86	-7.81	-7.25	-5.68
	(18.78)	(18.90)	(20.73)	(20.31)
GS grade [b]	7.13	7.22	8.08	8.40
(GS sample)	(2.63)	(2.75)	(2.72)	(2.84)
	Panel B: Individual characteristics			
Birth year	0.14	0.16	0.14	0.16
1955-1960	(0.34)	(0.37)	(0.35)	(0.37)
Birth year	0.17	0.18	0.17	0.19
1960-1965	(0.38)	(0.39)	(0.37)	(0.39)
Birth year	0.19	0.19	0.19	0.19
1965-1970	(0.39)	(0.39)	(0.39)	(0.39)
Birth year	0.17	0.17	0.18	0.18
1970-1975	(0.38)	(0.38)	(0.39)	(0.38)
Birth year	0.16	0.15	0.15	0.15
1975-1980	(0.37)	(0.36)	(0.36)	(0.35)
Birth year	0.17	0.15	0.17	0.14
1980+	(0.37)	(0.35)	(0.38)	(0.35)
Education:	0.18	0.19	0.12	0.16
High school or less	(0.38)	(0.39)	(0.33)	(0.37)
Education:	0.29	0.27	0.21	0.21
Some college	(0.46)	(0.45)	(0.40)	(0.41)
Education:	0.4	0.39	0.49	0.45
Bachelor's degree	(0.49)	(0.49)	(0.50)	(0.50)
Education:	0.12	0.15	0.18	0.18
Graduate degree	(0.33)	(0.35)	(0.39)	(0.38)
Tenure (years)	1.97	2.19	2.56	2.92
	(2.79)	(3.06)	(3.57)	(3.77)
N unique individuals	7,066	8,325	4,228	8,285
N person quarters	24,648	28,705	14,682	28,586
	Panel C: Workplace characteristics			
	New female mngr		New male mngr	
Female employee share at office	0.54		0.38	
	(0.21)		(0.22)	
Female management share at office	0.35		0.24	
	(0.35)		(0.31)	
N offices	3,235		4,446	

Note: The sample is the event-study sample from Table 2. Columns (1) and (3) include female and male employees who receive new female managers and columns (2) and (4) include employees who receive new male managers. Workplace characteristics are at the office-quarter level. Standard deviations are in parentheses.

[a] Unexplained log pay is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details.

[b] GS grade is summarized at the time of arrival of the first new manager for the subsample of employees working under the GS schedule, which includes 90% of workers in the event-study sample.

Table 4—DID Estimates of Same-sex Manager Effects on Pay, Grade, and Occupation Switching (GS sample)

Specification	TWFE (1)	TWFE (2)	Borusyak (3)	TWFE (4)	TWFE (5)	Borusyak (6)	TWFE (7)	TWFE (8)	Borusyak (9)
Dependent variable	Panel A: Log pay residual			Panel B: Alt log pay residual[a]			Panel C: Residualized GS Grade		
Same-sex manager		-1.151***			-1.422***			-0.105***	
(δ)		(0.320)			(0.338)			(0.030)	
Same-sex manager*female		3.169***			3.718***			0.299***	
(δ^f)		(0.464)			(0.505)			(0.044)	
New manager		7.659***			7.693***			0.632***	
(α)		(0.266)			(0.278)			(0.025)	
New manager*female		-1.784***			-01.428***			-0.148***	
(α^f)		(0.311)			(0.328)			(0.030)	
Female employee and manager		7.894***	8.135***		8.561***	8.853***		0.678***	0.709***
($\delta + \delta^f + \alpha + \alpha^f$)		(0.242)	(0.259)		(0.273)	(0.288)		(0.024)	(0.026)
Male employee and manager		6.509***	6.533***		6.271***	6.269***		0.527***	0.542***
($\delta + \alpha$)		(0.212)	(0.240)		(0.221)	(0.249)		(0.019)	(0.022)
Female - male same-sex manager		1.385***	1.602***		2.290***	2.584***		0.151***	0.168***
($\delta^f + \alpha^f$)		(0.311)	(0.324)		(0.345)	(0.351)		(0.029)	(0.031)
Individual controls		Yes	Yes		Yes	Yes		Yes	Yes
Dependent variable	Panel D: Occupation category change			Panel E: 4-Digit Occupation change			Panel F: Office switching		
Same-sex manager	-0.009	-0.009		-0.029***	-0.024***		-0.005*	-0.005*	
(δ)	(0.007)	(0.006)		(0.008)	(0.006)		(0.003)	(0.003)	
Same-sex manager*female	00.017	0.016		0.035***	0.020**		0.006	0.006	
(δ^f)	(0.011)	(0.010)		(0.011)	(0.009)		(0.004)	(0.004)	
New manager	0.022***	-0.002		0.054***	0.035***		0.009***	0.005***	
(α)	(0.005)	(0.005)		(0.006)	(0.005)		(0.002)	(0.002)	
New manager*female	0.091***	0.086***		0.053***	0.020***		-0.003	-0.004	
(α^f)	(0.007)	(0.007)		(0.008)	(0.006)		(0.003)	(0.003)	
Female employee and manager	0.122***	0.090***	0.096***	0.113***	0.051***	0.063***	0.007***	0.002	0.001
($\delta + \delta^f + \alpha + \alpha^f$)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)
Male employee and manager	0.013**	-0.011**	-0.019***	0.024***	0.011**	0.009**	0.003*	-0.000	-0.000
($\delta + \alpha$)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.002)	(0.002)	(0.003)
Female - male same-sex manager	0.109***	0.102***	0.114***	0.089***	0.040***	0.053***	0.004	0.002	0.001
($\delta^f + \alpha^f$)	(0.008)	(0.007)	(0.007)	(0.008)	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)
Individual controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Note: The sample is the event-study sample from Table 2 employed under the GS schedule. In all panels, the estimation specification from equation 3 includes year-quarter and individual-office fixed effects. In Panels A, B, and C the dependent variables are residualized as in the main event-study. In Panels A and B, log pay residual is scaled by 100. In Panel B, alternative log pay residuals are obtained as in the main event-study but without occupation controls in stage 1. In Panels, D, E, and F, individual controls include age categories, education, tenure, and a part-time indicator, and in Panels E and F they also include occupation categories. Average values with standard deviations in parentheses for dependent variables are: log pay residual -1.18 (17.58); alt log pay residual[a] -1.69 (19.82); residualized GS grade -0.07 (1.47); occupation category change 0.26 (0.44); 4-digit occupation change 0.33 (0.47); office switching 0.32 (0.47). Each regression is comprised of 28,377 of unique individuals and 1,044,194 person-quarters. Standard errors clustered at the office level in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

[a] Log pay residual without occupation controls in stage 1.

Table 5—Federal Employee Viewpoint Survey: Female Management Shares and Employee Attitudes

Dependent variable: answers to questions on the scale 1-5	Job satisfaction[a]	Pay satisfaction[a]	Recognition[a]	Leadership opportunities[b]	Employee development[b]	Discrimination not tolerated[b]
	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.055***	-0.022	-0.101***	-0.106***	-0.119***	-0.169***
	(0.019)	(0.020)	(0.016)	(0.015)	(0.010)	(0.008)
Same-sex management share $\geq$ median	-0.024	-0.035	-0.056**	-0.061***	-0.080***	-0.034*
	(0.026)	(0.043)	(0.025)	(0.017)	(0.018)	(0.019)
Same-sex management share $\geq$ median * Female	0.090*	0.119*	0.104**	0.119***	0.125***	0.089**
	(0.044)	(0.060)	(0.048)	(0.034)	(0.031)	(0.035)

Note: Estimation sample in all regressions contains 399,425 observations. All specifications include year and agency fixed effects. Same-sex management share $\geq$ median is an indicator equal to 1 when at least 46% of the management at the employee's agency are the same sex as the employee. Female is an indicator variable of the employee self-identifying as female. The sample is restricted to the subset of agencies whose female respondent shares in FEVS are within 15 percentage points of their shares in OPM. Standard errors clustered by agency are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

[a] Each question asks the worker to rate how satisfied they are with that aspect of their employment with 1 being the least satisfied and and 5 being the most satisfied.

[b] Each question asks the respondent to use a 1-5 scale to indicate how much she agrees with a statement with 5 indicating strong agreement. The text of the statements are: Leadership opportunities: "Supervisors/team leaders in my work unit provide employees with the opportunities to demonstrate their leadership skills." Employee development: "Supervisors/team leaders in my work unit support employee development. " Discrimination not tolerated: "Prohibited personnel practices (e.g. illegally discriminating for or against any employee/applicant, obstructing a person's right to compete for employment, knowingly violating veterans' preference requirements) are not tolerated.

Average responses are: job satisfaction – 3.78, pay satisfaction – 3.60, recognition – 3.38, leadership opportunities – 3.78, employee development – 3.78, discrimination not tolerated – 3.76.

NOT FOR PUBLICATION

Supplementary Appendices

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APPENDIX A Supplementary Figures and Tables

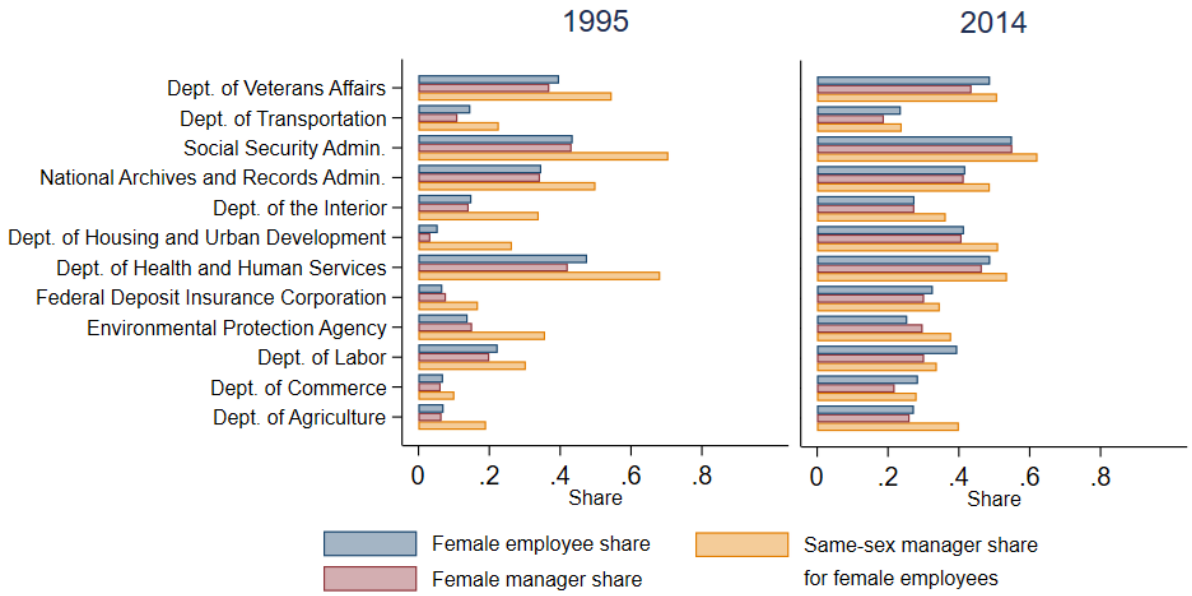

FIGURE A.1. FEMALE MANAGEMENT AND EMPLOYEE SHARES FOR SELECT AGENCIES

Note: The sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 managers, and are born in the year starting 1955.

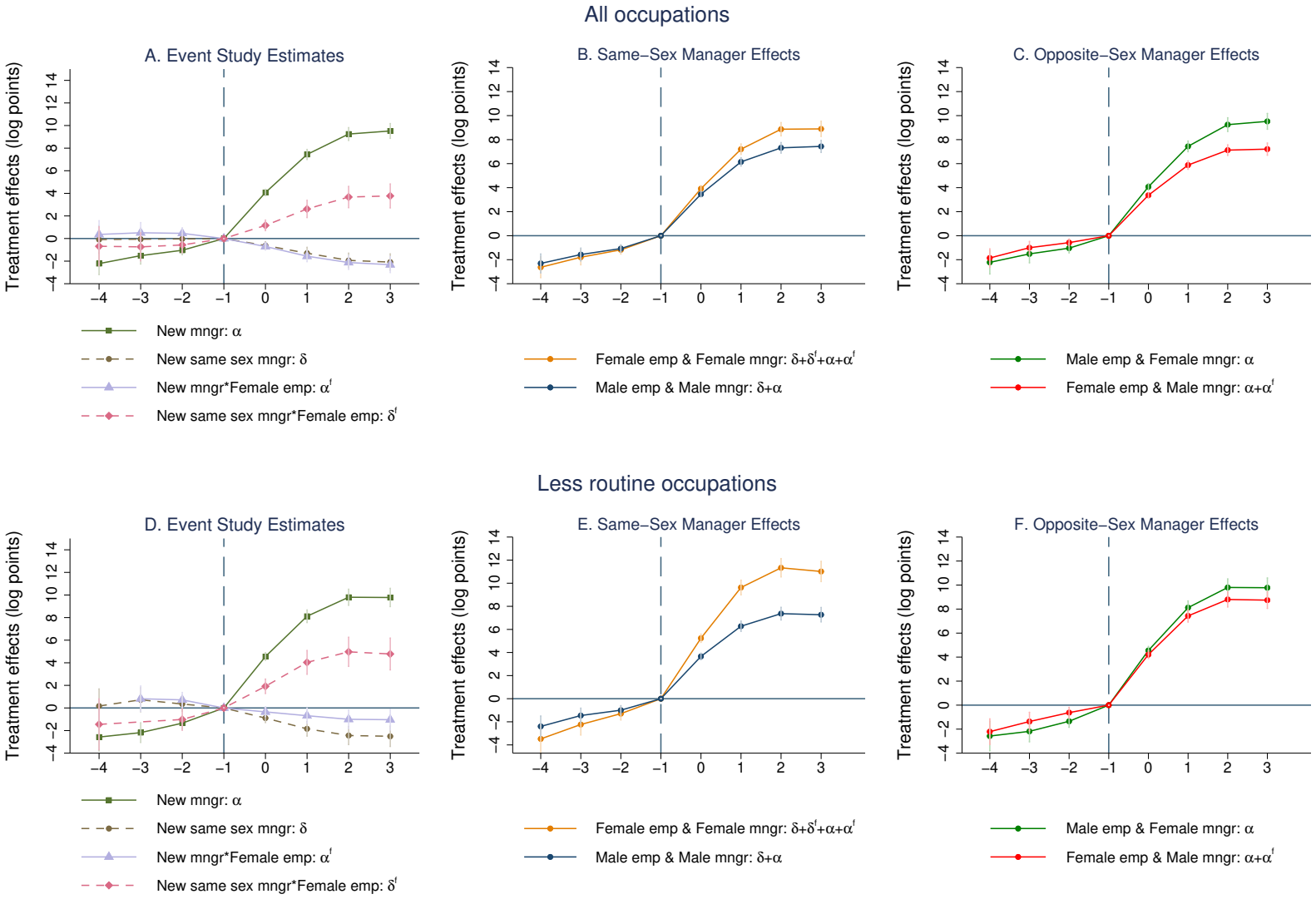

FIGURE A.2. EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS

Note: Treatments effects, and specification are defined as in Figure 3. Panels A and B are for all employees and occupations in the event-study sample as defined in Figure 3.Panels C and D are for a subsample of employees with less routine occupations, as defined in Figure 4. Point estimates and standard errors are reported in Tables 2 and B.3. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

Table A.1—Salary table 2012 General Schedule (GS)

A. Annual Rates by Grade and Step

Grade	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8	Step 9	Step 10
1	17,803	18,398	18,990	19,579	20,171	20,519	21,104	21,694	21,717	22,269
2	20,017	20,493	21,155	21,717	21,961	22,607	23,253	23,899	24,545	25,191
3	21,840	22,568	23,296	24,024	24,752	25,480	26,208	26,936	27,664	28,392
4	24,518	25,335	26,152	26,969	27,786	28,603	29,420	30,237	31,054	31,871
5	27,431	28,345	29,259	30,173	31,087	32,001	32,915	33,829	34,743	35,657
6	30,577	31,596	32,615	33,634	34,653	35,672	36,691	37,710	38,729	39,748
7	33,979	35,112	36,245	37,378	38,511	39,644	40,777	41,910	43,043	44,176
8	37,631	38,885	40,139	41,393	42,647	43,901	45,155	46,409	47,663	48,917
9	41,563	42,948	44,333	45,718	47,103	48,488	49,873	51,258	52,643	54,028
10	45,771	47,297	48,823	50,349	51,875	53,401	54,927	56,453	57,979	59,505
11	50,287	51,963	53,639	55,315	56,991	58,667	60,343	62,019	63,695	65,371
12	60,274	62,283	64,292	66,301	68,310	70,319	72,328	74,337	76,346	78,355
13	71,674	74,063	76,452	78,841	81,230	83,619	86,008	88,397	90,786	93,175
14	84,697	87,520	90,343	93,166	95,989	98,812	101,635	104,458	107,281	110,104
15	99,628	102,949	106,270	109,591	112,912	116,233	119,554	122,875	126,196	129,517

B. Percentage increases from previous step/grade

Grade	Grade Increase	Step 2 Increase	Step 3 Increase	Step 4 Increase	Step 5 Increase	Step 6 Increase	Step 7 Increase	Step 8 Increase	Step 9 Increase	Step 10 Increase
1		0.033	0.032	0.031	0.030	0.017	0.028	0.028	0.001	0.025
2	0.117	0.024	0.032	0.026	0.011	0.029	0.028	0.027	0.027	0.026
3	0.087	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
4	0.116	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
5	0.112	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
6	0.109	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
7	0.105	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
8	0.102	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
9	0.099	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
10	0.096	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
11	0.094	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
12	0.181	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
13	0.173	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
14	0.167	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026
15	0.162	0.033	0.032	0.031	0.030	0.029	0.028	0.027	0.027	0.026

Note: Amounts are in USD. The usual progression is 52 weeks (one year) between steps 1-2, 2-3, and 3-4, then 104 weeks (two years) between steps 4-5, 5-6, and 6-7, and finally 156 weeks (three years) between steps 7-8, 8-9, and 9-10. It normally takes 18 years to advance from step 1 to step 10 within a single GS grade if an employee remains in that single grade. See https://www.opm.gov/policy-data-oversight/pay-leave/pay-administration/fact-sheets/within-grade-increases/
Percentage increases from previous step within grade are calculated as the difference in log annual rates between the two steps. Percentage increases from previous grade are calculated as the difference between the log annual rate of the first step in the current grade and the log annual rate of the first step in the previous grade.

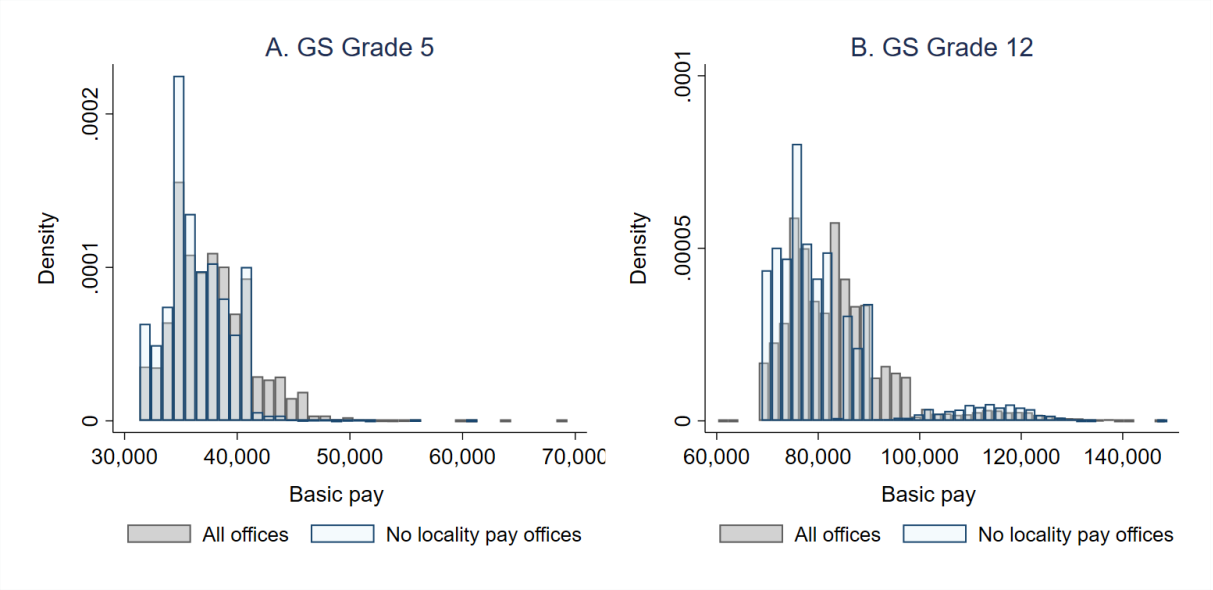

FIGURE A.3. GS EMPLOYEE BASIC PAY IN 2012

Note: The sample is restricted to workers who were employed in 2012 by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 managers, and are born in the year starting 1955, and are employed under the GS pay plan.

Table A.2—Managerial Descriptive Statistics

Sample	All managers			First new managers		
Manager sex	Female	Male	Unidentified	Female	Male	Unidentified
	(1)	(2)	(3)	(4)	(5)	(6)
Salary	89,459	95,265	84,496	68,124	71,545	59,234
	(38,136)	(42,251)	(39,229)	(26,170)	(29,087)	(26,497)
Log salary	11.31	11.37	11.24	11.05	11.09	10.89
	(0.45)	(0.45)	(0.47)	(0.42)	(0.42)	(0.45)
GS grade	12.36	12.80	12.41	11.78	12.14	11.68
(GS sample)	(2.29)	(2.11)	(2.31)	(1.96)	(1.96)	(2.18)
Birth year	0.42	0.51	0.63	0.36	0.41	0.63
1955-	(0.49)	(0.50)	(0.48)	(0.48)	(0.49)	(0.48)
Birth year	0.17	0.14	0.10	0.17	0.14	0.10
1955-1960	(0.37)	(0.35)	(0.29)	(0.37)	(0.35)	(0.31)
Birth year	0.13	0.10	0.06	0.15	0.13	0.07
1960-1965	(0.34)	(0.31)	(0.24)	(0.36)	(0.34)	(0.26)
Birth year	0.09	0.07	0.05	0.12	0.11	0.06
1965-1970	(0.29)	(0.26)	(0.21)	(0.33)	(0.31)	(0.23)
Birth year	0.05	0.04	0.03	0.07	0.08	0.04
1970-1975	(0.23)	(0.20)	(0.16)	(0.26)	(0.27)	(0.18)
Birth year	0.03	0.02	0.01	0.05	0.04	0.02
1975-1980	(0.17)	(0.15)	(0.12)	(0.22)	(0.20)	(0.13)
Birth year	0.11	0.11	0.13	0.07	0.09	0.09
1980+	(0.31)	(0.31)	(0.34)	(0.26)	(0.29)	(0.28)
Education:	0.15	0.10	0.13	0.16	0.09	0.15
High school or less	(0.35)	(0.30)	(0.33)	(0.37)	(0.29)	(0.36)
Education:	0.22	0.16	0.16	0.25	0.16	0.14
Some college	(0.41)	(0.37)	(0.37)	(0.43)	(0.36)	(0.35)
Education:	0.33	0.36	0.34	0.37	0.43	0.34
Bachelor's degree	(0.47)	(0.48)	(0.47)	(0.48)	(0.50)	(0.47)
Education:	0.31	0.37	0.36	0.21	0.30	0.34
Graduate degree	(0.46)	(0.48)	(0.48)	(0.41)	(0.46)	(0.47)
Total tenure	18.78	19.56	19.67	14.74	13.89	13.84
(years)	(9.84)	(10.07)	(10.31)	(9.72)	(9.29)	(10.64)
Managerial tenure	8.01	9.27	8.54	2.90	3.31	3.21
(years)	(7.14)	(7.42)	(6.78)	(5.42)	(5.82)	(5.48)
N unique individuals	85,253	127,380	46,502	4,814	7,936	2,872
N unique individuals (GS sample)	62,974	78,067	24,201	4,095	6,073	1,920
N offices	6,643	7,845	5,547	2,914	3,995	1,924

Note: Managerial characteristics are provided for offices in the event-study sample as defined in Table 1. Standard deviations are in parentheses.

Table A.3—Managerial Transitions (Event Study Sample)

Total managerial changes by sex	Female managers		Male managers		Unidentified managers	
	N (1)	Share (2)	N (3)	Share (4)	N (5)	Share (6)
By source of managerial change						
Appointments within Federal service	4,984	96%	8,031	94%	2,769	90%
Appointments within offices	2,656	51%	3,971	47%	1,334	44%
By type of managerial change						
Managerial additions	4,232	81%	6,929	81%	2,535	83%
Managerial replacements	985	19%	1,590	19%	525	17%
By increasing managerial share						
Increasing female management share	3,696	71%	837	10%	263	9%
Increasing male management share	326	6%	4,383	51%	294	10%
By age of new managers						
At least 5 years younger	1,475	28%	2,046	24%	561	18%
At least 5 years older	1,737	33%	3,344	39%	1,476	48%
Total managerial changes	5,217		8,519		3,060	
N unique individuals	4,814		7,936		2,872	
N offices	2,914		3,995		1,924	

Note: Managerial transitions are provided for first new managers in the event-study sample as defined in Table 1. Appointments within Federal service are when an incoming manager has worked within the US Federal service in the quarter prior to being appointed as a new manager, whereas appointments within offices are when new managers have been employed at the same offices. Managerial additions denote appointments that increase the number of managers at the office, while managerial replacements are appointments after which the number of managers at the office decreases or remains the same. Increasing female/male management share appointments include managerial changes after which the female/male managerial share increses at the time of managerial change relative to the previous quarter. At least 5 years older/younger appointments denote new managers that are older/younger than the average manager at the office by at least 5 years. Standard deviations are in parentheses.

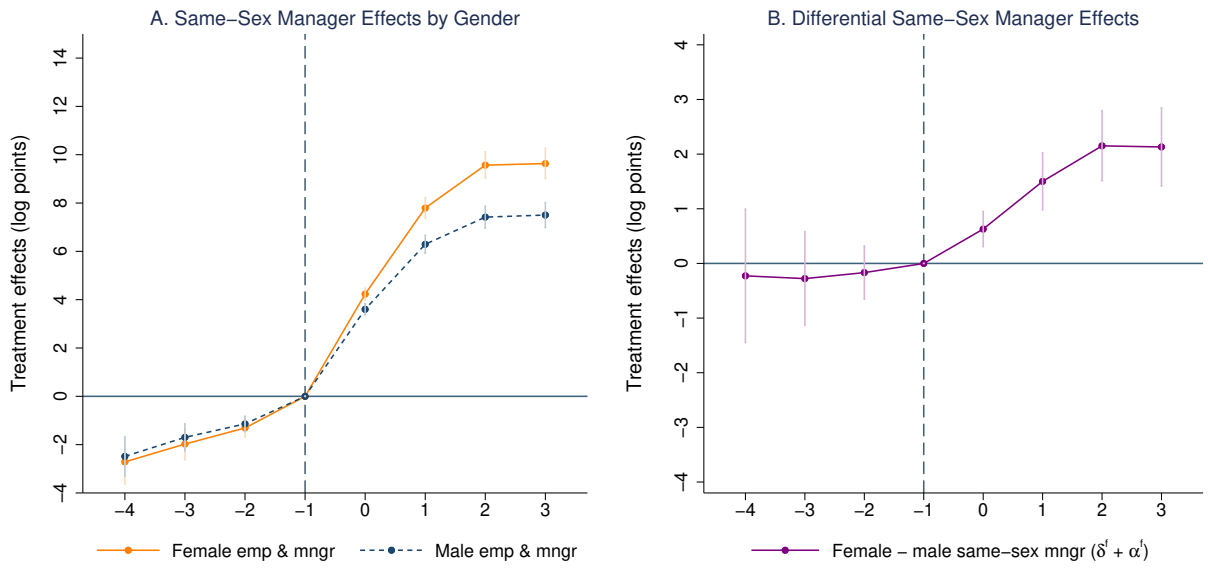

FIGURE A.4. EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS FOR GS SUBSAMPLE

Note: Treatments effects and specification are defined as in Figure 3. The sample includes employees that work under the GS schedule from the event-study sample. Point estimates and standard errors are reported in Table A.4. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

TABLE A.4—EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS FOR GS SUBSAMPLE

Event year	New same-sex mngr (δ)	New same-sex mngr*female (δ^f)	New mngr (α)	New mngr*female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)
-4	-0.27	-0.58	-2.22***	0.36	-0.23
	(0.65)	(0.91)	(0.52)	(0.65)	(0.62)
-3	-0.02	-0.99	-1.68***	0.72	-0.28
	(0.46)	(0.64)	(0.37)	(0.46)	(0.44)
-2	-0.05	-0.68*	-1.09***	0.51*	-0.17
	(0.27)	(0.37)	(0.22)	(0.27)	(0.25)
0	-0.76***	1.42***	4.36***	-0.79***	0.63***
	(0.18)	(0.25)	(0.14)	(0.17)	(0.17)
1	-1.50***	3.07***	7.80***	-1.57***	1.50***
	(0.28)	(0.41)	(0.24)	(0.27)	(0.27)
2	-2.08***	4.15***	9.50***	-2.00***	2.15***
	(0.35)	(0.50)	(0.32)	(0.34)	(0.33)
3	-2.06***	4.11***	9.56***	-1.98***	2.13***
	(0.39)	(0.56)	(0.36)	(0.38)	(0.37)
N unique individuals	28,385	28,385	28,385	28,385	28,385
N person-qtrs	1,172,730	1,172,730	1,172,730	1,172,730	1,172,730

Note: The sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, are employed under the GS schedule, and experienced an appointment of a first new manager, as explained in section III.B. Employees in the GS subsample are spread over 7,799 offices. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.4. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

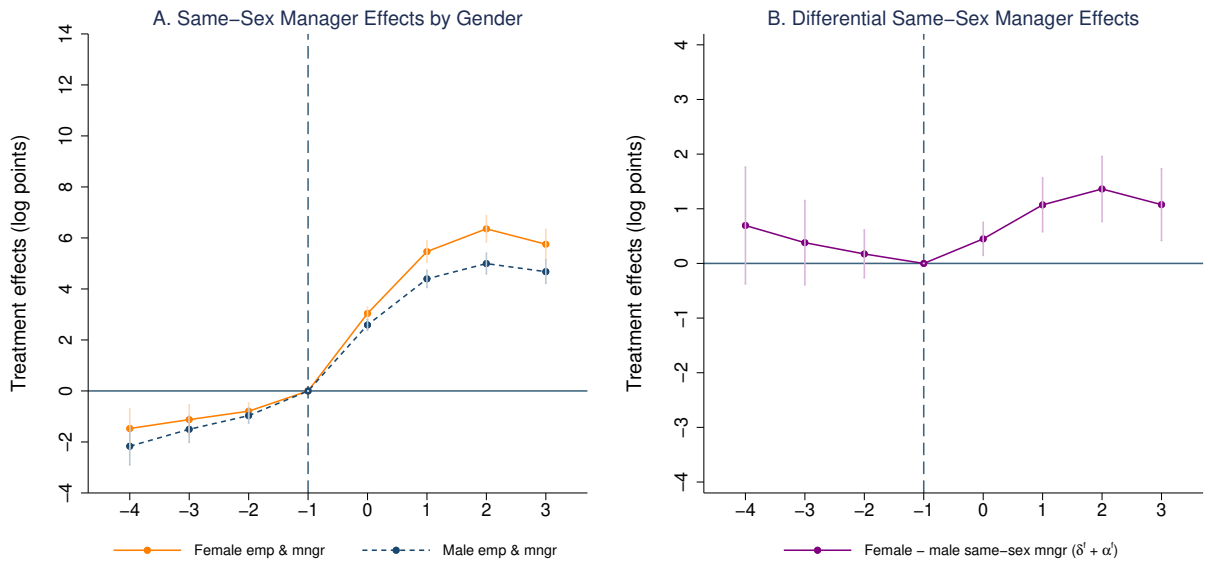

FIGURE A.5. EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS (SAME SAMPLE IN STAGES 1 AND 2)

Note: Treatments effects and specification are defined as in Figure 3. Estimates are obtained using the event-study sample in both first and second stages. Point estimates and standard errors are reported in Table A.5. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

TABLE A.5—EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS (SAME SAMPLE IN STAGES 1 AND 2)

Event year	New same-sex mngr (δ)	New same-sex mngr*female (δ^f)	New mngr (α)	New mngr*female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)
-4	-0.87	0.23	-1.30***	0.47	0.69
	(0.57)	(0.78)	(0.44)	(0.56)	(0.55)
-3	-0.44	-0.22	-1.06***	0.60	0.38
	(0.40)	(0.55)	(0.32)	(0.39)	(0.39)
-2	-0.12	-0.30	-0.85***	0.48**	0.17
	(0.23)	(0.32)	(0.19)	(0.23)	(0.22)
0	-0.70***	1.06***	3.29***	-0.61***	0.45***
	(0.16)	(0.22)	(0.13)	(0.15)	(0.16)
1	-1.52***	2.53***	5.92***	-1.45***	1.07***
	(0.25)	(0.36)	(0.22)	(0.23)	(0.25)
2	-2.08***	3.33***	7.08***	-1.96***	1.36***
	(0.30)	(0.44)	(0.28)	(0.29)	(0.30)
3	-2.11***	3.23***	6.79***	-2.16***	1.08***
	(0.34)	(0.49)	(0.31)	(0.33)	(0.34)
N unique individuals	31,117	31,117	31,117	31,117	31,117
N person-qtrs	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees in the sample are spread over 8,377 offices. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are obtained using the event-study sample in both first and second stages. Estimates are depicted in Figure A.5. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

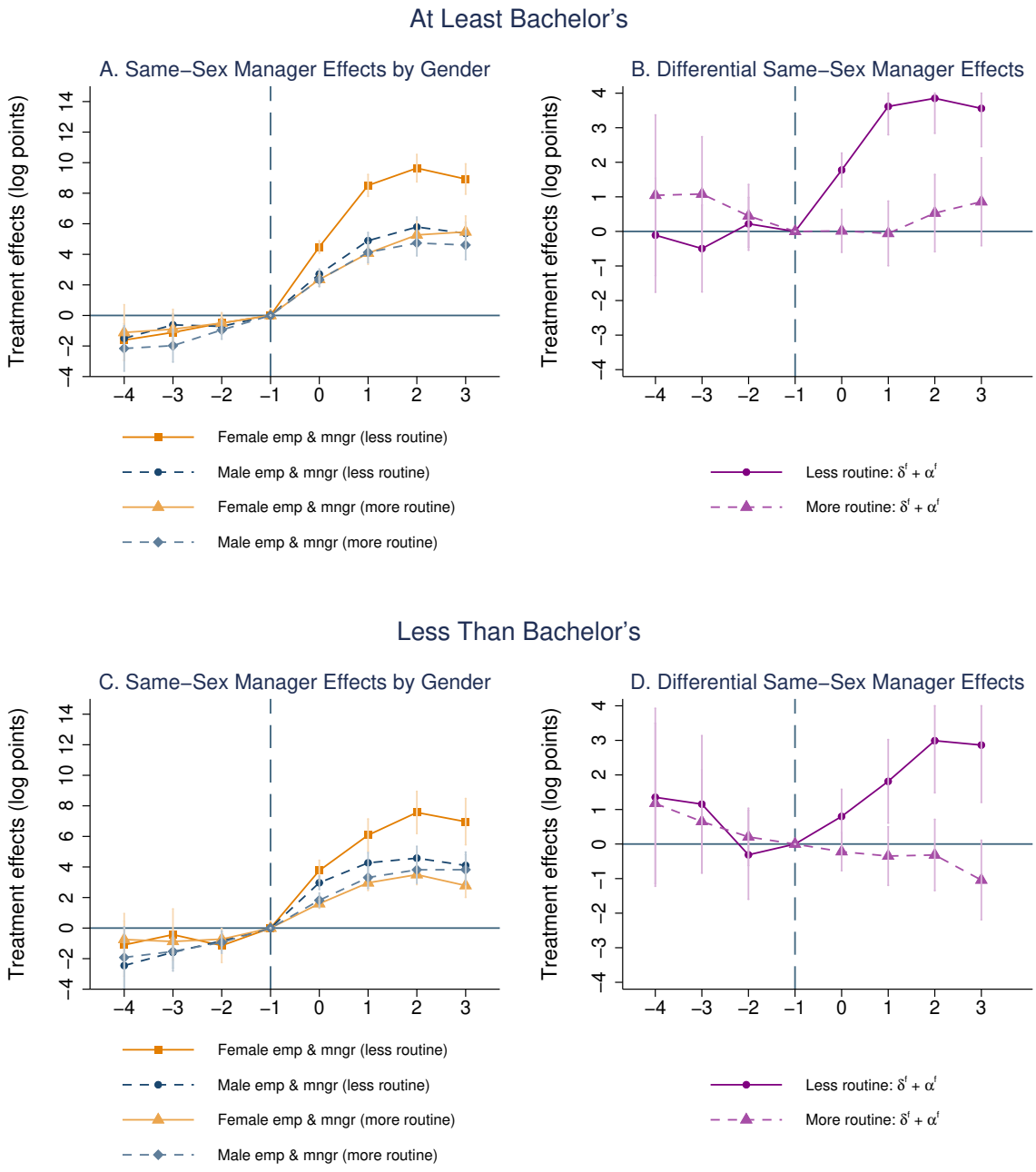

FIGURE A.6. EVENT STUDY ESTIMATES BY EDUCATIONAL ATTAINMENT AND OCCUPATIONAL ROUTINENESS (SAME SAMPLE IN STAGES 1 AND 2)

Note: Treatments effects and specification are defined as in Figure 3. Estimates are obtained using the event-study sample in both first and second stages. Panels A and B split the subsample of employees with at least a Bachelor's degree from Figure 4 into employees with less routine and more routine occupations. Panels C and D split the subsample of employees with less than a Bachelor's degree from Figure 4 into employees with less routine and more routine occupations. Less routine and more routine occupations are as defined in Figure 4. Point estimates and standard errors are reported in Tables A.6 and A.7. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

Table A.6—Event Study Estimates by Educational Attainment (Same Sample in Stages 1 and 2)

	At least Bachelor's				Less than Bachelor's				At least Bachelor's	Less than Bachelor's
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.70	0.10	-1.01*	-0.07	-0.87	-0.01	-1.58**	1.25	0.03	1.25
	(0.68)	(1.02)	(0.55)	(0.72)	(0.96)	(1.20)	(0.74)	(0.87)	(0.71)	(0.84)
-3	0.09	-0.44	-1.25***	0.39	-1.20*	0.08	-0.56	0.71	-0.05	0.78
	(0.49)	(0.73)	(0.39)	(0.51)	(0.67)	(0.85)	(0.51)	(0.61)	(0.53)	(0.57)
-2	0.03	-0.12	-0.87***	0.36	-0.24	-0.59	-0.75**	0.59*	0.24	0.00
	(0.30)	(0.43)	(0.24)	(0.30)	(0.38)	(0.49)	(0.30)	(0.35)	(0.30)	(0.33)
0	-0.98***	1.62***	3.55***	-0.38**	-0.14	0.15	2.62***	-0.55**	1.24***	-0.40*
	(0.19)	(0.29)	(0.16)	(0.19)	(0.25)	(0.31)	(0.20)	(0.23)	(0.20)	(0.22)
1	-1.97***	3.38***	6.58***	-0.97***	-0.49	1.00**	4.30***	-1.21***	2.41***	-0.21
	(0.31)	(0.48)	(0.27)	(0.31)	(0.38)	(0.48)	(0.30)	(0.34)	(0.33)	(0.33)
2	-2.50***	4.08***	7.87***	-1.30***	-0.95**	1.81***	5.14***	-1.72***	2.79***	0.09
	(0.38)	(0.58)	(0.34)	(0.38)	(0.45)	(0.58)	(0.37)	(0.41)	(0.41)	(0.40)
3	-2.59***	4.17***	7.60***	-1.40***	-0.77	1.42**	4.74***	-1.84***	2.76***	-0.42
	(0.43)	(0.65)	(0.39)	(0.42)	(0.50)	(0.65)	(0.41)	(0.46)	(0.45)	(0.45)
N unique individuals	18,033	18,033	18,033	18,033	13,311	13,311	13,311	13,311	18,033	13,311
N person-qtrs	753,475	753,475	753,475	753,475	575,061	575,061	575,061	575,061	753,475	575,061

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,875 offices in the at least Bachelor's sample and 6,372 offices in the less than Bachelor's sample. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are obtained using the event study sample in both first and second stages. Estimates are depicted in Figure A.6. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table A.7—Event Study Estimates by Occupational Routineness (Same Sample in Stages 1 and 2)

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.56	-0.18	-1.34**	0.57	-1.24	0.91	-1.12	0.65	0.39	1.56*
	(0.71)	(1.05)	(0.57)	(0.74)	(0.94)	(1.17)	(0.69)	(0.84)	(0.74)	(0.83)
-3	0.25	-0.73	-1.25***	0.77	-1.28*	0.55	-0.74	0.59	0.04	1.14**
	(0.50)	(0.76)	(0.41)	(0.53)	(0.66)	(0.82)	(0.48)	(0.59)	(0.55)	(0.57)
-2	0.28	-0.71	-1.07***	0.83***	-0.74**	0.44	-0.31	-0.05	0.12	0.39
	(0.31)	(0.45)	(0.24)	(0.31)	(0.36)	(0.45)	(0.29)	(0.35)	(0.33)	(0.31)
0	-0.96***	1.76***	3.77***	-0.23	-0.17	0.24	2.36***	-0.54**	1.53***	-0.31
	(0.20)	(0.32)	(0.17)	(0.21)	(0.25)	(0.31)	(0.19)	(0.21)	(0.22)	(0.22)
1	-1.94***	3.85***	6.64***	-0.55*	-0.70*	1.17**	4.59***	-1.68***	3.30***	-0.51
	(0.32)	(0.52)	(0.28)	(0.33)	(0.38)	(0.48)	(0.30)	(0.33)	(0.36)	(0.33)
2	-2.51***	4.69***	7.84***	-0.82**	-1.08**	1.78***	5.54***	-2.14***	3.87***	-0.36
	(0.38)	(0.62)	(0.35)	(0.40)	(0.46)	(0.58)	(0.40)	(0.42)	(0.44)	(0.40)
3	-2.57***	4.57***	7.41***	-0.91**	-0.99*	1.63**	5.40***	-2.41***	3.66***	-0.78*
	(0.42)	(0.68)	(0.40)	(0.44)	(0.51)	(0.65)	(0.43)	(0.47)	(0.48)	(0.44)
N unique individuals	17,516	17,516	17,516	17,516	13,793	13,793	13,793	13,793	17,516	13,793
N person-qtrs	729,190	729,190	729,190	729,190	596,980	596,980	596,980	596,980	729,190	596,980

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,543 offices in the sample with less routine employees and 6,130 offices in the sample with more routine employees. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are obtained using the event study sample in both first and second stages. Estimates are depicted in Figure A.6. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

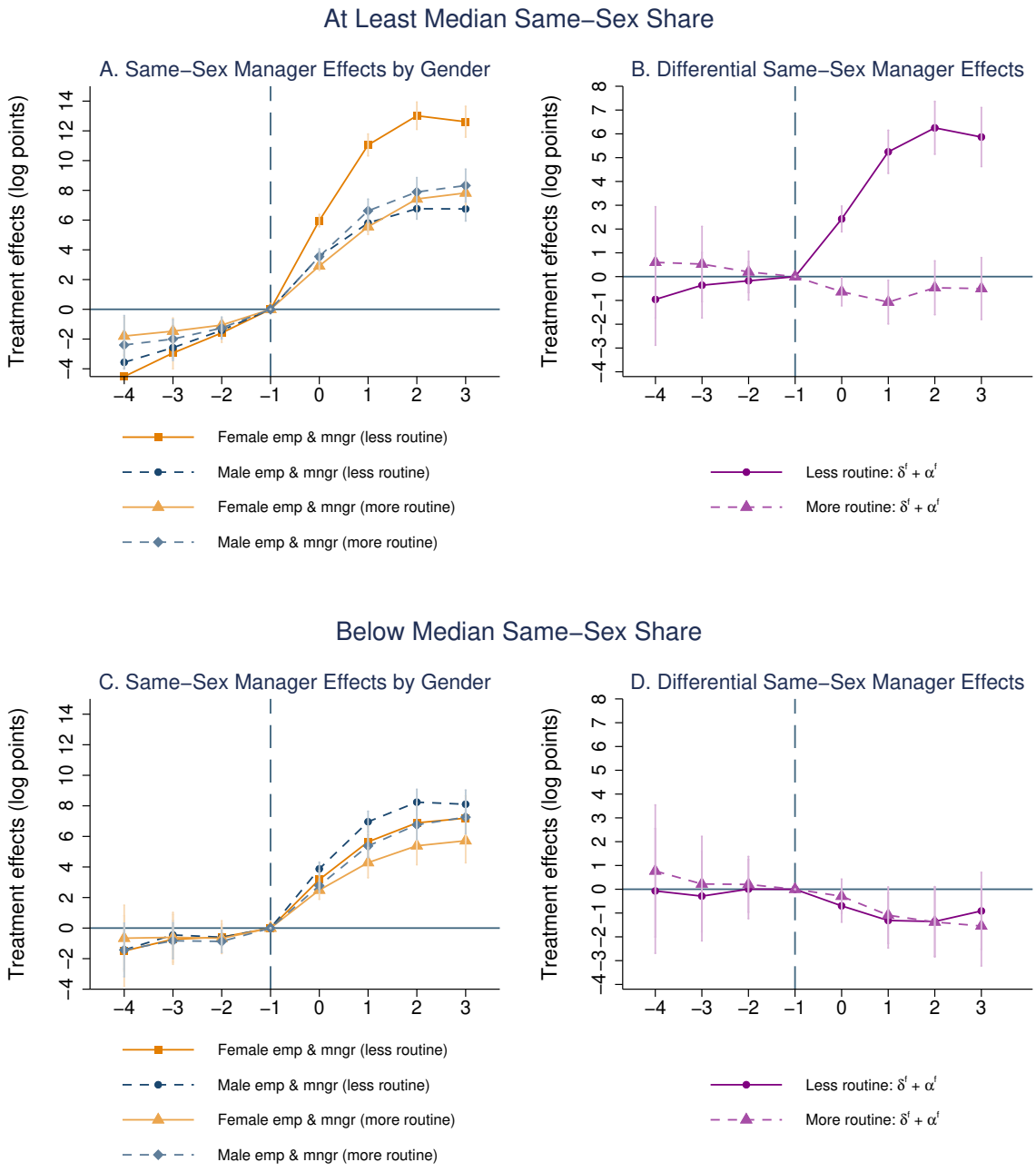

FIGURE A.7. OCCUPATIONAL ROUTINENESS ESTIMATES BY INITIAL SHARE OF SAME-SEX EMPLOYEES

Note: Treatments effects, sample, and specification are defined as in Figure 3. Panels A and B split the employees with an at least median share of same-sex employees in office (i.e. 47.45%) in the first two quarters of employees' tenure into employees with less routine and more routine occupations (i.e. occupations with a below median routine cognitive score). Panels C and D split employees with a below median share of same-sex employees into employees with less routine and more routine occupations. Point estimates and standard errors are reported in Tables A.8 and A.9. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

TABLE A.8—OCCUPATIONAL ROUTINENESS ESTIMATES FOR EMPLOYEES WITH AT LEAST A MEDIAN SHARE OF SAME-SEX EMPLOYEES IN OFFICE

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-2.07*	1.02	-1.49	-1.98	-0.85	0.01	-1.55	0.59	-0.96	0.60
	(1.24)	(1.65)	(1.05)	(1.33)	(1.72)	(1.97)	(1.44)	(1.58)	(0.98)	(1.19)
-3	-1.38	0.79	-1.20	-1.15	-1.41	0.40	-0.58	0.13	-0.36	0.53
	(0.88)	(1.19)	(0.78)	(0.99)	(1.23)	(1.41)	(1.01)	(1.11)	(0.70)	(0.81)
-2	-0.63	0.23	-0.78	-0.41	-0.82	0.13	-0.44	0.07	-0.17	0.20
	(0.54)	(0.71)	(0.48)	(0.60)	(0.71)	(0.80)	(0.64)	(0.69)	(0.41)	(0.44)
0	-0.33	0.92**	3.87***	1.50***	-0.11	0.22	3.66***	-0.86*	2.42***	-0.63**
	(0.35)	(0.46)	(0.33)	(0.40)	(0.48)	(0.53)	(0.41)	(0.44)	(0.28)	(0.30)
1	-0.68	1.68**	6.49***	3.56***	-0.03	0.57	6.65***	-1.64**	5.24***	-1.07**
	(0.51)	(0.72)	(0.46)	(0.60)	(0.75)	(0.83)	(0.68)	(0.73)	(0.46)	(0.47)
2	-1.31**	2.49***	8.07***	3.76***	-0.67	1.52	8.56***	-1.99**	6.25***	-0.47
	(0.62)	(0.88)	(0.56)	(0.73)	(0.94)	(1.05)	(0.87)	(0.94)	(0.57)	(0.58)
3	-1.86***	2.95***	8.61***	2.92***	-0.55	1.35	8.88***	-1.85*	5.87***	-0.50
	(0.71)	(1.00)	(0.66)	(0.83)	(1.03)	(1.18)	(0.95)	(1.04)	(0.63)	(0.66)
N unique individuals	8,425	8,425	8,425	8,425	7,988	7,988	7,988	7,988	8,425	7,988
N person-qtrs	321,259	321,259	321,259	321,259	332,225	332,225	332,225	332,225	321,259	332,225

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B.Employees are spread over 4,631 offices in the sample with less routine employees and 4,005 offices in the sample with more routine employees. Median initial share of same-sex employees is 47.45%. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.7. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

TABLE A.9—OCCUPATIONAL ROUTINENESS ESTIMATES FOR EMPLOYEES WITH BELOW MEDIAN SHARE OF SAME-SEX EMPLOYEES IN OFFICE

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	1.45	-1.71	-2.88***	1.63*	0.29	0.49	-1.72*	0.28	-0.07	0.77
	(0.98)	(1.68)	(0.76)	(0.98)	(1.21)	(1.83)	(0.89)	(1.19)	(1.34)	(1.42)
-3	1.98***	-2.11*	-2.43***	1.82***	-0.37	0.16	-0.46	0.06	-0.29	0.22
	(0.70)	(1.20)	(0.53)	(0.69)	(1.04)	(1.43)	(0.86)	(1.00)	(0.96)	(1.02)
-2	0.89**	-1.35*	-1.48***	1.36***	-0.40	0.21	-0.47	-0.00	0.01	0.20
	(0.43)	(0.78)	(0.30)	(0.41)	(0.50)	(0.77)	(0.35)	(0.46)	(0.63)	(0.60)
0	-0.87***	0.77*	4.74***	-1.47***	-0.19	0.49	2.97***	-0.78**	-0.70**	-0.29
	(0.28)	(0.46)	(0.20)	(0.27)	(0.35)	(0.49)	(0.28)	(0.32)	(0.35)	(0.37)
1	-1.63***	1.93***	8.59***	-3.24***	-0.72	1.40*	6.10***	-2.49***	-1.31**	-1.09*
	(0.44)	(0.74)	(0.34)	(0.43)	(0.52)	(0.77)	(0.39)	(0.46)	(0.59)	(0.61)
2	-2.01***	2.51***	10.26***	-3.87***	-1.23*	2.19**	7.99***	-3.57***	-1.35*	-1.38*
	(0.55)	(0.92)	(0.44)	(0.52)	(0.63)	(0.94)	(0.49)	(0.56)	(0.75)	(0.75)
3	-1.90***	2.55**	10.01***	-3.46***	-1.48**	2.72**	8.74***	-4.26***	-0.91	-1.54*
	(0.62)	(1.01)	(0.49)	(0.58)	(0.70)	(1.08)	(0.56)	(0.64)	(0.83)	(0.86)
N unique individuals	9,091	9,091	9,091	9,091	5,805	5,805	5,805	5,805	9,091	5,805
N person-qtrs	407,931	407,931	407,931	407,931	264,755	264,755	264,755	264,755	407,931	264,755

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B.Employees are spread over 5,069 offices in the sample with less routine employees and 4,364 offices in the sample with more routine employees. Median initial share of same-sex employees is 47.45%. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.7. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

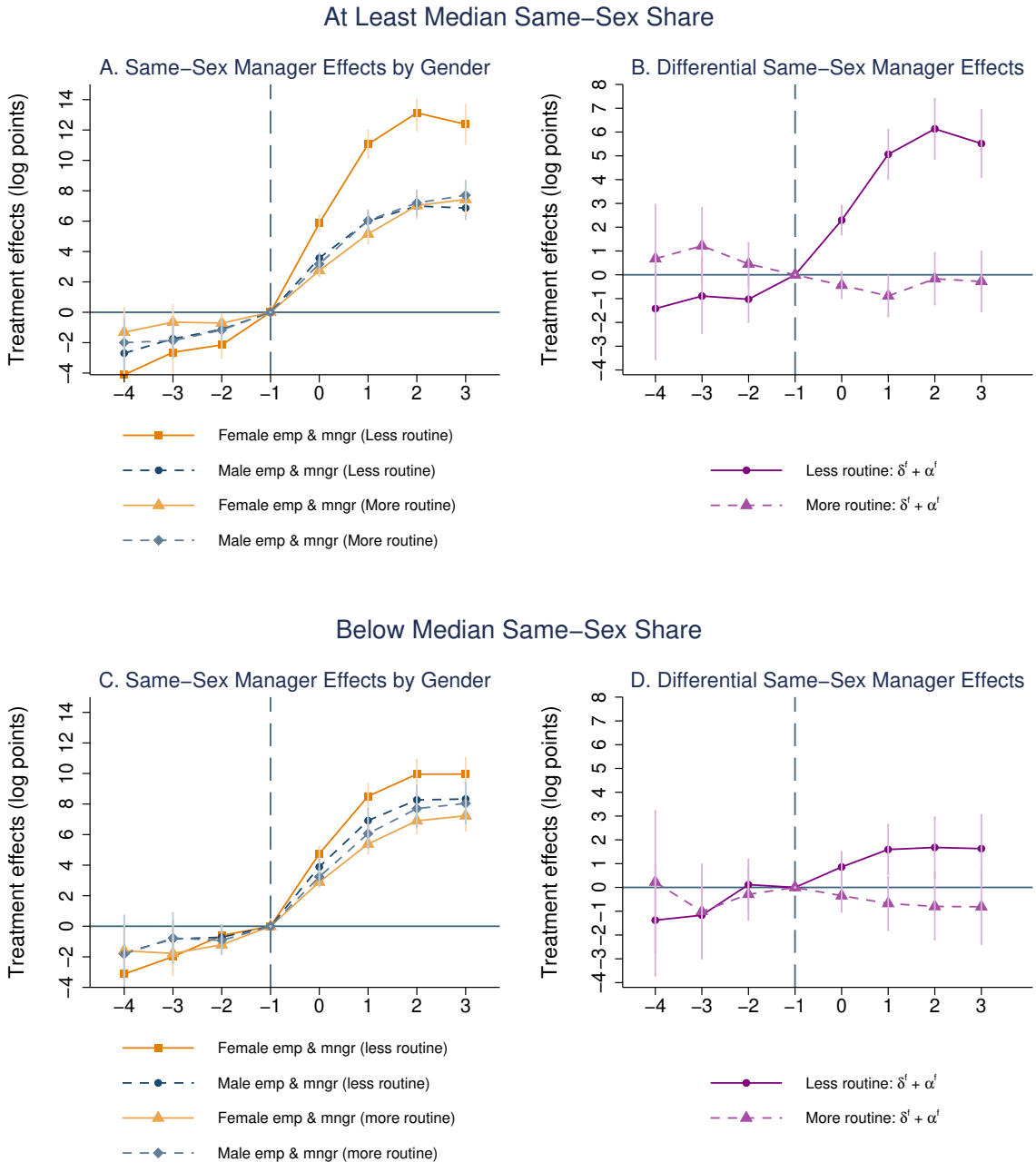

FIGURE A.8. OCCUPATIONAL ROUTINENESS ESTIMATES BY INITIAL SHARE OF SAME-SEX MANAGERS

Note: Treatments effects, sample, and specification are defined as in Figure 3. Panels A and B split the employees with an at least median share of same-sex managers in office (i.e. 45.65%) in the first two quarters of employees' tenure into employees with less routine and more routine occupations (i.e. occupations with a below median routine cognitive score). Panels C and D split employees with a below median share of same-sex managers into employees with less routine and more routine occupations. Point estimates and standard errors are reported in Tables A.8 and A.9. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

TABLE A.10—OCCUPATIONAL ROUTINENESS ESTIMATES FOR EMPLOYEES WITH AT LEAST A MEDIAN SHARE OF SAME-SEX MANAGERS IN OFFICE

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.13	-1.30	-2.57***	-0.12	-0.32	-0.61	-1.68*	1.29	-1.42	0.68
	(0.98)	(1.70)	(0.83)	(1.32)	(1.26)	(1.71)	(1.02)	(1.29)	(1.09)	(1.16)
-3	0.37	-0.95	-2.12***	0.06	-0.65	0.25	-1.22*	0.97	-0.89	1.22
	(0.69)	(1.22)	(0.58)	(0.94)	(0.91)	(1.25)	(0.72)	(0.94)	(0.80)	(0.82)
-2	-0.03	-0.91	-1.09***	-0.11	-0.47	-0.04	-0.70*	0.49	-1.03**	0.46
	(0.40)	(0.72)	(0.33)	(0.54)	(0.52)	(0.72)	(0.41)	(0.55)	(0.49)	(0.45)
0	-0.92***	1.70***	4.49***	0.59*	-0.00	0.19	3.18***	-0.63*	2.30***	-0.44
	(0.26)	(0.45)	(0.22)	(0.33)	(0.34)	(0.44)	(0.28)	(0.33)	(0.31)	(0.28)
1	-1.86***	3.55***	7.86***	1.52***	-0.09	0.68	6.14***	-1.57***	5.06***	-0.89**
	(0.41)	(0.74)	(0.35)	(0.53)	(0.54)	(0.69)	(0.46)	(0.54)	(0.53)	(0.44)
2	-2.56***	4.43***	9.55***	1.70***	-0.66	1.78**	7.86***	-1.95***	6.13***	-0.17
	(0.50)	(0.91)	(0.44)	(0.66)	(0.68)	(0.90)	(0.60)	(0.72)	(0.65)	(0.56)
3	-2.94***	4.19***	9.80***	1.33*	-0.91	2.01*	8.63***	-2.29***	5.52***	-0.28
	(0.56)	(1.01)	(0.50)	(0.72)	(0.76)	(1.03)	(0.68)	(0.82)	(0.72)	(0.65)
N unique individuals	8,784	8,784	8,784	8,784	6,859	6,859	6,859	6,859	8,784	6,859
N person-qtrs	341,427	341,427	341,427	341,427	270,930	270,930	270,930	270,930	341,427	270,930

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 4,968 offices in the sample with less routine employees and 3,996 offices in the sample with more routine employees. Median initial share of same-sex managers is 45.65%. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.8. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

TABLE A.11—OCCUPATIONAL ROUTINENESS ESTIMATES FOR EMPLOYEES WITH BELOW MEDIAN SHARE OF SAME-SEX MANAGERS IN OFFICE

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.99	-1.98	-2.74***	0.60	-0.28	0.22	-1.55	0.01	-1.38	0.23
	(1.25)	(1.64)	(0.97)	(1.12)	(1.69)	(2.04)	(1.15)	(1.35)	(1.19)	(1.53)
-3	1.55*	-2.39**	-2.38***	1.22	-1.23	-0.03	0.46	-0.98	-1.17	-1.01
	(0.91)	(1.19)	(0.70)	(0.81)	(1.51)	(1.69)	(1.26)	(1.34)	(0.88)	(1.01)
-2	1.03*	-1.22*	-1.75***	1.34***	-0.73	0.11	-0.19	-0.40	0.12	-0.29
	(0.56)	(0.72)	(0.42)	(0.49)	(0.62)	(0.73)	(0.45)	(0.51)	(0.54)	(0.55)
0	-0.74**	1.68***	4.63***	-0.82***	0.01	0.31	3.23***	-0.66	0.86***	-0.35
	(0.34)	(0.45)	(0.25)	(0.30)	(0.49)	(0.54)	(0.39)	(0.41)	(0.33)	(0.35)
1	-1.44***	3.41***	8.36***	-1.82***	-0.53	1.52*	6.60***	-2.20***	1.59***	-0.67
	(0.54)	(0.72)	(0.44)	(0.50)	(0.69)	(0.80)	(0.49)	(0.54)	(0.53)	(0.57)
2	-1.72**	4.01***	10.00***	-2.33***	-1.10	2.40**	8.80***	-3.20***	1.68**	-0.80
	(0.69)	(0.89)	(0.57)	(0.63)	(0.80)	(0.95)	(0.57)	(0.62)	(0.65)	(0.71)
3	-1.29*	3.66***	9.62***	-2.03***	-1.35	2.76**	9.39***	-3.57***	1.63**	-0.81
	(0.77)	(0.98)	(0.64)	(0.70)	(0.89)	(1.07)	(0.64)	(0.70)	(0.72)	(0.80)
N unique individuals	8,732	8,732	8,732	8,732	6,934	6,934	6,934	6,934	8,732	6,934
N person-qtrs	387,763	387,763	387,763	387,763	326,050	326,050	326,050	326,050	387,763	326,050

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 5,023 offices in the sample with less routine employees and 4,707 offices in the sample with more routine employees. Median initial share of same-sex managers is 45.65%. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.8. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

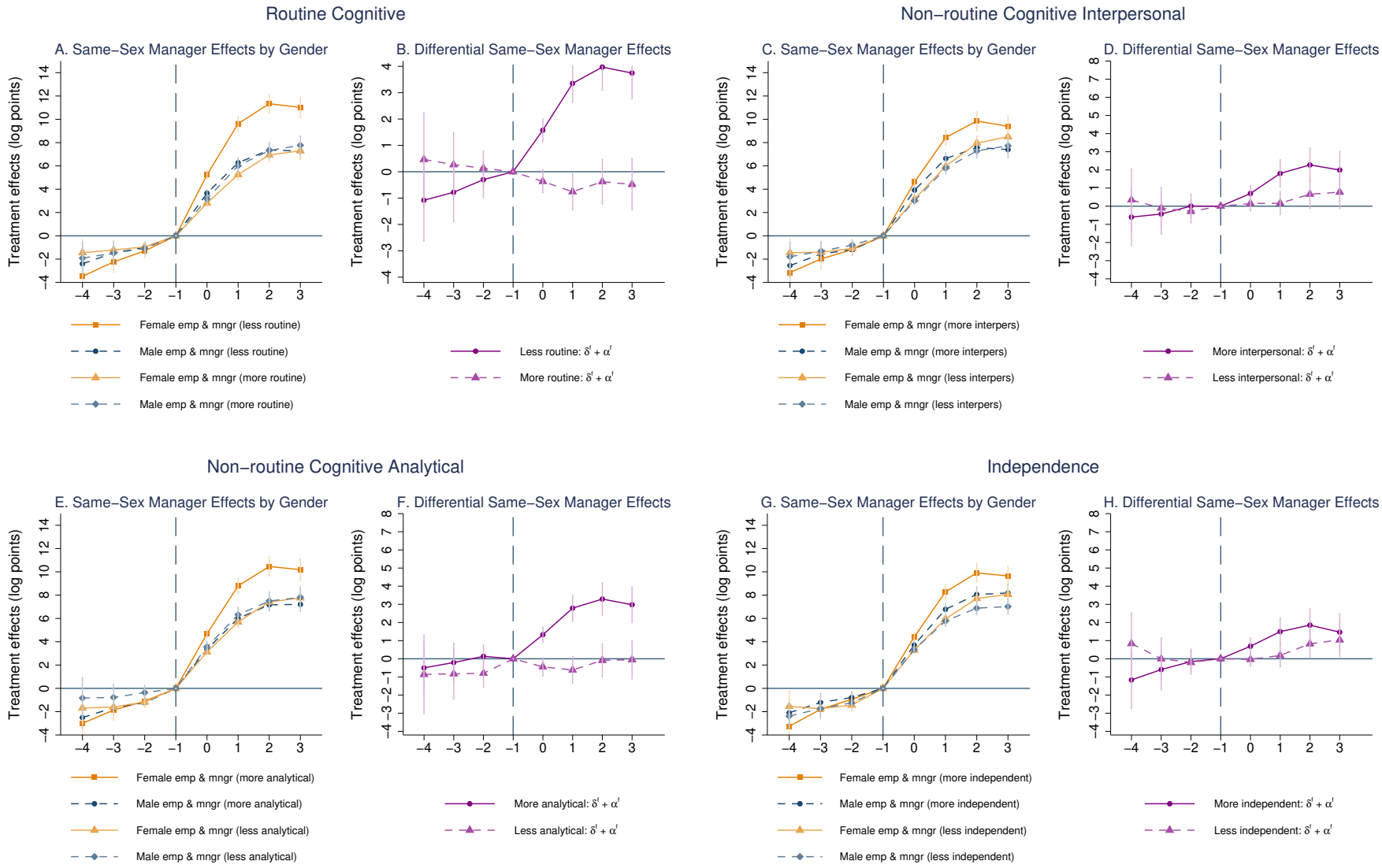

FIGURE A.9. EVENT STUDY ESTIMATES BY ALTERNATE O*NET INDICES

Note: Treatments effects and specification are defined as in Figure 3. Panels A and B split the sample from Figure 3 into employees by routineness of occupations, defined by below-median and above-median or median O*NET routine cognitive index (median – 0). Panels C, D and E, F split the sample by interpersonal and analytical non-routineness of occupations, defined by above-median and below-median or median non-routine interpersonal (median – 0) and analytical (median – 0.63) O*NET indices. Panels G and H split the sample by independence of occupations, defined by above-median and below-median or median independence (median – 3.97) O*NET index. Point estimates and standard errors are reported in Tables B.3, A.12, A.13, and A.14. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

Table A.12—Event Study Estimates by Non-Routine Interpersonal Index

	More Interpersonal				Less Interpersonal				More interpersonal	Less interpersonal
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.36	-1.07	-2.91***	0.47	-0.74	0.07	-1.06	0.28	-0.60	0.35
	(0.80)	(1.15)	(0.64)	(0.80)	(0.95)	(1.30)	(0.75)	(0.94)	(0.79)	(0.87)
-3	0.35	-0.98	-1.90***	0.55	-0.35	-0.70	-0.96*	0.60	-0.43	-0.10
	(0.62)	(0.86)	(0.52)	(0.62)	(0.67)	(0.89)	(0.52)	(0.65)	(0.57)	(0.58)
-2	0.02	-0.61	-1.20***	0.62*	-0.06	-0.55	-0.74**	0.27	0.01	-0.28
	(0.34)	(0.48)	(0.26)	(0.33)	(0.37)	(0.49)	(0.30)	(0.37)	(0.34)	(0.33)
0	-0.73***	1.31***	4.66***	-0.61***	-0.22	0.66**	3.22***	-0.52**	0.70***	0.15
	(0.23)	(0.34)	(0.19)	(0.22)	(0.24)	(0.30)	(0.19)	(0.22)	(0.23)	(0.21)
1	-1.73***	3.18***	8.36***	-1.38***	-0.44	1.58***	6.25***	-1.41***	1.81***	0.17
	(0.36)	(0.57)	(0.30)	(0.35)	(0.37)	(0.48)	(0.30)	(0.34)	(0.39)	(0.32)
2	-2.45***	4.20***	10.03***	-1.92***	-0.89*	2.56***	8.18***	-1.90***	2.28***	0.66*
	(0.44)	(0.69)	(0.38)	(0.43)	(0.46)	(0.59)	(0.39)	(0.43)	(0.47)	(0.40)
3	-2.56***	4.13***	9.96***	-2.13***	-1.19**	2.88***	8.92***	-2.11***	2.00***	0.78*
	(0.49)	(0.76)	(0.44)	(0.48)	(0.51)	(0.68)	(0.43)	(0.48)	(0.52)	(0.46)
N unique individuals	17,137	17,137	17,137	17,137	14,219	14,219	14,219	14,219	17,137	14,219
N person-qtrs	719,646	719,646	719,646	719,646	608,675	608,675	608,675	608,675	719,646	608,675

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,392 offices in the sample with employees with more interpersonal occupations (above median non-routine interpersonal O*NET index) and 6,334 offices in the sample with employees with less interpersonal occupations (below median or median non-routine interpersonal O*NET index). Median non-routine interpersonal O*NET index is 0. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.9. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table A.13—Event Study Estimates by Non-Routine Analytical Index

	More analytical				Less analytical				More analytical	Less analytical
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.28	-0.35	-2.78***	-0.15	-0.26	-1.07	-1.06	0.21	-0.50	-0.86
	(0.74)	(1.10)	(0.61)	(0.80)	(1.19)	(1.48)	(0.75)	(0.95)	(0.74)	(1.11)
-3	0.58	-0.68	-2.24***	0.47	-0.93	-0.64	-0.96*	-0.19	-0.21	-0.83
	(0.57)	(0.81)	(0.48)	(0.60)	(0.80)	(1.03)	(0.52)	(0.67)	(0.54)	(0.71)
-2	0.16	-0.29	-1.39***	0.42	-0.16	-0.94*	-0.74**	0.14	0.13	-0.80**
	(0.30)	(0.46)	(0.25)	(0.33)	(0.45)	(0.56)	(0.30)	(0.38)	(0.32)	(0.39)
0	-0.77***	1.42***	4.13***	-0.10	-0.35	0.74**	3.22***	-1.18***	1.33***	-0.44*
	(0.21)	(0.32)	(0.18)	(0.21)	(0.29)	(0.35)	(0.19)	(0.24)	(0.21)	(0.25)
1	-1.89***	3.35***	7.89***	-0.56	-0.21	1.37**	6.25***	-1.99***	2.79***	-0.62
	(0.33)	(0.54)	(0.29)	(0.34)	(0.44)	(0.55)	(0.30)	(0.36)	(0.37)	(0.38)
2	-2.62***	4.26***	9.78***	-0.96**	-0.55	2.30***	8.18***	-2.39***	3.29***	-0.09
	(0.40)	(0.66)	(0.37)	(0.42)	(0.54)	(0.67)	(0.39)	(0.46)	(0.45)	(0.47)
3	-2.78***	4.22***	9.99***	-1.24***	-0.55	2.35***	8.92***	-2.40***	2.98***	-0.05
	(0.45)	(0.73)	(0.41)	(0.47)	(0.62)	(0.77)	(0.43)	(0.53)	(0.50)	(0.54)
N unique individuals	18,533	18,533	18,533	18,533	12,619	12,619	12,619	12,619	18,533	12,619
N person-qtrs	779,298	779,298	779,298	779,298	539,982	539,982	539,982	539,982	779,298	539,982

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,557 offices in the sample with employees with more analytical occupations (above median non-routine analytical O*NET index) and 5,685 offices in the sample with employees with less analytical occupations (below median or median non-routine analytical O*NET index). Median non-routine analytical O*NET index is 0.63. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.9. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table A.14—Event Study Estimates By Independence Index

	More independent				Less independent				More independent	Less independent
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.74	-2.65**	-2.78***	1.48	-0.53	1.12	-1.86***	-0.28	-1.16	0.84
	(0.97)	(1.25)	(0.61)	(0.93)	(0.81)	(1.22)	(0.63)	(0.82)	(0.81)	(0.87)
-3	1.35**	-2.46***	-2.24***	1.87***	-0.86	0.28	-0.88*	-0.28	-0.60	0.00
	(0.68)	(0.90)	(0.48)	(0.67)	(0.63)	(0.86)	(0.52)	(0.62)	(0.57)	(0.59)
-2	0.81**	-1.34**	-1.39***	1.19***	-0.60*	-0.14	-0.63***	-0.06	-0.15	-0.20
	(0.41)	(0.53)	(0.25)	(0.39)	(0.31)	(0.46)	(0.25)	(0.32)	(0.35)	(0.32)
0	-1.25***	2.11***	4.13***	-1.42***	-0.04	0.12	3.36***	-0.15	0.69***	-0.04
	(0.25)	(0.35)	(0.18)	(0.23)	(0.23)	(0.30)	(0.19)	(0.21)	(0.23)	(0.20)
1	-2.50***	4.33***	7.89***	-2.83***	-0.21	0.79*	5.99***	-0.61**	1.50***	0.18
	(0.40)	(0.59)	(0.29)	(0.38)	(0.33)	(0.46)	(0.27)	(0.31)	(0.39)	(0.32)
2	-3.08***	5.17***	9.78***	-3.31***	-0.83**	1.99***	7.72***	-1.16***	1.86***	0.83**
	(0.51)	(0.73)	(0.37)	(0.49)	(0.40)	(0.56)	(0.33)	(0.38)	(0.47)	(0.40)
3	-3.00***	4.77***	9.99***	-3.31***	-1.11**	2.44***	8.13***	-1.39***	1.47***	1.04**
	(0.57)	(0.80)	(0.41)	(0.54)	(0.46)	(0.65)	(0.39)	(0.45)	(0.52)	(0.46)
N unique individuals	15,856	15,856	15,856	15,856	15,579	15,579	15,579	15,579	15,856	15,579
N person-qtrs	647,938	647,938	647,938	647,938	685,374	685,374	685,374	685,374	647,938	685,374

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,563 offices in the sample with employees with more independent occupations (above median independence O*NET index) and 6,007 offices in the sample with employees with less independent occupations (below median or median independence O*NET index). Median independence O*NET index is 3.97. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.9. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

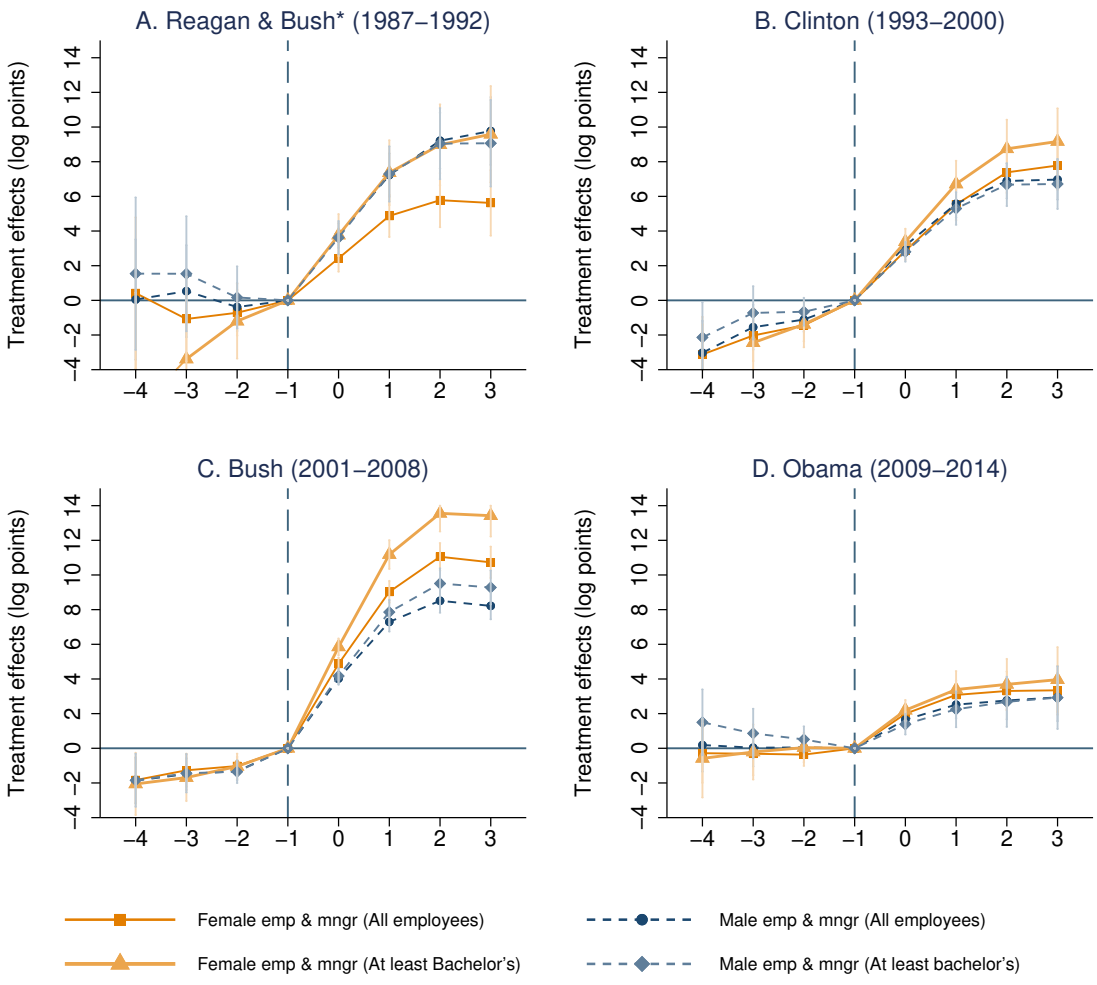

FIGURE A.10. EVENT STUDY ESTIMATES BY PRESIDENTIAL ERAS FOR ALL EMPLOYEES AND THOSE WITH AT LEAST A BACHELOR'S DEGREE

Note: Treatments effects and specification are defined as in Figure 3. The Figure displays estimates for each presidential era. Employees are assigned to the era they received their first new manager. There are 4,205 employees in the Reagan and Bush (1987-1992) sample, 6,670 employees in the Clinton (1993-2000) sample, 14,823 employees in the Bush (2001-2008) sample, and 8,593 employees in the Obama (2009-2014) sample. The subsample of employees with at least Bachelor's degree is defined in Figure 4. There are 2,194 employees in the Reagan and Bush (1987-1992) sample, 3,711 employees in the Clinton (1993-2000) sample, 8,705 employees in the Bush (2001-2008) sample, and 5,172 employees in the Obama (2009-2014) sample. Point estimates and standard errors are reported in Tables A.15, A.16, A.17, and A.18. Vertical bars represent 95% confidence intervals with standard errors clustered by office.
* The female employee and manager effect estimate for employees with at least Bachelor's degree in the panel A for event year t = -4 is at the seam of the data. For clarity of the figure, we omit this unusually low estimate and report it here. The estimate is -8.92(4.78).

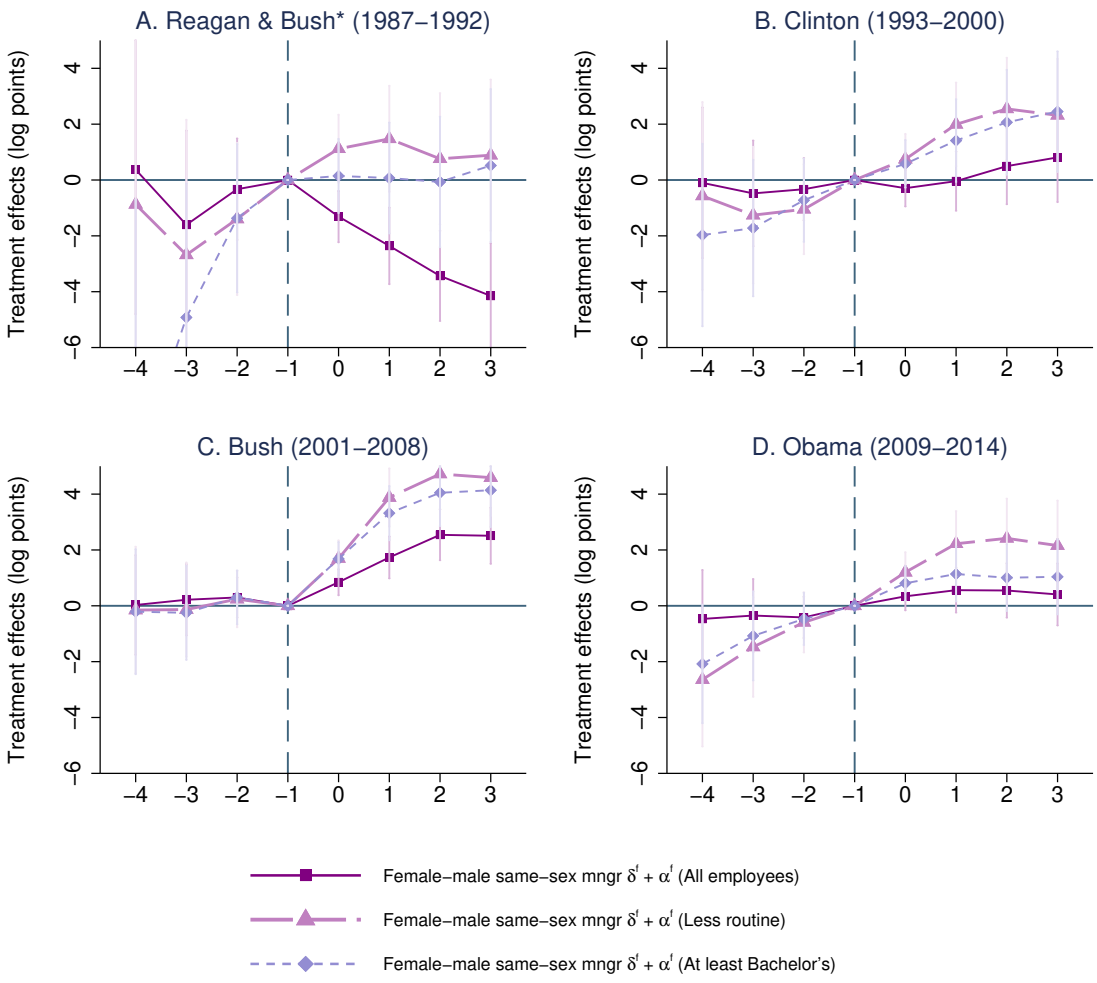

FIGURE A.11. DIFFERENTIAL HOMOPHILY ESTIMATES BY PRESIDENTIAL ERAS FOR ALL EMPLOYEES AND THOSE WITH AT LEAST A BACHELOR'S DEGREE

Note: Treatments effects and specification are defined as in Figure 3. The Figure displays estimates for each presidential era. Employees are assigned to the era they received their first new manager. There are 4,205 employees in the Reagan and Bush (1987-1992) sample, 6,670 employees in the Clinton (1993-2000) sample, 14,823 employees in the Bush (2001-2008) sample, and 8,593 employees in the Obama (2009-2014) sample. The subsample of employees with at least Bachelor's degree is defined in Figure 4. There are 2,194 employees in the Reagan and Bush (1987-1992) sample, 3,711 employees in the Clinton (1993-2000) sample, 8,705 employees in the Bush (2001-2008) sample, and 5,172 employees in the Obama (2009-2014) sample. The subsample of employees with less routine occupations is defined in Figure 4. There are 2,223 employees in the Reagan and Bush (1987-1992) sample, 3,872 employees in the Clinton (1993-2000) sample, 8,495 employees in the Bush (2001-2008) sample, and 4,651employees in the Obama (2009-2014) sample. Point estimates and standard errors are reported in Tables A.15, A.16, A.17, and A.18. Vertical bars represent 95% confidence intervals with standard errors clustered by office.
* The estimate for employees with at least a Bachelor's degree in panel A for event year -4 is at the seam of the data. For clarity of the figure, we omit this unusually low estimate and report it here. The estimate is -10.46(4.98).

TABLE A.15—EVENT STUDY ESTIMATES BY PRESIDENTIAL ERAS FOR ALL EMPLOYEES AND THOSE WITH AT LEAST A BACHELOR'S DEGREE: REAGAN AND BUSH (1987-1992)

	All employees				At least Bachelor's				All employees	At least Bachelor's
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-2.32	1.99	2.36	-1.61	0.17	-15.07**	1.37	4.61	0.37	-10.46**
	(2.38)	(3.57)	(1.88)	(2.26)	(3.02)	(6.44)	(2.45)	(3.65)	(2.64)	(4.98)
-3	0.21	-1.98	0.32	0.37	0.15	-5.15	1.39	0.23	-1.60	-4.92**
	(1.85)	(2.38)	(1.42)	(1.51)	(2.20)	(3.51)	(1.64)	(2.17)	(1.72)	(2.44)
-2	-0.27	-0.50	-0.11	0.17	-0.38	-0.54	0.55	-0.83	-0.33	-1.37
	(0.92)	(1.20)	(0.65)	(0.72)	(1.14)	(1.77)	(0.79)	(1.06)	(0.93)	(1.36)
0	0.68	-0.75	3.06***	-0.56	0.72	-0.03	2.90***	0.18	-1.31***	0.15
	(0.45)	(0.62)	(0.40)	(0.39)	(0.57)	(0.89)	(0.50)	(0.53)	(0.47)	(0.68)
1	0.89	-0.42	6.35***	-1.94***	0.83	0.48	6.47***	-0.41	-2.36***	0.07
	(0.69)	(0.92)	(0.61)	(0.56)	(0.86)	(1.34)	(0.79)	(0.78)	(0.70)	(1.01)
2	0.21	0.14	9.00***	-3.57***	-0.34	1.81	9.39***	-1.88*	-3.43***	-0.07
	(0.87)	(1.12)	(0.82)	(0.69)	(1.13)	(1.66)	(1.08)	(1.01)	(0.82)	(1.19)
3	-0.34	0.17	10.11***	-4.32***	-1.53	2.87	10.59***	-2.35*	-4.15***	0.52
	(1.05)	(1.34)	(1.03)	(0.85)	(1.39)	(1.99)	(1.34)	(1.23)	(0.96)	(1.40)
N unique individuals	4,205	4,205	4,205	4,205	2,194	2,194	2,194	2,194	4,205	2,194
N person-qtrs	275,353	275,353	275,353	275,353	139,537	139,537	139,537	139,537	275,353	139,537

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 4,340 offices in the sample with all employees and 2,757 offices in the sample with employees that have at least a Bachelor's degree. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figures A.10 and A.11. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

TABLE A.16—EVENT STUDY ESTIMATES BY PRESIDENTIAL ERAS FOR ALL EMPLOYEES AND THOSE WITH AT LEAST A BACHELOR'S DEGREE: CLINTON (1993-2000)

	All employees				At least Bachelor's				All employees	At least Bachelor's
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.70	-1.13	-3.72***	1.03	-0.16	-1.66	-1.98	-0.31	-0.10	-1.97
	(1.31)	(1.93)	(1.05)	(1.27)	(1.56)	(2.43)	(1.28)	(1.62)	(1.38)	(1.67)
-3	0.22	-1.15	-1.77**	0.67	-0.05	-0.91	-0.67	-0.81	-0.48	-1.72
	(1.06)	(1.44)	(0.88)	(1.04)	(1.38)	(1.90)	(1.16)	(1.39)	(0.97)	(1.25)
-2	0.63	-1.49**	-1.74***	1.16**	0.54	-1.72*	-1.20**	0.99	-0.33	-0.72
	(0.52)	(0.75)	(0.41)	(0.49)	(0.64)	(1.01)	(0.51)	(0.66)	(0.57)	(0.76)
0	-0.16	0.39	3.31***	-0.68**	-0.26	0.97	3.07***	-0.39	-0.29	0.58
	(0.37)	(0.48)	(0.30)	(0.34)	(0.48)	(0.66)	(0.40)	(0.49)	(0.33)	(0.44)
1	-0.63	1.37*	6.21***	-1.41***	-0.75	1.65	6.05***	-0.24	-0.04	1.41*
	(0.55)	(0.74)	(0.44)	(0.49)	(0.67)	(1.01)	(0.56)	(0.67)	(0.54)	(0.76)
2	-0.82	2.50***	7.71***	-2.00***	-1.00	2.71**	7.68***	-0.65	0.50	2.07**
	(0.66)	(0.92)	(0.53)	(0.59)	(0.80)	(1.25)	(0.65)	(0.79)	(0.70)	(0.96)
3	-0.67	2.81***	7.64***	-2.00***	-1.06	3.11**	7.77***	-0.66	0.81	2.45**
	(0.75)	(1.07)	(0.61)	(0.67)	(0.92)	(1.43)	(0.73)	(0.90)	(0.82)	(1.10)
N unique individuals	6,670	6,670	6,670	6,670	3,711	3,711	3,711	3,711	6,670	3,711
N person-qtrs	372,435	372,435	372,435	372,435	212,195	212,195	212,195	212,195	372,435	212,195

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 4,942 offices in the sample with all employees and 3,599 offices in the sample with employees that have at least a Bachelor's degree. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figures A.10 and A.11. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

TABLE A.17—EVENT STUDY ESTIMATES BY PRESIDENTIAL ERAS FOR ALL EMPLOYEES AND THOSE WITH AT LEAST A BACHELOR'S DEGREE: BUSH (2001-2008)

	All employees				At least Bachelor's				All employees	At least Bachelor's
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.84	0.57	-1.03	-0.54	-0.18	0.79	-1.67*	-1.00	0.03	-0.21
	(0.93)	(1.27)	(0.74)	(0.88)	(1.13)	(1.65)	(0.95)	(1.16)	(0.91)	(1.14)
-3	-0.24	-0.18	-1.25**	0.40	0.98	-0.96	-2.42***	0.71	0.22	-0.25
	(0.68)	(0.92)	(0.54)	(0.64)	(0.83)	(1.21)	(0.69)	(0.84)	(0.65)	(0.86)
-2	-0.62	0.05	-0.70**	0.25	-0.26	0.17	-1.09***	0.14	0.30	0.30
	(0.40)	(0.53)	(0.31)	(0.38)	(0.49)	(0.70)	(0.38)	(0.48)	(0.37)	(0.49)
0	-0.82***	1.74***	4.85***	-0.89***	-1.34***	2.47***	5.51***	-0.79***	0.85***	1.68***
	(0.25)	(0.35)	(0.21)	(0.23)	(0.31)	(0.45)	(0.25)	(0.29)	(0.24)	(0.31)
1	-1.41***	3.40***	8.70***	-1.67***	-2.33***	4.68***	10.19***	-1.36***	1.73***	3.32***
	(0.41)	(0.58)	(0.35)	(0.38)	(0.50)	(0.74)	(0.43)	(0.48)	(0.38)	(0.50)
2	-1.99***	4.43***	10.50***	-1.89***	-2.82***	5.44***	12.33***	-1.39**	2.54***	4.05***
	(0.51)	(0.72)	(0.46)	(0.48)	(0.62)	(0.92)	(0.55)	(0.60)	(0.46)	(0.61)
3	-2.35***	4.62***	10.57***	-2.11***	-3.07***	5.60***	12.35***	-1.46**	2.51***	4.14***
	(0.56)	(0.80)	(0.52)	(0.53)	(0.68)	(1.01)	(0.62)	(0.66)	(0.51)	(0.67)
N unique individuals	14,823	14,823	14,823	14,823	8,705	8,705	8,705	8,705	14,823	8,705
N person-qtrs	584,746	584,746	584,746	584,746	343,564	343,564	343,564	343,564	584,746	343,564

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 5,244 offices in the sample with all employees and 4,299 offices in the sample with employees that have at least a Bachelor's degree. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figures A.10 and A.11. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

TABLE A.18—EVENT STUDY ESTIMATES BY PRESIDENTIAL ERAS FOR ALL EMPLOYEES AND THOSE WITH AT LEAST A BACHELOR'S DEGREE: OBAMA (20019-2014)

	All employees				At least Bachelor's				All employees	At least Bachelor's
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	1.31	-2.70*	-1.13	2.23*	1.18	-4.51**	-0.73	1.87	-0.47	-2.64**
	(1.10)	(1.49)	(1.07)	(1.16)	(1.42)	(2.08)	(1.44)	(1.62)	(0.89)	(1.22)
-3	0.55	-1.84	-0.51	1.49*	0.86	-3.04*	-0.50	1.56	-0.35	-1.47
	(0.79)	(1.15)	(0.74)	(0.85)	(1.08)	(1.70)	(1.05)	(1.30)	(0.67)	(0.91)
-2	0.66	-1.53**	-0.60	1.12**	0.84	-1.87**	-0.72	1.28*	-0.42	-0.59
	(0.45)	(0.64)	(0.41)	(0.48)	(0.61)	(0.95)	(0.57)	(0.71)	(0.38)	(0.55)
0	-0.68**	0.82*	2.34***	-0.48	-1.15***	1.44**	2.81***	-0.24	0.34	1.20***
	(0.31)	(0.44)	(0.29)	(0.31)	(0.41)	(0.66)	(0.40)	(0.48)	(0.26)	(0.37)
1	-1.41***	1.72**	3.93***	-1.16**	-2.30***	2.95***	4.70***	-0.73	0.56	2.22***
	(0.48)	(0.69)	(0.49)	(0.50)	(0.66)	(1.03)	(0.70)	(0.75)	(0.41)	(0.60)
2	-1.83***	2.05**	4.59***	-1.50**	-3.22***	3.69***	5.72***	-1.27	0.55	2.42***
	(0.60)	(0.87)	(0.67)	(0.64)	(0.81)	(1.24)	(0.92)	(0.91)	(0.50)	(0.73)
3	-1.91***	2.04**	4.85***	-1.64**	-3.13***	3.25**	5.71***	-1.09	0.41	2.16***
	(0.68)	(0.99)	(0.82)	(0.72)	(0.91)	(1.39)	(1.13)	(1.00)	(0.57)	(0.82)
N unique individuals	8,593	8,593	8,593	8,593	5,172	5,172	5,172	5,172	8,593	5,172
N person-qtrs	247,914	247,914	247,914	247,914	131,864	131,864	131,864	131,864	247,914	131,864

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 3,841 offices in the sample with all employees and 3,032 offices in the sample with employees that have at least a Bachelor's degree. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figures A.10 and A.11. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table A.19—Share of the DID Estimate Explained by Additional Controls (GS Sample)

Dependent variable	Log pay residual (X100)			
	(1)	(2)	(3)	(4)
Additional controls		Grade change	Higher pay occupation switch	(2) and (3)
Same-sex manager	-1.151***	-0.765**	-1.092***	-0.765**
(δ)	(0.320)	(0.29)	(0.317)	(0.286)
Same-sex manager*female	3.169***	2.467***	3.094***	2.468***
(δ^f)	(0.464)	(0.410)	(0.458)	(0.410)
New manager	7.659***	5.212***	7.690***	5.215***
(α)	(0.266)	(0.235)	(0.263)	(0.234)
New manager*female	-1.784***	-1.967***	-1.970***	-1.965***
(α^f)	(0.311)	(0.282)	(0.307)	(0.282)
Female employee and manager	7.894***	4.953***	7.722***	4.952***
($\delta + \delta^f + \alpha + \alpha^f$)	(0.242)	(0.204)	(0.239)	(0.204)
Male employee and manager	6.509***	4.453***	6.598***	4.450***
($\delta + \alpha$)	(0.212)	(0.189)	(0.210)	(0.189)
Female - male same-sex manager	1.385***	0.500***	1.124***	0.503***
($\delta^f + \alpha^f$)	(0.311)	(0.272)	(0.306)	(0.272)
Share explained		0.639	0.188	0.637

Note: The sample is the event-study sample from Table 2 employed under the GS schedule. The estimation specification from equation 3 includes year and individual-office fixed effects. Column (1) replicates estimated from Panel A in Table 4. Column (2) includes a dummy variable that is equal to 1 when an employee experiences a change in grade after getting a new manager and remains 1 until employee's last quarter in federal service. Column (3) includes a dummy variable that is equal to 1 when an employee changes to a higher paying occupation after getting a new manager and remains 1 until employee's last quarter in federal service. Column (4) includes both grade change and higher paying occupation change dummies. Share explained shows the share of the female-male same-sex manager estimate explained by additional controls in columns (2), (3), and (4). Each regression is comprised of 28,377 of unique individuals and 1,044,194 person-quarters. 18,597 employees experience a change in their grade at some point after getting a new manager. 7,631 employees switch to a higher paying occupation at some point after getting a new manager. 7,233 employees experience both a change in grade and a change to a higher paying occupation at some point after getting a new manager. Standard errors clustered at the office level in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table A.20—Two-Period DID Estimates (GS Sample)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Panel A: Log pay residual (X100)		Panel B: Residualized GS Grade		Panel C: Staying Federal Service	
Same-sex manager		-1.540***		-0.144***	-0.328***	-0.329***
(δ)		(0.573)		(0.055)	(0.079)	(0.078)
Same-sex manager*female		3.494***		0.340***	0.123	0.145*
(δ^f)		(0.800)		(0.078)	(0.080)	(0.080)
New manager		8.200***		0.748***	4.362***	4.298***
(α)		(0.949)		(0.082)	(0.729)	(0.710)
New manager*female		-1.885***		-0.189***	0.027	0.027
(α^f)		(0.572)		(0.055)	(0.056)	(0.055)
Female employee and manager		8.269***		0.755***	4.184***	4.141***
($\delta + \delta^f + \alpha + \alpha^f$)		(0.839)		(0.074)	(0.690)	(0.670)
Male employee and manager		6.660***		0.603***	4.034***	3.968***
($\delta + \alpha$)		(0.822)		(0.071)	(0.676)	(0.658)
Female - male same-sex manager		1.608***		0.151**	0.150**	0.172**
($\delta^f + \alpha^f$)		(0.500)		(0.049)	(0.055)	(0.059)
Individual controls		Yes		Yes	No	Yes
Dependent variable	Panel D: Occupation category change		Panel E: 4-Digit Occupation change		Panel F: Office switching	
Same-sex manager	0.000	-0.002	-0.010	-0.012	0.005	0.005
(δ)	(0.010)	(0.010)	(0.012)	(0.009)	(0.003)	(0.003)
Same-sex manager*female	-0.001	-0.000	0.011	0.010	-0.004	-0.004
(δ^f)	(0.016)	(0.016)	(0.017)	(0.013)	(0.004)	(0.004)
New manager	-0.034*	-0.021	-0.014	0.008	-0.009	-0.008
(α)	(0.019)	(0.018)	(0.019)	(0.017)	(0.007)	(0.007)
New manager*female	0.075***	0.071***	0.053***	0.020**	0.004	0.004
(α^f)	(0.011)	(0.011)	(0.012)	(0.010)	(0.003)	(0.003)
Female employee and manager	0.040**	0.048**	0.040**	0.027*	-0.004	-0.004
($\delta + \delta^f + \alpha + \alpha^f$)	(0.017)	(0.017)	(0.018)	(0.015)	(0.007)	(0.006)
Male employee and manager	-0.034**	-0.022	-0.024	-0.004	-0.004	-0.004
($\delta + \alpha$)	(0.016)	(0.015)	(0.017)	(0.015)	(0.007)	(0.007)
Female - male same-sex manager	0.074***	0.071***	0.065***	0.031**	0.000	-0.000
($\delta^f + \alpha^f$)	(0.011)	(0.010)	(0.011)	(0.009)	(0.003)	(0.003)
Individual controls	No	Yes	No	Yes	No	Yes

Note: The sample is a collapsed panel of the event-study sample from Table 2. There are 2 observations for each employee – one year before getting a new manager and 3 years after. If an employee gets a new manager later than 1 year prior to the managerial appointment, all variables in the before time period for the employee are equal to the values in the quarter that we first observe the employee in the sample. If the employee leaves Federal Service within 3 years of getting a new manage, all variables in the second snapshot are equal to the values in the employee's last quarter of federal employment. In all panels, the estimation specification from equation 3 includes year-quarter and individual-office fixed effects. In Panels A and B, the dependent variables are residualized as in the main event-study. In Panel C, the dependent variable is employees' quarterly tenure. In Panels, C, D, E, and F, individual controls include age categories, education, tenure, and a part-time indicator, and in Panels C, E, and F they also include occupation category. Average values with standard deviations in parentheses for dependent variables are: log pay residual -3.89 (18.96); residualized GS grade -0.26 (1.60); number of quarters in Federal Service 16.81 (14.77); occupation category changes 0.16 (0.37); 4-digit occupation changes 0.20 (0.40); office switching 0.19 (0.39). Each regression is comprised of 26,945 of unique individuals and 53,890 observations. Standard errors clustered at the office level in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

FIGURE A.12. EVENT STUDY ESTIMATES: EFFECTS OF FIRST AND SECOND NEW MANAGERS

Note: Treatments effects, sample, and specification are defined as in Figure 3. The estimated equation is given by:
$\hat{\omega}_{itq} = \delta_k^1 \cdot \mathbb{I}^{Event_1} \cdot NSM_{idt} + \delta_k^{f1} \cdot \mathbb{I}^{Event_1} \cdot F_i \cdot \ NSM_{idt} + \alpha_k^1 \cdot \mathbb{I}^{Event_1} + \alpha_k^{f1} \cdot \mathbb{I}^{Event_1} \cdot F_i +$
$\delta_k^2 \cdot \mathbb{I}^{Event_2} \cdot NSM_{idt} + \delta_k^{f2} \cdot \mathbb{I}^{Event_2} \cdot F_i \cdot \ NSM_{idt} + \alpha_k^2 \cdot \mathbb{I}^{Event_2} + \alpha_k^{f2} \cdot \mathbb{I}^{Event_2} \cdot F_i + \gamma_i + \lambda_q + \varepsilon_{itq}$,
where $Event_1$ denotes the arrival of a first manager and $Event_2$ denotes the arrival of a second manager. The remaining notation is the same as in event study equation 2. Point estimates and standard errors are reported in Table A.21. Vertical bars represent 95% confidence intervals with standard errors clustered by office.

Table A.21—Event Study Estimates: Effects of First and Second New Managers

	First new mngr				Second new mngr			
Event year	New same-sex mngr (δ^1)	New same-sex mngr*female (δ^{f1})	New mngr(α^1)	New mngr*female (α^{f1})	New same-sex mngr (δ^2)	New same-sex mngr*female (δ^{f2})	New mngr (α^2)	New mngr*female (α^{f2})
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
-4	-0.09	-0.72	-2.29***	0.39				
	(0.63)	(0.88)	(0.50)	(0.62)				
-3	-0.05	-0.77	-1.57***	0.54				
	(0.47)	(0.64)	(0.38)	(0.46)				
-2	-0.04	-0.58	-1.07***	0.47*				
	(0.25)	(0.35)	(0.20)	(0.25)				
0	-0.65***	1.10***	3.87***	-0.69***	0.09	0.57	1.18***	-0.18
	(0.17)	(0.24)	(0.14)	(0.16)	(0.37)	(0.51)	(0.24)	(0.28)
1	-1.30***	2.31***	6.97***	-1.37***	-0.00	0.91*	0.95***	-0.40
	(0.28)	(0.40)	(0.24)	(0.28)	(0.33)	(0.47)	(0.21)	(0.26)
2	-1.76***	2.94***	8.18***	-1.74***	-0.35	1.57***	1.56***	-0.55*
	(0.35)	(0.50)	(0.31)	(0.37)	(0.35)	(0.53)	(0.24)	(0.29)
3	-1.78***	2.90***	7.93***	-1.50***	-0.48	1.65***	2.02***	-1.00***
	(0.40)	(0.57)	(0.37)	(0.44)	(0.38)	(0.59)	(0.28)	(0.35)
N unique individuals	31,117	31,117	31,117	31,117	31,117	31,117	31,117	31,117
N person-qtrs	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 8,377 offices. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs. The estimated equation is given by:
$\hat{\omega}_{itq} = \delta_k^1 \cdot \mathbb{I}^{Event_1} \cdot NSM_{idt} + \delta_k^{f1} \cdot \mathbb{I}^{Event_1} \cdot F_i \cdot \ NSM_{idt} + \alpha_k^1 \cdot \mathbb{I}^{Event_1} + \alpha_k^{f1} \cdot \mathbb{I}^{Event_1} \cdot F_i +$
$\delta_k^2 \cdot \mathbb{I}^{Event_2} \cdot NSM_{idt} + \delta_k^{f2} \cdot \mathbb{I}^{Event_2} \cdot F_i \cdot \ NSM_{idt} + \alpha_k^2 \cdot \mathbb{I}^{Event_2} + \alpha_k^{f2} \cdot \mathbb{I}^{Event_2} \cdot F_i + \gamma_i + \lambda_q + \varepsilon_{itq}$, where $Event_1$ denotes the arrival of a first manager and $Event_2$ denotes the arrival of a second manager. The remaining notation is the same as in event study equation 2.
The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure A.12. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

APPENDIX B Tables Underlying Figures

TABLE B.1—QUARTERLY EVENT STUDY ESTIMATES: EFFECTS OF FIRST NEW MANAGERS

Event quarter	New same-sex mngr (δ)	New same-sex mngr*female (δ^f)	New mngr (α)	New mngr*female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)
-16	-0.17	-0.69	-3.46***	0.37	-0.32
	(0.80)	(1.12)	(0.64)	(0.80)	(0.76)
-15	-0.15	-0.44	-3.08***	0.26	-0.18
	(0.72)	(1.02)	(0.58)	(0.72)	(0.70)
-14	0.32	-1.04	-3.42***	0.63	-0.41
	(0.68)	(0.95)	(0.54)	(0.67)	(0.65)
-13	0.27	-1.22	-3.12***	0.53	-0.69
	(0.63)	(0.90)	(0.51)	(0.63)	(0.61)
-12	0.12	-0.77	-2.89***	0.37	-0.41
	(0.65)	(0.89)	(0.52)	(0.63)	(0.58)
-11	0.00	-0.64	-2.58***	0.48	-0.16
	(0.60)	(0.82)	(0.49)	(0.59)	(0.53)
-10	0.10	-0.87	-2.38***	0.64	-0.23
	(0.53)	(0.75)	(0.44)	(0.54)	(0.48)
-9	0.27	-1.35*	-2.42***	0.87*	(0.47)
	(0.50)	(0.76)	(0.36)	(0.49)	(0.48)
-8	0.14	-0.78	-2.40***	0.74*	(0.04)
	(0.42)	(0.59)	(0.33)	(0.41)	(0.40)
-7	-0.07	-0.40	-2.09***	0.27	(0.13)
	(0.38)	(0.53)	(0.31)	(0.38)	(0.36)
-6	0.29	-0.98**	-2.09***	0.62*	(0.36)
	(0.34)	(0.47)	(0.27)	(0.34)	(0.31)
-5	0.26	-0.92**	-1.78***	0.67**	(0.25)
	(0.29)	(0.43)	(0.22)	(0.29)	(0.28)
-4	0.34	-0.59*	-1.86***	0.54**	(0.06)
	(0.24)	(0.33)	(0.19)	(0.23)	(0.22)
-3	0.28	-0.22	-1.52***	0.17	(0.05)
	(0.20)	(0.27)	(0.16)	(0.19)	(0.18)
-2	0.23*	-0.16	-0.98***	-0.11	-0.26**
	(0.13)	(0.18)	(0.10)	(0.12)	(0.11)
0	-0.25*	0.56***	1.30***	-0.35***	0.22*
	(0.13)	(0.18)	(0.10)	(0.12)	(0.12)
1	-0.37**	0.74***	2.54***	-0.45***	0.30*
	(0.17)	(0.24)	(0.13)	(0.16)	(0.16)
2	-0.51**	1.17***	4.06***	-0.74***	0.44**
	(0.21)	(0.29)	(0.17)	(0.20)	(0.19)
3	-0.58***	1.33***	4.68***	-0.88***	0.44**
	(0.21)	(0.30)	(0.18)	(0.20)	(0.19)
4	-0.88***	1.92***	5.44***	-1.20***	0.72***
	(0.25)	(0.35)	(0.22)	(0.24)	(0.22)
5	-0.87***	2.00***	6.10***	-1.27***	0.73***
	(0.28)	(0.38)	(0.24)	(0.26)	(0.25)

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TABLE B.1 CONTINUED

Event quarter	New same-sex mngr (δ)	New same-sex mngr*female (δ^f)	New mngr (α)	New mngr*female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)
6	-1.23***	2.74***	7.14***	-1.58***	1.16***
	(0.29)	(0.42)	(0.25)	(0.27)	(0.28)
7	-1.45***	3.00***	7.52***	-1.83***	1.17***
	(0.30)	(0.43)	(0.26)	(0.28)	(0.29)
8	-1.50***	3.07***	7.74***	-1.79***	1.28***
	(0.30)	(0.45)	(0.27)	(0.29)	(0.30)
9	-1.59***	3.24***	8.18***	-1.94***	1.31***
	(0.32)	(0.47)	(0.29)	(0.31)	(0.32)
10	-1.93***	3.75***	8.78***	-2.18***	1.57***
	(0.34)	(0.50)	(0.30)	(0.33)	(0.33)
11	-1.99***	3.82***	8.82***	-2.20***	1.61***
	(0.35)	(0.51)	(0.31)	(0.34)	(0.34)
12	-1.88***	3.53***	8.79***	-2.14***	1.39***
	(0.36)	(0.53)	(0.32)	(0.35)	(0.35)
13	-1.89***	3.57***	8.76***	-2.21***	1.36***
	(0.38)	(0.54)	(0.33)	(0.36)	(0.36)
14	-1.92***	3.50***	8.73***	-2.20***	1.30***
	(0.38)	(0.56)	(0.34)	(0.37)	(0.38)
15	-1.93***	3.67***	8.34***	-2.33***	1.34***
	(0.39)	(0.56)	(0.35)	(0.38)	(0.38)
N unique individuals	31,117	31,117	31,117	31,117	31,117
N person-qtrs	1,318,756	1,318,756	1,318,756	1,318,756	1,318,756

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 8,377 offices in the sample. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 3.
Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.2—Event Study Estimates by Educational Attainment

	At least Bachelor's				Less than Bachelor's				At least Bachelor's	Less than Bachelor's
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.04	-0.87	-1.75***	-0.37	0.18	-0.95	-2.91***	1.48	-1.23	0.53
	(0.76)	(1.13)	(0.63)	(0.81)	(1.04)	(1.32)	(0.77)	(0.93)	(0.75)	(0.93)
-3	0.35	-0.91	-1.56***	0.14	-0.52	-0.59	-1.34**	0.90	-0.77	0.31
	(0.59)	(0.84)	(0.50)	(0.61)	(0.70)	(0.91)	(0.53)	(0.64)	(0.55)	(0.61)
-2	0.08	-0.38	-0.96***	0.21	-0.03	-0.93*	-1.18***	0.84**	-0.17	-0.09
	(0.32)	(0.47)	(0.26)	(0.33)	(0.41)	(0.52)	(0.31)	(0.37)	(0.32)	(0.35)
0	-0.87***	1.72***	4.28***	-0.43**	-0.09	0.26	3.43***	-0.69***	1.29***	-0.43*
	(0.22)	(0.31)	(0.18)	(0.21)	(0.26)	(0.33)	(0.21)	(0.23)	(0.20)	(0.23)
1	-1.76***	3.43***	8.09***	-0.95***	-0.18	1.06**	5.70***	-1.34***	2.48***	-0.28
	(0.33)	(0.51)	(0.29)	(0.33)	(0.39)	(0.51)	(0.31)	(0.35)	(0.34)	(0.35)
2	-2.41***	4.35***	10.11***	-1.32***	-0.65	2.12***	7.06***	-1.83***	3.02***	0.29
	(0.41)	(0.63)	(0.36)	(0.41)	(0.48)	(0.63)	(0.39)	(0.44)	(0.42)	(0.43)
3	-2.65***	4.57***	10.42***	-1.43***	-0.52	1.93***	7.20***	-1.94***	3.14***	-0.01
	(0.47)	(0.70)	(0.41)	(0.46)	(0.54)	(0.71)	(0.44)	(0.49)	(0.47)	(0.49)
N unique individuals	18,033	18,033	18,033	18,033	13,311	13,311	13,311	13,311	18,033	13,311
N person-qtrs	753,475	753,475	753,475	753,475	575,061	575,061	575,061	575,061	753,475	575,061

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,875 offices in the at least Bachelor's sample and 6,372 offices in the less than Bachelor's sample. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 4. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.3—Event Study Estimates by Occupational Routineness

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.18	-1.45	-2.57***	0.37	-0.31	-0.02	-1.60**	0.49	-1.08	0.47
	(0.77)	(1.15)	(0.63)	(0.81)	(1.00)	(1.31)	(0.77)	(0.94)	(0.79)	(0.90)
-3	0.73	-1.60*	-2.18***	0.82	-1.01	0.20	-0.47	0.07	-0.78	0.27
	(0.55)	(0.82)	(0.45)	(0.58)	(0.83)	(1.02)	(0.68)	(0.78)	(0.57)	(0.62)
-2	0.35	-1.02**	-1.34***	0.72**	-0.63	0.11	-0.45	0.02	-0.30	0.13
	(0.33)	(0.49)	(0.26)	(0.34)	(0.39)	(0.50)	(0.31)	(0.37)	(0.35)	(0.34)
0	-0.89***	1.92***	4.55***	-0.34	-0.03	0.29	3.21***	-0.66***	1.58***	-0.37*
	(0.21)	(0.33)	(0.17)	(0.22)	(0.29)	(0.35)	(0.24)	(0.26)	(0.22)	(0.22)
1	-1.84***	4.04***	8.12***	-0.68**	-0.34	1.17**	6.36***	-1.93***	3.35***	-0.76**
	(0.33)	(0.54)	(0.29)	(0.34)	(0.42)	(0.53)	(0.34)	(0.37)	(0.37)	(0.35)
2	-2.44***	4.97***	9.80***	-1.00**	-0.98*	2.26***	8.30***	-2.64***	3.97***	-0.38
	(0.41)	(0.66)	(0.37)	(0.42)	(0.51)	(0.65)	(0.43)	(0.46)	(0.45)	(0.43)
3	-2.51***	4.78***	9.78***	-1.03**	-1.20**	2.56***	8.98***	-3.03***	3.75***	-0.48
	(0.46)	(0.72)	(0.42)	(0.47)	(0.57)	(0.75)	(0.48)	(0.52)	(0.50)	(0.50)
N unique individuals	17,516	17,516	17,516	17,516	13,793	13,793	13,793	13,793	17,516	13,793
N person-qtrs	729,190	729,190	729,190	729,190	596,980	596,980	596,980	596,980	729,190	596,980

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,543 offices in the sample with less routine employees and 6,130 offices in the sample with more routine employees. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 4. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.4—Occupational Routineness Estimates for Employees with Less than a Bachelor's Degree

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.46	-1.37	-3.23***	1.03	0.93	-1.54	-2.25*	1.46	-0.33	-0.08
	(1.24)	(1.89)	(0.95)	(1.23)	(1.60)	(1.88)	(1.15)	(1.32)	(1.44)	(1.31)
-3	-0.43	-1.08	-1.95***	0.97	-0.28	-0.87	-0.71	0.68	-0.11	-0.20
	(0.88)	(1.36)	(0.70)	(0.90)	(1.09)	(1.30)	(0.79)	(0.91)	(1.02)	(0.85)
-2	0.35	-2.04**	-1.65***	1.23**	-0.45	-0.27	-0.60	0.36	-0.81	0.09
	(0.52)	(0.88)	(0.42)	(0.55)	(0.62)	(0.71)	(0.44)	(0.50)	(0.66)	(0.48)
0	-0.23	0.84	4.10***	-0.25	0.17	0.16	2.61***	-0.44	0.59	-0.29
	(0.33)	(0.54)	(0.29)	(0.35)	(0.39)	(0.44)	(0.27)	(0.30)	(0.40)	(0.30)
1	-0.50	2.15**	6.28***	-0.31	0.37	0.66	5.11***	-1.51***	1.84***	-0.85*
	(0.52)	(0.85)	(0.43)	(0.53)	(0.59)	(0.69)	(0.44)	(0.48)	(0.64)	(0.47)
2	-1.07*	3.70***	7.50***	-0.58	0.28	1.20	6.50***	-1.96***	3.12***	-0.76
	(0.63)	(1.04)	(0.53)	(0.65)	(0.74)	(0.87)	(0.58)	(0.62)	(0.79)	(0.58)
3	-0.80	3.41***	7.23***	-0.38	0.40	0.93	7.02***	-2.32***	3.04***	-1.38**
	(0.69)	(1.13)	(0.58)	(0.70)	(0.85)	(1.00)	(0.67)	(0.72)	(0.88)	(0.67)
N unique individuals	5,663	5,663	5,663	5,663	7,827	7,827	7,827	7,827	5,663	7,827
N person-qtrs	236,990	236,990	236,990	236,990	345,225	345,225	345,225	345,225	236,990	345,225

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 3,587 offices in the sample with less routine employees and 4,887 offices in the sample with more routine employees. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 5. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.5—Occupational Routineness Estimates for Employees with at Least a Bachelor's Degree

	Less routine				More routine				Less routine	More routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.71	-1.76	-2.33***	0.10	-0.89	0.61	-1.02	-0.43	-1.66*	0.18
	(0.95)	(1.39)	(0.80)	(1.02)	(1.18)	(1.82)	(0.97)	(1.28)	(0.90)	(1.27)
-3	1.48**	-2.03**	-2.36***	0.78	-1.28	0.91	-0.24	-0.64	-1.25*	0.27
	(0.67)	(1.00)	(0.55)	(0.72)	(1.16)	(1.49)	(1.03)	(1.16)	(0.67)	(0.92)
-2	0.45	-0.72	-1.23***	0.51	-0.59	0.31	-0.39	-0.27	-0.21	0.04
	(0.40)	(0.59)	(0.32)	(0.41)	(0.51)	(0.72)	(0.42)	(0.53)	(0.41)	(0.49)
0	-1.13***	2.17***	4.64***	-0.29	-0.24	0.53	3.55***	-0.55	1.87***	-0.02
	(0.25)	(0.39)	(0.20)	(0.26)	(0.41)	(0.51)	(0.35)	(0.39)	(0.26)	(0.31)
1	-2.27***	4.26***	8.72***	-0.64	-0.89	1.63**	7.05***	-1.50***	3.61***	0.13
	(0.40)	(0.65)	(0.35)	(0.42)	(0.56)	(0.75)	(0.47)	(0.53)	(0.43)	(0.49)
2	-2.74***	4.83***	10.62***	-0.98*	-1.92***	3.22***	9.41***	-2.02***	3.85***	1.21**
	(0.50)	(0.79)	(0.44)	(0.51)	(0.67)	(0.93)	(0.57)	(0.65)	(0.53)	(0.61)
3	-2.87***	4.59***	10.72***	-1.08*	-2.34***	4.31***	10.15***	-2.20***	3.51***	2.11***
	(0.57)	(0.87)	(0.50)	(0.57)	(0.74)	(1.05)	(0.63)	(0.72)	(0.59)	(0.70)
N unique individuals	11,944	11,944	11,944	11,944	6,059	6,059	6,059	6,059	11,944	6,059
N person-qtrs	498,687	498,687	498,687	498,687	255,386	255,386	255,386	255,386	498,687	255,386

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 5,699 offices in the sample with less routine employees and 3,745 offices in the sample with more routine employees. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 5. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.6—Event Study Estimates by Presidential Eras: Reagan and Bush (1987-1992)

	All employees				Less routine employees				All employees	Less routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-2.32	1.99	2.36	-1.61	-4.43	1.97	4.52**	-2.84	0.37	-0.87
	(2.38)	(3.57)	(1.88)	(2.26)	(2.74)	(5.03)	(2.04)	(2.62)	(2.64)	(4.19)
-3	0.21	-1.98	0.32	0.37	0.16	-2.98	0.39	0.29	-1.60	-2.68
	(1.85)	(2.38)	(1.42)	(1.51)	(2.06)	(3.22)	(1.63)	(1.91)	(1.72)	(2.47)
-2	-0.27	-0.50	-0.11	0.17	0.52	-2.34	-0.64	0.95	-0.33	-1.40
	(0.92)	(1.20)	(0.65)	(0.72)	(1.03)	(1.74)	(0.75)	(0.97)	(0.93)	(1.39)
0	0.68	-0.75	3.06***	-0.56	-0.27	0.86	3.24***	0.26	-1.31***	1.12*
	(0.45)	(0.62)	(0.40)	(0.39)	(0.51)	(0.80)	(0.48)	(0.49)	(0.47)	(0.62)
1	0.89	-0.42	6.35***	-1.94***	-0.03	1.32	6.32***	0.16	-2.36***	1.47
	(0.69)	(0.92)	(0.61)	(0.56)	(0.79)	(1.24)	(0.74)	(0.73)	(0.70)	(0.97)
2	0.21	0.14	9.00***	-3.57***	-0.48	1.50	8.91***	-0.74	-3.43***	0.76
	(0.87)	(1.12)	(0.82)	(0.69)	(1.06)	(1.57)	(1.02)	(0.91)	(0.82)	(1.20)
3	-0.34	0.17	10.11***	-4.32***	-0.52	1.37	9.55***	-0.48	-4.15***	0.89
	(1.05)	(1.34)	(1.03)	(0.85)	(1.29)	(1.82)	(1.25)	(1.08)	(0.96)	(1.38)
N unique individuals	4,205	4,205	4,205	4,205	2,223	2,223	2,223	2,223	4,205	2,223
N person-qtrs	275,353	275,353	275,353	275,353	145,142	145,142	145,142	145,142	275,353	145,142

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 4,340 offices in the sample with all employees and 2,672 offices in the sample with employees that have less routine occupations. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 6. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.7—Event Study Estimates by Presidential Eras: Clinton (1993-2000)

	All employees				Less routine employees				All employees	Less routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.70	-1.13	-3.72***	1.03	0.88	-1.93	-3.51***	1.36	-0.10	-0.57
	(1.31)	(1.93)	(1.05)	(1.27)	(1.50)	(2.37)	(1.23)	(1.50)	(1.38)	(1.72)
-3	0.22	-1.15	-1.77**	0.67	1.32	-2.64	-2.36***	1.38	-0.48	-1.26
	(1.06)	(1.44)	(0.88)	(1.04)	(1.04)	(1.67)	(0.80)	(1.06)	(0.97)	(1.25)
-2	0.63	-1.49**	-1.74***	1.16**	0.97	-2.19**	-1.70***	1.15*	-0.33	-1.05
	(0.52)	(0.75)	(0.41)	(0.49)	(0.62)	(1.02)	(0.47)	(0.61)	(0.57)	(0.82)
0	-0.16	0.39	3.31***	-0.68**	-0.35	1.06*	3.46***	-0.32	-0.29	0.75
	(0.37)	(0.48)	(0.30)	(0.34)	(0.40)	(0.61)	(0.31)	(0.38)	(0.33)	(0.46)
1	-0.63	1.37*	6.21***	-1.41***	-1.08*	2.62***	6.24***	-0.62	-0.04	1.99***
	(0.55)	(0.74)	(0.44)	(0.49)	(0.63)	(0.97)	(0.50)	(0.60)	(0.54)	(0.76)
2	-0.82	2.50***	7.71***	-2.00***	-0.71	3.21***	7.18***	-0.66	0.50	2.55***
	(0.66)	(0.92)	(0.53)	(0.59)	(0.78)	(1.20)	(0.62)	(0.74)	(0.70)	(0.93)
3	-0.67	2.81***	7.64***	-2.00***	-0.35	2.78**	6.87***	-0.46	0.81	2.32**
	(0.75)	(1.07)	(0.61)	(0.67)	(0.89)	(1.35)	(0.71)	(0.84)	(0.82)	(1.03)
N unique individuals	6,670	6,670	6,670	6,670	3,872	3,872	3,872	3,872	6,670	3,872
N person-qtrs	372,435	372,435	372,435	372,435	213,602	213,602	213,602	213,602	372,435	213,602

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 4,942 offices in the sample with all employees and 3,517 offices in the sample with employees that have less routine occupations. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 6. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.8—Event Study Estimates by Presidential Eras: Bush (2001-2008)

	All employees				Less routine employees				All employees	Less routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-0.84	0.57	-1.03	-0.54	-0.32	0.91	-2.24**	-1.06	0.03	-0.15
	(0.93)	(1.27)	(0.74)	(0.88)	(1.19)	(1.66)	(0.97)	(1.19)	(0.91)	(1.16)
-3	-0.24	-0.18	-1.25**	0.40	0.67	-0.53	-2.34***	0.40	0.22	-0.13
	(0.68)	(0.92)	(0.54)	(0.64)	(0.86)	(1.21)	(0.70)	(0.85)	(0.65)	(0.86)
-2	-0.62	0.05	-0.70**	0.25	-0.16	-0.21	-1.23***	0.45	0.30	0.24
	(0.40)	(0.53)	(0.31)	(0.38)	(0.52)	(0.74)	(0.41)	(0.51)	(0.37)	(0.51)
0	-0.82***	1.74***	4.85***	-0.89***	-0.92***	2.29***	5.50***	-0.60*	0.85***	1.70***
	(0.25)	(0.35)	(0.21)	(0.23)	(0.32)	(0.48)	(0.26)	(0.31)	(0.24)	(0.33)
1	-1.41***	3.40***	8.70***	-1.67***	-1.90***	4.83***	9.76***	-0.95*	1.73***	3.88***
	(0.41)	(0.58)	(0.35)	(0.38)	(0.52)	(0.79)	(0.45)	(0.51)	(0.38)	(0.53)
2	-1.99***	4.43***	10.50***	-1.89***	-2.55***	5.80***	11.53***	-1.07*	2.54***	4.72***
	(0.51)	(0.72)	(0.46)	(0.48)	(0.64)	(0.97)	(0.58)	(0.63)	(0.46)	(0.64)
3	-2.35***	4.62***	10.57***	-2.11***	-2.94***	5.88***	11.36***	-1.28*	2.51***	4.59***
	(0.56)	(0.80)	(0.52)	(0.53)	(0.70)	(1.06)	(0.65)	(0.69)	(0.51)	(0.70)
N unique individuals	14,823	14,823	14,823	14,823	8,495	8,495	8,495	8,495	14,823	8,495
N person-qtrs	584,746	584,746	584,746	584,746	327,915	327,915	327,915	327,915	584,746	327,915

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 5,244 offices in the sample with all employees and 4,126 offices in the sample with employees that have less routine occupations. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 6. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.9—Event Study Estimates by Presidential Eras: Obama (20019-2014)

	All employees				Less routine employees				All employees	Less routine
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	1.31	-2.70*	-1.13	2.23*	1.18	-4.51**	-0.73	1.87	-0.47	-2.64**
	(1.10)	(1.49)	(1.07)	(1.16)	(1.42)	(2.08)	(1.44)	(1.62)	(0.89)	(1.22)
-3	0.55	-1.84	-0.51	1.49*	0.86	-3.04*	-0.50	1.56	-0.35	-1.47
	(0.79)	(1.15)	(0.74)	(0.85)	(1.08)	(1.70)	(1.05)	(1.30)	(0.67)	(0.91)
-2	0.66	-1.53**	-0.60	1.12**	0.84	-1.87**	-0.72	1.28*	-0.42	-0.59
	(0.45)	(0.64)	(0.41)	(0.48)	(0.61)	(0.95)	(0.57)	(0.71)	(0.38)	(0.55)
0	-0.68**	0.82*	2.34***	-0.48	-1.15***	1.44**	2.81***	-0.24	0.34	1.20***
	(0.31)	(0.44)	(0.29)	(0.31)	(0.41)	(0.66)	(0.40)	(0.48)	(0.26)	(0.37)
1	-1.41***	1.72**	3.93***	-1.16**	-2.30***	2.95***	4.70***	-0.73	0.56	2.22***
	(0.48)	(0.69)	(0.49)	(0.50)	(0.66)	(1.03)	(0.70)	(0.75)	(0.41)	(0.60)
2	-1.83***	2.05**	4.59***	-1.50**	-3.22***	3.69***	5.72***	-1.27	0.55	2.42***
	(0.60)	(0.87)	(0.67)	(0.64)	(0.81)	(1.24)	(0.92)	(0.91)	(0.50)	(0.73)
3	-1.91***	2.04**	4.85***	-1.64**	-3.13***	3.25**	5.71***	-1.09	0.41	2.16***
	(0.68)	(0.99)	(0.82)	(0.72)	(0.91)	(1.39)	(1.13)	(1.00)	(0.57)	(0.82)
N unique individuals	8,593	8,593	8,593	8,593	4,651	4,651	4,651	4,651	8,593	4,651
N person-qtrs	247,914	247,914	247,914	247,914	115,055	115,055	115,055	115,055	247,914	115,055

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 3,841 offices in the sample with all employees and 2,866 offices in the sample with employees that have less routine occupations. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 6. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.10—Event Study Estimates by Initial Share of Same-Sex Employees

	Above median				Below median				Above median	Below median
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	-1.66	0.78	-1.49*	-0.84	0.88	-0.83	-2.46***	0.92	-0.05	0.09
	(1.03)	(1.28)	(0.85)	(1.01)	(0.78)	(1.24)	(0.60)	(0.77)	(0.79)	(0.97)
-3	-1.54**	0.76	-0.85	-0.58	0.93	-1.17	-1.70***	1.04*	0.18	-0.12
	(0.73)	(0.91)	(0.62)	(0.74)	(0.59)	(0.92)	(0.47)	(0.58)	(0.54)	(0.71)
-2	-0.80*	0.23	-0.58	-0.21	0.41	-0.75	-1.17***	0.81***	0.01	0.06
	(0.43)	(0.52)	(0.39)	(0.45)	(0.34)	(0.55)	(0.24)	(0.31)	(0.30)	(0.44)
0	-0.26	0.60*	3.79***	0.13	-0.68***	0.69**	4.12***	-1.32***	0.74***	-0.63**
	(0.28)	(0.34)	(0.25)	(0.29)	(0.22)	(0.34)	(0.17)	(0.21)	(0.21)	(0.26)
1	-0.34	1.11**	6.48***	0.68	-1.37***	1.74***	7.66***	-3.10***	1.79***	-1.35***
	(0.43)	(0.54)	(0.39)	(0.46)	(0.35)	(0.54)	(0.27)	(0.32)	(0.34)	(0.43)
2	-0.92*	1.96***	8.17***	0.60	-1.88***	2.47***	9.46***	-4.01***	2.56***	-1.53***
	(0.53)	(0.67)	(0.49)	(0.58)	(0.43)	(0.67)	(0.35)	(0.40)	(0.42)	(0.54)
3	-1.24**	2.21***	8.68***	0.19	-1.93***	2.82***	9.61***	-4.09***	2.40***	-1.27**
	(0.61)	(0.77)	(0.56)	(0.66)	(0.48)	(0.75)	(0.40)	(0.45)	(0.48)	(0.60)
N unique individuals	16,217	16,217	16,217	16,217	14,900	14,900	14,900	14,900	16,217	14,900
N person-qtrs	646,512	646,512	646,512	646,512	672,244	672,244	672,244	672,244	646,512	672,244

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,116 offices in the sample with above median initial same-sex employee share and 6,764 offices in the sample with below median initial same-sex employee share. Median initial share of same-sex employees is 47.45%. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 7. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.11—Event Study Estimates by Initial Share of Same-Sex Managers

	Above median				Below median				Above median	Below median
Event year	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	New same-sex mngr (δ)	New same-sex mngr* female (δ^f)	New mngr (α)	New mngr* female (α^f)	Female-male same-sex mngr ($\delta^f + \alpha^f$)	Female-male same-sex mngr ($\delta^f + \alpha^f$)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-4	0.71	-1.76	-2.33***	0.10	-0.89	0.61	-1.02	-0.43	-1.66*	0.18
	(0.95)	(1.39)	(0.80)	(1.02)	(1.18)	(1.82)	(0.97)	(1.28)	(0.90)	(1.27)
-3	1.48**	-2.03**	-2.36***	0.78	-1.28	0.91	-0.24	-0.64	-1.25*	0.27
	(0.67)	(1.00)	(0.55)	(0.72)	(1.16)	(1.49)	(1.03)	(1.16)	(0.67)	(0.92)
-2	0.45	-0.72	-1.23***	0.51	-0.59	0.31	-0.39	-0.27	-0.21	0.04
	(0.40)	(0.59)	(0.32)	(0.41)	(0.51)	(0.72)	(0.42)	(0.53)	(0.41)	(0.49)
0	-1.13***	2.17***	4.64***	-0.29	-0.24	0.53	3.55***	-0.55	1.87***	-0.02
	(0.25)	(0.39)	(0.20)	(0.26)	(0.41)	(0.51)	(0.35)	(0.39)	(0.26)	(0.31)
1	-2.27***	4.26***	8.72***	-0.64	-0.89	1.63**	7.05***	-1.50***	3.61***	0.13
	(0.40)	(0.65)	(0.35)	(0.42)	(0.56)	(0.75)	(0.47)	(0.53)	(0.43)	(0.49)
2	-2.74***	4.83***	10.62***	-0.98*	-1.92***	3.22***	9.41***	-2.02***	3.85***	1.21**
	(0.50)	(0.79)	(0.44)	(0.51)	(0.67)	(0.93)	(0.57)	(0.65)	(0.53)	(0.61)
3	-2.87***	4.59***	10.72***	-1.08*	-2.34***	4.31***	10.15***	-2.20***	3.51***	2.11***
	(0.57)	(0.87)	(0.50)	(0.57)	(0.74)	(1.05)	(0.63)	(0.72)	(0.59)	(0.70)
N unique individuals	15,577	15,577	15,577	15,577	15,540	15,540	15,540	15,540	15,577	15,540
N person-qtrs	610,866	610,866	610,866	610,866	707,890	707,890	707,890	707,890	610,866	707,890

Note: The event study sample is restricted to workers who were employed by the US Federal service for at least 5 years, work in offices with at least 10 employees and no more than 5 mangers, born in the year starting 1955, and experienced an appointment of a first new manager, as explained in section III.B. Employees are spread over 6,569 offices in the sample with above median initial same-sex manager share and 6,805 offices in the sample with below median initial same-sex manager share. Median initial share of same-sex managers is 45.65%. Event year treatment effects are reported in log points. All event study specifications include quarter-year and individual-office FEs, see event study equation 2. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 7. Standard errors clustered at the office are in parentheses. * p<0.10 ** p<0.05 *** p<0.01.

Table B.12—Differential Homophily Effects By Source of Managerial Change and Managerial Age Difference

Event year	Main specification	By source of managerial change		By managerial age difference	
		Internal Promotions	External Hires	35 or younger	Older than 35
	(1)	(2)	(3)	(4)	(5)
-4	-0.32	-0.31	-0.87	-1.64	-0.34
	(0.60)	(0.72)	(0.86)	(1.45)	(0.60)
-3	-0.22	-0.31	-0.54	-2.57**	-0.23
	(0.42)	(0.53)	(0.60)	(1.05)	(0.42)
-2	-0.11	-0.11	0.02	-0.92	-0.11
	(0.24)	(0.30)	(0.34)	(0.57)	(0.24)
0	0.46***	0.64***	0.30	0.26	0.46***
	(0.16)	(0.20)	(0.21)	(0.36)	(0.16)
1	1.06***	1.47***	0.63*	0.56	1.06***
	(0.26)	(0.34)	(0.34)	(0.58)	(0.26)
2	1.55***	2.14***	0.93**	0.81	1.55***
	(0.33)	(0.41)	(0.42)	(0.71)	(0.33)
3	1.46***	2.08***	0.88*	1.17	1.46***
	(0.37)	(0.46)	(0.48)	(0.78)	(0.37)
N unique individuals	31,117	18,634	17,130	6,065	31,098
N person-qtrs	1,318,756	769,207	740,000	246,933	1,318,518

Note: The estimates in the table show female-male same-sex manager effects ($\delta^f + \alpha^f$) following equation 2. Event year treatment effects are reported in log points. 'Main Sample" is the event-study sample and reproduces the differential homophily effect from Figure 3B for reference. Columns (2) and (3) split the event study sample by the manager's previous location of employment. The "external hires" estimates are from employees whose new manager had not previously worked at the office, and "internal hires" are from employees whose new managers had previously worked at the office as employees. Columns (4) and (5) splits the event study sample by the age of the new manager at appointment. The "35 or younger" and "older than 35" estimates are from the subsamples of employees whose new manager was that age at appointment. Employees are spread over 8,377 offices in the main sample, 6,895 offices in the sample with internal managerial appointments, 6,738 offices with external managerial appointments, 3,896 offices where the new manager is 35 years old or younger, and 8,376 offices where the new manager is older than 35. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 8. Standard errors clustered at the office are in parentheses.
* p<0.10 ** p<0.05 *** p<0.01.

Table B.13—Differential Homophily Effects By Size of Managerial Team and for Single Managerial Change

	By size of managerial team				Single managerial change		
Event year	At most 2 managers	At most 5 managers	At most 10 managers	At most 20 managers	All appointments	Additions	Replacements
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
-4	-0.37	-0.32	-0.44	-0.62	-0.29	-0.76	1.07
	(0.69)	(0.60)	(0.57)	(0.57)	(0.67)	(0.73)	(1.52)
-3	-0.21	-0.22	-0.50	-0.81**	-0.41	-0.57	-0.08
	(0.50)	(0.42)	(0.41)	(0.41)	(0.48)	(0.53)	(1.10)
-2	0.12	-0.11	-0.40*	-0.53**	-0.18	-0.17	-0.23
	(0.28)	(0.24)	(0.23)	(0.24)	(0.27)	(0.30)	(0.60)
0	0.55***	0.46***	0.39***	0.27**	0.50***	0.36*	1.10***
	(0.21)	(0.16)	(0.14)	(0.12)	(0.18)	(0.20)	(0.39)
1	1.15***	1.06***	0.77***	0.41*	1.25***	0.87***	2.57***
	(0.34)	(0.26)	(0.23)	(0.21)	(0.29)	(0.33)	(0.64)
2	1.71***	1.55***	1.02***	0.47*	1.81***	1.36***	3.38***
	(0.41)	(0.33)	(0.29)	(0.27)	(0.36)	(0.41)	(0.79)
3	1.59***	1.46***	0.92***	0.32	1.74***	1.27***	3.40***
	(0.45)	(0.37)	(0.33)	(0.31)	(0.40)	(0.46)	(0.90)
N unique individuals	17,512	31,117	44,582	2,531,522	25,913	19,679	5,980
N person-qtrs	743,633	1,318,756	1,892,750	2,531,522	1,118,488	843,859	263,651

Note: The estimates in the table show female-male same-sex manager effects ($\delta^f + \alpha^f$) following equation 2. Event year treatment effects are reported in log points. Columns (1), (2), (3), and (4) split the event study sample by the size of managerial and includes all employees working in offices with at most 2, 5 10, and 20 managers in the quarter prior to getting a first new manager. The at most 5 managers sample is the main event-study sample and reproduces the differential homophily effect from Figure 3B for reference. Employees are spread over 6,453 offices in the sample with at most 2 managers at the office in a quarter prior to the arrival of the new manager, 8,377 offices in the sample with offices with at most 5 managers, 9,180 offices in the sample with offices with at most 10 managers, and 9,589 offices in the sample with offices with at most 20 managers. In offices with a single managerial transition, employees are spread over 7,781 offices. Among these, 7,047 offices have managerial additions, and 3,865 – managerial replacements. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 8. Standard errors clustered at the office are in parentheses.
* p<0.10 ** p<0.05 *** p<0.01.

Table B.14—Female-Male Same-Sex Manager Effects: Sensitivity Analysis

	Alternative specifications				Alternative samples		
Event year	Main specification	Individual FE	No office FE	No occupation	Single Stage	No office switching	No part time employees
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
-4	-0.32	0.41	-0.38	-0.60	-0.53	-1.32*	-0.49
	(0.60)	(0.56)	(0.79)	(0.65)	(0.78)	(0.68)	(0.63)
-3	-0.22	0.05	-0.10	-0.46	-0.04	-0.92*	-0.40
	(0.42)	(0.41)	(0.56)	(0.45)	(0.57)	(0.50)	(0.45)
-2	-0.11	0.06	-0.06	-0.25	-0.01	-0.27	-0.28
	(0.24)	(0.24)	(0.29)	(0.26)	(0.28)	(0.30)	(0.26)
0	0.46***	0.20	0.46**	0.73***	0.37**	0.53***	0.60***
	(0.16)	(0.16)	(0.18)	(0.17)	(0.17)	(0.19)	(0.17)
1	1.06***	0.45*	1.19***	1.54***	0.97***	1.00***	1.37***
	(0.26)	(0.26)	(0.31)	(0.28)	(0.31)	(0.32)	(0.28)
2	1.55***	0.87***	1.73***	2.34***	1.31***	1.44***	2.06***
	(0.33)	(0.33)	(0.40)	(0.35)	(0.40)	(0.39)	(0.35)
3	1.46***	0.59*	1.72***	2.53***	1.32***	1.29***	2.06***
	(0.37)	(0.35)	(0.45)	(0.40)	(0.45)	(0.43)	(0.39)
N unique individuals	31,117	31,117	31,117	31,118	31,117	18,713	27,815
N person-qtrs	1,318,756	1,318,756	1,318,756	1,319,033	1,318,756	800,027	1,176,878

Note: The estimates in the table show female-male same-sex manager effects ($\delta^f + \alpha^f$) following equation 2. Event year treatment effects are reported in log points. "Main specification" is the event-study sample and reproduces the differential homophily effect from Figure 3B for reference. Column 2 uses "individual FE" instead of individual-office FEs. "No office FEs" estimates exclude office FEs in the first stage, but include individual-office FEs in the second stage. "No occupation" estimates exclude occupation controls in the first stage. "Single stage" estimates are obained using controls from the first stage in the event study regression using the event study sample in a single stage. "No office switching" excludes 40% of employees that switch offices at any point in the sample. "No part-time employees" excludes the 8% of employees who have a part-time spell during their federal service. Employees are spread over 8,377 offices in the main sample, which is used in columns 1-5. IEmployees that do not switch offices during the event study period are employed in 6,004 offices. Employees without part-time spells are employed in 7,968 offices. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 9. Standard errors clustered at the office are in parentheses.
* p<0.10 ** p<0.05 *** p<0.01.

Table B.15—Sensitivity Analysis: Robustness and Placebo

Event year	Main specification	No unidentified managers	Placebo
	(1)	(2)	(3)
-4	-0.32	-0.32	-0.05
	(0.60)	(0.60)	(0.55)
-3	-0.22	-0.23	-0.20
	(0.42)	(0.42)	(0.42)
-2	-0.11	-0.11	-0.13
	(0.24)	(0.24)	(0.24)
0	0.46***	0.46***	-0.02
	(0.16)	(0.16)	(0.15)
1	1.06***	1.05***	-0.11
	(0.26)	(0.26)	(0.23)
2	1.55***	1.54***	-0.19
	(0.33)	(0.33)	(0.29)
3	1.46***	1.45***	-0.12
	(0.37)	(0.37)	(0.33)
N unique individuals	31,117	26,276	31,116
N person-qtrs	1,318,756	1,070,671	1,318,811

Note: The estimates in the table show female-male same-sex manager effects ($\delta^f + \alpha^f$) following equation 2. Event year treatment effects are reported in log points. "Main Sample" is the event-study sample and reproduces the differential homophily effect from Figure 3B for reference. Column (3) shows a placebo test, in which the treatment effects are redefined as getting a new manager of odd vs even birth year. Employees are spread over 8,377 offices in the main sample and 7,779 offices in the sample with no unidentified managers. In the placebo test, employees are spread over 8,376 offices. The dependent variable is the residual log pay after controlling for locations, five-year birth cohorts, education, tenure, and occupation dummies, and part-time status in yearly regressions. See footnote 32 and equation 1 for details. Estimates are depicted in Figure 9. Standard errors clustered at the office are in parentheses.
* p<0.10 ** p<0.05 *** p<0.01.