The Gender Gap Among Top Business Executives*

Wolfgang Keller† Teresa Molina‡ William W. Olney§

March 7, 2022

Abstract

This paper examines gender differences among top US business executives using a large executive-employer matched data set spanning the last quarter century. Female executives make up 6% of the sample and exhibit more labor market churning – both higher entry and higher exit rates. Unconditionally, women earn 26% less than men, which decreases to 8% once executive characteristics, firm characteristics, and in particular job title are accounted for. We find that women select into firms with more temporal flexibility and female-friendly corporate culture, but this sorting to particular firms does not explain the gender pay gap. Rather, corporate culture is an important determinant of gender pay gaps within firms: the within-firm gender pay gap – which is larger for discretionary pay – disappears entirely at female-friendly firms.

Keywords: Executive Compensation, Gender Pay Gap, Corporate Culture JEL Classification Codes: J16, J24, J33, J82, F16

*We thank David Autor, Linda Bell, Catherine Eckel, Caroline Fry, Lata Gangadharan, Claudia Goldin, Dan Hamermesh, Beata Javorcik, Petra Moser, Paul Oyer, Jenna Stearns, Owen Thompson, and numerous seminar participants for helpful comments. Financial support from NSF under grant SMA-1360207 is gratefully acknowledged.

†University of Colorado, NBER, CESifo, and CEPR; kellerw@colorado.edu

‡University of Hawaii at Manoa and IZA, tmolina@hawaii.edu

§Williams College, wwo1@williams.edu

1 Introduction

Convergence between men and women in terms of employment and compensation has been well documented, but this convergence is not complete and progress has not been uniform. For instance, women are underrepresented in the corporate business world and at the top of the income distribution more generally, where there are relatively large gender wage gaps (Blau and Kahn, 2017; Goldin, 2014; Guvenen et al., 2020). This paper examines gender gaps in employment and compensation among top business executives and documents how these gaps vary over time.[1] We identify determinants of these gender differences and in particular focus on the effects of a male-dominated corporate culture and preferences for temporal flexibility.

Rising top incomes are the driving force behind growth in inequality, and business executives are the largest share of the top 1% (Bakija et al., 2012; Piketty et al., 2018). The high level and rapid rise of executive pay has been well documented (Frydman, 2019; Frydman and Jenter, 2010). For instance, there was an eight-fold increase in the ratio of CEO pay to average worker pay from 1980 to 2015 (Edmans et al., 2017). Not only is executive compensation important in understanding inequality, executive positions are also jobs where women have traditionally made fewer inroads. Thus, this occupation offers unique insights and broader lessons on potential impediments to female employment and determinants of gender pay gaps.

We utilize a large executive-firm matched data set covering publicly traded U.S. firms over the last quarter century. The dataset combines executive-level information from *ExecuComp* and firm-level information from *Compustat*, which both come from company filings with the Securities and Exchange Commission (SEC). We complement this with the *KLD Research and Analytics*' corporate social responsibility index, which has firm-level information on temporal flexibility and corporate culture.

Our analysis begins by examining the gender gap in employment. Women represent 6.2% of top business executives. The share of women has steadily increased over time, but it still remains low at 10% by the end of the sample period. This increase over time has been driven by higher entry rates for women compared to men.[2] Interestingly, however, exit rates are also higher for

[1]Not only are we studying an occupation where gender gaps are relatively large but we are also focusing on the point in the workers' careers where gender gaps tend to grow. For example, Bertrand et al. (2010) find that the compensation of male and female MBAs is the same immediately after graduation but diverges thereafter.

[2]Entry occurs when the person becomes a new top 5 executive at the firm, and exit is when the person leaves this

women, which indicates there is more labor market churning for female executives. This suggests that, in addition to the promotion and recruitment of women, the retention of female executives is important.

Next, we examine the role that temporal flexibility and corporate culture play in determining gender gaps in entry and exit rates. To quantify temporal flexibility we utilize the *KLD* measure of whether the firm offers flextime benefits; to quantify corporate culture we use the *KLD* measure of firm diversity (the extent to which a firm has hired and promoted women and minorities in leadership positions) and whether the firm has ever had a female CEO.

Overall, temporal flexibility and female-friendly corporate culture are rare in this profession, which could explain the low numbers of female executives, especially if women value temporal flexibility more than men do or derive more disutility from competitive, male-dominated environments. Indeed, we find that female executives tend to select into more flexible and female-friendly firms. In addition, female entry rates are higher at flexible firms, and female exit rates are lower at female-friendly firms. This latter finding suggests that the retention of female executives in this male dominated profession can be improved with a more female-friendly corporate culture.

In addition to the gender employment gap, we also explore gender differences in compensation among these top business executives. Unconditionally, women earn 26% less than men. The pay gap falls to 15% after accounting for the characteristics of the executive (including experience, education, and age), and remains fairly constant after the addition of industry fixed effects, firm fixed effects, and a range of time-varying firm controls. The pay gap falls by about half after controlling for the job title of the executive. Accounting for all of these individual, firm, and job characteristics, we still find a conditional gender pay gap of about 8%. In other words, female executives with similar experience and education, working at similar firms, and doing similar jobs earn less than their male colleagues. We also find that the conditional pay gap has steadily decreased over our sample period.

Temporal flexibility and corporate culture may contribute to the gender pay gap in two ways. First, a compensating wage differential framework predicts that gender gaps can arise from women selecting into firms that provide these amenities and pay lower wages on average.[3] While we do show

sample of executives.

[3] Goldin (2014), Goldin and Katz (2016), and Blau and Kahn (2017) make this argument with respect to temporal flexibility.

that female executives tend to select into firms offering temporal flexibility and a female-friendly corporate culture, this sorting across firms is not responsible for the gender pay gap. Specifically, the estimated pay gap remains stable across specifications that control for firm flexibility, firm culture, and also firm fixed effects.

Second, flexibility and corporate culture could generate gender pay gaps within firms: if women choose shorter or flexible hours and get paid less as a result, or if insider relationships and personal connections favor men within the firm. While we find little evidence that temporal flexibility explains within-firm gender pay gaps, corporate culture does play an important role. At female-friendly firms, the gender pay gap is almost non-existent. Specifically, firms that have had a female CEO and firms that have promoted gender and racial diversity compensate male and female executives similarly. Conversely, at firms that lack these features, a corporate culture disproportionately favoring men prevails, and the gender pay gap is larger. A back of the envelope calculation shows that about a quarter of the decline in the conditional pay gap over the sample period can be explained by a more female-friendly corporate culture.

Finally, we examine whether the gender pay gap varies with the type of compensation. Compared to fixed compensation schemes (i.e. salary), discretionary pay is often more susceptible to the influence of negotiation, personal connections, and insider relationships which could disproportionately favor men (Biasi and Sarsons, 2020; Cullen and Perez-Truglia, 2019; Keller and Olney, 2021). Our findings show that the gender gap is larger for non-salary forms of compensation, such as bonuses. However, this gender gap in discretionary pay disappears entirely at female-friendly firms. These findings provide additional evidence that a male-dominated corporate culture is contributing to the gender pay gap.

Our paper builds on the existing work examining gender differences among top business executives (Albanesi and Olivetti, 2006; Bell, 2005; Bertrand and Hallock, 2001; Gayle et al., 2012). These studies typically focus on whether gender pay gaps can be explained by differences in individual characteristics (Bertrand and Hallock, 2001; Gayle et al., 2012) or by differences in firm performance (Albanesi and Olivetti, 2006), while we focus on the role that temporal flexibility and corporate culture play – not only in driving the gender pay gap, but also in determining gender differences in entry and exit. Furthermore, our much larger dataset is especially appealing when studying the relatively small number of women in this profession. Our novel approach and appealing data has led to three key contributions.

First, we show that female exit is an important reason for the low female share in this occupation. Several studies highlight the importance of gender gaps in *promotion* in various settings (Bronson and Thoursie, 2020; Lundberg and Stearns, 2019), but our findings highlight the need to better understand the *exit* decision. Interestingly, we find that gender gaps in exit are smaller at female-friendly firms. Thus, the higher female representation at firms with female leadership, which we document and which is consistent with Bell (2005) and Matsa and Miller (2011), is due to these firms improving female retention, as opposed to increasing female entry.

Second, this paper contributes to our understanding of the role that selection and compensating wage differentials play in determining gender pay gaps. Although the literature has found women sorting into lower-paying firms to be an important driver of gender pay gaps primarily for lower-skilled women (Card et al., 2016; Casarico and Lattanzio, 2020), we focus on the other end of the skill distribution and find little evidence for this. For example, we show that female executives seem to value temporal flexibility, consistent with existing work (Goldin and Katz, 2016; Hotz et al., 2018; Mas and Pallais, 2017; Wiswall and Zafar, 2018), but we find no evidence that sorting on this dimension contributes to the gender pay gap. Although female executives do select into flexible and female-friendly firms, our results show they do not pay for their preference for these amenities in the form of lower compensation, as would be predicted by a compensating wage differential framework.

Finally, our results reveal corporate culture to be an important driver of gender gaps in exit and pay (within firms). The absence of gender pay gaps at female-friendly firms is consistent with evidence that female leadership is associated with smaller gender gaps (Bell, 2005; Kunze and Miller, 2017; Matsa and Miller, 2011; Tate and Yang, 2015). We expand on this evidence by exploring the role that firm diversity and temporal flexibility play in determining within-firm gender pay gaps (the former is important while the latter is not), as well as gender gaps in entry and exit. Overall, our paper highlights the important role that female-friendly firms play in mitigating the effects of corporate culture on gender employment and pay gaps.

In the next section, we outline the data sources used in our analysis and provide some descriptive evidence on gender differences in this profession. Section 3 describes the empirical strategy used to examine gender gaps in employment and compensation. We present our results in section 4, where we examine the low female share in our sample, gender gaps in entry and exit, and the role of temporal flexibility and corporate culture. Our attention then shifts to gender gaps in compensation in section 5, where we focus on how temporal flexibility and corporate culture affect across-firm and within-firm gender pay gaps. Finally, section 6 provides some concluding thoughts.

2 Data

We construct an executive-firm matched data set that incorporates detailed data on executive compensation, executive characteristics, and firm characteristics. In this section, we first describe our various data sources and then report summary statistics on gender differences.

2.1 Executive Information

Information on executive compensation is obtained from the *Compustat ExecuComp* data set, which is based on filings with the U.S. Securities and Exchange Commission (SEC). This is the most comprehensive publicly available data set on executives and covers the top five executives within each Standard & Poor (S&P) firm. Our measure of executive compensation is *ExecuComp's* TDC1, which includes total compensation awarded to an executive in a given year. Results are similar using an alternative measure, TDC2, which captures compensation realized by an executive in a given year. All nominal compensation values are converted to 2017 U.S. dollars using the Consumer Price Index (CPI) provided by the Bureau of Labor Statistics.

Importantly, the *ExecuComp* data set identifies the gender of the executive, which allows us to measure the share of female executives as well as the gender pay gap. We account for other executive characteristics in the analysis, including experience, education, and age. Experience is defined as the number of years the individual has been a top five executive at any firm in the *ExecuComp* data set. Education is defined as whether the executive has a doctorate degree. Binary variables indicating the age decade of the executive (i.e. thirties, forties, etc.) are also included as controls in our analysis.[4]

While our analysis focuses on top business executives, individuals within this labor market are likely performing different types of tasks, which could influence compensation. The occupation of

[4]We include a dummy for missing age to maintain the sample size in light of incomplete information for some executives.

the executive is identified using the 'title' variable in the *ExecuComp* data set. We focus on the following five job titles: 'CEO and Chair', 'Vice-Chair', 'President', 'Chief Financial Officer (CFO)', and 'Chief Operating Officer (COO)' which we rank according the literature's assessment of their prestige (Albanesi and Olivetti, 2006; Bertrand and Hallock, 2001).[5] This allows us to examine whether the gender composition differs across these job titles, and it provides an opportunity to account for the tasks performed by the executive when measuring gender pay gaps.

An appealing feature of the data is that we can follow executives over time, which allows us to construct measures of executive entry and exit. Entry is a binary variable equal to one if an individual became a new top 5 executive at that particular firm in a given year. Exit is a binary variable equal to one in the last year an executive was a top 5 executive at the firm. We are interested in whether entry and exit rates differ for men and women. This will provide an opportunity to examine how entry and exit contributes to the gender employment gap, and offers insights into which firms are better at attracting, promoting, and retaining female executives.[6]

2.2 Firm Information

Executive compensation information from the *ExecuComp* data set is linked to company-level measures in *Compustat* using a unique firm identifier, which allows us to construct an executive-firm matched data set. This provides an opportunity to examine whether firm characteristics influence the gender gap within this labor market. Firm size, measured using sales, may influence executive composition and compensation. We also account for firm markups, which have been steadily increasing since 1980 (De Loecker et al., 2020).[7] We anticipate that firms with higher sales and higher markups will be more profitable and thus may be able to pay their executives more. A measure of insider board relationships is included, which is defined as a binary variable indicating whether three of more executives serve on the board of directors. We expect that executives will

[5]These job titles are mutually exclusive definitions which are constructed by searching for substrings within *ExecuComp's* title variable. For instance, the following non-case sensitive titles 'CEO', 'Chief Executive Officer', 'Chairman', 'Chmn.', and 'Chair' are included in our 'CEO and Chair' job title definition.

[6]In the data we can see the executive enter (or leave) the sample of top 5 executives at the firm, but we do not observe if she was promoted from within the firm or arrived from another firm outside our sample. There are relatively few instances of executives switching from one firm in our sample to another (specifically, 92% of executives in the *Execu Comp* data work at only one firm (Keller and Olney, 2021). Note that executives with gaps in their tenure at the firm are not classified as entering or exiting because the executive may simply have moved in or out of the top five at the firm.

[7]Using *Compustat* data, firm-specific markups are calculated as 0.85*(total sales / total costs of goods sold) following De Loecker et al. (2020).

earn more at firms with this type of insider board structure. Finally, we identify the firm's main six-digit NAICS industry using the Compustat dataset.

Our firm-level measures of temporal flexibility and corporate culture come from *KLD Research and Analytics*, a source commonly used in economics and finance research (Cronqvist and Yu, 2017). Ninety percent of the Compustat sample is matched to the *KLD* data using a unique firm ticker variable. We use the *KLD* data to identify whether the firm offers temporal flexibility to its workers. Specifically, a binary *KLD* variable identifies whether the firm has "outstanding employee benefits or other programs addressing work/life concerns, e.g., childcare, elder care, or flextime" (called "Div_str_d" in the *KLD* dataset). In our main analysis, we take the firm-level average of this variable over the available years to maintain our sample size in light of *KLD* data constraints (i.e. missing values increase post-2009).[8] Our results, however, are robust to the use of a time-varying measure of temporal flexibility, despite a much smaller sample size (See Appendix Table A3).

We measure corporate culture using *KLD* data on whether the firm has hired and promoted women and minorities in leadership positions. Specifically, we use binary *KLD* variables indicating whether the firm has a CEO who "is a woman or a member of a minority group" (Div_str_a), "has made notable progress in the promotion of women and minorities, particularly in line positions with profit and loss responsibilities" (Div_str_b), and has "strong gender diversity on their board of directors" (Div_str_c). We calculate the average of these three measures and then take the firm-level average over the available years. Note that using a time-varying measure of diversity leads to similar results (Table A3), despite a much smaller sample. Finally, using the *ExecuComp* data we construct another measure of female-friendly corporate culture that identifies whether the firm has ever had a female CEO. Together these measures will provide new insight into whether the gender employment and pay gaps are influenced by temporal flexibility or corporate culture within the firm.

[8]Using time-invariant measures has the added benefit of avoiding potentially endogenous changes over time within the firm, which reduces reverse causality concerns.

2.3 Summary Statistics

This section documents gender differences in the market for top business executives. We include in our analysis the top five highest paid executives for each firm in each year.[9] Our sample consists of almost 240,000 observations and spans 26 years (1992-2017), around 4,000 firms and 45,000 executives. Our sample is over five times larger than existing studies of gender gaps among top business executives.[10] This larger sample is important when studying gender gaps within an occupation where there are relatively few women. Average total compensation in this sample (in 2017 dollars) is \$3.96 million, and median compensation is \$1.97 million.

Table 1 reports summary statistics of our key variables for men and women separately, along with the differences between the two. A comparison of the number of male and female executives indicates that women comprise 6.2% of our sample. For male executives the mean natural log of total compensation is 7.43. In contrast, women earn 17 log points (approximately 16%) less than men, and this difference is statistically significant. In fact, there are statistically significant gender differences in almost all variables summarized in this table. Men have more experience (5.6 versus 5 years), are more likely to hold a doctorate (0.02 versus 0.01), and are on average older (52.5 versus 50 years old).[11] Firms which employ female executives tend to have similar sales but higher markups. Men also are more likely to be in firms with insider relationships, defined as when three or more executives sit on the board of directors in a given year.

While the overall share of female executives is 6.2%, there is substantial variation in this female share across job titles. For instance, Appendix Figure A2 shows that only 2.7% of CEOs in our sample are women. However, 4.8% of Presidents are women and 7.9% of CFOs are women. Overall, we see that the share of women typically falls as the job becomes more prestigious. Not only are women underrepresented overall in this profession, an even smaller share rise to the top leadership positions. The share of women is relatively high (8%) in "other" executive positions, with less prestige and potentially more temporal flexibility.

In Appendix Figure A3, we explore how the share of women varies across age cohorts: female

[9]The SEC requires firms to report compensation information for their top five executives but some firms report more. The average number of executives reported changes over time which could influence the evolution of the female share and the gender pay gap. Thus, we drop non-top five executives from our sample.

[10]See for example Bertrand and Hallock (2001) and Albanesi and Olivetti (2006).

[11]Figure A1 in the online appendix shows that while the average age of both genders has increased over time the age gap between men and women is closing.

Table 1: Summary Statistics

	(1) Males	(2) Females	(3) Difference
Total Comp	7.430	7.261	-0.169***
	(1.058)	(0.991)	(0.009)
Salary Comp	6.122	5.996	-0.126***
	(0.693)	(0.612)	(0.005)
Non-Salary Comp	6.871	6.727	-0.144***
	(1.575)	(1.447)	(0.012)
Experience	5.640	4.972	-0.668***
	(4.299)	(3.761)	(0.033)
Dr.	0.020	0.011	-0.009***
	(0.141)	(0.104)	(0.001)
Age	52.549	49.982	-2.567***
	(7.895)	(6.709)	(0.062)
CEO/Chair	0.250	0.105	-0.145***
	(0.433)	(0.307)	(0.003)
Vice Chair	0.018	0.012	-0.006***
	(0.132)	(0.108)	(0.001)
President	0.121	0.093	-0.027***
	(0.326)	(0.291)	(0.003)
COO	0.033	0.027	-0.006***
	(0.179)	(0.163)	(0.001)
CFO	0.140	0.185	0.045***
	(0.347)	(0.389)	(0.003)
Other Title	0.438	0.577	0.139***
	(0.496)	(0.494)	(0.004)
Sales	21.120	21.111	-0.010
	(1.757)	(1.768)	(0.015)
Markups	0.963	0.987	0.024***
	(0.432)	(0.430)	(0.004)
Insider	0.170	0.105	-0.065***
	(0.376)	(0.306)	(0.003)
Observations	219948	14477	234425

Notes: Sample consists of the top five highest paid executives for each firm in the *ExecuComp* dataset from 1992-2017. Standard deviations (in columns 1 and 2) and standard errors (in column 3) reported in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. Compensation and sales are reported in logs (of 2017 dollars). Markups are equal to ln(0.85(total sales/ total costs)).

shares are much larger among younger cohorts. This pattern could reflect that women are less likely to become CEOs (see Figure A2) and thus they exit this labor market. Alternately, perhaps fewer women historically were able to join the track towards top leadership positions and thus there are now fewer women among this older cohort.

3 Empirical Strategy

3.1 Gender Gaps

The goal of our empirical analysis is to document and understand the gender gaps in employment and compensation. We begin by investigating whether the changes in the female employment share can be explained by gender differences in entry or exit rates. Specifically, the following estimating equation is used:

$$Y_{ijfnt} = \beta_1 Female_i + \beta_2 X_{1it} + \beta_3 X_{2fnt} + \gamma_t + \delta_j + \nu_n + \alpha_f + \epsilon_{ijfnt}, \tag{1}$$

where Y_{ijfnt} either represents entry or exit of executive i, with job title j, at firm f, in industry n, and in year t. As described above, we generate entry and exit variables to indicate when an executive enters or leaves the sample of top executives at the firm. In these regressions, β_1 identifies whether the female entry (or exit) rate is larger than the male entry (or exit) rate.

We rely on a similar specification to estimate the gender compensation gap. Specifically, log compensation is used as our dependent variable (Y_{ijfnt}) in equation 1. We begin with a basic specification that only includes the female indicator ($Female_i$) and year fixed effects (γ_t). The following controls are then sequentially added: individual controls for age, education, and experience (X_{1it}), industry fixed effects (ν_n), firm fixed effects (α_f), time-varying firm controls (X_{2fnt}), and finally job title fixed effects (δ_j). Documenting how our estimates of β_1 change with the inclusion of these controls will shed light on how much of the raw pay gap can be explained by these factors.

3.2 Temporal Flexibility and Corporate Culture

Our analysis then examines the extent to which temporal flexibility and corporate culture explain the gender gaps in employment and compensation. We distinguish between how these explanations may lead to sorting across firms and how these explanations can also have within-firm effects.

Women may value temporal flexibility more than men do (Goldin and Katz, 2016; Hotz et al., 2018; Mas and Pallais, 2017; Wiswall and Zafar, 2018) and may derive disutility from a male-dominated environment (Hunt, 2016; Husain et al., 2018; Lordan and Pischke, 2016; Usui, 2008). This could result in women gravitating towards firms with the amenities of flexibility and a female-friendly corporate culture. Our analysis will start by examining whether the share of female executives is higher at firms with these characteristics. To the extent that it is, we are then interested in whether this occurs because of higher female entry rates or lower female exit rates at firms with these amenities. We test this prediction using the following specification.

$$\begin{aligned} Y_{ijfnt} = {} & \beta_1 Female_i + \beta_{flex} Female_i Flex_f + \beta_{div} Female_i Div_f + \beta_{ceo} Female_i FCEO_f \\ & + \beta_2 X_{1it} + \beta_3 X_{2fnt} + \gamma_t + \delta_j + \nu_n + \alpha_f + \epsilon_{ijfnt}. \end{aligned} \tag{2}$$

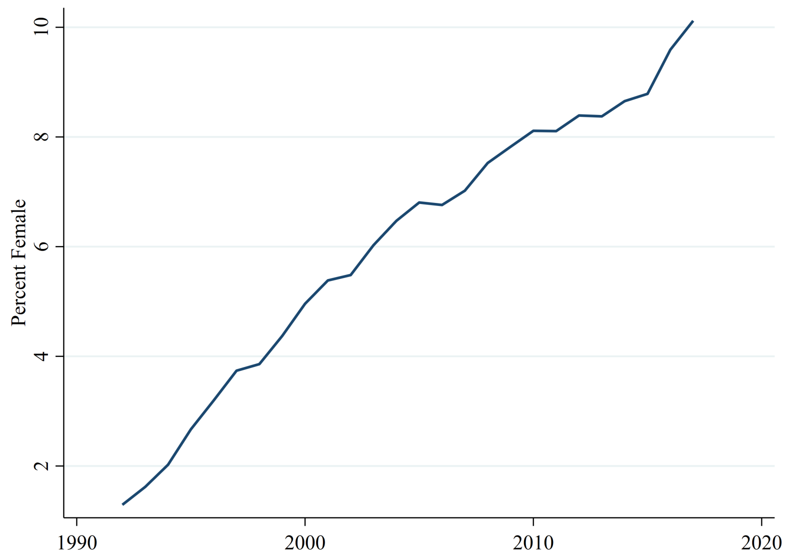
where Y_{ijfnt} again is either entry or exit of executive i. Here, $Flex_f$ is the firm-level flexibility variable from the KLD dataset, Div_f is the firm diversity index from the KLD dataset, and $FCEO_f$ indicates whether the firm has ever had a female CEO.

The sorting of executives into flexible and female-friendly firms can influence not only female shares but also the gender pay gap. A compensating wage differential framework predicts that firms that offer these amenities may pay less on average. According to this hypothesis, women select into these firms, their compensation is lower, and this leads to a gender pay gap. Estimating Equation 1 (with log compensation as the dependent variable and various firm controls) can help shed light on this. If compensating wage differentials are important, then controlling for temporal flexibility and corporate culture (and firm fixed effects) should reduce the estimated gender pay gap.

Second, flexibility and corporate culture can lead to gender pay gaps *within* the firm rather than *across* firms. For example, at firms where temporal flexibility is offered, women may choose shorter or flexible hours which are accompanied by less generous compensation. This would lead to a larger gender pay gap within flexible firms. Alternatively, more competitive and male-dominated firms may disproportionately disadvantage female executives, which would lead to smaller gender pay gaps in female-friendly firms. These predictions are tested by estimating Equation 2 using compensation as the dependent variable. If women are being paid less for taking more flexible hours, then there should be a larger gender gap at firms that offer this amenity (i.e. a negative β_{flex} coefficient). Conversely, there should be smaller gender gaps at firms with a more female-friendly culture (i.e. positive β_{div} and β_{ceo} coefficients).

4 Gender Employment Gaps

Figure 1: Female Share of Top Executives over Time



We begin by documenting the gender gap in employment. As previously noted, the share of female executives in our sample is 6.2%. As we see in Figure 1, the female share has risen from 1.5% in 1992 to 10.1% in 2017.[12] While the share of women still remains low in an absolute sense, these increases are substantial in relative terms. This section explores how this might be driven by gender gaps in entry and exit, and the extent to which temporal flexibility and corporate culture are playing a role.

4.1 Entry and Exit

An appealing feature of our data is that we can track executives over time and identify when they enter or exit a firm as a top five executive. We investigate whether differences in entry and exit rates for men and women can explain the low but rising female share of executives.

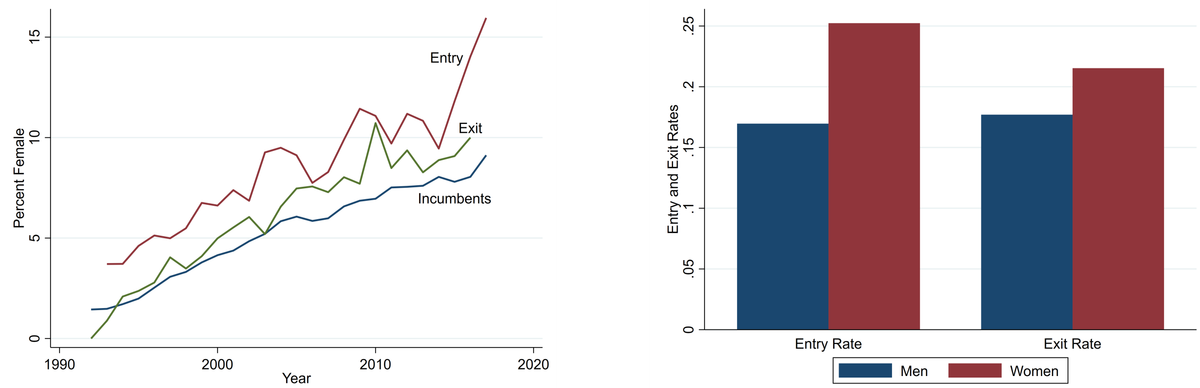
We begin by calculating the female share among newly entering executives, the female share among executives that exit the firm, and the female share among incumbent executives. We document the evolution of these shares over time in panel A of Figure 2. The findings show that the

[12]We show in Appendix Figure A4, however, that the increase documented here has been much slower in CEO or Chair positions relative to all other job titles.

Figure 2: Entry and Exit

A. Female Shares: Entrants, Exiters, and Incumbents

B. Entry and Exit Rates by Gender



Notes: Panel A illustrates the female share of executives entering a top 5 position at a firm, the female share of executives exiting a top 5 position at a firm, and the female share of incumbent executives. Panel B reports the share of female entrants (and exiters) relative to all female executives and the share of male entrants (and exiters) relative to all male executives.

female share is higher among entrants than incumbents. However, the female share of exiters is also higher than incumbents throughout the sample period, which indicates that there is more labor market churning among female business executives. Note that the female share of entrants exceeds the female share of exiters throughout the sample period, which means that the share of women is increasing over time (see Figure 1). The higher female share among exiters than incumbents means that the overall female share of executives is not increasing as fast as entry alone would indicate.

Another approach is to calculate the entry and exit rates for men and women, as we do in panel B of Figure 2. The female (male) entry rate is the ratio of female (male) entrants compared to all female (male) executives, and the exit rates are calculated in an analogous way. Consistent with the findings in panel A, both exit and entry rates are higher for women than men, but the gender gap in entry rates is larger than the gender gap in exit rates.

As the regression analog of this exercise, we estimate Equation (1) using entry and exit as the dependent variables. The results in column 1 of Table 2 confirm that the female entry rate is higher. Specifically, the female entry rate is 8.5 percentage points higher than the male entry rate. However, in column 2 we again find that the female exit rate is also higher: 3.6 percentage points higher than the male exit rate. The female coefficients in columns 1 and 2 are consistent with the gender gaps in entry and exit depicted in panel B of Figure 2. In columns 3 and 4, we show the significant

Table 2: Entry and Exit

	(1) Entry	(2) Exit	(3) Entry	(4) Exit
Female	0.085***	0.036***	0.019***	0.024***
	(0.004)	(0.004)	(0.003)	(0.003)
Age 40s			-0.073***	0.018***
			(0.005)	(0.005)
Age 50s			-0.092***	0.043***
			(0.005)	(0.005)
Age 60+			-0.061***	0.139***
			(0.007)	(0.006)
Experience			-0.039***	0.001***
			(0.001)	(0.000)
Dr.			-0.007	-0.041***
			(0.005)	(0.006)
Sales			-0.009***	0.014***
			(0.003)	(0.003)
Markups			-0.015*	-0.008
			(0.008)	(0.006)
Insider			0.000	0.051***
			(0.004)	(0.005)
CEO/Chair			-0.065***	-0.066***
			(0.002)	(0.003)
Vice Chair			-0.099***	0.039***
			(0.007)	(0.012)
President			-0.082***	-0.006*
			(0.003)	(0.003)
CFO			-0.062***	-0.047***
			(0.002)	(0.002)
COO			-0.095***	-0.029***
			(0.004)	(0.004)
Observations	234425	234425	234425	234425
Year FE	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * $p< 0.1$, ** $p< 0.05$, *** $p< 0.01$. All regressions control for a dummy for missing age.

positive coefficients are robust to the inclusion of executive controls, firm characteristics and fixed effects, and job title fixed effects, although the magnitude of both coefficients are smaller.[13]

Overall, these results show there is more labor market churning among female executives. The

[13]In Appendix Table A1, we show that the large reduction in the female coefficient in the entry regression results primarily from the inclusion of age and experience controls (older and more experienced people are less likely to enter, and women tend to be younger and less experienced).

female entry rate is higher, compared to men, but the female exit rate is also higher. Even though it is not possible to observe in the data where the newly entering top executives are coming from (i.e. promoted from within the firm or recruited from another firm) or where the exiters are going (i.e. to another firm or leaving the labor force altogether), these findings nonetheless have important implications. While firms are recruiting and promoting more women into this top five executive sample each year, they appear to be less effective at retaining female executives.

4.2 Temporal Flexibility and Corporate Culture

We now examine whether characteristics of the firm influence the gender employment gap. As described in section 3, if women derive disutility from a male-dominated corporate culture, they might sort into firms with more female-friendly cultures. Similarly, if women value temporal flexibility more than men do, they will select into flexible firms.

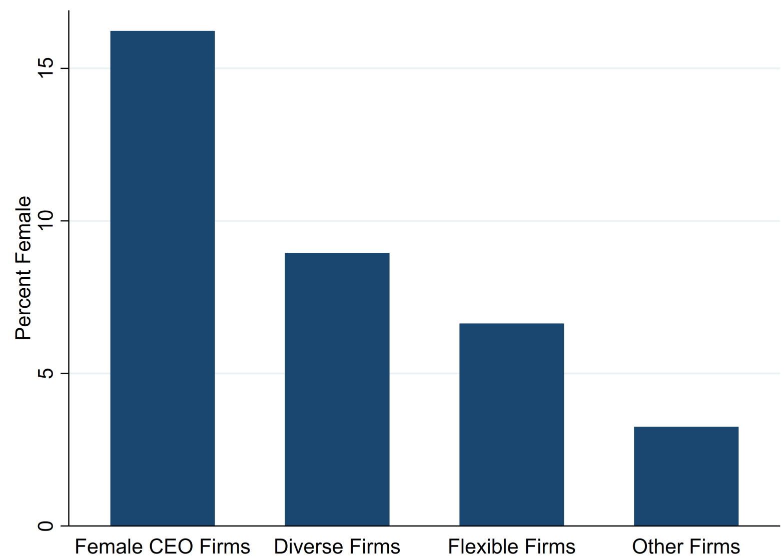
As a first test of this hypothesis, we report the share of female executives at these different types of firms. Figure 3 provides evidence that men and women differentially sort across firms with these amenities. Women are indeed much more likely to be at firms that have had a female CEO at least once in the study period. Specifically, the female share of executives at these firms is 16.2% while it is only 3.3% at all other firms.[14] While part of this could be mechanical (due to the presence of a female CEO at these firms), the female share of non-CEO executives at these firms (approximately 15%) is similarly high.

Figure 3 also shows the share of female executives is higher at diverse firms (9.0%), defined as those with a non-zero diversity score. Finally, the female share of executives is higher at firms that offer temporal flexibility in the form of childcare, elder care, and flextime (6.6%). Overall, these findings provide evidence that women do select into firms that offer temporal flexibility and a female-friendly corporate culture.

Having established that there is sorting by gender, we now examine whether this is driven primarily by exit or entry. Specifically, we estimate equation (2), where entry and exit are regressed on the female binary variable and the interactions between this female variable and the temporal flexibility and female-friendly corporate culture measures.

[14] "Other" firms are defined as those that have never had a female CEO, never promoted diversity, and never offered temporal flexibility.

Figure 3: Share of Female Execs by Firm Type



Notes: Share of female executives at firms that have ever had a female CEO, at firms that promote diversity, at firms that offer temporal flexibility, and at all other firms.

In Table 3, the coefficient on the interaction with our first corporate culture variable (female CEO) is insignificant in the entry regression (column 1), but negative and significant in the exit regression (column 2). The point estimate on the interaction term in column 2 is similar in magnitude to the female coefficient itself, which means that although exit rates are higher among women than men overall, at firms that have ever had a female CEO, this gap is almost non-existent. In other words, female leadership is found to improve the retention of female executives.

Examining our next corporate culture variable (firm diversity), we find, somewhat surprisingly, that the female-male entry difference is smaller at diverse firms.[15] However, consistent with our previous results, the negative interaction in column 2 indicates that the female exit rate is smaller at firms that prioritize diversity. Overall, firms with female-friendly corporate cultures (according to both measures) are relatively better at retaining female executives.

Finally we turn to temporal flexibility. Column 1 shows that female executives not only have higher entry rates overall (female coefficient of 0.03) but they are even more likely to join firms that provide temporal flexibility (female-flexibility interaction coefficient of 0.02). On the other

[15] One potential explanation is that diverse firms may be especially successful at recruiting and promoting minority men.

Table 3: Entry and Exit By Firm Characteristics

	(1) Entry	(2) Exit
Female	0.030***	0.056***
	(0.005)	(0.005)
Female x Female CEO Firm	0.005	-0.040***
	(0.007)	(0.008)
Female x Firm Diversity	-0.069***	-0.105***
	(0.015)	(0.018)
Female x Firm Flexibility	0.024*	0.016
	(0.013)	(0.017)
Observations	197546	197546
Indiv. Controls	Yes	Yes
Firm Controls	Yes	Yes
Year FE	Yes	Yes
Job Title FE	Yes	Yes
Firm FE	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. Indiv. Controls are age (including a dummy for missing age), gender, and experience. Firm controls are sales, markups, and insider relationships. Regressions restrict to firms with non-missing flexibility and corporate culture variables.

hand, in column 2 there is no evidence that women are more or less likely to exit firms that provide flexibility.[16]

Overall these findings indicate that the higher share of women at female-friendly and flexible firms (see Figure 3) occurs for different reasons. Female-friendly firms are better at retaining female executives (lower relative exit rates), while firms with temporal flexibility are better at recruiting and promoting female executives (higher relative entry rates).

5 Gender Pay Gaps

With a better understanding of the gender employment gap, our focus now shifts to the gender pay gap. First, we are interested in whether women's lower compensation, seen in Table 1, can be explained by observable worker, firm, or job characteristics. Second, to the extent that a

[16]The fact that all three of these interactions terms are significant in Table 3, after conditioning on the other two, indicates that these measures are capturing distinct variation in the data. It is not the case that all temporally flexible firms are also female-friendly.

conditional gender pay gap does exist, we are interested whether this is due to sorting of male and female executives across firms with different amenities, or whether temporal flexibility and corporate culture lead to gender pay gaps within firms.

5.1 Conditional Gender Pay Gap

Our analysis begins with the estimation of Equation (1) using log total compensation as our dependent variable. The results show that the "unconditional" gender pay gap (after controlling for only year fixed effects) is -0.26 in column 1 of Table 4.[17] This coefficient indicates that women earn approximately 26% less than men, when not accounting for any worker or firm characteristics.

Female and male executives differ along a number of dimensions, including experience, education, age, and job titles (see Table 1). In the remaining columns of Table 4, we examine the extent to which these observable differences between men and women can explain the unconditional pay gap found in column 1. We sequentially control for a variety of executive and firm characteristics that may influence compensation. For instance, controlling for age, experience, and education decreases the gender pay gap by eleven percentage points to 15% (column 2). Female executives tend to be young (Table 1), and these regression results show that executives in their forties, fifties, and sixties are paid increasingly more than those younger than 40 (the omitted category). More experienced executives earn more, while having a doctorate does not have a significant effect on compensation. In sum, while there exists a substantial unconditional gender pay gap among top executives, 40% of this gap can be explained by these individual worker characteristics.

Next we examine the role of industries and firm characteristics in explaining the remaining gender pay gap. If men and women select into industries and firms with different compensation structures, this could influence the gender pay gap. To test for this possibility, column 3 adds industry fixed effects in order to estimate the gender pay gap based on within-industry comparisons. Interestingly, the estimated gender pay gap barely changes, which suggests that differential sorting at the industry level is not an important explanation for the pay gap we document. Similarly, the next two columns show that firm characteristics do not appear to be driving the gender pay gap either. Controlling for firm fixed effects (in column 4) and also our time-varying firm characteristics

[17] This point estimate is slightly larger than the raw difference in male and female compensation reported in Table 1 because both executive compensation and the share of female executives has been increasing over time.

Table 4: Gender Compensation Gap

	(1) Total Comp	(2) Total Comp	(3) Total Comp	(4) Total Comp	(5) Total Comp	(6) Total Comp
Female	-0.255***	-0.147***	-0.156***	-0.168***	-0.165***	-0.079***
	(0.026)	(0.024)	(0.020)	(0.012)	(0.012)	(0.009)
Age 40s		0.312***	0.285***	0.158***	0.130***	0.069***
		(0.024)	(0.021)	(0.015)	(0.014)	(0.015)
Age 50s		0.461***	0.429***	0.260***	0.229***	0.097***
		(0.033)	(0.026)	(0.019)	(0.018)	(0.017)
Age 60+		0.409***	0.391***	0.306***	0.278***	0.045**
		(0.040)	(0.030)	(0.022)	(0.021)	(0.020)
Experience		0.057***	0.057***	0.050***	0.047***	0.022***
		(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Dr.		0.010	0.016	0.023	0.024	-0.014
		(0.069)	(0.040)	(0.028)	(0.028)	(0.024)
Sales					0.183***	0.172***
					(0.015)	(0.015)
Markups					0.050*	0.057**
					(0.027)	(0.027)
Insider					0.064***	0.046***
					(0.014)	(0.014)
CEO/Chair						0.813***
						(0.012)
Vice Chair						0.304***
						(0.024)
President						0.301***
						(0.010)
CFO						0.103***
						(0.008)
COO						0.312***
						(0.015)
Observations	234425	234425	234425	234425	234425	234425
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Absorbed	Absorbed	Absorbed
Firm FE	No	No	No	Yes	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. Columns 2 through 6 also control for a dummy for missing age.

(in column 5) both have a negligible effect on the gender pay gap. The female point estimate varies between 15-17% in columns 2-5. Thus, selection into particular industries or firms, does not play a major role in explaining the gender pay gap.

Occupations, on the other hand, do have an important impact on the gender pay gap. In column 6, we add indicators for each of the five top leadership positions: CEO/Chair, Vice Chair, President, CFO, and COO. All five positions earn more than the omitted 'other' category, and not surprisingly it is CEOs that earn the most. Controlling for job title also reveals that the monotonically increasing relationship between age and compensation documented in previous columns was driven in part by older executives being more likely to be in a top leadership position. In fact, after controlling for title, we see that compensation peaks around age fifty and then tails off for older executives. Importantly, we find that accounting for job title explains half of the remaining gender pay gap (the female point estimate drops from -0.165 in column 5 to -0.079 in column 6).[18] However, women still earn 7.9% less than men, after accounting for executive, firm, and job characteristics. In other words, female executives with similar experience and education, working at similar firms, and doing similar jobs earn less than their male colleagues.[19]

Like the share of female executives, the gender pay gap varies across age cohorts and has changed over our sample period. Appendix Figure A5 shows the conditional gender pay gap is much larger for executives in their thirties than it is for other age brackets. One potential explanation is that women in their thirties may be disproportionately affected by the time constraints associated with young children. This is consistent with evidence of a "child penalty" in compensation for women but not for men (Cortés and Pan, 2020; Keller and Utar, 2022; Kleven et al., 2019).

Illustrating changes over time, panel A of Figure 4 shows that compensation has increased (in real terms) for both men and women, while the gap between male and female earnings appears to have decreased. This can be seen more clearly in panel B of Figure 4, where the solid line plots the difference between male and female earnings. The unconditional pay gap declines by about half over this period, from about -0.4 in 1992 to about -0.2 in 2017. Interestingly, much of this decline took place in the first half of the study period, after which the series flattens out slightly.

We also report in panel B the evolution of the conditional gender pay gap. We find that in 1992 women earned about 20% less than similar male colleagues performing the same job. However, by 2017 female executives earned only 0.5% less than similar male colleagues. Unlike the unconditional pay gap, the conditional pay gap has continued to narrow throughout the entire time period, which could be an indication that the flattening out of the unconditional pay gap line is due to persistent gender gaps in promotion to higher-paying job titles.

[18]This decline suggests that women lag behind men in promotion to the highest-paying positions, which has also been found in previous work (Bronson and Thoursie, 2020; Gorman and Kmec, 2009).

[19]In Appendix Table A2, we show that our estimate of the conditional gender pay gap is robust to the inclusion of industry-by-year fixed effects, industry-by-title fixed effects, firm-by-year fixed effects, and firm-by-title fixed effects. The estimated gender gap across all these specifications ranges from 7.5 to 8.7%

Figure 4: Gender Pay Gap over Time

Notes: Gender gap in total compensation. The left panel reports the log of total compensation (in 2017 USD) for men and women separately, while the right panel reports the unconditional and conditional difference (conditional on experience, age, education, sales, markups, insider relationships, title fixed effects, and firm fixed effects).

5.2 Temporal Flexibility and Corporate Culture

Having established that women do select into more flexible and female-friendly firms (see Figure 3), we now test whether this sorting contributes to the gender pay gap. A compensating wage differential explanation predicts that firms that offer these amenities may pay less on average. To test this hypothesis we examine whether the estimated gender pay gap decreases after controlling for these amenities.

Column 1 of Table 5 reports the gender pay gap after controlling for executive characteristics, industry fixed effects, time-varying firm controls, and job title fixed effects. In column 2, we add our measures of female-friendly corporate culture and temporal flexibility. If compensating wage differentials are important, then the estimated gender gap in column 2 should be smaller. However, the estimated gap grows from 7% in column 1 to 8.8% in column 2. The coefficients on firm diversity and firm flexibility are positive and statistically significant, which means that diverse and flexible firms tend to pay *more*, not less. When we control for firm fixed effects (in column 3), which account for all time-invariant firm-specific unobservables, there is a gender pay gap of 8%.[20]

[20]Note that this specification is identical to that of column 6 in Table 4, except here firms with missing culture and flexibility data are excluded.

In short, although women do appear to be selecting into more flexible and female-friendly firms, this sorting is not responsible for the gender pay gap that we document.

Table 5: Gender Compensation Gap By Firm Characteristics

	(1)	(2)	(3)	(4)
Female	-0.070***	-0.088***	-0.080***	-0.131***
	(0.014)	(0.015)	(0.009)	(0.014)
Female CEO Firm		0.038		
		(0.033)		
Firm Diversity		0.187***		
		(0.071)		
Firm Flexibility		0.183**		
		(0.075)		
Female x Female CEO Firm				0.054**
				(0.021)
Female x Firm Diversity				0.174***
				(0.060)
Female x Firm Flexibility				-0.002
				(0.039)
Observations	197546	197546	197546	197546
Indiv. Controls	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Job Title FE	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * $p< 0.1$, ** $p< 0.05$, *** $p< 0.01$. Indiv. Controls are age (including a dummy for missing age), gender, and experience. Firm controls are sales, markups, and insider relationships. Regressions restrict to firms with non-missing flexibility and corporate culture variables.

However, it is still possible that temporal flexibility and corporate culture could lead to gender pay gaps *within* firms. For example, a corporate culture that is competitive and male-dominated may favor men within a firm. Similarly, if women choose tasks within the firm that provide greater temporal flexibility but pay less, then gender pay gaps will be larger at flexible firms.

To test these hypotheses, we explore whether the conditional gender pay gap differs based on the firm's corporate culture or temporal flexibility. Specifically, we add interactions between the female indicator and our three firm characteristics in column 4 of Table 5 (as outlined in Equation 2). The significant positive coefficient on the first interaction term indicates that the gender gap is cut in half at firms that have ever had a female CEO. The next interaction term reveals a similar story – the gender pay gap is non-existent at firms that promote diversity. The fact that the gender pay gap is significantly smaller at these female-friendly firms supports the idea that a male-dominated corporate culture is prevalent elsewhere and is contributing to the gender pay gap. On the other hand, there is no evidence that the gender pay gap is larger at firms that offer temporal flexibility. The coefficient on the flexibility interaction term is negative but small in magnitude and statistically insignificant in column 4.

We utilize time-varying measures of flexibility and corporate culture in Appendix Table A3. Despite the loss of more than half the sample, the results are similar.[21] The gender pay gap is significantly smaller at firms with a female-friendly corporate culture but not different at firms that offer temporal flexibility. We use these estimates to calculate how much of the observed decline in the conditional gender pay gap (Figure 4) can be explained by corporate culture. Specifically, a back of the envelope calculation multiplies the change in the Female CEO and Firm Diversity variables by their respective coefficients in columns 1 and 2 of Table A3. We find that these two factors together explain 28% of the observed decline in the conditional gender pay gap.[22]

Overall, these findings provide new insight into gender employment and compensation gaps among top business executives. Although we do find that female executives tend to select into firms with temporal flexibility and female-friendly corporate culture, there is no evidence that this influences gender pay gaps through a compensating wage differential story. Instead, there is evidence that these firm characteristics influence gender pay gaps *within* the firm. Specifically, gender pay gaps disappear entirely at firms with female-friendly corporate cultures.

5.3 Compensation Type

This section explores whether the gender pay gap varies with the type of compensation. Discretionary pay is often more susceptible to the influence of negotiation and insider relationships which could disproportionately favor men (Biasi and Sarsons, 2020; Cullen and Perez-Truglia, 2019; Keller and Olney, 2021).

We test this prediction in Table 6, by reporting the conditional gender pay gap using salary and non-salary compensation as our dependent variables. The findings show that women earn

[21] Specifically, we restrict the analysis to the years prior to 2010, which have more complete KLD data coverage.

[22] While the point estimate on the Female CEO interaction term is larger, relatively few women become CEOs in our sample and thus the Firm Diversity variable plays a larger role in the decline in the conditional gender pay gap. Due to Firm Diversity data constraints, this calculation is based on changes from 1992 to 2009. To calculate the change in Firm Diversity over time, we focus on firms that span this entire period.

Table 6: Gender Gap by Compensation Type

	(1) Salary Comp	(2) Non-Salary Comp	(3) Bonus	(4) Stocks	(5) Options	(6) Other Comp
Female	-0.044***	-0.085***	-0.057***	0.005	-0.081***	-0.081***
	(0.007)	(0.013)	(0.019)	(0.025)	(0.026)	(0.019)
Observations	234425	234425	234425	234425	234425	234425
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Job Title FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * $p< 0.1$, ** $p< 0.05$, *** $p< 0.01$. Individual controls are age (including a dummy for missing age), gender, and experience. Firm controls are sales, markups, and insider relationships.

4.4% less in salary compared to their male colleagues (column 1) but 8.5% less in non-salary compensation (column 2). In the remaining columns, we report results for each component of non-salary compensation, including bonuses, stocks, options, and other compensation. Across all types of non-salary compensation (except compensation from stocks, which is the smallest component), the gender gap is larger than the gender gap in salary compensation.

The fact that the gender pay gap is larger for more discretionary forms of compensation is broadly consistent with our earlier findings showing that corporate culture is important. Specifically, corporate culture that favors men may be more likely to manifest itself in the form of discretionary compensation.

We explore these possibilities in more detail in Table 7, which replicates the specification in column 4 of Table 5 but uses different types of compensation as the dependent variable. Comparing the Female coefficient in columns 1 and 2, we again see that the gender pay gap is larger for non-salary compensation (coefficient of -0.16 in column 2 versus -0.07 in column 1). However, importantly the gender gap in salary and non-salary compensation is non-existent at female-friendly firms that promote diversity.

We then disaggregate non-salary compensation into bonuses, stocks, stock options, and other compensation. The negative female point estimate is largest for bonuses (column 3), but also sizable and statistically significant for stocks and other compensation (columns 4 and 6). The interaction coefficients show that the gender bonus gap disappears entirely at firms that promote

Table 7: Gender Gap by Compensation Type and Firm Characteristic

	(1) Salary Comp	(2) Non-Salary Comp	(3) Bonus	(4) Stocks	(5) Options	(6) Other Comp
Female	-0.068***	-0.155***	-0.149***	-0.139***	0.013	-0.100***
	(0.009)	(0.020)	(0.030)	(0.038)	(0.045)	(0.029)
Female x Female CEO Firm	0.026	0.033	0.052	0.075	-0.088	-0.018
	(0.017)	(0.031)	(0.060)	(0.086)	(0.092)	(0.053)
Female x Firm Diversity	0.105***	0.328***	0.427***	0.521***	-0.206	0.114
	(0.038)	(0.087)	(0.137)	(0.181)	(0.200)	(0.136)
Female x Firm Flexibility	-0.042	-0.052	-0.172*	0.099	-0.251**	-0.075
	(0.043)	(0.049)	(0.103)	(0.119)	(0.123)	(0.097)
Observations	197546	197546	197546	197546	197546	197546
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Job Title FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * $p< 0.1$, ** $p< 0.05$, *** $p< 0.01$. Individuals controls are age (including a dummy for missing age), gender, and experience. Firm controls are sales, markups, and insider relationships. Regressions restrict to firms with non-missing flexibility and corporate culture variables.

diversity, which is what we would expect to see if corporate culture is important. Conversely, the gender gaps in bonuses and stock options are larger at firms that offer temporal flexibility. This provides some evidence that women may take advantage of temporal flexibility but then receive less discretionary pay as a result.

6 Conclusion

This paper examines gender differences among top business executives. The results provide unique insight into one of the most high-stress, time-intensive, and competitive work environments. Furthermore, the findings highlight impediments to female labor participation and identify determinants of gender pay gaps, which may be of interest more broadly.

Over the last quarter century the female share of top business executives averaged 6%. Furthermore, the women that do work in this profession earn 8% less than otherwise similar male colleagues in the same positions. We also find that the share of female executives is increasing and the conditional gender pay gap is decreasing over our sample period.

We examine whether corporate culture and temporal flexibility can explain these features of this executive labor market. There is evidence that the female share of executives is higher at firms with more temporal flexibility (via higher female entry rates) and at firms with a more female-friendly culture (via lower female exit rates). While there is evidence that women select into firms with these amenities, our findings show that this does not lead to a gender pay gap, via a compensating wage differential story.

However, when looking at compensation differences *within* firms, we find that at female-friendly firms the gender pay gap disappears entirely, indicating that corporate culture is important. Finally we show that the gender pay gap is larger for discretionary pay, but again this gap disappears entirely at female-friendly firms.

There is a rich literature in economics – both experimental and observational – that examines gender differences in various characteristics and gender discrimination in various settings. This large body of work suggests some possible explanations for the large gender gaps in executive employment and pay, as well as the significantly smaller gaps at female-friendly firms.

Lower female representation and pay in top executive positions (even after controlling for observed characteristics) could be due to gender differences in a number of dimensions. For example, previous work shows that women tend to be less competitive (Buser, 2014; Croson and Gneezy, 2009; Niederle, 2016; Niederle and Vesterlund, 2007; Sutter and Glätzle-Rützler, 2015), less confident (Niederle and Vesterlund, 2007), are less likely to negotiate (Hernandez-Arenaz and Iriberri, 2019), and less likely to self promote (Exley and Kessler, 2019). This combination of differences could deter women from pursuing top management positions in the first place, make them less successful at obtaining these positions conditional on trying, and result in lower pay conditional on making it to the top.[23] Firm characteristics might moderate the outcome gaps generated by these gender differences. In particular, existing research suggests that woman might behave differently in settings with more women (Chen and Houser, 2019; Hernandez-Arenaz and Iriberri, 2018), which could help explain why we find muted gender gaps in firms with female leadership.

It could also be the case that women experience discrimination in promotion and salary determination, as has been found to be the case in other male-dominated settings (Goldin and Rouse,

[23] According to O*NET data, CEOs rank in the top three percentile of all jobs in terms of both competitiveness and negotiation.

2000; Moss-Racusin et al., 2012). This kind of discrimination could be due to incorrect perceptions of female ability (Beg et al., 2021). If these inaccuracies are less common at female-friendly firms (which have had more exposure to female executives), this is another way through which corporate culture can affect the size of gender pay gaps.

Given that the executives we study are all in leadership roles, it is also important to note the growing evidence that women are evaluated differently in leadership roles (Ayalew et al., 2021; Brooks et al., 2014; Grossman et al., 2019). Importantly, evidence suggests these issues can be mitigated by greater exposure to female leaders (Beaman et al., 2009; Gangadharan et al., 2016). For these reasons, female leadership is one component of corporate culture that could be especially important in determining the size of a firm's gender pay gap.

In sum, the gender gaps we document in our setting could be driven by a combination of factors: gender differences in characteristics like competitiveness and negotiation, discrimination in promotion or salary determination, or differences in how male and female leaders are evaluated. Gaps generated by these differences could be mitigated by greater exposure to female leadership, which could explain why we find smaller gaps in female-friendly firms. Overall, these findings provide important lessons for policy makers who are interested in closing the remaining gender gaps in employment and compensation.

References

Albanesi, S. and Olivetti, C. (2006). Gender and Dynamic Agency : Theory and Evidence on the Compensation of Female Top Executives. *Science*, (November):1–23.

Ayalew, S., Manian, S., and Sheth, K. (2021). Discrimination from below: Experimental evidence from Ethiopia. *Journal of Development Economics*, page 102653.

Bakija, J., Cole, A., Heim, B. T., et al. (2012). Jobs and income growth of top earners and the causes of changing income inequality: Evidence from us tax return data.

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

Beg, S., Fitzpatrick, A., and Lucas, A. M. (2021). Gender bias in assessments of teacher performance. In *AEA Papers and Proceedings*.

Bell, L. (2005). Women-led firms and the gender gap in top executive jobs. *IZA Discussion Paper*, (1689).

Bertrand, M., Goldin, C., and Katz, L. F. (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, M. and Hallock, K. F. (2001). The gender gap in top corporate jobs. *Industrial and Labor Relations Review*, 55(1):3–21.

Biasi, B. and Sarsons, H. (2020). Flexible Wages, Bargaining, and the Gender Gap.

Blau, F. D. and Kahn, L. M. (2017). The Gender Wage Gap: Extent, Trends, and Explanations. *Journal of Economic Literature*, 55:789–865.

Bronson, M. A. and Thoursie, P. S. (2020). The Wage Growth and Within-Firm Mobility of Men and Women: New Evidence and Theory. *Working Paper*, (June):1–77.

Brooks, A. W., Huang, L., Kearney, S. W., and Murray, F. E. (2014). Investors prefer entrepreneurial ventures pitched by attractive men. *Proceedings of the National Academy of Sciences of the United States of America*, 111(12):4427–4431.

Buser, T. (2014). Gender, Competitiveness, and Career Choices. *Quarterly Journal of Economics*, pages 1409–1447.

Card, D., Cardoso, A. R., and Kline, P. (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.

Casarico, A. and Lattanzio, S. (2020). What Firms Do : Gender Inequality in Linked Employer-Employee Data.

Chen, J. and Houser, D. (2019). When are women willing to lead? The effect of team gender composition and gendered tasks. *Leadership Quarterly*, 30(6):101340.

Cortés, P. and Pan, J. (2020). Children and the Remaining Gender Gaps in the Labor Market.

Cronqvist, H. and Yu, F. (2017). Shaped by their daughters: Executives, female socialization, and corporate social responsibility. *Journal of Financial Economics*, 126(3):543–562.

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

Cullen, Z. and Perez-Truglia, R. (2019). The Old Boys' Club: Schmoozing and the Gender Gap. *SSRN Electronic Journal*.

De Loecker, J., Eeckhout, J., and Unger, G. (2020). The rise of market power and the macroeconomic implications. *The Quarterly Journal of Economics*, 135(2):561–644.

Edmans, A., Gabaix, X., and Jenter, D. (2017). Executive compensation: A survey of theory and evidence. *The handbook of the economics of corporate governance*, 1:383–539.

Exley, C. L. and Kessler, J. B. (2019). The gender gap in self-promotion. Technical report, National Bureau of Economic Research.

Frydman, C. (2019). Rising through the ranks: the evolution of the market for corporate executives, 1936–2003. *Management Science*, 65(11):4951–4979.

Frydman, C. and Jenter, D. (2010). Ceo compensation. *Annu. Rev. Financ. Econ.*, 2(1):75–102.

Gangadharan, L., Jain, T., Maitra, P., and Vecci, J. (2016). Social identity and governance: The behavioral response to female leaders. *European Economic Review*, 90:302–325.

Gayle, G. L., Golan, L., and Miller, R. A. (2012). Gender differences in executive compensation and job mobility. *Journal of Labor Economics*, 30(4):829–872.

Goldin, C. (2014). A grand gender convergence: Its last chapter. *American Economic Review*, 104(4):1091–1119.

Goldin, C. and Katz, L. F. (2016). A most egalitarian profession: pharmacy and the evolution of a family-friendly occupation. *Journal of Labor Economics*, 34(3):705–746.

Goldin, C. and Rouse, C. (2000). Orchestrating impartiality: The impact of ”blind” auditions on female musicians. *American Economic Review*, 90(4):715–741.

Gorman, E. H. and Kmec, J. A. (2009). Hierarchical rank and women’s organizational mobility: Glass ceilings in corporate law firms. *American Journal of Sociology*, 114(5):1428–1474.

Grossman, P. J., Eckel, C., Komai, M., and Zhan, W. (2019). It pays to be a man: Rewards for leaders in a coordination game. *Journal of Economic Behavior and Organization*, 161:197–215.

Guvenen, F., Kaplan, G., and Song, J. (2020). The glass ceiling and the paper floor: Gender differences among top earners, 1981—2012. In *NBER Macroeconomics Annual 2020, volume 35*. University of Chicago Press.

Hernandez-Arenaz, I. and Iriberri, N. (2018). Women ask for less (only from men): Evidence from bargaining in the field. *Journal of Economic Behavior & Organization*, 152:192–214.

Hernandez-Arenaz, I. and Iriberri, N. (2019). A review of gender differences in negotiation. *Oxford Research Encyclopedia of Economics and Finance*.

Hotz, J. V., Johansson, P., and Karimi, A. (2018). Parenthood, Family Friendly Workplaces, and the Gender Gaps in Early Work Careers. *NBER Working Paper*, 24173.

Hunt, J. (2016). Why do women leave science and engineering? *ILR Review*, 69(1):199–226.

Husain, A. N., Matsa, D. A., and Miller, A. R. (2018). Do male workers prefer male leaders? an analysis of principals' effects on teacher retention. Technical report, National Bureau of Economic Research.

Keller, W. and Olney, W. W. (2021). Globalization and executive compensation. *Journal of International Economics*, 129:103408.

Keller, W. and Utar, H. (2022). Globalization, Gender, and the Family. *Review of Economic Studies*.

Kleven, H., Landais, C., and Søgaard, J. E. (2019). Children and gender inequality: Evidence from Denmark. *American Economic Journal: Applied Economics*, 11(4):181–209.

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

Lordan, G. and Pischke, J.-S. (2016). Does Rosie Like Riveting? Male and Female Occupational Choices.

Lundberg, S. and Stearns, J. (2019). Women in economics: Stalled progress. *Journal of Economic Perspectives*, 33(1):3–22.

Mas, A. and Pallais, A. (2017). Alternative work arrangements. *American Economic Review*, 107(12):3722–3759.

Matsa, D. A. and Miller, A. R. (2011). Chipping Away at the Glass Ceiling: Gender Spillovers in Corporate Leadership. *American Economic Review*, 101(3):635–39.

Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J., and Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences of the United States of America*, 109(41):16474–16479.

Niederle, M. (2016). 'gender effects in economic experiments. In *Handbook of experimental economics*. Princeton university press.

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

Piketty, T., Saez, E., and Zucman, G. (2018). Distributional national accounts: methods and estimates for the united states. *The Quarterly Journal of Economics*, 133(2):553–609.

Sutter, M. and Glätzle-Rützler, D. (2015). Gender differences in the willingness to compete emerge early in life and persist. *Management Science*, 61(10):2339–2354.

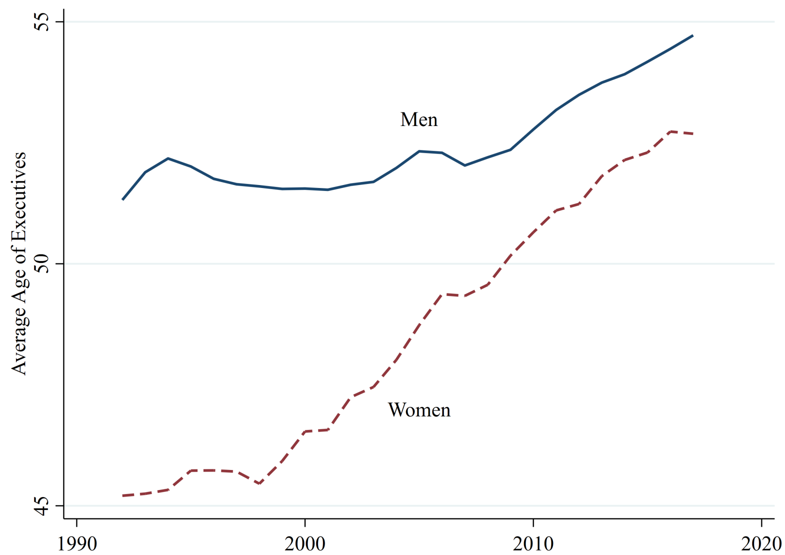
Tate, G. and Yang, L. (2015). Female leadership and gender equity : Evidence from. *Journal of Financial Economics*, 117(1):77–97.

Usui, E. (2008). Job satisfaction and the gender composition of jobs. *Economics Letters*, 99(1):23–26.

Wiswall, M. and Zafar, B. (2018). Preference for the workplace, investment in human capital, and gender. *Quarterly Journal of Economics*, 133(1):457–507.

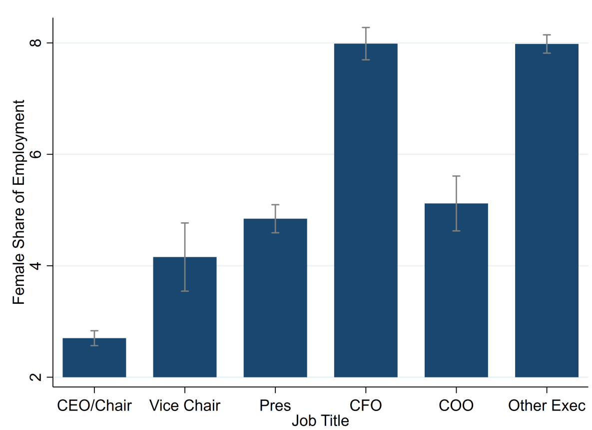
A ONLINE APPENDIX

Figure A1: Average Age of Top Executives by Gender over Time



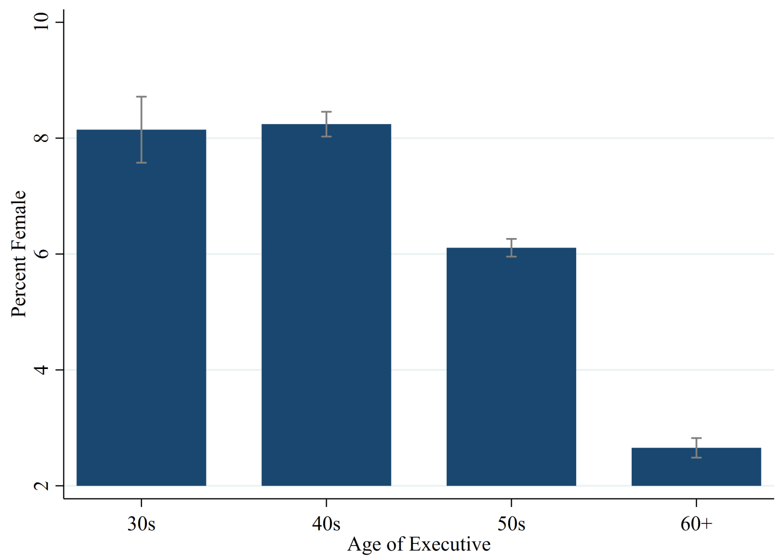
Notes: Average age of female and male executives over time. ExecuComp does not report age of all executives.

Figure A2: Female Share by Job Title



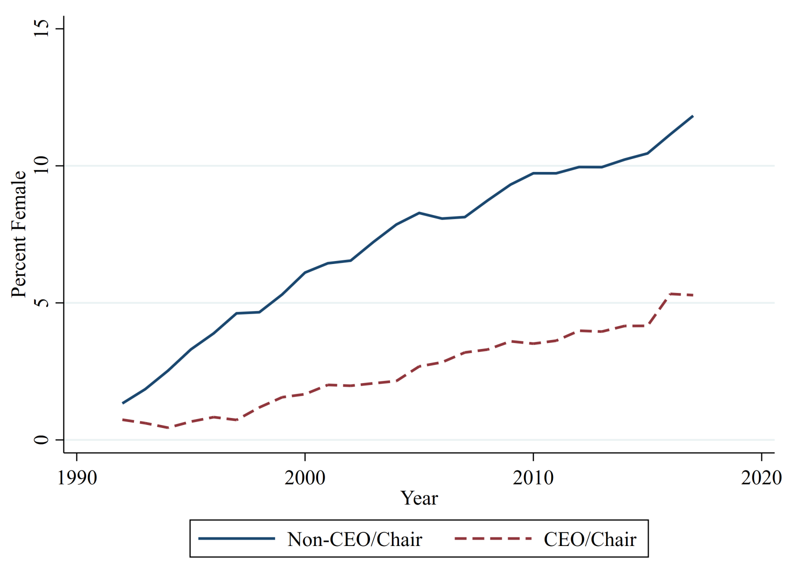
Notes: Percent of executives who are female in each job title category.

Figure A3: Female Shares of Top Executives by Age



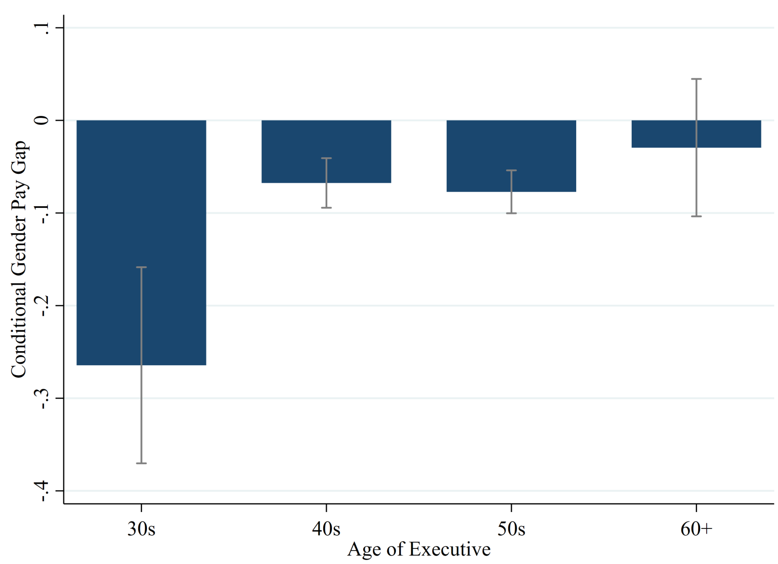
Notes: Share of female executives within each age bin. ExecuComp does not report the age of all executives.

Figure A4: Female Share of Top Executives by Job Title over Time



Notes: Share of executives who are female over time by job title.

Figure A5: Conditional Gender Pay Gap by Age



Notes: Gender gap in total compensation (TDC1) conditional on executive age (including a dummy for missing age), gender, and experience, as well as firm sales, markups, insider relationships, and firm fixed effects.

Table A1: Entry and Exit with All Controls

	(1) Entry	(2) Entry	(3) Entry	(4) Entry	(5) Entry	(6) Entry	(7) Exit	(8) Exit	(9) Exit	(10) Exit	(11) Exit	(12) Exit
Female	0.085***	0.029***	0.027***	0.028***	0.028***	0.019***	0.036***	0.035***	0.031***	0.030***	0.030***	0.024***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Age 40s		-0.070***	-0.071***	-0.080***	-0.079***	-0.073***		0.009**	0.014***	0.016***	0.014***	0.018***
		(0.004)	(0.004)	(0.004)	(0.005)	(0.005)		(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Age 50s		-0.091***	-0.091***	-0.101***	-0.099***	-0.092***		0.024***	0.034***	0.039***	0.036***	0.043***
		(0.004)	(0.005)	(0.005)	(0.005)	(0.005)		(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Age 60+		-0.069***	-0.068***	-0.071***	-0.069***	-0.061***		0.100***	0.116***	0.131***	0.127***	0.139***
		(0.005)	(0.006)	(0.006)	(0.006)	(0.007)		(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Experience		-0.039***	-0.039***	-0.041***	-0.041***	-0.039***		-0.002***	-0.002***	-0.000	-0.001*	0.001***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dr.		-0.002	-0.004	0.001	0.001	-0.007		-0.033***	-0.051***	-0.037***	-0.037***	-0.041***
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)		(0.007)	(0.006)	(0.007)	(0.007)	(0.006)
Sales					-0.012***	-0.009***					0.013***	0.014***
					(0.003)	(0.003)					(0.003)	(0.003)
Markups					-0.014*	-0.015*					-0.007	-0.008
					(0.008)	(0.008)					(0.006)	(0.006)
Insider					-0.004	0.000					0.051***	0.051***
					(0.004)	(0.004)					(0.004)	(0.005)
CEO/Chair						-0.065***						-0.066***
						(0.002)						(0.003)
Vice Chair						-0.099***						0.039***
						(0.007)						(0.012)
President						-0.082***						-0.006*
						(0.003)						(0.003)
CFO						-0.062***						-0.047***
						(0.002)						(0.002)
COO						-0.095***						-0.029***
						(0.004)						(0.004)
Observations	234425	234425	234425	234425	234425	234425	234425	234425	234425	234425	234425	234425
Mean	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Absorbed	Absorbed	Absorbed	No	No	Yes	Absorbed	Absorbed	Absorbed
Firm FE	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. All regressions control for a dummy for missing age.

Table A2: Gender Compensation Gap with Additional Fixed Effects

	(1) Total Comp	(2) Total Comp	(3) Total Comp	(4) Total Comp	(5) Total Comp	(6) Total Comp
Female	-0.079***	-0.079***	-0.080***	-0.087***	-0.075***	-0.082***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)
Observations	234425	234286	234415	233371	234329	233270
Indiv. Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Job Title FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-by-Title FE	No	Yes	No	Absorbed	No	Absorbed
Industry-by-Year FE	No	No	Yes	No	Absorbed	Absorbed
Firm-by-Title FE	No	No	No	Yes	No	Yes
Firm-by-Year FE	No	No	No	No	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. Indiv. Controls are age (including a dummy for missing age), gender, and experience. Firm controls are sales, markups, and insider relationships.

Table A3: Gender Compensation Gap By Time-Varying Firm Characteristics

	(1)	(2)	(3)
Female	-0.105***	-0.141***	-0.086***
	(0.011)	(0.016)	(0.013)
Female CEO Firm	-0.030		
	(0.031)		
Firm Diversity		-0.026	
		(0.038)	
Firm Flexibility			0.030
			(0.028)
Female x Female CEO Firm	0.078**		
	(0.037)		
Female x Firm Diversity		0.186***	
		(0.049)	
Female x Firm Flexibility			-0.019
			(0.034)
Observations	161691	84850	84850
Indiv. Controls	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Job Title FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Notes: Standard errors (clustered at the industry level) in parentheses. * p< 0.1, ** p< 0.05, *** p< 0.01. Indiv. Controls are age (including a dummy for missing age), gender, and experience. Firm controls are sales, markups, and insider relationships. Regressions restrict to years before 2010.