The gender pay gap: Pay for performance and sorting across employers

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Abstract

We document a gender pay gap among business professors at Florida public universities. Part of this gap is driven by the fact that females are disproportionately likely to work at schools with low pay, controlling for faculty productivity. However, this sorting effect does not completely explain our findings: Using strict fixed effects to control for discipline, employer, rank, productivity, and experience, we find that women are paid approximately 3.5% less than men. Women's pay is less sensitive to their publication performance, and the pay gap is economically largest among full professors.

Keywords: Gender gap, gender inequality, compensation, faculty, research productivity, career paths

JEL classifications: I26, J16, J24, J31, J71

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1. Introduction

According to the US Bureau of Labor Statistics, in 2020 women earned 82 cents for every dollar a man makes.[1] For decades, this 'gender wage gap,' has been vigorously debated, receiving tremendous attention in both the popular press and academic outlets.[2] While pay inequality between men and women improved over the 1979 – 2000 period, it has leveled out since then (Jarrell and Stanley, 2004; Weichselbaumer and Winter-Ebmer, 2005), inspiring further investigation into what factors contribute to a gender wage gap and what factors mitigate it.[3]

A major challenge in examining the gender gap is that it is difficult to fully control for factors that are likely to impact salary. Ideally, one would compare the salaries of men and women with the same experience, performing the same task, and producing the same output. Unfortunately, such a setting does not exist. In this paper, we overcome some of these challenges by studying salary differentials between male and female tenure-track faculty. Academia as an empirical setting provides several key advantages in studying pay between men versus women. Most importantly, the performance of faculty is observable, quantifiable, and can be linked to individuals.

We employ a relatively unique sample: faculty working in business schools within large public universities that are all located within a single state. Specifically, we examine business school faculty across seven public universities in Florida. This setting provides several advantages. First, Florida's sunshine laws require publicly available compensation disclosure. Second, by focusing on universities within a single state, we can ensure greater uniformity in pay reporting. Third, these universities are all research universities, and three of the seven are among the largest public 4-year universities in the country. Together, these factors increase our ability to precisely measure both compensation and the determinants of compensation.

Prior literature suggests that the features of Florida's public universities should minimize the existence of any gender pay gap. Because of open record laws and the associated wage transparency, these universities should have stronger incentives to promote equality (Bennedsen, Simintzi, Tsoutsoura, and Wofenzon, 2021; Obloj and Zenger, 2022). Moreover, the faculty within our sample have access to the United Faculty of Florida (UFF), a union for all the public universities in the state.

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1 https://www.bls.gov/cps/earnings.htm

2 For a review of the gender pay gap, see Wright (1991) and Bishu and Alkadry (2016).

3 See Highlights of women's earnings in 2020 : BLS Reports: U.S. Bureau of Labor Statistics at https://www.bls.gov/opub/reports/womens-earnings/2020/home.htm

Unions such as UFF serve to raise faculty concerns such as equality and have been found to lessen pay inequality (Card, 2001).

Our baseline tests measure the difference in salaries between male and female faculty controlling for research productivity, *within* the same school, discipline, rank, PhD graduation time period, and year. Thus, our model absorbs considerable unobservable time invariant factors that most studies examining pay differentials between men and women cannot. In this baseline model, we estimate a gender gap of approximately $5.7k, which is 3.5% of the average $164k faculty salary. This pay gap exists in spite of pay transparency in Florida and the existence of a faculty union.

To shed further light on the way in which gender relates to pay, we examine the evolution of the pay gap over the various stages of faculty careers. Prevailing discipline-specific (and gender-neutral) market rates for newly-minted PhDs suggest that salaries for "rookie" academics should be similar for men and woman. Alternatively, experimental evidence of Maitra, Neelim, and Tran (2021) and Leibbrandt and List (2014) suggests that women may negotiate less aggressively even at the earliest career stages. Our findings are consistent with bargaining and negotiating playing less of a role at these early career stages: the pay gap is significantly lower among assistant professors, and it is the greatest at the full professor level.

Advancements in rank are primarily earned through publications. The finding that the pay gap increases at higher levels of seniority raises the question of whether females are being less highly compensated for performance. That is, is females' pay-for-performance lower than that of their male counterparts? We rely on the widely used *Financial Times* 50 (FT50) journal ranking list to examine pay-for-performance sensitivity of faculty members across our sample. We find that female faculty are rewarded significantly less for hitting top publications compared to their male colleagues. This is consistent with firm-level evidence that male executive director pay is more performance-based compared to female directors (Kulich, Trojanowski, Ryan, Haslam, and Renneboog, 2011). Our findings suggest that differential pay-for-performance is likely one channel through which the average pay gap manifests.

The existence of a significant gender pay gap and significant differences in pay-for-performance raise questions of what factors may serve to mitigate these inequalities. We focus on two channels. First, we examine the leadership within the business school. Specifically, we investigate whether having a female department chair, associate dean, or dean moderates the gap. Evidence on the impact of female leadership on subordinate pay is mixed. For instance, Tate and Yang (2015) find that female leadership lessens the gender gap for lower-level employees within their firm, and Biasi and Sarsons (2022) find the gap is lower for female teachers working under a female principal. However, Srivastava and Sherman (2015) find evidence consistent with the value-threat perspective, which predicts the opposite. They find that women who switched to a female supervisor from a male supervisor had a lower salary in the following year compared to similarly performing males who also made the same switch. Finally, a growing body of literature concludes that men and women are equally susceptible to implicit biases, which cause people to associate males with more career-oriented roles and with certain 'expert' occupations (Sterling, Thompson, Wang, and Sheppard, 2020). Such biases would lead male and female leadership to discriminate similarly against females. Our findings are most consistent with this implicit bias explanation. We find no evidence that female leadership influences the pay disparity between male and female faculty.

The second channel that potentially serves to mitigate the pay gap is the proportion of females on the faculty. Implicit biases can be effectively overcome when people observe more data points that contradict their biases. Consistent with this, Perryman, Fernando and Tripathy (2015) find that as the number of female executives increase, compensation between male and female executives becomes more equitable. We find some weak evidence consistent with this view. At the college-level, we find that female faculty salaries are positively related to overall female faculty representation. However, we fail to find that department-level female representation has a similar effect.

Interestingly, we find that female representation is associated with *overall* lower faculty pay. This begs an important question. Why are females more likely employed by lower paying institutions? We conjecture that our finding regarding females' lower pay-for-performance sensitivity reflects a broader phenomenon of females receiving less recognition for their research. If this is the case, then this would plausibly affect the type of university for which females work. A growing body of work highlights the extent to which differences in wage-setting *between* firms contributes to pay inequality (see, e.g., OECD 2022; Song et al. 2018). If females' research is less recognized than males,' then their job opportunities will be worse than those of their male counterparts. It follows that females would be more likely to accept jobs at institutions that offer lower compensation. We find strong support for such sorting within our sample. We compute the residuals from our baseline salary model and plot the percentage of female faculty and average residuals by institution. We find the institutions with the highest percentage of female faculty have negative salary residuals, whereas universities with the lowest female representation are associated with positive salary residuals.

Another possible explanation of the observed sorting behavior is that women are less likely to leave their job despite below-market pay. We examine the career paths of faculty to address this question. While we find evidence that underpaid faculty are significantly more likely to leave their institution, we find no significant difference in the propensity to leave between men and women. There are several other plausible explanations that we cannot rule out to explain the sorting behavior we document. For instance, if females have differential preferences for risk tolerance or the willingness to engage in competition, this may contribute to this effect. We note that while such differences do exist within broader populations (see, e.,g Niederle and Vesterlund, 2007; Niederle, 2017; Cortes, Pan, and Zafar, 2021), there is less evidence that such differences exist within the subsample of individuals who self-select into academia within business schools (Adams and Lowry, 2021).

A caveat in interpreting our results is that while research productivity is presumably the main aspect of the job that gets rewarded in academia, teaching and service are also important components of the profession, and we do not observe these activities. To the extent that there exist systematic differences across the genders in the performance of these tasks, our pay gap estimates would be biased. Likewise, we do not observe other sources of income such as funds from summer research support, research chairs, summer teaching, or executive MBA teaching. If one gender is more likely to receive summer funding or more likely to engage in extra teaching for compensation, this would also impact our estimates. Of course, if men are more likely to receive these extra sources of funding, then this could cause our estimates of the pay gap to be underestimated.

Our paper broadly contributions to the extant literature on the gender gap (O'Neill, 2003; Goldin, 2014: Blau and Kahn, 2017; Goldin, Kerr, Olivetti, and Barth, 2017; Niederle, 2017; Biasi and Sarsons, 2022). More specifically, our findings relate to the academic labor market. In this setting, despite the homogenous job-related task of producing research and our unique ability to control for individual performance and a host of unobserved heterogeneity, we still find a statistically and economically significant wage gap. Our study has the advantage of studying multiple disciplines where females are significantly underrepresented, in a single unionized state. This contrasts with studies such as Ginther and Hayes (1999) and Sherman and Tookes (2021) that study only one discipline, studies such as Chen and Crown (2019) that study just one institution, and studies such as Barbezat and Hughes (2005) that study schools across multiple states and thus potentially suffer from more heterogeneity in pay reporting. Moreover, our focus on business schools provides the additional advantage that the determinants of compensation are more observable, and are generally not influenced by factors such as grants or patents.

We also contribute to the literature on pay-for-performance differences between male and female employees in an academic setting. While it is widely recognized that pay-for-performance varies across firms, there is relatively little evidence on differences by gender. Kulich et al. (2011) finds some evidence that pay-for-performance is lower for women, but their sample is relatively small, consisting of 192 executives who also serve on the Board of Directors in UK firms. They link the compensation of these executive directors to overall company operating performance or firm Tobin's Q. Our ability to more closely link performance to the individual, combined with a broader sample, enables us to provide more direct evidence on this issue. Using the readily available Financial Times Top 50 (FT50) publications, we find that female faculty's pay-for-performance is significantly less than that of their male counterparts.

Finally, we contribute the literature on gender sorting. One stream of this literature focuses on preferences. In experimental settings, there exists a large literature on females' propensity to avoid or underperform in more competitive settings (Gneezy, Niederle, and Rustichini, 2003; Niederle and Vesterlund, 2007; Buser, Nierdele, and Oosterbeek, 2014). Also related to gender preferences, research suggests that females are more risk averse than males. For instance, in a study of business students' job search process, Cortes, Pan, Pilossoph, and Zafar (2021) find that women tend to accept jobs earlier than men, and the longer the job search takes, the lower the pay gap. On the other hand, Adams and Lowry (2021) and Adams, Barber and Odean (2016) suggest that such differences in preferences may not be generalizable to our sample, as the type of person that selects into academia is not representative of the more general population. In addition to preferences, another factor that could potentially contribute to gender sorting is differences in pay-for-performance sensitivity, which we find within our sample. That is, females recognize their research is not valued as much as male's research, so females self-select into lower paying schools.

The rest of the paper proceeds as follows. Section 2 describes the data and presents descriptive statistics. Section 3 discusses the empirical model and presents baseline results. Section 4 considers the culture of the institution in potentially moderating the gender gap. Section 5 further explores sorting and career paths, and section 6 concludes.

2. Data and descriptive statistics

Our data include detailed information on the faculty of business schools within public universities in Florida. Section 2.1 describes these data, and Section 2.2 provides descriptive statistics for our sample.

2.1 Data sources

We focus on the seven largest public universities in the Florida state university system (SUS).[4] In 2021, these universities collectively had a student population of almost 310,000. Of the top ten institutions in the U.S. by student enrollment, three are in Florida: The University of Florida (UF), University of Central Florida (UCF) and Florida International University (FIU). The four other universities in our sample include Florida Atlantic University (FAU), Florida State University (FSU), University of North Florida (UNF) and University of South Florida (USF). Six of the seven universities offer a PhD in business and have R1 status, the highest level of research activity as denoted by the Carnegie Classification System.

The state of Florida is known for its very broad public record laws, commonly referred to as Sunshine Laws. We take advantage of these laws to obtain both current and historical salary information. Current salary information is easily obtainable on the 'Florida has a right to know' website.[5] Historical salary information must be requested through public records, typically through each university's General Council office. Salaries are reported uniformly on a nine-month basis (with the exception of administrators whose salaries are reported on a twelve-month basis). Getting salary information in this way is vital to ensuring the accuracy and comparability of data across individuals.

The uniformity in reporting requirements across the schools in our sample, which is generally only possible when focusing on universities within a single state, represents a key advantage of our study. Moreover, extensive in-person contacts at each school enabled us to verify many institution-specific issues. These factors increase the precision of our analysis relative to other studies that focus on broader samples. First, states vary in their reporting, with some states reporting more comprehensive measures of compensation than others. For example, some states' reported salary information includes summer research support, off-load teaching in summer or executive programs, etc.[6] Being able to isolate typical nine-month compensation without distortions from other sources is a key advantage in our sample. To the extent that females are differentially likely to receive any of these forms of compensation, analyses that include broad samples with heterogeneous reporting are more likely to be biased. Second, state-level wage disclosures for state employees are staggered through time. This is again a challenge for broad inter-state samples, given the evidence of Obloj and Zenger (2022) that wage disclosure has a causal impact on pay equality. Importantly, Florida's right-to-know

[4] https://nces.ed.gov/programs/digest/d20/tables/dt20_312.10.asp.
[5] This can be viewed at https://www.floridahasarighttoknow.myflorida.com/search_state_payroll.
[6] We thank Jonathan Clarke for confirming these details regarding the State of Georgia's disclosures.

website was launched prior to the beginning of our sample period, meaning our results should not be confounded by a transparency shock.

We gather detailed information on all business school faculty across these seven institutions from current university web pages, from historical pages accessed via *Waybackmachine*, and in some cases with assistance from individual faculty at each institution.[7] Gender is gathered from first name and, in cases where name is inconclusive, from pictures or the faculty members' profile webpages. We search for each faculty member's curriculum vita (CV) online. From the CVs, we capture employment history, education, PhD graduation year, and administrative experience.

Identifying administrative experience is particularly important for two reasons. First, administrators are typically paid on a 12-month basis (and reported as such), compared to non-administration tenure-track faculty who are paid on a 9-month basis. Therefore, if one gender is more likely to take administrative roles (and they were not identified), this would bias our findings. Second, these data enable us to directly examine the influence of administrators' gender on the pay gap.

Publication data are collected from *Scopus*. Faculty are matched in Scopus based on name. In cases where faculty have common names and multiple matches may occur, we supplement data from faculty CVs to ensure we have the correct person.

For each publication, we collect the journal name and year. As we describe in further detail below, we have two measures of publication quality. The first is a binary ranking based on the journal outlet. The second is a citations-based measure. *Scopus* provides the number of article-citations from time x to time t, where x is the year in which the article was published and t is 2018 (the year in which the citations data were collected).

We limit our sample along two dimensions. First, for our main analyses we restrict the sample to the 2015 – 2018 period. This enables us to include the set of seven universities while also minimizing survivorship biases.[8] While some universities were able to provide extensive time-series data (the University of Florida provided a complete time series of *all* their faculty across *every* college since 2003), other universities were more limited in their capabilities. We learned from conversations with officials in human resources departments at several schools that Information Technology (IT) systems differ across institutions in ways that make some requests more cumbersome and other requests not possible. For instance, Florida Atlantic University indicated a change in their IT systems

[7] We thank Andy Naranjo, Ajai Singh, Reinhold Lamb, Suchi Mishra, and Doug Cumming for helping with these data.
[8] We have the following salary data for each university: FAU 2015-2019; FIU 2007-2019; FSU 2004-2019; UCF 2005-2019; UF 2003-2018; UNF 2003-2019; USF 2004-2018.

in 2015, and they were unable to provide salary data prior to that period. To keep a balanced panel and to minimize any potential impact of survivorship bias on our results, we employ a 2015-2018 sample in our main analyses. For a subset of tests in which longer time-series are particularly informative, we employ the full time-series across the three schools for which the data are survivorship bias free: UF, FAU, and FSU.[9]

Second, we limit the sample to common disciplines that exist in the majority of the business schools in our sample. These disciplines are also the ones that have at least 50 faculty members across all institutions. This filter eliminates disciplines such as sports and entertainment management, which only exists at USF and UCF. Likewise, health administration, insurance, and supply chain are separate disciplines that reside in the business school at only one of the seven universities in our sample. The final set of disciplines include economics (4 universities), information systems (5 universities), finance (7 universities), accounting (7 universities), management (7 universities), and marketing (7 universities).

2.2 Descriptive statistics

Figure 1 plots the gender makeup of faculty across all institutions in our sample, from 2015-2018. The percentage of women faculty in business schools has remained fairly constant across our sample period and is quite low. On average across all ranks, it has remained in the 26% range over the four years. One striking observation from this graph is the deviation in female representation across ranks. There is a relatively high percentage of Assistant Professors who are female (around 40%), compared to a much lower level of Full Professors (around 15%). This gap between the representation of Assistant and Full Professors may reflect more young females entering the profession. Incremental to this, it may also reflect more females exiting these institutions before they make Full Professor, what is commonly referred to as the 'leaky pipeline' (see, e.g., Ginther and Kahn (2004), Buckles (2019) and Sherman and Tookes (2022)).

Insert Figure 1

Figure 2 shows a time series of salaries by rank for male and female professors. The figure displays average salaries for each gender-rank for each year in our sample. Looking first at Assistant Professors, the figure suggests that the average salaries do not differ significantly in the year 2015,

[9] We also re-estimate our main tests on this alternative sample, for robustness.

however, for each year thereafter as well as the sample overall, there appears to be a discernable gender wage gap. The patterns for Associate Professors paint a different picture. First, it is notable that the average salaries of Associate Professors is less than that of Assistants. This may reflect salary compression (i.e., where newly minted PhDs make more than existing faculty) and/or the presence of terminal associates who are not actively working towards Full Professor and are producing little to no research. Second, the overall differences between salaries by gender appears to be negligible at this rank. Looking at the final rank, Full professor, we again see a discernible difference between males and females. For three of the four years and for the sample overall, there appears to be a lower average salary for female faculty versus male faculty.

Insert Figure 2

Table 1 provides descriptive statistics for our main 2015-2018 sample. The unit of observation is faculty-year. Panel A presents descriptive statistics across institutions. The first two columns show the number of male and female faculty, and columns three and four show average salary at each institution, by gender. These univariate statistics provide several takeaways. First, there is a gender pay gap, with female faculty getting paid approximately $11k less ($164k versus $153k), on average.[10] Second, there is considerable variation in both the pay gap and in the percentage of women faculty across these institutions. The pay gap ranges from close to zero at four schools, to approximately $5,000 at two schools, to nearly $25,000 at one school. The percentage of female faculty ranges from 15% to 39%. Of course, these simple averages do not control for discipline or productivity, both of which are likely important determinants in explaining salaries and which might also potentially relate to female representation.

***Insert Table 1 ***

The middle two columns provide data on PhD graduation year. Assuming that the average age at PhD graduation is roughly similar between males and females, this implies that female faculty members are, on average, younger than males. This is consistent with evidence from Figure 1. As

[10] According to the World Bank, the average inflation rate for our sample term is 1.48%, which is small enough that we ignore its effects in our analysis (https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=US).

noted previously, both a greater number of females entering the profession and a leaky pipeline potentially contribute to this pattern.

The final columns of Panel A report data on research productivity. For each institution, we report both the average number of *Financial Times* top 50 (*FT50*) publications per faculty member and the average number of other publications per faculty member; we refer to the latter as *non-FT* publications. The *FT50* list is widely used as a research ranking mechanism for business schools. The journal list of titles is based on survey feedback from approximately 200 business schools that participate in *Financial Times* MBA, EMBA, and Online MBA rankings.[11] It contains the top journals in each discipline, which are generally regarded as the highest ranked by most metrics. For instance, the five journals in finance are: *Journal of Finance*, *Journal of Financial Economics*, *Review of Financial Studies*, *Journal of Financial and Quantitative Analysis*, and *Review of Finance*. The complete list is reported in Appendix A.

The University of Florida has the highest average per capita number of publications in FT50 journals for males (7.2) and females (6.0), while The University of North Florida has lowest for both genders (1.0 and 0.5, respectively). We also present the average number of 'Other publications,' which consist of all non-FT50 publications. In general, these do not have the same readership or citation levels as *FT50* journals and therefore are not valued as highly for tenure, promotion or merit raises. It is widely recognized that publishing in *FT50* journals is challenging. The average male and female faculty member across all institutions publishes less than 20% of their work in FT50 journals, but again there is considerable heterogeneity in this percent. Universities with higher research expectations for tenure and promotion tend to pay higher salaries. For example, both the average salaries and the average FT50 publications are highest at the University of Florida and lowest at the University of North Florida.

Panel B of Table 1 presents information by discipline. Women have the highest representation in accounting and marketing (approximately 30%) and the lowest in finance (approximately 22%). These differences are consistent with variation in biases across fields. As discussed by Leslie, Cimpian, Meyer and Freeland (2015), certain fields are perceived to be "expert"

[11] In 2016, the FT Top 45 list expanded to the FT Top 50 list. Four titles were dropped: *Academy of Management Perspectives*, *California Management Review*, *Journal of the American Statistical Association*, and *RAND Journal of Economics*. Nine titles were added: *Human Relations*, *Journal of Management*, *Journal of Management Information Systems*, *Journal of the Academy of Marketing Science*, *Manufacturing and Service Operations Management*, *Research Policy*, *Review of Economic Studies*, *Review of Finance*, and *Strategic Entrepreneurship Journal*.

fields: these are fields in which certain types of people – in particular males – are perceived to be naturally gifted. Economics, of which finance is a sub-field, is categorized as an expert field.

Accounting pays the highest average salaries while economics pays the lowest. This difference is consistent with academic salaries being influenced by outside opportunities (Celerier, Vallee and Vasilenko, 2021). Females are paid less than their male counterparts across all disciplines, but they also have fewer average FT50 and non-FT publications, across nearly all disciplines. (The only exception is economics, where female faculty produce 0.3 FT50 publications compared to males at 0.2.). However, it is important to note that the lower number of publications does not necessarily indicate lower productivity. These statistics represent publications over a person's career, and females, on average, have been in the profession for less time (as shown in Figure 1 and Table 1).

3. Is there a gender pay gap?

This section presents our main empirical results. We examine the extent to which the gender pay gap observed in the univariate statistics is driven by factors such as productivity and field. Section 3.1 reports baseline results, Section 3.2 reports results by rank, and Section 3.3 examines pay-for-performance sensitivity.

3.1 Baseline results: Is there a gender gap?

We begin by addressing the question of whether there is a gender gap. We estimate a panel regression, in which the unit of observation is faculty × year.

$$Faculty\ salary_{it} = \alpha + \beta_1 Female_i + \beta_2 Characteristics_{it} + Fixed\ Effects_{it} + \varepsilon_{it.} \quad (1)$$

The dependent variable, $Faculty\ salary_{i,t}$ is annual salary (in thousand USD) for faculty member *i* in year *t*. The key independent variable is $Female_i$, which is a dummy variable that is equal to one if the faculty member is female, zero otherwise. $Characteristics_{i,t}$ is a vector of faculty characteristics, as described below. $Fixed\ Effects_{it}$ represent a series of fixed effects, ranging from only year fixed effects to the strongest specification in which we include year × school × discipline × rank × PhD year group fixed effects. Robust standard errors are clustered by faculty member and the resulting *t*-statistics are reported in parentheses below the coefficient values. Results are reported in Table 2.

Insert Table 2 here

Looking first at column one, independent variables include only *Female* and year fixed effects. The coefficient on *Female* indicates that female professors are paid $10.8k less than their male counterparts on average across the whole sample. This is economically significant, representing a gender gap of 6.5 percent relative to the mean average salary of $164k. However, this does not control for other factors that should be related to pay, for example, productivity, rank, or discipline. The adjusted R^2 indicates that the model only explains 2% of the variation in salaries.

In column 2, we enrich the model to include other determinants of pay. Specifically, we introduce three measures of research productivity: the log number of FT50 publications (*Log FT50 publications*), the log number of other publications (*Log other publications*), and the log number of citations (*Log Citations*). In addition to year fixed effects, we also include school × discipline × rank fixed effects and PhD year fixed effects. We control for the PhD year by forming five-year groups that capture the number of years since the faculty member graduated with their doctoral degree, thereby proxying for the amount of time in academia.[12] Older faculty, particularly those that have stayed at the institution for longer periods of time, have had more time to publish but are also more likely subject to salary compression (see, e.g., McDonald and Sorensen 2017). In this specification, we are capturing the extent to which females' pay differs from that of their male counterparts within the same school-discipline-rank, controlling for productivity, year and PhD year group.

After including these additional controls, the coefficient on *Female* is −5.03, which is statistically significant at the 5% level. This decrease in magnitude is consistent with a portion of the gap shown in column 1 reflecting the fact that females are, on average, at earlier stages of their career, which naturally corresponds to lower pay. Coefficients on control variables reflect the value of research productivity. Consistent with Garfinkel, Hammoudeh, and Weston (2021), salary is significantly positively related to *FT50 publications*: a 10% increase in FT 50 publications is associated with $3.1k increase in salary. Interestingly, the coefficients on both *Log Other publications* and on *Log citations* are close to zero in magnitude and statistically insignificant. The insignificance of *Log citations* is driven by multicollinearity. It is highly positively correlated with *Log FT50 publications*, and in a univariate regression *Log citations* is significantly positively related to compensation. In contrast, even in a univariate regression the coefficient on *Log Other Publications* is insignificant at conventional levels, consistent with lower-level publications not having a similar value to that of articles in higher level

[12] We group the PhD year into five-year "buckets" to minimize cases in which there is a single observation within a fixed effect category. Such issues become a greater concern in subsequent specifications, in which we interact Ph.D. year fixed effects with other fixed effects.

outlets. The Adjusted R^2 increases from 2% in model 1 to 74% in model 2 suggesting that factors such as productivity, rank, and discipline are important determinants in explaining salary differentials.

Finally, in the last specification, we include even more stringent fixed effects. Specifically, we include year × school × discipline × rank × PhD year group fixed effects. Thus, we are now testing the difference between male and female faculty salaries within the same year, school, discipline, rank, and PhD graduation time frame. With this stricter fixed effect structure, we lose a considerable number of observations. Nonetheless, the estimated pay disparity between male and female faculty remains about the same at approximately $6k, and it is statistically significant at the 10 percent level. This represents a gender gap of approximately 3.5%. Reflecting the fact that our model captures a great deal of the heterogeneity in our faculty salaries, the Adjusted R-squared of this model with the stringent fixed effects reaches 80%.

3.2. Does the gap vary by rank?

Having established the existence of a gender pay gap, we next investigate at what stage of the faculty's career this gap emerges. It is plausible that salaries are equitable between men and woman early in their careers, but the wage gap slowly compounds over time (Bertrand, Goldin, and Katz, 2010). There is relatively high transparency in wages at the time of initial hiring, particularly for rookie candidates.[13] The gap might only appear at later stages of career, when transparency decreases and when negotiating and bargaining become relatively more important. In experimental settings, Maitra, Neelim and Tran (2021) and Liebbrandt and List (2014) find that women frequently do not negotiate as intensely as their male counterparts. On the other hand, the gap could begin early for female faculty, for example if negotiation affects compensation even at the earliest stages of one's career.

Insert Table 3 here

To test if there are cross-sectional differences in the gender gap across rank, we re-estimate equation (1), including additional independent variables that capture both rank and the interaction between rank and *Female*. In columns 1 – 3, we use our main set of fixed effects: school × discipline × rank, year, and Phd year group fixed effects. In columns 4 – 6, we examine whether the results are

[13] There is generally a somewhat standard 'market salary' that is offered by many universities to individuals just graduating from PhD programs. While this rate may vary across universities of different ranks (e.g., the most research intensive universities versus less research intensive versus more teaching oriented schools), it is typically the case that universities within the same level offer a similar 'market salary' to rookie candidates.

robust to using the strictest set of fixed effects, year × school × discipline × rank × PhD year group fixed effects. Similar to Table 2, standard errors are clustered by faculty member.

Looking first at column 1, variables of interest include *Female*, *Female* x *Assistant* and *Female* x *Associate.* The inclusion of rank fixed effects means that the coefficient on *Female* captures female full professors, and the omitted category is male full professors. The coefficient on *Female*, which tests for the difference between male and female full professors, implies that female full professors are paid $19k less than their male counterparts. The magnitude of this gap is significantly greater than that at earlier career stages. For example, the coefficient on *Female* x *Assistant* indicates that the gender pay gap is $12k less among assistant professors than among full professors. Somewhat puzzlingly, the coefficient on *Female* x *Associate* suggests that there is no gender pay gap among associate professors (as indicated by the sum of the coefficients on *Female* and *Female* x *Associate).* It is possible that the heterogeneity among associates, combined with a set of fixed effects and other control variables that don't fully capture this heterogeneity, contribute to this puzzling result. We examine this possibility below.

In models (2)-(4), we estimate our baseline pay gap regression separately for faculty at each rank. This enables us to test whether significant gender gaps exist within faculty at the assistant professor rank and analogously within the associate and full ranks. Looking first at column 2, we find that female assistant professors are paid $7k less than their male counterparts, significant at the 5% level. Further investigation (not tabulated) reveals that this gap is concentrated among assistant professors who have been working two or more years since they received their PhD. Among the most recently hired faculty, we find no evidence of a significant pay gap. This is consistent with transparency in pay being highest at the earliest stages of career and our relatively recent 2015-2018 sample period coinciding with diversity initiates and policies aimed at equality for underrepresented groups.[14]

Turning to people at the most senior levels, column 4 indicates a significant gender pay gap of almost $13k among full professors. The magnitude of this estimate is consistent with inferences from column 1.

In columns 5 - 8, the estimates include the strictest fixed effects. Importantly, this stricter set of fixed effects controls for the interaction between rank and PhD year bucket, thus addressing the concern that earlier results regarding associate professors were biased due to inadequately controlling for heterogeneity amongst this group, for example for differences between associate

[14] Consistent with this view, Sherman and Tookes (2022) find no evidence of a gender gap in finance academia for recently hired faculty.

professors who were advancing toward full versus individuals who are effectively terminal associates. With this finer set of fixed effects, consistent with expectations we find a pay gap among associate professors that falls between that of assistant professors and full professors. Given that this strictest set of fixed effects causes the sample size to decrease by approximately 40%, it is perhaps not surprising that statistical power is weaker among these specifications.

Looking at the control variables, which capture the influence of research productivity on pay, differences across subsamples are illustrative. Among assistant professors, the coefficient on FT publications is close to zero and insignificant, consistent with many assistant professors being hired at a standard 'market salary' and frequently not having any publications in the early years of their career. In contrast, the coefficient on FT publications is significant among higher ranks, and the magnitude is greatest among full professors.

3.3 Pay for performance sensitivity

Findings to this point show that both research productivity and gender are significantly related to pay. Moreover, the influence of each is greatest among full professors. In this section, we examine the link between these patterns. Prior literature has shown that women obtain less recognition than men for research. For example, Sarsons (2017) and Ginther and Hayes (1999) find that women receive less credit for co-authored publications in tenure decisions. This prior evidence leads us to hypothesize that women will also be less rewarded in terms of pay. Specifically, we focus on pay-for-performance sensitivity to see if women are less rewarded for top publications. Our analysis is in the spirit of similar pay-for-performance research on executive compensation (Newton and Simutin, 2015).

Table 4 about here

Results on pay-for-performance by gender are reported in Table 4. Consistent with prior specifications, we first report results using our main set of fixed effects, school × discipline × rank fixed effects, year fixed effects, and Phd year group fixed effects (columns 1-3). In columns 4 -6, we use the stricter set of fixed effects, school × discipline × rank × year × PhD year groupings.

We begin with a model similar to our baseline regression, additionally including the interaction term *Female* x *FT 50 publications*. The coefficient measures the difference in pay-for-performance, specifically of pay for FT 50 publications, among female faculty compared to male faculty. Consistent with predictions, the coefficient on the interaction term is significantly negative (*p*-

value less than 0.001) suggesting that female faculty are paid less for FT 50 publications. This finding provides added evidence regarding the ways in which pay disparity between male and female faculty increases over the average person's career.

In column 2, we introduce interactions between FT50 publications and each university, and in column 3 we add interactions between FT50 publications and each discipline. The advantage of these specifications is that they control for differences in pay-for-performance sensitivity across universities and across disciplines. Looking first at column 2, coefficients on these interaction terms are consistent with more research-intensive universities rewarding research productivity more highly. The coefficient on FT50 publications captures the pay-for-performance sensitivity of the benchmark category, FAU, and other interaction terms capture the relative pay-for-performance of each other university. Consistent with UF being the most research-intensive school (for example as evidenced by the fact UF has the highest average number of FT50 publications per faculty member, shown in Table 1), we find that UF has the highest pay-for-performance sensitivity.

Looking at column 3, we find that finance represents the discipline with the highest pay-for-performance. Notably, this also represents a discipline in which average research productivity is relatively high: average FT publications per faculty member is 2.9 (behind management and marketing) and finance has the lowest number of journals included in the FT50 (five, compared to 9 for management and 6 for marketing).

In column 4-6, we include the strictest set of fixed effects. The results are remarkably similar across specifications. Females' pay-for-performance is significantly lower than that of their male counterparts, and this discrepancy contributes directly to the increasing gender pay gap as seniority within the profession increases.

4. Does female leadership or larger female representation moderate the gender gap?

The existence of a significant gender pay gap naturally raises the question of what factors potentially mitigate this inequality. In this section, we consider the impact of two potential factors: female leadership and female representation within the school or discipline. Section 4.1 presents results on leadership and 4.2 reports evidence on female representation.

4.1 Does female leadership moderate the gender gap?

Ex ante, the impact of female leadership on the gender gap is not clear, with theoretical arguments providing contradictory predictions. One stream of research suggests that female leadership moderates the gender gap because female managers are more likely to work actively to address gender inequality and to cultivate female-friendly cultures inside their organizations (Cohen and Huffman, 2007; Tate and Yang, 2015). Alternatively, evidence on implicit biases suggests that female leadership would be ineffective in addressing the gap. A broad body of research shows that males and females are equally susceptible to implicit biases that associate males with more career-oriented roles and women with more home-oriented roles. To the extent that such implicit biases cause people of both genders to conclude that women are less skilled, female management would not have any meaningful effect on the gender pay gap. Finally, another stream of research raises the 'cogs in the machine' explanation, which suggests that females may act in ways that prevent other females from ascending in their organization (Derks et al. 2011). Consistent with this explanation, Srivastava and Sherman (2015) find that womens' salaries were lower after switching from a male to a female supervisor, compared to men who made the same switch.

To empirically test these possibilities, we focus on the gender of the individual serving as the department chair, the associate dean, and the dean. Individuals in these positions are typically responsible for negotiating initial salaries and performing annual evaluations that impact merit pay. As such, they have the power to influence the wage gap between female and male professors. We introduce three new variables: *Female Department Chair*, *Female Associate Dean*, and *Female Dean*. Each is an indicator variable, equal to one if a faculty member had a female department chair, associate dean or dean in year *t*, respectively. To determine the impact on the gender gap, we interact each of these variables with *Female*. We employ the same set of fixed effects as in previous tables and we similarly cluster by faculty member.

Insert Table 5

Panel A of Table 5 reports the results. The first model considers the impact of a female dean. The interaction of female and female dean is positive, but close to zero in magnitude and insignificant at conventional levels. This suggests that having a female dean does not significantly moderate the gender gap. Likewise, models 2 and 3 suggest that neither a female associate dean nor a female department chair has a significant moderating effect on the pay gap. In sum, the evidence is most consistent with the implicit bias theory, that both males and females are equally susceptible to biases, which cause them to perceive males as being more skilled.

4.2 Does female representation moderate pay disparity?

The findings in the prior subsection that female leadership has no significant effect on the gender pay gap is consistent with prior literature on implicit bias: both females and males are equally susceptible to biases, specifically to preconceptions that successful people are male. However, prior literature, including for example Reuben, Sapienza and Zingales (2014), provides a striking lack of evidence to support these preconceptions. Rather, evidence overwhelmingly shows that women are equally qualified as men. It follows that when faced with more data points showcasing this equality of skills, peoples' implicit biases tend to lessen. This generates the prediction that implicit biases against women, and thus the gender pay gap, will be lower when there are more women.

We examine the relation between female representation and the gender pay gap in Panel B of Table 5. We estimate regressions similar to those in Panel A, except that we interact female with different measures of female representation. In model 1, we focus on *% Female*, which is the overall percentage of female faculty in the business school at institution *i*, and we interact this term with *Female*. Consistent with predictions, we find that female faculty pay is higher when there is a larger percentage of female faculty. The coefficient on the interaction term *Female* × *%Female* implies that a 10% increase in the percentage of females on the faculty is associated with $7.3k increase in females' compensation.

In model 2, we employ an alternative measure of female representation: the percentage of female faculty within the department that is within the school × discipline. The insignificance of this interaction term, in contrast to the analogous significance in model 1, suggests that the overall business school culture has a greater influence on gender-related pay differences than department-level representation.

We also estimate models in which we use coarser measures of female representation, for example whether female representation within the school or within the department is above the median. Within these alternative specifications, we continue to find that the interaction term female × female representation is positive, but it is generally not significant at conventional levels when using these coarser measures.

One striking aspect about these regressions is that the coefficient on female representation is nearly always negative, and in many cases it is significant. This indicates that when female representation at the school is higher, average pay among all faculty is lower. Put differently, females are more likely to work at schools in which average pay is lower. We examine this finding in more depth in the next section.

5. Sorting and career paths of female faculty

Prior literature has shown that women receive less recognition for their research than men (see, e.g., Sarsons 2017; Ginther and Hayes 1999). We posit that such dynamics may also contribute to women disproportionately working at lower paying institutions. As shown in Table 1, there is a positive relation between average research productivity and average pay across institutions. If women receive less credit for their research, they will be more likely to work at institutions in which average research productivity is lower, and correspondingly average pay is lower. Evidence in the prior section provides suggestive evidence that this may be the case. We examine this conjecture in more detail in Section 5.1. In section 5.2, we consider dynamics that potentially contribute to this sorting, for example the career paths of faculty and their propensity to leave their institutions.

5.1 Sorting by female faculty

Recent evidence highlights the ways in which differences in pay practices *between* firms contribute to observed patterns in compensation. For example, a 2022 OECD study concludes that one-third of wage inequality can be explained by gaps in wage-setting between firms, rather than differences in workers' skills.[15] Song, Price, Guvenen, Bloom and von Wachter (2018) conclude that two-thirds of the rise in (log) compensation is driven by variation between-firms, though they further conclude that difference in worker composition explains this difference. Under the reasonable assumption that people would prefer to work for higher-paying institutions, all else equal, demographics that face more discrimination might be disproportionately forced to work for lower-paying institutions. In our framework, this would suggest that if females' research is less recognized, they will be more likely to work for institutions that, on average, pay less.

To empirically test this conjecture, we first estimate the base pay of each university in our sample. We regress faculty compensation on measures of productivity, discipline, seniority, and time. Specifically, we estimate a regression similar to that in column 2 of Table 2, except that we exclude both school fixed effects and gender. Thus, the dependent variable is compensation and independent

[15] See https://www.oecd-ilibrary.org/sites/7d9b2208-en/index.html?itemId=/content/publication/7d9b2208-en

variables include measures of productivity (Top50 publications, nonTop50 publications, and citations) and our standard set of fixed effects excluding institution (i.e., discipline × rank fixed effects, year fixed effects, and PhD year bucket fixed effects). We average the residuals from this regression across all observations from each university.

More directly related to our main prediction, Figure 3 shows a strong negative correlation between the percentage of female faculty and average residual salaries. For instance, after controlling for performance, faculty at FIU are the most underpaid (by $28k). FIU also has the highest proportion of female faculty at almost 40%. The next three institutions with the highest female representation (FSU, FAU, and UNF) all have negative residual salaries whereas the three schools with positive residual salaries employ the fewest female faculty.

Insert Figure 3

These patterns raise the question of why female faculty sort into schools that underpay. We attempt to shed some light on this question in the next section.

5.2 Are females more likely to leave if they are underpaid?

One plausible explanation for females sorting into lower paying schools is that they are less likely to search out better opportunities, less likely to find better opportunities, or less likely to take advantage of better opportunities when they arise, relative to male faculty (all else equal). While many factors may influence the decision to stay or leave a job, compensation should rank high on the priority list. Thus, our first prediction is that a faculty member is more likely to leave an institution if they are relatively more underpaid. We then examine whether females' sensitivity is different from that of males.

We estimate the following linear probability models:

$$Leave_{it} = \alpha + \beta_1 Underpaid_{it} + \beta_2 UnderpaidxFemale_i + \varepsilon_{it.} \quad (2)$$

$$Faculty\ salary_{it} = \alpha + \beta_1 Characteristics_{it} + Fixed\ Effects_t + \varepsilon_{it.} \quad (3)$$

In Eq (2), the dependent variable *Leave*$_{it}$ is an indicator variable equal to one if a faculty member *i* leaves their institution in year *t*, zero otherwise. *Underpaid*$_{it}$ is an indicator variable equal to 1 if the residual from Eq (3) is negative for faculty *i* in year *t*, zero otherwise. The interaction term *Underpaid*

$\times$ *Female* tests whether female faculty members' exit decisions are differentially sensitive to compensation, compared to male faculty. Consistent with earlier specifications, fixed effects in Eq 3 include school × discipline × rank fixed effects, year fixed effects, and PhD year group fixed effects. Fixed effects in Eq 2 include the standard set of fixed effects, i.e., also interacting discipline × rank with university FE. Standard errors are clustered by faculty member. Because we are examining the career trajectory of faculty members, having a survivorship bias free sample is critical for this analysis. We thus use a slightly different sample for this analysis. Specifically, we restrict the sample to the three schools for which we have such a sample, and we use the complete time-series for each of these schools. This results in the following unbalanced panel: UF 2003 - 2017, FSU 2004 - 2018, and FAU 2015 – 2018.

Insert Table 6

Column 1 focuses on our first prediction that more underpaid faculty are more likely to leave an institution. Thus, the independent variable of interest is the *Underpaid* dummy. Consistent with predictions, the coefficient is positive and highly statistically significant: faculty who are underpaid are 4% more likely to leave their institution, significant at the 1% level.

In column 2, we limit the sample to tenured professors, as these represent the faculty whose exit decisions are most likely to be voluntary. In comparison, assistant professors are more likely to be forced to leave, for example because they did not pass their tenure evaluation. Results are qualitatively similar in this more restricted sample. Underpaid tenured professors are 3% more likely to leave their institution, significant at the 5% level.

Having established that an individual's likelihood of leaving an institution is significantly related to their pay, we next examine whether this sensitivity is different for females than males. Results provide no evidence of a significant differential: in column 3, the coefficient *Female* $\times$ *Underpaid* is insignificant at conventional levels. This suggests that females' sorting into lower paying institutions occurs at earlier stages of their career, for example in their initial job placement. In sum, sorting effects, which potentially start at the earliest stages of peoples' careers, appear to contribute significantly to the gender pay gap.

6. Conclusion

Pay disparity between men and women has been documented for decades and has received considerable attention in media outlets and the academic literature. Two challenges pervasive in this literature are the inability to closely match a person's work output with their pay, and the inability to obtain compensation data that is comparable across institutions. Our study contributes to the literature by utilizing a unique dataset that addresses both of these issues. We focus on business tenure-track faculty within public universities in Florida, which provides an ideal setting to test for gender salary gaps for at least three key reasons. First, the output of individual faculty (research) can be identified, which is almost impossible in most other industries. Second, we obtain individual faculty salaries and we can therefore precisely link productivity with compensation. Third, the reporting of salaries is consistent across all institutions in the state, which is typically not in the case in studies that use broader samples of universities.

Within our sample, we find a gender gap of approximately 3.5% in our baseline models. When examining this gender wage gap by rank, the gap is larger for associate professors and largest for those that reach a rank of full professor. We examine pay-for-performance sensitivity of faculty members as a potential channel that causes this wage gap. Results provide support for the influence of this channel: we find that female faculty are rewarded significantly less for hitting top publications compared to their male colleagues.

These findings raise of the question of what factor(s) potentially mitigate the pay gap. We focus on two potential candidates: 1) female leadership, and 2) female representation within the institution. We find no evidence that female department chairs, deans, or associate deans mitigate the gender wage gap. Moreover, we find only marginal evidence that the percentage of women in the school helps to mitigate inequality in pay.

In addition to the pay gap, another striking finding is the sorting female faculty into lower paying universities. We posit that differences in recognition for research may contribute to this sorting. As evidenced by females' lower pay-for-performance sensitivity, women appear to receive less recognition for their research, compared to their male counterparts. This would plausibly lead women to work at universities that were less preferred, for example at universities that pay less.

Overall, our baseline evidence is discouraging. Using a stringent set of fixed effects that control for 80% of the variation in the salaries of College of Business faculty in four-year public universities in Florida, we find that there exists a gender wage gap. We provide some plausible explanations for these results, but we are unable to provide much evidence in the way of mitigating factors. We hope that future research can help shed more light on these interesting questions.

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Figure 1. Female representation by rank and year

This figure plots average female tenure-track faculty representation by rank and year. Data are from seven Florida public universities collected through public record requests from 2015-2018.

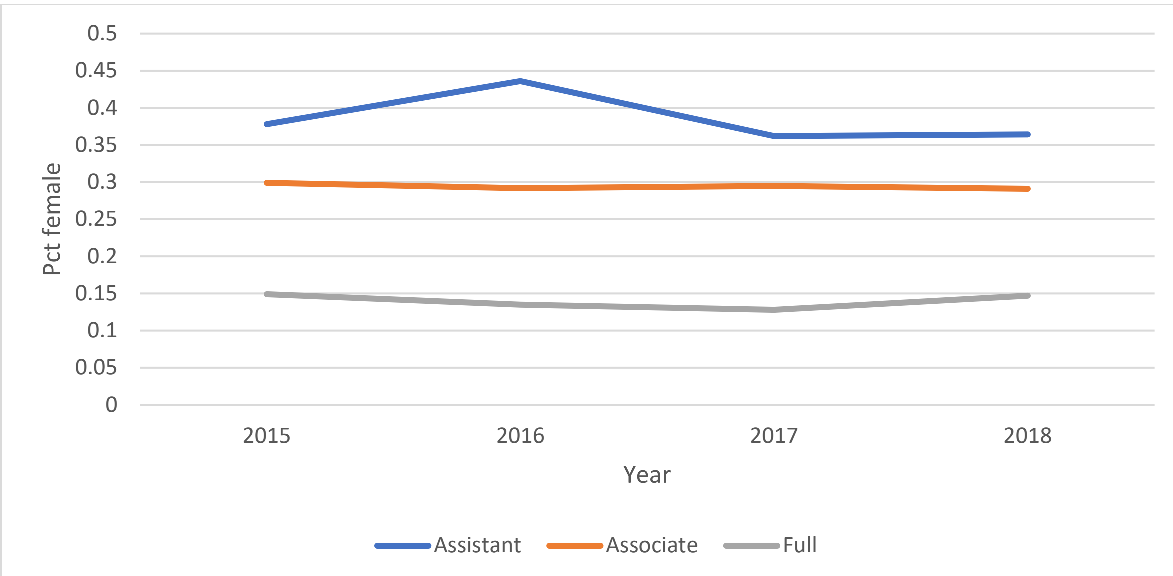

Figure 2. Average Salary by Gender and Rank across Time

This figure plots average salary by rank and gender for each year in our sample term. Data are from seven Florida public universities collected through public record requests from 2015-2018.

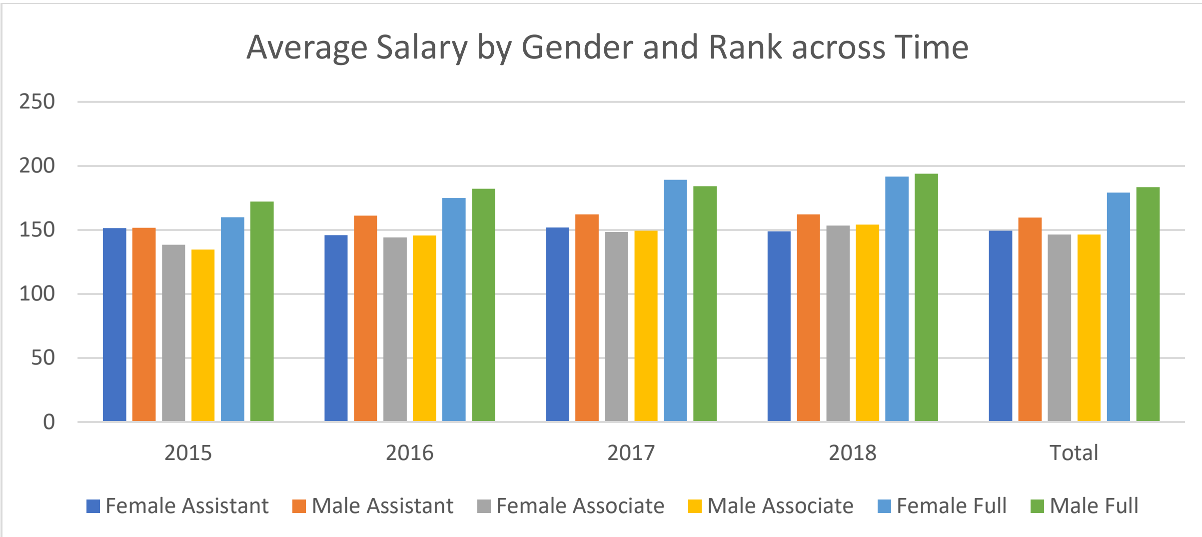

Figure 3. Percentage of Female Faculty and Average Residual Salaries

This figure plots average salary residuals (in $000's) by school and the proportion of females on the faculty. Data are from seven Florida public universities collected through public record requests from 2015-2018.

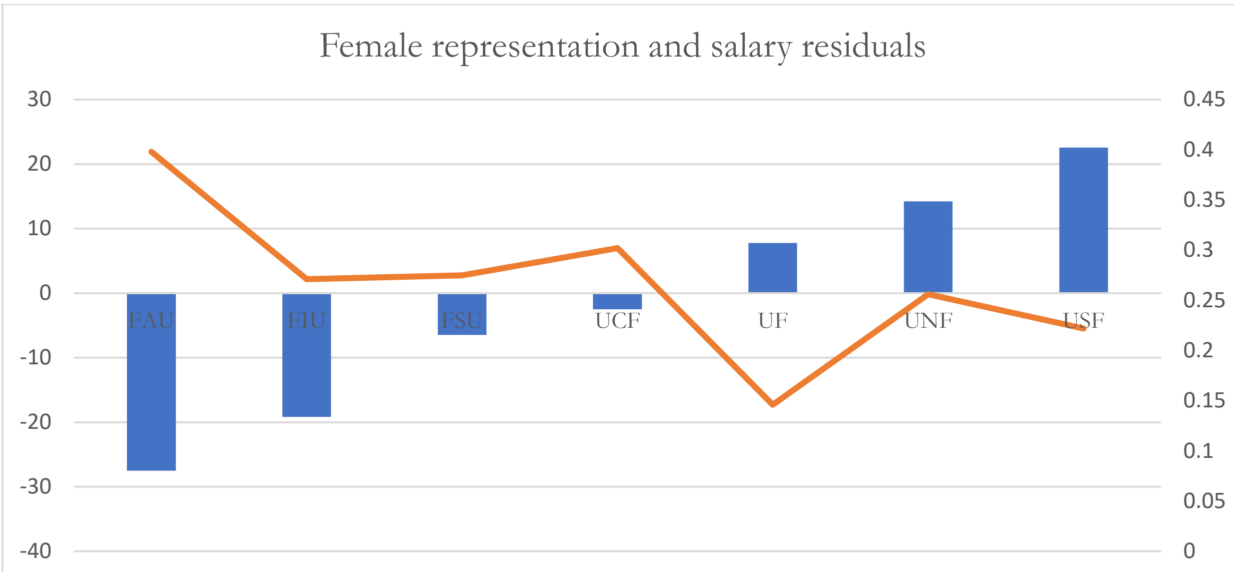

Table 1 Summary statistics

We report the number of professor-years, the average salary, the average PhD year, the average number of publications in FT 50 journals, and the average number of non-FT 50 publications, by gender-school (Panel A) and gender-discipline (Panel B). The sample consists of faculty-years for the seven schools in our sample in the years 2015-2018.

Panel A: summary stats, by school

	Num obs		Salary		PhD year		FT pubs		Other pubs	
School	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
FAU	187	71	138.0	132.6	1997	2001	1.0	1.3	19.5	8.7
FIU	109	72	127.7	127.5	1999	2006	2.7	1.2	13.7	13.0
FSU	162	70	169.5	166.7	1999	2006	4.8	3.4	20.4	17.8
UCF	174	60	173.5	180.2	1998	2005	4.1	3.0	12.0	7.8
UF	193	55	216.3	192.8	1998	2006	7.2	6.0	16.9	6.1
UNF	113	42	122.1	111.5	1999	2001	1.0	0.5	9.4	12.2
USF	140	24	172.0	168.9	1994	2005	2.5	2.3	24.9	8.7
All	1078	394	164.2	153.3	1997	2004	3.5	2.5	17.0	11.0

Panel B: summary stats, by discipline

	Num obs		Salary		PhD year		FT pubs		Other pubs	
Discipline	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Accounting	204	90	179.5	175.1	1999	2006	2.1	1.8	6.8	5.2
Economics	103	33	126.5	103.5	1998	1997	0.2	0.3	18.4	14.4
Finance	235	69	176.9	168.2	1994	2004	3.3	1.7	15.8	10.0
Information systems	160	62	157.8	133.6	1998	2006	2.9	1.8	31.9	18.8
Management	194	64	161.1	153.2	2000	2002	6.3	6.0	17.9	16.2
Marketing	182	76	160.9	151.9	1996	2007	5.0	2.7	15.2	6.4
All	1078	394	164.2	153.3	1997	2004	3.5	2.5	17.0	11.0

Table 2: Baseline regressions

We regress professors' salaries (in thousands) onto their gender and measures of their productivity and rank. The sample consists of the 1,472 professor-year observations for non-administrator, non-department chair assistant, associate, and full professors in 2015-2018 at the seven Florida business schools in our sample (FAU, FIU, FSU, UF, UCF, UNF, and USF) in the disciplines of accounting, economics, finance, information systems, management, and marketing. Female is an indicator variable representing the professor's gender. Log FT pubs (Log non-FT pubs) is equal to the natural log of one plus the number of papers that the professor has published in FT 50 (non-FT 50) journals as of 2018. Log citations is the natural log of one plus the number of Scopus citations for all the papers that the professor has published as of 2018. Full professor and Associate professor are indicators representing the professors' academic rank. In column (1), we include year fixed effects; in column (2), we include school-discipline-rank, year, and PhD year (rounded to the nearest 5) fixed effects; in column (3), we include school-discipline-rank-year-PhD year fixed effects, where the PhD year is rounded to the nearest 5. Robust standard errors are clustered by professor and reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Salary (1)	Salary (2)	Salary (3)
Female	-10.79**	-5.03**	-5.73*
	[5.01]	[2.50]	[3.19]
Log FT pubs		17.55***	21.16***
		[3.83]	[6.66]
Log non-FT pubs		-1.71	1.04
		[3.01]	[4.45]
Log citations		1.47	0.54
		[1.79]	[2.75]
Full professor			
Associate professor			
Observations	1,472	1,471	864
R-squared	0.02	0.74	0.80
Year FE	Yes	.	.
Baseline FEs	No	Yes	.
Stronger FEs	No	No	Yes

Table 3: Gender gap by academic rank

We examine the gender gap across the various academic ranks (assistant, associate, and full). In column 1, we estimate the regression model from column 2 of Table 2, except that we include interactions of indicators for the professor being an assistant or associate professor with the Female indicator variable. In columns 2-4, we estimate the regression model from column 2 of Table 2 separately for each rank (assistant, associate, and full, respectively). Columns 5-8 are analogous, except that we use the model from column 3 (rather than column 2) of Table 2. Robust standard errors are clustered by professor and reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Salary	Salary	Salary	Salary	Salary	Salary	Salary	Salary
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-19.04***	-7.01**	-0.78	-12.58**	-10.77	-4.10	-6.01	-15.71
	[5.29]	[3.05]	[3.80]	[5.98]	[6.86]	[3.18]	[4.99]	[10.59]
Assistant × Female	12.99**				6.44			
	[6.20]				[8.06]			
Associate × Female	21.36***				5.40			
	[6.63]				[8.85]			
Log FT pubs	17.51***	2.08	14.13***	23.37***	21.18***	-1.45	8.21	32.43***
	[3.80]	[3.01]	[4.20]	[7.21]	[6.67]	[2.69]	[5.02]	[9.52]
Log non-FT pubs	-2.21	-0.10	-6.20*	-8.46	0.98	-1.16	-5.99	-12.67
	[3.01]	[3.08]	[3.40]	[10.95]	[4.49]	[2.83]	[4.57]	[13.39]
Log citations	1.54	0.18	3.81*	5.64	0.55	0.93	8.32***	6.06
	[1.78]	[1.37]	[2.07]	[5.85]	[2.76]	[1.30]	[3.14]	[7.94]
Observations	1,471	414	564	493	864	315	267	282
R-squared	0.75	0.86	0.72	0.74	0.80	0.90	0.84	0.78
Ranks	All	Assistants	Associates	Fulls	All	Assistants	Associates	Fulls
Baseline FEs	Yes	Yes	Yes	Yes	.	.	.	.
Stronger Fes	No	No	No	No	Yes	Yes	Yes	Yes

Table 4: Pay for performance analysis

We regress salary onto gender and measures of publication performance. Columns (1)-(3) use our baseline fixed effects, while columns (4)-(6) use the stronger fixed effects, both of which are described in Table 2. Columns (2) and (5) control for difference in pay-for-performance across schools, and columns (3)-(6) control for differences across disciplines. Robust standard errors are clustered by professor and reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Salary (1)	Salary (2)	Salary (3)	Salary (4)	Salary (5)	Salary (6)
Female	3.01	0.70	2.23	3.77	-0.30	4.93
	[3.51]	[3.48]	[3.34]	[4.73]	[3.97]	[4.97]
Log FT pubs	19.44***	9.62**	7.24	23.10***	7.71	10.78*
	[4.03]	[3.76]	[4.91]	[6.91]	[5.19]	[6.02]
Female × Log FT pubs	-9.34***	-7.13**	-8.32***	-11.50**	-7.13*	-10.52**
	[3.04]	[2.85]	[2.76]	[4.95]	[3.76]	[4.45]
Log non-FT pubs	-2.13	-0.64	-2.77	0.03	0.96	-1.82
	[3.03]	[2.93]	[3.12]	[4.55]	[4.49]	[4.62]
Log citations	1.61	0.32	2.37	0.97	0.52	3.24
	[1.78]	[1.82]	[1.85]	[2.76]	[2.96]	[2.91]
Log FT pubs × USF		16.43***			19.50***	
		[5.03]			[6.94]	
Log FT pubs × UCF		12.29			2.89	
		[7.81]			[7.31]	
Log FT pubs × FIU		-0.82			7.89	
		[6.53]			[6.28]	
Log FT pubs × UF		25.25***			35.86**	
		[9.59]			[14.00]	
Log FT pubs × FSU		5.66			9.91	
		[5.07]			[6.23]	
Log FT pubs × UNF		-5.03			-7.79	
		[7.50]			[5.40]	
Log FT pubs × ACCT			12.97*			-10.94
			[7.06]			[7.44]
Log FT pubs × ECON			12.75			14.75**
			[9.12]			[7.06]
Log FT pubs × FIN			20.30**			26.61**
			[9.21]			[11.47]
Log FT pubs × IS			17.99**			11.24
			[7.44]			[8.01]
Log FT pubs × MGMT			3.71			-2.98
			[5.34]			[7.51]
Observations	1,471	1,471	1,471	864	864	864
R-squared	0.75	0.76	0.76	0.80	0.83	0.83
Baseline FEs	Yes	Yes	Yes	.	.	.
Stronger FEs	No	No	No	Yes	Yes	Yes

Table 5: Female leadership and representation

We regress salaries onto indicators and interactions of female leadership (Panel A) and female representation (Panel B). Female dean (Female assoc dean) is an indicator for the professor working at a business school with a female dean (associate dean) in the given year. Female dept chair is an indicator for the professor's department having a female chair. % Female (school) is the percentage of female faculty in the professor's school in the given year, and % Female (dept) is the percentage of female faculty in the professor's department in the given year. All regressions include the baseline fixed effects described in Table 2. Robust standard errors are clustered by professor and reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Female leadership

	Salary (1)	Salary (2)	Salary (3)
Female	-5.12**	-4.74*	-5.00*
	[2.58]	[2.85]	[2.56]
Log FT pubs	17.52***	17.60***	17.56***
	[3.84]	[3.86]	[3.84]
Log non-FT pubs	-1.75	-1.70	-1.71
	[3.01]	[3.01]	[3.01]
Log citations	1.50	1.45	1.48
	[1.79]	[1.80]	[1.79]
Female dean	-4.11		
	[2.54]		
Female × Female dean	0.94		
	[4.32]		
Female assoc dean		2.82	
		[2.66]	
Female × Female assoc dean		-1.38	
		[4.99]	
Female dept chair			0.94
			[2.31]
Female × Female dept chair			-0.68
			[6.05]
Observations	1,471	1,471	1,471
R-squared	0.74	0.74	0.74
Baseline Fes	Yes	Yes	Yes

Panel B: Female representation

	Salary (4)	Salary (5)
Female	-24.96***	-8.40*
	[9.14]	[4.86]
Log FT pubs	17.79***	17.53***
	[3.81]	[3.84]
Log non-FT pubs	-2.06	-1.79
	[3.01]	[3.04]
Log citations	1.57	1.50
	[1.78]	[1.81]
% Female (school)	-58.54**	
	[26.18]	
Female × % Female (school)	72.66**	
	[32.69]	
% Female (dept)		-20.22
		[12.43]
Female × % Female (dept)		11.27
		[16.27]
Observations	1,471	1,471
R-squared	0.74	0.74
Baseline Fes	Yes	Yes

Table 6: Propensity to leave a school

We estimate the likelihood that a faculty member leaves a school in a given year using a linear probability model. We consider the sample of schools that provided us salary data for employees who no longer work there (FAU, FSU, and UF), and we exclude the last year from each school so that we can identify whether the faculty member left the school in the given year or not. Our dependent variable is an indicator for the faculty member leaving. Underpaid is an indicator for the professor being underpaid (having a negative residual in the given year) when salary is regressed onto our productivity measures (FT pubs, non-FT pubs, and citations) and the baseline FE's described in Table 2.

	Exit (1)	Exit (2)	Exit (3)
Underpaid	0.04***	0.03**	0.04**
	[0.01]	[0.01]	[0.01]
Female			0.01
			[0.02]
Underpaid × Female			-0.03
			[0.02]
Constant	0.05***	0.04***	0.04***
	[0.01]	[0.01]	[0.01]
Observations	2,252	1,605	1,605
R-squared	0.09	0.10	0.10
Ranks	All	Tenured	Tenured
Baseline FEs	Yes	Yes	Yes
Stronger FEs	No	No	No

Appendix A: Top 50 Financial Times (FT) Publications

1	*Academy of Management Journal*	Management
2	*Academy of Management Review*	Management
3	*Accounting, Organizations and Society*	Accounting
4	*Accounting Review*	Accounting
5	*Administrative Science Quarterly*	Management
6	*American Economic Review*	Economics
7	*Contemporary Accounting Research*	Accounting
8	*Econometrica*	Economics
9	*Entrepreneurship Theory and Practice*	Entrepreneurship
10	*Harvard Business Review*	Management
11	*Human Relations*	Human Resources
12	*Human Resource Management*	Human Resources
13	*Information Systems Research*	Operations & Information Systems
14	*Journal of Accounting and Economics*	Accounting
15	*Journal of Accounting Research*	Accounting
16	*Journal of Applied Psychology*	Organizational Behaviour
17	*Journal of Business Ethics*	Ethics
18	*Journal of Business Venturing*	Entrepreneurship
19	*Journal of Consumer Psychology*	Marketing
20	*Journal of Consumer Research*	Marketing
21	*Journal of Finance*	Finance
22	*Journal of Financial and Quantitative Analysis*	Finance
23	*Journal of Financial Economics*	Finance
24	*Journal of International Business Studies*	International Business
25	*Journal of Management*	Management
26	*Journal of Management Information Systems*	Operations & Information Systems
27	*Journal of Management Studies*	Management
28	*Journal of Marketing*	Marketing
29	*Journal of Marketing Research*	Marketing
30	*Journal of Operations Management*	Operations & Information Systems
31	*Journal of Political Economy*	Economics
32	*Journal of the Academy of Marketing Science*	Marketing
33	*Management Science*	Operations & Information Systems
34	*Manufacturing & Service Operations Management*	Operations & Information Systems

35	*Marketing Science*	Marketing
36	*MIS Quarterly*	Operations & Information Systems
37	*MIT Sloan Management Review*	Management
38	*Operations Research*	Operations & Information Systems
39	*Organization Science*	Organizational Behaviour
40	*Organization Studies*	Organizational Behaviour
41	*Organizational Behavior and Human Decision Processes*	Organizational Behaviour
42	*Production and Operations Management*	Operations & Information Systems
43	*Quarterly Journal of Economics*	Economics
44	*Research Policy*	Economics, Management
45	*Review of Accounting Studies*	Accounting
46	*Review of Economic Studies*	Economics
47	*Review of Finance*	Finance
48	*Review of Financial Studies*	Finance
49	*Strategic Entrepreneurship Journal*	Entrepreneurship
50	*Strategic Management Journal*	Management