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Why Female Professors Earn Less: The Role of Retention Negotiations and Performance Bonuses

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Why Female Professors Earn Less: The Role of Retention Negotiations and Performance Bonuses*

Abstract

How large is the gender pay gap among university professors, and how do institutional pay-setting mechanisms shape this disparity? This paper provides novel empirical evidence on the gender pay gap among professors at a renowned German university. Using detailed human resources data for the time span 2013 to 2021, we document a statistically significant conditional gender pay gap in professorial salaries of 5.2%, after controlling for employment characteristics, socio-demographics, performance measures, and faculty and year fixed effects. Our findings show that these differentials can be attributed mainly to lower returns from retention negotiations, which have a particularly strong impact during the earlier stages of academic careers. These results highlight the importance of pay system designs in promoting gender equity in academia.

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1 Introduction

In 1923, Margarete von Wrangell became the first woman in Germany to be appointed as a full professor, despite strong resistance from many of her male colleagues. While the number of female professors and their general acceptance have risen markedly over the past hundred years in Germany and beyond, statistically significant differences in remuneration between female and male professors persist, drawing considerable attention. Since the late 1960s, numerous economic studies have examined the gender pay gap in academia in the US and UK, where salary negotiations play a prominent role (Bayer and Astin, 1968; Johnson and Stafford, 1974; Gordon et al., 1974; Farber, 1977). However, there is currently little evidence on wage inequality in systems that combine structured wage setting with market negotiation, such as the German system. Moreover, most existing evidence is based on cross-sectional data from up to the early 2000s, with little empirical research covering more recent years or tracking professors longitudinally.

This paper contributes to the literature by documenting the gender pay gap among university professors, tracking individuals employed at a large German university over time. Using detailed human resources data, we construct a panel dataset for all professors employed at the University of Göttingen as of June 30, 2021, covering their employment and salary information from 2013 to 2021, and estimate several versions of the Mincer wage regression. The University of Göttingen is a large comprehensive university with approximately 27,000 students across 13 faculties (University of Göttingen, 2024), offering a broad range of disciplines from the humanities to the natural sciences.[2] Among Germany's 109 universities (Statistisches Bundesamt, 2024a), Göttingen ranks in the upper quartile by student enrollment (Statistisches Bundesamt, 2024b) and 15th in research funding competitiveness among the 40 top institutions supported by the German Research Foundation (*Deutsche Forschungsgemeinschaft*, DFG), receiving 232.5 million EUR in funding between 2020 and 2022 (DFG, 2024), making it fairly representative of major German research universities. The richness of our data allows us to control for a range of individual-specific characteristics (including employment history, socio-demographics, and performance measures) as well as faculty and year fixed effects. Additionally, we examine the roles of salary negotiations and performance bonuses as potential contributors to the

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[2]Due to the special administrative status of the Faculty of Medicine within the university, our data excludes medical professors and focuses on professors from the remaining 12 faculties.

pay gap.[3]

Our results show an unconditional gender pay gap of 12.9% and a conditional pay gap of 5.2%, which remains statistically significant after controlling for employment characteristics, socio-demographic factors, performance metrics, and faculty and year fixed effects. This conditional pay gap is slightly lower than the recent national estimate of 6.6% for German professorships (Frost et al., 2023). We explore two potential mechanisms behind these results. The current German system of professorial salaries—based on W-salary scales (*W-Besoldung*)—does not provide for automatic salary progression. Instead, salaries may be renegotiated in response to external offers or increased through university-specific merit-based progression systems. We use detailed data on the timing and frequency of retention negotiations, as well as performance bonus applications, to examine their contribution to the conditional pay gap. We find no gender differences in the frequency of participation in retention negotiations or in the frequency of performance bonus applications. However, female professors receive significantly lower salary increases from retention negotiations than their male counterparts, contributing to the overall gender pay gap. Specifically, each additional retention negotiation increases the total salary of male professors by 11.6%, while the increase for females is only 5.8% (and not statistically significant). Overall, our findings suggest that while the negotiation-based component of professorial salaries disadvantages female professors, the structured, merit-based component leads to more equitable outcomes.

Our paper contributes to three main strands of the literature. First, we add to a rich body of research on gender wage differences in the academic labor market, which predominantly focuses on average wage disparities between female and male academics in the US. Using data from the National Register of Scientific and Technical Personnel, Bayer and Astin (1968) document salary differences between women and men across all career stages. Johnson and Stafford (1974) find that the gender pay gap in academia is not statistically significant at the entry level but rises to 15–23% fifteen years after PhD completion, suggesting that differential career dynamics widen the gap over time. Gordon et al. (1974) estimate that female faculty earn 11% less than men with similar characteristics. In one of the few studies using longitudinal data, Farber (1977) documents that younger cohorts

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[3]As outlined in Section 2, on top of highly regulated state-specific base salaries, professors at the University of Göttingen may receive wage increases by applying for performance bonuses every three years or by leading wage negotiations after receiving external job offers.

of female faculty experience smaller salary increases and fewer promotion opportunities. Notably, however, he finds no such differences among older cohorts, suggesting that gender inequalities may have intensified across generations.

We also contribute to a second, more focused strand of research, assessing gender pay differences within the fields of economics and management and investigating potential mechanisms. Relying on data from the National Science Foundation, Kahn (1993) documents significant but decreasing gender differences in tenure progress among academics in these fields. Using survey data from 258 US economics departments, Formby et al. (1993) find no significant gender gap in entry-level salaries for economists. Similarly, Broder (1993) finds gender differences in remuneration and professional achievement among older cohorts but no significant gap within the sample of assistant professors. In one of the most comprehensive studies on the gender pay gap among economists in the UK academic labor market, Blackaby et al. (2005) document a statistically significant gender gap in both promotions and pay among individuals of similar rank. The mechanism behind these results appears to be that male professors receive higher returns from outside offers, a finding that closely aligns with our results.

Third, we contribute to a growing body of research investigating the role of salary negotiations in explaining the gender pay gap across various professions. Exploiting the quasi-experiment of flexibilization of teacher pay in Wisconsin, Biasi and Sarsons (2022) show that flexible pay contributes to increased gender wage inequality, disadvantaging women. Similarly, Säve-Söderbergh (2019) documents that, within a sample of college graduates in Sweden, women request lower salaries and receive lower offers even when asking for similar values, on average. Dreber et al. (2022) report that women request less than men in salary negotiations, which appears to stem from differences in beliefs about what constitutes a reasonable request. Finally, Leibbrandt and List (2015) show that men are more likely than women to negotiate when job ads do not mention negotiability, but this difference disappears when job ads explicitly indicate that wages are negotiable.

Our contributions to these strands of the literature are twofold. First, the wage system at the University of Göttingen provides a particularly suitable context for studying the gender pay gap in academia, as it combines a rules-based system of salary progression with a market negotiation component. This allows us to examine how female professors

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navigate these systems and how the different wage-setting mechanisms contribute to widening or reducing gender inequalities. Second, we use a comprehensive panel dataset containing yearly individual-level information for 312 professors from 2013 to 2021. This enables us to investigate how the gender pay gap in academia has evolved in recent years within an institutional context that differs from the US and UK academic labor markets, where most existing evidence originates.

The rest of the paper is structured as follows. Section 2 provides background information on the German academic labor market. Section 3.1 describes our dataset and presents descriptive statistics. Section 3.2 outlines our empirical approach and the estimation model. Section 4 presents the empirical results, robustness checks, and discusses underlying mechanisms. Section 5 concludes.

2 Background

Professorial salaries in Germany are governed by the nationwide W-payroll system (*W-Besoldung*), which has defined the salary structure for publicly employed professors since 2002.[4] Unlike the previous C-payroll system, the current W-system typically no longer provides automatic experience-based salary increases. Instead, it includes flexible salary components designed to reward exceptional achievements and enable public universities to compete more effectively for talent. As most German universities— including highly renowned research-intensive institutions—are publicly funded, the W-system determines the overall salary structure for the vast majority of German professors, who are predominantly employed as civil servants.

Given Germany's federal structure and the fact that education is a matter of state responsibility, the specifics of professorial salaries vary across the 16 German states. Each state enacts its own legislation governing tertiary education, resulting in a professorial salary system that follows a common framework defined by the nationwide W-payroll system, while base salaries, the scope for variable components, and the rules for their determination are set at the state level (Kultusministerkonferenz, 2020).

Cross-state variation in base salaries is substantial. The W-payroll system distinguishes

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[4]Its predecessor, the C-payroll system, served as the standard salary framework for German university professors from 1975 to 2002 and has since been phased out.

between two main professorial salary groups: W2-professors, who hold either fixed-term or lifelong civil servant contracts and are roughly equivalent to associate professors; and W3-professors, who hold lifelong contracts and are comparable to full professors in other countries.[5] State-specific base salaries differ between these groups, with W3-professors generally receiving higher base compensation. In 2021, W3-professors in the highest-paying state (Bavaria) earned a monthly base salary of €7,578.60, compared to €6,585.98 in the lowest-paying state (Thuringia), with Lower Saxony ranking second lowest at €6,724.43 (Deutscher Hochschulverband, 2021). Recent data indicate that Lower Saxony—the state in which the University of Göttingen is located—remains among the lowest-paid states, and overall salary inequality across states has widened: in 2024, base salaries for W3-professors ranged from €7,112.71 euros in Lower Saxony to €8,407.12 in Brandenburg (Deutscher Hochschulverband, 2024).

Beyond these state-wise differences in base salaries, individually variable regular bonus components constitute the primary source of salary variation among German professors.[6] Regular bonuses are typically awarded through two main channels: they may arise during salary negotiations or take the form of structured, merit-based performance bonuses. While negotiation bonuses can be granted during appointment or retention negotiations, performance bonuses are awarded upon formal application for specific academic achievements (Klenke, 2012).

The performance bonus system at the University of Göttingen follows the same general logic as the broader German framework, combining negotiation-based and structured, application-based bonus components. Similarly, appointment and retention negotiations adhere to the standard formal procedures used at other public universities. Professors are selected through a highly standardized process involving an appointment committee, an interview phase, and an external evaluation, culminating in a ranked list of recommended candidates. The presidential office then initiates negotiations with the highest-ranked candidate and proceeds down the list if necessary. Candidates are expected to submit a concept paper outlining their future research and teaching plans, along with a request

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[5]A third group of professors holds W1 positions, or assistant professorships (*Juniorprofessur*), which are temporary appointments for early-career academics leading independent research groups and are typically limited to six years.

[6]For an overview of the different components of total salary for W2/W3-professors in Lower Saxony, see Appendix Figure B.1.

for funding and a negotiation bonus. Universities typically aim to match the candidate's prior salary and may offer additional incentives in the form of bonuses tied to predefined performance targets—such as publications, third-party funding, or leadership roles. The size of the initial bonus depends on the candidate's prior salary but may also reflect negotiation skill and the perceived reasonableness of the requested amount. Retention negotiations follow a similar pattern: when a professor receives an external offer, they prepare a concept paper and enter into negotiations with their current institution. The university seeks to match the outside offer, albeit within reasonable limits. Consequently, the final negotiated bonus amount reflects not only prior earnings and the competitiveness of the external offer but also individual negotiation success. As a result, female professors may receive lower negotiable bonus components than their male counterparts if they have lower prior salaries, receive less generous outside offers, or are less likely to engage in assertive negotiation.

While appointment and retention negotiations are broadly standardized across all German universities, systems for subsequent performance bonuses vary significantly. The University of Göttingen maintains a particularly detailed and transparent framework for structured, application-based bonuses, awarded for outstanding achievements in research, teaching, and the mentoring of junior researchers. Applications are evaluated by a dedicated commission of the university Senate, which provides recommendations to the Presidential Board. A formal guideline specifies the criteria, application frequency, and procedural requirements. There are up to eight performance bonus levels, each associated with a fixed monetary amount (€280 at the time of our analysis). Professors may typically reapply for a performance bonus every three years after receiving their last award. Subsequent applications may result in the same level being maintained (temporarily or permanently), or an increase to the next higher level. Although bonuses are initially granted on a temporary basis, they are frequently converted into permanent bonuses upon successful renewal—though renewal is not guaranteed (Georg-August-Universität Göttingen, 2020).

The combination of negotiated and achievement-based salary components in Germany's W-system reflects strong institutional inspiration from academic salary practices in the US and the UK. In the US, the academic job market is highly competitive, and salary structures vary considerably across institutions. Professors typically negotiate their salaries directly with universities, with compensation influenced by factors such

as academic reputation, departmental prestige, research productivity (as measured by publications and external funding), and whether the appointment is external or internal (Gordon et al., 1974; Moore et al., 2007). In the UK, salaries for non-professorial staff are determined through nationally negotiated agreements between university vice-chancellors and academic unions whereas professorial salaries are structured around a nationally agreed base, supplemented by individually negotiated components. Salary disparities often emerge from these negotiations, with external appointments typically commanding higher salaries than external promotions, reflecting both market competition and the perceived value of external candidates (Blackaby et al., 2005). In contrast, other countries maintain more rigid, non-negotiable salary systems. In France, academic salaries are determined by fixed, nationally established scales that depend on rank and employment status (Angermuller, 2017). Similarly, Japanese universities have traditionally relied on a centralized salary table that specifies pay by rank, particularly in national and public institutions. Although universities have been permitted to develop their own salary frameworks since 2004, most national and public universities continue to adhere to the national guidelines, preserving a high degree of salary uniformity (Takahashi and Takahashi, 2011).

This contrast underscores the distinctive position of Germany's W-system: it blends centralized structural principles with significant institutional and individual discretion, creating a hybrid model that is both flexible and subject to considerable variation. This makes the system particularly well-suited for analyzing the role of negotiation, performance evaluation, and gendered dynamics in shaping academic pay.

3 Empirical approach

3.1 Data and descriptives

To analyze the gender pay gap among professors, we use salary history data from 2013 to 2021 for 312 professors at the University of Göttingen. The data were retrospectively collected for all professors in non-medical faculties employed by the university as of June

30, 2021.[7] The sample includes all associate and full professorships—W2- and W3-level positions in the German system—while W1 assistant professors are excluded because they only receive base salary but no negotiable or performance-related bonuses. In addition to salary histories, our dataset contains information on gender, faculty affiliation, employment characteristics, third-party funding, performance measures, and socio-demographic factors.

Table 1 provides an overview of the main variables of interest, presenting descriptive statistics for the full sample as well as separate summaries for female and male professors. Total salary includes the base salary according to the W2 or W3 tariff group under the German appointment system, plus regular bonuses such as entry bonuses, retention negotiation awards, performance, and special function bonuses, as well as special payments, family allowances, and other bonuses (e.g., one-time payments and capital-forming benefits), as detailed in Appendix Figure B.1.[8]

Our sample focuses on professors employed under the W-payroll system. In our final sample of 312 professors, approximately 88% (274 individuals) were hired under the W-system, while the remaining 12% (38 professors) were initially appointed under the C-payroll system but subsequently transitioned to the W-system. These individuals opted to leave the age-based salary progression framework of the C-system in favor of the fixed base salaries and performance-based bonus opportunities offered by the W-system.[9] The estimation sample comprises 63% W3-professors and 37% W2-professors. Due to the unbalanced nature of the panel, individuals with longer observation histories—typically senior W3-professors and German nationals—are slightly overrepresented in the observation-level descriptive statistics.

Table 1 reveals several features that must be accounted for when analyzing the gender pay gap. First, a substantially larger share of male professors hold higher paid W3 positions—74% compared to 55% among female professors. Second, as gender equity

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[7]Since professors in our sample join (and leave) the university at different points in time, we have an unbalanced panel, and the number of observations varies across analyses.

[8]We apply a logarithmic transformation to the various salary measures. For temporary and permanent bonus payments, which include zero values, we use the $\ln(x + 1)$ transformation to retain all observations. However, given the known limitations of this approach, as discussed by Chen and Roth (2024), we additionally estimate alternative specifications using the Poisson Pseudo-Maximum Likelihood (PPML) estimator as a robustness check.

[9]After the C-payroll system was phased out in 2002, professors employed prior to the transition were given the choice to remain in the C-system or switch into the W-system. Our analyses exclude 63 professors who were still employed under the C-payroll system at the cutoff date (June 30, 2021), as their pay structure differs fundamentally from that of the W-system.

Table 1: Descriptive statistics

	Full sample		Male		Female	
	Mean	SD	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)
ln(Total salary)	8.92	0.20	8.95	0.20	8.83	0.15
ln(Base salary)	8.64	0.09	8.64	0.09	8.62	0.09
ln(Bonus pay + 1)	7.06	1.06	7.20	1.01	6.69	1.07
W3-professorship	0.68	0.47	0.74	0.44	0.55	0.50
Years since appointment	8.47	5.17	8.83	5.43	7.57	4.33
Humboldt-professorship	0.01	0.10	0.01	0.12	0.00	0.00
Vice-president	0.01	0.09	0.00	0.06	0.02	0.14
Special function	0.08	0.27	0.10	0.30	0.03	0.16
Hired under W-system	0.86	0.34	0.84	0.37	0.93	0.26
Cumulative years in C-system until year t	0.75	2.49	0.96	2.78	0.21	1.38
First appointment	0.67	0.47	0.65	0.48	0.73	0.45
Count times reduced	0.06	0.38	0.05	0.36	0.09	0.44
Rank in the appointment procedure	1.07	0.63	1.05	0.66	1.12	0.55
Retention negotiations until year t	0.13	0.35	0.13	0.36	0.11	0.34
Performance bonus applications until year t	0.73	0.93	0.75	0.94	0.65	0.90
ln(Average DFG/EU funding until $t-1+1$)	5.87	5.48	6.25	5.48	4.90	5.37
ln(Average other funding until $t-1+1$)	6.16	4.86	6.28	4.90	5.84	4.76
German	0.89	0.32	0.89	0.31	0.88	0.33
Married	0.72	0.45	0.78	0.42	0.58	0.49
Number of children	1.37	1.20	1.49	1.22	1.04	1.08
Age	48.53	7.03	48.86	7.02	47.68	7.01
Observations	2245		1611		634	

Notes: The table presents summary statistics (means and standard deviations) for the main variables of interest for the full sample (columns (1) and (2)), male professors (columns (3) and (4)), and female professors (columns (5) and (6)). All monetary values are expressed in constant 2013 EUR (deflated using 2013 as the base year).

initiatives have increasingly influenced hiring practices in German academia in recent years, women are more strongly underrepresented among historically hired professors than among more recent hires (see Figure 1a). This pattern is evident among multiple dimensions: on average, female professors are approximately one year younger and have been employed at their current institution for more than one year less than their male counterparts. Moreover, while about 65% of male professors hold their current position as their first professorial appointment, this share rises to about 73% for female professors. Given that appointment and retention negotiations play a relevant role in salary progression, those who have not changed institutions are likely to receive lower salaries on average. Additionally, a larger share of male professors began their careers under the former C-payroll system, which carried higher base salaries at the time of

transition to the W-system. In contrast, a greater proportion of female professors have reduced their contract from full to part-time in the past (9% of women versus 5% of men), potentially slowing their career advancement. Third, high-salary positions such as the Humboldt-professorship—awarded by the Federal Ministry of Education and Research to outstanding, internationally renowned scientists (Alexander von Humboldt Foundation, 2025)—have been held exclusively by male professors at the University of Göttingen during the period of our study. Fourth, while approximately 10% of male professors hold special functions (such as dean, dean of studies, or other leadership roles), only about 3% of female professors do. Consequently, women are less likely to receive special function bonuses. This pattern reverses among vice-presidents in our sample: due to the lower overall representation of female professors and greater gender parity at the highest professorial ranks, a larger share of female professors occupy top management positions. Fifth, from a socio-demographic perspective, female professors are substantially less likely to be married (58% versus 78% for men) and have, on average, fewer children. As a result, they are also less likely to receive family-related benefits, which are paid on top of regular salaries.

Beyond career history and socio-demographic characteristics, our dataset includes measures of research productivity, hiring rank, and the frequency of past retention negotiations, as well as performance bonus applications. Given the challenges of comparing research output across disciplines, German universities commonly use competitive third-party funding as a proxy for academic standing. Although such funding reflects inputs into the research process rather than direct output, institutions generally assume that grant awards are indicative of a professor's reputation, competitiveness, and integration within their academic community. At the University of Göttingen, individual third-party funding records (maintained in a dedicated *Drittmittelakte*) were systematically linked to each professor's personnel file by the university administration, enabling detailed analysis.

Descriptively, female professors receive significantly less third-party funding on average, across multiple sources. This includes highly competitive grants from the German Research Foundation (DFG) and the European Union's research funding programs, as well as grants from other public and private funding institutions. Panel (b) in Figure 1 illustrates the cumulative distribution of total third-party funding by gender, revealing that a substantially larger share of female professors receive no or negligible funding. However,
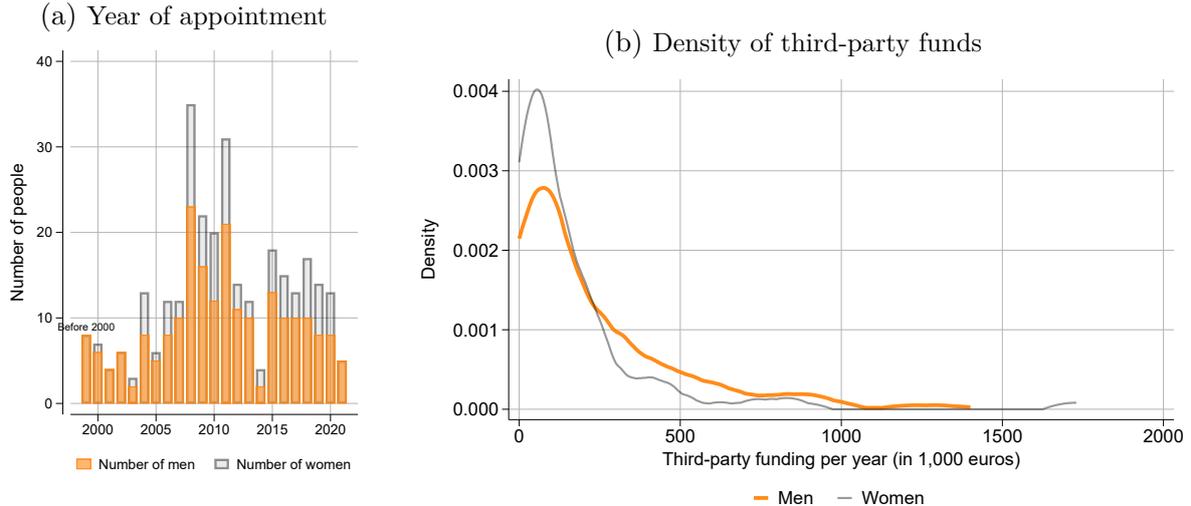
(a) Year of appointment

(b) Density of third-party funds

Figure 1: Tenure and third-party funding by gender

Notes: The figures show the distribution of female and male professors by year of appointment (panel 1a) and third-party funding per year (panel 1b). Orange bars represent male professors and grey bars represent female professors.

it is important to note that part of this disparity may stem from the underrepresentation of women in certain natural sciences, which are traditionally more reliant on higher grant volumes.

From the appointment negotiations, we record the hiring rank assigned to each professor, which may serve as a proxy for their relative bargaining position at the time of entry. The number of past retention negotiations—reflecting how often a professor received an external offer—captures the extent to which salary improvements were possible through competitive bidding. On average, the number of retention negotiations is low for both genders, ranging between 0.11 and 0.13 per year, equivalent to approximately one such negotiation every ten years. Finally, we track the number of performance bonus applications submitted over the observation period. On average, male professors apply for such bonuses at a rate of 0.75 per year, compared to 0.65 for female professors.

Overall, female professors in our sample are, on average, somewhat younger and less experienced, more likely to hold less prestigious appointments, less likely to occupy leadership roles, less likely to have changed institutions, and less likely to receive family-related benefits. These structural and career-stage differences may collectively contribute to disparities in pay. Moreover, women attract significantly less third-party funding, which may further entrench disparities in salary progression, particularly given the role of external

funding in shaping negotiation leverage and performance-based compensation. These descriptive findings suggest a more substantial unconditional gender pay gap compared to the conditional gap, as we expect that observed pay disparities between men and women will diminish significantly once all relevant structural differences are accounted for in the analysis.

3.2   Estimation strategy

To investigate the presence of a gender pay gap among professors at the University of Göttingen, we employ individual-level panel data and estimate variations of the Mincer wage equation:

$$Y_{ift} = \alpha + \beta_1 Male_i + \lambda X_{ift} + \gamma_f + \omega_t + \epsilon_{ift}$$

where the outcome variable, Y_{ift}, denotes one of five salary measures for individual i employed in faculty f in year t: (i) ln(Total salary), (ii) ln(Base salary), (iii) ln(Permanent and temporary bonus pay $+ 1$), (iv) the cumulative number of retention negotiations up to year t, or (v) the cumulative number of performance bonus applications up to year t. By using these five distinct outcome variables, we examine not only overall gender differences in total compensation but also disentangle disparities in fixed and variable components of pay. Our primary explanatory variable is $Male_i$, a binary indicator that equals one for male professors and zero for female professors. The coefficient of interest, β_1, captures the estimated gender pay gap, interpreted as the average difference in log salary (or its components) between male and female professors.

In a baseline specification, we estimate a raw gender gap by regressing the log salary or its components on the male indicator alone. Subsequent specifications progressively include additional control variables to assess the magnitude of the conditional gender pay gap and to evaluate the contribution of different sets of covariates in explaining it. Our conditional models first include time fixed effects, ω_t, which capture economy-wide or institution-wide changes in wages over time, and faculty fixed effects, γ_f, which account for persistent faculty-specific wage differentials. By incorporating these fixed effects, we exploit within-faculty and within-year variation in wages, controlling for changes in the university's competitiveness, institutional resources, and time-invariant faculty-level factors that may influence compensation.

In further regressions, we condition the salary outcomes on a comprehensive vector of individual-level controls, X_{ift}, including employment characteristics and history, proxies for research productivity, negotiation history, performance bonus applications, and socio-demographic variables. Employment-related controls include indicators for W3-professorships, years since appointment, whether the professor holds a Humboldt-professorship, serves as vice-president, holds other special functions, was hired under the W-payroll system (as opposed to the former C-system), the cumulative number of years spent in the C-system prior to year t, whether the University of Göttingen was the first academic appointment, and the cumulative number of years a professor worked part-time due to care responsibilities (calculated based on all part-time months from one year before through three years after each child's birth).

Third-party funding controls include the natural logarithm of average DFG and EU funding received by the professor up to year $t-1$, as well as the natural logarithm of average other external funding, using the $\ln(x+1)$ transformation to handle zero values. Behavioral controls consist of three key measures: (1) the rank in the appointment procedure, which reflects the professor's relative standing among candidates at hiring (lower ranks indicating stronger performance); (2) the number of retention negotiations up to year t, serving as a proxy for market value, as universities typically respond to external offers only for high-performing faculty; and (3) the number of applications for performance bonuses up to year t, capturing the professor's proactive engagement in seeking merit-based compensation increases. Finally, socio-demographic controls include age, the number of children, and indicator variables for marital status and German nationality.

4 Results

4.1 Baseline results

Our regression results reveal systematic wage disparities between female and male professors at the University of Göttingen. Over the period 2013 to 2021, we estimate an unconditional gender pay gap (GPG) of 12.9% (see Figure 2a). This indicates that, on average, male professors earn 12.9% more in total compensation than their female counterparts, holding no other characteristics constant.
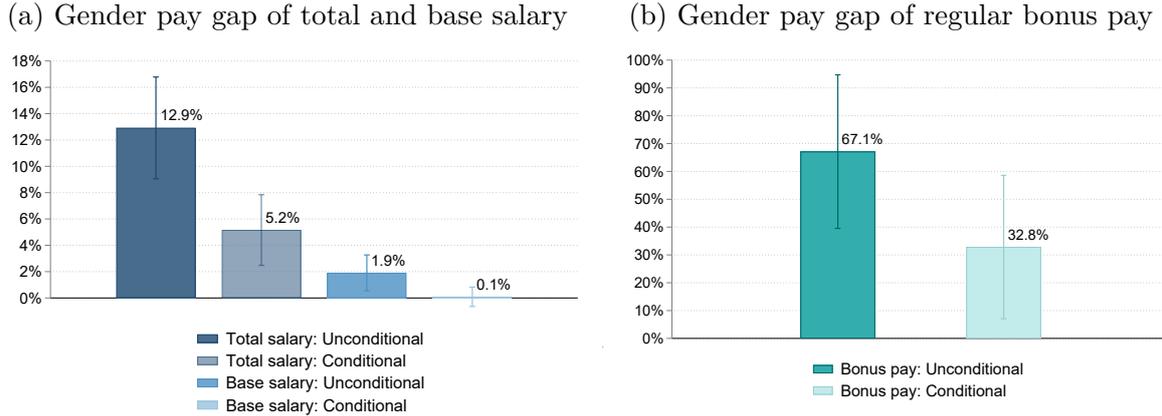
(a) Gender pay gap of total and base salary   (b) Gender pay gap of regular bonus pay

Figure 2: Gender pay gap in monthly salary components

Notes: Bars show the estimated gender pay gap, measured as the percentage difference in favor of men. This corresponds to the change in the expected outcome when the *Male* indicator is set to one. Conditional estimates control for employment characteristics, third-party funding, performance, socio-demographics, family characteristics, and include faculty and year fixed effects. The displayed whiskers represent 95% confidence intervals. Panel (a) presents the gap in total and base monthly salary; Panel (b) focuses on regular bonus pay. Darker shades indicate unconditional estimates, and lighter shades indicate conditional ones.

After adjusting for all control variables outlined in Section 3.2—including among others time and faculty fixed effects, employment history, third-party funding, the frequency of past negotiations and performance bonus applications, and socio-demographic factors— a gender pay gap of 5.2% remains (see Figure 2a). Further analyses reveal that this difference does not stem from disparities in base salaries (as reflected in lighter blue tones in Figure 2a), but is entirely driven by disparities in variable regular bonuses (see Figure 2b). Even after controlling for all observable characteristics, the conditional gender pay gap in regular bonuses amounts to approximately 32.8%. A detailed breakdown of the regression results for each salary component is provided in Appendix Table A.1. These descriptive findings underscore that while differences in base pay and formal qualifications play a role, the largest share of the residual gender pay gap is attributable to disparities in variable compensation, particularly regular bonuses, highlighting the importance of negotiation dynamics, performance evaluation, and institutional discretion in shaping pay outcomes.

Figure 3 presents a stepwise decomposition of the gender pay gap, illustrating the contribution of various observed factors. The decomposition begins with an unconditional gap of 12.9%. Controlling for faculty and year fixed effects accounts for 0.5 percentage points, reflecting differences in disciplinary composition and broad salary trends over time.
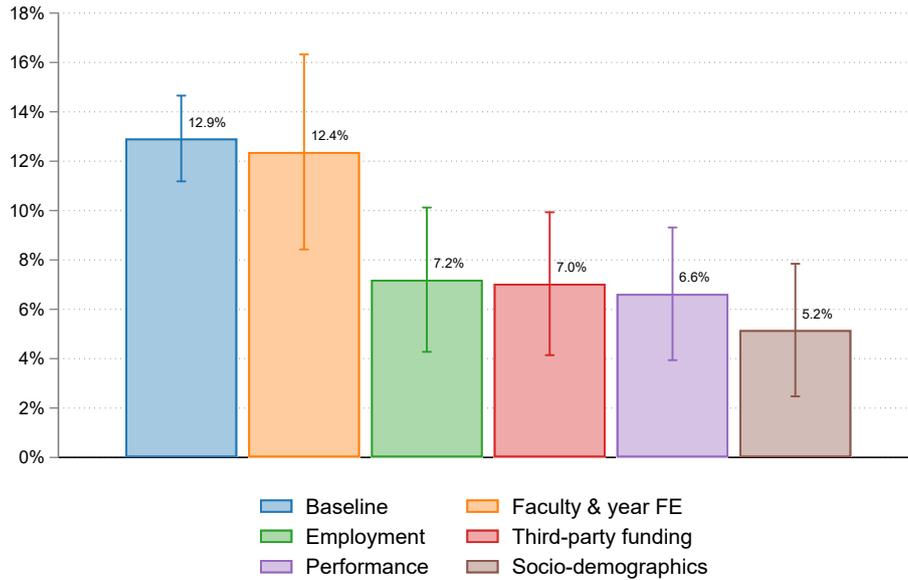
Figure 3: Decomposition of the gender pay gap (total salary)

Notes: Bars show the estimated gender pay gap in total monthly salary (in percent), sequentially controlling for different sets of observable characteristics. The baseline model includes no controls; subsequent bars add employment characteristics, third-party funding, performance, socio-demographics, as well as faculty and year fixed effects (FE). The displayed whiskers represent 95% confidence intervals.

Employment-related characteristics explain an additional 5.2 percentage points, capturing substantial disparities in professorial rank (W2 vs. W3), career stage, and institutional hiring practices. These factors include the likelihood of being hired under the older, higher-paying C-payroll system, the cumulative number of years spent in the C-system, and the likelihood that professors entered the university as W2-appointees—often at lower starting salaries and with fewer opportunities for early career advancement. Other employment-related factors include holding a Humboldt-professorship, serving as vice-president, occupying special functions, and being appointed as a professor for the first time. Female professors are significantly less likely to hold most of these high-status positions, which are associated with higher compensation. Additionally, the cumulative number of years spent working part-time due to child care responsibilities—calculated from one year before to three years after each child's birth—also contributes to the gap, reflecting the long-term career consequences of caregiving. Third-party funding accounts for 0.2 percentage points of the gap, while performance-related measures—including appointment rank, the number of retention negotiations, and performance bonus applications—explain an additional 0.4 percentage points. Socio-demographic controls, including nationality, number of children, and marital status, further reduce the gender pay gap to a conditional

5.2%, which remains statistically significant. The detailed regression results underpinning this decomposition are presented in Appendix Table A.2.

4.2 Robustness

To assess the robustness of our findings and ensure that we have adequately accounted for factors influencing wage determination, we conduct a series of sensitivity analyses. First, given the highly skewed distribution of raw salary data (see Appendix Figure B.3), we re-estimate our baseline specifications using winsorized samples. As shown in Appendix Figures B.4 and B.5, the estimated gender pay gap remains virtually unchanged when the sample is winsorized at the 1% or 5% levels, indicating that our results are not driven by extreme outliers. Second, in light of documented limitations of the log-plus-one transformation—particularly its lack of scale-invariance—discussed by Chen and Roth (2024), we replicate our main analysis of the gender pay gap in bonus compensation using Poisson Pseudo-Maximum Likelihood (PPML) estimation. The results, presented in Appendix Figure C.1, confirm the robustness of our findings to this alternative estimation method.

Third, we examine whether the returns to special academic functions—such as dean, dean of studies, or dean's office member—differ by gender. These roles carry standardized administrative bonuses, and by controlling for their presence, the conditional gender gap nets out differential access to such higher-paying roles. While we do not necessarily expect gender-based differences in the returns to these roles, we test gender-by-function interaction terms for completeness. As shown in Appendix Table A.3, women in these roles do not receive systematically different bonuses from their male counterparts, and accounting for potential differences does not alter the estimated gender pay gap.

Finally, we test the robustness of our results to the inclusion of additional interaction terms between the gender indicator and individual-level characteristics that could plausibly influence wages. Specifically, we allow the gender effect to vary by first appointment at the University of Göttingen (Appendix Table C.1), number of children (Appendix Table C.3), years since appointment, and subject-specific pay level (Appendix Table C.4). In all cases, the main gender coefficient remains stable and statistically significant, while the interaction terms are consistently insignificant. This indicates that the gender pay gap

does not differ systematically across these subgroups and is not driven by heterogeneity in the effect of gender across career stages, family status, and disciplinary contexts. The persistence of the gender pay gap—particularly in variable bonuses—after controlling for a comprehensive set of observable factors underscores the importance of institutional and behavioral mechanisms in shaping pay disparities in academia.

4.3   Mechanisms

To understand the mechanisms driving the gender pay gap documented above, we investigate how salary increases are generated within the German professorial system and how these channels differentially affect female and male professors.

As outlined in Section 2, German universities place strong emphasis on the acquisition of third-party funding, which serves as a key benchmark of institutional performance and academic competitiveness. Securing competitive grants from the German Research Foundation (DFG) or the European Union, for instance, is widely regarded as an indicator of academic productivity. These external resources can translate into higher remuneration for faculty—either through temporary bonuses tied to grant acquisition at the time of hiring, during retention negotiations, or through ongoing performance-based bonus payments. Given the central role of third-party funding in shaping wages, we begin by examining the elasticity of salaries with respect to third-party funding acquisition (Table A.2). The estimates in column (4) indicate that a 10% increase in average DFG funding is associated with a 0.022% increase in total salary, whereas a 10% increase in funding from other sources corresponds to approximately a 0.038% increase. Notably, these effects become smaller and statistically insignificant once we control for the number of stay negotiations and performance-based pay applications. This pattern suggests that wage gains from third-party funding are primarily mediated through negotiation and performance-based mechanisms rather than reflecting direct returns to research productivity. Importantly, additional analysis shows no significant gender difference in the direct returns to third-party funding acquisition (column (2), Table C.2).

Building on these results, we then focus on the two main channels for salary growth: retention negotiations following external offers and applications for performance bonuses. Figure 4 shows how professors' salaries increase with each additional retention negotiation

17

and performance bonus application at the University of Göttingen.[10] These variables capture the cumulative number of negotiations or bonus applications up to each observation year.

The magnitude of these gains varies strongly by gender. Each retention negotiation increases a male professor's total salary by an average of 11.6%, and their regular bonus pay by 84.4% (see the green bars in Figures 4a and 4b). In contrast, female professors experience smaller and statistically insignificant salary gains on average from retention negotiations (see Figure 4a, purple bar). Focusing solely on regular bonuses, female professors receive retention bonuses that are on average 32.3 percentage points lower than those of male professors (see Figure 4b, difference between green and purple bars). These unequal returns are notable given that women and men engage in retention negotiations at similar rates (see Appendix Figure B.2).

These results suggest that, on average, female professors receive smaller salary increases from retention negotiations. Several mechanisms likely contribute to this gender gap. On the employer's side, the pattern aligns with the "loyal servant" hypothesis of Blackaby et al. (2005): employers may assume that women are less likely to leave their positions due to family responsibilities or other non-employment-related commitments. As a result, potential new employers may extend fewer job offers to women than to equally qualified men, and current employers may perceive female professors' outside offers as less credible or less binding, leading to smaller counter-offers. This differential valuation of outside options can systematically reduce the leverage women have in retention negotiations, even when their academic qualifications and productivity are comparable to those of their male peers.

On the employee side, gender differences in negotiation behavior may also play a role. If women are more cautious or less assertive in negotiating with external institutions—perhaps due to social norms, fear of backlash, or differing risk preferences—they may secure weaker initial salary offers. This, in turn, constrains the magnitude of counter-offers that their current employer is willing or able to make, even if the counter-offer mechanism itself is gender-neutral. This interpretation is consistent with experimental and survey evidence of systematic differences in negotiation styles between women and men (Niederle

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[10]Our data on retention negotiations include only individuals who declined the external offer and remained in Göttingen.

(a) Salary gains calculated on the total salary
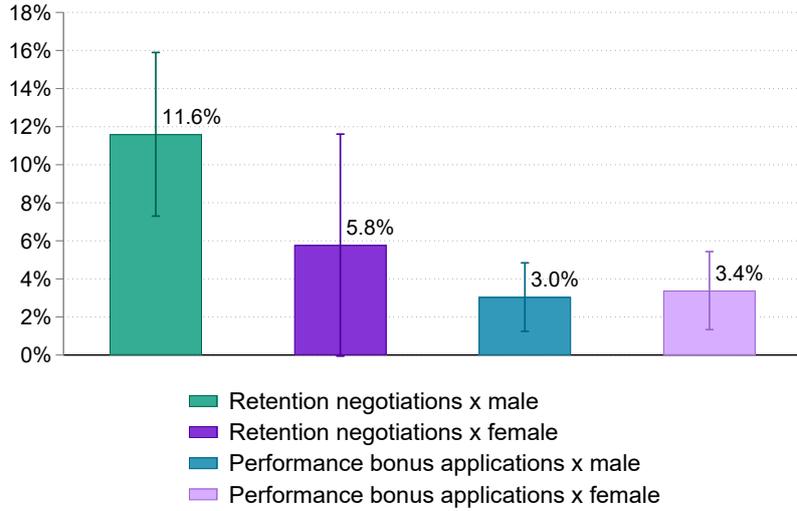
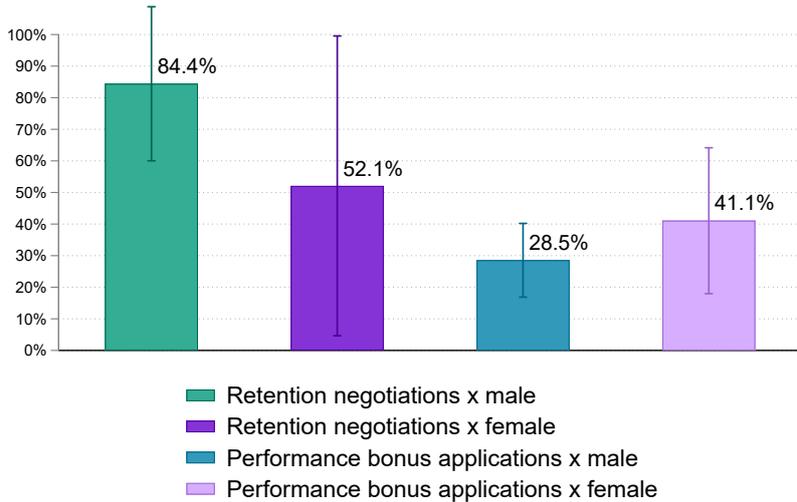(b) Salary gains calculated on regular bonuses

Figure 4: Salary gains from retention negotiations and performance bonuses

Notes: Bars show the estimated salary gains in percent from the number of entered retention negotiations and the number of performance bonus applications, separately for women and men. Panel (a) reports gains as a share of total salary; Panel (b) relative to regular bonus payments. The displayed whiskers represent 95% confidence intervals. Retention bonuses are shown in green (men) and purple (women), while performance bonuses appear in teal (men) and light purple (women).

and Vesterlund, 2011; Kagel and Roth, 2016; Hernandez-Arenaz and Iriberri, 2019; Exley and Nielsen, 2024), as well as differences in risk-preferences (Croson and Gneezy, 2009). Together, these factors may create a feedback loop in which women's lower initial offers lead to smaller retention gains, reinforcing existing pay disparities over time.

Turning to performance-based bonuses, each additional application increases a male

professor's monthly salary by an average of 3.0%, primarily driven by a 28.5% increase in regular bonus payments (see blue bars in Figures 4a and 4b). The corresponding effects for female professors are comparable and even slightly higher (see light purple bars in Figures 4a and 4b). However, because female professors start from a lower average salary, these relative gains do not fully offset the overall gender gap in total salaries. Taken together, these results suggest that negotiation-based components of the salary structure tend to widen gender pay gaps, while structured performance bonuses appear to be gender neutral.

Importantly, our data provide no evidence that women are less likely to apply for performance bonuses or participate in retention negotiations. Appendix Figure B.6 clearly illustrates this, showing no statistically significant gender differences in the likelihood of entering retention negotiations (turquoise bars) or applying for performance bonuses (blue bars). Hence, the observed pay gap arises not from differences in participation, effort, or ambition, but from unequal returns within the salary system, particularly in the context of retention negotiations. This suggests that structural and behavioral factors embedded in the negotiation process, rather than individual choices or incentives, are central to the persistence of the gender pay gap in academia.

This pattern is further supported by our heterogeneity analysis by career stage (Figure 5). Among early-career professors, the gender gap in returns to performance bonuses is minimal (teal vs. light purple bars in Figure 5a), whereas the gap in the unstructured, negotiation-based component is substantial, amounting to 45.1 percentage points (green vs. purple bars in Figure 5a). In later career stages, the retention bonuses received by women are no longer significantly different from those of men (green vs. purple bars in Figure 5b). Moreover, women in later career stages receive larger performance premiums than their early-career counterparts (53.3% vs. 38.3%, light purple bars in Figure 5a vs. Figure 5b), partially offsetting the disadvantage from retention negotiations and suggesting that structured salary components may become more equalizing over time.

These findings suggest that structured salary components generate more equitable outcomes than negotiation-based mechanisms. While performance bonuses do not eliminate the overall gender pay gap, the higher performance bonuses received by women in later career stages indicate the potential for structured, transparent processes to reduce gender pay

disparities over the course of academic careers. This underscores the importance of institutional design in shaping fairer compensation systems, particularly in contexts where informal or discretionary mechanisms may amplify existing inequalities.

(a) Early career stage: Below median years since appointment
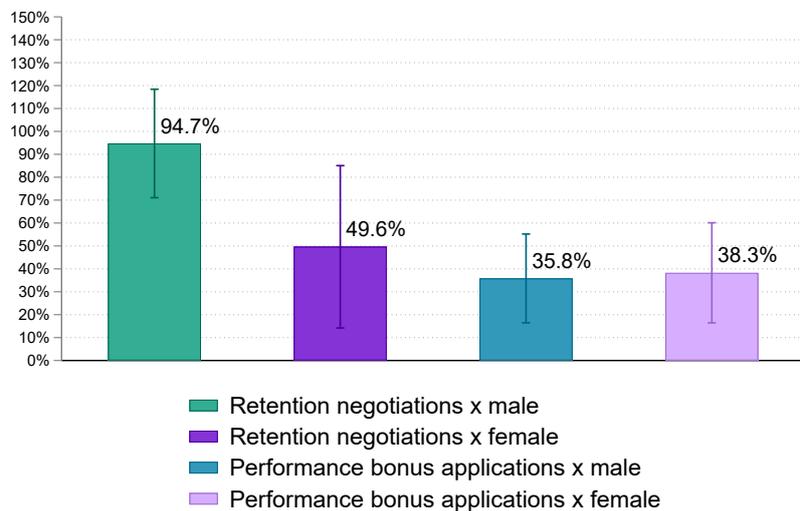
(b) Late career stage: Above median years since appointment
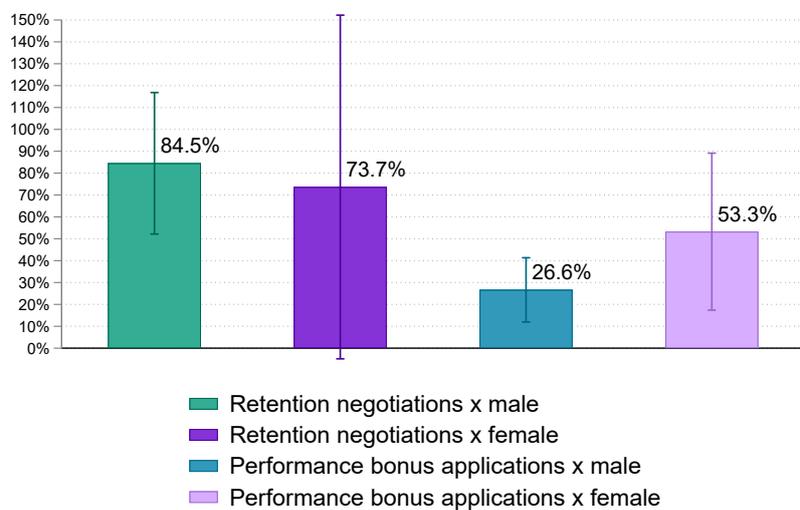
Figure 5: Salary gains from retention negotiations and performance bonuses by career stage

Notes: Bars show the estimated salary gains from retention negotiations and performance bonus applications, separately for women and men across career stages. Panel (a) presents results for individuals in early career stages (below-median years since appointment); Panel (b) for those in later career stages (above the median). The displayed whiskers represent 95% confidence intervals. Retention negotiations are shown in green (men) and purple (women), while performance bonus applications appear in teal (men) and light purple (women).

4.4 Discussion

Our analysis reveals that gender pay disparities at the University of Göttingen stem primarily from unequal returns to retention negotiations rather than gender-based differences in the frequency of these negotiations. Structured, rule-based salary components—such as performance bonuses—appear to treat female and male professors more equitably and may help reduce wage disparities over the course of academic careers. In contrast, negotiation-based salary components systematically disadvantage women, likely reflecting both employer-side perceptions (e.g., lower perceived job mobility among women) and employee-side behavioral factors, including more cautious negotiation strategies.

These findings must be interpreted within the context of Germany's highly heterogeneous system for awarding performance bonuses, where procedures vary significantly across universities under decentralized legal frameworks that encompass both state salary laws and local regulations (Deutscher Hochschulverband, 2006). An ad-hoc survey of approximately 50 gender equity officers conducted in 2024 highlights this variation: while 87% of respondents reported that their universities offer performance bonus applications, only 42% reported that these operate on a three-year cycle comparable to Göttingen's system. Göttingen's eight-tier structure is particularly distinctive—only 4% of respondents reported similar tiered systems at their institutions, compared with 25% reporting no tier system and 29% reporting a five tier-structure. This institutional distinctiveness becomes even more pronounced when viewed against Germany's substantial interstate variation in both base salaries and variable compensation (Detmer, 2023). Taken together, these patterns suggest that the gender-equalizing effects of structured performance bonuses may be especially pronounced in Göttingen's context, where performance-based compensation is implemented through an unusually detailed and transparent framework.

5 Conclusion

Using detailed human resources data on all professors employed at a prominent German University, we document a conditional gender pay gap of 5.2%, which remains significant after controlling for a range of influencing factors, including among others faculty and year fixed effects, employment history, third-party funding, negotiation history, and socio-demographic variables. Our findings highlight that reduced gains from retention negotiations are a central driver of the wage disparity faced by female professors. In contrast, structured performance bonuses appear to be gender neutral, with no systematic differences in awarding rates or magnitudes between men and women. Our channel analysis by career stage reveals that gender differences in retention negotiations are particularly pronounced among early-career professors, while performance-based bonuses are more evenly distributed across genders. At later career stages, women's performance bonuses even exceed those of men on average, suggesting that structured bonus mechanisms can promote equity when negotiation-based disparities persist.

These findings carry important implications for institutional policy. Universities should place greater emphasis on the structured and transparent elements of salary systems. Although we find no systematic gender differences in the awarding of performance bonuses, the criteria for these bonuses should be clearly communicated and accessible across all disciplines. Moreover, the process of retention negotiations—where gender disparities are most evident—would benefit from targeted career coaching for women, particularly for newly appointed professors. Regular gender-sensitive monitoring of salary developments can help track progress and assess the effectiveness of institutional interventions.

This paper contributes to the broader literature by providing new empirical evidence on how female and male professors navigate a dual system of academic compensation—one that blends formalized salary structures with individualized negotiation mechanisms. Our results underscore the critical role of policy design in shaping equitable outcomes in academia—an issue that remains poorly and far from resolved, more than 100 years after Margarete von Wrangel became the first female professor in Germany.

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Appendix

A   Tables

Table A.1: Gender pay gap in monthly salary components

	ln(Total Salary)		ln(Base Salary)		ln(Bonus Pay +1)	
	Unconditional	Conditional	Unconditional	Conditional	Unconditional	Conditional
Male	0.1215***	0.0503***	0.0189***	0.0009	0.5135***	0.2839**
	(0.0195)	(0.0136)	(0.0069)	(0.0037)	(0.1312)	(0.1230)
W3-tariff group		0.1504***		0.1009***		0.3801***
		(0.0157)		(0.0021)		(0.1272)
Years since appointment		-0.0022		0.0004		-0.0331**
		(0.0023)		(0.0003)		(0.0155)
Humboldt-professorship		0.4975***		0.0002		1.5023***
		(0.0491)		(0.0061)		(0.2138)
Vice-president		0.1943**		0.0072		0.8104**
		(0.0774)		(0.0050)		(0.3987)
Special function		0.0118		-0.0008		0.1598**
		(0.0155)		(0.0017)		(0.0802)
Hired under W-payroll system		-0.0901**		-0.0065		-0.6209**
		(0.0392)		(0.0087)		(0.2499)
Cumulative years in c-system until year t		0.0057		-0.0016*		0.0404*
		(0.0046)		(0.0009)		(0.0228)
First appointment		-0.0315**		-0.0066**		-0.2485**
		(0.0145)		(0.0029)		(0.1024)
Part-time years (child-related)		-0.0380***		-0.0467**		0.0881
		(0.0135)		(0.0188)		(0.1078)
ln(average DFG/EU funding until t-1 + 1)		0.0010		-0.0004*		0.0116
		(0.0012)		(0.0002)		(0.0089)
ln(average other funding until t-1 + 1)		0.0016		-0.0009**		0.0127
		(0.0013)		(0.0004)		(0.0079)
Rank position		-0.0108		-0.0048*		0.0059
		(0.0175)		(0.0027)		(0.1006)
Stay negot. (sum to t)		0.0953***		0.0061**		0.5601***
		(0.0193)		(0.0028)		(0.1164)
Perf.-based pay appl. (sum to t)		0.0309***		-0.0001		0.2768***
		(0.0078)		(0.0015)		(0.0607)
German		-0.0267		0.0012		-0.1766
		(0.0294)		(0.0051)		(0.1706)
Married		0.0348**		0.0025		0.0366
		(0.0139)		(0.0036)		(0.1259)
Number children		0.0133**		-0.0002		-0.0254
		(0.0058)		(0.0008)		(0.0580)
Age		0.0048***		-0.0000		0.0265***
		(0.0015)		(0.0002)		(0.0096)
Observations	2245	2134	2245	2134	2245	2134
Male wage premium (%)	12.9	5.2	1.9	0.1	67.1	32.8
FE		✓		✓		✓
Employment		✓		✓		✓
TPF		✓		✓		✓
Performance		✓		✓		✓
Socio-demographic		✓		✓		✓

FE = Faculty & year FE. TPF = Third-party funding. Standard errors clustered. *** p<0.01, ** p<0.05, * p<0.1.

Table A.2: Decomposition of the gender pay gap (total salary)

	ln(Total Salary)					
	Baseline	FE	Employment	TPF	Performance	Socio-demogr.
Male	0.1215***	0.1167***	0.0695***	0.0680***	0.0642***	0.0503***
	(0.0195)	(0.0199)	(0.0147)	(0.0146)	(0.0136)	(0.0136)
W3-tariff group			0.1720***	0.1621***	0.1590***	0.1504***
			(0.0162)	(0.0156)	(0.0159)	(0.0157)
Years since appointment			0.0044**	0.0028	0.0014	-0.0022
			(0.0018)	(0.0020)	(0.0020)	(0.0023)
Humboldt-professorship			0.5147***	0.5121***	0.5367***	0.4975***
			(0.0320)	(0.0323)	(0.0316)	(0.0491)
Vice-president			0.2316***	0.2220***	0.2109***	0.1943**
			(0.0798)	(0.0791)	(0.0801)	(0.0774)
Special function			0.0170	0.0141	0.0142	0.0118
			(0.0186)	(0.0184)	(0.0170)	(0.0155)
Hired under W-payroll system			-0.1109***	-0.1082***	-0.0856**	-0.0901**
			(0.0350)	(0.0336)	(0.0400)	(0.0392)
Cumulative years in c-system until year t			-0.0002	0.0017	0.0055	0.0057
			(0.0047)	(0.0047)	(0.0046)	(0.0046)
First appointment			-0.0361**	-0.0348**	-0.0414***	-0.0315**
			(0.0154)	(0.0151)	(0.0148)	(0.0145)
Part-time years (child-related)			-0.0530***	-0.0491***	-0.0451***	-0.0380***
			(0.0133)	(0.0146)	(0.0134)	(0.0135)
ln(average DFG/EU funding until t-1 + 1)				0.0022*	0.0007	0.0010
				(0.0013)	(0.0013)	(0.0012)
ln(average other funding until t-1 + 1)				0.0038**	0.0024*	0.0016
				(0.0015)	(0.0015)	(0.0013)
Rank position					-0.0131	-0.0108
					(0.0179)	(0.0175)
Stay negot. (sum to t)					0.0802***	0.0953***
					(0.0193)	(0.0193)
Perf.-based pay appl. (sum to t)					0.0321***	0.0309***
					(0.0079)	(0.0078)
German						-0.0267
						(0.0294)
Married						0.0348**
						(0.0139)
Number children						0.0133**
						(0.0058)
Age						0.0048***
						(0.0015)
Observations	2245	2244	2140	2134	2134	2134
Male wage premium (%)	12.9	12.4	7.2	7.0	6.6	5.2
Faculty FE		✓	✓	✓	✓	✓
Employment			✓	✓	✓	✓
TPF					✓	✓
Performance				✓	✓	✓
Socio-demographic						✓

Progressive controls. FE = Faculty & year FE. TPF = Third-party funding. Standard errors clustered. *** p<0.01, ** p<0.05, * p<0.1.

Table A.3: Effect of functional bonus by category and gender

	ln(Total Salary)	
	(1)	(2)
Male	0.0541***	0.0543***
	(0.0138)	(0.0138)
Special function	0.0265	
	(0.0324)	
Special function × male	-0.0134	
	(0.0366)	
Dean		0.0742*
		(0.0415)
Dean × male		-0.0238
		(0.0482)
Other function		-0.0118
		(0.0370)
Other function × male		0.0065
		(0.0420)
Observations	2134	2134
In %:		
Male	5.6	5.6
Special function	2.7	
Special function × male	-1.3	
Dean		7.7
Dean × male		-2.3
Other function		-1.2
Other function × male		0.7
Faculty FE	✓	✓
Year FE	✓	✓

Column (1): binary special function indicator. "Special function" indicates any functional position except vice-president (dean, dean of studies, or dean's office member). Vice-president positions are controlled for separately. Column (2): specific categories (dean, other function). "Other Function" includes all functional positions except Dean. Reference category: "No Function". All specifications include faculty and year fixed effects. Standard errors clustered at the individual level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.
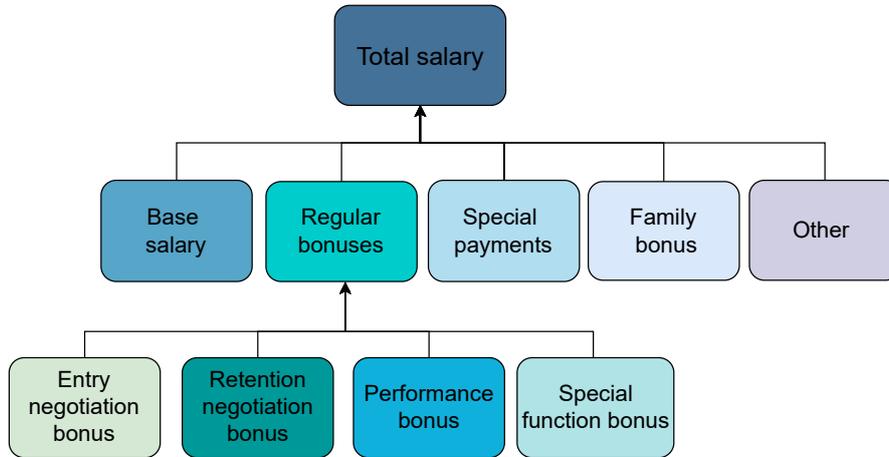
B Figures

Figure B.1: Components of total salary for W2/W3-professors in the German state of Lower Saxony

Notes: As of 2025, a W2/W3-professor's total salary in Lower Saxony consists of the base salary plus a family bonus, special payments (including research grants), regular bonuses, and other bonuses (including one-time bonuses and capital-forming benefits (internal sources). Regular bonuses can be categorised into four types: negotiation-based entry bonuses, retention bonuses, bonuses for specific roles, and performance-related bonuses. Performance bonuses can include regular and one-time payments.
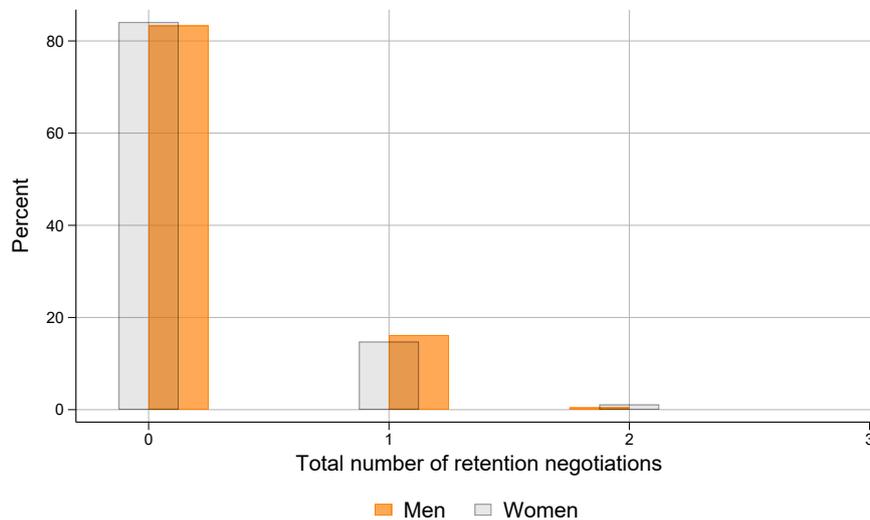

Figure B.2: Gender differences in total retention negotiations after external offers

Notes: The figure shows the distribution of the total number of retention negotiations per professor from 2013 to 2021, separately by gender. The histogram displays percentage values, with orange bars representing male professors and grey bars representing female professors.

(a) Total salary

(b) Base salary

Figure B.3: Descriptives by gender

Notes: Figure B.3a shows the distribution of total monthly salaries, and Figure B.3b the distribution of base monthly salaries, from 2013 to 2021, separately by gender. The histograms display percentage values, with orange bars representing male professors and grey bars representing female professors. Bin widths are set to €500 for total salaries and €100 for base salaries.

(a) Gender pay gap of total and base salary
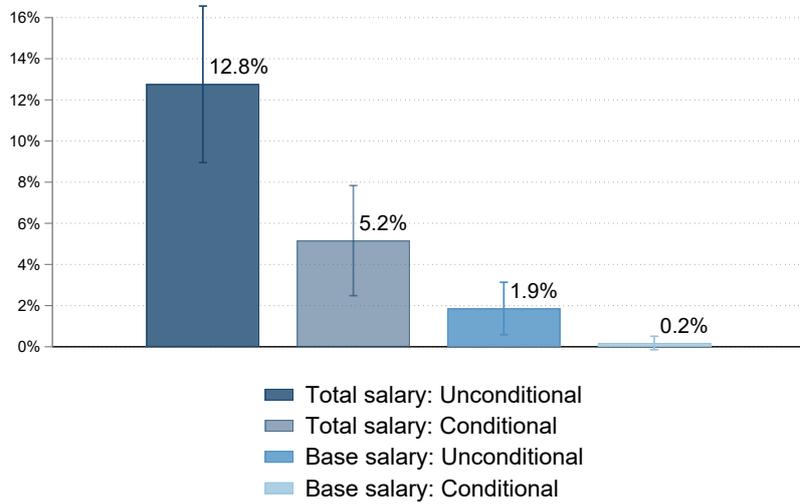
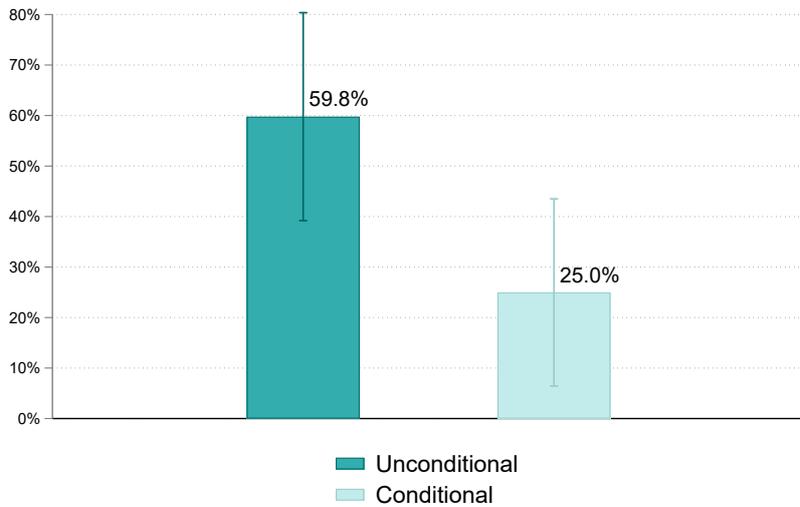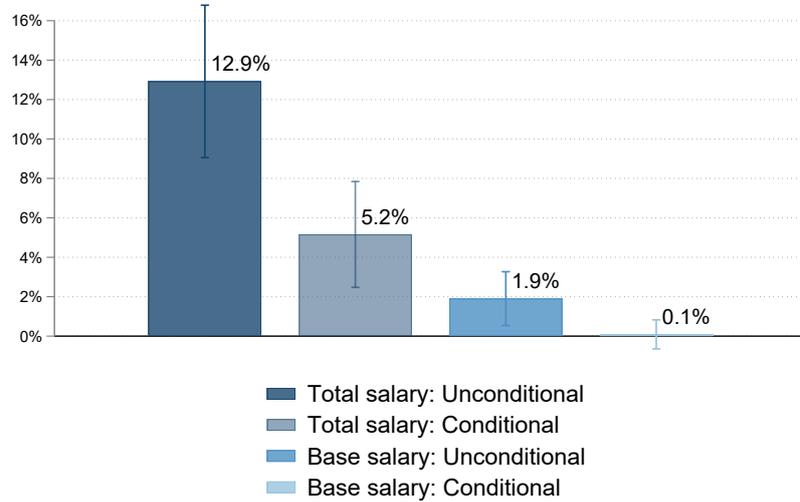(b) Gender pay gap of regular bonuses

Figure B.4: Robustness: Gender pay gap, winsorized sample at the 1% level

Notes: Bars show the estimated gender pay gap, measured as the percentage difference in favor of men based on the coefficient on the *Male* indicator in wage regressions. Estimates are based on a sample winsorized at the 1% level. Conditional estimates control for employment characteristics, third-party funding, performance, socio-demographics, family characteristics, and include faculty and year fixed effects. The displayed whiskers represent 95% confidence intervals. Panel (a) presents the gap in total and base monthly salary; Panel (b) focuses on regular bonus pay. Darker shades indicate unconditional estimates, lighter shades conditional ones. Blue tones are used for total and base salary, turquoise for bonus pay.

(a) Gender pay gap of Total and base salary

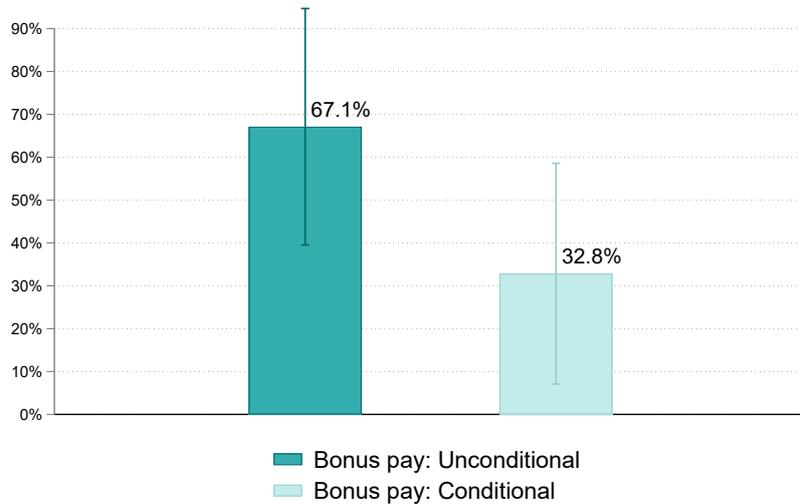(b) Gender pay gap of Regular bonuses

Figure B.5: Robustness: Gender pay gap, winsorized sample at the 5% level

Notes: Bars show the estimated gender pay gap, measured as the percentage difference in favor of men based on the coefficient on the *Male* indicator in wage regressions. Estimates are based on a sample winsorized at the 5% level. Conditional estimates control for employment characteristics, third-party funding, performance, socio-demographics, family characteristics, and include faculty and year fixed effects. The displayed whiskers represent 95% confidence intervals.
Panel (a) presents the gap in total and base monthly salary; panel (b) focuses on regular bonus pay. Darker shades indicate unconditional estimates, lighter shades conditional ones. Blue tones are used for total and base salary, turquoise for bonus pay.
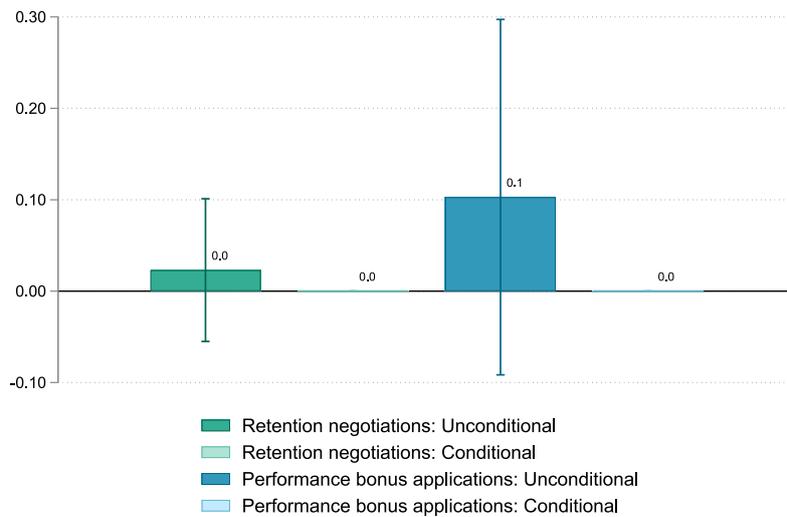
Figure B.6: Probabilities of entering retention negotiations and applying for performance bonuses by gender

Notes: This figure displays estimated coefficients for the effect of being male on the cumulative number of retention negotiations and applications for performance bonuses. Each outcome is shown in both unconditional and conditional specifications, where controls include employment characteristics, third-party funding, performance metrics, and socio-demographic variables. Faculty and year fixed effects are included in the conditional models. Bars represent point estimates with 95% confidence intervals. Estimates suggest no significant gender differences in the likelihood of engaging in retention negotiations or applying for bonuses.
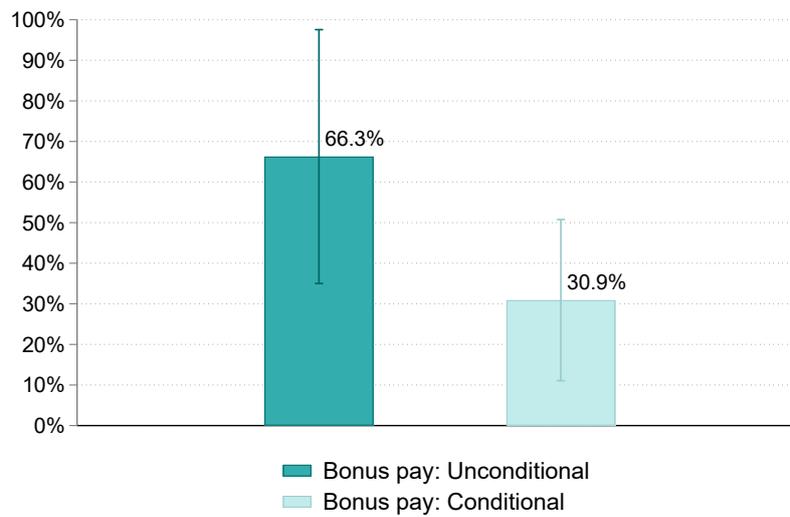
C   Additional robustness checks

Figure C.1: Gender pay gap in regular bonus pay using PPML

Notes: Bars show the estimated gender pay gap, measured as the percentage difference in favor of men, estimated using Poisson Pseudo-Maximum Likelihood (PPML) regression. The gap is calculated as $(\exp(\beta) - 1) \times 100$, where β is the coefficient on the male indicator. Conditional estimates control for employment characteristics, third-party funding, performance, socio-demographics, family characteristics, and include faculty and year fixed effects. The displayed whiskers represent 95% confidence intervals. Darker shades indicate unconditional estimates, and lighter shades indicate conditional ones. Turquoise is used for bonus pay.

Table C.1: First appointment at the University of Göttingen by gender

	ln(Total Salary)	
	(1)	(2)
Male	0.0503***	0.0611**
	(0.0136)	(0.0247)
First appointment	-0.0315**	-0.0240
	(0.0145)	(0.0219)
Male × first appointment		-0.0104
		(0.0286)
Observations	2134	2134
In percentages:		
Male	5.2	6.3
First appointment	-3.1	-2.4
Male × first appointment		-1.0
Faculty FE	✓	✓
Year FE	✓	✓

Notes: This table presents regression estimates of the association between gender and being first appointed as a professor at the University of Göttingen. Column (2) includes an interaction term between gender and first appointment. All specifications include faculty and year fixed effects. Robust standard errors are clustered at the individual level.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C.2: Effect of third-party funding on salaries by gender

	ln(Total Salary)	
	(1)	(2)
Male	0.0544***	0.0633***
	(0.0137)	(0.0173)
ln(average DFG/EU funding until t-1 + 1)	0.0010	0.0009
	(0.0013)	(0.0017)
ln(average other funding until t-1 + 1)	0.0022	0.0034**
	(0.0014)	(0.0017)
Male × ln(average DFG/EU funding until t-1 + 1)		0.0002
		(0.0019)
Male × ln(average other funding until t-1 + 1)		-0.0016
		(0.0021)
Observations	2134	2134
In percentages:		
Male	5.6	6.5
Male × ln(average DFG/EU funding until t-1 + 1)	0.1	0.1
Male × ln(average other funding until t-1 + 1)	0.2	0.3
ln(average DFG/EU funding until t-1 + 1)		0.0
ln(average other funding until t-1 + 1)		-0.2
Faculty FE	✓	✓
Year FE	✓	✓

Notes: This table presents regression estimates of the relationship between third-party funding and total monthly salary. Column (2) includes interaction terms between gender and both types of third-party funding (DFG/EU and other sources). All specifications include faculty and year fixed effects. Robust standard errors are clustered at the individual level.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C.3: Effect of the number of children by gender

	ln(Total Salary)	
	(1)	(2)
Male	0.0544***	0.0616***
	(0.0137)	(0.0197)
No. of children	0.0090	0.0136
	(0.0058)	(0.0091)
Male × no. of children		-0.0061
		(0.0106)
Observations	2134	2134
In percentages:		
Male	5.6	6.4
No. of children	0.9	1.4
Male × no. of children		-0.6
Faculty FE	✓	✓
Year FE	✓	✓

Notes: This table shows regression results on the association between the number of children and total monthly salary, disaggregated by gender. Specifications include faculty and year fixed effects. Robust standard errors are clustered at the individual level.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C.4: Wages over time and higher paid fields by gender

	ln(Total Salary)			
	(1)	(2)	(3)	(4)
Male	0.0544***	0.0706***		0.0626***
	(0.0137)	(0.0237)		(0.0167)
Years since appointment	0.0018	0.0043		0.0019
	(0.0019)	(0.0028)		(0.0019)
Male × years since appointment		-0.0020	-0.0020	
		(0.0028)	(0.0020)	
Male × higher paid field				-0.0463
				(0.0423)
Observations	2134	2134	2123	2134
In percentages:				
Male	5.6	7.3		6.5
Years since appointment	0.2	0.4		0.2
Male × years since appointment		-0.2	-0.2	
Male × higher paid field				-4.5
Faculty FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Notes: The table displays regression results examining wage development over time and the role of higher paid academic fields, disaggregated by gender. All specifications include fixed effects for faculty and year to control for structural and temporal heterogeneity. Robust standard errors are clustered at the individual level.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$.