The Gender Wage Gap in a Highly Regulated Market*

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Abstract

This paper investigates the gender wage gap in a highly regulated labor market, focusing on public school teachers in Mexico. Using a rich administrative dataset covering eight years and over 850,000 teachers, we analyze wage differences between men and women in a system with standardized pay structures. We estimate a 2% gender wage gap for equal work—based on comparisons of earnings in identical teaching positions within the same school. This gap is modest—roughly one-quarter the size of the gap observed in private schools, a much less regulated market. Gender differences in advancement through the horizontal promotion system explain about half of the gender wage gap for equal work, while the remaining portion is attributable to pay disparities among older teachers. We identify larger gaps—around 5%—in total earnings, driven by differences in multiple job holdings and better–paid secondary positions.

Keywords: Gender wage gap, teaching profession, pay standardization, regulated labor markets.

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1 Introduction

Despite the increasing implementation of policies aimed at reducing it, the gender wage gap remains en enduring feature of labor markets, reflecting persistent inequalities and potential discrimination (Blau and Kahn, 2017; Berniell et al., 2025). Part of this earnings difference is attributable to the higher concentration of men in better-paying occupations (e.g., STEM fields). However, despite progress toward gender parity, wage disparities persist within occupations—even for equal (observed) work.

Pay differentials between men and women endure-even in occupations perceived as more equitable. The teaching profession, where women constitute a significant majority of the workforce, presents a particularly compelling case. Despite their numerical dominance, female teachers often earn less than their male counterparts, raising critical questions about equity and fair compensation in education. Understanding the source of these disparities is essential not only to improve the economic standing of female teachers, but also to influence the career aspirations of future educators and promote broader gender equity in the labor market.

Recent literature highlights discrimination and gender differences in wage negotiation as key mechanisms driving pay inequality for equal work. Pay standardization—a feature commonly associated with the public sector—is often viewed as a potential solution. Yet, does the gender wage gap persist in highly regulated labor markets with standardized pay scales? And if so, why? This paper investigates the gender wage gap within the Mexican public education system—a context characterized by centralized wage bargaining, a standardized salary schedule, and strong union presence. In theory, such institutional features should minimize or eliminate gender-based pay differences for equal work.

For the analysis, we use a national administrative dataset that records the quarterly payroll of public education personnel in Mexico. The dataset comprises 9.91 million teacher observations at the job-quarter level, spanning from the second quarter of 2016 to the first quarter of 2024. A key strength of the data is its detailed reporting of teaching positions, which enables us to estimate the gender wage gap for equal work—that is, the average pay difference between male and female

teachers holding exactly the same position at the same school. To further enhance comparability, we restrict our analysis to generalist teachers in regular primary schools. The detailed occupational information in our data distinguishes our analysis from most existing studies on the gender wage gap, which rely on survey data where occupations are measured imprecisely. As a result, observed wage gaps conflate differences in pay for equal work with gender disparities in the types of positions held within broadly defined occupational categories.

We find that female teachers earn, on average, 0.018 log points less than their male counterparts for equal work (controlling for age). To better interpret the magnitude of this gap, we use the Mexican Labor Force Survey to compare the gender wage gap in the public and private education sectors. The private sector is characterized by low union density and the absence of specific labor regulations. We find that the gender wage gap in public primary schools is approximately one quarter of the gap observed in private primary schools (in terms of the hourly wage). Thus, pay standardization significantly reduces the gender wage gap in the public sector, although it does not eliminate it.

Leveraging the richness of the administrative data, we explore the sources of the remaining gap and find that roughly 50% of the gender wage gap for equal work is explained by the higher rate of progression among male teachers within the horizontal promotion system, which allows teachers to earn higher wages without changing positions. The rest of the gap is explained by pay differences among older teachers.

In Mexico, some teachers hold more than one teaching position in the public education system (12% of women and 17% of men in our sample). Examining the gender gap over the life cycle, we find evidence of widening disparities in labor supply and total earnings, consistent with recent findings on the impact of motherhood on gender inequality (Kleven et al., 2019; Berniell et al., 2023; Aguilar-Gomez et al., 2025).

Empirical findings on the gender wage gap among teachers are largely based on evidence from the United States. Ransom and Lambson (2011) find a persistent gap favoring male teachers in the state of Missouri even after controlling for qualifications and experience—the authors do not

observe specific teacher occupation—which they attribute to the higher propensity of men to move to higher paying districts. Quintero et al. (2024) use survey data and find that male teachers are more likely than female teachers to take on extra duties and be compensated for them, and that the gender pay gap widens in schools led by male principals.

The literature on unionization, collective bargaining, and gender wage disparities suggests that weaker union coverage is often associated with larger gender wage gaps (Blau and Kahn, 2003). While limited research directly examines wage inequality within education, existing evidence highlights the significant role of institutional arrangements. For instance, teachers' unions can reduce wage disparities, though their effectiveness varies by legal and policy environments (Han, 2020). In Wisconsin, for example, the adoption of flexible pay policies in 2011 widened the gender wage gap, particularly among younger teachers (Biasi and Sarsons, 2022).

This paper contributes to the literature in several ways. First, we examine whether a gender wage gap persists in a highly regulated labor market with a standardized pay scale—an environment where opportunities for wage discrimination are expected to be limited. Second, we leverage high-quality administrative data—including over 33 million observations on teacher compensation and specific positions—to provide a precise estimate of the gender wage gap for equal work. Third, we advance the understanding of the mechanisms driving the remaining wage differences. In particular, we provide novel evidence on the role of horizontal promotion systems—a policy increasingly adopted in the public sector, yet one for which empirical evidence remains scarce.

The reminder of the paper is organized as follows. Section 2 describes the institutional context, describing the personnel Policies in the Mexican Public Education System, including wage setting, promotion and hiring. Section 3 explains the databases we use. Section 4 presents the model of the gender wage gap and the estimations for the gender wage gap for equal work, as well as the estimation for total earnings. Section 5 analyzes the underlying mechanisms. Finally, section 6 presents the main conclusions of the paper.

2 Personnel Policies in the Mexican Public Education System

2.1 Wage Setting

In Mexico, state governments are responsible for the operation of primary schools, while the federal government regulates the system and finances a large share of the public education budget. There are approximately 87,000 public schools that offer primary education, serving over 11 million students and employing around 500,000 teachers. Private schools represent a small part of the system, around 10% of total enrollment (Secretaria de Educacion Publica, 2025). Primary education spans six years and employs generalist teachers, who are in charge of teaching one class, in addition to some specialist teachers (e.g., arts and physical education teachers).

The teaching career in the public education system is very regulated, and pay standardization is high. There is a national salary structure with a detailed list of all teaching positions. Schools are classified into two economic zones, and teachers who work in the more marginalized zone are paid a higher salary. A teacher's base salary is uniquely determined by their position, economic zone, and state. Beyond the basic wage, teachers receive payments for horizontal promotions and allowances. Horizontal promotions allow teachers to earn higher wages without changing position. Promotions to higher-paying categories are defined in national-level evaluations (see more below). Teachers can receive a variety of allowances, including tenure-based payments. The basic wage and the horizontal promotion payments follow a unique national scale, while allowances might be defined at the national or state level.

To increase their paychecks, teachers can take on multiple positions. This is more common in the lower secondary level, where part-time contracts for a given amount of teaching hours are standard, but it also occurs in the primary level—which is the one we study. The typical school day is short, 4.5 hours in primary education, and most schools operate a morning and an afternoon shift with separate staff. Hence, one teacher can hold a full-time position in the morning shift and

another in the afternoon shift.

There is a national teachers' union (SNTE, by its Spanish acronym) with mandatory affiliation for all basic education teachers in the public sector. SNTE has a strong voice in the education system and is an active player in the political and electoral systems (see the details in Estrada (2019)). Wage increases and changes in allowances and benefits are defined in a centralized bargaining process with the participation of SNTE, the National Ministries of Finance and Education (SEP by its Spanish acronym) and the State Secretariats of Education. The clout of SNTE is reflected in high teacher compensation, both for women and men, as we document using the Mexican Labor Force Survey (ENOE, by its Spanish acronym).

ENOE is a national representative survey with a rotating panel design, in which individuals are interviewed for five consecutive quarters. Leveraging the panel dimension of the survey, we estimate an equation that relates wages to sector of occupation, incorporating individual fixed effects (FE). These individual FE capture time-invariant heterogeneity in potential earnings among individuals, enabling us to identify the average wage premium for teaching in public schools compared to working in other sectors of the economy.

Our analysis focuses on the wages of university-educated workers in their main occupation—as having a university degree is a requirement for teaching in a public school. Table 1 presents the results. On average, public school teachers earn approximately 5% more per month than they would in private schools (Columns 1 and 3), and about 8% more when comparing hourly wages (Columns 2 and 4), regardless of gender. Compared to working in other sectors, Women earn similar monthly wages, while men earn around 3% less. However, when accounting for hours worked, both women and men earn higher wages in teaching—around 5% and 6% more, respectively—than they would in other salaried occupations in the economy.

The better pay of public school teachers in Mexico, compared to other university-educated workers, stands in contrast to the norm in much of Latin America (Elacqua et al., 2018).

Table 1: Wage Premium to Teaching in Public Primary Schools

	Women		Men	
	Monthly wage (ln)	Hourly wage (ln)	Monthly wage (ln)	Hourly wage (ln)
Public School	-	-	-	-
Private School	-0.054***	-0.080***	-0.045*	-0.077**
	(0.0147)	(0.0167)	(0.0268)	(0.0306)
Other occupations	-0.009	-0.050***	0.032***	-0.062***
	(0.0086)	(0.0101)	(0.0106)	(0.0128)
Obs	466,120		528,068	
Individuals	193,313		219,881	

Notes: Table reports the coefficients (and standard errors) for the sector categories of an individual fixed effects wage model (the baseline category is in the first row). The indicators for public and private school include teachers working in primary education. All regressions include as controls age, state FE, and time FE. The top and bottom 2 percentiles of the quarterly wage distribution are trimmed. Wages are expressed in constant pesos at the fourth quarter of 2019. The sample is composed of individuals aged 21 to 65 years old with a university degree who report positive wages and worked at least 20 hours in the reference week, and excludes teachers not working in primary schooling. Data come from ENOE from the first quarter of 2015 to the fourth quarter of 2019.

2.2 Promotion and Hiring

The Mexican public education system has gone through major changes in personnel policies during the last decades. From 1992 to 2014, a national teacher incentive program called Teaching Career (*Carrera Magisterial*, CM) managed horizontal promotions for teachers. To participate and progress in the program, teachers were required to complete professional development courses and undergo national evaluations. CM had six pay categories with steep salary increases. Teachers who achieved a pay category were not obligated to participate in further evaluations to maintain their level. However, promotion to the next level required a waiting period of two to four years. The evaluation criteria for teachers included seniority, highest degree earned, preparation (measured by teacher testing), participation in professional development courses, performance (as reported through supervisor and peer reviews), and student achievement (measured by student testing). Eligibility for CM required a minimum seniority of two to six years and a contract of unlimited duration. Almost all eligible teachers participated in the program (see program details in Santibanez et al. (2007)) In 2014, CM was replaced by another evaluation system as part of a

wider reform of the teaching profession that included hiring and vertical promotions.

Prior to 2008, state education ministries and SNTE were responsible for hiring and vertical promotions. In practice, the union held nearly complete control over these decisions, which were marked by a high degree of discretion and lack of transparency. In 2008, the *Alianza por la Calidad de la Educación* (ACE) reform introduced national competitive examinations for hiring teachers in public schools. However, the use of these examinations was not mandatory. Moreover, the reform did not address promotions or other dimensions of the teaching career (see details about the ACE reform in Estrada (2019)).

In 2013, the Mexican Congress passed a significant education reform that overhauled the teachers' civil service system. The newly established teacher civil service, named *Servicio Profesional Docente* (SPD), mandated the use of competitive examinations to hire and promote teachers in basic education, including horizontal promotions. These evaluations relied on standardized examinations to assess candidates for both hiring and promotion. Similarly to the earlier ACE reform, the SPD faced strong opposition from SNTE (see details of the SPD reform in Bedoya, de Hoyos, and Estrada (2023)).

In 2019, the SPD reform was repealed, due to a change in the political party in control of the Executive and the Legislative powers, and it was replaced with the *Sistema para la Carrera de las Maestras y los Maestros* (SICAMM). For both vertical and horizontal promotions, SICAMM relies on national evaluations that consider teachers' seniority, highest degree earned, preparation (measured through teacher testing), and participation in professional development courses. A similar process is used to determine the access of current teachers to additional positions. Table A.1 in the Appendix provides a summary of the three horizontal promotion systems that operated during our period of analysis.

3 Data

Our main source of data is the *Fondo de Aportaciones para la Nómina Educativa* (FONE by its Spanish acronym), which is a quarterly administrative dataset that records the payroll of public education personnel. The FONE databases are assembled by SEP using information from the State Education Ministries. FONE covers all public education personnel paid with federal funds, except those based in Mexico City. No official documents report the total number of teachers on the payrolls of state governments. However, according to Bedoya, de Hoyos, and Estrada (2023), they account for around 14 percent of teachers.

FONE includes information on quarterly pay, individual population ID, position, CM pay category, geographic zone, and school ID. A key strength for our analysis is the detailed reporting of teaching positions—there are 11 distinct codes for basic education teachers, including, for example, *"MAESTRO B DE PRIMARIA RURAL"*. This granularity allows us to more precisely estimate the gender wage gap for equal work. Our main analysis focuses on generalist teachers in regular primary schools. We exclude pre-school teachers due to the high gender imbalance among the former (94.32% women) and the lack of data on contracted hours for the latter. We also exclude specialist teachers (e.g., arts and physical education) within regular primary schools, as well as all teachers in alternative settings such as special education and bilingual or indigenous schools, given their occupational specificity and distinct gender composition. Since teachers may hold multiple positions, our analysis of total earnings includes all public teaching positions held by general primary school teachers.

We use data from the second quarter of 2016 to the first quarter of 2024 (32 quarters) and restrict our sample to teachers aged 22 to 65 years old with at least one generalist primary job. We eliminate observations with errors in the population ID (0.00006% of all) and those with a job category with less than 100 observations in a quarter (0.003% of the sample). Using the school ID, we merge FONE to the national catalog of education centers to obtain information about school characteristics. We also add data on the characteristics of the localities where schools are seated from the National Council for the Evaluation of Social Development Policy (CONEVAL

by its Spanish acronym). We are able to merge 99.9% of the observations to the catalogue of school census and 99% to the locality data. Furthermore, using the population ID, we merge this data to results from the 2015–2018 SPD examinations to identify teachers who obtained horizontal promotions in this incentive program.

Our main sample consists of 5,713,245 observations from 418,058 teachers. Table 2 presents summary statistics for the variables used in our analysis. As it is possible to observe in Panel A, the teaching profession in Mexico is predominantly female, with two thirds of observations corresponding to female teachers. Female teachers tend to earn lower wages and are, on average, younger than their male counterparts. Women enter earlier to the profession where as men enter older and retire later as well. Females are less likely to work in schools located in rural areas, in poorer localities, in regions farther from the state capital, and in the afternoon shift. Because the existence of allowances to attract teachers to marginalized schools, these differences could lead to lower compensation for women.

As Panel B reports, around 12% of female teachers and 21% of male teachers have another job in the public education system, which might be a another position as a generalist primary school teacher or other type of teaching position. Therefore, the gender gap in total earnings across all positions appears larger than the gap observed at the individual position level. Panel C in the same table reports summary characteristics for the other teaching jobs held by teachers in our main sample. These are mostly part-time jobs, and hence are associated with lower wages.

Table 2: Descriptive Statistics

	Female				Male			
	Mean	SD	P10	P90	Mean	SD	P10	P90
Generalist primary jobs								
Wage per Job	50,154	22,200	30,472	73,074	52,791	24,957	31,742	79,183
Age	39.63	10.04	27.00	54.00	42.08	10.41	28.00	56.00
CM low pay category	78.54	41.05	0.00	100.00	73.48	44.15	0.00	100.00
CM top pay category	0.90	9.44	0.00	0.00	1.36	11.57	0.00	0.00
High-pay economic zone	29.74	45.71	0.00	100.00	32.34	46.78	0.00	100.00
Rural (%)	27.35	44.57	0.00	100.00	35.78	47.94	0.00	100.00
Locality marginalization	-0.77	0.67	-1.34	0.10	-0.62	0.75	-1.32	0.33
Distance to state capital (kms.)	94.06	106.77	5.00	229.77	102.92	94.36	6.89	234.13
Homicide rate (per 1,000)	0.08	0.10	0.00	0.19	0.07	0.10	0.00	0.19
Morning Shift (%)	80.60	39.54	0.00	100.00	76.53	42.38	0.00	100.00
SPD high pay cateogry	0.94	9.66	0.00	0.00	0.65	8.04	0.00	0.00
Obs	6,353,432				3,384,088			
Teachers								
Total earnings	56,199	29,667	33,540	88,179	61,817	35,596	34,977	103,626
PR having other type of job	2.48	15.57	0.00	0.00	5.75	23.29	0.00	0.00
PR having other teaching job	12.01	32.51	0.00	100.00	17.11	37.66	0.00	100.00
Number of teaching jobs	1.13	0.40	1.00	2.00	1.20	0.52	1.00	2.00
Other type of jobs	0.03	0.16	0.00	0.00	0.06	0.24	0.00	0.00
Obs	5,713,245				2,927,660			
Other teaching jobs								
Wage per Job	12,673	15,486	2,004	27,523	12,753.96	15,529	2,262	28,230
Age	46.05	10.52	32.00	60.00	49.28	9.46	35.00	60.00
CM low pay category	87.59	32.97	0.00	100.00	80.53	39.59	0.00	100.00
CM top pay category	0.21	4.62	0.00	0.00	0.31	5.53	0.00	0.00
High-pay economic zone	31.26	46.36	0.00	100.00	34.85	47.65	0.00	100.00
Full-time (%)	2.22	14.72	0.00	0.00	1.81	13.33	0.00	0.00
Rural (%)	6.73	25.05	0.00	0.00	10.45	30.59	0.00	100.00
Locality marginalization	-0.93	0.58	-1.36	-0.30	-0.81	0.66	-1.35	-0.08
Distance to state capital (kms.)	91.62	101.49	3.41	262.94	96.02	96.23	4.07	237.77
Homicide rate (per 1,000)	0.08	0.10	0.01	0.20	0.08	0.10	0.00	0.21
Morning Shift (%)	63.57	48.12	0.00	100.00	69.78	45.92	0.00	100.00
SPD high pay cateogry	0.12	3.50	0.00	0.00	0.02	1.54	0.00	0.00
Obs	76,687				89,078			

4 Empirical Analysis

4.1 The Gender Wage Gap for Equal Work

We begin our analysis by estimating the gender wage gap for equal work using the following specification:

$$ln(wage_{ist}) = \beta_0 + \beta_1 Female_i + \Phi\, X_{ist} + \delta_s + \gamma_t + U_{ist} \tag{1}$$

$wage_{ist}$ is the quarterly pay of teacher i working in school s in quarter t and $Female_i$ is a dummy for whether teacher i is female (0 if male). X_{ist} is a vector of covariates that includes age, δ_s are school fixed effects, and γ_t are quarter fixed effects. U_{ist} is an error term. β_1 is the parameter of interest and captures the average pay difference between female and male teachers conditional on the control variables. Notably, as we restrict our sample to primary school teachers with the same specific position working in the same school, we are able to study gender differences in pay for equal work. We report standard errors clustered at the individual level. In this specification, a teacher will appear in a given quarter as many times as jobs she holds. We later study outcomes at the level of the individual–quarter.

Table 3 reports the results from the estimation of Equation 1. Consistent with the summary statistics in the previous table, female teachers earn on average 0.05 log points less than their male counterparts (Column 1). Controlling for quarter fixed effects produces a similar estimate (of 0.054 log points, Column 2). This gap decreases to 0.23 log points once we control for age (Column 3), as female teachers tend to be younger than males, and wages increase with age.

The level of development and location of a locality, as well as the composition of the student body, are important determinants of teachers' preferences over schools (Bobba et al., 2021), and the former factors are reflected in their compensation (see Section 2). To obtain a more precise estimate of the gender wage gap for equal work, we exploit the richness of our dataset by including school fixed effects in Equation 1. This adjustment slightly reduces the estimated gap to 0.023 log

points (Column 4), reflecting the fact that women are somewhat less likely to work in disadvantaged localities and thus receive the associated compensation premiums less frequently.

Table 3: The Gender Wage Gap for Equal Work

	(1)	(2)	(3)	(4)
Female	-0.050***	-0.054***	-0.023***	-0.018***
	(0.001)	(0.001)	(0.001)	(0.001)
Obs.	9,736,654	9,736,654	9,736,654	9,736,654
Quarter FE		X	X	X
Age FE			X	X
School FE				X

Notes: The dataset for this estimation includes information on Mexican teachers aged 22 to 65 from the second quarter of 2016 to the first quarter of 2024, excluding the State of Ciudad de Mexico. Controls include quarter FE, teacher's age FE and school FE. Observations with ages below 22 (standard bachelor's in education age) and where the national identifier (CURP) was incorrect, leading to misidentification of sex or negative age, were excluded. Additionally, observations with negative values were excluded for estimations with logarithmic dependent variables. Clustered at the teacher level are reported in parentheses. Statistical significance is indicated by p-values: * for p <0.1, ** for p <0.05, and *** for p <0.01.

To better contextualize the magnitude of the presented results, we use data from the ENOE to compare the gender wage gap in public schools with the corresponding gap in private schools. Salaries in the latter market are neither subject to specific regulations nor influenced by a teachers' union. It is important to note that the estimates obtained using ENOE are not directly comparable to those based on FONE, due to the sampling and reporting error associated with survey date, the less precise identification of teaching positions (we can identify if individuals work as teachers in primary schools, but not their specific occupation) and the longer period if time included to increase sample size. However, these issues should not be a problem, as we can compare the gender wage gap in public and private schools estimated in both cases using ENOE.

Table 4 presents the results. In public schools, the gender wage gap is -0.040 log points for monthly wages (Column 1) and -0.036 log points for hourly wages (Column 2). In contrast, the gender wage gap is substantially larger in private schools: -0.096 log points for monthly wages and -0.144 log points for hourly wages. These findings suggest that while pay standardization

in the public education system does not fully eliminate the gender wage gap for equal work, it significantly reduces it compared to the private sector, where the gap is approximately 150% larger for hourly wages (the best comparison to our main estimate) and nearly 400% larger for monthly wages.

Table 4: The Gender Wage Gap in Public and Private Schools: Labor Force Survey

	Public School		Private School	
	Monthly wage (ln)	Hourly wage (ln)	Monthly wage (ln)	Hourly wage (ln)
Female	-0.040***	-0.036***	-0.096***	-0.144***
	(0.0054)	(0.0059)	(0.0224)	(0.0225)
Obs	26,034		4,087	
R^2	0.14	0.13	0.24	0.24

Notes: Table reports the coefficients (and standard errors) for the gender wage gap of regressions including as controls age, state FE, and time FE. The top and bottom 2 percentiles of the quarterly wage distribution are trimmed. Wages are expressed in constant pesos at the fourth quarter of 2019. The sample consists of primary school teachers aged 21 to 65 years who hold a university degree, report positive wages, and worked at least 20 hours during the reference week. Following Estrada, Goyheix, and Lombardi (2024), only individuals who self-responded to the employment questionnaire are included in the sample. The data come from the ENOE and cover the period from the first quarter of 2015 to the fourth quarter of 2019.

4.2 The Gender Wage Gap for Total Earnings

As reported in Table 2, male teachers are more likely than female teachers to hold a second teaching job within the public education system (by around 5 percentage points, and 3.4 percentage points if one controls for age, see Panel A in Table 5), which could contribute to a larger gender gap in total earnings. To investigate this, Panel B in Table 5 presents estimates of the gender gap in total earnings, using one observation per teacher per quarter and incorporating all payments received (for those teachers with more than one job). The controls included in the regressions correspond to their main job (the one with the highest earnings) if they have more than one job, ensuring that any observed earnings gap is driven by income from secondary jobs.

The results indicate a gender wage gap of 0.082 log points based on the raw mean difference

(Column 1), and 0.047 log points when controlling for quarter and age (Column 3). The gap remains unchanged after introducing school fixed effects. This estimate contrasts with the smaller gap obtained when analyzing each job separately—0.018 log points (Column 5 in Table 3).

Table 5: The Gender Wage Gap for Total Earnings

	(1)	(2)	(3)	(4)
Panel A: More than 1 job				
Female	-0.051***	-0.050***	-0.034***	-0.041***
	(0.001)	(0.001)	(0.001)	(0.001)
Obs.	8,640,195	8,640,195	8,640,195	8,640,195
Panel B: Total earnings				
Female	-0.079***	-0.082***	-0.047***	-0.047***
	(0.001)	(0.001)	(0.001)	(0.001)
Obs.	8,639,980	8,639,980	8,639,980	8,639,980
Quarter FE		X	X	X
Age FE			X	X
School FE				X

Notes: The dataset for this estimation includes information on Mexican teachers aged 22 to 65 from the second quarter of 2016 to the first quarter of 2024, excluding the State of Ciudad de Mexico. Controls include quarter FE, teacher's age FE and school FE. Observations with ages below 22 (standard bachelor's in education age) and where the national identifier (CURP) was incorrect, leading to misidentification of sex or negative age, were excluded. Additionally, observations with negative values were excluded for estimations with logarithmic dependent variables. Clustered at the teacher level are reported in parentheses. Statistical significance is indicated by p-values: * for p <0.1, ** for p <0.05, and *** for p <0.01.

Besides, being more likely to hold more than one teaching job, male teachers earn on average a higher salary in their second job, as it is possible to observe in Table 6, which report the gender gap in the wage differential between the first and second teaching positions (for those with at least to jobs). This wage differential is .208 log points in the raw means (Column 1) 0.161 log points controlling for quarter FE, age, and school FE. Table A.2 in the Appendix presented disaggregated results by the number of jobs held by teachers.

Summing up, men are more likely than female to hold more than one teaching job and earning more on their second job, which leads to a larger gender gap in total earnings than in wages per job.

Table 6: Gender Gap in the Wage Differential Between First and Second Teaching Positions

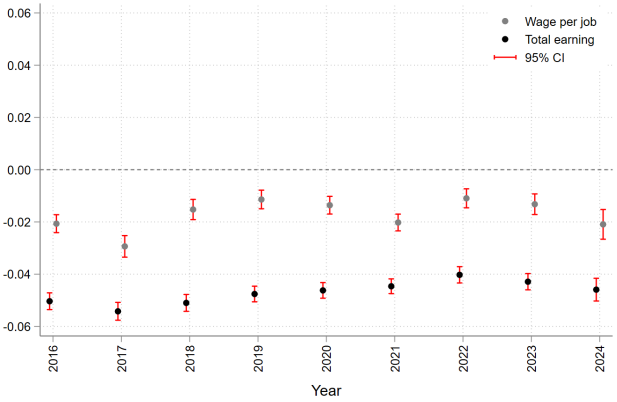
	(1)	(2)	(3)	(4)
Female	0.208***	0.204***	0.160***	0.161***
	(0.018)	(0.018)	(0.018)	(0.015)
Obs.	1,119,968	1,119,968	1,119,968	1,119,968
Quarter FE		X	X	X
Age			X	X
School FE				X

Notes: The dataset for this estimation includes information on Mexican teachers aged 22 to 65 from the second quarter of 2016 to the first quarter of 2024, excluding the State of Ciudad de Mexico. Controls include quarter FE, teacher's age FE, school FE. Columns with ♠ are restricted to before 2023Q2. Observations with ages below 22 (standard bachelor's in education age) and where the national identifier (CURP) was incorrect, leading to misidentification of sex or negative age, were excluded. Additionally, observations with negative values were excluded for estimations with logarithmic dependent variables. Clustered at the teacher level are reported in parentheses. Statistical significance is indicated by p-values: * for p <0.1, ** for p <0.05, and *** for p <0.01.

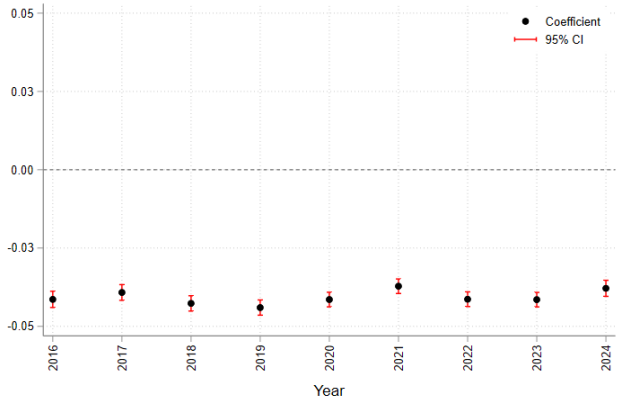
Panels A and B in Figure 7 show that the estimates for the gender gap in wage per job, total earnings, and number of jobs are stable across the years included in the study.

Table 7: Gender Gaps by Year

Panel A: Wage per Job and Total Earnings



Panel B: Probability of Holding More Than One Job



5 Mechanisms

5.1 The Role of Horizontal Promotion Systems

We hypothesize that the estimated gap for equal work may be explained by gender differences in horizontal promotions (see Section 2.2). To investigate this, we first introduce a vector of dummy variables for CM pay categories in our specification—see Table 8. Although the CM system was discontinued in 2014, its salary benefits remained in place, and a significant proportion of teachers in our sample (78% of women) managed to reach at least the first CM pay category. After controlling for CM pay category, the magnitude of the gender wage gap decreases to 0.008 log points (Column 2).

Next, we focus on the SPD horizontal promotion system, which ceased operations in 2021. However, similar to the CM system, its salary benefits remained in place. Controlling for the SPD pay category has little effect on the estimated gap (Column 3). While we do not observe the pay categories associated with the current horizontal promotion system (SICAMM), we can assess whether this system helps explain the observed gap by restricting the estimation to the period before its implementation. The results are similar—the estimated gap is 0.012 log points (Column 4).

These results indicate that the higher rate of progression among male teachers within the horizontal promotion system accounts for approximately 1 log point or around 50% of their pay advantage relative to female teachers in the same job position and school.

Table 8: The Gender Wage Gap for Equal Work: The Role of Horizontal Promotions

	(1)	(2)	(3)	(4♠)
Female	-0.018***	-0.008***	-0.009***	-0.012***
	(0.001)	(0.001)	(0.001)	(0.001)
Obs.	9,736,654	9,736,654	9,736,654	7,610,278
Quarter FE	X	X	X	X
Age FE	X	X	X	X
School FE	X	X	X	X
CM. Pay category		X	X	X
SPD. High pay category			X	X

Notes: The dataset for this estimation includes information on Mexican teachers aged 22 to 65 from the second quarter of 2016 to the first quarter of 2024, excluding the State of Ciudad de Mexico. Controls include quarter FE, teacher's age FE, school FE, homicide rate, municipality marginalisation index, CM ("Carrera Magisterial") category and SPD recognition bonus. The category level is a national categorisation from the "National Teaching Career Program," designed to incentivise horizontal earning increases among Mexican teachers, with categories progressing as follows: 07, 7A, 7B, 7C, 7D, and 7E. The SPD recognition bonus is a salary increase given to teachers with the best results in the teaching validation tests. Columns with ♠ are restricted to before 2023Q2. Observations with ages below 22 (standard bachelor's in education age) and where the national identifier (CURP) was incorrect, leading to misidentification of sex or negative age, were excluded. Additionally, observations with negative values were excluded for estimations with logarithmic dependent variables. Clustered at the teacher level are reported in parentheses. Statistical significance is indicated by p-values: * for p <0.1, ** for p <0.05, and *** for p <0.01.

5.2 The Gender Wage Gap Across the Life Cycle

A large body of research shows that the gender wage gap varies over the life cycle, largely due to motherhood and differences in time devoted to childcare. We now examine whether this pattern holds in the teaching profession.

As shown in Panel A of Figure 9, the wage gap per job is either slightly positive (up to 0.097 log points) or close to zero between ages 22 and 44. At ages 40-44, the gap turns negative (-0.01 log points) and declines further to -0.078 and -0.066 log points at ages 50-54 and 55-59, respectively. These patterns reveal substantial heterogeneity by age that underlies the average results reported in Panel A of Table 3. Women tend to earn similar or slightly higher wages than men for equivalent work until around age 45, but face substantially lower wages thereafter, particularly after age 50. Controlling for horizontal promotions produces a similar picture, although the wage gaps are

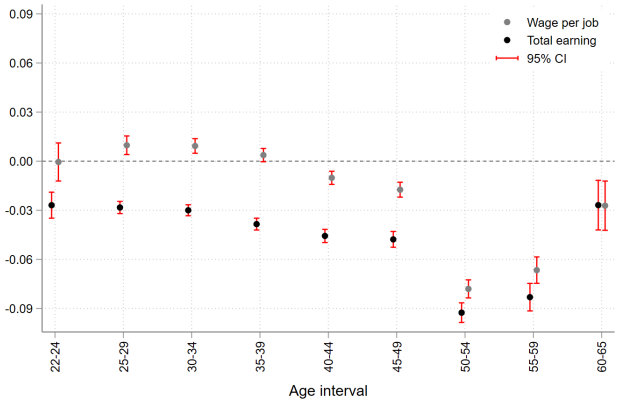
slightly attenuated—see Figure B.4 in the Appendix.

Panel A also reports the gender gap in total earnings. In this case, the gap is already negative starting at ages 22-25 (-0.028 log points) and widens gradually up to ages 40-44. It then falls sharply at ages 45-49 (-0.093 log points), before narrowing again and becoming statistically indistinguishable from zero at ages 60-64.

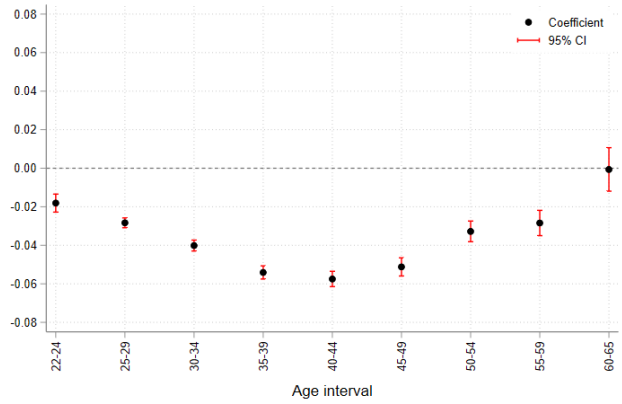
Panel B of the same figure shows the gender gap in the probability of having more than one job, which follows a clear U-shaped pattern. The gap is around -1.81 percentage points at ages 22-24, widens steadily to about -5.74 percentage points at ages 40-44, and then narrows thereafter, becoming statistically indistinguishable from zero at ages 60-64.

Table 9: Gender Gaps by Age

Panel A: Wage per Job and Total Earnings

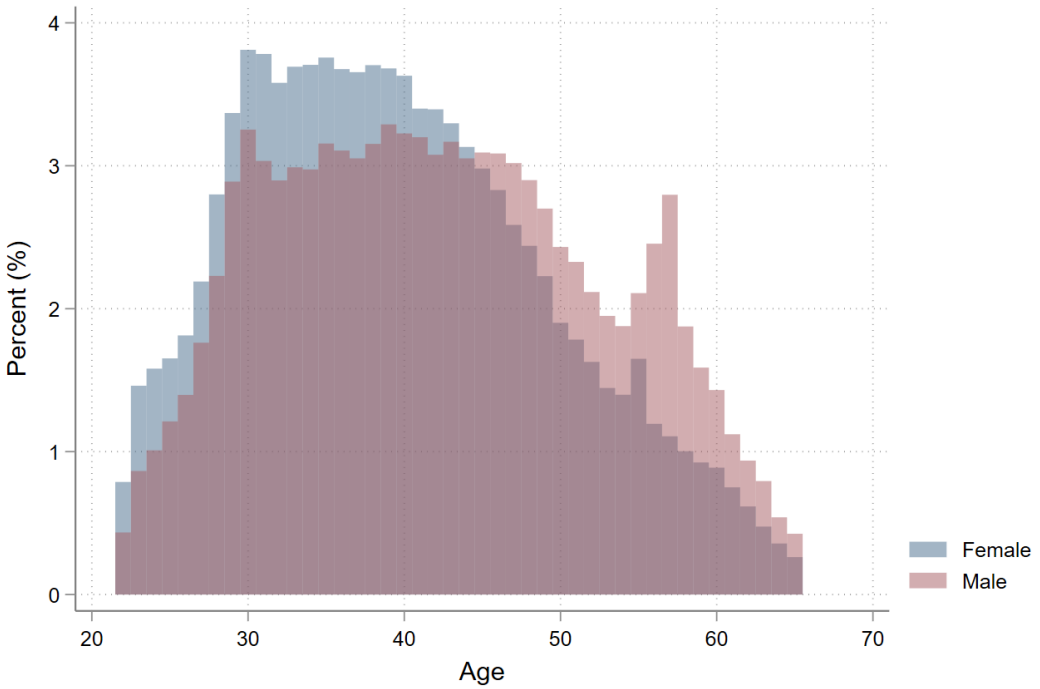


Panel B: Probability of Holding More Than One Job



The life-cycle patterns in total earnings and number of jobs held, as shown in Figure 9, are consistent with existing evidence on the effects of motherhood on women's labor supply and the gender wage gap. However, these patterns may also reflect gender differences in the timing of entry into and exit from the teaching profession. As documented in Table 2, women tend to enter and leave teaching at younger ages than men. This is illustrated more clearly in Figure 10, which shows the age distribution of teachers by gender.

Table 10: Age Distribution by Gender



Notes:

6 Conclusions

This paper investigates the gender wage gap in Mexico's public education system -a uniquely regulated labor market characterized by centralized wage bargaining, standardized pay scales, and strong union oversight. Drawing on rich administrative data from the FONE payroll system, covering over eight years and more than 850,000 teachers, we provide a detailed examination of gender-based pay disparities in one of Latin America's largest public education systems.

Our analysis reveals a modest wage penalty for women in equivalent job positions—compared to the prive school market. However, a larger gender gap in total earnings remains. This disparity is largely driven by the higher likelihood of male teachers holding multiple positions and for their higher earnings in the secondary positions.

These findings contribute to a growing literature on the role of institutional structures in shaping gender pay outcomes. In particular, our results highlight the strengths of pay standardization in reducing wage inequality for equal work, but also its limitations in addressing broader gender disparities in career progression and income accumulation. While standardization may narrow base pay gaps, it does not fully eliminate gender differences in access to supplementary roles or career advancement opportunities.

The Mexican case offers valuable insights for other countries with highly regulated public sectors. Despite formal equality in wage structures, structural and behavioral factors -such as differential promotion rates, assignment to multiple roles, and possibly gendered patterns in job application behavior- continue to generate earnings gaps. This suggests that achieving substantive gender equality requires complementary policies aimed at promoting equitable access to advancement opportunities, increasing transparency in recruitment and promotions, and addressing potential biases in task assignment and workload distribution.

Future research could explore the dynamics behind promotion and role allocation decisions, including the potential impact of subjective performance evaluations, informal networks, or mobility constraints faced by women. Moreover, examining how recent policy changes -such as the transition from Servicio Profesional Docente to Sistema para la Carrera de las Maestras y los Maestros-

affect these patterns would offer additional insights into the effectiveness of those policies in the gender wage gap.

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A Additional Tables

Table A.1: Horizontal Promotion Systems

Characteristics	Carrera Magisterial (CM)	Servicio Profesional Docente (SPD)	Sistema para la Carrera de las Maestras y los Maestros (SICAMM)
Period	1992–2013	2013–2019	2019–Current
Participation	Optional	Mandatory	Optional
Eligibility*	Seniority of 2 to 6 years. Permanent contract with some exceptions for temporary contracts.	Seniority of 2 years. Permanent contract.	Seniority of 2 years in current position. Permanent contract.
Evaluation Criteria (and method)	Seniority, highest degree earned, preparation (teacher testing), participation in professional development activities, performance (school principal and peer reviews), and student achievement (student testing).	Preparation (teacher testing), participation in professional development activities, and evidence of good teaching practices (teaching portfolio).	Seniority, highest degree earned, preparation (teacher testing), and participation in professional development activities.
Maintenance Requirements	Eligibility for next pay category required a waiting pariod. Maintanence of current category required a good performance in an evaluation held within the waiting period.	Teachers were evaluated every four years, determining access to next pay category, maintenance, or loss of current category.**	None. Eligibility for next pay category required a four-year waiting pariod.
No. of Pay Categories	6.***	7.	8.
Compensation	36% to 168% of basic salary.	35% to 180% of basic salary (41% to 222% in marginalized areas).	35% to 205% of basic salary (41% to 247% in marginalized areas).

Notes: *Teachers with temporary contracts were excluded from participation in any horizontal promotion system. ** New teachers were evaluated after their first year of service. *** 5 before 19XX.

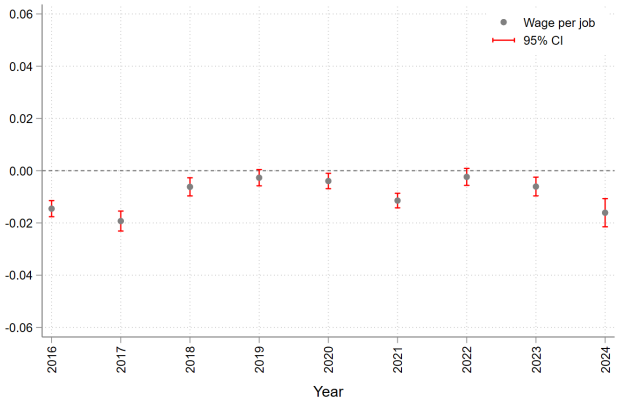
Table A.2: The Gender Wager Gap by the Number of Jobs

	(1)	(2)	(3)	(4)	(5)	(6)	(7♠)
Panel A: Just 1 job							
Female	-0.040***	-0.044***	-0.023***	-0.016***	-0.009***	-0.009***	-0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Obs.	7,508,862	7,508,862	7,508,862	7,508,862	7,508,862	7,508,862	5,788,144
Panel B: More than 1 job							
All jobs							
Female	-0.070***	-0.071***	-0.022***	-0.091***	-0.076***	-0.077***	-0.072***
	(0.007)	(0.007)	(0.007)	(0.003)	(0.003)	(0.003)	(0.003)
Obs.	2,389,319	2,389,319	2,389,319	2,389,319	2,389,319	2,389,319	1,950,334
First job							
Female	-0.053***	-0.056***	-0.034***	-0.039***	-0.028***	-0.028***	-0.029***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
Obs.	1,126,207	1,126,207	1,126,207	1,126,207	1,126,207	1,126,207	920,052
Second job							
Female	-0.173***	-0.172***	-0.106***	-0.146***	-0.132***	-0.133***	-0.122***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Obs.	1,125,448	1,125,448	1,125,448	1,125,448	1,125,448	1,125,448	919,277
Quarter FE		X	X	X	X	X	X
Age			X	X	X	X	X
School FE				X	X	X	X
CM. Pay category					X	X	X
SPD. High pay category						X	X

B Additional Figures

Table B.3: The Gender Wage Gap for Equal Work by Year: Controlling for Horizontal Promotions

Panel A: Wage per Job and Total Earnings



Panel B: Probability of Holding More Than One Job

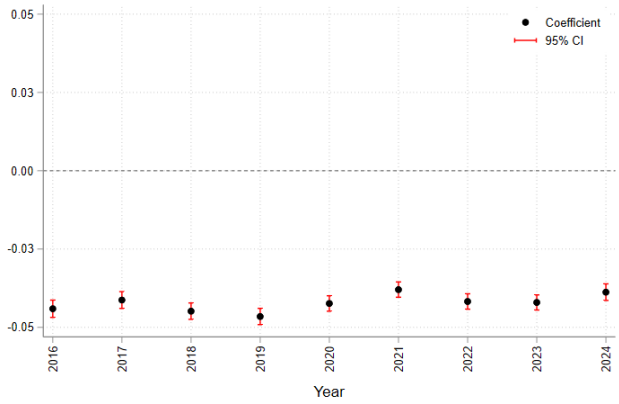
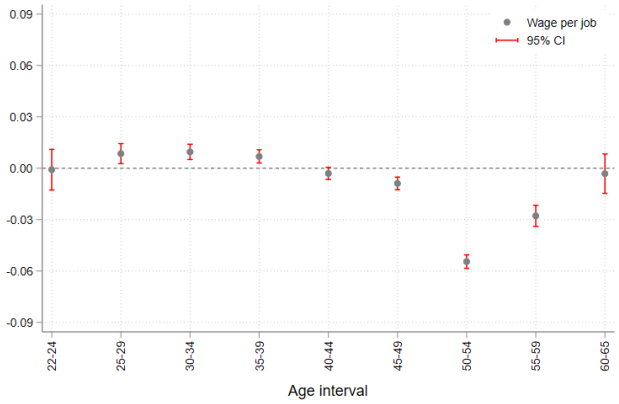


Table B.4: The Gender Wage Gap for Equal Work by Age: Controlling for Horizontal Promotions

Panel A: Wage per Job and Total Earnings



Panel B: Probability of Holding More Than One Job