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The wage effects of employers' associations: A case study of the private schools sector*

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Abstract

Does employers' association (EA) membership affect the wages paid by firms? Such effects could follow from several channels, including increased productivity, different management practices, or employer collusion promoted by EA affiliation. We test these hypotheses drawing on detailed matched employer-employee panel data, including time-varying EA affiliation and worker mobility across firms. We consider the case of private schools in Portugal, 2010-2020, and its EA, and develop a methodology to delimit the sector's scope. We find that, even when controlling extensively for worker characteristics, including worker fixed effects, EA firms pay significantly higher wages. However, when controlling for firm fixed effects, these wage differences are significantly reduced or disappear. Our evidence indicates that the EA wage premium can be largely explained by the selection of high-wage firms (but not high-wage workers) into EA membership.

Keywords: Employers organisations, Worker mobility, Social dialogue.

JEL Codes: J53, J62, L40.

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1 Introduction

Employers' associations (EAs) are a key actor in social dialogue (OECD (2019)). Indeed, EAs play critical roles in many countries in areas such as collective bargaining, training, lobbying and different forms of employer coordination. However, the roles and effects of EAs remain poorly understood in both research and policy. This paper expands the evidence base in this area by researching the effects of EAs in shaping the wage distribution. We ask if EAs prompt affiliated firms towards different wage levels compared to comparable but not affiliated firms.

Such positive or negative wage effects from EA affiliation could follow from increased productivity, different management practices, or employer collusion - all of which can be promoted by EAs. Collective bargaining - and the resulting close interaction with trade unions - could be an important pathway in such mechanisms. EAs may also promote employer monopsony in the labour market (Bassanini et al. (2022)), for instance by restricting hiring or poaching across affiliated firms (Martins & Thomas (2022)). In this case, namely if negative collusion effects are stronger than positive productivity effects, EAs could have overall negative wage effects from a counterfactual perspective.

We test these hypotheses about EA wage effects by exploiting a detailed matched employer-employee panel data. Such rich data is critical in order to disentangle worker from firm effects through worker mobility across firms over time and zoom in on any EA affiliation wage effects. However, the particular exercise that we conduct here is only possible given our complementary access to comprehensive and time-varying firms' EA affiliation data. This data covers the case of private schools in Portugal, over a long period (2010-2020), allowing for considerable worker mobility and affiliation changes.

Portugal is an interesting case in our context also given the prominence in the country of EA-led sectoral collective bargaining - in contrast to countries where most collective bargaining is conducted at the firm level, without EA intermediation. In this context, we propose a methodology to delimit the sector's scope, as we need to establish the relevant subset of non-affiliated firms that can serve as a comparison group and we show that simple measurements based on industry classification are not adequate. Given the nature of the industry in our case, our methodology is based on the employment by firms of teachers. Other industry-definition approaches will be required in studies of different sectors. In general, our methodology highlights an important practical challenge in the measurement of individual

EA representativeness, in contrast to the case of simpler, country-level EA density indicators.

As to our main results, we find initially that EA firms pay significantly - up to 8% - higher wages than their non-affiliated counterparts. This is the case even when controlling extensively for worker characteristics, including worker fixed effects. However, when considering firm heterogeneity, these wage differences virtually disappear. Our evidence therefore indicates that the large unconditional EA wage premium can be largely explained by the selection of high-wage firms into EA membership. In contrast, the potential selection of high-wage workers is not a major driver of the large unconditional EA wage premium.

In other words, our case study evidence does not support the view that EAs make affiliated firms more productive or adopt better management practices to the extent that that may lead to significantly higher wages. Even when considering exclusively the case of teachers, the key occupation of the industry - which receives greater attention in collective bargaining -, the EA affiliation wage premium is never greater than 2%. An alternative interpretation is that any positive productivity and wage effects following from EAs are canceled by potential employer coordination effects and their increased employer labour market power.

We believe this is the first paper that examines empirically, from a causal perspective, the wage effects of EAs. Moreover, our paper contributes to a number of literatures. First, the recent research on labour market monopsony or market power, including Azar, Marinescu & Steinbaum (2020), Azar, Marinescu, Steinbaum & Taska (2020), Krueger & Ashenfelter (2022) and Bassanini et al. (2022). These papers find evidence of local labour markets characterised by high levels of employer concentration and that such concentration is associated with lower wages. Concentration is measured using the number of employers in a given local labour market (a combination of a region, such as a commuting zone, and an occupation). This approach disregards the potential coordination between these employers, leading to an effective number of prospective employers that may be lower than what is originally observed. We also mention the literature on inter-firm worker mobility. For instance, Buchinsky et al. (2010) consider workers' mobility decisions to study returns to tenure. Hijzen et al. (2013) draw on workers moving between firms to estimate wage premiums of foreign firms. In general, worker mobility has been used extensively to decompose firm and worker heterogeneity and study the wage returns or premiums of specific firm or worker attributes. There is also an important literature on collective bargaining laws and teacher pay, union membership, and

student achievement, including Marianno & Strunk (2018), Willen (2021), Biasi & Sarsons (2021), and Han (n.d.). Finally, we also contribute to the emerging literature on the micro analysis of collective agreements and their effects, including Card & Cardoso (2022), Gautier et al. (2022), and Adamopoulou & Villanueva (2022).

The remaining of the paper is as follows: the next section highlights the key characteristics and institutions of private schools in Portugal; Section 3 presents the background to our empirical analysis (data sets, sector definition approach, and descriptive statistics); Section 4 presents our main results, considering either the full sample of all employees or the subset of teachers only. Finally, section 5 concludes and presents ideas for further research.

2 Institutions

This section offers a short institutional background on the private schools sector in Portugal. Our focus here is exclusively on basic and secondary education, excluding kindergarten and higher education which are not covered by the EA under analysis in this paper. Basic and secondary education in the country are delivered both by private and public schools. The former account for approximately 15% of all 1.2 million basic and secondary students in the country (increasing to 21% of all 1.6 million pre-school, basic and secondary students). While public (i.e., State-run) schools are free for students and their families as they are paid from general taxation, private schools are funded by fees paid by students and their families. In a small number of cases (and only up to 2016), private schools may be partly subsidised by the State (Ministry or Department of Education), from general taxation, leading to lower or no fees charged to students and their families.

Given the alternative of free public schools, the fact that a significant percentage of families prefer private schools can be explained by a number of issues. These include perceptions of higher quality of the teaching provided in private schools (possibly following better management Bryson & Green (2018)), as indicated in national rankings of student performance in exams. Additional factors include shorter commuting with respect to the best alternative public school and perceptions of better student peers. Some private secondary schools are also believed to inflate their grades, which may influence positively a student's chances in higher education placement.

As to the teachers (and any other employees) of private schools, their pay and other work-

ing conditions are determined as any other occupation in the private sector. Specifically, teachers' pay is subject to the private-sector Labour Code and any applicable collective bargaining agreement (see Appendix 5 for additional background on labour market institutions). An important element concerns the large percentage of teachers that are employed by the Ministry of Education in public-sector labour contracts. The latter contracts can influence teachers' wage determination in the private sector. Moreover, a small number of teachers in public schools may have part-time contracts with private schools.

The key institutional player in the private schools sector is its single employers' association and the EA studied in this paper. This EA is the 'Association of private education establishments', or AEEP in its Portuguese acronym. AEEP was founded in 1974 and has been responsible for the representation of the sector since then. A key activity conducted by AEEP is collective bargaining, which is typically established with two key trade unions (FENPROF and FNE). Collective bargaining agreements are routinely administratively extended to non-affiliated firms, except in the case of schools that have their own firm-level agreements or operate in the context of the social sector (which has a different collective agreement). Since 2015, AEEP has been bargaining only with the FNE trade union, in a 'defensive' agreement that sought to protect jobs in exchange of wage moderation. Since 2017, AEEP is the leading member of the Education and Training Confederation, which is now responsible for collective bargaining in the sector. Interestingly, there is limited union membership in private schools. Indeed, the two trade unions that have bargained with AEEP are much more active in the public sector.¹

Besides collective bargaining, AEEP conducts a number of additional activities. All or many of these activities can influence the productivity of these firms and have an effect upon the wages paid to their workers. These activities include: the provision of information to members; national and international representation of the sector; promotion of cooperation between schools (including public schools); legal support; management support; management and pedagogical training; and schools' sport projects. These activities fit with the categories proposed in Martins (2020) regarding the main contributions of EAs.

¹We thank the board of AEEP for their availability to discuss these issues and preliminary findings of this paper over five interviews and meetings throughout 2021.

3 Empirical analysis

3.1 Data

Our empirical study is based originally on the population of all private-sector firms and establishments in Portugal and all their individual employees. These data are made available in Personnel Records ('Quadros de Pessoal', QP), a compulsory survey of all firms with at least one employee, conducted by the Ministry of Employment.

This census also includes a number of additional variables about firms, establishments and employers, such as identifiers, geographical location, industry (five-digit code), sales, employee headcount, and individual wages of each employee. This data set, QP, has been used extensively in industrial relations and labour economics research, including, more recently, Martins (2021), Card & Cardoso (2022) and Bassanini et al. (2022).

In our study, we consider the period 2010-2020. For each one of these years, we have information provided by AEEP on its annual membership. This is a time-varying list, allowing us to consider firms that leave and join the EA. Using common firm identifiers, we were able to merge the two data sets, in order to establish if each QP firm is affiliated or not to EA in each year over the period.

The number of affiliated firms varies between 427 in 2010 and 349 in 2019 (and 351 in 2020), leading to a total of 4,165 firm-years over the period. Considering the 3,588 firm-years (and 412 firms) that can be merged, 63% are EA affiliated over the entire 2010-2020 period.² The remaining 37% of firms are affiliated between 1 and 10 years. For instance, 21 firms are affiliated in only one year and 16 firms are affiliated in only two years.³ Such variation of EA affiliation, from joiners and leavers, is important from the perspective of our econometric identification, towards disentangling firm fixed effects and the EA wage effect.

3.2 Domain identification

A question that remains concerns the identification of the domain of the EA (Eurofound (2020)). This is an important challenge in the context of a comparison between affiliated and

²577 of the total firm-years (corresponding to 74 different firms) cannot be merged to QP for data reasons. These are in most cases (very) small firms. Note we only consider only firms with unique identifiers and not multiple schools of the same firm.

³Virtually all firms are either affiliated in 2010 or affiliated in 2020 (or both, in the case of the case of the 63% firms that are always affiliated). In other words, there are very few cases of firms with gaps in membership, whereby they leave the EA at some point and then resume membership after two or more years.

non affiliated firms regarding a particular EA (e.g., EA density analysis in an industry). In contrast, our present question would not be relevant in a more general study about affiliated and non affiliated firms in any EA (e.g., EA density analysis in a country).

While a simple approach would be based on the consideration of the industry code in which the EA operates (primary and secondary education - code 85 of the Portuguese industry code), this would leave out a large number of firms that have their main activity in other industries. Indeed, we find that over 30% of firms in our final sample (created as explained below) have a different industry code. Even when considering the industry of the establishment, 24% of establishments have a different industry code. (Both percentages are weighted by employment, e.g. the number of employees in all firms or establishments.) Most of these alternative industries are in the social care sector (industry codes 87 and 88) and religious sector (industry code 94) but include schools. Indeed, many (but certainly not all) of these schools in the alternative industry codes above are affiliated with the EA.

Given the challenge above regarding the limited usefulness of the industry code for the purposes of establishing the potential domain of the EA, we opted for a different approach. We considered the key occupation in the industry, that of teachers, and the establishments where this occupation is based - presumably schools. More specifically, we identified in our data all the establishments that employed at least five primary and or secondary education teachers (as defined by the corresponding four-digit occupation codes, 2330 and 2341).⁴ While the specific number of five teachers is arguably somewhat arbitrary, we regarded it as a adequate in ensuring the minimum staff for a small school. For instance, the lower primary level involves four years of schooling, each led by a teacher with additional support for foreign languages or physical exercise or other activities.

3.3 Descriptive statistics

Table 1 presents the descriptive statistics of our worker-level data set, covering nearly 270,000 worker-years. As indicated above, this data set follows from the identification of all establishments (and their firms) in the QP data set that employ at least five teachers. 152,000 of these 270,000 workers are in EA firms, corresponding to a coverage rate of 56.3%. We consider multiple variables, each one separately for affiliated and non-affiliated firms. We also present the mean difference between the two groups and a t-test of its significance.

⁴See Cahuc et al. (2022) for a recent study that also considers the establishment dimension in the QP data.

We find that all the wage variables indicate large and statistically significant differences between the two types of firms, with EA-affiliated firms paying higher wages. For instance, while the average monthly salary of EA workers⁵ is 1,361 euros, that of non-EA workers is 1,115 euros. (All nominal variables have been deflated to 2020 euros.) As monthly hours are slightly lower amongst EA firms, the hourly wage is even relatively higher than in the case of the monthly wage. This can be documented in the comparison of log monthly and hourly wages, with a gap of 0.19 log points in the former case and 0.21 log points in the latter. This analysis supports the view that EA firms tend to pay higher wages. In the case of private schools in Portugal, this premium is of about 20%.

We now consider a number of additional worker characteristics, finding that EA firms employ slightly more educated workers (13.26 vs 13.03 years of schooling). EA workers are also slightly less female (77% vs 78%), older (43 vs 41), more experienced, more tenured (12.1 vs 9.2 years), less likely to be on part-time contracts (13% vs 17%) or fixed-term contracts (24% vs 35%). 56% of EA workers are teachers, while only 44% are so in the case of non-EA workers. This is an important difference that may explain a significant part of the gross wage differential, given that most non-teachers are likely to be paid lower wages.

Finally, we consider whether these workers are subject to the EA collective agreements. As explained before, this could follow from direct application in the context of EA membership or indirect application through the administrative extension of the agreements. As detailed collective bargaining coverage information is not available for 2019 and 2020, we construct an alternative measure to also consider these years, extrapolating from the information in 2017 and 2018. In the two cases, we find that 89% of all workers in EA firms are in EA collective agreements. This means that the remaining 11% of workers are in other collective agreements (most likely from related sectors, e.g. administrative staff) or in occupations not covered by any collective agreement.

In contrast, as many as 49% to 50% of workers in non-EA firms are also subject to EA collective agreements. This large percentage can be explained by administrative extensions of collective agreements.⁶ Lastly, our descriptive statistics indicate that 50% to 51% of non-EA workers are in firms that do not follow the EA agreement. These include firm-level agreements, sectoral agreements of related sectors (e.g. administrative staff), and workers not covered by

⁵By 'EA workers' we refer to observations of workers employed in EA firms in the year considered.

⁶We also find that 14% of non-EA workers are in firms that were EA affiliated in at least one year over the 2010-2020 period. By definition, all EA workers are in firms that were EA affiliated in at least one year.

any agreement.

The distribution of workers across years is very similar for the two types of workers, as its mean is 2014.7 in both cases. This value also reflects a downward trend in the total number of workers, especially during the first years of the sample period, which coincided with a recession.

4 Results

Our main analysis is based on the estimation of the following wage equation:

$$y_{i,t} = \beta_1 EA_{j(i,t),t} + \beta_2 NonEACBA_{i,t} + \beta_3 X_{i,t} + \alpha_i + \tau_{j(i,t)} + \delta_t + u_{i,t}. \quad (1)$$

The dependent variable, $y_{i,t}$, is the logarithm of the monthly total salary of worker i in (October of) year t . The monthly salary is the key reference compensation figure in the country; the total salary includes base salary and other payments (regular or irregular), such as bonuses or allowances. In robustness checks, the hourly salary is also used, dividing the monthly salary by the total number of hours worked in the month.⁷

The key explanatory variable is $EA_{j(i,t),t}$, a dummy variable equal to one if firm $j(i,t)$ (the firm of worker i in year t) is affiliated in the private schools EA (AEEP) in year t . As discussed before, EA affiliation is time-varying over the eleven-year period considered, 2010-2020. Moreover, as workers move between firms over time, their exposure to the EA affiliation status of their firms may also change.

Another important explanatory variable is $NonEACBA_{i,t}$, a dummy variable equal to one if worker i in year t is not subject to a collective agreement bargained by the EA. As discussed before, there are several collective agreements in force in the private schools sector, and not all involve the AEEP private schools EA. Other collective agreements are either established at the firm-level or involve related sectors that partially overlap with private schools (administrative occupations, social care, religious organisations). A third category that is also included in the $NonEACBA_{i,t}$ dummy variable are workers that are not subject to any collective agreement.

These cases are referred to as the 'white zone' ('zona branca').

⁷Fewer than 2% of the total observations correspond to workers that have more than one employment in a given year. We thus simplify the notation and simply refer to each observation using a combination of i and t and not referring to the firm of the worker in that year.

Finally, we also consider a number of additional control variables. $X_{i,t}$ includes a large number of human capital variables that may influence wages and may also be correlated with EA status. In the main specification, $X_{i,t}$ includes years of education, a female dummy variable, years of labour market experience (and square), years of tenure with the firm (and square), a dummy variable for teachers, the number of hours worked in the month, a fixed-term contract dummy variable, and a dummy variable for each year (δ_t). Depending on the specification, we also include worker fixed effects, α_i , and firm fixed effects, $\tau_{j(i,t)}$.

The coefficient estimated for the β_1 parameter will therefore inform us of the average difference of the wages paid by EA firms compared to non-EA firms. When not controlling for $NonEACBA_{i,t}$ (in the first model of each table presented next), the coefficient will be drawn from a comparison with all non-EA firms; when including such control, the comparison group will be exclusively made up of workers that follow the EA collective agreement.

Our first set of results are presented in Table 2. In this case, we do not control for firm or worker time-invariant heterogeneity through firm or worker fixed effects but include all other items of the $X_{i,t}$ vector. The results are in line with the descriptive statistics presented above, with large positive wage premiums paid by EA firms. Depending on the specification, the EA premium ranges between 6% and 8%. In contrast, the coefficient regarding non-EA firms and non-EA collective agreements is negative, ranging between -4% and -8%. These results indicate that workers in EA firms are paid the highest wages (conditional on worker characteristics), followed by workers in non-EA firms following the EA collective agreement (the reference group). The lowest wages are paid by workers in non-EA firms that do not follow the EA collective agreement.

The remaining coefficients presented in Table 2 also deserve a brief discussion. The schooling premium is found to be high, at nearly 10%, indicating that the sector values higher levels of education. This is despite the specification already controlling for the teacher occupation and its coefficient being particularly large, with premiums of over 40%. The gender pay gap in the sector appears to be large, at over 11%, despite the large share of women employed in these schools. Experience and tenure have the expected positive but decreasing association with wages. Each additional hour of work appears to translate into an 1% higher total salary. Fixed-term contracts predict lower wages, at about 8% less.

We now turn to a second model, which includes worker fixed effects. This addition implies

that all time-invariant heterogeneity will be controlled for. This could be important if EA firms tend to attract more skilled workers, which could then explain the EA premiums uncovered in Table 2. The new results are presented in Table 3. We find that the EA affiliation premium is much lower than before but still significant, both in economical and statistical terms. The premiums range between 2% and 3%. These results, from Tables 2 and 3, suggest that the selection of more productive workers by EA firms may indeed be part of the EA premium. Such selection may in itself be a contribution of EAs, if any training or the dissemination of good practices provided by EAs helps member firms in their personnel recruitment. In any case, the premiums documented after controlling for worker heterogeneity may also follow from productivity increases or more generous working conditions prompted by EA affiliation.

A remaining dimension of heterogeneity that we consider now is that of the firm itself. Different firms may have different reward practices and it is important to try to disentangle such differences from EA affiliation. Indeed, it may be the case that firms that offer higher wages to otherwise similar workers are more likely to join EAs. Drawing on the time variation of EA affiliation in our data, we can separate the firm fixed effect from the EA effect. This is what we do in Tables 4 and 5: in the first case we control for firm fixed effects while in the second we also control for worker fixed effects.

The findings of the two tables are similar as both indicate that the EA affiliation premium disappears when firm fixed effects are considered in the wage equation. All six coefficients are lower than 1% (five of which are lower than 0.5%). Moreover, as these coefficients are fairly precisely estimated, we can rule in most cases wage premiums of more than 1% at the 5% statistical significance level.

We test the robustness of these results with respect to the measurement of the dependent variable, considering the case of hourly wages instead of monthly wages. Table 6 presents the results, which indicate again that EA affiliation does not translate into higher wages when firm fixed effects are controlled for.⁸

⁸We conduct further robustness by considering different subsets of our control variables, while always including worker and firm fixed effects. The results are presented in Appendix Table 10: in the first column, we do not consider any other control variables; in the second, we consider schooling, experience and tenure; in the third, we add hours and contract type; and in the fourth, we control only for hours and the teacher dummy variable. We find that only in the first two cases do we find significant EA wage differentials, and in both cases not higher than 2% or as small as 1%.

4.1 The case of teachers

Following the general analysis of the entire sector above, covering all its occupations, we now focus on the case of the key job in (private) schools: teachers. It may be the case that the wages of non-teacher occupations in schools (e.g. staff responsible for administration, security, meals, etc) follow general labour market standards, which imply less potential differentiation between EA and non-EA firms. Such possibility could bias downward our estimates of the EA effect.

As before, we start by presenting descriptive statistics of our worker-level data set but now considering exclusively the case of teachers - Table 7. We find that this subsample covers 136,000 worker-years, almost exactly half the total sample described in Table 1, which was of 270,000 worker-years. In the case of teachers, 84,000 of these workers are in EA firms, corresponding to an EA coverage rate of 61.8% (higher than the 56.3% found for the entire sector, reflecting the higher percentage of teachers in EA schools that was documented before).

We find that, as before, all the wage variables indicate large and statistically significant differences between the two types of firms, with EA-affiliated firms paying higher wages. However, in the case of teachers, salaries are generally higher and the gross wage premiums of EA affiliation also increases. The comparison of log monthly and hourly wages indicates gaps of 0.27 and 0.25 log points, larger than 0.19 and 0.21 log points in the case of all workers. This analysis supports again the view that EA firms tend to pay higher wages. Moreover, the larger wage premiums (in unconditional terms) for the case of teachers than for the entire workforce of the sector supports the hypothesis above of greater differentiation in teacher pay. This could pave the way for EA wage effects amongst teachers, in contrast to our main results above.

We also find that some of the differences between EA and non-EA workers documented before for all workers also arise in the specific context of teachers. EA teachers are older, have more labour market experience, more tenured, and less likely to be on part-time contracts or fixed-term contracts. Schooling levels are virtually the same, reflecting the similar minimum requirements for admission into the teaching occupation.

Finally, we consider whether these workers are subject to the EA collective agreements. We find that 92% of all workers in EA firms are in EA collective agreements (an increase from 89% in the case of all workers). In contrast, as many as 58% of workers in non-EA firms

are also subject to EA collective agreements, which can be explained again by administrative extensions of collective agreements.⁹

We now turn to our estimations, following again equation 1. We consider the cases of models including always worker and firm fixed effects and either monthly or hourly wages. The results are presented in Tables 8 and 9, respectively. In contrast to our benchmark findings for the full sector, here we find significant EA premiums for teachers. This is the case in five of the six estimations. However, the magnitude of these effects is relatively small, as the largest premium is of only 1.6%.

Moreover, when restricting our sample further, considering only full-time teachers (see Appendix Tables 11 and 12), we do not find significant results. This is the case both when measuring wages on monthly or hourly terms. Full-time teachers may be more comparable across firms as the measurement of working time may be different for part-time workers in the education sector. For instance, registered working time for full-time teachers may include teaching hours, preparation time, school meetings and other activities. In contrast, registered and paid working time for part-time teachers may include only teaching hours.

5 Conclusions

Employers' associations (EAs) are a key actor in social dialogue which has remained relatively ignored in both research and policy. In this context, this paper investigates the role of EAs in shaping the wage distribution, namely by prompting affiliated firms towards higher wages. Such positive wage effects from EA affiliation could follow from increased productivity or different management practices promoted by EAs. However, one should also acknowledge the possibility that EAs promote employer coordination or even collusion in the labour market (Martins & Thomas (2022)), leading to negative wage effects.

We test these contrasting hypothesis about EA wage effects by exploiting a detailed matched employer-employee panel data, including time-varying firms' EA affiliation data. Such rich data is critical in order to disentangle worker from firm effects through worker mobility across firms over time and zoom in on any EA affiliation wage effects. We also propose a methodology to determine the sector's scope, as we need to establish the relevant subset of

⁹This implies that 42% of non-EA workers are in firms that do not follow the EA agreement. Moreover, the distribution of workers across years is again very similar for the two types of workers, as its mean is 2014.6 in both cases. This value reflects a downward trend in the total number of workers, especially during the first years of the sample period.

non-affiliated firms that serve as a comparison group.

We find that, even when controlling extensively for worker characteristics, including worker fixed effects, EA firms pay significantly - up to 8% - higher wages than their non-affiliated counterparts. However, when controlling for firm fixed effects, these wage differences virtually disappear. Our evidence therefore indicates that the EA unconditional wage premium can be largely explained by the selection of high-wage firms (although not of high-wage workers) into EA membership. In other words, our case study does not support the view that EAs make affiliated firms more productive or adopt different practices to the extent that that may lead to significantly higher wages. Even when considering exclusively the case of teachers, the key occupation of the industry - which receives greater attention in collective bargaining -, the EA affiliation wage premium is never greater than 2%. Alternatively, any positive productivity effects following from EAs are cancelled by potential employer coordination effects and its increased employer labour market power.

A large number of additional research can build on the findings and approaches of this paper. We mention here three examples. First, it would be interesting to investigate further the extent to which EA firms follow closely the wages established in the EA collective agreements - or if these minimum levels are generally exceeded. Second, a related question is if EAs have positive effects on productivity and profits of firms. Indeed, the absence of large wage effects does not preclude the possibility that EAs make firms more productive and profitable - the nature of sectoral collective bargaining may disrupt the linkage between productivity and wages at the firm level. Third, a complementary and original dimension of productivity that could also be considered is about student achievement, as measured in student-level national exam data.

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Table 1: **Descriptive statistics, full data set**

	(1)		(2)		(3)	
	EA affiliated		Non EA affiliated		Difference	
	Mean	SD	Mean	SD	b	t
Monthly salary	1360.67	841.88	1114.53	685.73	246.14***	(83.58)
Monthly total hours	132.58	41.89	137.29	44.01	-4.71***	(-28.13)
Hourly salary	12.53	20.51	9.57	9.88	2.96***	(49.28)
Log monthly salary	7.06	0.67	6.88	0.65	0.19***	(73.40)
Log hourly salary	2.26	0.70	2.05	0.61	0.21***	(82.97)
Schooling years	13.26	4.07	13.03	4.02	0.24***	(15.05)
Female	0.77	0.42	0.78	0.41	-0.01***	(-6.85)
Age	43.15	10.31	41.17	10.24	1.98***	(49.63)
Experience	23.87	12.30	22.14	12.34	1.73***	(36.05)
Tenure	12.16	10.00	9.22	8.93	2.93***	(80.19)
Part time	0.13	0.34	0.17	0.38	-0.04***	(-29.91)
Fixed-term contract	0.24	0.42	0.35	0.48	-0.12***	(-65.87)
Teacher	0.56	0.50	0.44	0.50	0.11***	(57.92)
EA coll agreement	0.89	0.31	0.50	0.50	0.39***	(215.21)
EA coll agreement (B)	0.89	0.32	0.49	0.50	0.40***	(239.97)
EA affiliation (once)	1.00	0.00	0.14	0.35	0.86***	(852.66)
Non EA aff, coll agreement	0.00	0.00	0.50	0.50	-0.50***	(-314.28)
Non EA aff, coll agreement (B)	0.00	0.00	0.51	0.50	-0.51***	(-353.14)
Year	2014.75	3.21	2014.77	3.22	-0.01	(-1.01)
Observations	151642		117590		269232	

Notes: The table considers the main data set used the estimations presented below. The sample covers all employees of firms in the private schools sector in Portugal. Salary variables are deflated to 2020 euros and refer to October of each year. 'Experience' is labour market experience (Age-Schooling years-6). 'Tenure' is the number of years with the present employer. 'Part time' is a dummy variable for workers working part time as defined by the employer, typically representing fewer than 35 hours per week. Source: QP data (2010-2020). 'Fixed-term contract' is a dummy variable for workers without open-ended contracts. 'Teacher' is a dummy variable for workers whose occupation is teacher (CPP code). 'EA coll agreement' is a dummy variable equal to one if the worker is subject to a collective agreement bargained by the EA (AEEP). 'Non EA aff, coll agreement' is a dummy variable equal to one if the worker is not working for a firm affiliated in the EA and is not subject to a collective agreement bargained by the EA.

Table 2: **Collective agreement and EA affiliation wage differentials - Year fixed effects only**

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	0.082*** (0.002)		0.062*** (0.002)	0.058*** (0.002)
Non EA aff, coll agreement		-0.084*** (0.002)	-0.041*** (0.003)	
Non EA aff, coll agreement (B)				-0.048*** (0.003)
Schooling years	0.096*** (0.000)	0.098*** (0.000)	0.099*** (0.000)	0.096*** (0.000)
Female	-0.114*** (0.002)	-0.116*** (0.002)	-0.116*** (0.002)	-0.113*** (0.002)
Experience	0.014*** (0.000)	0.014*** (0.000)	0.014*** (0.000)	0.014*** (0.000)
(Exp ²)/100	-0.007*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.006*** (0.001)
Tenure	0.022*** (0.000)	0.023*** (0.000)	0.022*** (0.000)	0.022*** (0.000)
(Tenure ²)/100	-0.024*** (0.001)	-0.024*** (0.001)	-0.024*** (0.001)	-0.024*** (0.001)
Teacher	0.419*** (0.002)	0.422*** (0.003)	0.418*** (0.003)	0.416*** (0.002)
Monthly total hours	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
Fixed-term contract	-0.084*** (0.002)	-0.086*** (0.003)	-0.084*** (0.003)	-0.083*** (0.002)
Constant	4.025*** (0.008)	4.056*** (0.008)	4.010*** (0.009)	4.051*** (0.008)
Observations	268,629	222,776	222,776	268,629
R-squared	0.583	0.585	0.587	0.584

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 3: Collective agreement and EA affiliation wage differentials - Worker and year fixed effects only

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	0.030*** (0.003)		0.020*** (0.004)	0.025*** (0.004)
Non EA aff, coll agreement		-0.010*** (0.004)	-0.002 (0.004)	
Non EA aff, coll agreement (B)				-0.013*** (0.004)
Schooling years	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)
Female ,	-	-	-	-
Experience	-0.004** (0.002)	-0.004** (0.002)	-0.004** (0.002)	-0.004** (0.002)
(Exp ²)/100	0.007*** (0.001)	0.008*** (0.001)	0.008*** (0.001)	0.007*** (0.001)
Tenure	0.017*** (0.000)	0.017*** (0.001)	0.017*** (0.001)	0.017*** (0.000)
(Tenure ²)/100	-0.037*** (0.001)	-0.039*** (0.002)	-0.039*** (0.002)	-0.037*** (0.001)
Teacher	0.094*** (0.005)	0.115*** (0.006)	0.115*** (0.006)	0.093*** (0.005)
Monthly total hours	0.009*** (0.000)	0.010*** (0.000)	0.010*** (0.000)	0.009*** (0.000)
Fixed-term contract	-0.024*** (0.002)	-0.021*** (0.003)	-0.021*** (0.003)	-0.024*** (0.002)
Constant	5.506*** (0.055)	5.454*** (0.063)	5.439*** (0.063)	5.511*** (0.055)
Observations	249,791	205,904	205,904	249,791
R-squared	0.893	0.903	0.903	0.893

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 4: Collective agreement and EA affiliation wage differentials - Firm and year fixed effects only

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	-0.004 (0.006)		-0.004 (0.007)	-0.003 (0.006)
Non EA aff, coll agreement		0.023*** (0.006)	0.021*** (0.006)	
Non EA aff, coll agreement (B)				0.005 (0.007)
Schooling years	0.090*** (0.000)	0.093*** (0.000)	0.093*** (0.000)	0.090*** (0.000)
Female	-0.087*** (0.002)	-0.087*** (0.002)	-0.087*** (0.002)	-0.087*** (0.002)
Experience	0.010*** (0.000)	0.011*** (0.000)	0.011*** (0.000)	0.010*** (0.000)
(Exp ²)/100	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Tenure	0.023*** (0.000)	0.023*** (0.000)	0.023*** (0.000)	0.023*** (0.000)
(Tenure ²)/100	-0.028*** (0.001)	-0.028*** (0.001)	-0.028*** (0.001)	-0.028*** (0.001)
Teacher	0.454*** (0.002)	0.461*** (0.003)	0.461*** (0.003)	0.454*** (0.002)
Monthly total hours	0.008*** (0.000)	0.009*** (0.000)	0.009*** (0.000)	0.008*** (0.000)
Fixed-term contract	-0.074*** (0.002)	-0.076*** (0.003)	-0.076*** (0.003)	-0.074*** (0.002)
Constant	4.117*** (0.008)	4.061*** (0.008)	4.063*** (0.009)	4.115*** (0.008)
Observations	268,629	222,776	222,776	268,629
R-squared	0.661	0.668	0.668	0.661

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 5: Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	-0.002 (0.004)		-0.004 (0.004)	-0.006 (0.004)
Non EA aff, coll agreement		0.002 (0.004)	0.000 (0.005)	
Non EA aff, coll agreement (B)				-0.012*** (0.004)
Schooling years	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)
Female = 0,	-	-	-	-
Experience	-0.002 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.002 (0.002)
(Exp ²)/100	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
Tenure	0.016*** (0.000)	0.015*** (0.001)	0.015*** (0.001)	0.016*** (0.000)
(Tenure ²)/100	-0.037*** (0.001)	-0.037*** (0.002)	-0.037*** (0.002)	-0.037*** (0.001)
Teacher	0.080*** (0.005)	0.093*** (0.006)	0.093*** (0.006)	0.079*** (0.005)
Monthly total hours	0.009*** (0.000)	0.010*** (0.000)	0.010*** (0.000)	0.009*** (0.000)
Fixed-term contract	-0.024*** (0.003)	-0.020*** (0.003)	-0.020*** (0.003)	-0.024*** (0.003)
Constant	5.486*** (0.054)	5.453*** (0.063)	5.456*** (0.063)	5.490*** (0.054)
Observations	249,756	205,871	205,871	249,756
R-squared	0.897	0.907	0.907	0.897

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker, firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 6: Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects - Hourly wages

VARIABLES	(1) Log h. salary	(2) Log h. salary	(3) Log h. salary	(4) Log h. salary
EA affiliation (in year)	-0.003 (0.003)		-0.001 (0.003)	-0.001 (0.003)
Non EA aff, coll agreement		0.016*** (0.003)	0.015*** (0.004)	
Non EA aff, coll agreement (B)				0.006* (0.003)
Schooling years	0.010*** (0.001)	0.009*** (0.002)	0.009*** (0.002)	0.010*** (0.001)
Female ,	-	-	-	-
Experience	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)
(Exp ²)/100	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)
Tenure	0.014*** (0.000)	0.013*** (0.000)	0.013*** (0.000)	0.014*** (0.000)
(Tenure ²)/100	-0.036*** (0.001)	-0.036*** (0.001)	-0.036*** (0.001)	-0.036*** (0.001)
Teacher	0.065*** (0.004)	0.070*** (0.005)	0.070*** (0.005)	0.065*** (0.004)
Monthly total hours	-0.004*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.004*** (0.000)
Fixed-term contract	-0.021*** (0.002)	-0.017*** (0.002)	-0.017*** (0.002)	-0.021*** (0.002)
Constant	2.367*** (0.043)	2.381*** (0.050)	2.382*** (0.050)	2.365*** (0.043)
Observations	248,676	205,067	205,067	248,676
R-squared	0.939	0.946	0.946	0.939

Notes: Dependent variable: Logarithm of the hourly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker, firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 7: **Descriptive statistics, Teachers only**

	(1)		(2)		(3)	
	EA affiliated		Non EA affiliated		Difference	
	mean	sd	mean	sd	b	t
Monthly salary	1731.04	795.57	1389.33	687.51	341.71***	(83.91)
Monthly total hours	115.08	38.86	117.64	45.63	-2.57***	(-10.67)
Hourly salary	17.19	24.21	13.32	11.96	3.86***	(39.14)
Log monthly salary	7.37	0.61	7.10	0.70	0.27***	(71.47)
Log hourly salary	2.72	0.45	2.47	0.46	0.25***	(97.40)
Schooling years	15.91	0.85	15.92	0.86	-0.00	(-0.96)
Female	0.74	0.44	0.76	0.43	-0.02***	(-8.72)
Age	41.54	9.38	39.16	8.97	2.38***	(46.69)
Experience	19.59	9.52	17.23	9.09	2.36***	(45.59)
Tenure	11.90	9.54	8.40	8.48	3.50***	(70.57)
Part time	0.17	0.37	0.28	0.45	-0.12***	(-49.38)
Fixed-term contract	0.24	0.43	0.40	0.49	-0.15***	(-59.35)
EA coll agreement	0.92	0.26	0.58	0.49	0.34***	(134.21)
EA coll agreement (B)	0.92	0.28	0.57	0.50	0.35***	(147.94)
EA affiliation (once)	1.00	0.00	0.15	0.36	0.85***	(544.19)
Non EA aff, coll agreement	0.00	0.00	0.42	0.49	-0.42***	(-177.76)
Non EA aff, coll agreement (B)	0.00	0.00	0.43	0.50	-0.43***	(-200.28)
Year	2014.67	3.20	2014.55	3.23	0.12***	(6.42)
Observations	84183		52131		136314	

Notes: The subsample considered here includes only teachers. See the notes to Table 1 for a description of the variables.

Table 8: Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects - Teachers only

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	0.015** (0.006)		0.012* (0.007)	0.006 (0.006)
Non EA aff, coll agreement		-0.031*** (0.007)	-0.027*** (0.008)	
Non EA aff, coll agreement (B)				-0.045*** (0.007)
Schooling years	0.008** (0.004)	0.009** (0.004)	0.009** (0.004)	0.008** (0.004)
Female ,	-	-	-	-
Experience	0.002 (0.003)	-0.001 (0.003)	-0.001 (0.003)	0.002 (0.003)
(Exp ²)/100	-0.011*** (0.002)	-0.008*** (0.003)	-0.008*** (0.003)	-0.011*** (0.002)
Tenure	0.020*** (0.001)	0.020*** (0.001)	0.020*** (0.001)	0.020*** (0.001)
(Tenure ²)/100	-0.042*** (0.003)	-0.043*** (0.003)	-0.043*** (0.003)	-0.042*** (0.003)
Teacher = o,	-	-	-	-
Monthly total hours	0.009*** (0.000)	0.009*** (0.000)	0.009*** (0.000)	0.009*** (0.000)
Fixed-term contract	-0.025*** (0.004)	-0.023*** (0.004)	-0.023*** (0.004)	-0.025*** (0.004)
Constant	5.977*** (0.096)	5.995*** (0.106)	5.986*** (0.106)	5.990*** (0.096)
Observations	125,517	104,483	104,483	125,517
R-squared	0.864	0.875	0.875	0.864

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker, firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 9: Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects - Teachers only - Hourly pay

VARIABLES	(1) Log h. salary	(2) Log h. salary	(3) Log h. salary	(4) Log h. salary
EA affiliation (in year)	0.014*** (0.005)		0.016*** (0.005)	0.014*** (0.005)
Non EA aff, coll agreement		0.007 (0.006)	0.012** (0.006)	
Non EA aff, coll agreement (B)				0.001 (0.006)
Schooling years	0.008*** (0.003)	0.006* (0.003)	0.006* (0.003)	0.008*** (0.003)
Female ,	-	-	-	-
Experience	0.004** (0.002)	0.003 (0.002)	0.003 (0.002)	0.004** (0.002)
(Exp ²)/100	-0.009*** (0.002)	-0.009*** (0.002)	-0.010*** (0.002)	-0.009*** (0.002)
Tenure	0.017*** (0.001)	0.015*** (0.001)	0.015*** (0.001)	0.017*** (0.001)
(Tenure ²)/100	-0.039*** (0.002)	-0.037*** (0.002)	-0.037*** (0.002)	-0.039*** (0.002)
Teacher ,	-	-	-	-
Part time	-0.076*** (0.003)	-0.068*** (0.004)	-0.068*** (0.004)	-0.076*** (0.003)
Monthly total hours	-0.005*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)
Fixed-term contract	-0.023*** (0.003)	-0.022*** (0.003)	-0.022*** (0.003)	-0.023*** (0.003)
Constant	2.982*** (0.073)	3.047*** (0.081)	3.036*** (0.081)	2.981*** (0.073)
Observations	125,039	104,097	104,097	125,039
R-squared	0.858	0.869	0.869	0.858

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker, firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Appendix: Portugal - institutional background

The labour market of Portugal and its institutions share many similarities to those of other continental European countries, in particular in Southern Europe. One important dimension concerns the relevance of sectoral collective bargaining, which covers 86% of private-sector employees as of 2010. (On top of collective bargaining minimum wages, there is also a national, statutory minimum wage. This minimum wage is relatively large in relative terms over the period considered in the study, with a Kaitz index of approximately 60%.) Sectoral collective bargaining is conducted by over 300 EAs and an even larger number of trade unions. Martins (2020) provides a detailed description of EA activities and their potential effects, with a particular focus on the case of Portugal. Martins & Saraiva (2020) finds that a large share of the contents of collective agreements other than minimum wages overlap with the contents of the Labour Code. This results warrants a focus on wages when considering the value added of collective agreements.

EA affiliation is estimated at 43%, a figure in line with the OECD mean, but much below the coverage rate of sectoral agreements. This gap is explained by the pervasive nature of administrative extension schemes, which widen the coverage of collective agreements to all firms and employees in each sector Martins (2020). The parties that bargain a sectoral collective agreement can ask the Ministry of Employment to extend the collective agreement to the entire sector. This extension implies that both non-unionised employees in EA affiliated firms as well as all employees of non-EA-affiliated firms are subject to the provisions of the collective agreement. However, any organisation (namely a competing trade union or employers' association) may oppose such extension, at least its part that may overlap with the members of the organisation.

Finally, from a macroeconomic perspective, we mention that 2011-2013 were years of recession, while during 2014-2019 the economy grew. 2020 was again an year of recession, following the onset of the pandemic crisis.

Appendix: Additional empirical results

Table 10: **Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects - Different specifications**

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	0.019*** (0.006)	0.011* (0.006)	-0.004 (0.004)	0.001 (0.004)
Non EA aff, coll agreement	0.019*** (0.006)	0.017*** (0.006)	0.000 (0.005)	0.002 (0.005)
Schooling years		0.007*** (0.003)	0.010*** (0.002)	
Female ,		-	-	
Experience (Exp ²)/100		-0.003 (0.002) 0.005*** (0.002)	-0.003 (0.002) 0.007*** (0.001)	
Tenure (Tenure ²)/100		0.026*** (0.001) -0.056*** (0.002)	0.015*** (0.001) -0.038*** (0.002)	
Monthly total hours			0.010*** (0.000)	0.010*** (0.000)
Fixed-term contract			-0.020*** (0.003)	
Teacher				0.102*** (0.006)
Constant	6.994*** (0.004)	6.771*** (0.083)	5.484*** (0.063)	5.627*** (0.006)
Observations	206,432	205,871	205,871	206,432
R-squared	0.835	0.836	0.907	0.906

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker, firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 11: Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects - Full-time teachers only

VARIABLES	(1) Log m. salary	(2) Log m. salary	(3) Log m. salary	(4) Log m. salary
EA affiliation (in year)	-0.001 (0.006)		-0.000 (0.006)	-0.005 (0.006)
Non EA aff, coll agreement		-0.003 (0.008)	-0.003 (0.008)	
Non EA aff, coll agreement (B)				-0.027*** (0.008)
Schooling years	0.008** (0.004)	0.012*** (0.004)	0.012*** (0.004)	0.008** (0.004)
Female ,	-	-	-	-
Experience	0.007*** (0.003)	0.007** (0.003)	0.007** (0.003)	0.007*** (0.003)
(Exp ²)/100	-0.017*** (0.003)	-0.016*** (0.003)	-0.016*** (0.003)	-0.017*** (0.003)
Tenure	0.012*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.012*** (0.001)
(Tenure ²)/100	-0.030*** (0.003)	-0.026*** (0.003)	-0.027*** (0.003)	-0.030*** (0.003)
Teacher = o,	-	-	-	-
Part time = o,	-	-	-	-
Monthly total hours	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)
Fixed-term contract	-0.014*** (0.004)	-0.018*** (0.005)	-0.018*** (0.005)	-0.014*** (0.004)
Constant	6.179*** (0.100)	6.096*** (0.112)	6.096*** (0.112)	6.185*** (0.100)
Observations	99,951	82,496	82,496	99,951
R-squared	0.772	0.785	0.785	0.772

Notes: Dependent variable: Logarithm of the monthly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with worker, firm and year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.

Table 12: Collective agreement and EA affiliation wage differentials - Worker, firm and year fixed effects - Full-time teachers only - Hourly wages

VARIABLES	(1) Log h. salary	(2) Log h. salary	(3) Log h. salary	(4) Log h. salary
EA affiliation (in year)	0.003 (0.005)		0.004 (0.005)	0.003 (0.005)
Non EA aff, coll agreement		0.015** (0.006)	0.016*** (0.006)	
Non EA aff, coll agreement (B)				0.000 (0.006)
Schooling years	0.007*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.007*** (0.003)
Female ,	-	-	-	-
Experience	0.005** (0.002)	0.005** (0.002)	0.006** (0.002)	0.005** (0.002)
(Exp ²)/100	-0.011*** (0.002)	-0.012*** (0.002)	-0.013*** (0.002)	-0.011*** (0.002)
Tenure	0.012*** (0.001)	0.009*** (0.001)	0.009*** (0.001)	0.012*** (0.001)
(Tenure ²)/100	-0.033*** (0.002)	-0.027*** (0.002)	-0.026*** (0.002)	-0.033*** (0.002)
Teacher ,	-	-	-	-
Part time ,	-	-	-	-
Monthly total hours	-0.005*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)	-0.005*** (0.000)
Fixed-term contract	-0.018*** (0.003)	-0.020*** (0.003)	-0.020*** (0.003)	-0.018*** (0.003)
Constant	3.111*** (0.075)	3.102*** (0.083)	3.099*** (0.083)	3.111*** (0.075)
Observations	99,534	82,161	82,161	99,534
R-squared	0.891	0.901	0.901	0.891

Notes: Dependent variable: Logarithm of the hourly salary (October of each year). See the notes to Table 1 for a description of the control variables. Source: QP data (2010-2020). Models with year fixed effects. Significance levels: * 10%, ** 5%, *** 1%.