

*The impact of employers' associations  
on wages:  
National and sectoral evidence from Portugal*

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# Introduction and motivation

- “What do EAs do?” -> What are the effects of what EAs do?
- Wages are a natural outcome variable:
  - EAs can increase firm and worker **productivity**, leading to **higher wages** through labour market competition, rent sharing or incentive schemes
  - EAs may also promote employer **collusion** (and artificial wage floors under administrative extensions), leading to **lower wages**
- Case study perspective may be useful, given challenges in industry definition and industry idiosyncracies
- Focus on (private) schools – large literature on teachers’ pay but no studies on employers’ side

# Earlier paper (“What do EAs do?”): main findings

- Economics of EAs: sectoral public goods
  - Main EA activities: 1) collective bargaining, 2) representation and training, and 3) coordination
  - Issues: Free-riding, heterogeneity, representativeness, scale, collusion
- Analysis of matched panel for Portugal, including (sectoral) EA affiliation: construction of coverage rates by EA (% of workers in relevant industry/region domain employed by affiliated firms)
- Positive affiliation premiums in sales, employment, productivity, and wages
- Premiums tend to increase with EA coverage (up to a point)
- Sectors also appear to benefit from EA coverage, even if non-affiliated firms do worse

# Preview of analysis and results

- Rich matched employer-employee-EA-CBA panel data (plus qualitative dimension)
- Data on all private schools in Portugal and their employees, 2010-2019
  - 250k observations, 600+ firms
- Simultaneous control for firm and worker (AKM) fixed effects towards causal estimates, addressing *selection*
- Evidence of positive EA effects and negative CBA effects, leading to ranking:
  - Highest wages: **un**affiliated **un**covered firms
  - Intermediate wages: affiliated covered firms
  - Lowest wages: **un**affiliated covered firms (role of extensions)
- Empirical support for *both* productivity and collusion views of EAs

# Institutional aspects: Private schools in PT (1/2)

## Private schools in basic and secondary education

- 15% of students – 210k (1.2m) students in private (public) schools
- Diverse quality levels and locations
- Some (part-time) teachers from public schools
- A small number of schools received public subsidies (up to 2016)
- Complex interaction with Education Ministry
- Wage determination as in private sector (Labour Code and CBAs)

# Institutional aspects: Private schools in PT (2/2)

Single employers' association: AEEP ('Association of private education establishments'), founded in 1974, with ~450 *school* members

- Member of the Education and Training Confederation (takes over bargaining from AEEP from 2017)
- Bargains with two key trade unions (FENPROF and FNE) – only FNE since 2015 (in 'defensive' agreement)
- Limited union membership in private schools
- CBAs routinely administratively extended to non-affiliated firms
- Uncovered schools offer firm-level CBAs

Information collected from five interviews and discussions with AEEP senior management throughout 2021

# AEEP key activities

- provision of information to members
- national and international representation of the sector
- promoting cooperation between schools (*including public schools*)
- legal support
- collective bargaining
- management support
- management and pedagogical training
- schools' sport projects

All activities can promote productivity (and wages)



# Data sets and industry definition

- QP 2010-2019: matched employer-employee panel
  - Includes info on establishments and AEEP or not AEEP CBA of each worker
- Merge with AEEP yearly affiliation data, 2010-2020
  - Including leavers and new members
- Sector definition: *establishments* with at least five primary and secondary education teachers (4-digit occupation codes) and all their employees
  - Issues include religious schools, adult training in firms, vocational schools, private tutoring
- 629 different firms, 826 different establishments, 2010-2019

# Worker-level descriptive statistics, 2010-19

Variable	Obs	Mean	Std. Dev.	Min	Max
Monthly salary	247455	1258.788	791.651	2	22493
Monthly hours	247455	134.509	42.109	0	208
Log salary	247455	6.946	.658	.693	10.021
Schooling	246881	13.117	4.089	1	19
Female	247455	.771	.42	0	1
Age	245362	42.124	10.285	18	75
Experience	244792	22.969	12.339	0	64
Tenure	247428	10.924	9.692	0	62
Part time	247455	.154	.361	0	1
Teacher	247455	.506	.5	0	1
Fixed-term contract	247455	.283	.45	0	1
EA collective agreement	247455	.717	.45	0	1
EA coll agreement (post 2015)	247455	.257	.437	0	1
EA affiliation (once)	247455	.627	.484	0	1
EA affiliation (in year)	247455	.566	.496	0	1
Year	247455	2014.254	2.911	2010	2019

# Tabulation of workers across EA CBA coverage and EA affiliation statuses

EA CBA cov.	EA affiliation		Total
	0	1	
0	57,017	16,920	73,937
	22.26	6.61	28.87
1	54,472	127,728	182,200
	21.27	49.87	71.13
<b>Total</b>	<b>111,489</b>	<b>144,648</b>	<b>256,137</b>
	43.53	56.47	100.00

# Econometric model of individual wages

Consideration of worker, firm, and year fixed effects:

$$\log y_{ijt} = \beta_1 EA_{jt} + \beta_2 EA\_CBA_{ijt} + X_{it}' \beta_3 + \alpha_i + \gamma_t + \tau_t$$

- $Y_{ijt}$ : total monthly salary (October) of worker  $i$  in firm  $j$  in year  $t$
- $X$  vector: schooling, experience, tenure, gender, and teacher, part-time, fixed-term contract dummies
- Identification of EA and EA\_CBA effects from worker mobility across firms and variability in EA status of each firm over time
- Results based on different combinations of FEs above and samples

## Worker and firm fixed effects – Teachers only

Variable	Eq1f	Eq2f	Eq3f	Eq4f
Experience	-0.003	-0.003	-0.003	-0.003
(Exp <sup>2</sup> )/100	-0.008**	-0.008**	-0.008**	-0.008**
Tenure	0.027***	0.027***	0.027***	0.027***
(Tenure <sup>2</sup> )/100	-0.057***	-0.057***	-0.056***	-0.056***
Part time	-0.380***	-0.375***	-0.381***	-0.381***
Fixed-term contract	-0.040***	-0.041***	-0.040***	-0.040***
EA collective agreement	-0.062***		-0.062***	-0.055***
EA affiliation		0.030***	0.032***	0.032***
EA coll agreement (post 2015)				-0.015**
Constant	7.162***	7.084***	7.138***	7.140***
N	114571	114571	114571	114571
r <sup>2</sup> _a	0.806	0.806	0.806	0.806

# Conclusions

- EA industry definition and operation can be complex – complementary qualitative approach may be useful
- EA affiliation has positive wage effect (+3%), CB coverage has *negative* wage effect (-6%).
- Unaffiliated uncovered firms tend to pay the highest wages
  - Negative CB effect greater in absolute terms than positive EA effect
- Results robust to:
  - Firm and worker fixed effects (drawing on worker mobility and changing EA affiliation),
  - Focus on teachers.
- Evidence of role of extensions: several non-EA firms follow the EA's CBAs but pay lower wages than EA firms.

# Future research steps

- More on EA affiliation status changes
- Are EA firms paying above CBA – or are non-EA, CBA-covered firms paying below CBA?
  - Are EA firms pushing non-EA firms' wages to higher level – and then paying higher wages still, in excess of the wage floors that they set?
- EA effects in terms of:
  - Worker training (2010 and 2011)
  - Firm performance (sales, profits)
  - Student achievement (using student-level national exam data)

Additional slides



## CBA and EA wage differentials - Year fixed effects only

Variable	Eq1a	Eq2a	Eq3a	Eq4a
Schooling	0.086***	0.087***	0.087***	0.087***
Female	-0.076***	-0.076***	-0.076***	-0.077***
Experience	0.012***	0.012***	0.013***	0.013***
(Exp^2)/100	-0.005***	-0.005***	-0.005***	-0.006***
Tenure	0.021***	0.021***	0.021***	0.021***
(Tenure^2)/100	-0.023***	-0.023***	-0.023***	-0.023***
Teacher	0.257***	0.253***	0.253***	0.254***
Part time	-0.651***	-0.650***	-0.650***	-0.650***
Fixed-term contract	-0.110***	-0.107***	-0.107***	-0.107***
EA collective agreement	0.012***		-0.007**	-0.004
EA affiliation (in year)		0.039***	0.042***	
EA affiliation (once)				0.038***
Constant	5.436***	5.423***	5.426***	5.424***
N	244772	244772	244772	244772
r2_a	0.516	0.517	0.517	0.517

# CBA and EA wage differentials - Firm fixed effects

Variable	Eq1b	Eq2b	Eq3b
Schooling	0.080***	0.080***	0.080***
Female	-0.056***	-0.055***	-0.056***
Experience	0.008***	0.008***	0.008***
(Exp^2)/100	-0.001**	-0.001*	-0.001**
Tenure	0.023***	0.023***	0.023***
(Tenure^2)/100	-0.028***	-0.028***	-0.028***
Teacher	0.271***	0.271***	0.271***
Part time	-0.609***	-0.608***	-0.609***
Fixed-term contract	-0.104***	-0.104***	-0.104***
EA collective agreement	-0.056***		-0.056***
EA affiliation (in year)		0.011	0.011
Constant	5.591***	5.546***	5.585***
N	244772	244772	244772
r2_a	0.593	0.593	0.593

# CBA and EA wage differentials - Worker fixed effects

Variable	Eq1c	Eq2c	Eq3c	Eq4c
Experience	-0.004*	-0.004*	-0.004*	-0.004*
(Exp <sup>2</sup> )/100	0.004**	0.004***	0.004***	0.004***
Tenure	0.020***	0.020***	0.020***	0.020***
(Tenure <sup>2</sup> )/100	-0.045***	-0.045***	-0.045***	-0.045***
Teacher	0.047***	0.046***	0.046***	0.045***
Part time	-0.407***	-0.405***	-0.407***	-0.407***
Fixed-term contract	-0.033***	-0.033***	-0.033***	-0.032***
EA collective agreement	-0.028***		-0.031***	-0.035***
EA affiliation (in year)		0.024***	0.027***	
EA affiliation (once)				0.098***
Constant	6.866***	6.822***	6.845***	6.797***
N	226772	226772	226772	226772
r <sup>2</sup> _a	0.827	0.827	0.827	0.827

# CBA and EA wage differentials - Worker and firm fixed effects

Variable	Eq1d	Eq2d	Eq3d
Experience	-0.003	-0.003	-0.003
(Exp <sup>2</sup> )/100	0.004***	0.004**	0.004***
Tenure	0.019***	0.019***	0.019***
(Tenure <sup>2</sup> )/100	-0.044***	-0.044***	-0.044***
Teacher	0.039***	0.039***	0.039***
Part time	-0.383***	-0.381***	-0.383***
Fixed-term contract	-0.034***	-0.034***	-0.034***
<b>EA collective agreement</b>	<b>-0.038***</b>		<b>-0.038***</b>
<b>EA affiliation (in year)</b>		<b>0.013**</b>	<b>0.013**</b>
Constant	6.854***	6.814***	6.844***
N	226745	226745	226745
r2_a	0.832	0.832	0.832

# Additional slides – Mobility presentation

# Motivation / Research question

- How does restricted worker mobility influence training?
- Is there less worker mobility between firms in employers' associations?
- Employers' associations (EAs) provide 'sectoral public goods' (e.g., collective bargaining)...
- ... but may also promote collusion amongst affiliated firms
- Do workers in EA firms receive more training?

# Methods / Data

- Matched employer-employee panel (all firms and all their employees)
  - QP - Quadros de Pessoal, Ministry of Employment
  - 2009: EA affiliation of each firm
  - 2010-2011: wages and training of each employee (at each firm)
- Inter-firm mobility data based on actual + potential but not realized mobility:
- Actual: all (100k) workers that change firms between 2010 and 2011
- Potential/not realised: (0.1%-5%) samples of not realized combinations between firms with actual mobility
  - Identified from population nature of matched data

# Results / Conclusions

- Model of training and (restricted) worker mobility
  - Allows us to think about endogenising EA membership and welfare
- Empirical evidence consistent with (tacit) NPAs:
  - EA workers less likely to move to another firm in the same EA
  - EA workers receive (much) more training
  - Overall separations are lower in EA firms
  - EA workers not paid more than non-EA workers
- Policy implications:
  - Public policy (competition agencies?) may need to pay attention to employers' (EAs) collusion
  - How to reduce potential negative effects while still incentivizing training?