



Union membership & membership in employers' associations - *Work in progress*

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Structure of the presentation

- 1 Motivation & research questions
- 2 Methodology
- 3 Datasets used
- 4 Explanations for changes in EA & TU membership
- 5 Firm-level data
- 6 Trade union membership with individual-level data
- 7 Summary & conclusions

Motivation

- 1 The puzzle of declining union membership (TUM) [▶ Graph](#) but relatively flat membership in employers' associations (EA) [▶ Graph](#)
- 2 Notwithstanding differences across countries and time periods the above describes the broad picture
- 3 Main research question: How do determining factors of membership in EAs and TUs differ
- 4 Approach: distinguish between trade union presence and trade union membership
- 5 Explain trade union presence and membership in employers' association jointly
- 6 Explain trade union membership using individual-level data

Evolution of EAM

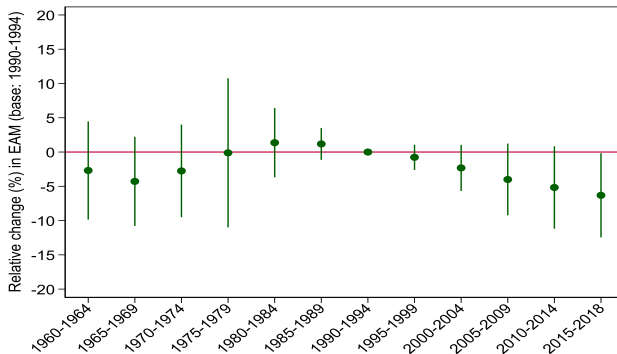


Figure 1: Evolution of EAM, EU-25, 1960-2018 (ICTWSS)

Evolution of TUM

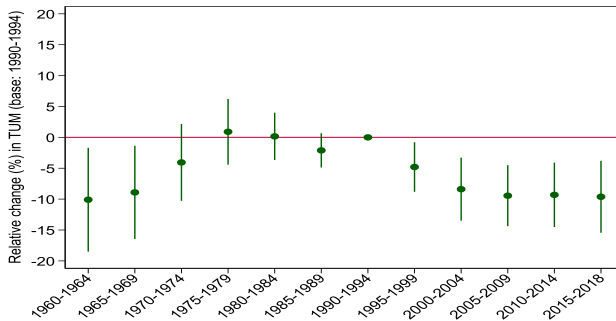


Figure 2: Evolution of TUM, EU-25, 1960-2018 (ICTWSS)

Methodology

- 1 Ideally we would have panel data at the firm-level and the individual worker level with the information to test the theoretical framework
- 2 The most important methodological issues are the absence of good proxies for the variables put forward by theory and the difficulty in dealing with endogeneity issues
- 3 Furthermore, if we are willing to test the theory for more than one country we have difficulty in finding panel data at the firm-level and at the individual level
- 4 We end up using pseudo-panels of firms and individuals exploiting available repeated cross-sections

Datasets

- 1 Macro picture: OECD-Visser database (ICTWSS)
 - EA & TU membership: trends & differences
- 2 Firm: European Company Survey (ECS)
 - EA & TU membership: who & why
- 3 Worker: European Social Survey (ESS)
 - TU membership: who & why

A succinct macro picture: Country-level analysis

Table 1: Macroeconomic correlates with EA & TU membership

	EAM		TUM	
	[1]	[2]	[3]	[4]
TUM	0.100*** (3.98)	0.097** (3.01)	-	-
EAM	-	-	0.474*** (2.81)	0.271*** (2.88)
Centralized bargaining	-	0.070*** (3.46)	-	-0.126*** (3.46)
Industry (% employment, males)	-	0.018 (0.23)	-	0.132 (1.05)
Services (% employment, males)	-	0.356*** (2.61)	-	0.323* (1.67)
Part-time (% employment, males)	-	0.011 (1.49)	-	0.004 (0.02)
Exports (% GDP)	-	-0.141*** (3.26)	-	-0.096 (1.34)
Imports (% GDP)	-	0.147*** (2.60)	-	-0.034 (0.44)
GDP per employee (PPP, 2017)	-	-0.266*** (4.76)	-	0.067 (0.78)
Unemployment rate	-	-0.006 (0.61)	-	0.063*** (3.67)
Country dummies	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y
Country dummies × linear trend	N	Y	N	Y
Observations	544	511	544	511

Source: ICTWSS & AMECO & WB, (EU-25, 1991-2019).

Notes: Missing data (EAM and TUM) are filled by linear interpolation. All vars in logs. In (.) |t|-statistic (robust s.e.).

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Main points from macro picture

- Positive association between EAM and TUM
- Correlations with EAM
 - (+): Centralized bargaining, Services, Imports
 - (-): Exports, Employees' compensation
- Correlations with TUM
 - (+): Services, Unemployment
 - (-): Centralized bargaining

Firm-level data/European Company Survey

- Two waves: 2013 & 2019
- Focus on EU-15 countries
- Around 13 thousand obs./firms for 2013 & 11 thousand obs./firms for 2019
- Information on membership in EA and on the presence of Employee Representation
- Information on workshop composition, workplace practices, bargaining arrangements, some information on the market the firm operates in, some conjunctural information

Classification of firms according to EA membership and TU presence

	2013	2019
EA & TU	35.85	26.20
EA & No TU	13.02	18.50
No EA & TU	19.73	15.03
No EA & No TU	31.40	40.26
	100.00	100.00

Source: ECS

- Decline in % of firms with both EA & TU
- Increase in % of firms with no EA & no TU
- Increase in % of firms with EA but no TU
- Decrease in % of firms with no EA but with TU

Bi-variate probit: EA memb. & TU presence, 2013 & 2019

Table 2: Bivariate probit of EAM & TU presence - coef. estimates (1)

	2013		2019	
	[EA=0, 1]	[TU=0, 1]	[EA=0, 1]	[TU=0, 1]
Log of employment	0.199***	0.516***	0.197***	0.537***
High-level agreement is the reference				
Firm-level agreement	-0.128***	0.323***	0.00510	0.364***
No coll. Agreement	-1.003***	-0.391***	-1.142***	-0.288***
JIT	0.085**	0.159***		
Training	0.028***	0.056***	0.0475***	0.0536***
OJT	0.027***	0.006	-0.00432	-0.0212***
Bad climate	0.044*	0.085***	-0.000933	0.0672**
Regional dispersion	0.153***	0.041		
No exports is the reference				
1 to 24 % exp/sales			-0.0825**	-0.0925**
25-49% of exp/sales			-0.0389	-0.0883
50%+ exp/sales			-0.0493	0.00794
e-commerce			-0.0845***	-0.00388
Obs.	13,098		11,178	
Country & sectoral dummies included				
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$				

Bi-variate probit: EA memb. & TU presence, 2013 & 2019

Table 3: Bivariate probit of EAM & TU presence - coef. estimates (2)

	2013		2019	
	[EA=1]	[TU=1]	[EA=1]	[TU=1]
Log of employment	0.219***	0.552***	0.200***	0.575***
High-level agreement is the reference				
Firm-level agreement	-0.109***	0.342***	0.00360	0.352***
No coll. Agreement	-1.025***	-0.405***	-1.196***	-0.322***
JIT	0.093**	0.166***		
Training	0.028***	0.048***	0.0521***	0.0578***
OJT	0.023***	0.0100	-0.0104	-0.0337***
Bad climate	0.047**	0.076***	0.0103	0.0842***
Regional dispersion	0.147***	0.033		
No exports is the reference				
1 to 24 % exp/sales			-0.0865**	-0.0368
25-49% of exp/sales			0.00674	0.0883
50%+ exp/sales			0.0162	0.154***
e-commerce			-0.0536***	0.0507
PMRI	0.431*	0.349	0.634**	-0.251
Obs.	11,612		10,050	
Only sectoral dummies included				
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$				

Main points from both bivariate probit models

- A firm-level agreement is associated with lower chance of EA membership & higher chance of TU presence
- Firms with departments dealing with specific geographical areas are more likely to be associated with EA membership but this has no impact on TU presence
- Firms engaged in e-commerce are less likely to be members of EA
- Regulational impact appears to be associated with higher chance of EA membership but has no impact on TU presence

Bi-variate probit of EA & TU membership: marginal effects (1)

Table 4: Marginal effects from first bivariate probit of EAM & TU presence

	2013		2019	
	[EA=1, TU=1]	[EA=1, TU=0]	[EA=1, TU=1]	[EA=1, TU=0]
Firm-level agreement	0.0266***	-0.0775***	0.0616***	-0.0596***
No coll. Agreement	-0.307***	-0.0923***	-0.215***	-0.231***
Training				
JIT	0.0483***	-0.0143**		
Bad climate	0.0253**	-0.00788*	0.0111**	-0.0114*
Regional dispersion	0.0434***	0.0173*		
E-commerce			-0.0130*	-0.0200*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Bi-variate probit of EA & TU membership

Table 5: Marginal effects from second bivariate probit of EAM & TU presence

	2013		2019	
	[EA=1, TU=1]	[EA=1, TU=0]	[EA=1, TU=1]	[EA=1, TU=0]
Firm-level agreement	0.0350***	-0.0786***	0.0591***	-0.0577***
No coll. Agreement	-0.310***	-0.0977***	-0.225***	-0.241***
Training	0.0146***	-0.00391**	0.0171***	0.00321
JIT	0.0513***	-0.0140*		
Bad climate	0.0245**	-0.00576	0.0154**	-0.0115*
Regional dispersion	0.0400***	0.0185**		
E-commerce			0.000750	-0.0216*
PMRI	0.135**	0.00237	0.0492	0.198**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Main points from marginal effects

- A firm-level agreement is associated with EAM and TU presence. Firms with a firm-level agreement are less likely to be EAM with no TU.
- A \uparrow in the use of JIT practices is associated with a \uparrow probability of having both EAM and TU presence but is associated with a \downarrow probability of having EAM with no TU presence
- An improvement in the climate within the firm is associated with a \downarrow probability of having both EAM and TU presence but is associated with a \uparrow probability of having EAM with no TU presence
- Firms with departments dealing with different geographical areas are more likely to be associated with EAM and TU presence
- Firms engaged in e-commerce are less likely to be characterised by EAM and TU presence.

Pseudo-panel: $dv \Delta$ in EA membership

- The interest is in what happens when the determining factors we looked at above change over time
- In the absence of a panel element in the ECS we create a pseudo panel
- Firms are grouped by employment (in the same quartile of employment distribution), sector of economic activity (15 sectors), establishment type (single, HQ, subsidiary) and country

Pseudo-panel: Δ in EA membership - details

We investigate the association of the change in EAM (dependent variable) of:

- 1 Change in trade union presence (ΔTU)
- 2 Change in type of coll. agreement - a negative coefficient suggests that a more decentralised type of agreement is associated with a lower probability of being an EAM ($\Delta Agreement$)
- 3 Change in log employment between 2013 (first ECS wave) and 2019 (second ECS wave) ($\Delta \ln emp_{1319}$)
- 4 Indication by interviewees of whether between 2016 and 2019 employment has increased or decreased - a negative coefficient suggests that an increase in employment is associated with a decrease in EAM (ΔN_{1619})
- 5 Indication by interviewees of whether between 2016 and 2019 output has increased or decreased - a negative coefficient suggests that an increase in output is associated with a decrease in EAM (ΔY_{1619})
- 6 Indication by interviewees of whether employment is expected to increase (1), remain the same (0) or decrease (-1) in the next three years.
- 7 Change in climate between employers/managers and employees within the firm
- 8 New products - introduction since 2016 of products that are new in the market
- 9 New processes- introduction since 2016 of processes that are new in the market

Pseudo-panel: Δ in EA membership

Table 6: Coefficient estimates from OLS regression of change in EAM

	ΔEAM	ΔEAM	ΔEAM	ΔEAM	ΔEAM
ΔTU	0.339***	0.318***	0.256***	0.253***	0.255***
$\Delta Agreement$		-0.147***	-0.145***	-0.144***	-0.141***
$\Delta Iemp_{1319}$			0.035***	0.037***	0.035***
ΔN_{1619}				-0.047**	-0.043*
ΔY_{1619}				0.037	0.043
$\Delta E(N)$					-0.028
$\Delta climate$					0.009
New products					-0.138**
New processes					0.228***
Observations	1,669	1,669	1,667	1,655	1,652
R^2	0.187	0.234	0.247	0.253	0.261

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, $p < 0.10$

Main points from pseudo-panel analysis

- 1 The change in trade union presence is positively associated with a change in EAM
- 2 Change to a more decentralised agreement is associated with a decrease in trade union presence
- 3 Employment and output changes appear of equal magnitude (puzzle not significant Y) and opposite sign suggesting that productivity is the important variable
- 4 Introduction of products new to the market appear to be associated with lower EAM
- 5 Introduction of processes new to the market appear to be associated with higher EAM

Data & Variables used in analysis of individual-level data

- European Social Survey (ESS) rounds 1-9 (2002 to 2018) - All EU countries
- Member of trade union or similar organization (0,1)
- Voted in last national election (0,1)
- Type of contract; unlimited (1), limited (2), no contract (3)
- Education level (el): 4 levels based on the number of years of education; $el \leq 9$; $9 < el \leq 12$; $12 < el \leq 16$; $el > 16$

Individual-level data - ESS

Trade Union Membership - Marginal effects from logit estimates

Age	0.0222***
Age ²	-0.000218***
Men	0.0130***
	Est. size
10 to 24	0.0705***
25 to 99	0.119***
100 to 499	0.138***
500 or more	0.196***
	Education level
edul=2	0.0179
edul=3	0.0382
edul=4	-0.0404
Limited duration contract	-0.0513***
No contract	-0.115***
Vote in national elections	0.0547***
Observations	121,910
Country FE	Yes

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Summary & conclusions

- 1 Trade union presence and trade union membership could be driven by different processes / A similar distinction does not exist for employers associations
- 2 Trade union presence and membership in employers' associations are positively associated
- 3 Bargaining arrangements impact on both trade union presence and membership in employers' associations
 - Organized labour is necessary for a firm-level agreement
 - A firm-level agreement does not require that the firm is a member of an Employers' Association
 - Centralised bargaining arrangements appear associated with both trade union presence and membership in employers' associations

Summary & conclusions

- 4 Variables pertaining to product market structure appear more important for EAM than trade union presence
 - For firms having more than a local focus being member of an EA appears more important
 - OJT appears to be associated with a higher probability of being a member of an EA but has no impact (2013) or has a negative impact (2019) on Trade Union presence.
 - The association between extroversion - measured as exports share of sales - and EAM show that firms with a 1/4 of their sales or below exported are less likely to be EAM compared to firms with no exports. Trade unions are more likely to be present in firms with more than half their sales exported.
 - Firms in industries where the product market regulation impact is higher are more likely to be EAM. PMRI appears to have no association with the presence of a trade union.
- 5 Trade union membership appears to go hand in hand with a decision to participate in national elections

Motivation & research questions

Methodology

Datasets used

Explanations for changes in EA & TU membership

Firm-level data

Trade union membership with individual-level data

Summary & conclusions

Thank You for Your Attention!

Definitions of variables used in the ECS analysis

- 1 EAM (0,1): Membership in employers' association
- 2 TU presence (0,1): Employee representative in the firm
- 3 Firm-level collective agreement (0,1): firm-level collective agreement independently of whether other collective agreements are also in force
- 4 Higher-level collective agreement (0,1): collective agreement at sectoral/occupational/regional/national level and no firm level agreement.
- 5 Bad climate (1,5): Rating by managers of current general work climate in the establishment; very good (1), good (2), neither good nor bad (3), bad (4), or very bad (5)
- 6 JIT (0,1): Use or otherwise of Just-in-time practices
- 7 e-commerce (0,1): The firm buys or sells goods/services over the internet.

Definitions of variables used in the ECS analysis - continued

- 8 Training: % of employees that in the last year received paid time-off normal duties for training purposes; grouped in 7 intervals increasing in the % covered
- 9 OJT: % of employees that received on-the-job training; grouped in 7 intervals increasing in the % covered.
- 10 Regional dispersion (0,1): firm has departments dealing with specific geographical regions.
- 11 (information matched to the ECS at sectoral level) PMRI: impact of regulatory barriers to competition in non-manufacturing sectors on other sectors as calculated by the OECD.
- 12 Innovation activity (0, 1): introduction of new products or processes since 2016
- 13 Change in employment between 2016 and 2019: rating of change in employment on a 5-point scale interval; (1) > 10% decrease, (2) \leq 10% decrease, (3) same, (4) \leq 10% increase, (5) > 10% increase.
- 14 Change in output between 2016 and 2019: rating of change in output on a 3-point scale interval; (-1) decrease, (0) no change (1) increase.

Means of variables used in the analysis

Variable	2013	2019	Variable	2019
EAM	0.479	0.443	Innov. products	0.170
TU presence	0.536	0.400	Innov. process	0.0983
Higher-level coll. agr.	0.474	0.519	Employment change	3.704
Firm-level coll. agr.	0.336	0.240	Output change	0.444
No coll. agr.	0.190	0.240	Expected change in emp.	0.283
Bad climate (1-5)	1.98	1.911		
JIT	0.555			
e-commerce		0.337		
Training (1-7)	3.377	4.037		
OJT (1-7)	3.550	4.009		
Regional dispersion	0.311			
PMRI	0.0359			

Means of variables used in analysis of individual-level data

	'02	'04	'06	'08	'10	'12	'14	'16	'18
TUM	0.35	0.32	0.32	0.29	0.27	0.29	0.28	0.23	0.26
Vote	0.83	0.79	0.81	0.81	0.79	0.80	0.78	0.79	0.80
Unltd ctct.	0.82	0.78	0.76	0.76	0.78	0.79	0.81	0.79	0.81
Ltd ctct.	0.12	0.13	0.15	0.14	0.14	0.14	0.15	0.13	0.14
No ctct.	0.059	0.084	0.089	0.090	0.076	0.067	0.050	0.055	0.048