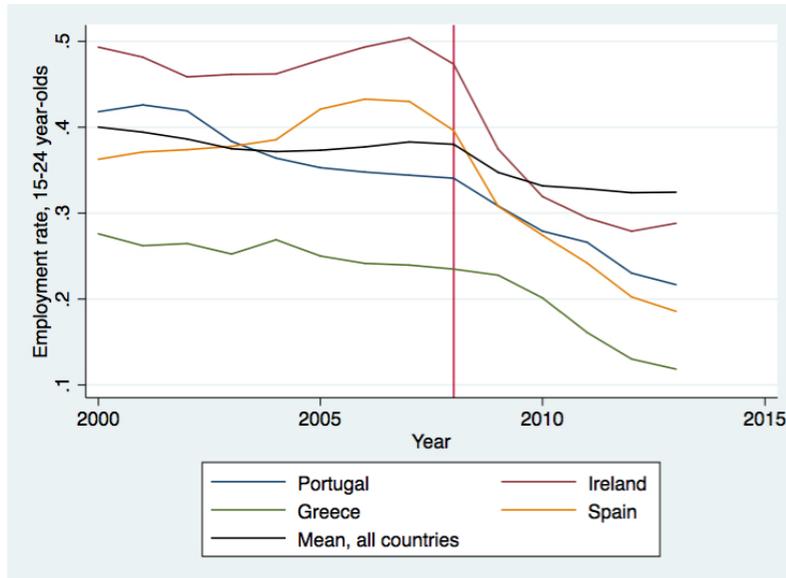# Synergies in Labour Market Institutions

The nonlinear effect of minimum wages on youth employment
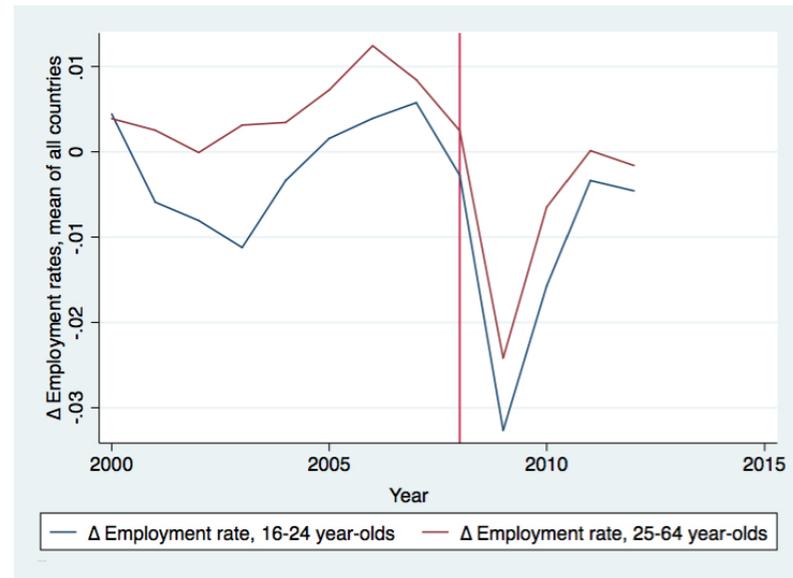
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Why should we care?

Youth employment rates are falling…

…more so than general employment

Meanwhile, minimum wages are returning to the political spotlight across the globe

Outline

Investigating the effect of minimum wages (MW) on youth employment

- Hypothesis: effect of MW on youth employment varies with institutions

- Theoretical background

    - MW have a negative demand-side but positive supply-side effect on the employment rate
    - Institutional synergies can shape the overall effect (Coe and Snower 1997)

What is the contribution of this paper?

- MW have negative or insignificant effects on youth employment

- Synergies determine the size of this effect

Data and Methodology

- Unbalanced panel dataset of 19 OECD countries over 1985-2013

- Empirical model: $emp_{it} = \beta mw_{it-1} + \mathbf{I}_{\mathbf{it}}^{\mathrm{T}}\psi + \boxed{mw_{it-1} * \mathbf{I}_{\mathbf{it}}^{\mathrm{T}}\Phi} + \mathbf{X}_{\mathbf{it}}^{\mathrm{T}}\Theta + \tau_t + \partial_i + \varepsilon_{it}$

Variable	Measure
emp_{it}	Employment rate, 15-24 year-olds
mw_{it-1}	Minimum-to-median wage ratio
$\mathbf{I}_{\mathbf{it}}^{\mathrm{T}}$	Vector of institutional variables (standardised for regression)
− Employment protection	OECD Employment Protection Index: 0 (least restrictive) to 6
− Unemployment benefits	Average benefits as % of previous earnings
− Union density	Proportion of wage and salary earners covered by a union
− Active labour market policies (ALMP)	Government expenditure as % of GDP
$\mathbf{X}_{\mathbf{it}}^{\mathrm{T}}$	Vector of control variables
− Demand-side control	Harmonised unemployment rate of 25-64 year-olds
− Supply-side control	15-24 year-olds as proportion of total working age population
− Productivity	PPP-adjusted GDP/capita

Mean Statistics

Country	Period	Youth emp.	MWs	Emp. protection	ALMPs	Unemp. Benefits	Union dens.
Australia (AUS)	1986-2013	61%	59%	1.33	0.15%	24%	28%
Belgium (BEL)	1985-2012	28%	54%	1.88	0.53%	41%	53%
Canada (CAN)	1985-2013	57%	41%	0.92	0.21%	17%	31%
Czech Rep. (CZE)	2002-2012	28%	37%	3.16	0.07%	6%	18%
France (FRA)	1985-2012	31%	56%	2.39	0.70%	38%	9%
Greece (GRC)	2002-2010	24%	48%	2.80	0.15%	13%	24%
Hungary (HUN)	2002-2012	21%	50%	2.00	0.34%	13%	15%
Ireland (IRL)	2001-2013	41%	49%	1.35	0.61%	43%	34%
Japan (JPN)	1990-2013	42%	33%	1.61	0.11%	9%	21%
Korea (KOR)	2002-2010	27%	40%	2.37	0.16%	9%	10%
Luxembourg (LUX)	2002-2012	24%	54%	2.44	0.43%	27%	38%
Netherlands (NLD)	1985-2013	59%	52%	2.92	0.29%	47%	23%
New Zealand (NZL)	1986-2012	56%	53%	1.38	0.40%	29%	29%
Poland (POL)	2002-2012	24%	44%	2.23	0.21%	11%	16%
Portugal (PRT)	1985-2012	40%	53%	4.57	0.36%	38%	26%
Slovakia (SLK)	2002-2012	25%	44%	2.21	0.14%	9%	20%
Spain (ESP)	1987-2012	34%	43%	2.71	0.54%	36%	16%
United Kingdom (GBR)	2004-2011	55%	46%	1.26	0.04%	16%	27%
United States (USA)	1985-2013	55%	36%	0.26	0.08%	14%	14%
Measurement unit		% of 15-24 year-olds	% of median wage	0 (lowest) to 6 (highest)	% of GDP	% of previous earnings	% of workers covered

Main Model

	Initial Model	Preferred Model	Misspecified Model
MW, lagged	-0.288***	-0.260***	-0.322**
	(0.057)	(0.061)	(0.126)
Institutional variables			
Employment protection	0.050	-0.011	0.000
	(0.029)	(0.011)	(0.013)
Unemployment benefits	0.147*	0.176**	-0.039***
	(0.077)	(0.075)	(0.013)
Union density	0.146***	0.134***	0.025
	(0.037)	(0.038)	(0.015)
ALMPs	-0.162***	-0.173***	0.007
	(0.047)	(0.049)	(0.009)
Interaction with MW			
Employment protection	-0.120*		
	(0.062)		
Unemployment benefits	-0.349**	-0.402**	
	(0.141)	(0.140)	
Union density	-0.244***	-0.225***	
	(0.063)	(0.067)	
ALMP	0.320***	0.343***	
	(0.089)	(0.092)	
Elasticity w.r.t. MW	-0.261***	-0.236***	-0.363**
N	371	371	371
R^2	0.828	0.823	0.744

Control variables and year dummies omitted from table for simplicity. Robust standard errors clustered by country.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Main Model

Unemployment benefits: negative synergy
- Decrease opportunity cost of unemployment
- MW fail to attract workers under high benefits but act as an additional cost for employers

Union density: negative synergy
- Advocate protection of insiders at expense of outsiders (Kawaguchi and Tetsushi 2014)
- Young workers are less likely to be union members (Keune 2015)

ALMP: positive synergy
- Training programmes lead to better applicants
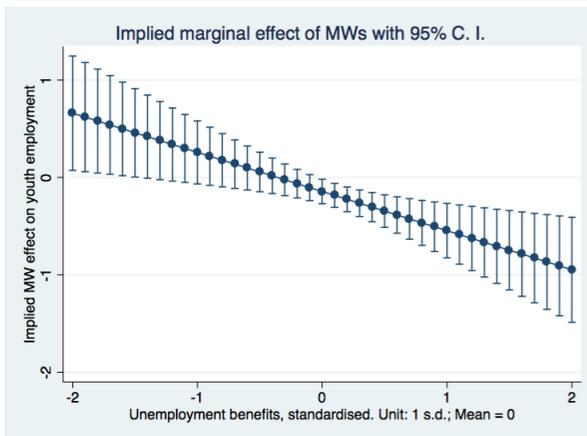- Draw in discouraged workers (Scarpetta 1996)

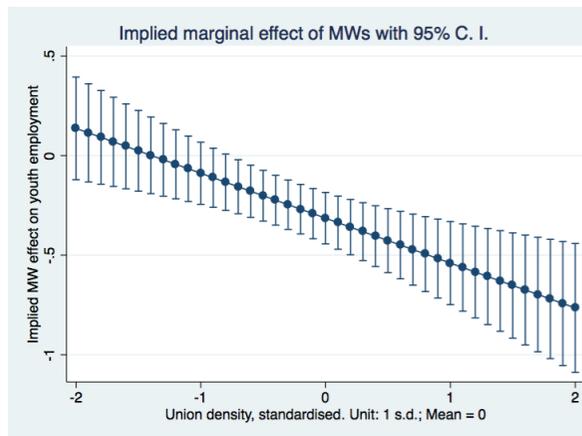|	Preferred
Interaction with MW	
Unemployment benefits	-0.402**
	(0.140)
Union density	-0.225***
	(0.067)
ALMPs	0.343***
	(0.092)
Elasticity w.r.t. MW	-0.236***
$\mathcal{N}$	371
R^2	0.823

*** p<0.01, ** p<0.05, * p<0.1

Main Model

- Unemployment benefits and union density are *policy substitutes* to MW

- ALMP are *policy complements* to MW

- Ideal setting would be low unemployment benefits and union density, and high ALMP
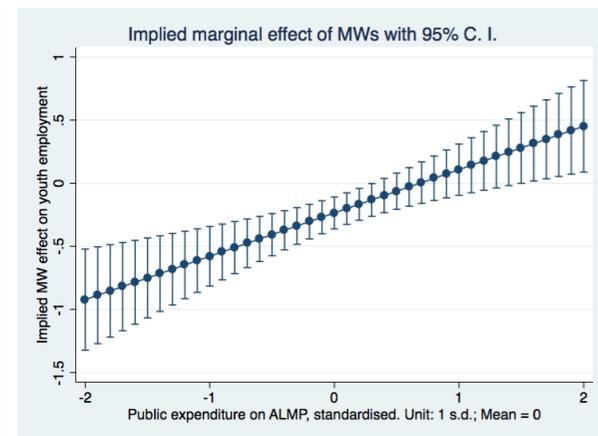
- But does such a setting exist?

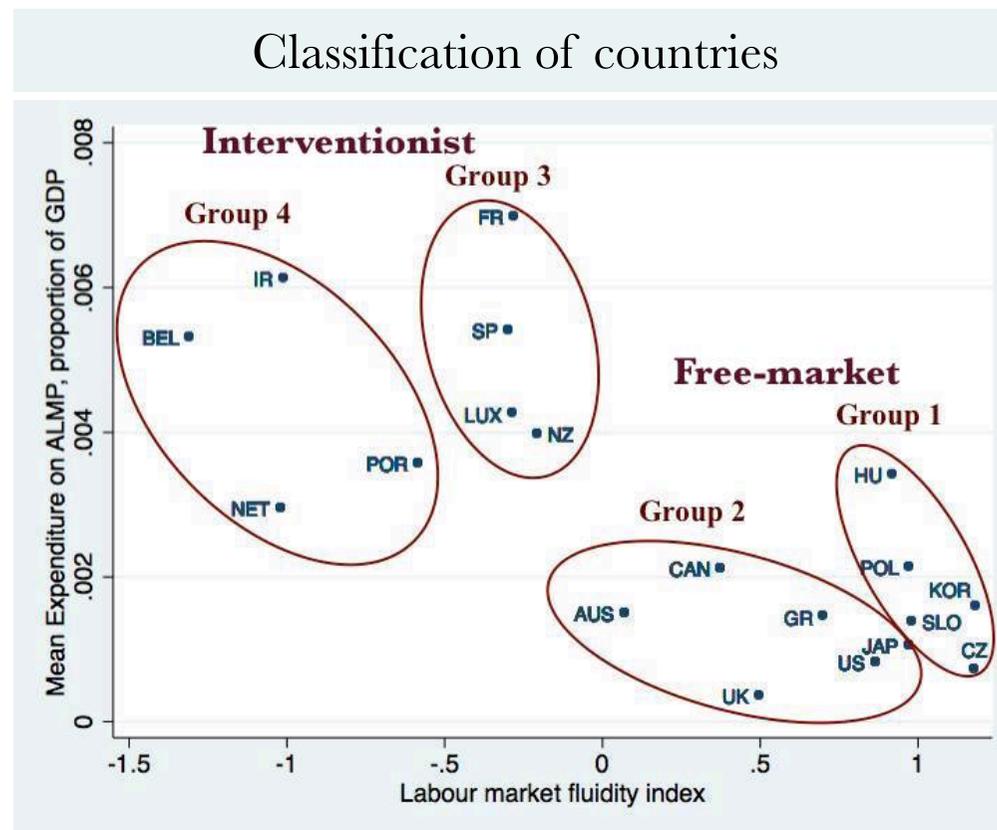| Marginal effect by unemp. benefits	Marginal effect by union density	Marginal effect by ALMP

Cross-country Analysis

- *Labour market fluidity*: index of average benefits and density

- Ideal setting does not exist in practice

- Two types of countries
  - free-market (groups 1 and 2) and interventionist (groups 3 and 4)

Classification of countries

Cross-country Analysis

- Implied marginal effect of MW insignificant for most free-market countries

- Significant negative effect for most interventionist countries

- Note: implied effects should be viewed as merely indicative

Implied marginal effects of MW on employment, free-market countries				Implied marginal effects of MW on employment, interventionist countries			
Group 1	Marginal Effect	Group 2	Marginal Effect	Group 3	Marginal Effect	Group 4	Marginal Effect
HUN	0.376**	JPN	0.054	FR	0.175	IRL	-0.425***
KOR	0.277	USA	-0.032	ESP	-0.073	PRT	-0.523***
POL	0.220	GRC	-0.055	NZL	-0.245***	BEL	-0.751***
CZE	0.138	CAN	-0.163**	LUX	-0.265***	NLD	-0.874***
SLK	0.109	GBR	-0.341***	*Average*	-0.102	*Average*	-0.643
		AUS	-0.434***	*** p<0.01, ** p<0.05, * p<0.1			
Average	0.224	*Average*	-0.162				

*** p<0.01, ** p<0.05, * p<0.1

Cross-country Analysis

In order to confirm the analysis, a new model is needed

- Model 2: $emp_{it} = \beta mw_{it-1} + \mathbf{I}_{\mathbf{it}}^{\mathrm{T}}\psi + \boxed{\gamma mw_{it-1} * intervention_i} + \mathbf{X}_{\mathbf{it}}^{\mathrm{T}}\Theta + \tau_t + \partial_i + \varepsilon_{it}$

- Institutional synergies replaced by $intervention_i$

- $intervention_i = 1$ for interventionist countries

- Result: MW less costly in free-market countries
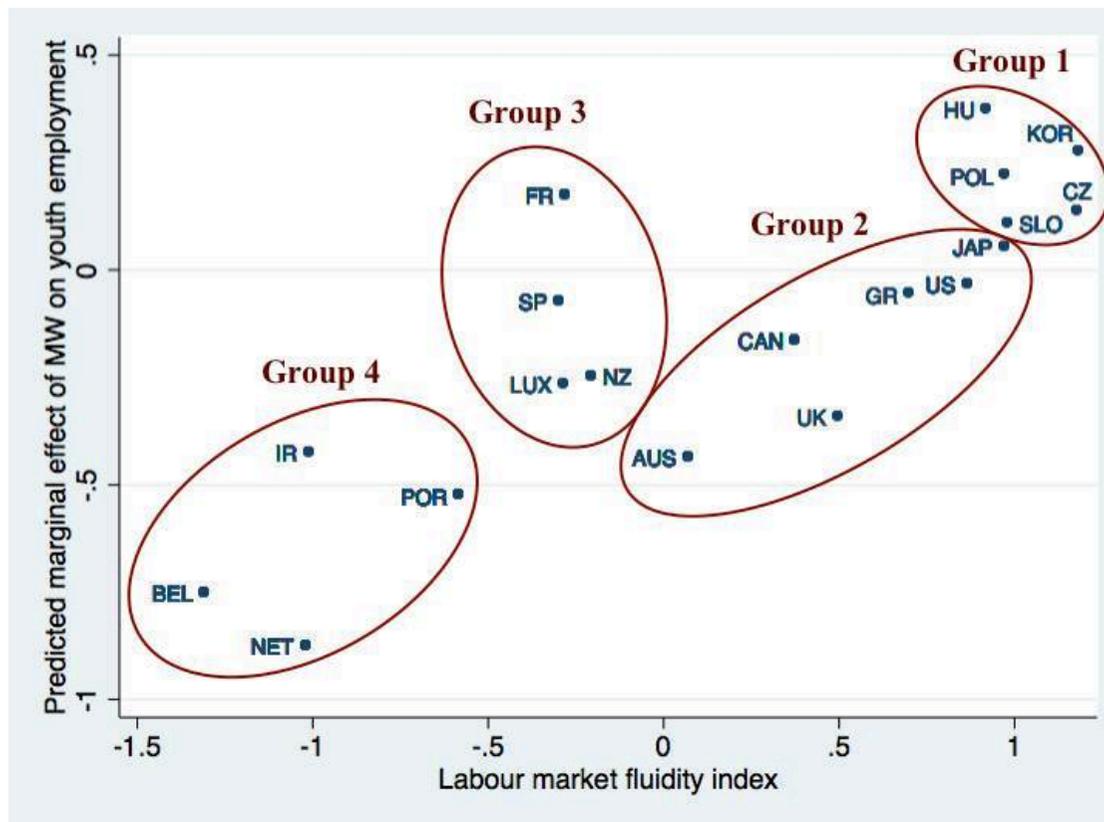
Model 2 marginal effect of MW	
Group	Marginal Effect
Free-market	-0.229*
Interventionist	-0.385**

*** p<0.01, ** p<0.05, * p<0.1

Conclusion

- Institutional synergies matter!
- MW are not costly in fluid labour markets
- In rigid labour markets MW have high costs

Marginal effect of MW by labour market fluidity

Robustness Checks

Two potential problems:
1. Unbalanced panel
2. Small number of clusters

- Ad 1: Balanced subsample
- Ad 2: Bootstrap standard errors

$$S_{\hat{\beta}_i} = \left(\frac{1}{N-1} \sum_{n=1}^{N} (\hat{\beta}_{i,n} - \bar{\beta}_i)^2 \right)^{1/2} \quad \text{where}$$

$S_{\hat{\beta}_i} \equiv$ bootstrap standard error

$N \equiv$ number of subsamples n

$\hat{\beta}_{i,n} \equiv$ coefficient estimate in subsample n

$\bar{\beta}_i \equiv (1/N) \sum_{n=1}^{N} \hat{\beta}_{i,n}$, the average bootstrap estimate

Main robustness checks			
	Preferred	Balanced	Bootstrap
MW (lagged)	-0.260***	-0.163**	-0.260**
	(0.061)	(0.068)	(0.118)
Interactions with MW			
Unemp. benefits	-0.402**	-0.369***	-0.402*
	(0.140)	(0.087)	(0.245)
Union density	-0.225***	-0.232***	-0.225**
	(0.067)	(0.044)	(0.114)
ALMPs	0.343***	0.346***	0.343**
	(0.092)	(0.055)	(0.142)
N	371	234	371
R^2	0.823	0.903	0.823

*** p<0.01, ** p<0.05, * p<0.1

Contribution to Literature

- MW can have negative or insignificant employment effects
  - Brown et al (1982), OECD (1998)
  - Card and Krueger (1994), Dickens et al (1998)

- Synergies in institutions
  - Coe and Snower (1997), Neumark and Wascher (2004)

- Robustness checks
  - Unbalanced panel
  - Small number of clusters

Limitations and Future Research

- IV model for MW
    - No suitable IV found yet (Dolton and Bondibene 2011)
    - MW not exogenous, but *conditionally* exogenous

- Data availability for institutional variables

- Only investigating costs but not benefits of MW

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