Wage Bargaining Regimes and Firms' Adjustments to the Great Recession

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Outline

- Analysis Preview
- Motivation
  - *The Great Recession*
- Literature review
  - *Micro vs Macro data*
- A new ECB database
  - *Novel features*
  - *Descriptive evidence of WB in EU*
- Empirical strategy and results
- Conclusions

This paper

WHAT: Tests if different degrees of downward wage rigidity (DWR) across Wage Bargaining (WB) set-ups affected firms adjustments to the Great Recession (GR) in EU as to changes in:

Wages, Employment, Profits

WHY: Can different WB set-ups explain the different performance of labour markets across EU? Important policy implications

Contribution

Contributes to the literature on LM institutions and economic performance using ECB **new high quality micro data** comparable across-countries relating

1. The reaction of firms to the GR in 13 EU countries
2. Degree of centralisation of WB institutions at the firm-level

Preview of findings

In line with *theoretical predictions*, we find that WB regimes play a crucial role in shaping the response of firms to a negative shock:

Firms subject to **centralised WB** systems - as opposed to decentralised ones - show stronger:

1. DWR: overall their wages are 5% higher after the GR
2. Employment reduction: share of firms decreasing in size is 4% higher
3. Profit reduction: additional cut in profit of more than 7%

Motivation

Motivation: The Great Recession (GR)

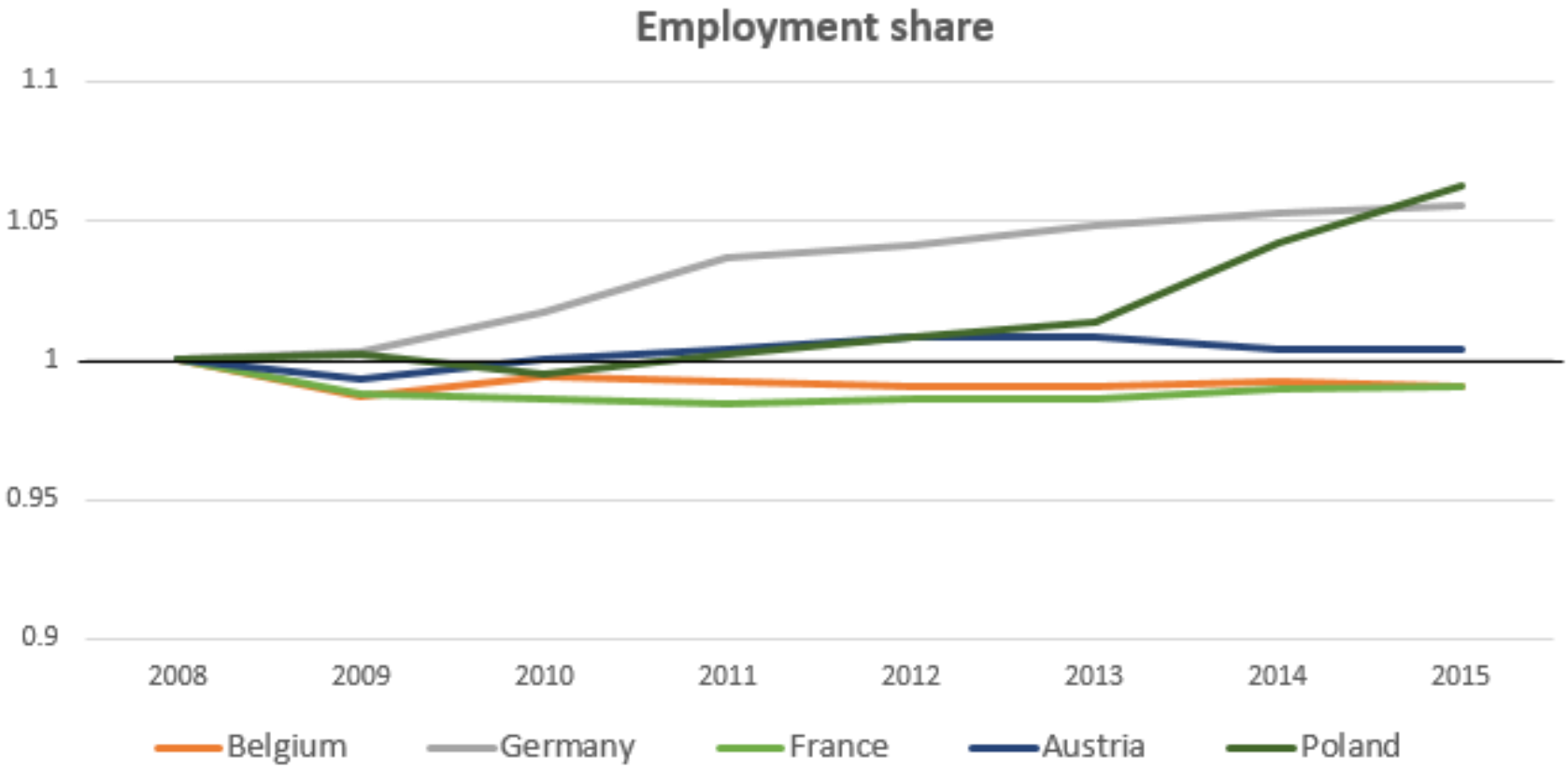
The GR had a heavy impact on labour markets in EU:

- Loss of around 4 million jobs
- Wept out the gains from almost 10 years of strong job creation
- Onset of a second recession between 2011 and 2013 with the loss of a further 1.8 million jobs across the euro area

Notable Feature

Considerable degree of cross-country heterogeneity in labour market adjustments

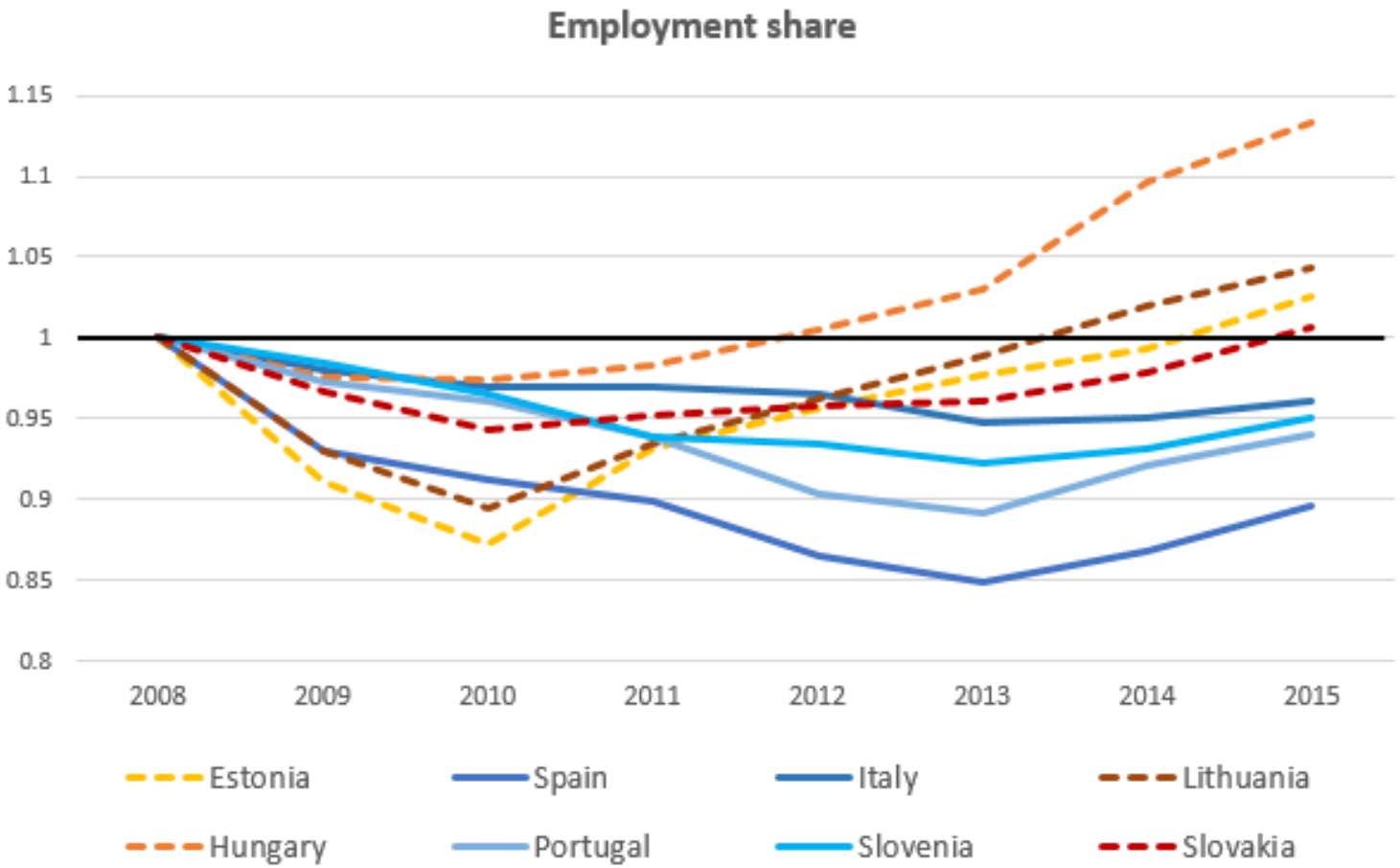
The Great Recession: Employment (1/2)



Employment is calculated as a percentage of total population (aged between 16-64) and indexed at 2008.
Source: EUROSTAT

Some economies emerged relatively unscathed...

The Great Recession: Employment (2/2)

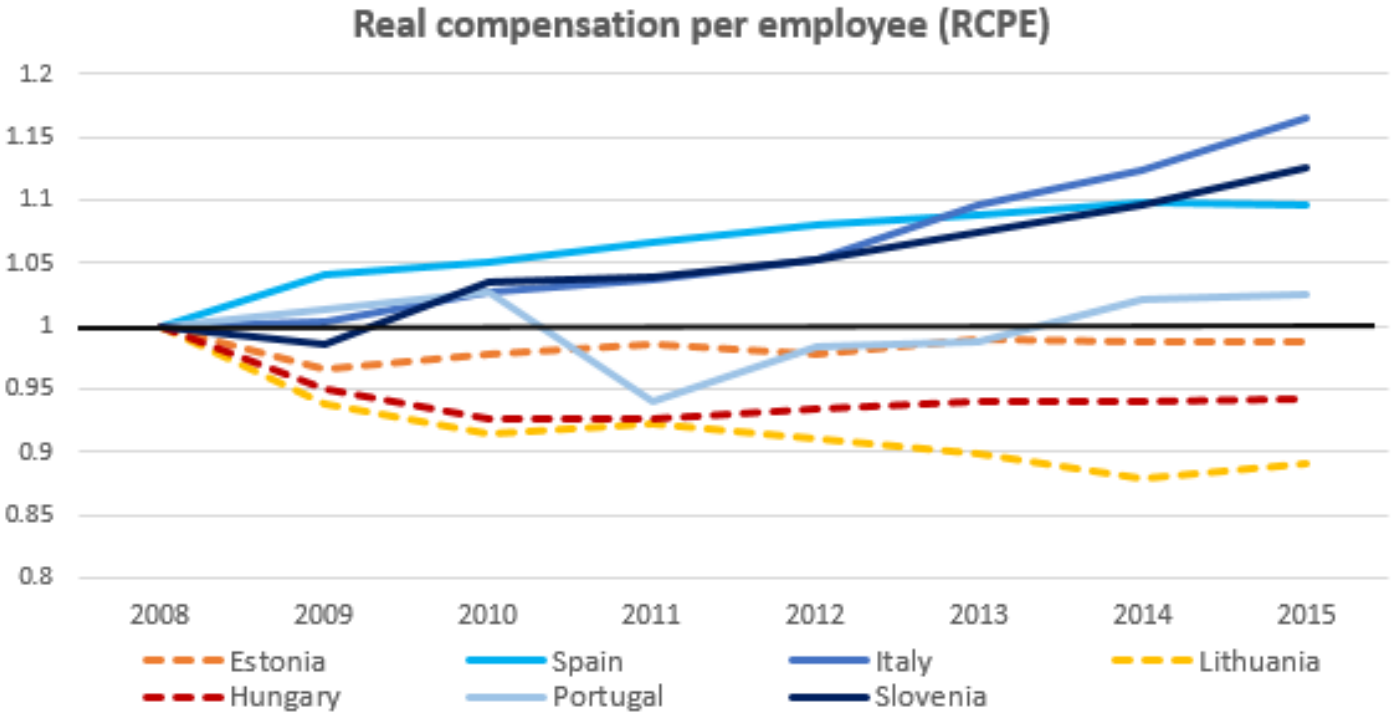


Others have seen steep decrease in employment...

- In some countries it returned at the pre-crisis level (CEE, dashed lines)
- In others it still lies well below its level in 2008 (continuous lines)

The Great Recession: Wages

Can differences in DWR dictated by WB explain employment trends?



Deflator GDP: total economy. National currency idexed at 2008.
Source: ATECO

- *Dashed lines*: wages are negotiated mostly at the firm-level
  $\Rightarrow$ **decentralised WB**, immediate fall in wages
- *Continuous lines*: wages are negotiated mostly at the sector-level
  $\Rightarrow$ **centralised WB**, high DWR despite dramatic $\downarrow$ in employment

Motivation

Such patterns have re-opened a long standing debate on whether/to what extent the **level of negotiation** of WB shapes macro performance following economic shocks (Anderton et al, 2015; Fabiani et al, 2015; OECD Outlook 2013, 2016)

Why does the level of the negotiation matter?

Theoretical Predictions

WB set-ups taking place at a level other than the firm (**centralised bargaining**) prevent wages to adjust downwards during economic downturns, thus

- they can *hamper* the smooth functioning of labour markets
- and *amplify* the impact of a shock on employment

(Nickell and Andrews(1983), McDonald and Solow (1981))

Example

Consider a small firm subject to multi-employer (ME) WB:

- Firm takes wages as exogenously fixed
- Chooses employment so that the wage equals its marginal productivity

A large aggregate demand shock such as the GR translates fully into **employment losses** if the cost of labour remains fixed

On the contrary, at the **firm-level** both wages and employment are bargained:

- The bargained cost of labour could fall as a response to the fall in aggregate demand

The reduction of the labour force would be mitigated
(Card, 1990; Nickell and Andrews, 1983; McDonald and Solow, 1981)

time-dep

Motivation

How strong is the case -other than theoretical predictions - supporting reforms to enhance wage flexibility?

In the **policy arena**, recent labour reforms were passed in PT, GR or ES with the aim of easing wage adjustments

- Rationale: poor LM performance in those economies during the GR was due to a high degree of wage rigidity (OECD, 2013)

Despite the relevance of the issue, available empirical evidence comparable across countries and sectors is **scarce** (Visser, 2013)

$\Rightarrow$ Generally poor understanding and measurement of institutions

This analysis

This analysis improves on measurement of WB set-ups and provides new evidence on the period 2006-2012:

- Using a **new micro-distributed database** relating firms' adjustment mechanisms to measures on centralisation of WB systems at the *country-industry-firm size* level
- Checking if the shock is distributed across reductions in **wages, employment, and profits** in a theoretically consistent way

Literature: micro vs macro

Micro literature: limitations

When relying on **micro data**, centralised WB systems are shown to play a very important role:

- Inversely related to wage flex. and responsiv. to LM conditions (Rute Cardoso and Portela, 2009; Faggio and Nickell, 2005)
- Positively related to employm. reduction (Guimaraes et al., 2014)

However, only **single country-studies**, for which you need:

- Available micro-data on WB (not the case for CEE)
- Cross-section within country variation (Portugal)
- Over-time variation through deregulation/reforms (UK)

Micro-studies can focus on a very limited number of countries

Not suited for explaining the role of WB for heterogeneous performance across countries

Macro literature: limitations

Large **cross-country differences** in LM institutions has tradit. been identified as important explanatory factor for divergent economic performance of countries (Freeman, 2007). However

1. Country-level panel reg. not robust (Blanchflower, 2001)
2. Cannot **disentangle** the impact of instit. from the other events occurring simultaneously at the macro-level (Backer, 2005)
3. Cannot account for crucial factors at **micro-level** determining firms *endogenous sorting* into WB set-ups

New data at the *country-sector-firm size level* captures variation in WB within-country and deals with unobserved heterogeneity with a full battery of fixed effects

Multi-level bargaining: same implications as ME

Distinction between levels is only a first approximation: many countries affected by the GR have **two-tier bargaining structures**

$\Downarrow$

Multi-level Bargaining

Higher level of bargaining dominates:

Firm-level WB can *only supplement* multi-employer agreements influencing wages through ”wage-drift” with respect to the wage floor determined at the sector-level

Favorability principle **constraints adequate adjustment** to temporary shocks by cutting wages (same implications of single-level ME set-ups, Boeri (2014))

New harmonised micro-distributed database

New harmonised micro-distributed database

The database used is the outcome of a merging procedure between two ECB database:

- **CompNet**: repeated cross-section data from firm's balance-sheet at the *country-industry-firm size* level
- **WDN**: cross-section survey; info on WB set-ups at the firm-level:

  $\Rightarrow$ WB pre-dating the GR and stable until 2012: *time-invariant*
  $\Rightarrow$ Possible to identify three WB set-ups for each cell:

  - *Centralised WB*: Multi-employer (ME) and, in two-tier countries only, Multi-level (ML)
  - *Firm-level* (FL) in non two-tier countries only
  - *No bargaining* regulation at all

New database: adjustment mechanisms

Three possible adjustment mechanisms of interest:

1. **Labour costs per employee**: labour costs (wages and employers' social security contribution) divided by the number of employees
2. **Profit margin**: EBIT over turnover
3. **Share of shrinking firms**: built using CompNet *transition matrices* matrices

Variable	Mean	Median	Std Deviation	Min.	Max.
Labor Costs per Employee	25.45	20.31	15.12	4.37	64.93
Share of shrinking firms	0.22	0.20	0.11	0	0.65
Profit Margin	0.031	0.031	0.023	-0.107	0.123

Descriptives: variation in WB centralisation

OECD: *"In a number of countries is extremely difficult to localise "the" predominant bargaining level. Ideally it should be determined by accounting for the different levels and at which level most of the change in wages is being determined"* (Employment Outlook 2013)

coverage lenght

Descriptives: WB across sectors/size-classes

Both sector and size-class play an important role in determining allocation of firms into WB regimes: controlling for them alleviates concerns of endogeneity examples comparison

Empirical Specification and Results

Empirical Specification

We follow Blanchard and Wolfers (2000) by allowing for the negative shock to have a stronger effect in those cells characterised with a higher degree of WB centralisation

$$y_{zsct} = \alpha + \eta Centr_{zsc} + \lambda FL_{zsc} +$$
$$\beta_1 Centr_{zsc} * Crisis_t + \beta_2 FL_{zsc} * Crisis_t +$$
$$\tau_t + \varphi_{cs} + \pi_{sz} + \chi_{cz} + (\omega_{cst} + \nu_{szt} + \xi_{czt} + \sigma_{cst^{2/3}} + \delta_{szt^{2/3}} + \varrho_{czt^{2/3}}) + \varepsilon_{zsct}$$

- *zsct* are respectively: size class, sector, country, time
- y_{zsct} is any of our dependent variables
- Centr, FL are the % of firms engaging in the WB set-ups; parameter of interests are β_1, β_2, (omitted category: no bargaining)
- *Crisis* is a dummy equal to 1 after the shock
- Error terms clustered at the country-sector level

Results: Labour costs per employee

From (3): a 10pp (std) increase in

- % Centralised
  - additional increase in wages of 0.9% (2.9%) already in 2009
  - additional increase in wages of another 0.7% (2%) in the following two years
- % FL
  - not significant as expected

After the GR wages of firms in centralised regimes have adjusted downwards less than those of firms in decentralised ones: evidence of DWR

Labour Costs per Employee	(1)	(2)	(3)
%Centralised	-4.910	-1.374	-1.374
	(2.994)	(2.299)	(2.301)
Firm-level	-0.0524	0.834	0.828
	(2.789)	(1.765)	(1.765)
%Centr*Crisis	1.535***	2.221***	2.219***
	(0.457)	(0.594)	(0.594)
FL*Crisis	3.074	3.280	3.287
	(3.133)	(2.761)	(2.767)
%Centr*Crisis(+1)	0.628**	1.043***	1.043***
	(0.272)	(0.333)	(0.334)
FL*Crisis(+1)	-2.277	-1.987	-1.984
	(1.816)	(2.312)	(2.312)
%Centr*Crisis(+2)	0.292	0.657*	0.658*
	(0.405)	(0.364)	(0.364)
FL*Crisis(+2)	-0.953	-1.589	-1.584
	(1.327)	(1.462)	(1.463)
Observations	920	920	920
R-squared	0.963	0.991	0.991
Country FE	YES		
Sector FE	YES		
Size FE	YES		
Year FE	YES	YES	YES
C_S FE		YES	YES
S_Z FE		YES	YES
Z_C FE		YES	YES
C_S_Trend		YES	YES
S_Z_Trend		YES	YES
C_Z_Trend		YES	YES
C_S_Trend^2/3			YES
S_Z_Trend^2/3			YES
C_Z_Trend^2/3			YES

Clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Non Param PM sample

Results: Share of shrinking firms

Is the different degree in DWR linked to different employment dynamics?

From (3): a 10pp (std) increase in

- % Centralised
  - additional ↑ in %of shrinking firms of 4% (12%) after 2010
- % FL
  - not significant as expected

After the GR the share of firms cutting employment was higher in those cells with a higher share of firms subject to centralised bargaining

Non Param

Share of Shrinking Firms	(1)	(2)	(3)
%Centralised	0.0546	-0.0319	-0.0318
	(0.0794)	(0.0617)	(0.0617)
Firm-level	-0.00170	0.0922	0.0924
	(0.193)	(0.101)	(0.101)
%Centr*Crisis	-0.0852**	-0.0680*	-0.0681*
	(0.0348)	(0.0377)	(0.0378)
FL*Crisis	0.0781	0.0124	0.0122
	(0.160)	(0.116)	(0.116)
%Centr*Crisis(+1)	-0.0130	0.00196	0.00193
	(0.0158)	(0.0185)	(0.0186)
FL*Crisis(+1)	-0.0704	-0.0828	-0.0830
	(0.0794)	(0.0751)	(0.0751)
%Centr*Crisis(+2)	0.0842***	0.0832**	0.0832**
	(0.0283)	(0.0342)	(0.0342)
FL*Crisis(+2)	-0.0364	-0.0144	-0.0145
	(0.0883)	(0.0787)	(0.0786)
Observations	719	719	719
R-squared	0.675	0.890	0.890
Country FE	YES		
Sector FE	YES		
Size FE	YES		
Year FE	YES	YES	YES
C_S FE		YES	YES
S_Z FE		YES	YES
Z_C FE		YES	YES
C_S_Trend		YES	YES
S_Z_Trend		YES	YES
C_Z_Trend		YES	YES
C_S_Trend^2/3			YES
S_Z_Trend^2/3			YES
C_Z_Trend^2/3			YES

Clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results: Profit Margin

Do firms more affected by DWR cut profits more?

From (3): a 10pp (std) increase in

- % Centralised
  - additional ↓ in PM of 7% (21%)
- % FL
  - not significant as expected

After the outbreak of the GR firms subject to more DWR have been decreasing PM more than firms in decentralised set-ups

Non Param

Profit Margin	(1)	(2)	(3)
%Centralised	-0.00523	0.000969	0.000981
	(0.0148)	(0.0118)	(0.0118)
Firm-level	0.0306	0.0220*	0.0220*
	(0.0182)	(0.0127)	(0.0127)
%Centr*Crisis	0.0226**	0.0133*	0.0134*
	(0.00933)	(0.00705)	(0.00707)
FL*Crisis	0.0355	0.0447*	0.0448*
	(0.0251)	(0.0265)	(0.0265)
%Centr*Crisis(+1)	-0.0168**	-0.0214**	-0.0215**
	(0.00656)	(0.00898)	(0.00901)
FL*Crisis(+1)	-0.0298*	-0.0252	-0.0253
	(0.0153)	(0.0164)	(0.0164)
%Centr*Crisis(+2)	-0.00964*	-0.0137	-0.0137
	(0.00531)	(0.00838)	(0.00840)
FL*Crisis(+2)	-0.0174	-0.00823	-0.00826
	(0.0136)	(0.0154)	(0.0154)
Observations	795	795	795
R-squared	0.510	0.762	0.762
Country FE	YES		
Sector FE	YES		
Size FE	YES		
Year FE	YES	YES	YES
C_S FE		YES	YES
S_Z FE		YES	YES
Z_C FE		YES	YES
C_S_Trend		YES	YES
S_Z_Trend		YES	YES
C_Z_Trend		YES	YES
C_S_Trend^2/3			YES
S_Z_Trend^2/3			YES
C_Z_Trend^2/3			YES

Clustered standard errors in parentheses

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

Conclusions

- Better data improves cross-country evidence
- Results are theoretically consistent and economically meaningful
- Currently working on a specification with country-specific timing of shock Ctry Shock

By preventing wages to adjust downwards during the GR, centralised WB regimes led to

- an additional increase in the share of firms cutting employment of 4% $\rightarrow$ amplify the impact of the GR on employment
- an additional decrease in profit margin of 7% $\rightarrow$ additional channel for firms suffering from DWR

Thank you for your attention!

Appendix

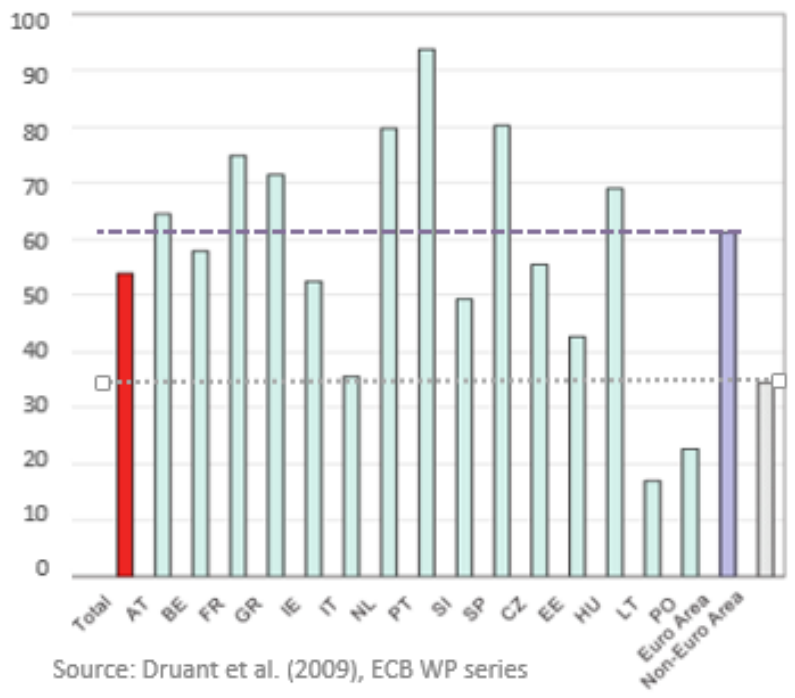
WB in the Europe: evidence on time-dependency

Time-dependent wage rules is when the timing of the adjustment is exogenously given and does not depend on the state of the economy (Layard et al. 1991)

- Infrequent bargaining increase the degree of nominal inertia of the economy
- When collective contracts are not renegotiated on a continuous fashion, firms under already settled agreements will experience severe employment losses after a large demand shock

TIME DEPENDENT WAGE ADJUSTMENT ACROSS COUNTRIES

Percentage of firms that change wages in a particular month



Source: Druant et al. (2009), ECB WP series

Time-dependent process exceeds 60% in the EA countries, while it is less than 35% for non-EA ones: possibly in relation to the more widespread diffusion of collective bargaining agreements in the EA.

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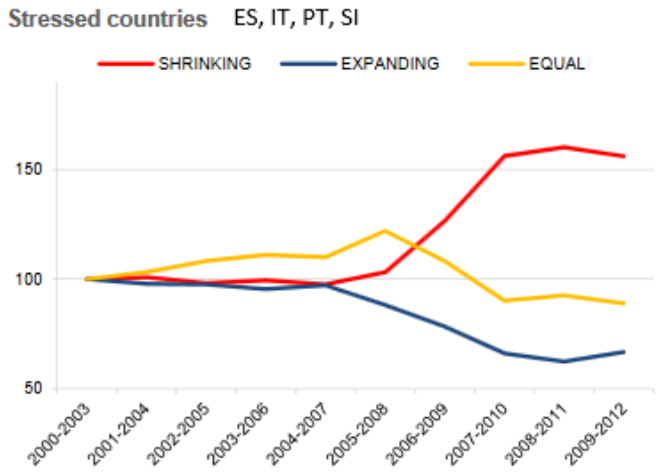
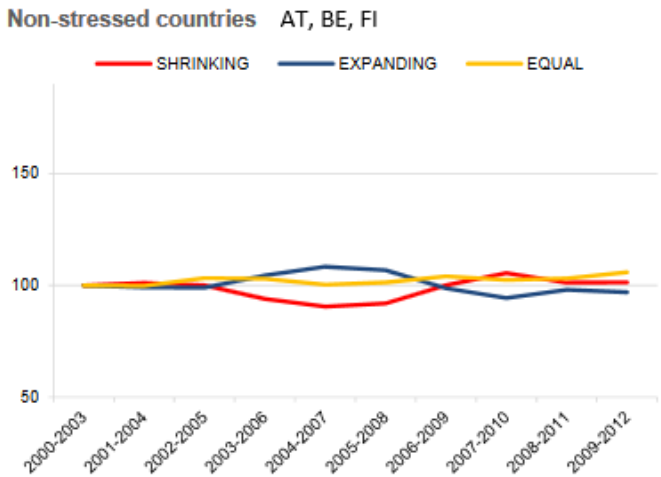
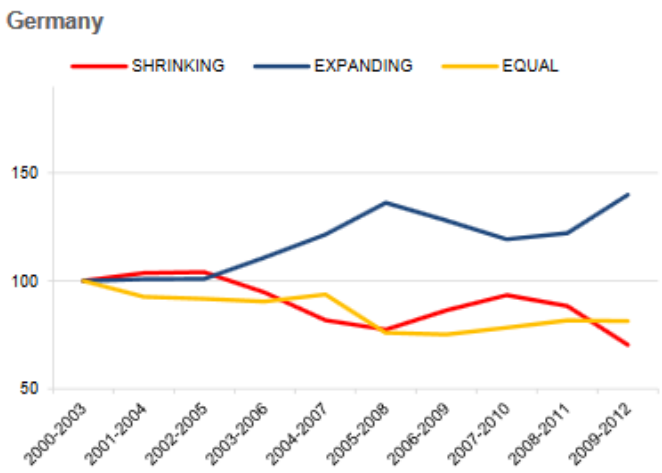
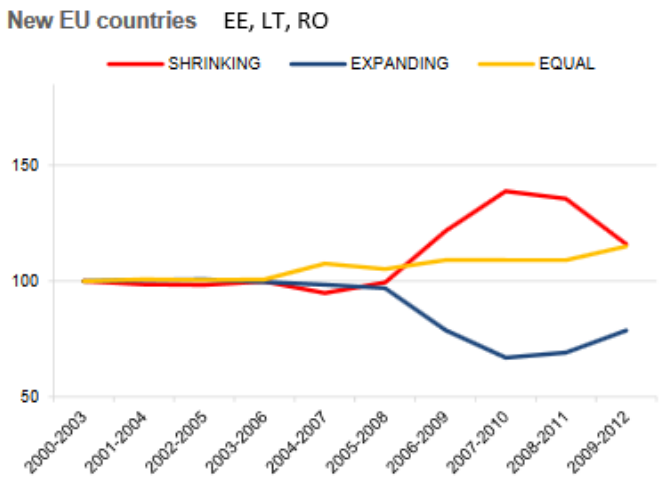
Transition Matrices









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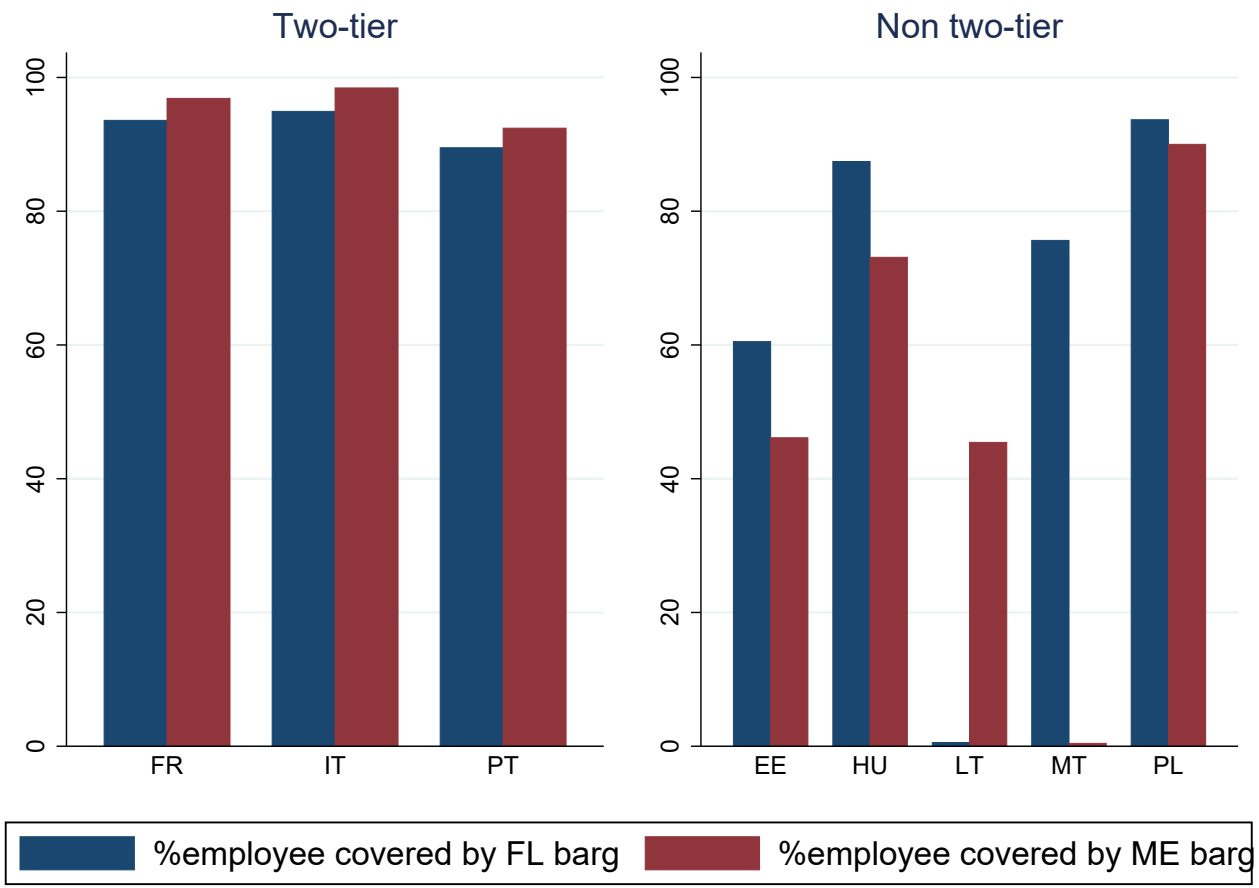
Coverage



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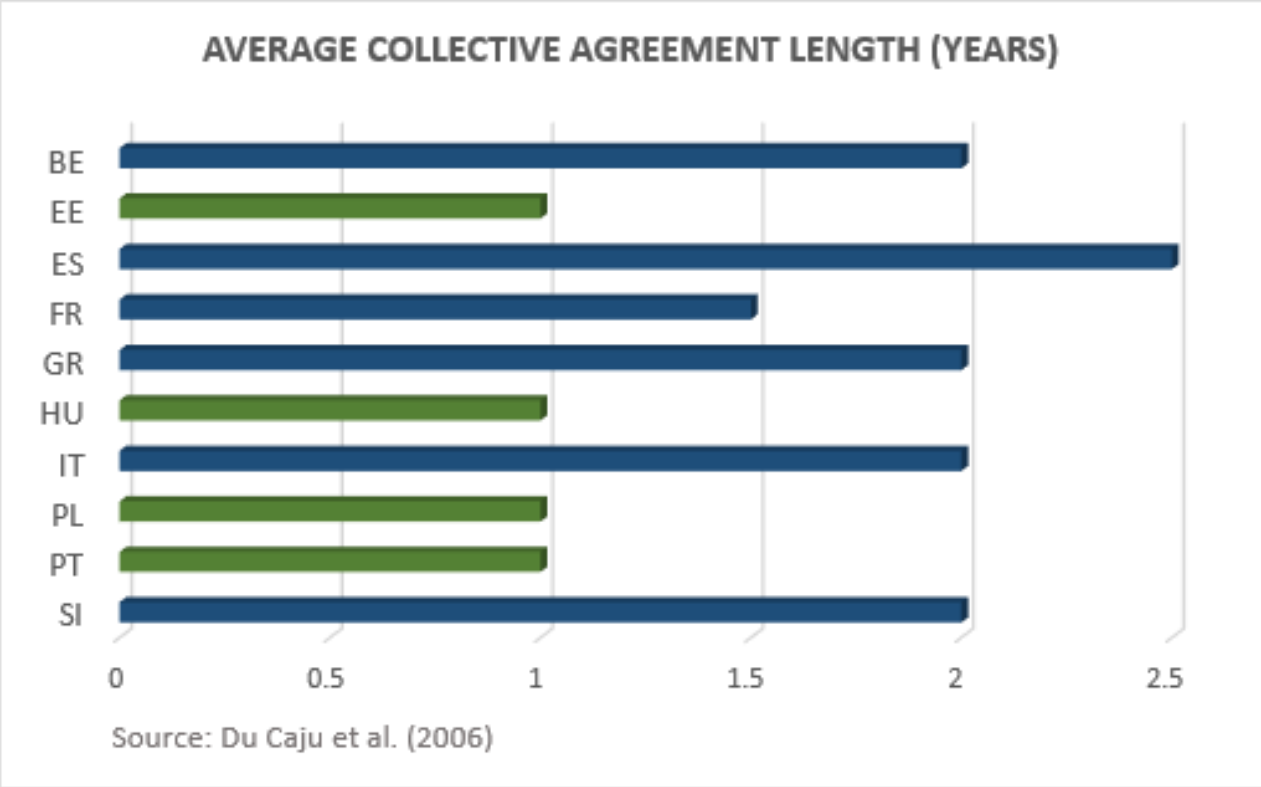
Average Length



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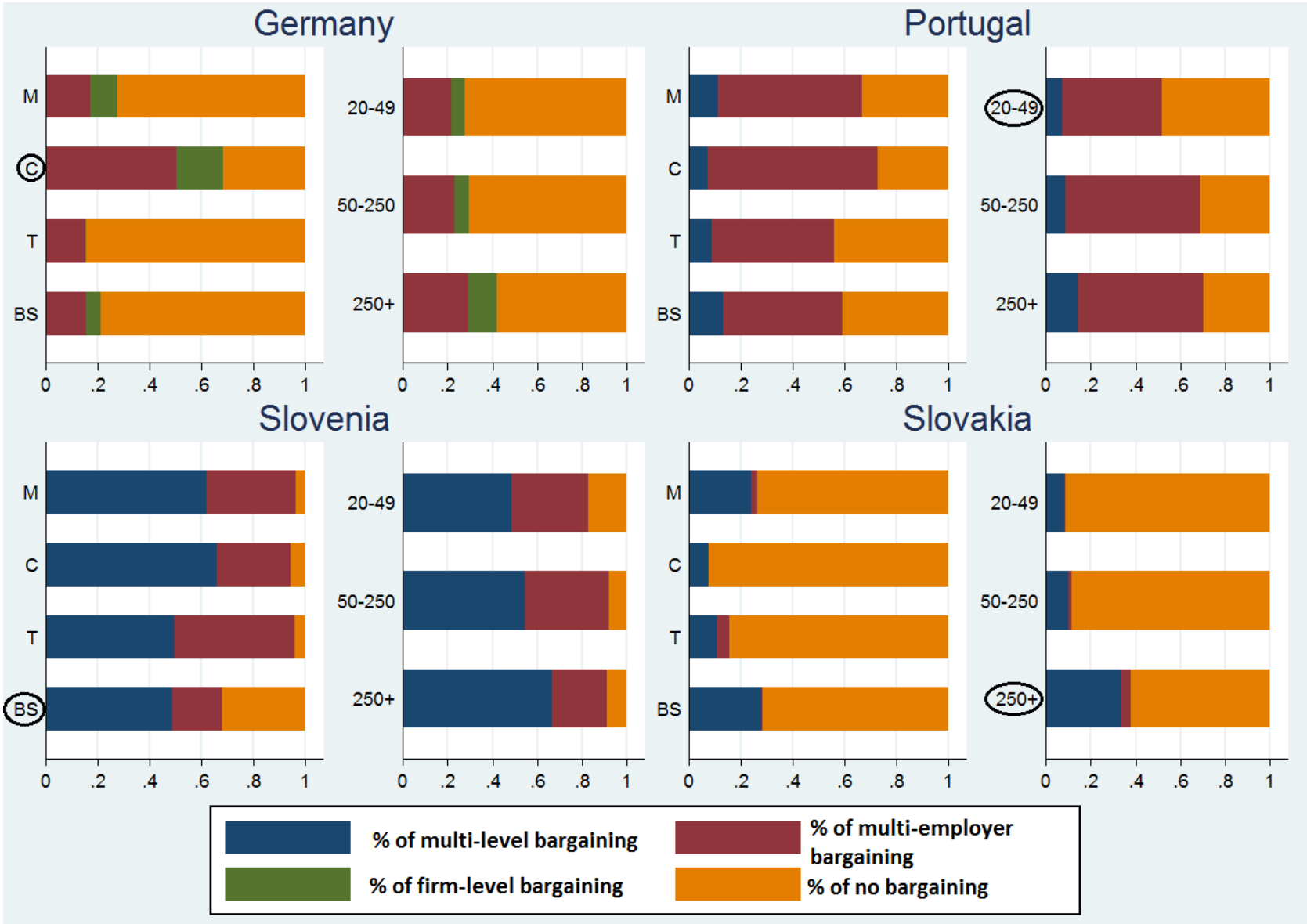
Descriptives: ”special cases”



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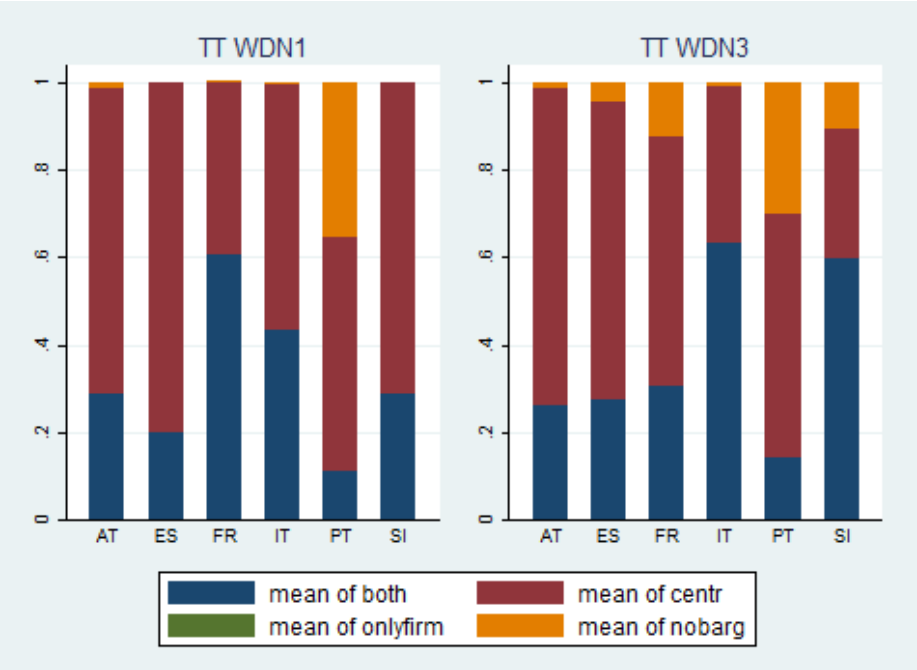
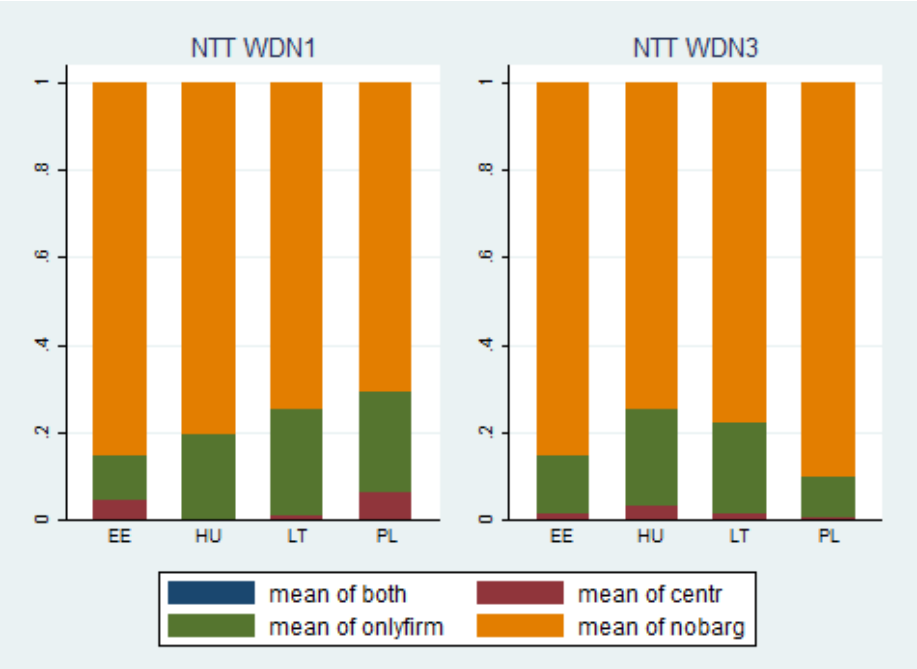
WDN1 WDN3 comparison





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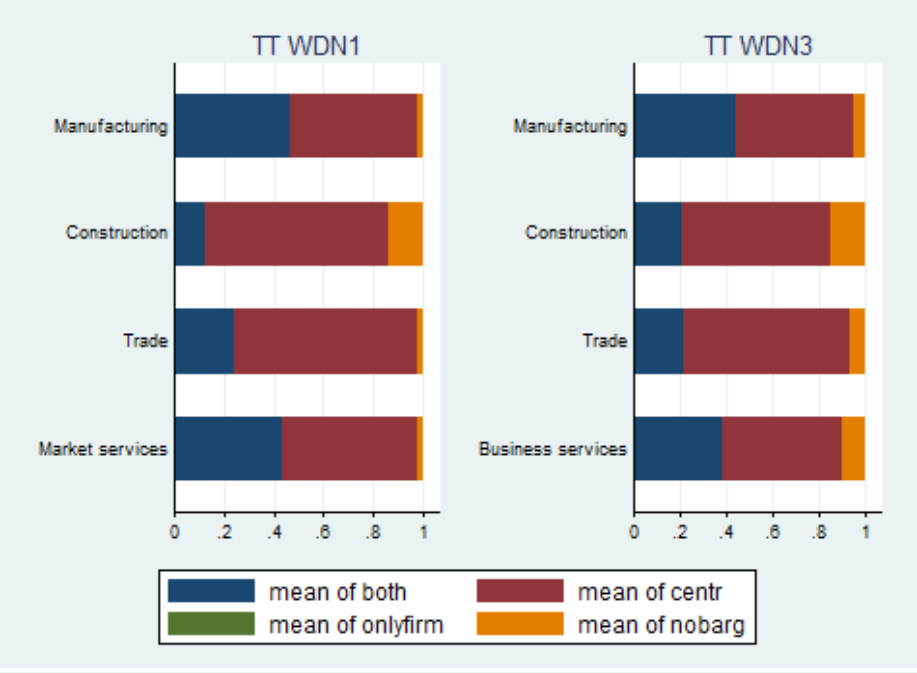
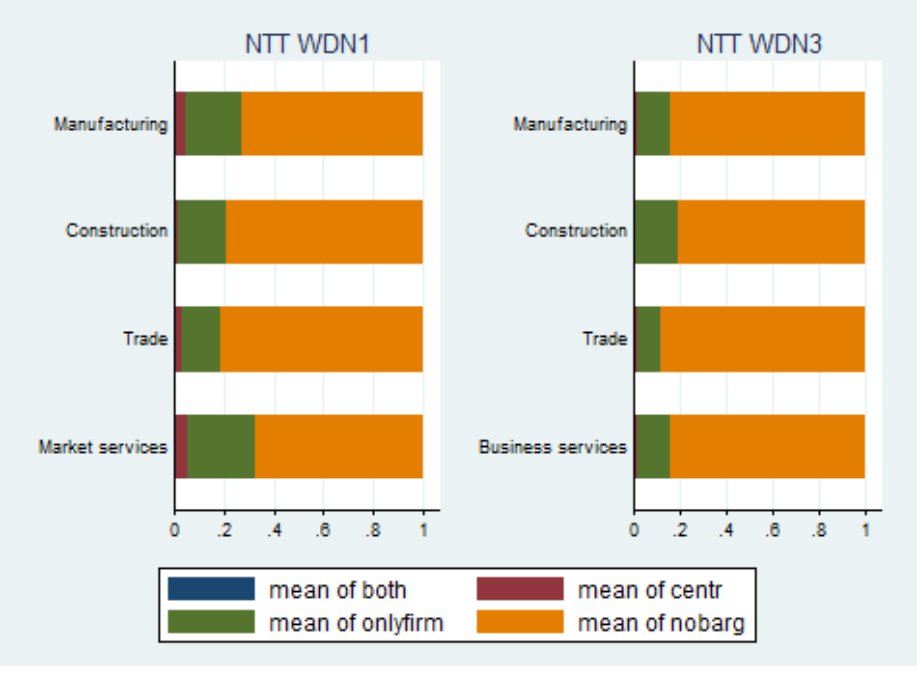
WDN1 WDN3 comparison





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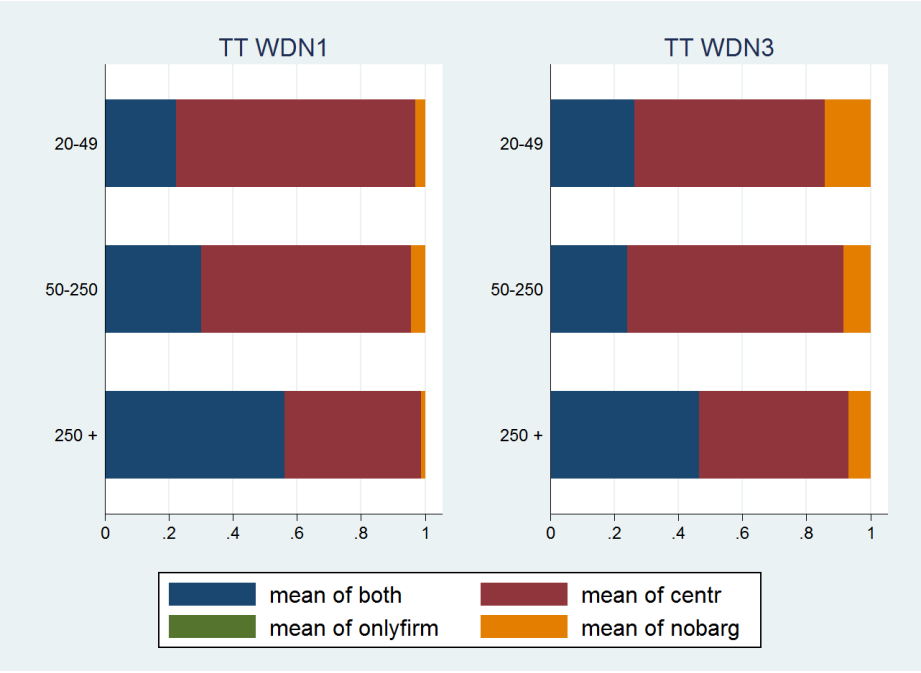
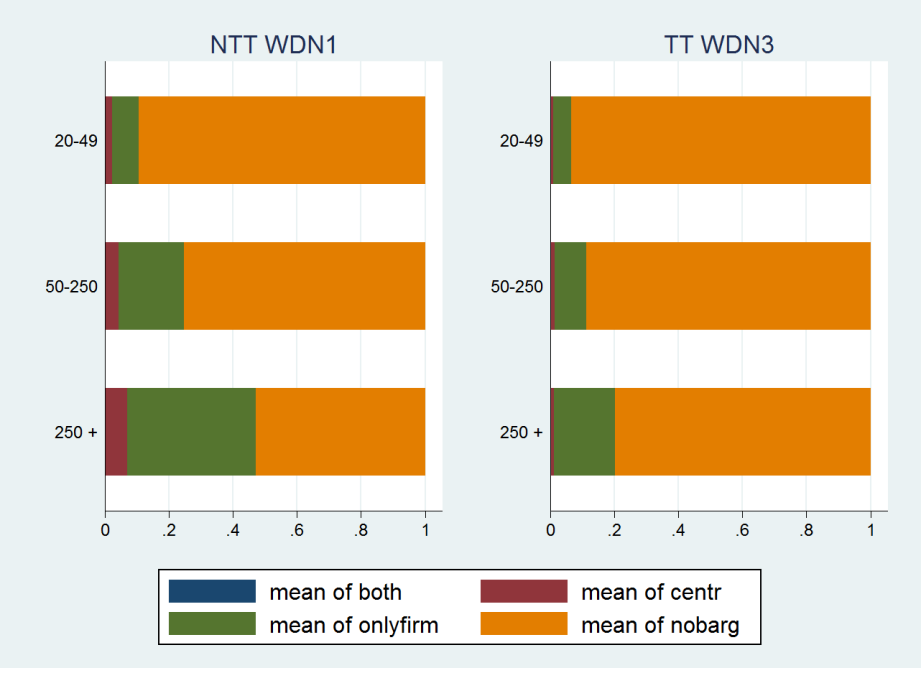
WDN1 WDN3 comparison





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WDN1 WDN3 comparison

	AT	EE	ES	FR	HU	IT	LT	PL	PT	SK	SI
2001	3	1	3	3	1	3	1	1	3	2	5
2002	3	1	3	3	1	3	1	1	3	2	3
2003	3	1	3	3	1	3	1	1	3	2	5
2004	3	1	3	3	1	3	1	1	3	2	3
2005	3	1	3	3	1	3	1	1	3	2	3
2006	3	1	3	3	1	3	1	1	3	2	3
2007	3	1	3	3	1	3	1	1	3	2	5
2008	3	1	3	3	1	3	1	1	3	2	3
2009	3	1	3	3	1	3	1	1	3	2	3
2010	3	1	3	3	1	3	1	1	3	2	3
2011	3	1	3	3	1	3	1	1	3	2	3
2012	3	1	3	3	1	3	1	1	3	2	3

Source: Vissier, ICTWSS: Database on Institutional characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts.

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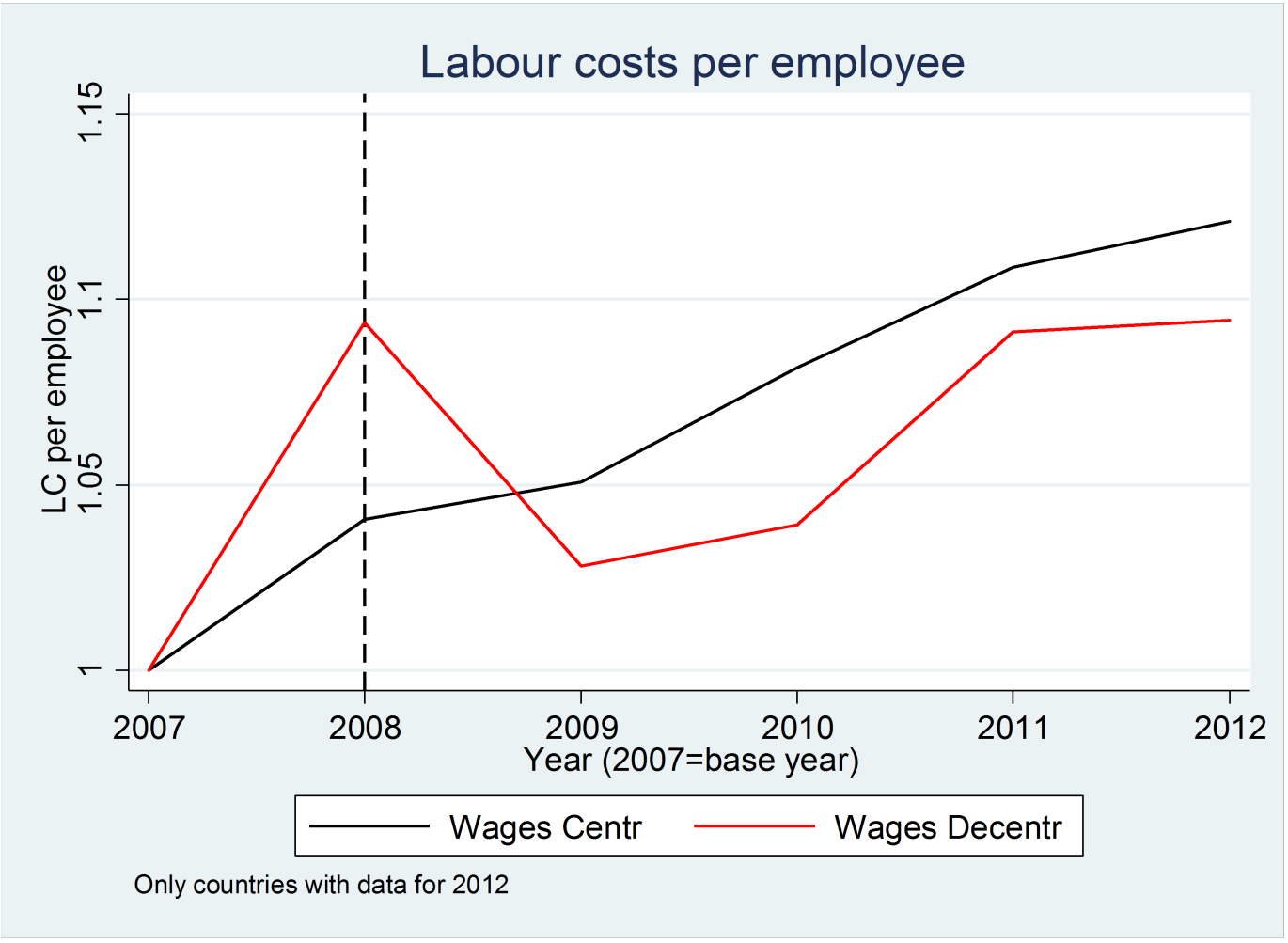
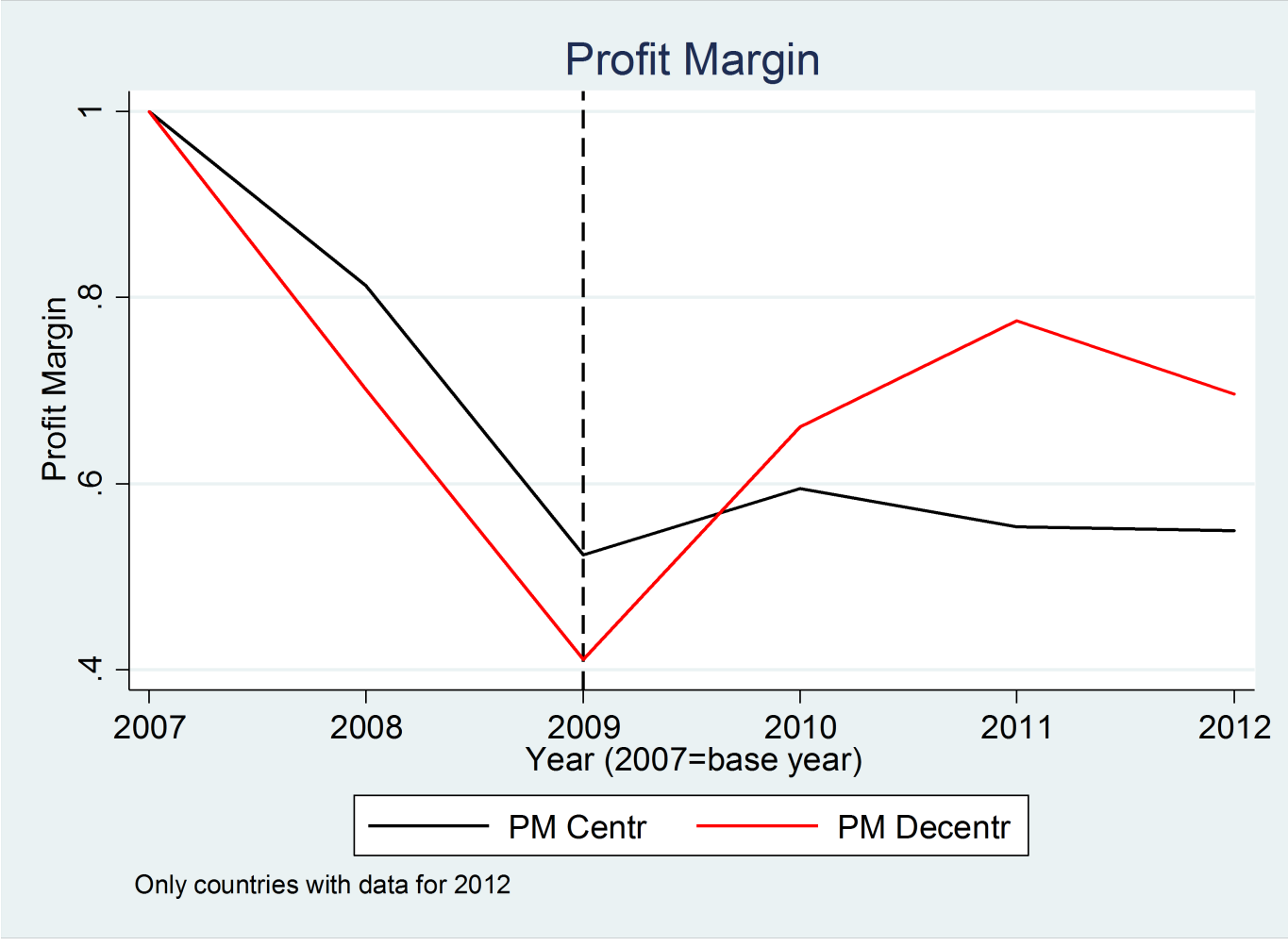
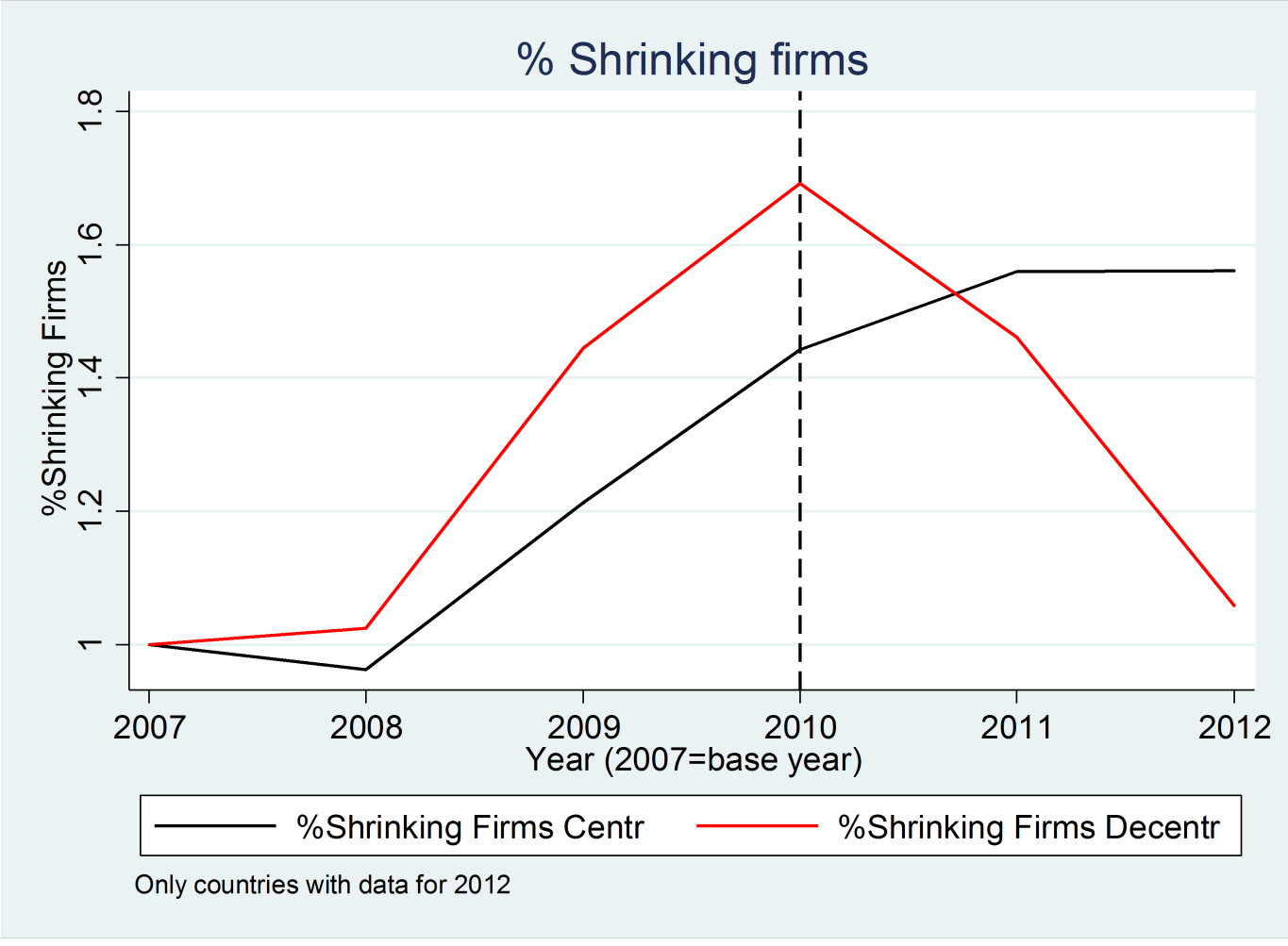
Preliminary Evidence: Labour Costs per Employee



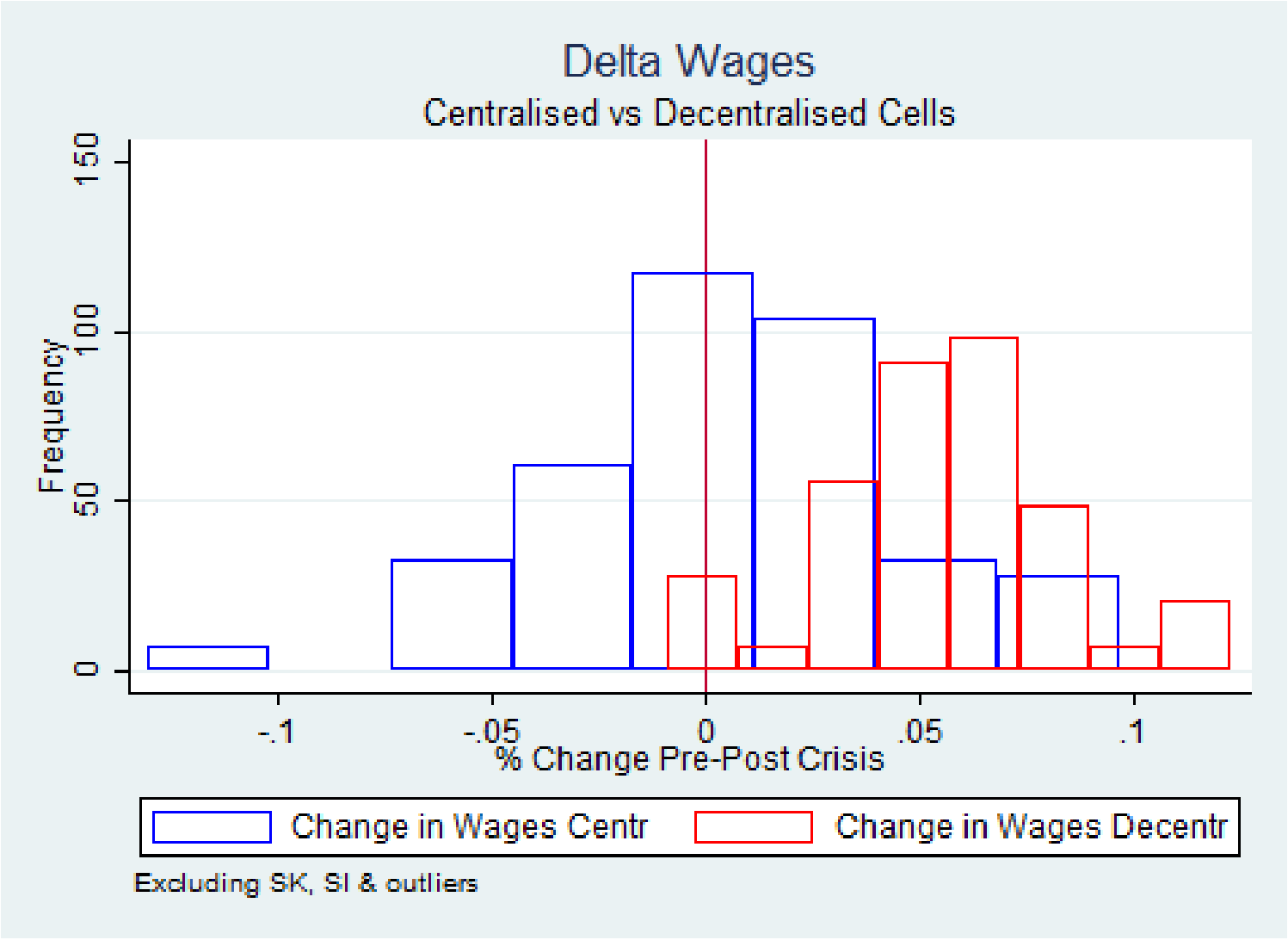
Preliminary Evidence: Profit Margin



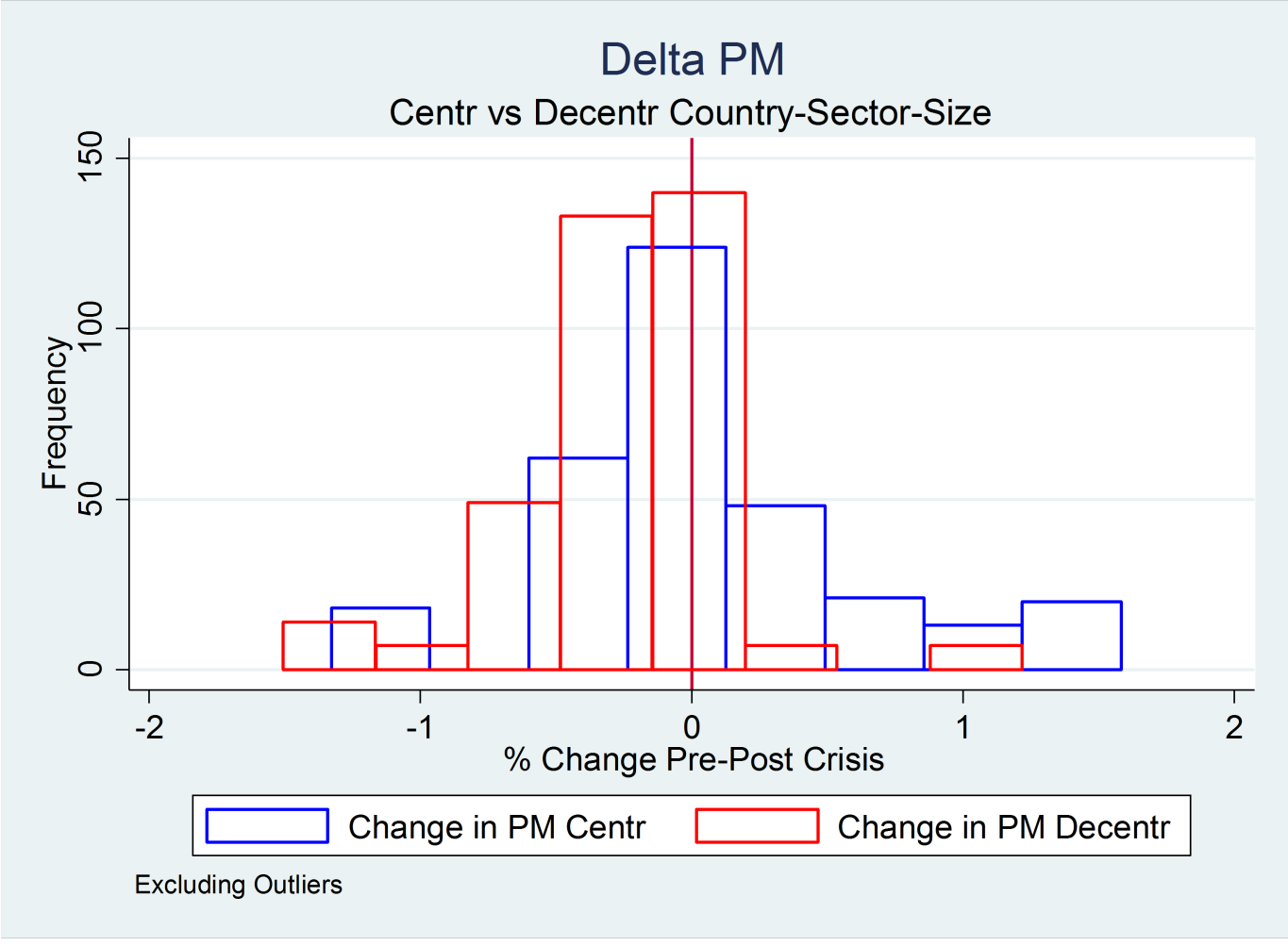
Preliminary Evidence: % Shrinking Firms



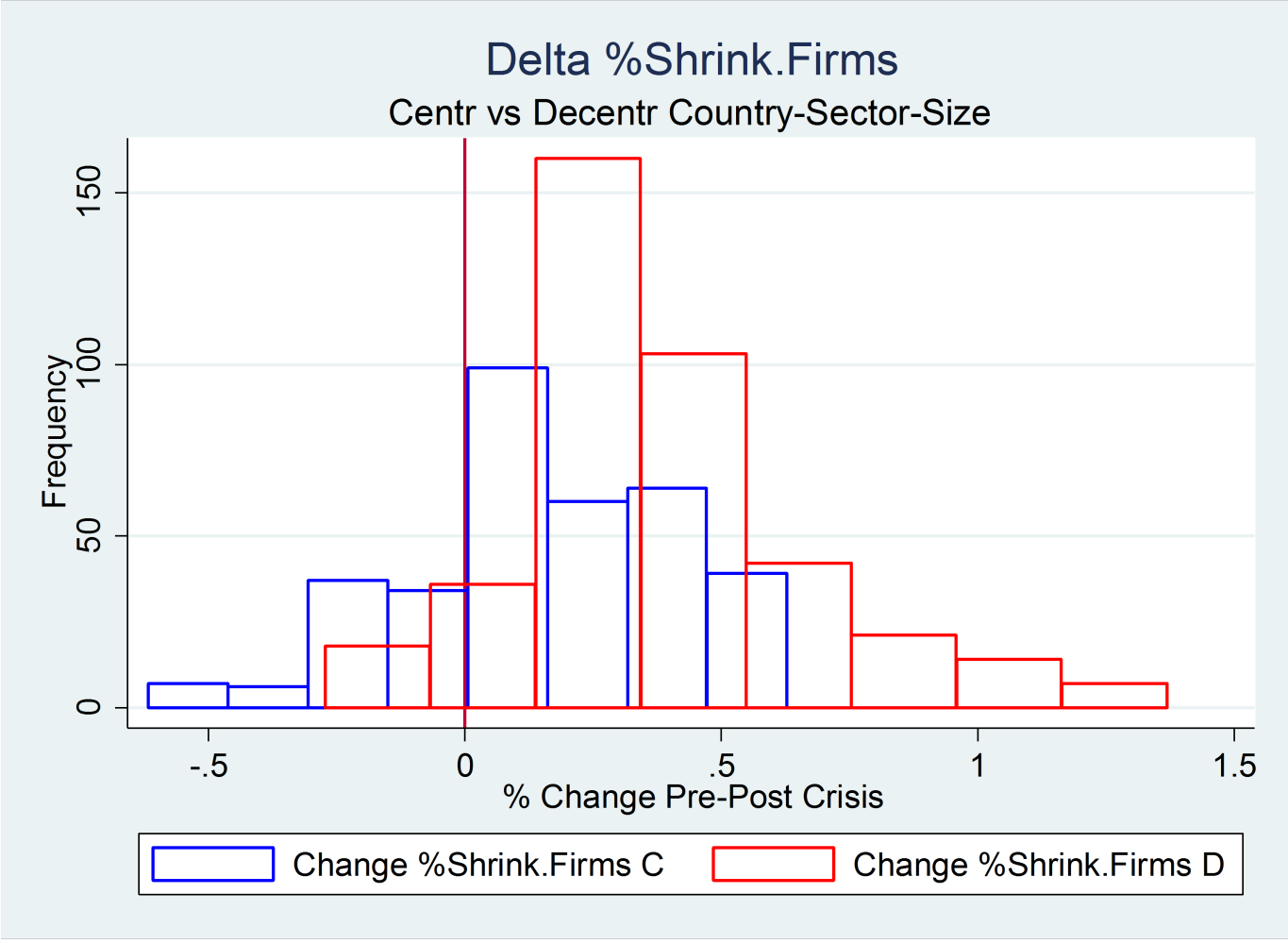
Preliminary Evidence: Labour Costs per Employee (2)



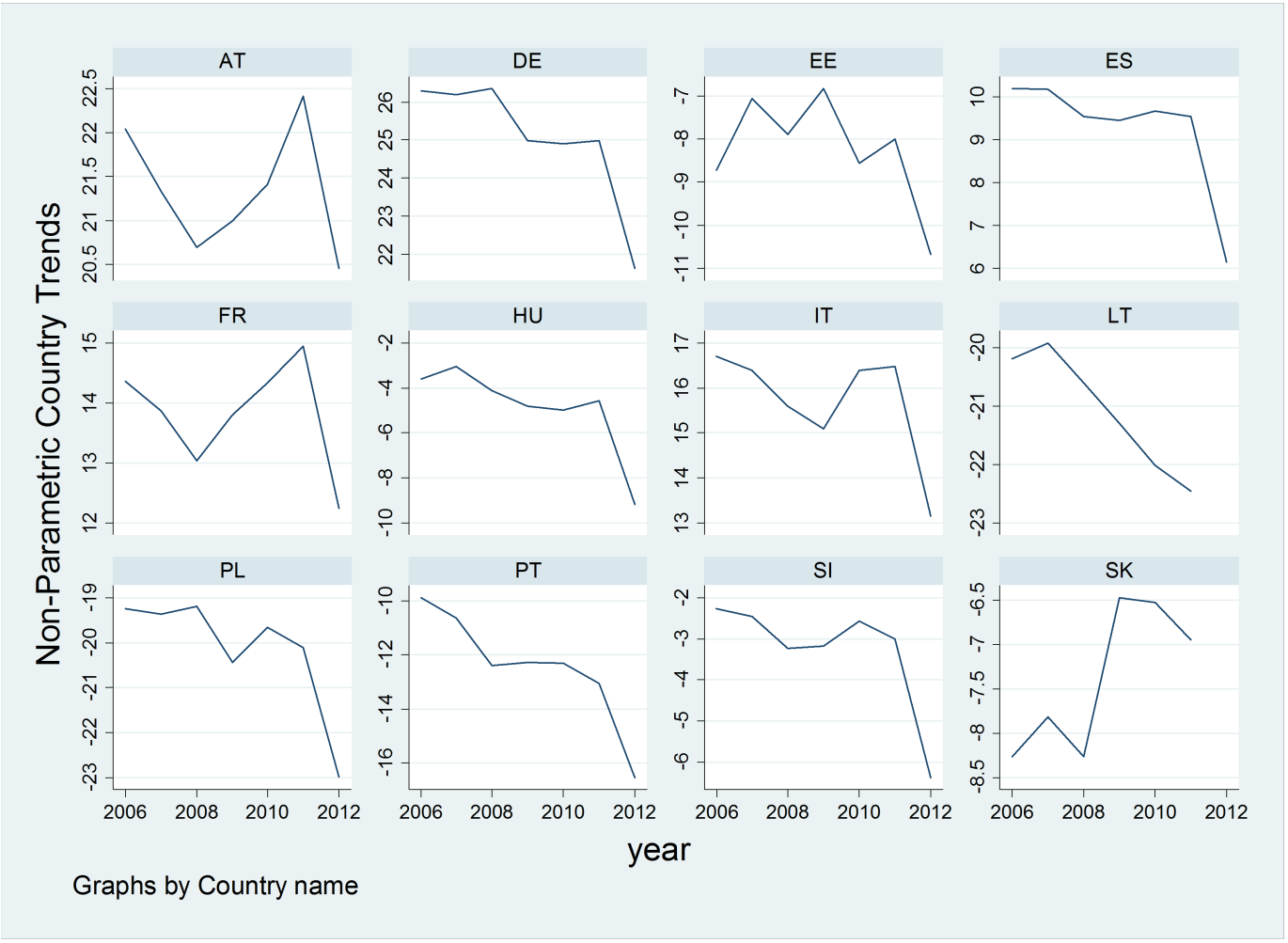
Preliminary Evidence: Profit Margin (2)



Preliminary Evidence: % Shrinking Firms (2)



Labour Costs per Employee - Non Parametric Country-Trends



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Labour Costs per Employee - PM Sample

Labour Costs per Employee	(1)	(2)	(3)
%Centralised	-4.754*	-2.789	-2.791
	(2.692)	(2.095)	(2.097)
Firm-level	-2.914	0.769	0.764
	(2.659)	(1.493)	(1.493)
%Centr*Crisis	1.502***	2.539***	2.538***
	(0.498)	(0.660)	(0.660)
FL*Crisis	4.213	4.204	4.210
	(3.618)	(3.367)	(3.374)
%Centr*Crisis(+1)	0.436	0.993**	0.995**
	(0.347)	(0.382)	(0.383)
FL*Crisis(+1)	-3.098	-3.003	-3.001
	(2.138)	(2.611)	(2.611)
%Centr*Crisis(+2)	-0.0326	0.563	0.567
	(0.462)	(0.367)	(0.368)
FL*Crisis(+2)	-0.598	-1.749	-1.747
	(1.750)	(1.663)	(1.662)
Observations	812	812	812
R-squared	0.961	0.993	0.993
Country FE	YES		
Sector FE	YES		
Size FE	YES		
Year FE	YES	YES	YES
C_S FE		YES	YES
S_Z FE		YES	YES
Z_C FE		YES	YES
C_S_Trend		YES	YES
S_Z_Trend		YES	YES
C_Z_Trend		YES	YES
C_S_Trend^2/3			YES
S_Z_Trend^2/3			YES
C_Z_Trend^2/3			YES

Clustered standard errors in parentheses

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

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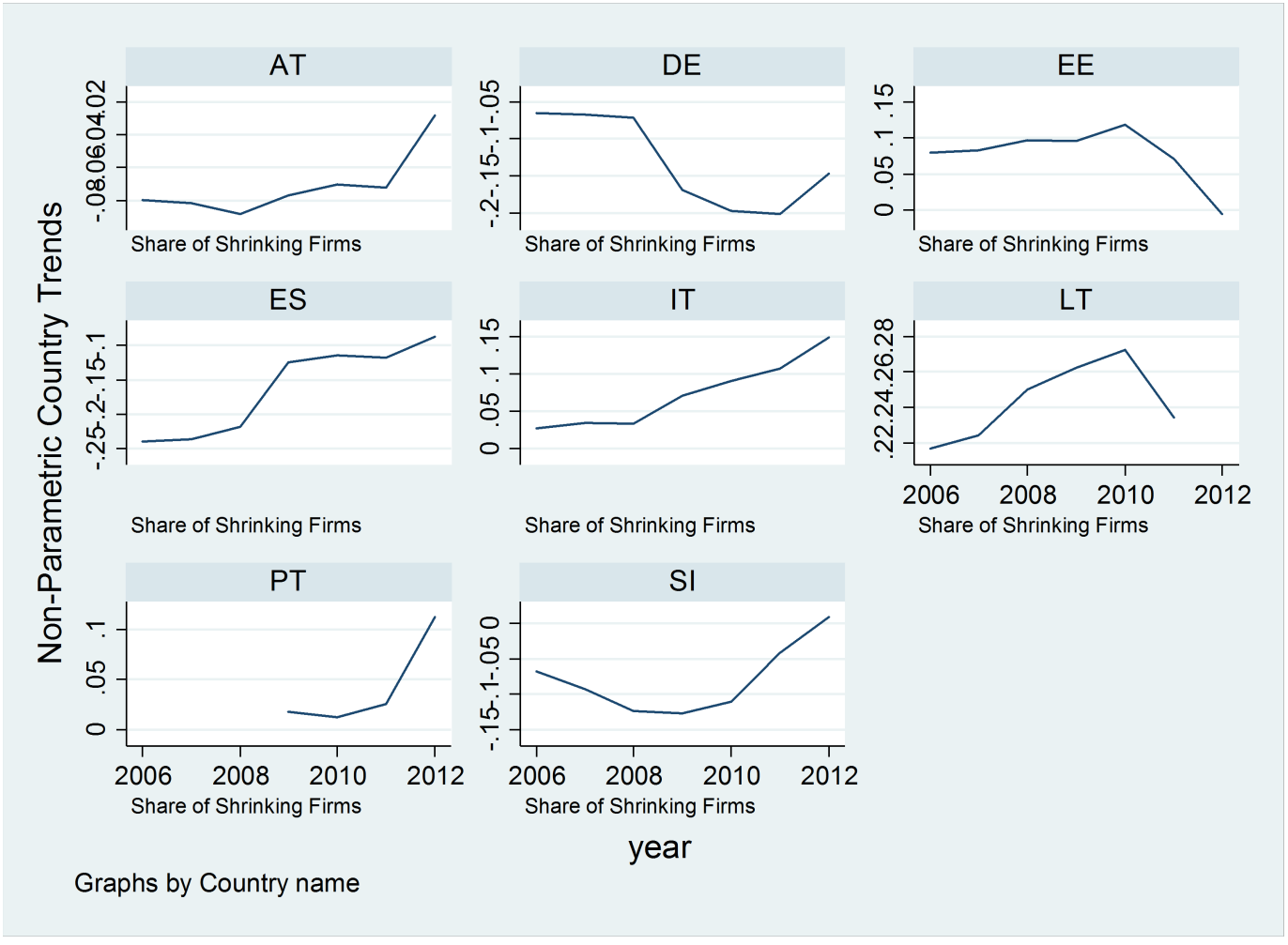
% Shrinking Firms - Non Parametric Country-Trends



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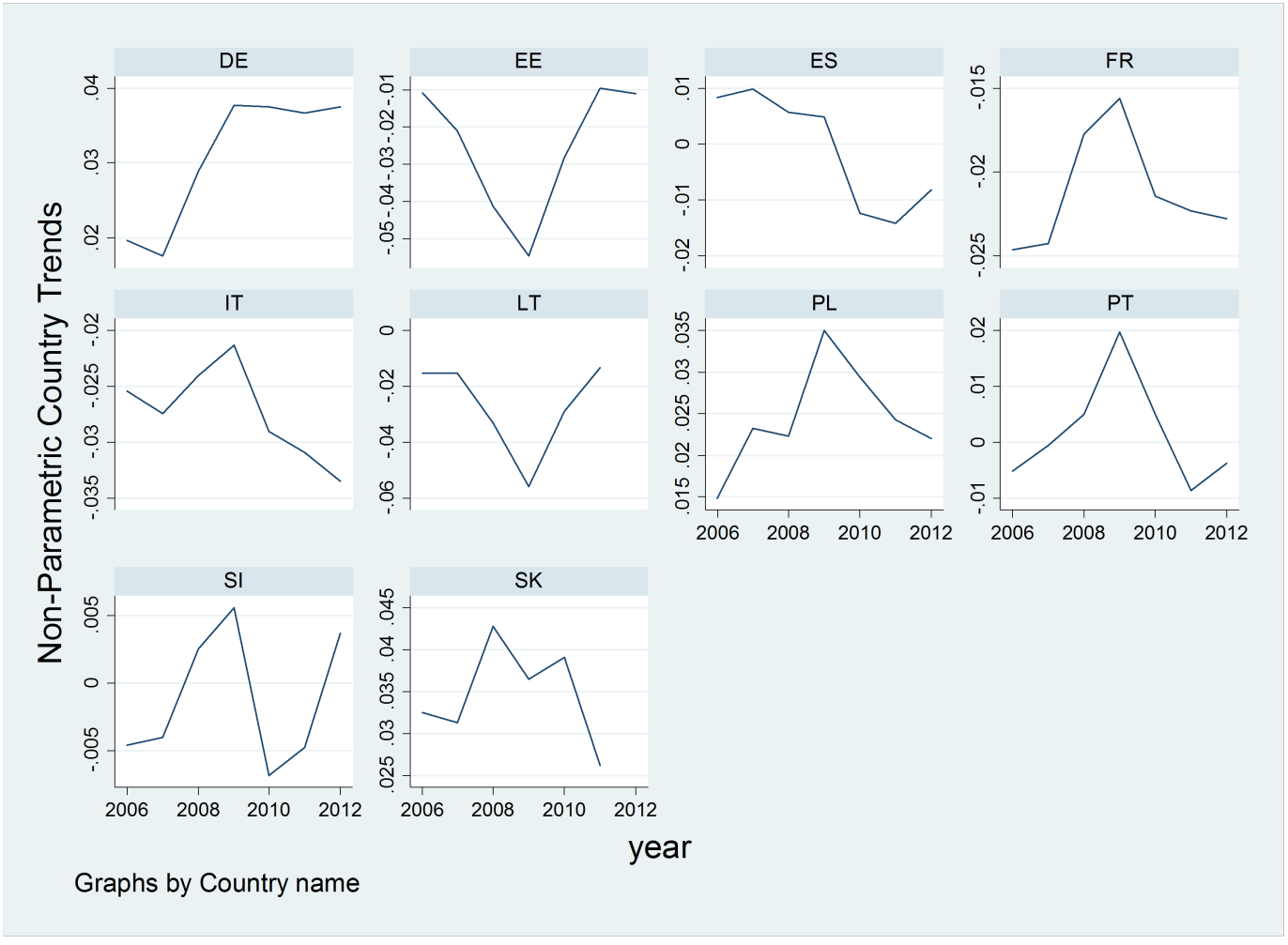
Profit Margin - Non Parametric Country-Trends



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Country-specific timing: Labour costs

Labour Costs per Employee	(1)	(2)	(3)
Ctry Crisis	-1.883***	-1.392***	-1.391***
	(0.426)	(0.442)	(0.443)
%Centralised	-4.712	-0.551	-0.549
	(2.987)	(2.371)	(2.372)
Firm-level	-0.336	0.153	0.149
	(2.811)	(1.880)	(1.881)
%Centr*Ctry Crisis	1.961***	1.868***	1.865***
	(0.463)	(0.549)	(0.549)
FL*Ctry Crisis	5.688*	6.364**	6.368**
	(3.083)	(3.053)	(3.055)
Ctry Crisis(+1)	0.291	-0.0728	-0.0732
	(0.245)	(0.312)	(0.312)
%Centr*Ctry Crisis(+1)	0.555*	1.067***	1.066***
	(0.296)	(0.373)	(0.373)
FL*Ctry Crisis(+1)	-5.022**	-2.772	-2.766
	(1.885)	(2.861)	(2.862)
Ctry Crisis(+2)	-0.623	0.230	0.232
	(0.462)	(0.379)	(0.379)
%Centr*Ctry Crisis(+2)	1.020*	0.582	0.580
	(0.553)	(0.458)	(0.458)
FL*Ctry Crisis(+2)	1.285	-0.327	-0.323
	(1.562)	(1.178)	(1.179)
Observations	920	920	920
R-squared	0.963	0.991	0.991
Country FE	YES		
Sector FE	YES		
Size FE	YES		
Year FE	YES	YES	YES
C_S FE		YES	YES
S_Z FE		YES	YES
Z_C FE		YES	YES
C_S_Trend		YES	YES
S_Z_Trend		YES	YES
C_Z_Trend		YES	YES
C_S_Trend^2/3			YES
S_Z_Trend^2/3			YES
C_Z_Trend^2/3			YES

Robust standard errors in parentheses

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Country-specific timing: Employment

Share of Shrinking Firms	(1)	(2)	(3)
Ctry Crisis	0.124***	0.0602	0.0557
	(0.0238)	(0.0399)	(0.0390)
%Centralised	0.0627	-0.0361	
	(0.0861)	(0.0579)	
Firm-level	0.0394	0.117	
	(0.169)	(0.0903)	
%Centr*Ctry Crisis	-0.0943***	-0.0824**	-0.0833***
	(0.0329)	(0.0309)	(0.0294)
FL*Ctry Crisis	-0.0283	-0.0482	0.0250
	(0.145)	(0.105)	(0.0774)
Ctry Crisis(+1)	-0.0118	-0.0573***	-0.0603***
	(0.0180)	(0.0204)	(0.0207)
%Centr*Ctry Crisis(+1)	-0.00342	0.0211	0.0202
	(0.0162)	(0.0149)	(0.0134)
FL*Ctry Crisis(+1)	-0.0179	-0.0491	-0.0212
	(0.0791)	(0.0669)	(0.0683)
Ctry Crisis(+2)	-0.0316	-0.0790***	-0.0819***
	(0.0264)	(0.0219)	(0.0228)
%Centr*Ctry Crisis(+2)	0.0164	0.0588**	0.0596**
	(0.0245)	(0.0273)	(0.0282)
FL*Ctry Crisis(+2)	-0.0534	-0.0475	0.00457
	(0.0958)	(0.0643)	(0.0747)
Observations	719	719	719
R-squared	0.694	0.897	0.896
C_S FE	YES	YES	YES
S_Z FE	YES	YES	YES
Z_C FE	YES	YES	YES
Year FE	YES	YES	YES
C_S_Trend	YES	YES	YES
S_Z_Trend	YES	YES	YES
C_Z_Trend	YES	YES	YES
C_S_Trend^2/3	YES	YES	YES
S_Z_Trend^2/3	YES	YES	YES
C_Z_Trend^2/3	YES	YES	YES

Clustered standard errors in parentheses

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

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Country-specific timing: Profit Margin

Profit Margin	(1)	(2)	(3)
Ctry Crisis	-0.0239***	-0.0106	-0.00905
	(0.00810)	(0.00705)	(0.00707)
%Centralised	-0.00371		0.00493
	(0.0152)		(0.0112)
Firm-level	0.0240		0.0231*
	(0.0185)		(0.0119)
%Centr*Ctry Crisis	0.0298***	0.0216***	0.0200**
	(0.00998)	(0.00778)	(0.00761)
FL*Ctry Crisis	0.0687***	0.0811***	0.0705***
	(0.0231)	(0.0195)	(0.0197)
Ctry Crisis(+1)	0.0204***	0.0341***	0.0349***
	(0.00426)	(0.00883)	(0.00911)
%Centr*Ctry Crisis(+1)	-0.0205***	-0.0302***	-0.0311***
	(0.00557)	(0.00969)	(0.0100)
FL*Ctry Crisis(+1)	-0.0449***	-0.0314*	-0.0375**
	(0.0141)	(0.0156)	(0.0166)
Ctry Crisis(+2)	0.0132***	0.0321***	0.0336***
	(0.00361)	(0.00765)	(0.00788)
%Centr*Ctry Crisis(+2)	-0.00956***	-0.0248***	-0.0266***
	(0.00350)	(0.00784)	(0.00820)
FL*Ctry Crisis(+2)	-0.00377	0.00320	-0.00655
	(0.00991)	(0.00954)	(0.0108)
Observations	795	795	795
R-squared	0.542	0.809	0.811
Sector FE	YES		
Size FE	YES		
Year FE	YES	YES	YES
C_S FE	YES	YES	YES
S_Z FE		YES	YES
Z_C FE		YES	YES
C_S_Trend		YES	YES
S_Z_Trend		YES	YES
C_Z_Trend		YES	YES
C_S_Trend^2/3			YES
S_Z_Trend^2/3			YES
C_Z_Trend^2/3			YES

Clustered standard errors in parentheses

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

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