No extension without representation?
Evidence from a natural experiment in collective bargaining

Alexander Hijzen (OECD, IZA)

Pedro S. Martins (Queen Mary U. of London, Nova SBE, IZA)

12th joint ECB/CEPR Labour Market Workshop

"Wage developments in the aftermath of the crisis"

13-14 December 2016, Frankfurt

Background

- Renewed interest in *collective bargaining* since the financial crisis
  - Affects the responsiveness of wages and working hours to aggregate shocks
  - Affects consumption and aggregate demand

- Policy debate focused on the degree of centralization of bargaining
  - Common view that centralised/decentralised systems dominate sector-level bargaining
  - However, experiences diverge, including among countries where sector-level bargaining is widespread

- To improve our understanding of collective bargaining more attention needs to be paid to the specifics- > go micro
  - E.g. the scope for flexibility at the firm level, the effectiveness of coordination between bargaining units, and the reach of sector-level collective agreements

Sector-level bargaining and the role of extensions

- Macro-economic importance of collective bargaining systems hinges crucially on the degree of coverage
  - Extensions are key tool for achieving high coverage

- Extensions widen the coverage of collective agreements beyond the membership of the social partners to all workers in a sector
  - limit scope of competition based on working conditions
  - ensure minimum standards and reduce inequality
  - reduce transaction costs of individual negotiations

Union density and collective bargaining coverage, selected countries

Source: ILO (2013)

4
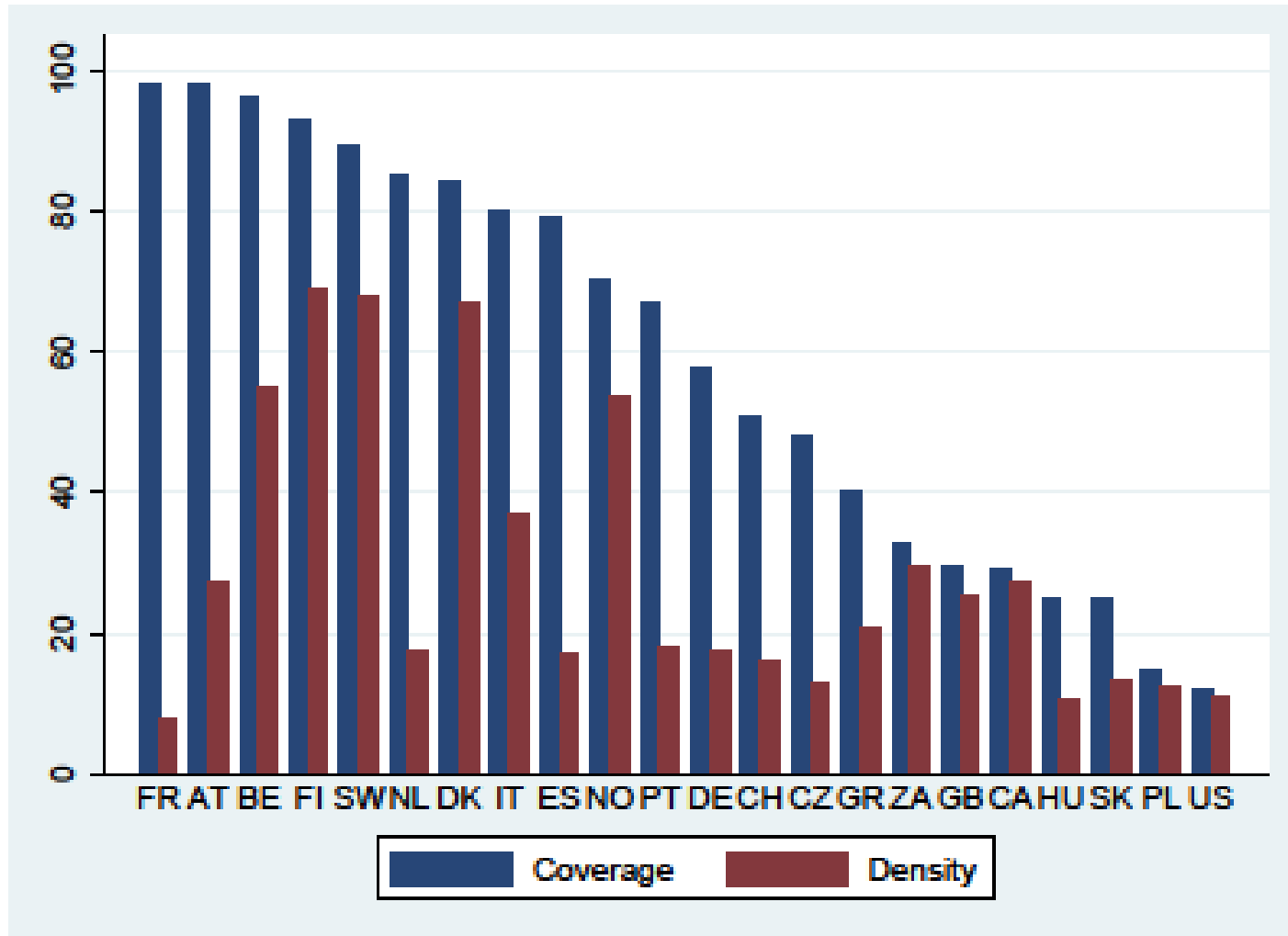
Literature on coverage extensions

- Theoretical concerns about the role of extensions for employment when the social partners are unrepresentative of the sector as a whole (Mol, 1996; Haucaup et al., 2001)

- Mixed evidence on the employment effects of extensions (Magruder, 2012, for SA; Martins, 2014, for PT; Diez-Catalan and Villanueva , 2015, for ES; Hartog et al. , 2002, for NL)

- So far no direct evidence on the role of representativeness for the impact of extensions on employment

Natural experiment for Portugal

- Sectoral agreements were extended quasi-automatically until 2011

- Sharp and unanticipated decline in the extension probability in March 2011
  - the immediate suspension of extensions by the government that took office in June 2011
  - the time needed for processing the extensions of agreements

- Use regression discontinuity design (RDD) to analyse the causal impact of extensions
  - What is the impact of employment?
  - What is the role of representativeness?

Outline of this talk*

1. Economic and institutional background

2. Methodology
   a) The "natural" experiment
   b) Econometric method
   c) Validity

3. Data on firms, agreements and extensions

4. Results
   a) What are the overall effects of extensions?
   b) How do they depend on affiliation status?
   c) What role for representativeness and retro-activity?

5. Concluding remarks

1. Economic and institutional background

Economic context

- During the 2000s, Portugal experienced low growth, declining international competitiveness and increasing macroeconomic imbalances

- The global financial crisis resulted in large increases in public deficits, a sharp surge in interest rates at which the government could borrow, prompting a request to the Troika in April 2011 for financial assistance

- Downward nominal wage adjustment seen as important part of rebalancing, motivating a number of reforms with respect to collective bargaining

Collective bargaining reform in Portugal

- Until May 2011: sectoral agreements were virtually always extended *erga omnes*

- June 2011: the new government suspended extensions with immediate effect

- In 2012, the labour reform revised extension procedures
  - Subject to representativeness criteria (workers of employer association firms > 50% sector workforce)
  - Extensions no longer entered into force retroactively at the date of the collective agreement

- In 2014, extensions procedures were again revised
  - Representative criteria only apply when less than 30% of firms are small -> largely a return to the pre-2012 situation, representative criteria remain highly controversial
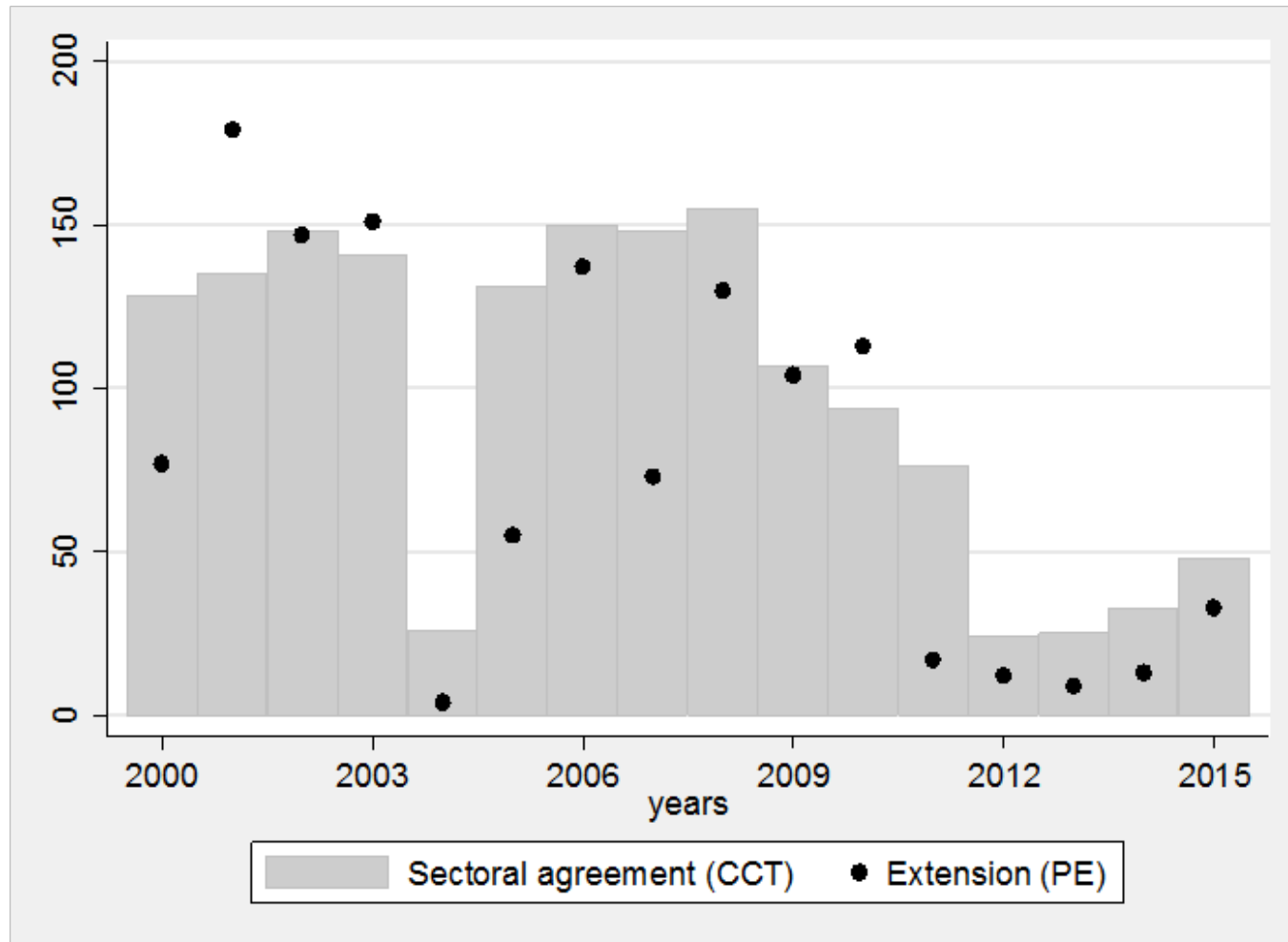
Representativeness tends to be well below 50%

of agreements by share of workers in affiliated firms
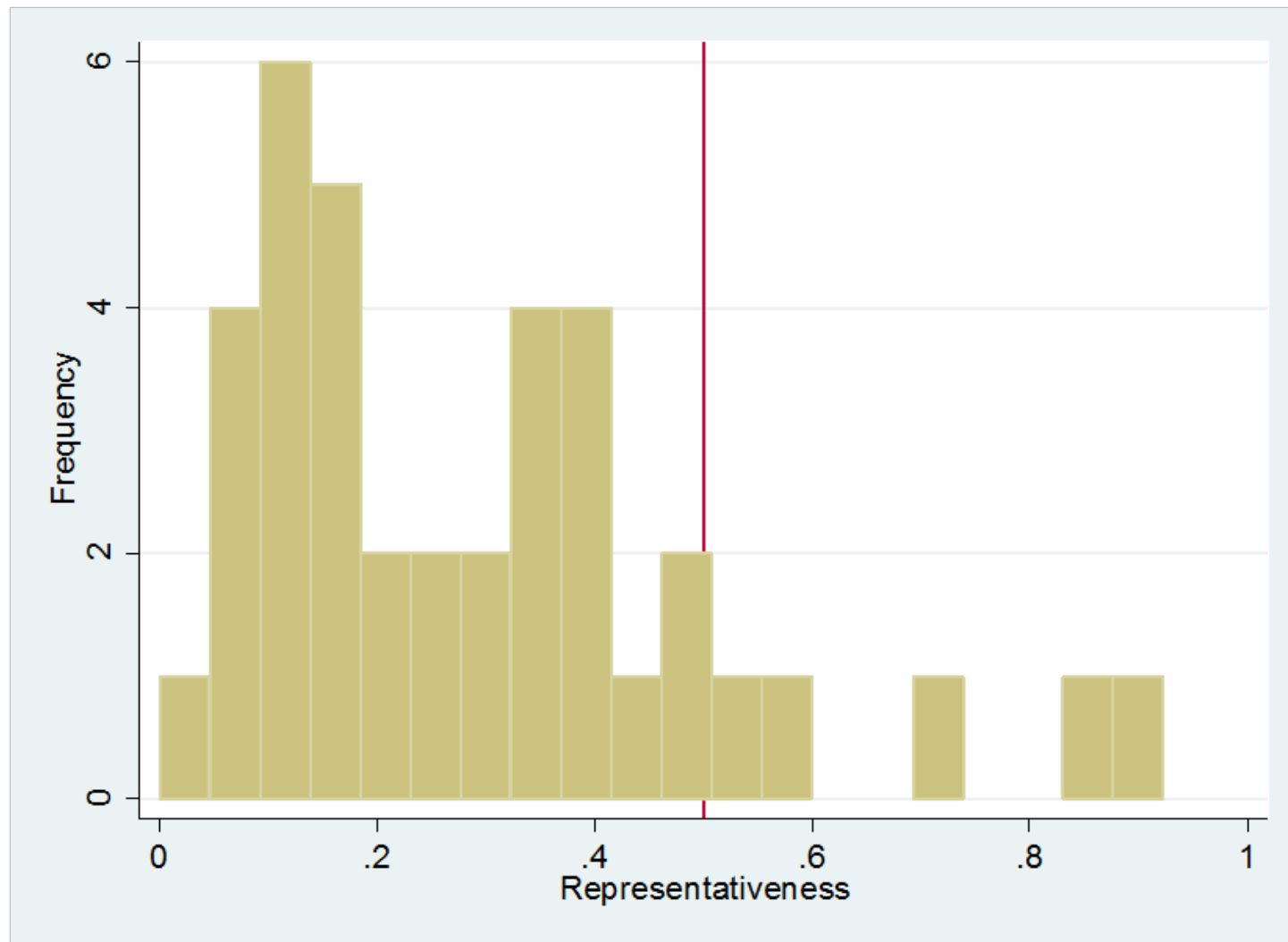
Sharp decline in number of *new* agreements & extensions from 2011

The number of sectoral collective agreements and extensions by year, 2000-2015

2. Methodology

a) The "natural" experiment
b) Econometric method
c) Validity

The "natural" experiment

In 21 June 2011, the new government suspended extensions with immediate effect:

- Delay between the signing of sector agreements and their extension -> sharp drop in the probability of extension from March 2011 (publication date; see next slide)

- The suspension was not anticipated (or announced) -> in principle, agreements published just before and after 1 March 2011 should be similar in terms of their constituency and contents (but see results on balancing)

The probability of extension
drops to zero in first week of March 2011
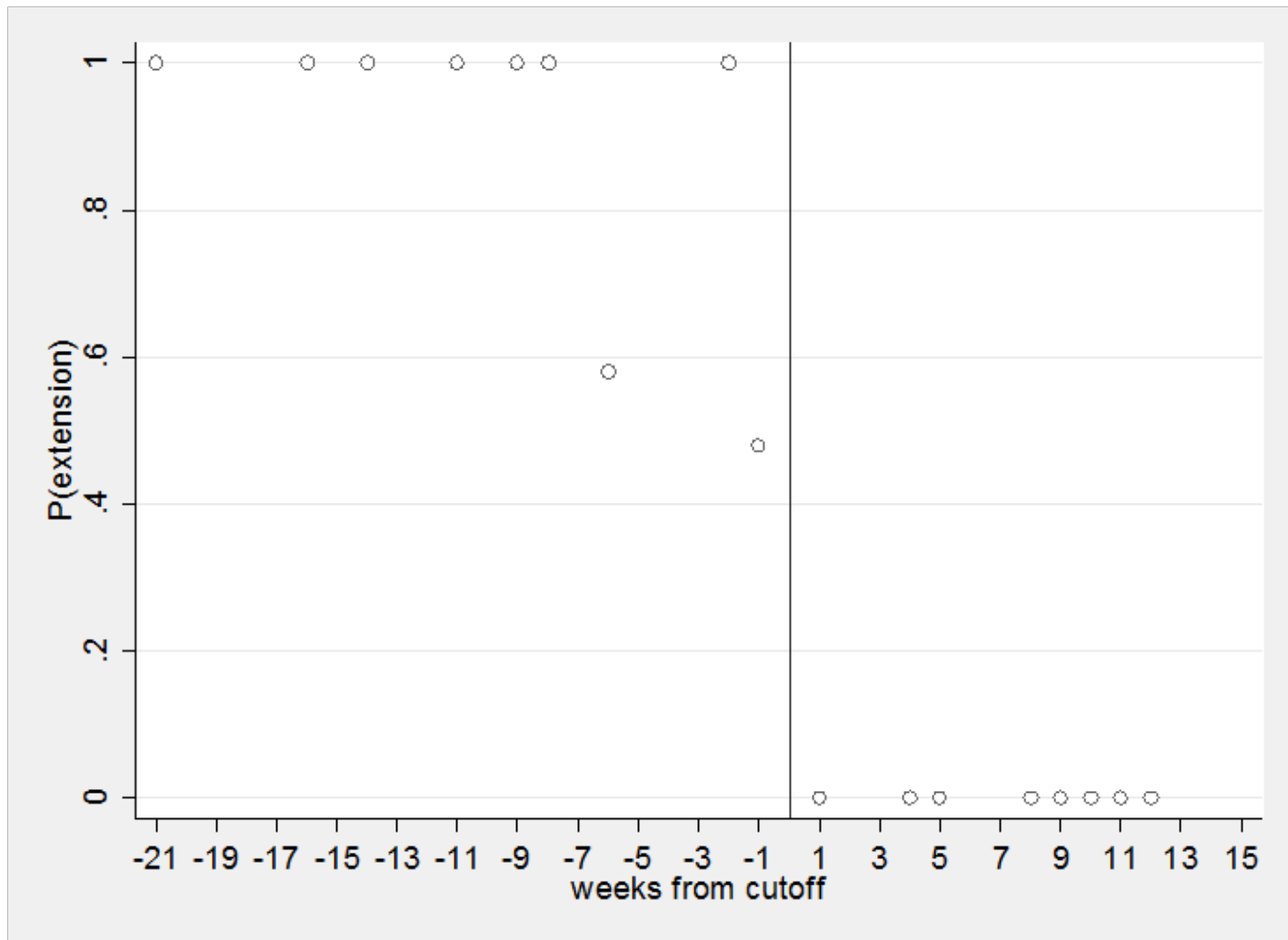
Methodology

- Use regression discontinuity design (RDD) that focuses on the sharp decline in the probability of extension around 1 March 2011

- More specifically, we use the following model ("sharp RDD")

$$y_i = \alpha + \delta D_i + \gamma f(t_i - T) + v_i$$

 - Y: change in the growth rate (employment)
  - D: dummy that equals if treated, i.e. agreements is extended
  - f(.): a function that controls for the independent effect of relative time
  -> drop the two agreements pre-March 2011 that were not extended

- Alternatively, use Fuzzy RDD to take account of the gradual decline in treatment probability by using the cutoff date as an instrument for the signature date

Implementation

- Main focus on 31 (29) agreements signed between 10 October 2010 and 20 June 2011 (+/- 20% of E)
  - 10 Oct. 20 10 - 24 Jan. 2011: 15 wks since 1st agreement not extended
  - 24 Jan. 2011 - 28 Feb. 2011: 5 wk transition period
  - 01 Mar. 2011 - 20 Jun. 2011: 15 wks since last agreement not extended

- Controlling for relative time effects is potentially important
  - Economic conditions may reflect the timing and contents of agreements (also time in year exposed to treatment differs)
  - Relative time effects are linear or quadratic and allowed to differ on each side of the cutoff

The number of collective agreements over time

in weeks from 1 March 2011 (Oct. 2010 - May 2011)
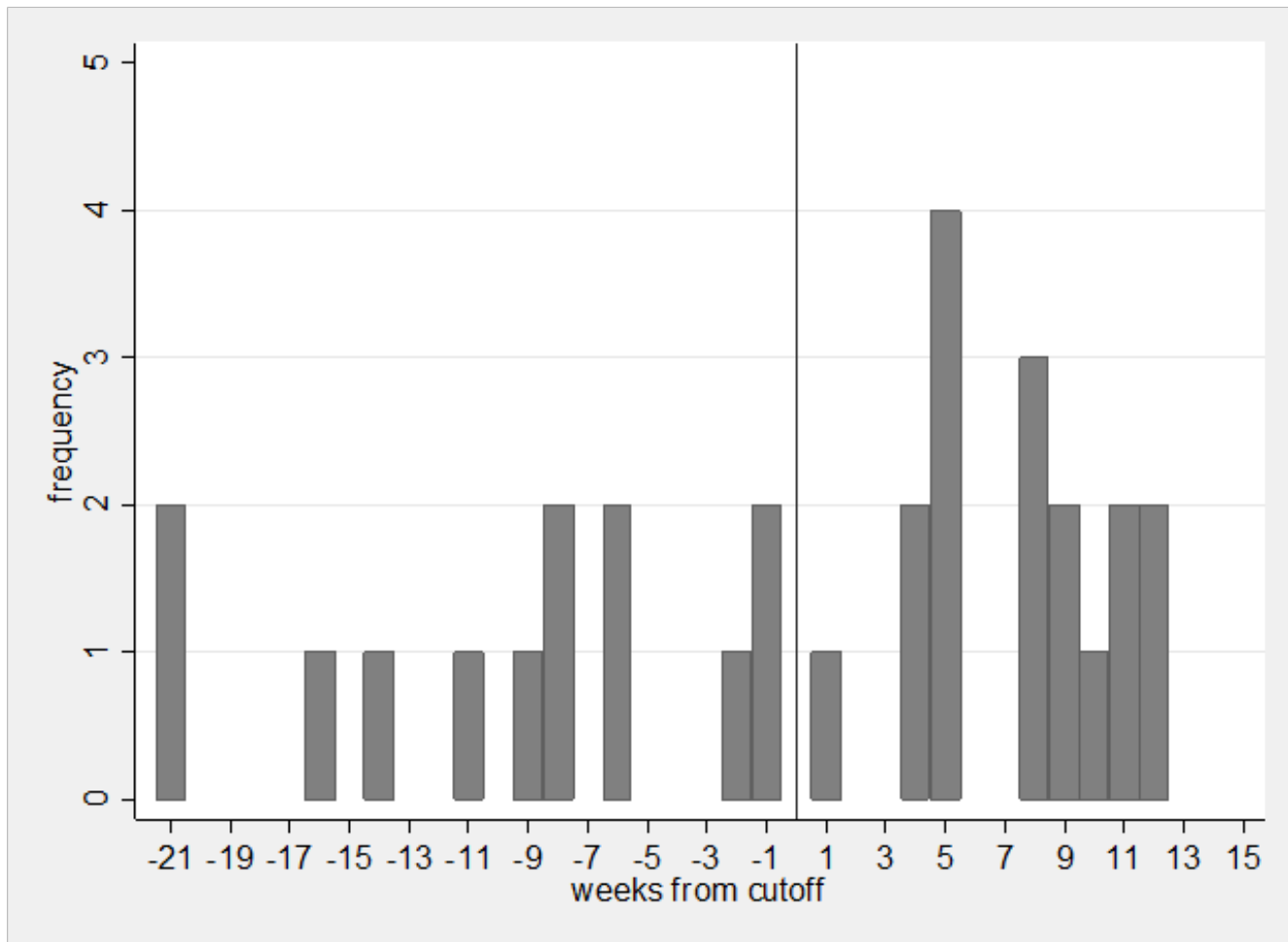
Balancing tests

Sharp RDD: Treatment is positive before the cutoff and zero after

	All		Non-affiliated		Affiliated	
	(1)	(2)	(3)	(4)	(3)	(4)
Balancing variables	linear	quadratic	linear	quadratic	linear	quadratic
Representativeness, 2010	0.0815	-0.0080	0.0923	-0.0183	0.0220	0.0303
- share of workforce in afffiliated firms	(0.1143)	(0.0574)	(0.1422)	(0.0617)	(0.0695)	(0.0510)
Employment growth, 2009-2010	0.0865	0.0975	0.0953	0.1045	0.0813	0.0844
	(0.0155)	(0.0080)	(0.0195)	(0.0106)	(0.0099)	(0.0076)
	***	***	***	***	***	***
Log employment, 2010	-0.2195	-0.1584	-0.4327	-0.3626	0.5093	0.1547
	(0.6026)	(0.6073)	(0.6009)	(0.6273)	(0.7890)	(0.5082)
Log average firm size, 2010	-1.2418	-1.4115	-1.2439	-1.3098	-1.5805	-1.6135
- number of workers per firm	(0.3004)	(0.1840)	(0.2429)	(0.2017)	(0.2265)	(0.1765)
	***	***	***	***	***	***
Log average wage, 2010	-0.0510	-0.0812	-0.0530	-0.0603	-0.1147	-0.1120
- within job title and year	(0.0870)	(0.0956)	(0.0852)	(0.0875)	(0.0901)	(0.0758)
Log median wage, 2010	0.0040	-0.0092	-0.0127	-0.0059	-0.0243	-0.0035
- within job title and year	(0.0764)	(0.0828)	(0.0775)	(0.0781)	(0.0824)	(0.0605)
Export intensity, 2010	-0.4642	-0.4553	-0.4072	-0.3808	-0.5818	-0.6151
	(0.0523)	(0.0494)	(0.0579)	(0.0583)	(0.0466)	(0.0264)
	***	***	***	***	***	***
Log labour productivity, 2010	0.1753	-0.0735	0.2313	0.0320	-0.2217	-0.1636
	(0.4604)	(0.5252)	(0.4727)	(0.5360)	(0.3814)	(0.2627)

3. Data

Data sources

- Personnel Records *(Quadros de Pessoal)*
  - Matched employer-employee panel (incl. 2009-2013)
  - Info on employer association affiliation in 2010
  - Info on collective agreements of each worker (incl. following extension)
  - Info relates to October of each year

- Ministry of Labour (DGERT)
  - Public info on collective agreements, including timing and, if applicable, their extensions (but different code than in QP)
  - Initial focus on (sectoral) agreements published between Sept 2010 and Aug 2011 (40 in total covering about 20% of the workforce)

The construction of the dataset*

- Sample of firms
  - present in 2010 QP (followed in other years)
  - covered by agreement at sector level (excl. firm- and holding-level)
  - covered by new/revised agreements signed (Sept 2010 -Aug 2011)

- Linking QP and DGERT data
  - for each firm, focus on agreement that represents most workers
  - for each agreement, identify most important employer association
  - link QP and DGERT data using the employer association
  - extend domain of collective agreement to non-affiliated firms

- Construct semi-aggregated dataset by agreement, membership status and year

4. Results

a. What are the overall effects of administrative extensions?

Sharp RDD

Change in employment growth, 2010-2011
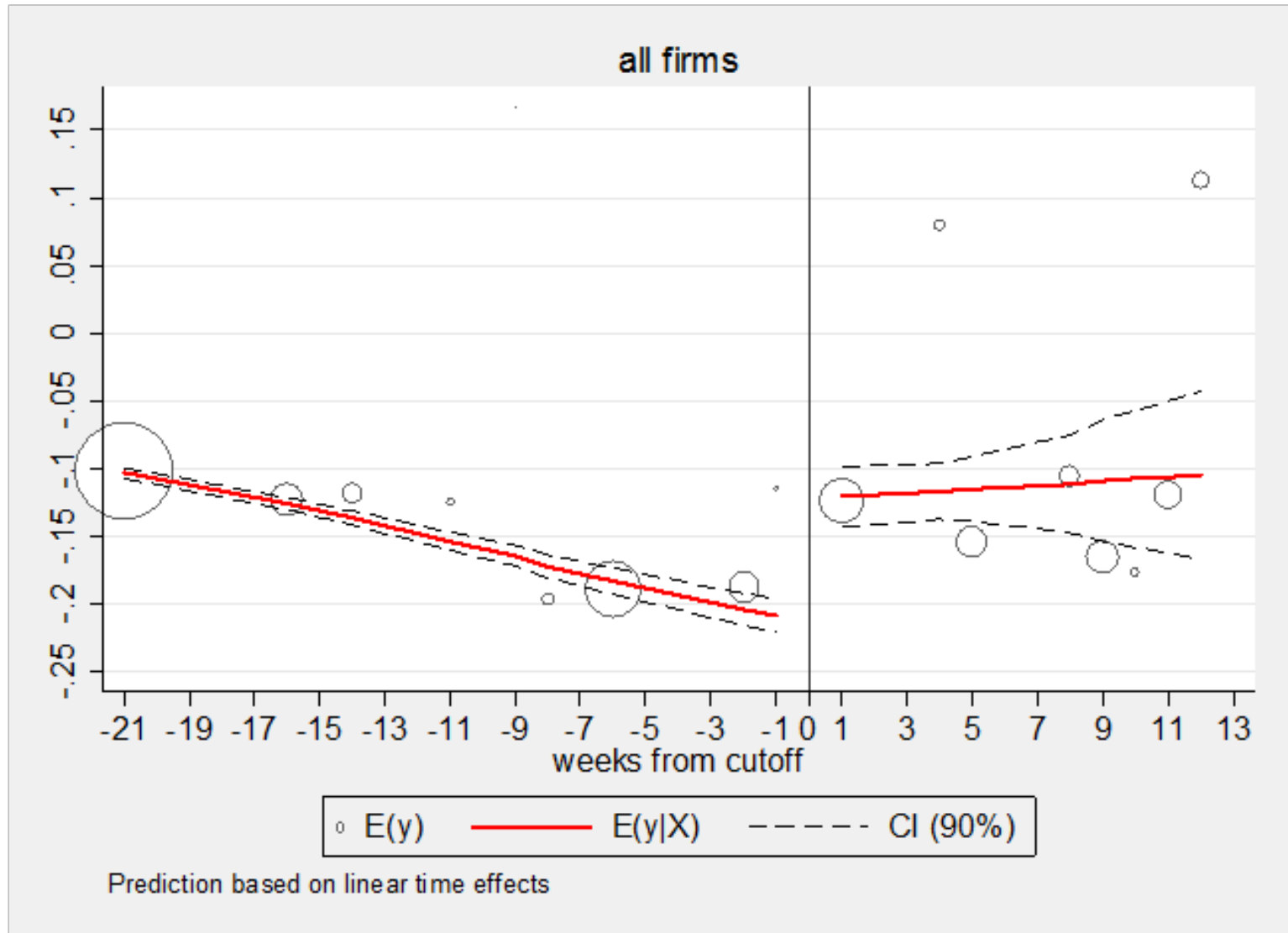
Sensitivity analysis (sharp RDD)

Change in employment growth, all firms, 2010-2011

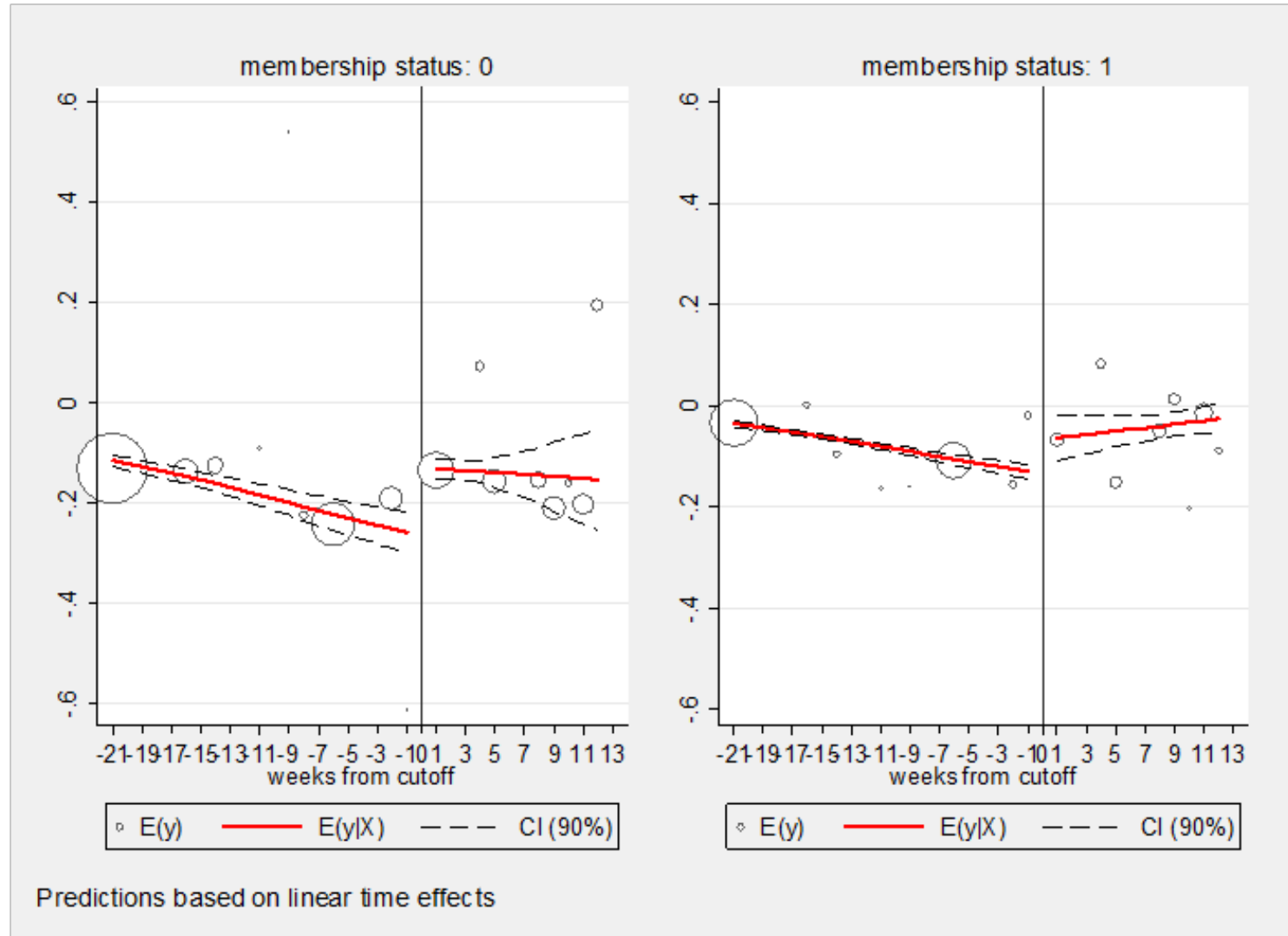|	Employment growth				Change in employment growth			
	Baseline	Controls	Bandwidth	Falsification	Baseline	Controls	Bandwidth	Falsification
Treatment dummy	-0.0578	-0.0603	-0.0164	-0.0345	-0.1022	-0.1169	-0.0898	-0.0345
	(0.0262)	(0.0203)	(0.0264)	(0.0556)	(0.0301)	(0.0245)	(0.0210)	(0.0556)
	**	***			***	***	***	
Constant	-0.1226	-0.0891	-0.1570	-0.2129	-0.2238	-0.1352	-0.2017	-0.2129
	(0.0313)	(0.0115)	(0.0412)	(0.0541)	(0.0279)	(0.0143)	(0.0259)	(0.0541)
	***	***	***	***	***	***	***	***
Relative time effects	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Observations	58	58	72	46	58	58	72	46
R-squared	0.4290	0.3917	0.5210	0.5902	0.6809	0.5650	0.7015	0.5902

Regressions are weighted by the number of employees in 2010. Standard errors are robust and clustered. *, **, *** refer to statistical significance levels of 10%, 5% and 1% respectively

4. Results

b. How do the effects of extensions differ between affiliated and non-affiliated firms?

The effects of extensions by affiliation status (Sharp RDD)

Change in employment growth, 2010-2011

Results by affiliation status

Dependent variable : change in employment growth, 2010-2011

	Fuzzy RDD				Sharp RDD			
	Baseline	Controls	Bandwidth	Falsification	Baseline	Controls	Bandwidth	Falsification
Non-affiliated firms	-0.1787	-0.2446	-0.1706	-0.0370	-0.1222	-0.1309	-0.0986	-0.0337
* treatment dummy	(0.0653)	(0.1118)	(0.0650)	(0.0607)	(0.0428)	(0.0306)	(0.0309)	(0.0928)
	**	**	**		***	***	***	
Affiliated firms	0.2565	0.1080	0.1798	-0.0295	-0.0512	-0.0636	-0.0681	-0.0216
* treatment dummy	(0.0916)	(0.1877)	(0.0887)	(0.0497)	(0.0159)	(0.0317)	(0.0272)	(0.0255)
	***		*		***	*	**	
Affiliated firms	0.0779	0.1072	0.0707	0.0380	-0.0080	0.0612	0.0540	0.0634
	(0.0265)	(0.0411)	(0.0474)	(0.1109)	(0.0273)	(0.0309)	(0.0442)	(0.0984)
	***	**				*		
Constant	-0.0710	-0.0814	-0.0888	-0.1138	-0.0865	-0.1283	-0.1113	-0.1247
	(0.0163)	(0.0481)	(0.0210)	(0.0532)	(0.0164)	(0.0181)	(0.0212)	(0.0870)
	***		***	**	***	***	***	
Relative time effects	linear	linear	linear	linear	linear	linear	linear	linear
Observations	62	62	76	46	58	58	72	46
R-squared	0.6650	0.5670	0.6919	0.5906	0.6990	0.5762	0.7091	0.5963

Weighted by 2010 employment. Robust standard errors clustered.

4. Results

c. What is the role of representativeness and retro-activity?

The role of representativeness

	Fuzzy		Sharp	
	(1)	(2)	(1)	(2)
	ΔE	ΔΔE	ΔE	ΔΔE
Treatment dummy * non-affiliated firms * representativeness	0.3024 (0.1603) *	0.1296 (0.2129)	0.2443 (0.1706)	-0.1178 (0.2044)
Treatment dummy * affiliated firms * representativeness	-0.5177 (0.2553) *	-0.2431 (0.2887)	-0.1288 (0.1087)	-0.0233 (0.0989)

The role of retro-activity

	Fuzzy		Sharp	
	(1)	(2)	(1)	(2)
	ΔE	ΔΔE	ΔE	ΔΔE
Treatment effect *	-0.0003	-0.0006	-0.0003	-0.0005
non-affiliated firms *	(0.0001)	(0.0002)	(0.0002)	(0.0003)
administrative delay	**	***		*
Treatment effect *	-0.0001	0.0003	-0.0001	0.0001
affiliated firms *	(0.0002)	(0.0003)	(0.0002)	(0.0002)
administrative delay				

5. Concluding remarks

Summary

- Extensions play important role in many countries, but their role is not well understood

- Use novel approach based on RDD and unique data on collective agreements (albeit with small N)

- Results based on natural experiment that took place in specific economic and institutional context

Main insights

- By reducing (the growth of) employment, extensions amplified the effects of the economic crisis

- The adverse effects of extensions appear strongest for non-affiliated firms

- The (temporary) introduction of representativeness criteria may have limited further job losses, mainly by making it harder for agreements to be extended

- The reform is likely to have promoted further resilience by removing the retro activity of extensions

- In a trade-off with employment, extensions appear to reduce wage inequality

Thanks!

Contact details: alexander.hijzen@oecd.org

Results on inequality

Δp5 denotes the change in the 5th percentile (of the cell's log base wage residual) between 2010 and 2011,

	(1) Δp5	(3) Δp10	(5) Δp15	(7) Δp20
Treatment effect	0.0493	0.0494	0.0519	0.0184
	(0.0232)	(0.0213)	(0.0296)	(0.0147)
	**	**	*	
Constant	-0.0310	-0.0087	-0.0266	-0.0109
	(0.0213)	(0.0185)	(0.0298)	(0.0155)
Relative time effects	Linear	Linear	Linear	Linear
Observations	58	58	58	58
R-squared	0.1019	0.2675	0.2170	0.0756

Weighted by 2010 employment. Robust standard errors clustered.