Market Externalities of Large Unemployment Insurance Extensions

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Motivation:

What is the effect of increasing generosity of UI on labor market outcomes?

- We $\approx$ know what micro effect is
  - In *theory*, increase in UI unambiguously increase U duration
  - *Empirically*, large number of well-identified micro estimates
- What about macro effect?
  - In *theory*, large literature on equilibrium search & matching, but anything goes regarding externalities
  - *Empirically*, difficulty of estimating G-E effects of UI and to analyze how micro and macro estimates differ

UI and labor market externalities:

- Market externality:
  Whenever (UI induced) variations in the search effort of some unemployed affect job finding probability of other unemployed in the same labor market
- Market externality $\neq$ incidence:
  In market with frictions, efficiency is usually not achieved, so that (UI induced) variations in behaviors have first order welfare effects

This paper:

- Regional Extended Benefit Progam (REBP): Large extensions of UI in Austria
  - Unique quasi-experimental setting to identify market externalities
  - Strong evidence of positive effects of REBP on untreated workers in treated labor markets
- Discuss how evidence relates to different search & matching models:
  - Evidence refutes predictions of Nash bargaining / flexible wage models
  - Evidence in line with job-rationing models

Related literature:

- Theoretical literature on pecuniary externalities:
  - Geanakoplos & Polemarchakis (1986), etc.
- Literature on optimal UI:
  - Direct continuity of LMS (2012)
- Empirical literature on identification of spillovers of policy interventions
  - General literature on spillovers: Duflo & Saez (2003)
  - Spillovers of active labor market policies: Crepon & al. (2012), Ferracci & al. (2010), Blundell, & al. (2004).
  - Spillovers of UI: Levine (1993)

1. Introduction
2. Conceptual framework
3. Institutional background
4. Empirical strategy
5. Results
6. Calibrations

Labor Market with Matching Frictions

- u unemployed workers:
  - Exert search effort e
  - e function of wedge in consumption $\Delta c = c^e - c^u$
- v vacancies.
- Number of matches: $m(e \cdot u, v) = \omega_m \cdot (e \cdot u)^{\eta} \cdot v^{1-\eta}$
- Labor market tightness: $\theta \equiv v/(e \cdot u)$
- Job-finding proba: $e \cdot f(\theta) = e \cdot m(1, \theta)$.
- Vacancy-filling proba: $q(\theta) = m(1/\theta, 1)$.

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  $\Rightarrow \frac{\partial q(\theta)}{\partial \theta} < 0$

Labor market equilibrium

- Aggregate labor supply (from equality of in- and outflows into employment):

$$n^s(e(\theta, \Delta c), \theta)$$

- Aggregate labor demand (from firm's maximisation program):

$$n^d(\theta)$$

- Labor market equilibrium:

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Figure 1 : Externalities in a model with Nash bargaining

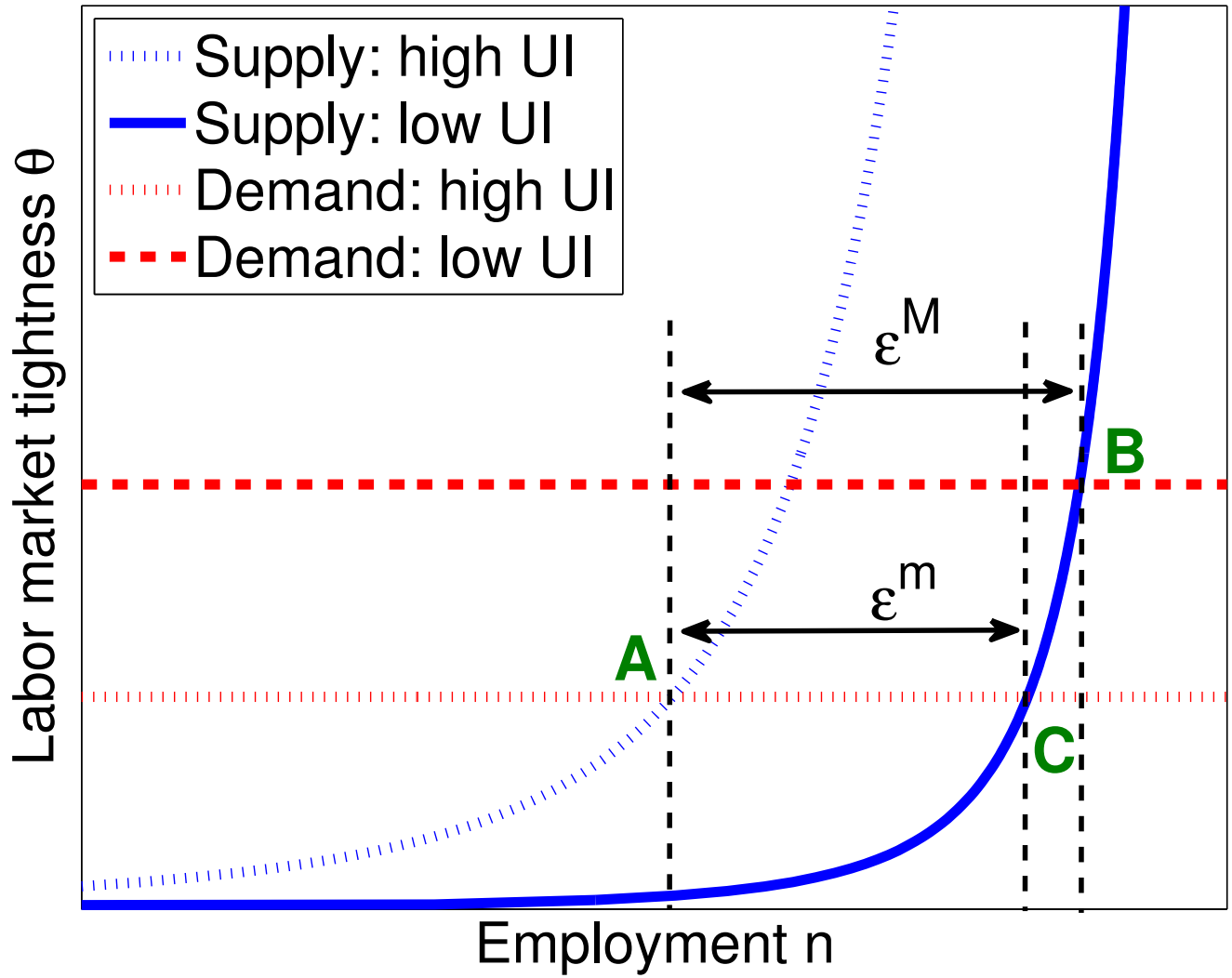
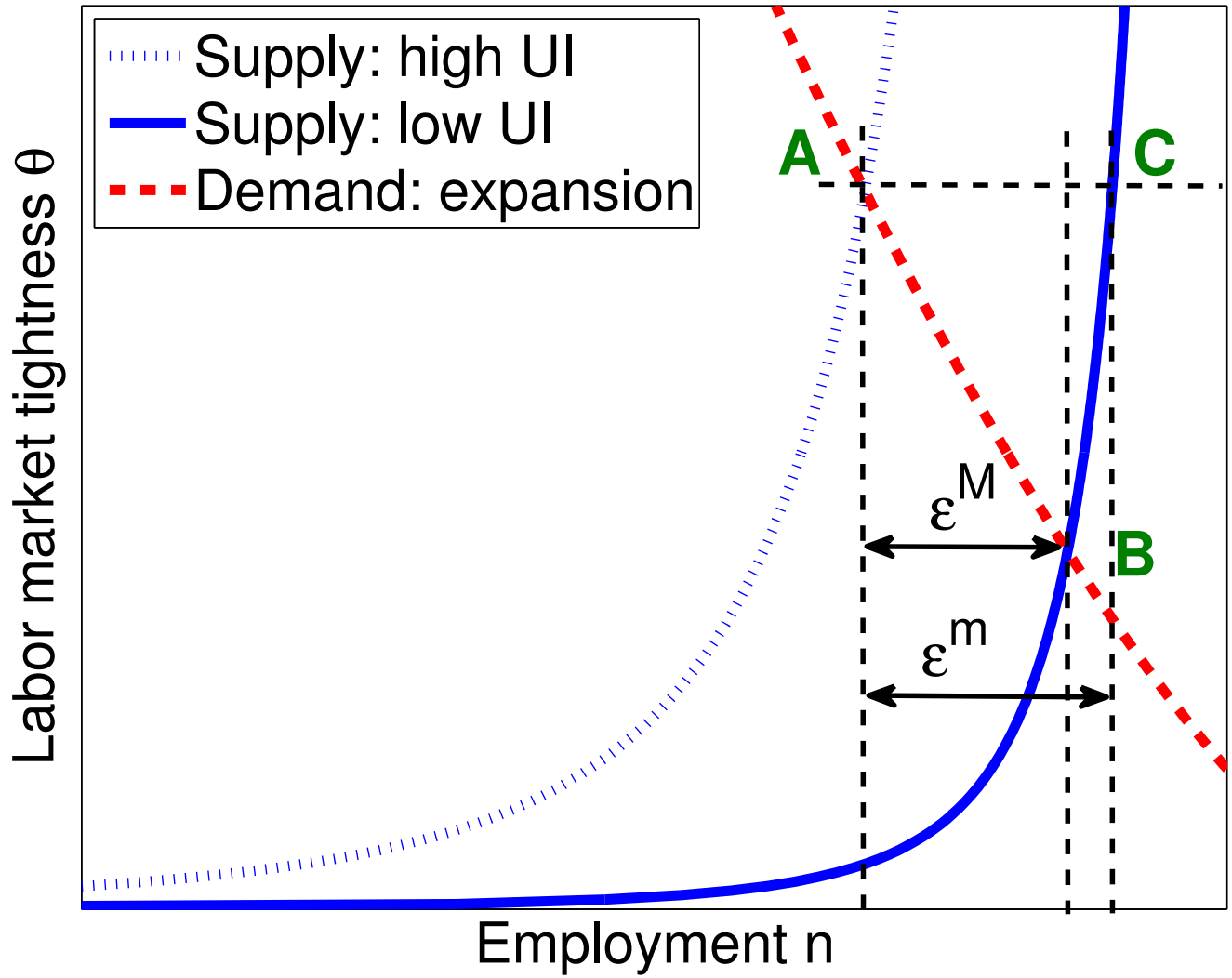


Figure 2 : Labor market equilibrium in a Michaillat model



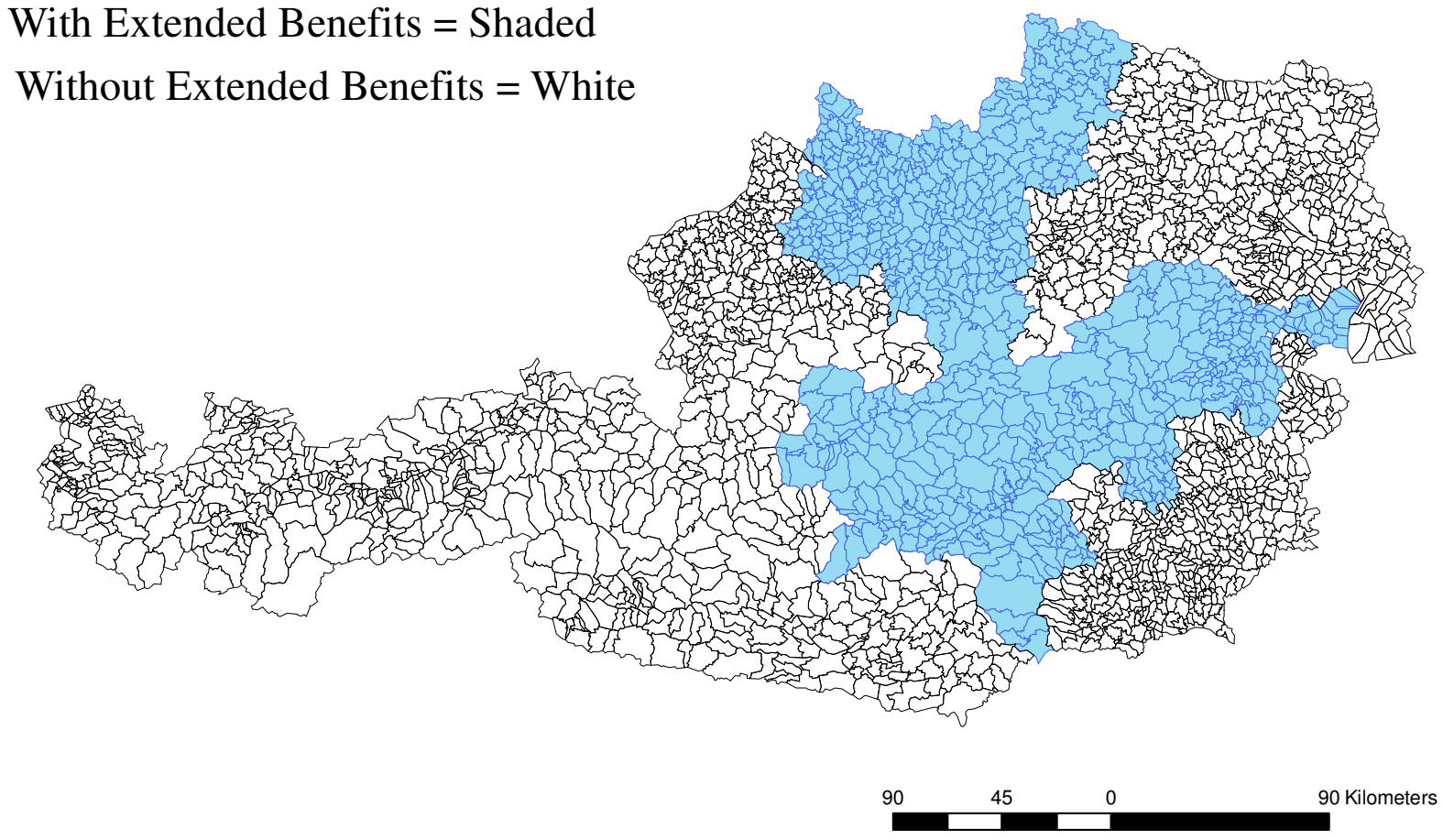
Externalities in different matching models

- In models with flexible wages:
  - $\downarrow \Delta c \Rightarrow \uparrow w \Rightarrow \downarrow n^d$
  - Macro effect larger than micro effect
- In models with rigid wages & diminishing returns:
  - $\downarrow \Delta c \Rightarrow \uparrow (f' - w) \Rightarrow \uparrow n^d$
  - Macro effect smaller than micro effect

REBP reform in Austria

- Large UI benefit extension program enacted in Austria
  - 209 weeks instead of 52 weeks
- Eligibility requirements:
  - Age: more than 50
  - Reside in selected regions at least 6 months before becoming unemployed
  - At least 15 years of continuous work history in the past 25 years
  - Spell beginning between June 1988 and Dec 1993

Figure 3 : **Austrian regions by REBP treatment status**



Data:

- Universe of UI spells in Austria from 1980 to 2010:
  - Info on age, residence, education, marital status, etc...
- Universe of social security data in Austria from 1949 to 2010:
  - Info on each employment spell
  - Compute experience in past 25 years
  - Merge with UI data to determine REBP eligibility
  - Info on wages, industry, tenure,

Sample selection:

- Endogeneity of choice of REBP regions:
  - Regions are not selected at random: restructuring of steel sector
  - Remove all steel sector workers (at most 15% of unemployed in treated regions), and all workers in related industries
- Early retirement programs:
  - Women can go directly from REBP to early retirement programs
  - We focus only on men 50 to 54 bc they cannot go directly from REBP to early retirement

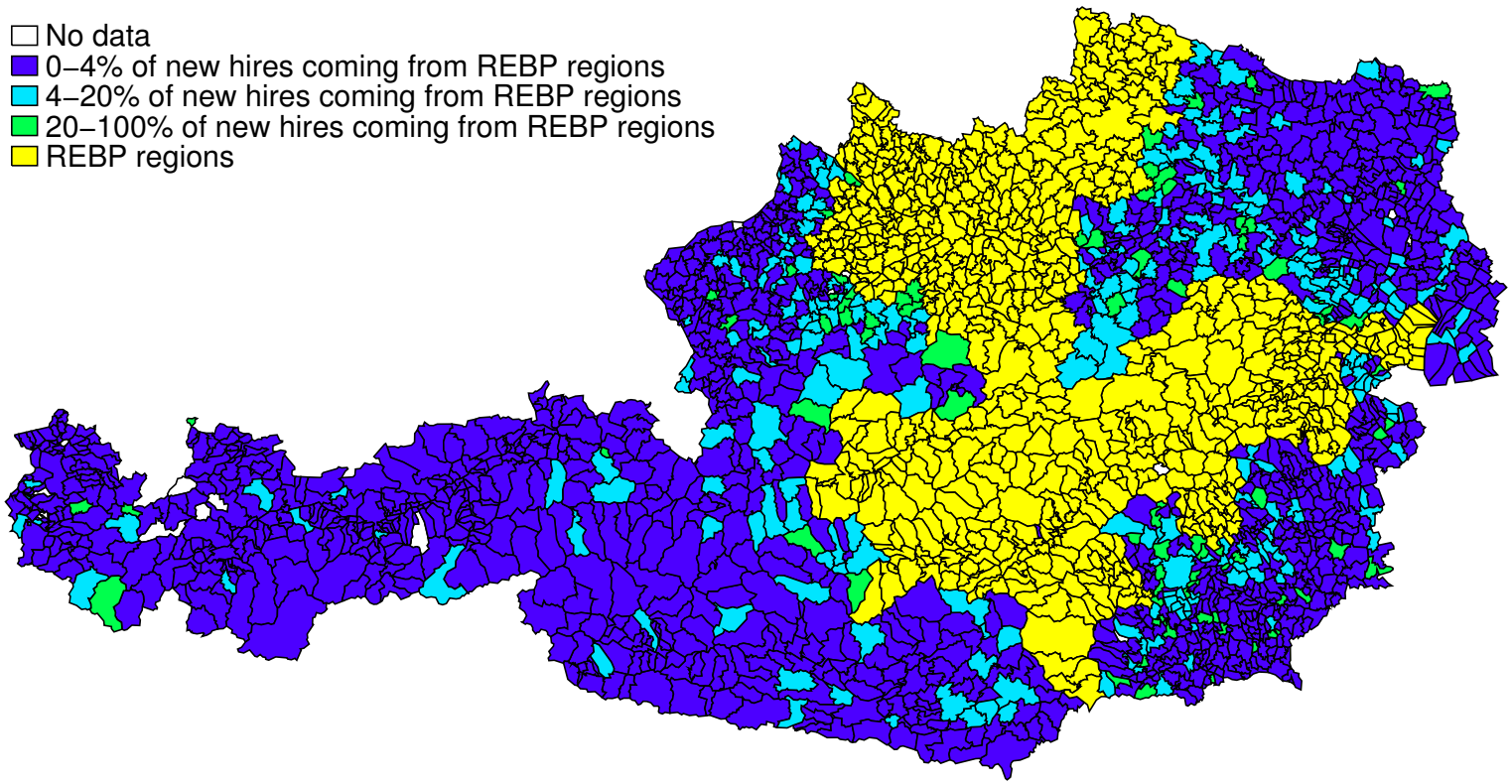
Empirical strategy:

- **First stage**: Compare treated workers in treated regions and untreated regions *before/during/after*
- **Second stage**: Compare untreated workers in treated and untreated regions *before/during/after*
- Identification assumptions:
  - Treated and untreated regions are somehow isolated
  - Unobserved differences between treated and untreated workers fixed over time
  - Unobserved differences between labor markets are fixed over time

Table 1 : Summary statistics:

	(1)	(2)	(3)	(4)
	A. All workers treated vs untreated counties before 1988			
	M=0	M=1	Difference	p-value
Age	51.9	51.9	0	.366
U duration	18.7	19.4	-.7	.12
Non employment duration	31.7	29.9	1.8	.018
Fraction spells $>$ 100 wks	.033	.039	-.006	.023
Fraction spells $>$26 wks	.135	.122	.013	.016
Real wage before spell	52.1	50.5	1.6	0
Real wage after spell	51.8	50.8	1.1	0
White Collar	.063	.035	.028	0
Fraction not in construction	.38	.369	.011	.148
	B. Treated workers vs untreated workers in treated counties before 1988			
	T=0	T=1	Difference	p-value
Age	51.8	51.9	-.1	.181
Experience	4089.365	8292.634	-4203.269	0
U duration	16.3	19.6	-3.3	.025
Non employment duration	52.5	28	24.5	0
Fraction spells $>$ 100 wks	.018	.041	-.023	.022
Fraction spells $>$ 26 wks	.091	.124	-.033	.056
Real wage before spell	47.3	50.8	-3.6	0
Real wag after spell	47.4	51	-3.6	0
White Collar	.01	.037	-.027	.006
Fraction not in construction	.345	.371	-.026	.307

Figure 4 : **Local labor markets integration**: Fraction of new hires from REBP regions in total number of new hires by county



Sample: male age 50 to 54 in non steel-related industries, 1980-1987.

Figure 5 : **Difference in U duration between REBP and non REBP regions**: male 50-54 with **more** than 15 years of experience

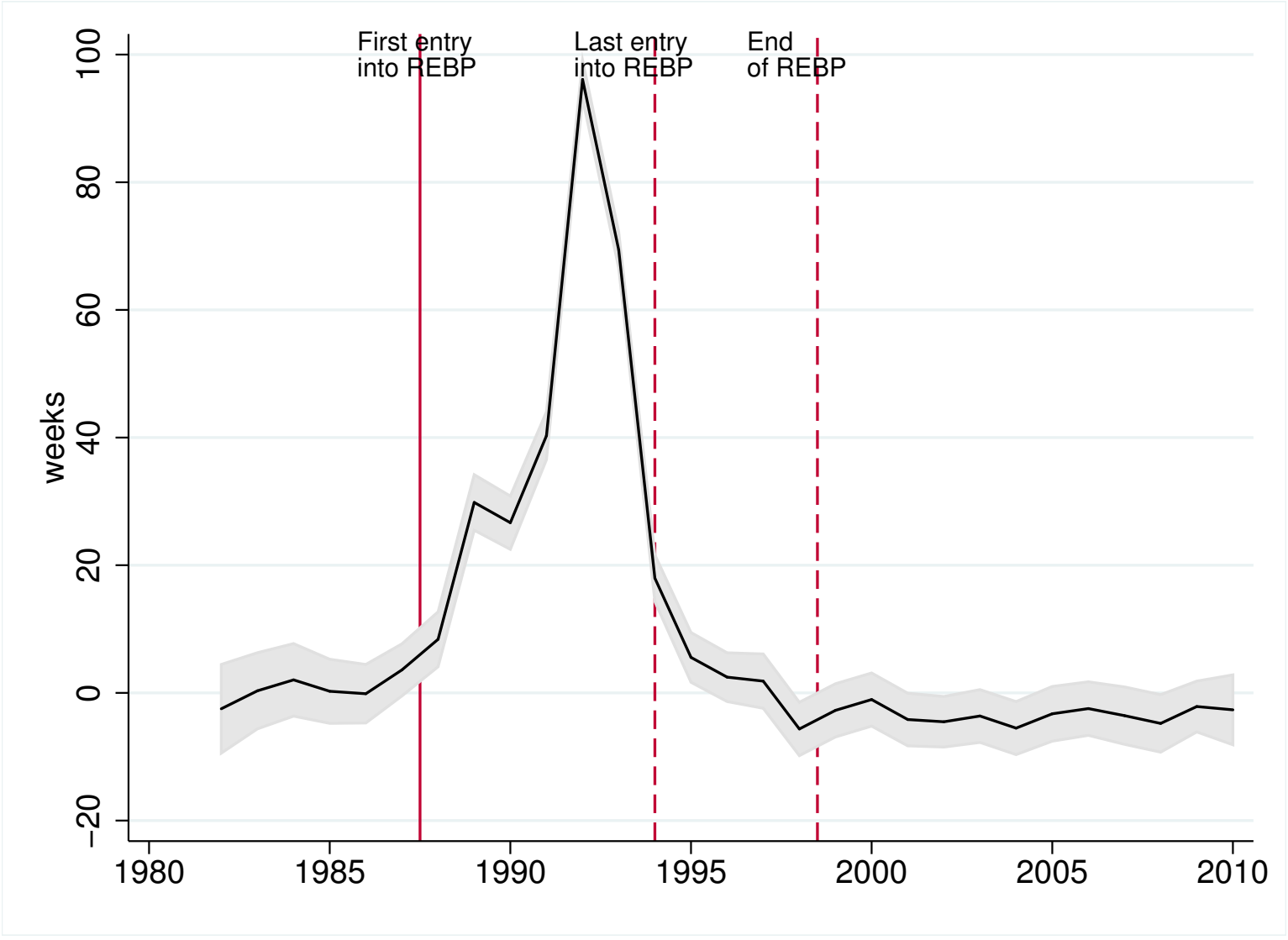
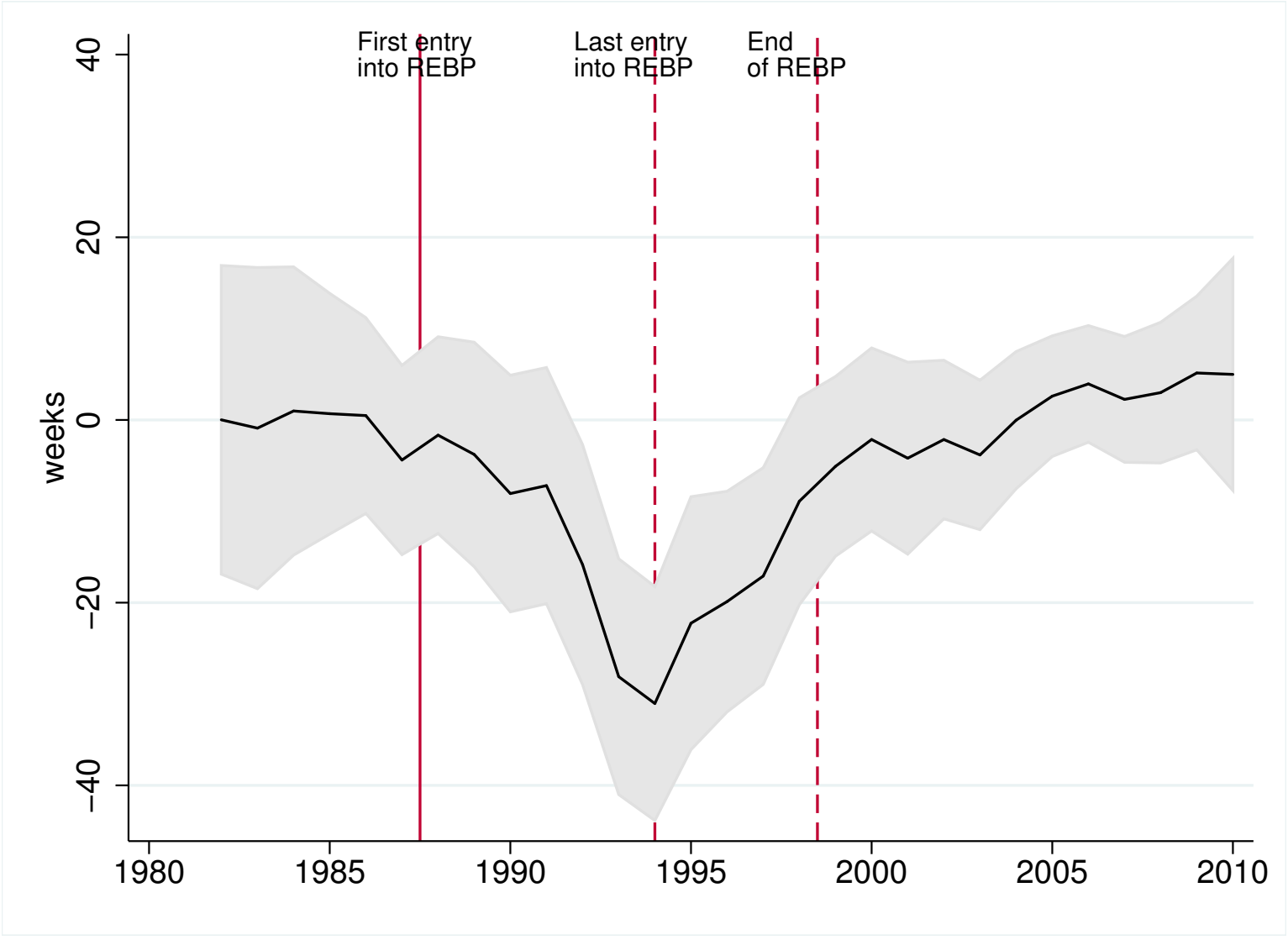


Figure 6 : **Difference in U duration between REBP and non REBP regions**: male 50-54 with **less** than 15 years of experience



Baseline specifications:

$$
\begin{aligned}
Y_{irt} \;=\; & \alpha + \overbrace{\beta_0 \cdot Z_{irt} \cdot R_r \cdot T_t}^{\text{Effect of REBP on treated}} + \overbrace{\gamma_0 \cdot (1 - Z_{irt}) \cdot R_r \cdot T_t}^{\text{Effect of REBP on non-treated}} \\
& + \eta_0 R_r + \eta_1 B_{irt} + \eta_2 B_{irt} \cdot R_r \\
& + \sum \nu_t + \sum \eta_3 B_{irt} \cdot \iota_t + X'_{it}\rho + \varepsilon_{irt}
\end{aligned}
$$

- R_r: indicator for residing in REBP region
- T_t: indicator for spell starting btw June 1988 and Dec 1997
- $B_{irt} = \mathbb{1}[exp > 15]$: indicator for more than 15 yrs of exp
- $Z_{irt} = B_{irt} \cdot \tilde{T}_t$: indicator for being eligible to REBP extensions

Table 2 : Baseline estimates of the treatment effect of REBP on treated unemployed and untreated unemployed

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Unemployment duration				Non-empl. duration	Spell >100 wks	Spell >26 wks
β_0	62.41***	54.57***	55.48***	58.14***	26.03***	0.233***	0.236***
	(9.565)	(8.345)	(9.051)	(9.159)	(5.797)	(0.0312)	(0.0290)
γ_0	-6.941***	-7.165***	-11.86***	-8.979***	-9.725***	-0.0186***	-0.0297**
	(1.690)	(2.017)	(1.640)	(1.433)	(1.487)	(0.00509)	(0.0116)
Educ., marital status, industry, citizenship		×	×	×	×	×	×
Preexisting trends							
by region			×				
by region × exp				×	×	×	×
N	127802	126091	126091	126091	106164	126091	126091

S.e. clustered at the year × region level in parentheses. * p<0.10, ** p<0.05, *** p<0.010.

Potential confounders:

- Confounder 1: **selection**
  - Self-selection into unemployment affected by the reform for non-treated group in treated counties
  - If anything, bias likely to attenuate estimate of spillover effect on non-treated
- Confounder 2: **differential region-specific shocks**
  - REBP regions experience positive shock on labor market conditions at the time REBP was implemented
  - If anything, we expect negative shock if REBP regions endogenously selected

Table 3 : Testing for selection: inflow rate into unemployment and log real wage in previous job

	(1) log separation rate	(2) log real wage in previous job	(3)
eligible	0.287***		
	(0.0355)		
non-eligible	-0.0346		
	(0.0306)		
β_0		0.144**	0.132**
		(0.0691)	(0.0614)
γ_0		-0.0638	-0.0479
		(0.0629)	(0.0608)
N	1733	114770	112242

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.010

Table 4 : Using regions close to REBP border with high labor market integration as spillover group

	(1)	(2)	(3)	(4)	(5)	(6)
	Unemployment duration			Non-empl. duration	Spell >100 wks	Spell >26 wks
β_0	66.20***	58.24***	65.09***	27.68***	0.254***	0.251***
	(10.13)	(8.865)	(9.869)	(6.298)	(0.0339)	(0.0316)
γ_0	-1.813	-1.588	-3.110	-3.446	-0.0117	-0.0602**
	(3.323)	(2.954)	(3.261)	(2.563)	(0.0118)	(0.0257)
Educ., marital status, industry, citizenship		×	×	×	×	×
Preexisting trends by region			×	×	×	×
N	160714	157578	159104	135702	159104	159104

S.e. clustered at the year×region level in parentheses. * p<0.10, ** p<0.05, *** p<0.010

Table 5 : Effects of REBP on subsequent wages and match quality

	(1)	(2)	(3)	(4)	(5)	(6)
	log real wage in next job		wage drop from next to previous job		distance to next job (min)	
β_0	-0.0236	-0.0381**	-0.157	-0.0904	-0.456	0.223
	(0.0154)	(0.0152)	(0.214)	(0.208)	(0.554)	(0.549)
γ_0	0.00515	-0.0477	0.269	0.462	-0.233	2.476*
	(0.0448)	(0.0441)	(0.591)	(0.562)	(1.138)	(1.240)
Educ., marital status, industry, citizenship		×		×		×
N	90345	88634	94503	92719	103678	101715

Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.010

Conclusion:

- Identification of positive effects of increasing UI on untreated workers in the same labor market
- Externalities matter in the labor market and must be taken into account for optimal UI
- Next steps: heterogeneity analysis

Figure 7 : **Local labor markets integration**: Fraction of new hires from non-REBP regions in total number of new hires by county