

Is temporary agency employment a stepping stone for immigrants?

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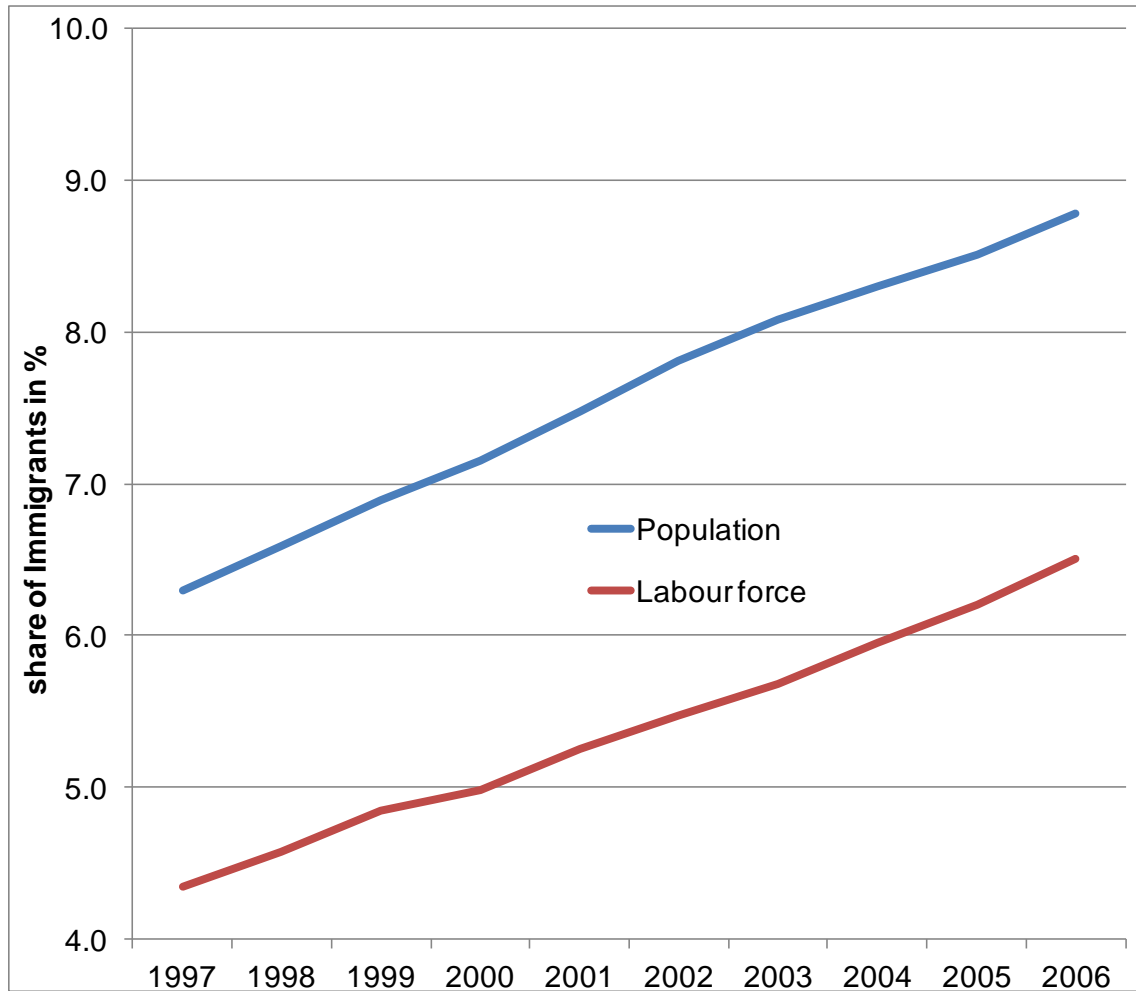
IAB, Aarhus University, and IZA

Michael Rosholm

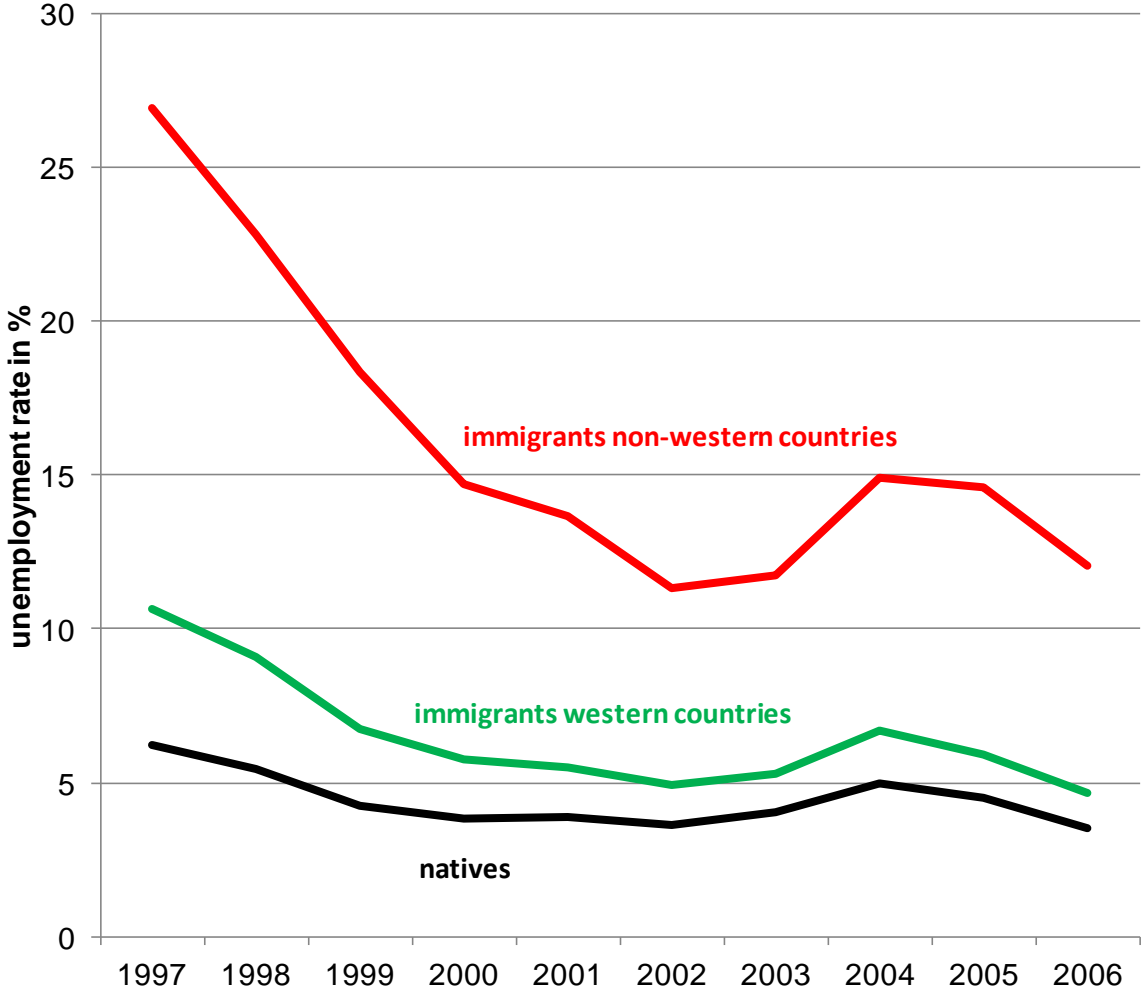
Aarhus University and IZA

Leuven, October 27, 2011

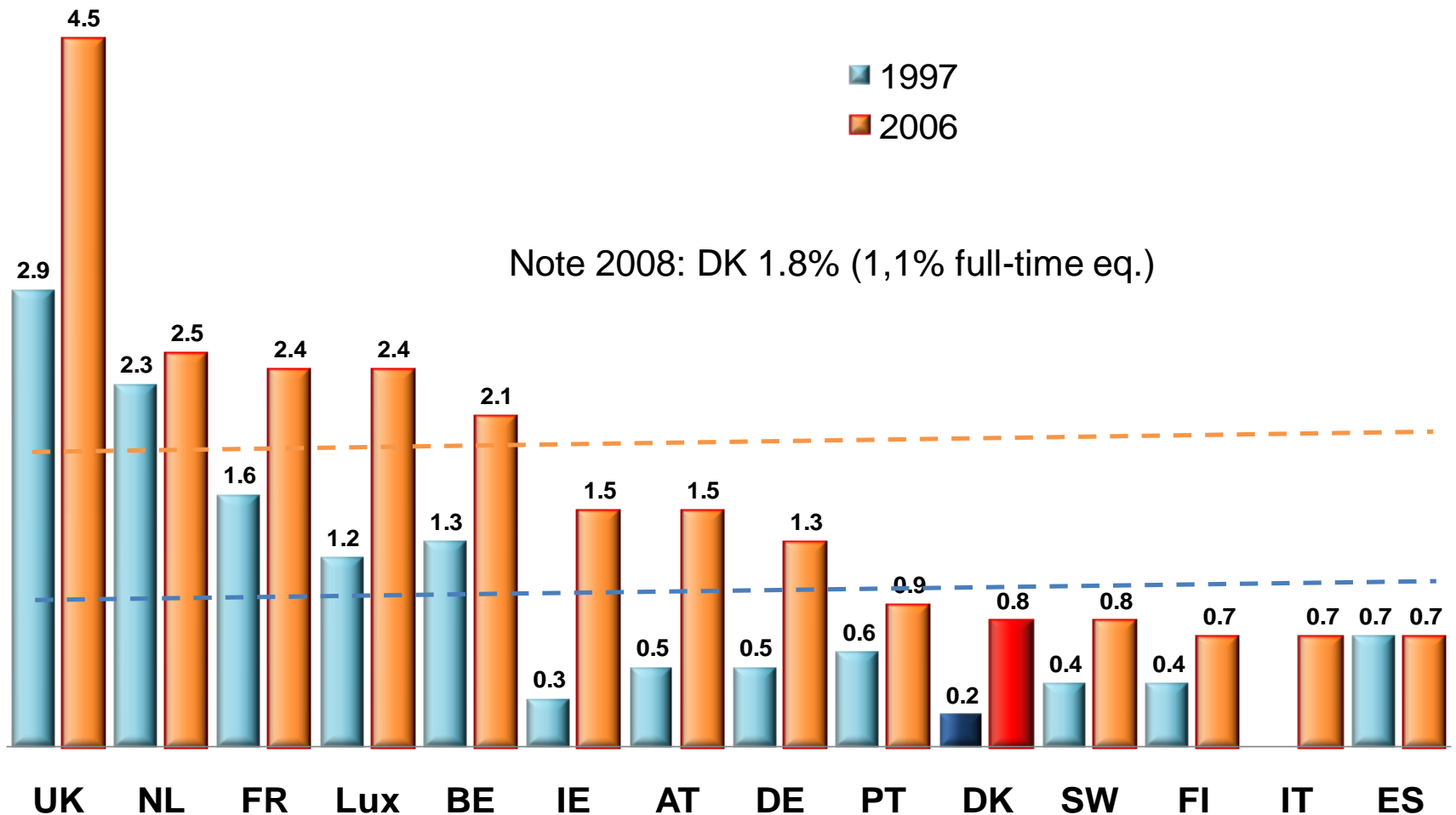
Share of immigrants in Denmark



Unemployment rates



Share of temporary agency workers (full-time equivalent)



Quelle: Ciett und nationale Berichte, eigene Berechnungen

Some facts about the Danish (temp) labor market

- ◆ Danish labor market - Flexicurity
 - Low employment protection
 - Generous unemployment insurance system (80 % replacement rate)
- ◆ Danish temp labor market
 - Regulation by collective bargaining (coverage rate 80 %)
 - Standard labor law applies after 6 months on assignment (before no social benefits as payment on holidays, pension etc.; no notice period)
 - Port of entry for Eastern Europeans \Rightarrow 20% of work and stay permissions for Eastern European citizens via temporary work agencies

Existing empirical evidence

- ◆ Stepping stone:
 - US: Lane *et al.* (2003)
 - Denmark: Jahn & Rosholm (2010)

- ◆ No effects:
 - US: Autor & Houseman (2005/2011)
 - Germany: Kvasnicka (2009)
 - Netherlands: De Graaf-Zijl *et al.* (2010) for contingent workers
 - Spain: Amuedo-Dorantes *et al.* (2008)

- ◆ Mixed effects:
 - Spain: García-Pérez & Muñoz-Bullón (2005): Only for young workers with a short previous unemployment experience.
Malo & Muñoz-Bullón (2008): Only for married women
 - Italy: Ichino *et al.* (2008) (Tuscany yes, Sicily no)

Contribution to the literature

- ◆ First study concentrating on immigrants
- ◆ Timing-of-events Model (Abbring & Van den Berg 2003)
- ◆ Taking into account selection out of treatment back into unemployment
- ◆ Heterogeneous effects for sub-groups of unemployed immigrants

The timing-of-events approach

Timing-of-events duration model

Hazard rate (Exit rate) $\theta(t)$

⇒ The hazard rate is defined as the transition rate out of unemployment at time t **conditional** on survival until time t .

Idea of the timing of events model

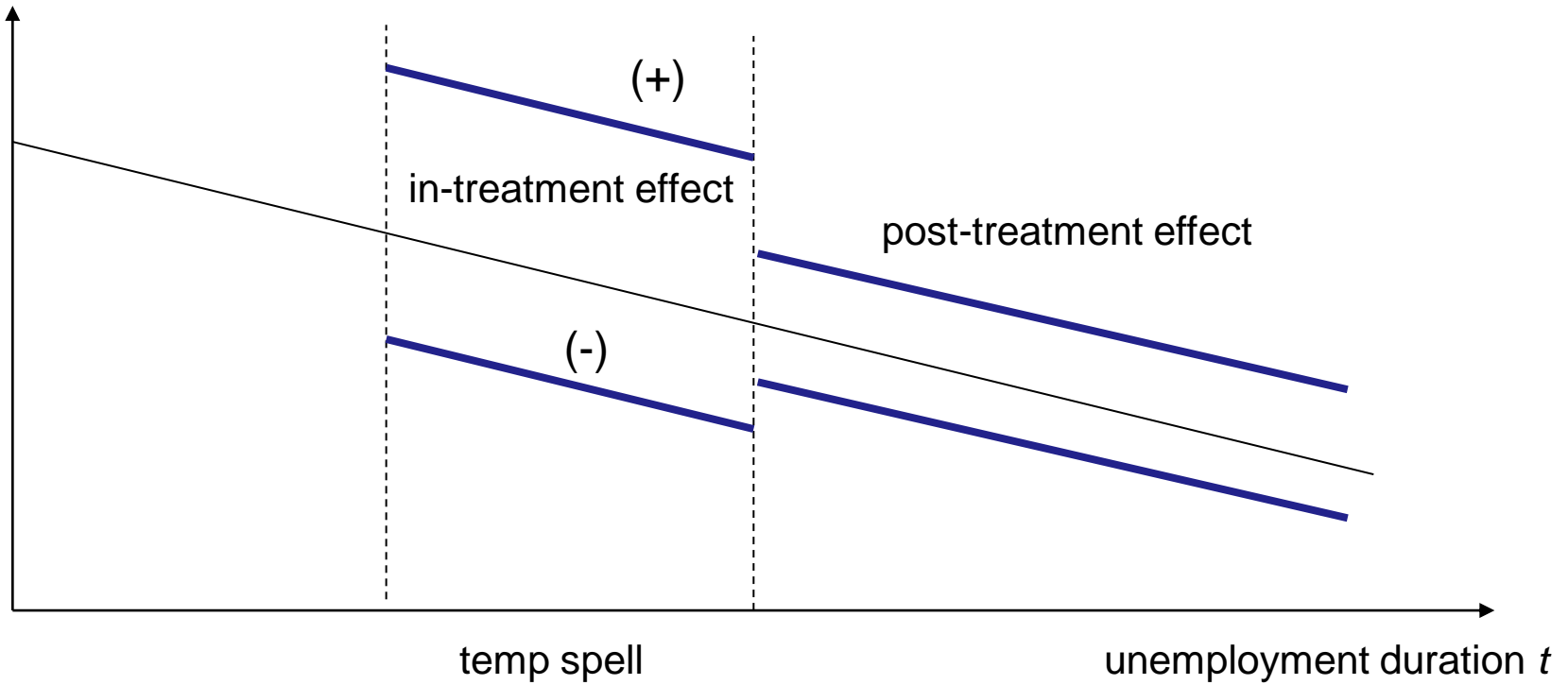
⇒ Estimating the **causal effect** of taking up a temp job **during** an unemployment spell on the **exit rate** to regular employment,

⇒ taking into account **selection into and out of treatment** and **out of unemployment**

⇒ based on observables and **unobservables**

Timing-of-events duration model

hazard rate



Data Sources

Data

- ◆ Two administrative datasets: Spell data and IDA data (1994-2006)
 - All unemployed who have been employed in an agency at least once during their unemployment career
 - 2 % random sample of remaining unemployed

- ◆ Selection
 - Inflow into unemployed during 1997-2006 (UB and UA); (Note: Treatment is part of the unemployment spell)
 - Unemployed aged 16 to 60 years

Controls

- ◆ Dependent variable: unemployment duration in weeks

- ◆ Socio-economic characteristics
 - Gender, age (5 categories), education (5 categories),
 - Single, child in household, child below age of 7, working partner
 - Ethnic origin (6 groups)
 - Immigration type (3 groups)
 - Recipient of unemployment assistance (UA)

- ◆ Macroeconomic controls
 - Regional unemployment rate (14 counties)
 - Quarter and year dummies

Controls

- ◆ Employment career
 - Previous labor force status (self-empl, empl, temp, sick, nlf)
 - Fraction of time in regular employment during the past 3 years
 - Number of previous temp jobs past 3 years (4 categories)
 - Number of previous regular jobs past 3 years (4 categories)
 - Number of previous almps past 3 years (3 categories)
- ◆ Destination: Regular or self-employed

Selected descriptive statistics – unemployment pool

		Men		Women	
		Treatment	Control	Treatment	Control
Ethnic Origin	EU 15	0.193	0.156	0.281	0.178
	West	0.093	0.068	0.126	0.083
	EU East	0.044	0.034	0.107	0.076
	Turkey	0.089	0.137	0.084	0.154
	Pakistan	0.065	0.070	0.068	0.061
	Former Yugoslavia	0.083	0.101	0.056	0.085
	Non-western	0.435	0.435	0.277	0.362
Immigrationtyp	2. Generation	0.635	0.643	0.586	0.621
	Immigrated as child	0.241	0.242	0.256	0.243
	Immigrated as adult	0.125	0.115	0.158	0.137
Unemployment assistance		0.355	0.367	0.226	0.294
Number of persons		368	3,573	301	2,703
Spells		1,100	12,671	747	8,893

Overview of events and outcomes

	Men		Women	
	Treatment	Control	Treatment	Control
Median duration of unemployment / time until start of a temp job (weeks)	15	16	13	16
Median duration temp job (weeks)	7		6	
Exit to regular jobs (%)	72	51	73	51
Share repeated treatment	26		29	

Results

Homogenous treatment effects

	Model 1		Model 2		Model 3	
	coef.	se	coef.	se	coef.	se
Men						
In-treatment	1.085	0.046	0.837	(0.048)	0.816	(0.050)
Post-treatment	0.262	0.059	0.016	(0.061)	0.059	(0.067)
Women						
In-treatment	1.166	0.058	0.772	(0.065)	0.763	(0.072)
Post-treatment	0.460	0.074	-0.044	(0.070)	-0.090	(0.082)
Unobserved heterogeneity	no		yes		yes	
Control variables	no		yes		yes	
Selection out of treatment	no		no		yes	
Mass-points	-		5		5	

Note: Bold coefficients are statistically significant at least at the 5 percent level.

Heterogenous treatment effects

	Men				Women			
	In-treatment		Post-treatment		In-treatment		Post-treatment	
	Coef	SE	Coef.	SE	Coef.	SE	Coef.	SE
EU 15 (ref.)	0.642	(0.107)	-0.468	(0.153)	0.722	(0.128)	-0.257	(0.161)
West	-0.059	(0.163)	0.348	(0.224)	-0.254	(0.210)	-0.037	(0.249)
EU East	0.280	(0.282)	0.990	(0.398)	-0.100	(0.207)	0.633	(0.275)
Turkey	0.388	(0.130)	0.661	(0.172)	0.069	(0.172)	0.290	(0.213)
Pakistan	0.228	(0.184)	0.766	(0.244)	0.143	(0.240)	0.399	(0.290)
Former Yugoslavia	0.294	(0.194)	0.167	(0.283)	0.695	(0.277)	-0.027	(0.412)
Non-western	-0.284	(0.195)	0.957	(0.282)	0.362	(0.324)	0.018	(0.363)

Heterogenous treatment effects

	Men				Women				
	In-treatment		Post-treatment		In-treatment		Post-treatment		
	Coef.	SE	Coef.	SE	Coef..	SE	Coef.	SE	
Immigrationtyp									
2nd Gen. (ref.)	0.713	(0.109)	0.417	(0.196)	0.785	(0.150)	0.004	(0.221)	
Immi as child	0.253	(0.147)	-0.220	(0.230)	0.019	(0.191)	0.084	(0.267)	
Immi as adult	0.074	(0.121)	-0.443	(0.204)	-0.063	(0.167)	-0.185	(0.238)	
Unemployment Assistance									
U-benefits (ref.)	0.752	(0.059)	-0.071	(0.082)	0.652	(0.082)	-0.071	(0.098)	
U-assistance	0.296	(0.101)	0.484	(0.129)	0.598	(0.148)	-0.034	(0.192)	



Labor market tightness

	In-treatment		Post-treatment	
	Coef.	SE	Coef.	SE
Men				
Reference: \bar{u}	0.841	(0.053)	0.090	(0.070)
$u - \bar{u}$	0.013	(0.034)	0.071	(0.048)
Women				
Reference: \bar{u}	0.773	(0.079)	-0.118	(0.089)
$u - \bar{u}$	0.024	(0.055)	-0.029	(0.064)

Notes: Bold coefficients are statistically significant at least at the 5 percent level.



Summary

Summary and conclusions

- ◆ Agency employment seems to be a bridge into regular employment for unemployment immigrants
 - ⇒ Human capital effects for immigrants from non-western countries
 - ⇒ Stigma effects for workers from EU15 countries
- ◆ Particular strong effects for
 - ⇒ 2nd generation immigrants
 - ⇒ Non-western immigrants and immigrants from Eastern European countries
 - ⇒ Recipients of unemployment assistance
- ◆ Treatment effects seems not to be cyclical

Indirect indication for the
'screening hypothesis'

Comments are welcome

Heterogenous treatment effects - Age

	Men				Women			
	In-treatment		Post-treatment		In-treatment		Post-treatment	
	coef.	se	coef.	se	coeff.	se	coef.	se
Age								
Treatment (ref: 25 <= age < 35)	1.044	(0.082)	0.141	(0.114)	0.892	(0.105)	0.051	(0.149)
Treatment* age < 20	0.080	(0.218)	0.209	(0.338)	-0.085	(0.423)	0.074	(0.575)
Treatment* 20 <= age < 24	-0.259	(0.136)	0.239	(0.165)	0.175	(0.189)	-0.454	(0.273)
Treatment* 35 <= age <44	-0.252	(0.114)	-0.073	(0.159)	-0.267	(0.153)	-0.012	(0.190)
Treatment* age >=45	-0.438	(0.132)	-0.588	(0.212)	-0.359	(0.175)	-0.301	(0.222)

Heterogenous treatment effects - Education

	Men				Women			
	In-treatment		Post-treatment		In-treatment		Post-treatment	
	coef.	se	coef.	se	coeff.	se	coef.	se
Education (edu)								
Treatment (ref: low edu)	0.958	(0.067)	0.188	(0.089)	0.824	(0.102)	-0.036	(0.112)
Treatment*vocational edu	-0.386	(0.100)	-0.330	(0.132)	-0.075	(0.143)	-0.217	(0.174)
Treatment*short academic edu	-0.198	(0.198)	0.091	(0.268)	-0.229	(0.205)	0.045	(0.253)
Treatment*medium academic edu	0.002	(0.264)	-0.467	(0.305)	0.026	(0.184)	-0.181	(0.256)
Treatment*long academic edu	0.116	(0.320)	-0.298	(0.423)	-0.099	(0.312)	1.194	(1.071)

Remaining unemployment duration in weeks

Treatment		Men			Women		
		Average expected remaining unemployment duration			Average expected remaining unemployment duration		
Time until entry into temp job	duration temp job	Treat	Control	Difference	Treat	Control	Difference
Tp	Td	T0	T1	Δ	T0	T1	Δ
4	2	23	21	-2	33	36	3
4	6	23	18	-5	33	31	-2
4	12	23	15	-7	33	27	-7
11	2	25	23	-2	36	40	4
11	6	25	20	-5	36	35	-1
11	12	25	17	-7	36	31	-6
26	2	28	27	-1	39	43	4
26	6	28	24	-4	39	38	-1
26	12	28	21	-7	39	33	-6

Theoretical impact

- ◆ Human capital
 - + Unemployed may increase their human capital during assignments (e.g. Abraham 1988, Katz/Krueger 1999)
 - Only low human capital effects as agency jobs are primarily low-skilled jobs which are often below the qualification of the worker (e.g. Segal/Sullivan 1997)
- ◆ Search intensity
 - + Possibilities for developing productive job search networks (Neugart/Storrie 2005)
 - Agency employment crowds out direct job search (lock-in) (Autor/Houseman 2011)
- ◆ Stigma Effects
 - + Agencies face lower hiring and firing costs and hire individuals, who might have difficulty finding any regular employment ⇒ Jobseekers can overcome negative stigma effects (Autor 2001)
 - Agency employment stigmatizes jobseekers (e.g. Heinrich et al. 2009)

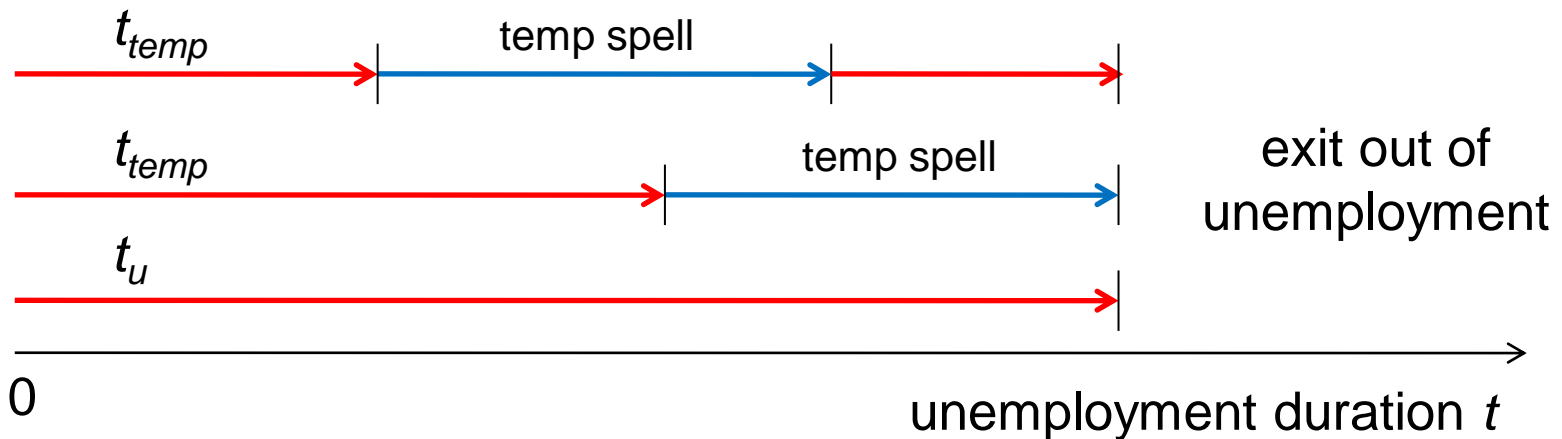
Robustness checks

- Exit state: only wage and salary employment
→ stable results
- Full data set
→ lower but still positive in-treatment effect
- Excluding workers with agency spell before entering unemployment
→ lower but still positive in-treatment effect
- Full data set with interaction terms for excluded groups
→ overall: lower but still positive in-treatment effect
→ nurses: lower in-treatment effect and strong negative post-treatment effect

Timing-of-events duration model

Two random variables:

- T_u duration until exit out of current unemployment
- T_{temp} duration until treatment (temp job)



Identification of the causal effect :
„random variation of the timing of events“

Timing-of-events duration model

- ◆ Hazard rate out of unemployment

$$\theta_u(t | x, d_1(t), d_2(t), \nu_u) = \lambda_u(t) \exp[x\beta_u + \underset{\substack{\text{in-} \\ \text{treatment}}}{d_1(t)} \gamma_1 + \underset{\substack{\text{post-} \\ \text{treatment}}}{d_2(t)} \gamma_2 + \underset{\substack{\text{unobserved} \\ \text{heterogeneity}}}{\nu_u}]$$

- ◆ Hazard rate into temporary agency employment

$$\theta_{temp}(t | x, \nu_{temp}) = \lambda_{temp}(t) \exp[x\beta_{temp} + \underset{\substack{\text{unobserved} \\ \text{heterogeneity}}}{\nu_{temp}}]$$

- ◆ Joint estimation: conditional likelihood function

The timing of events model

- ◆ Main estimation equation: Conditional likelihood function

$$L(\nu_u, \nu_{temp}) = \prod_{i=1}^N L_i(\nu_u, \nu_{temp}) \quad \text{where}$$

$$L_i(\nu_u, \nu_{temp}) = \theta_{temp}[t_{temp,i} | x_i, \nu_{temp}]^{I[t_{temp,i} < t_{ui}]} \theta_u[t_{ui} | x_i, d_1(t_{ui}), +d_2(t_{ui}), \nu_u]^{C_i} \\ \times \exp \left\{ - \int_0^{t_{temp,i}} \theta_{temp}[s | x_i, \nu_{temp}] ds - \int_0^{t_{ui}} \theta_u[t | x_i, d_1(t), +d_2(t), \nu_u] dt \right\}$$

with

C_i Non censoring indicator $C_i = 1$ if exit to reg employment

$I[t_{temp,i} < t_{ui}]$ Indicatorfunction $I = 1$ if having received treatment

More estimation equations

- ◆ Baseline Hazard is „piecewise constant“

$$\lambda_u = \exp \left[\sum_l \lambda_{u,l} I_l(t) \right]$$

Extensions of the timing-of-events model

- ◆ Selection out of treatment back into open unemployment

$$\theta_p(t | x, \nu_p) = \lambda_p(t) \exp[x\beta_p + z\gamma + \nu_p]$$

- ◆ Cyclical

$$\theta_u(t | x, d_1(t), d_2(t), \nu_u) = \lambda_u(t) \exp[x\beta_u + (1 - x^s)d_1(t)\gamma_1 + (1 - x^s)d_2(t)\gamma_2 + \nu_u]$$

- ◆ Wages

$$f(w | x, \nu_w) = \frac{1}{\sigma} \varphi\left(\frac{\ln w - x\beta_w - \nu_w}{\sigma}\right)$$

Selection equation and hazard rates

		Men		Women	
		Selection- equation coef.	Hazard in employment coef.	Selection- equation coef.	Hazard in employment coef.
Age (ref: 25-34)	<20	0.472	0.091	0.474	0.209
	20-24	0.510	0.179	0.415	0.215
	35-44	0.099	-0.039	0.122	-0.032
	> 44	-0.020	-0.275	-0.085	-0.109
Ethnic origin (EU 15)	West	0.180	0.034	-0.004	-0.006
	EU East	-0.216	-0.152	-0.327	-0.285
	Non-West	-0.365	-0.236	-0.701	-0.263
	Turkey	-0.871	-0.176	-0.989	-0.356
	Pakistan	-0.420	-0.178	-0.440	-0.480
	Jugoslavia	-0.525	-0.191	-0.746	-0.191

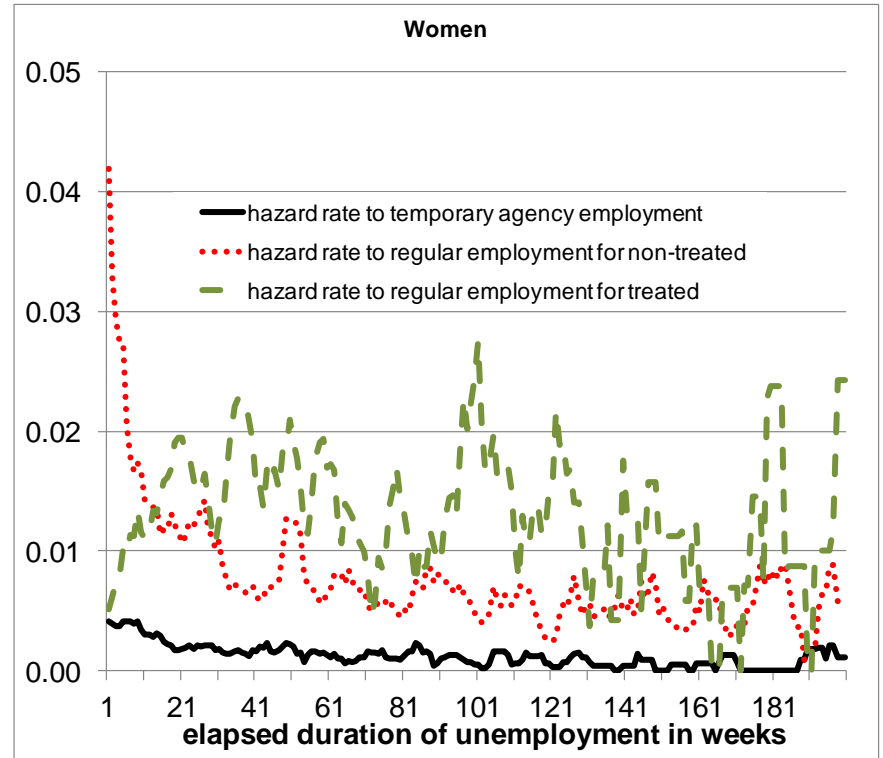
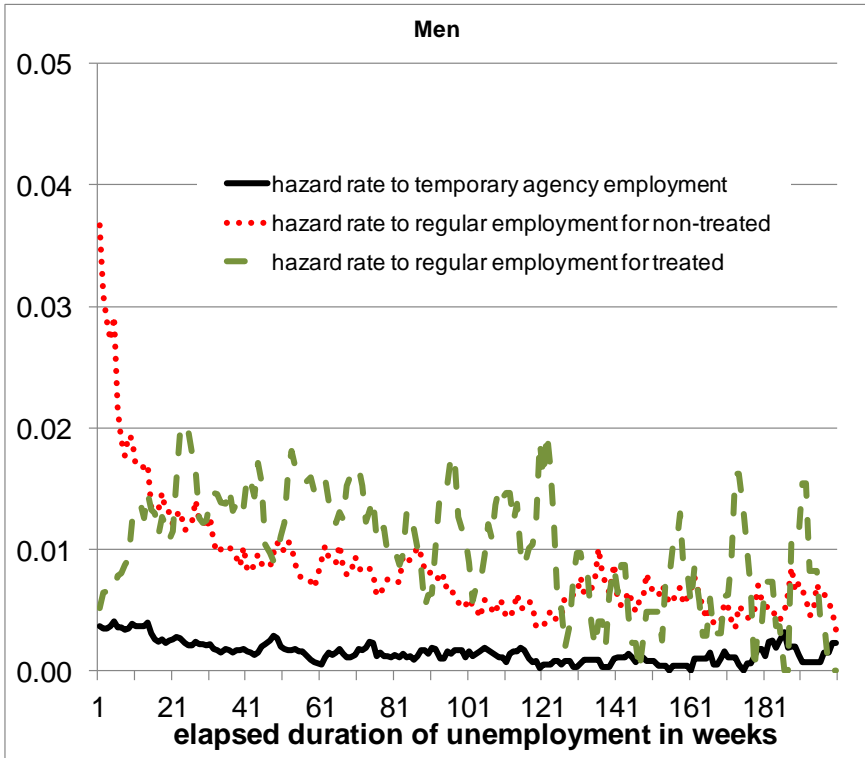
Notes: Bold coefficients are statistically significant at least at the 5 percent level.

Further Events

	Men		Women	
	Treatment	Control	Treatment	Control
Share right censored spells	2.64	4.86	4.15	5.71
Med. Unemployment duration (weeks)	44	16	39	16
Average no. of temp jobs	1.45		1.51	
No. of persons	368	3,573	301	2,703
No. of u_spells	1,100	12,671	747	8,893

Kaplan Meier hazard rates into employment and temp jobs

Kaplan Meier hazard rates into employment and temp jobs from unemployment (smoothed)



Advantages of the timing of events model

- ◆ Takes into account **selection into treatment** based on observables and unobservables \Rightarrow important if one assumes that the unobservables not only affect the selection into the treatment but also the outcome
- ◆ Exclusion restriction / CIA is not necessary
- ◆ Non-parametric identification \Rightarrow no functional form for
 - The discrete bivariate distribution of the unobserved heterogeneity terms
 - Duration dependence (baseline hazard)
 - Controls
- ◆ Takes into account right censoring
- ◆ Dynamic modeling

Assumptions

◆ Key assumptions

- Identification of the causal effect via random variation of the timing of events
- Proportionality assumption, but:
 - Multiple unemployment spells
 - Large set of controls
- No anticipation assumption; the individual is not supposed to know in advance the exact starting date of the treatment, only its probability distribution $f(t_p)$, but not the exact realization t_p

◆ Further Assumptions:

- No selection at time zero
- Baseline hazard is „piecewise constant“
- Discrete distribution of the two unobserved heterogeneity terms
⇒ Masspoints are added until AIC reaches a minimum.