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# Consequences of advance layoff notice for workers and firms

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# Motivation

- Employment protection typically modelled as a “bad”
  - ✓ Hampers job creation
  - ✓ Inefficient allocation of resources
- But employment protection can be second-best policy
  - ✓ by, e.g., providing insurance for workers (Pissarides, 2001)
- We focus on the effects of mandatory advance lay-off notice
  - ✓ The upside is that it provides workers with time to adjust to a new situation (and full insurance)
  - ✓ The downside is that it locks in workers in less productive activities



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# Advance notice periods

- Exist in practically all OECD countries
- Are relatively long in Sweden (OECD, 2008)
  - ✓ SE: 3 months; FR: 2 months; DE: 1 month; IT: 2 months; EU(15): 1.8 months
  - ✓ Sweden has no mandated severance pay
  - ✓ (Numbers apply to white-collar workers with 4 yrs. of tenure)
- Are longer for white-collar than for blue-collar workers
- Pissarides (2001) concludes that private contracts may include notice
- Consistent with this conclusion, many collective agreements (even in the U.S.) feature advance notice (and severance pay)



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# Questions of interest

1. How does advance layoff notice affect subsequent labor market outcomes for workers?
  - ✓ job mobility and exposure to non-employment
  - ✓ subsequent wages and earnings
2. How do firms respond to increases in lay-off costs?
  - ✓ WTP for a reduction in notice period (voluntary severance pay/ “golden hand-shake”)
  - ✓ Longer notification periods may imply that fewer workers are laid-off



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# Institutions, data, identification

- Labor law stipulates that the length of the notification period varies discontinuously with tenure
- In addition, many collective agreements in Sweden have age provisos that prolong notice periods further
  - ✓ Typical formulation: Private-sector white-collar workers above age 55 get additional notice (when tenure  $\geq 10$  yrs. they get additional 6 months of notice)
- Unique data on individuals notified of displacement (2005-15)
- Identification comes from the discontinuities implied by the tenure and age thresholds
- Today, I focus on the age-55 discontinuity which applies to white-collar workers in the private sector (26% of total employment)



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# Preview of empirical results

- Longer notice period cause...
  - 1) Less job-to-job mobility
    - ✓  $\Pr\{\text{remain in displacing firm}\}$  increases (during 1<sup>st</sup> and 2<sup>nd</sup> year)
    - ✓  $\Pr\{\text{in other firm}\}$  decreases (during 1<sup>st</sup> year)
  - 2) Less exposure to non-employment and unemployment
  - 3) Higher annual earnings (during 1 year post notice)
  - 4) Firms respond to longer notification by laying off fewer workers
  - 5) Severance pay is used to reduce notice periods
  - 6) Brunt of the earnings effect comes from severance pay and less exposure to non-employment



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# Institutional background

- An employer intending to displace five or more workers simultaneously must notify PES in advance
- A two-stage process: (i) intended # displaced workers is reported to the PES; (ii) a list of names of the displaced workers and their displacement dates must be submitted
- At stage (ii) we observed the identities of displaced workers and length of their notice periods
- Law specifies tenure thresholds
- Law is dispositive. More generous rules, from the worker point of view, can be agreed upon
- Many collective agreement include age rules (age 55)
- Union/firm bargain at displacement



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# Data

- The key data source: Displacement data
  - ✓ ( $\geq 5$  workers displaced simultaneously)
- These displacement data have been matched with a # population-wide registers held by Statistics Sweden
  - ✓ Unemployment register
  - ✓ Matched employer/employee data
  - ✓ Wage data (stratified sample)
  - ✓ Etc...



# Characteristics of firms giving notice

(All displacements)

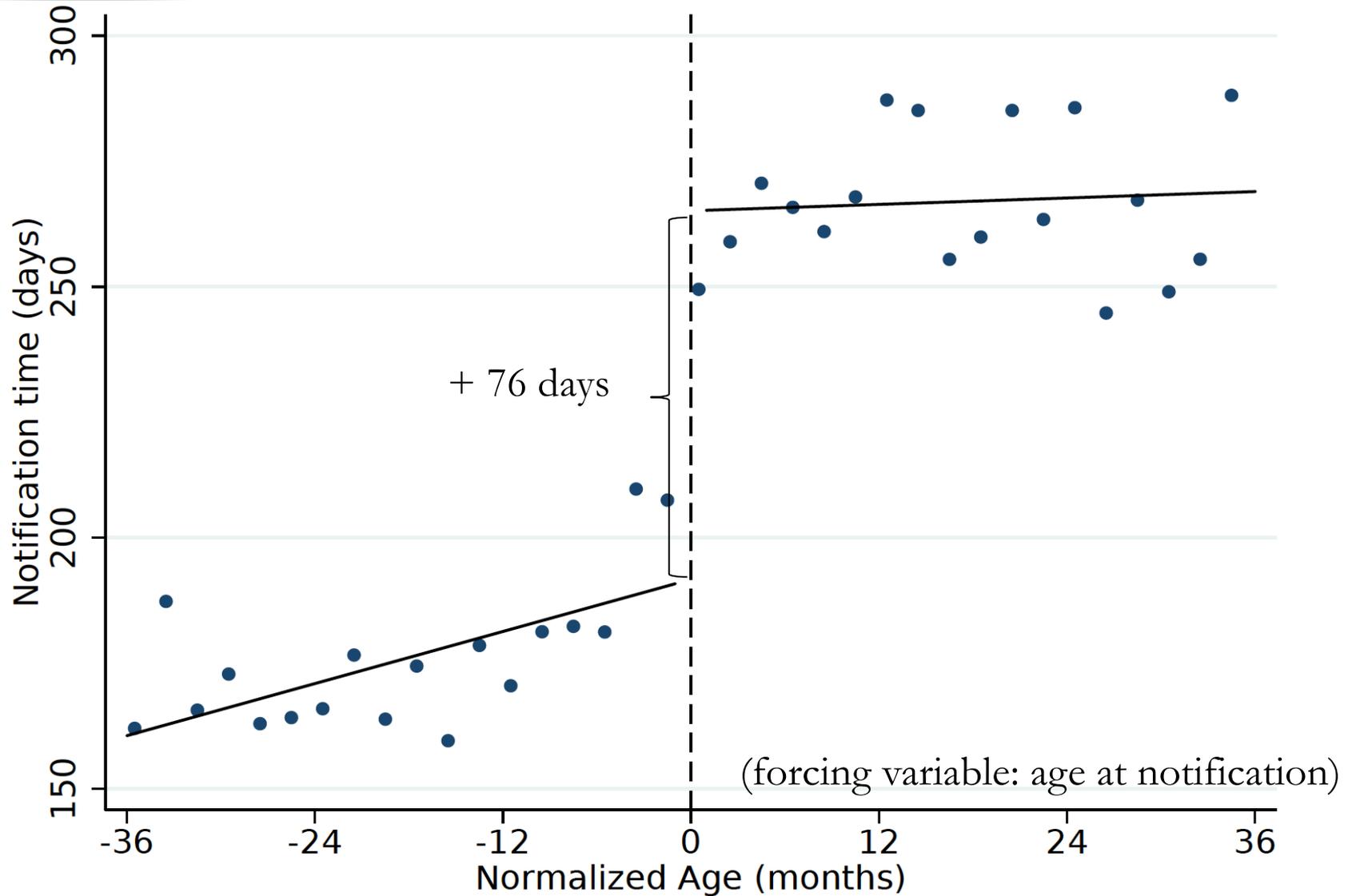
Table 4: Firm characteristics (Displacing firms, 2005-15)

	Mean
Firm size (# employed)	158
# notified (initial report)	20.2
# notified (final report)	15.8
<b>Industry distribution</b>	
Manufacturing	0.34
Construction	0.09
Retail trade	0.14
Transport	0.09
Non-Financial services	0.19
Health	0.05
Other	0.10



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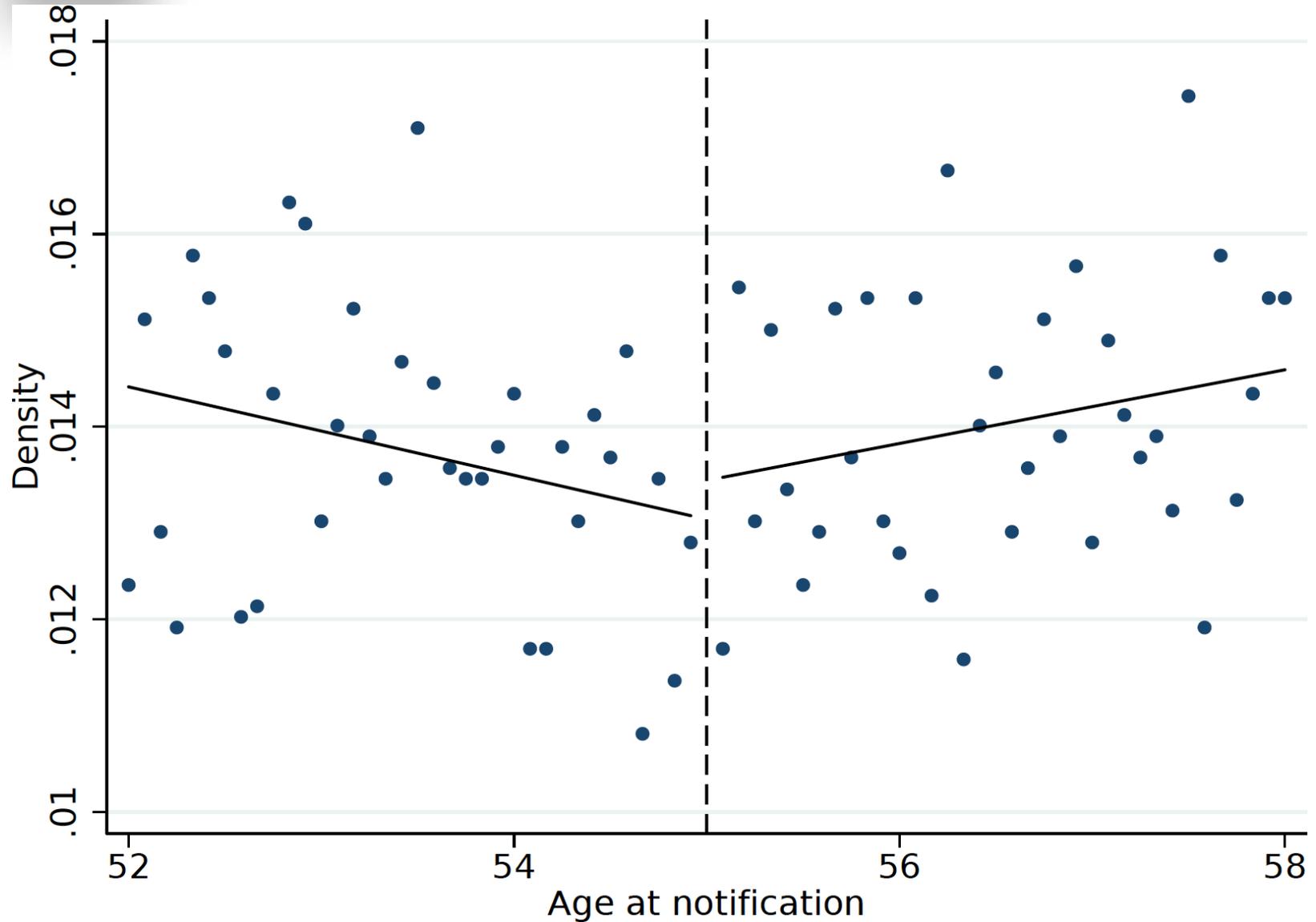
# First-stage: Age-55 discontinuity





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# Age distribution (balancing)





# Instrument exogeneity

(Above threshold regressed on pre-det. covariates)

Table 1: OVERALL BALANCING

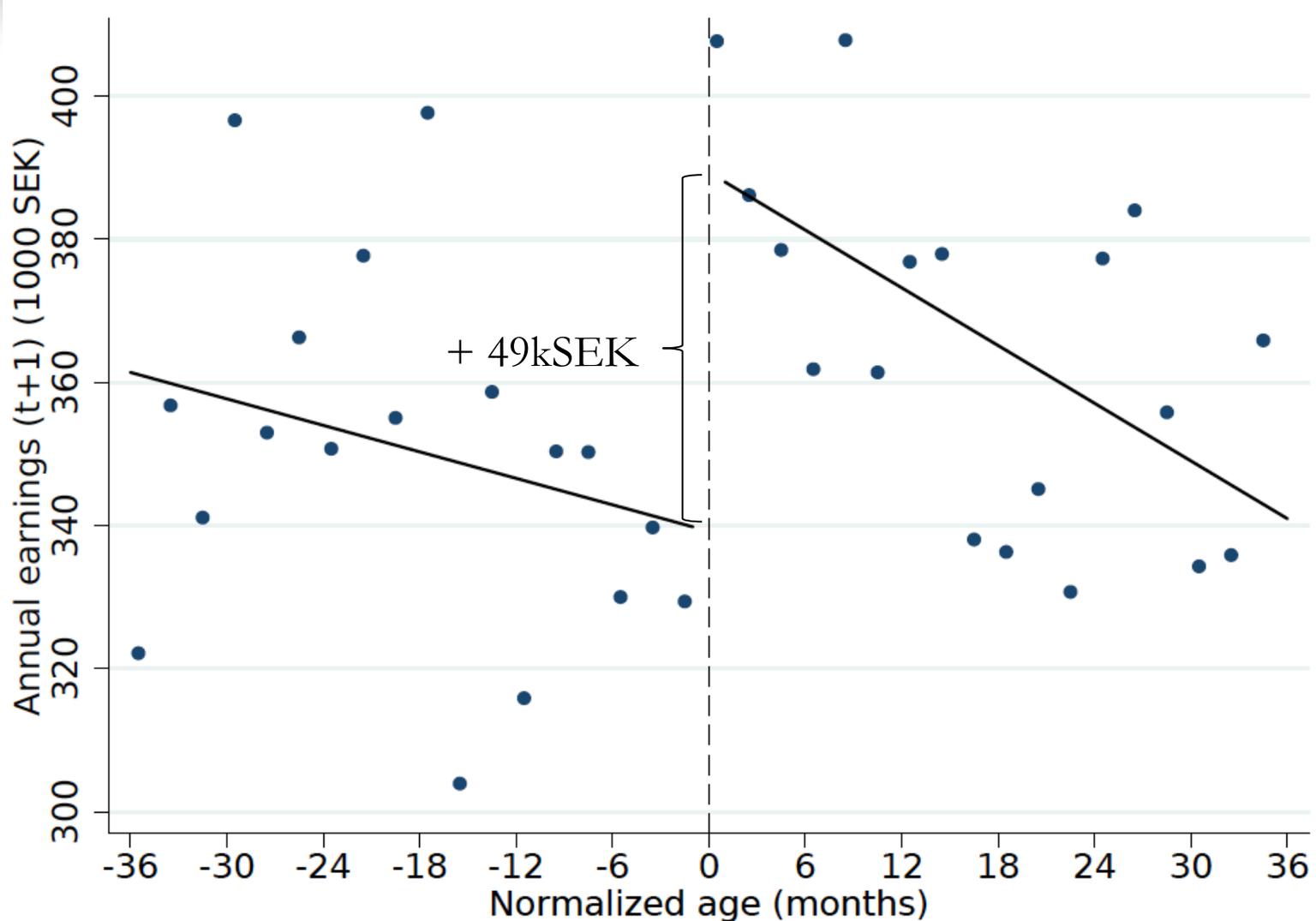
	(1)	(2)	(3)	(4)
Earnings (t-1)	-0.0009 (0.0054)	-0.0012 (0.0057)	-0.0022 (0.0058)	-0.0001 (0.0033)
Female	0.0047 (0.0051)	0.0041 (0.0050)	0.0038 (0.0052)	0.0004 (0.0034)
Immigrant	-0.0119 (0.0101)	-0.0113 (0.0099)	-0.0111 (0.0099)	-0.0066 (0.0070)
Tenure	-0.0013 (0.0029)	-0.0016 (0.0030)	-0.0028 (0.0031)	-0.0003 (0.0018)
<i>Highest attained education</i>				
Primary	-0.0180 (0.0227)	-0.0151 (0.0233)	-0.0127 (0.0231)	-0.0054 (0.0156)
High school	-0.0260 (0.0200)	-0.0235 (0.0205)	-0.0226 (0.0202)	-0.0110 (0.0128)
College	-0.0141 (0.0213)	-0.0122 (0.0212)	-0.0125 (0.0211)	-0.0036 (0.0138)
<i>Firm Characteristics</i>		✓	✓	✓
<i>Polynomial order</i>				
1st degree	✓	✓	✓	
2nd degree				✓
Interacted w. threshold	✓	✓	✓	✓
Month/Year FE			✓	✓
F-stat	1.02	1.31	1.39	1.24
p-val	0.427	0.232	0.192	0.274



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# Overall earnings effect

(Age-55 treatment. Year after notification)

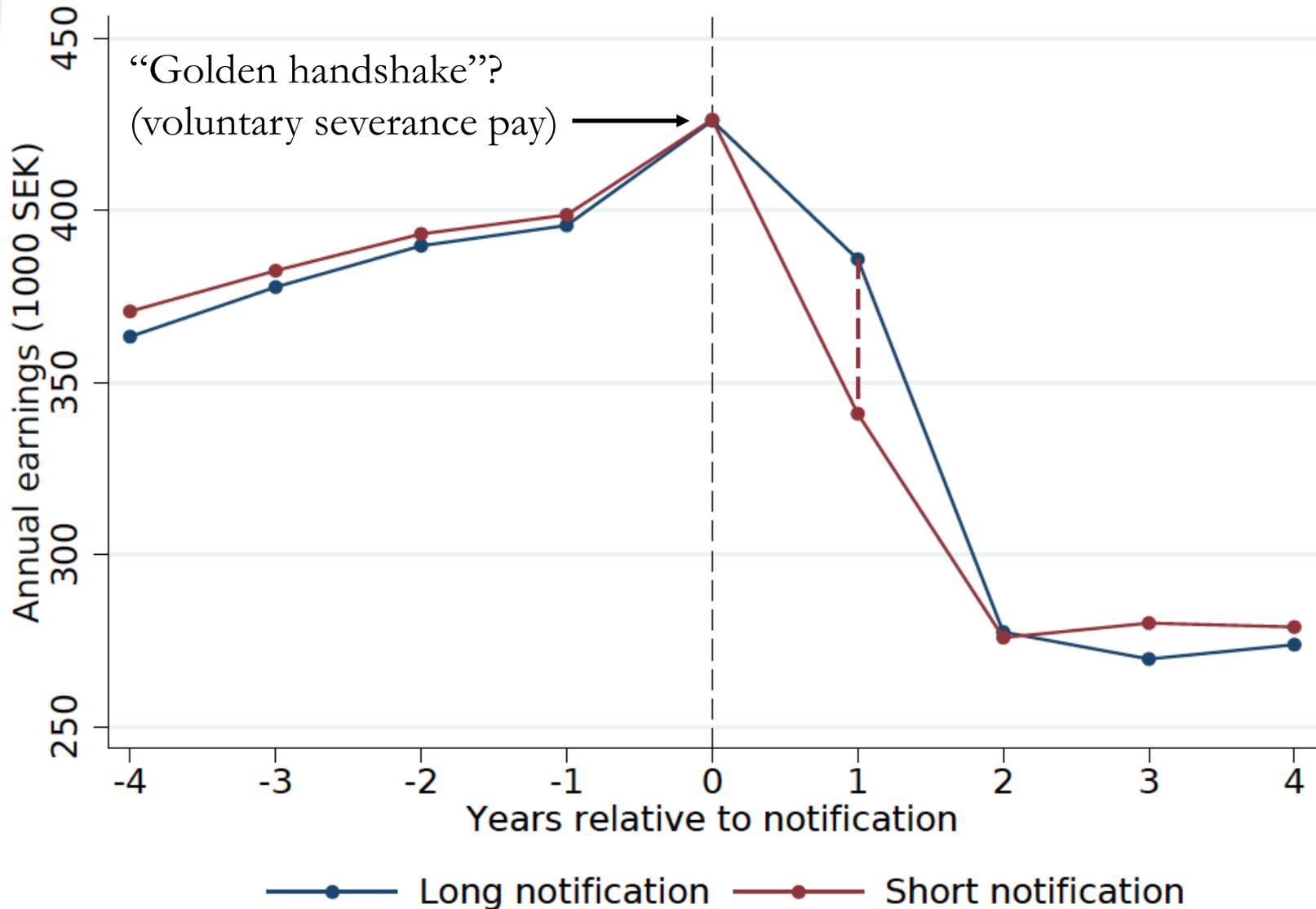




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# Overall earnings effect

(age-55 treatment, RD-estimates at different times relative to notification)





# Unpacking the earnings effect

- The treatment effect of longer notification on total earnings over some fixed time horizon (say  $T = 2$  years)

$$\underbrace{\Delta y}_{\text{Total earnings}} = \underbrace{\Delta SP}_{\text{severance pay}} + \underbrace{\Delta(w_0 l_0)}_{\text{earn. old job}} + \underbrace{\Delta(w_1 l_1)}_{\text{earn. new job}}$$

- Where  $w_0$  ( $w_1$ ) is the wage paid in the old (new) job and  $l_0$  ( $l_1$ ) is the duration of the old (new) job (over the time horizon)
- Rewrite using  $\Delta w_0 = 0$  and  $T = NE + l_0 + l_1$  where  $NE$  denotes non-employment

$$\underbrace{\frac{\Delta y}{w_0}}_{\text{Total earnings}} = \underbrace{\frac{\Delta SP}{w_0}}_{\text{severance pay}} - \frac{w_0 - w_1}{w_0} \underbrace{\Delta l_1}_{\text{dur. new job}} - \underbrace{\Delta NE}_{\text{non-employment dur.}} + \underbrace{\frac{\Delta w_1}{w_0} l_1}_{\text{wage effect}}$$

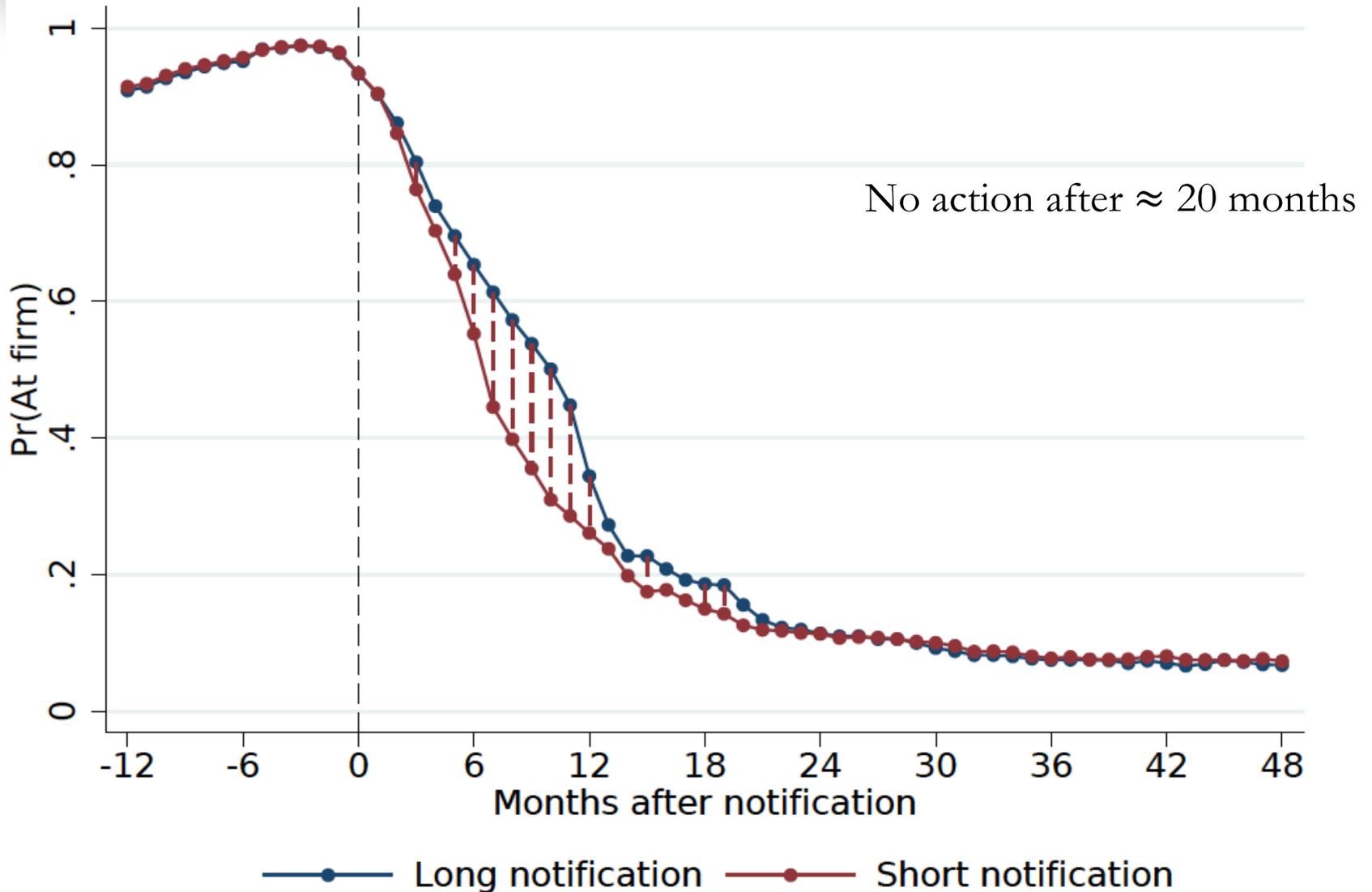
- Start by looking at the employment outcomes



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# Pr(at notifying firm)

(RD-estimates at different times relative to notification)

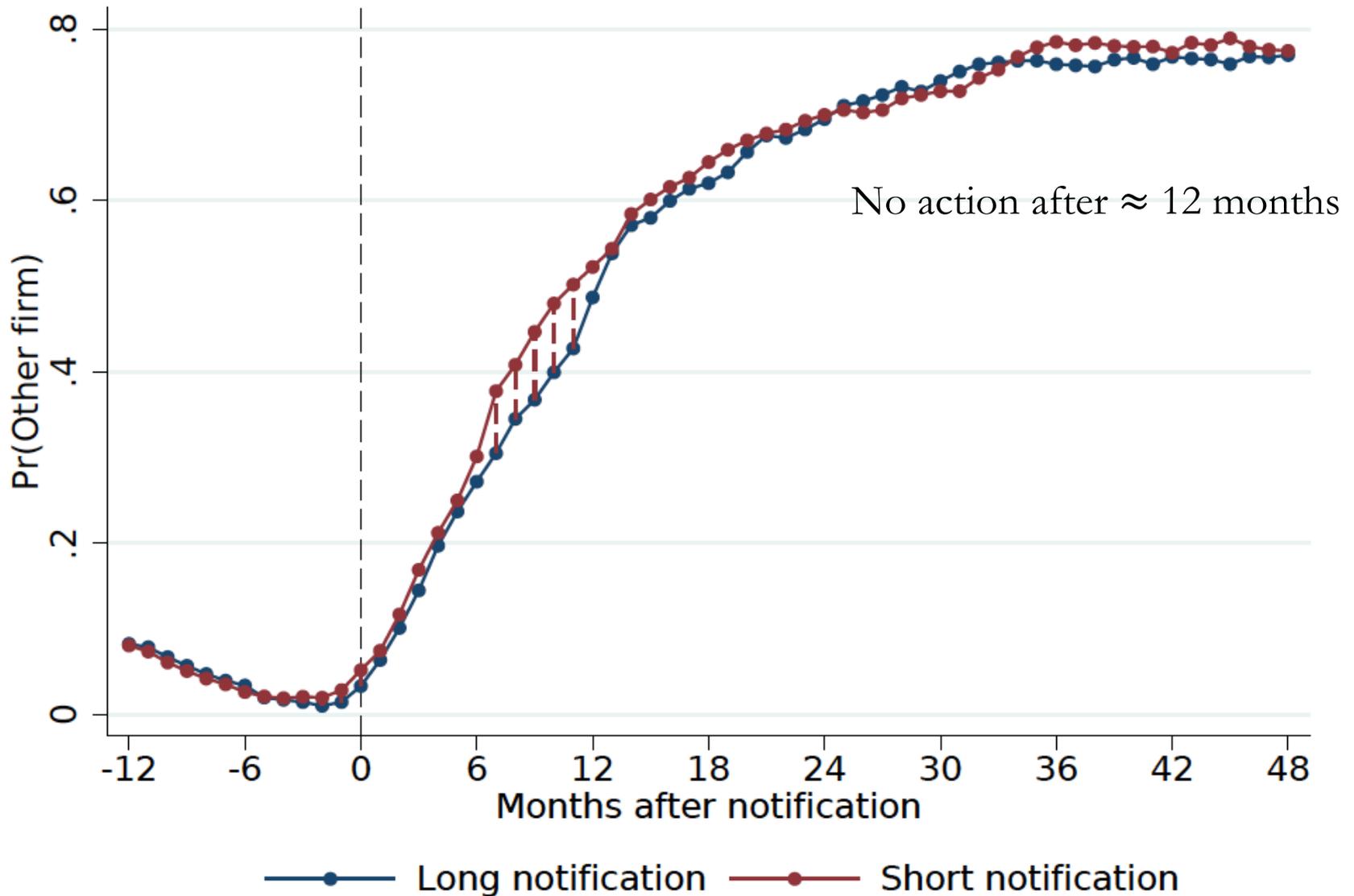




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# Pr(at new firm)

(RD-estimates at different times relative to notification)

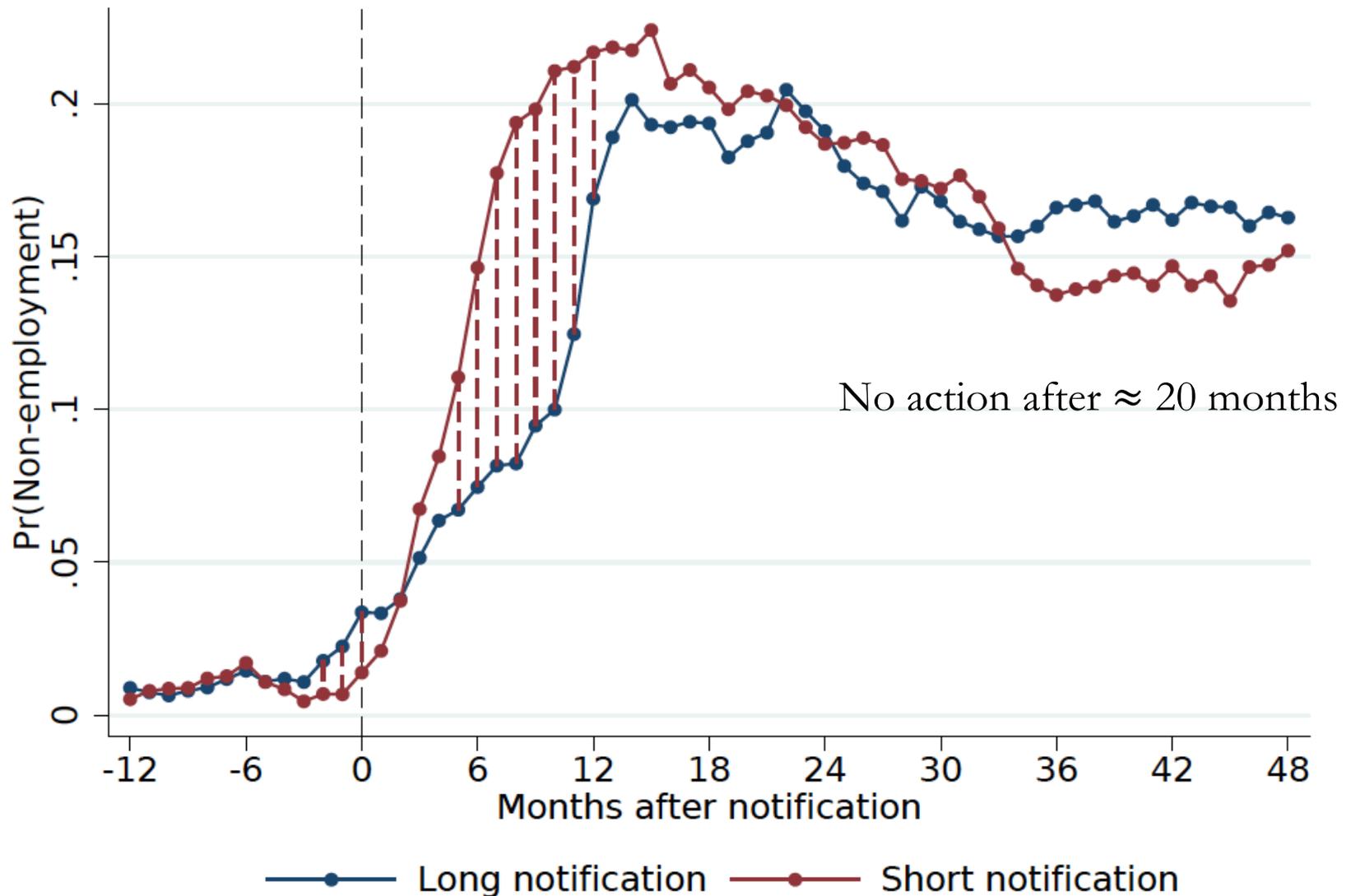




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# Pr(non-employed)

(RD-estimates at different times relative to notification)





# Duration in various employment states

(2 year horizon)

Table 4: CUMULATIVE MONTHS OF EMPLOYMENT 2 YEARS POST NOTIFICATION

	(1)	(2)	(3)	(4)	(5)
	At firm	Other firm	Non-employed	Unemployed	Out of LF
Long NT	1.600*** (0.358)	-0.772* (0.447)	-0.828*** (0.309)	-0.593** (0.250)	-0.235 (0.157)
Control mean	8.228*** (0.297)	11.600*** (0.401)	4.159*** (0.264)	3.392*** (0.187)	0.767*** (0.124)
$R^2$	0.035	0.024	0.001	0.001	0.001
No. of Clusters	72	72	72	72	72
N	6699	6699	6699	6699	6699



# Summary: Employment outcomes

- Longer notification periods
  - ✓ Prolong the duration at the notifying firm (+1.60 months)
  - ✓ Delay the move to a new firm (-0.77 months)
  - ✓ And imply less exposure to non-employment (-0.83 months)
- After  $\approx 20$  months, no differential effects on employment outcomes across treatment groups
  - ✓ The longer-run Pr(notifying firm) is 7 ppt.
  - ✓ The longer-run Pr(non-employed) around 16 ppt.
  - ✓ The longer run Pr(new firm) around 77 ppt.
- We can look at wages in the first new firm within 2 years w/o worrying about differential selection across treatment groups



# Wage effects – Effect on wages in the first new job

(Difference relative to t-1 to improve precision)

Table 1: FULL-TIME EQUIVALENT WAGES IN NEW JOB

	(1)	(2)
	$\Delta$ Contracted Wage	$\Delta \ln(\text{Contracted Wage})$
Long NT	584.045 (716.283)	0.022** (0.011)
Control mean	-1612.198** (619.414)	-0.057*** (0.009)
$R^2$	0.002	0.005
No. of Clusters	72	72
N	2714	2714

Average contracted wage = 29 kSEK

$0.584/29=0.02$



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# Firms responses I

- Notice periods are of course costly for firms; negative cash-flow if the job is not sufficiently productive
- Workers are forgoing unemployment benefits by staying in an activity which is not sufficiently productive
- Is there an upfront (severance) payment that firms are willing to make to avoid the notice period, which is also acceptable to workers?



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# Identifying severance pay in the data

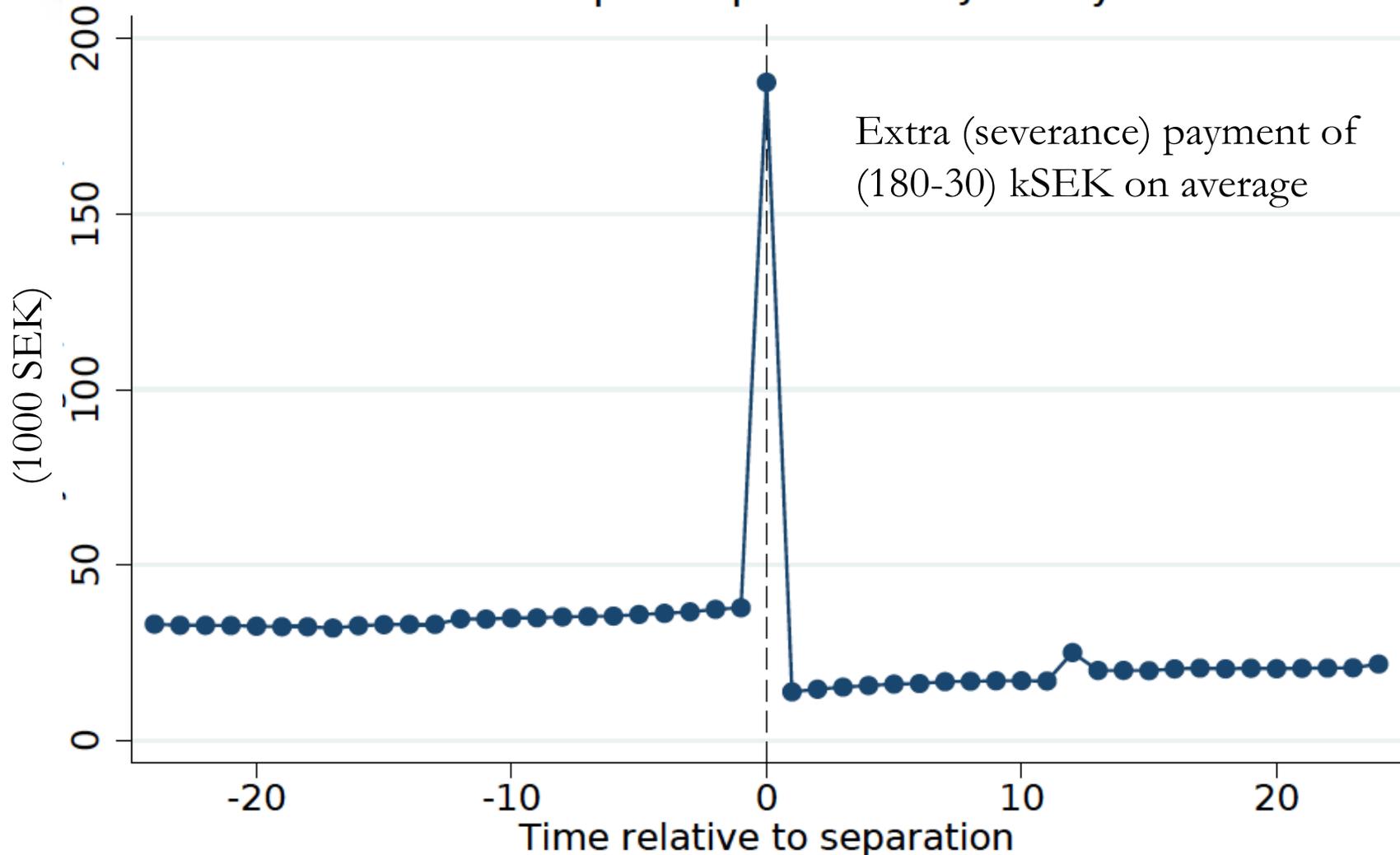
- Problem: we observe earnings at the annual level
- Any severance payment from the firm to the worker gets watered out with regular wage payments
- As a descriptive exercise – focus on separations occurring in January
- For such separations: Payments from the firm to the worker = Severance pay + max 1 month of regular wage payments



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# Monthly earnings around separation

Sub sample: Separation in January





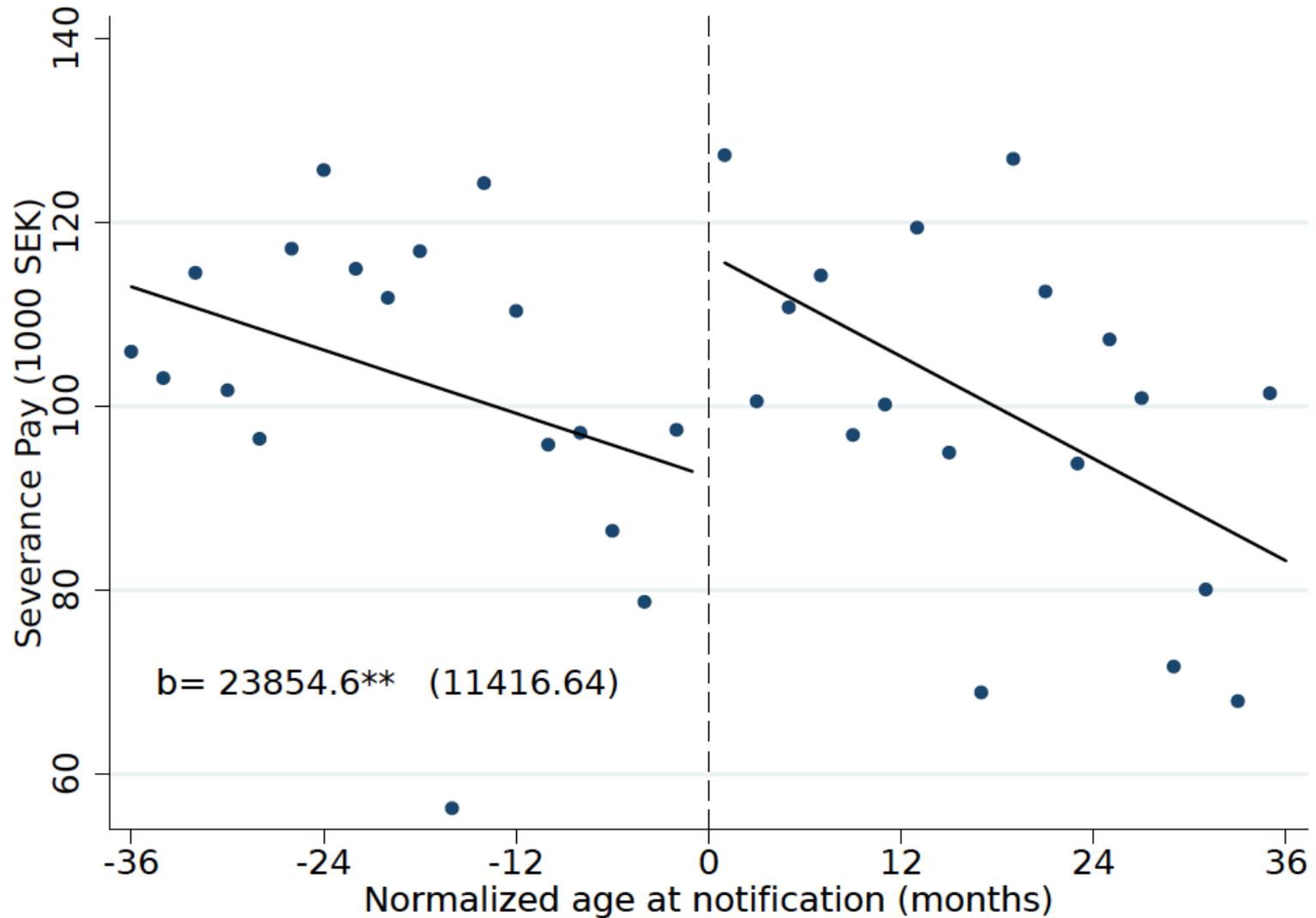
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# Identifying severance pay in the data

- What about the extra severance pay accruing to treated workers?
- Would like to use all separations (not just January)
- We measure Severance Pay as excess earnings in the year of separation relative to the previous year



# Severance Pay





# Decomposition of earnings effect

- The treatment effect of on total earnings over 2 years

$$\underbrace{\frac{\Delta y}{w_0}}_{\text{Total earnings}} = \underbrace{\frac{\Delta SP}{w_0}}_{\text{severance pay}} - \frac{w_0 - w_1}{w_0} \underbrace{\Delta l_1}_{\text{dur. new job}} - \underbrace{\Delta NE}_{\text{non-employment dur.}} + \underbrace{\frac{\Delta w_1}{w_0} l_1}_{\text{wage effect}}$$

- Insert estimates

$$\underbrace{\frac{48.7}{33}}_{\text{Total earnings}} \approx \underbrace{\frac{23.9}{33}}_{\text{severance pay}} - \frac{33.0 - 30.4}{33} \times \underbrace{(-0.77)}_{\text{dur. new job}} - \underbrace{(-0.83)}_{\text{non-employment dur.}} + \underbrace{\frac{0.6}{33}}_{\text{wage effect}} \times 11.2$$

- 46% of the earnings effect due to a reduction in non-employment
- 40% due to increase in severance pay
- 11% wage effect



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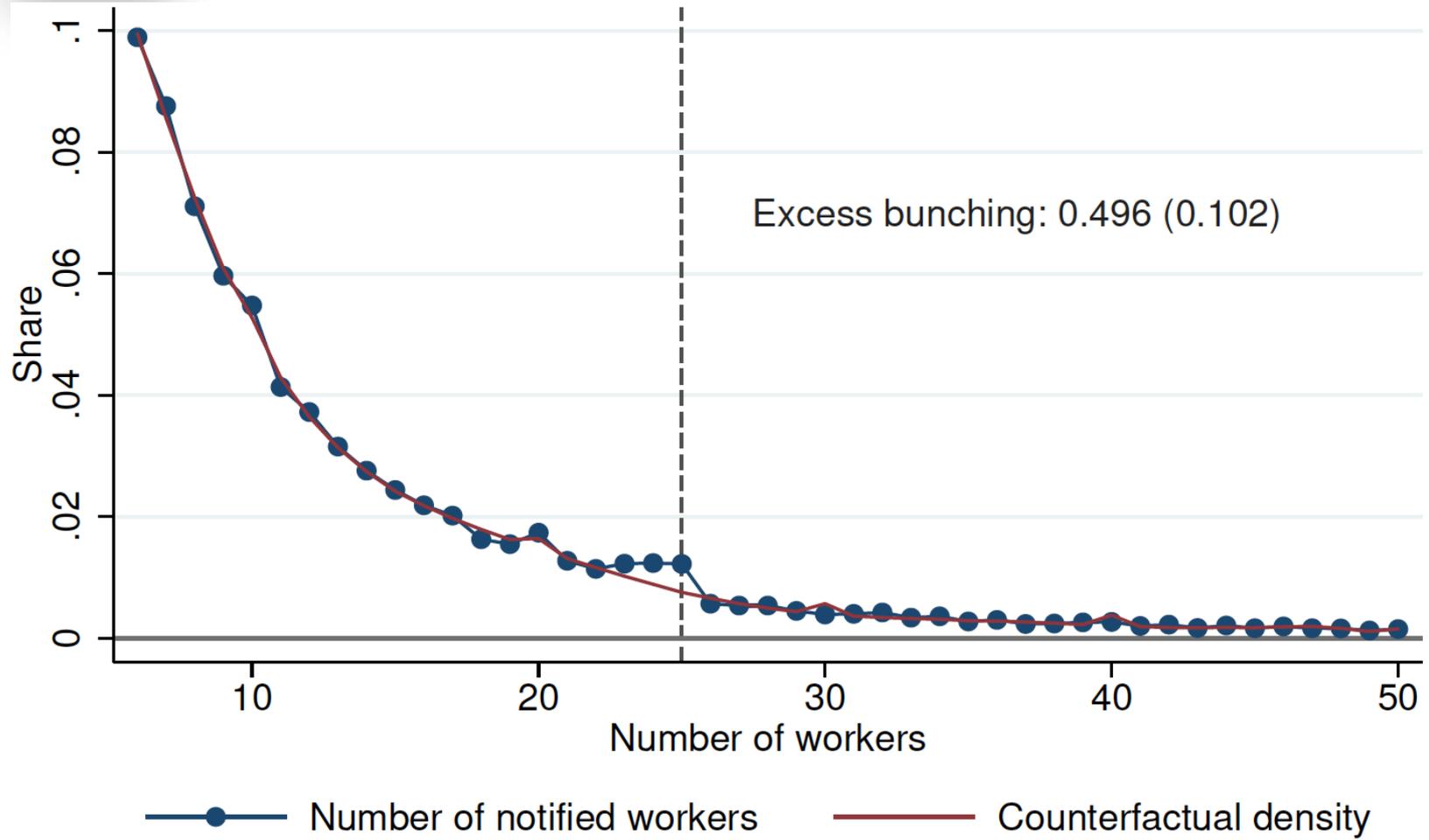
## Firm responses II

- Advance notice makes it more costly to lay-off workers
- How do firms respond to increases in such costs?
- Rules pertaining to # notified (initial report)
  - ✓ If  $5 \leq \# \text{notified} \leq 25 \rightarrow$  All workers get at least 2 months notification
  - ✓ If  $25 < \# \text{notified} \leq 100 \rightarrow$  All workers get at least 4 months notification
  - ✓ If  $100 < \# \text{notified} \rightarrow$  All workers get at least 6 months notification
- Displacements involving around 100 workers very rarely occur
- Instead we look at bunching at the 25 threshold



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# Excess bunching by firms



Counterfactual density obtained by fitting a ninth-order polynomial + round-number fixed effects (separately for 5,15 etc and 10,20 etc)



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## Firm responses II

- Increasing the number of notified workers from 25 to 26, would increase notification costs by 100%/worker
- Excess bunching at the 25 threshold is 50%
- Elasticity of # notified workers w.r.t. notification cost is 0.5
- Probably a lower-bound estimate since monitoring of this particular rule is lax
- A lot more remains to be done on the firm side
- Estimate effect on
  - ✓ firm revenue and
  - ✓ workforce composition



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# Summary (so far)

- Longer notice period cause...
  - 1) Less job-to-job mobility
    - ✓  $\Pr\{\text{remain in displacing firm}\}$  increases (during 1<sup>st</sup> and 2<sup>nd</sup> year)
    - ✓  $\Pr\{\text{in other firm}\}$  decreases (during 1<sup>st</sup> year)
  - 2) Less exposure to non-employment and unemployment
  - 3) Higher annual earnings (during 1 year post notice)
  - 4) Firms respond to longer notification by laying off fewer workers
  - 5) Voluntary severance pay is used to reduce notice periods
  - 6) Brunt of the earnings effect comes from severance pay and less exposure to non-employment (some evidence suggesting increase in match quality)