Unemployment Insurance and Mandatory Notice

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Unemployment Insurance

- Lots of empirical work on labor supply effect of social insurance (Krueger and Meyer, 2002)
  - Early literature used cross-sectional variation in replacement rates.

    Problem: compare high and low wage earners, whose employment prospects may be very different!

    Solution: modern methods, DD/ IV in late 80s/early 90s
  - Most recent methods use kinks in unemployment policy and discontinuities depending on age, work-history...
- Evidence suggests unemployment elasticities ε in range $[0.5, 1.5]$; high relative to other labor supply estimates.

- Nekoei Weber, (AER 2017): What is the wage impact of longer potential benefit duration in UI?

  Empirical setting: **Austria**.

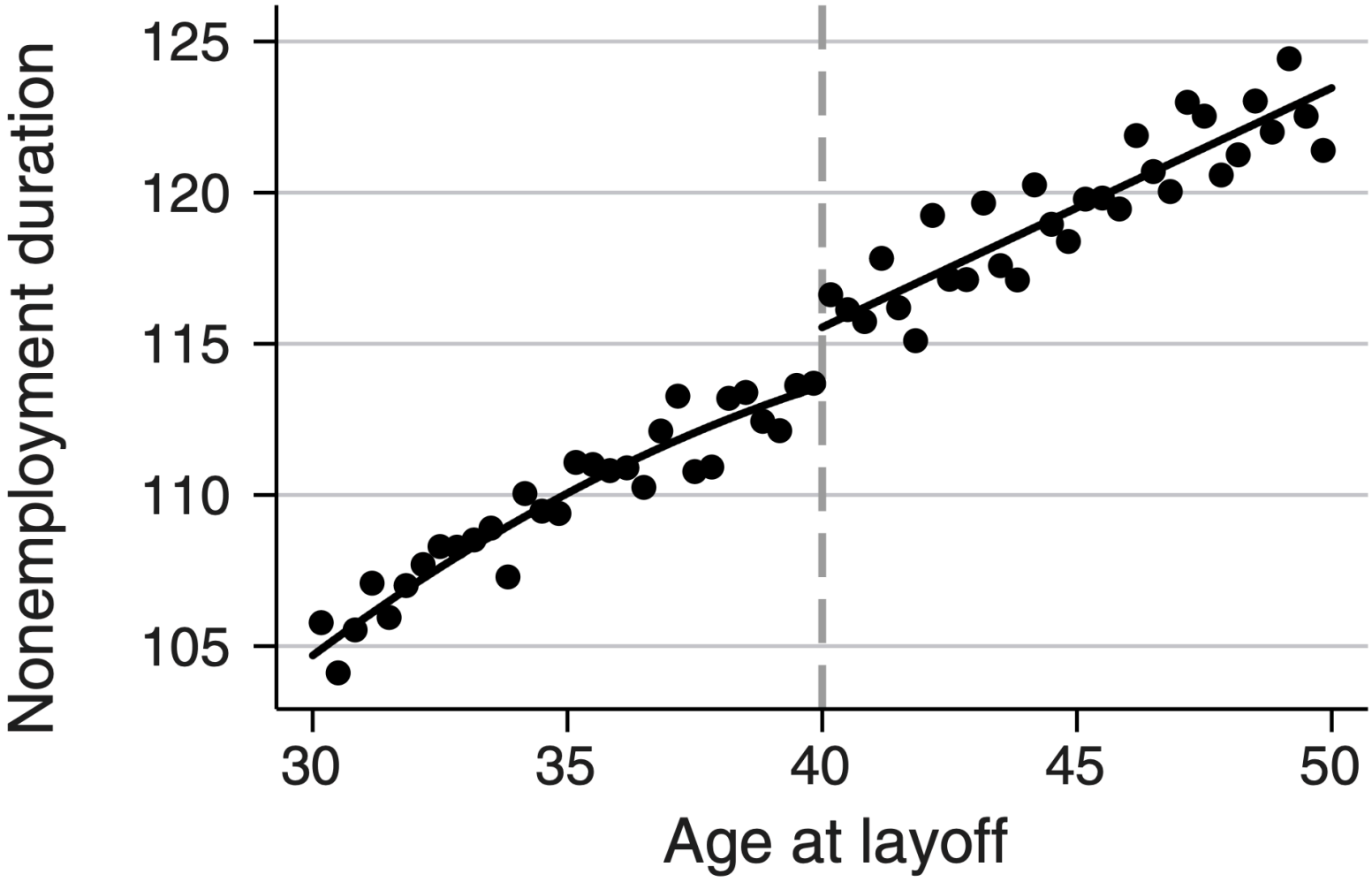
  PBD = 30 weeks for ages ≤ 40; 39 weeks for ages > 40.

- Age-based discontinuities for UI duration also exploited by Schmieder, von Wachter and Bender (2016) in **Germany**.

- Theoretically, PBD $\uparrow$:
  i. Selective search $\rightarrow$ wages $\uparrow$;
  ii. Stay unemployed longer $\rightarrow$ job opportunities $\downarrow$;

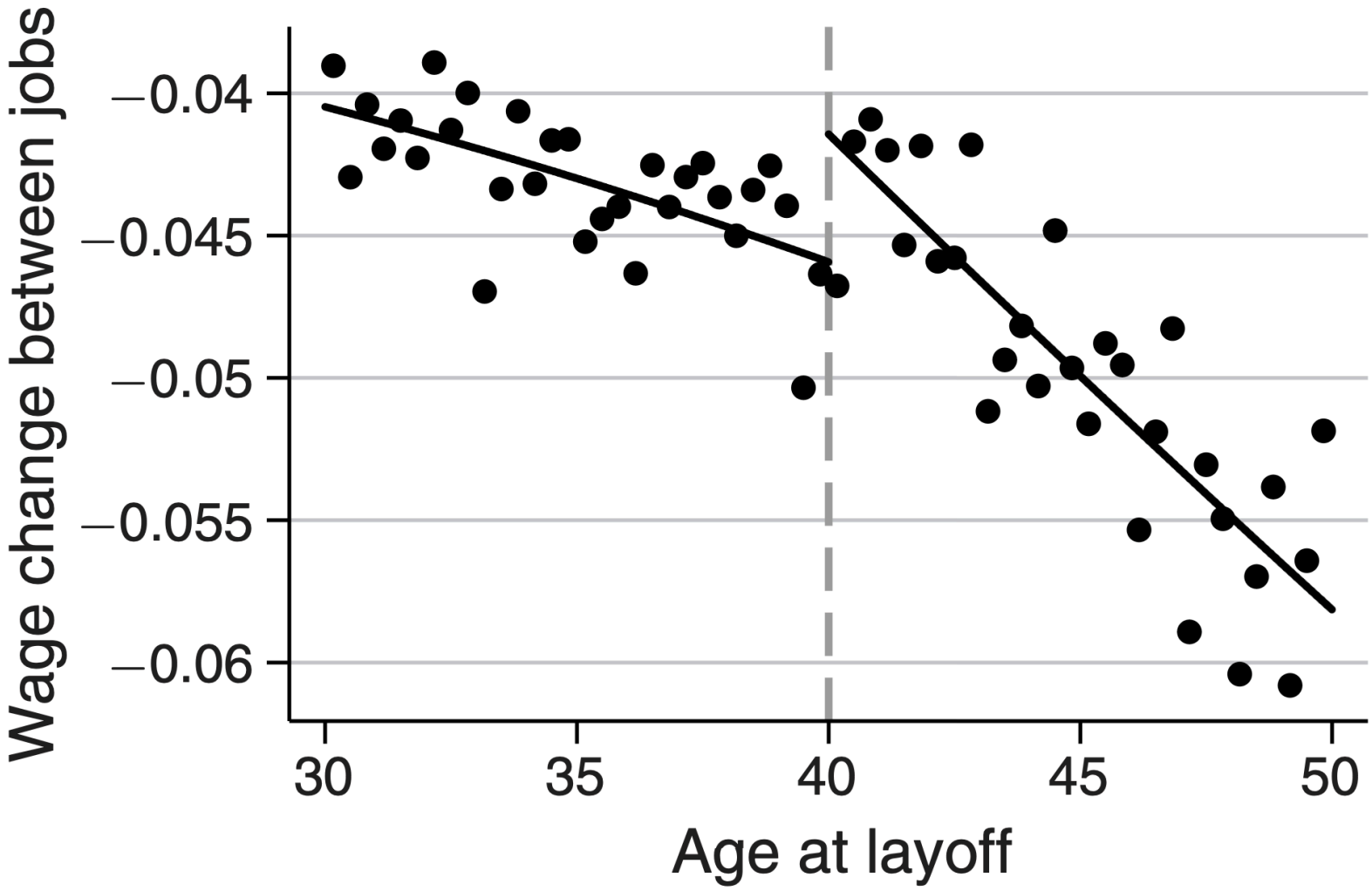
- Empirically, PBD $\uparrow$ can increase or decrease wage effect depending on which force dominates.

Effect of PBD on non-employment



- Source: Nekoei Weber (AER, 2017)

Effect of PBD on wage



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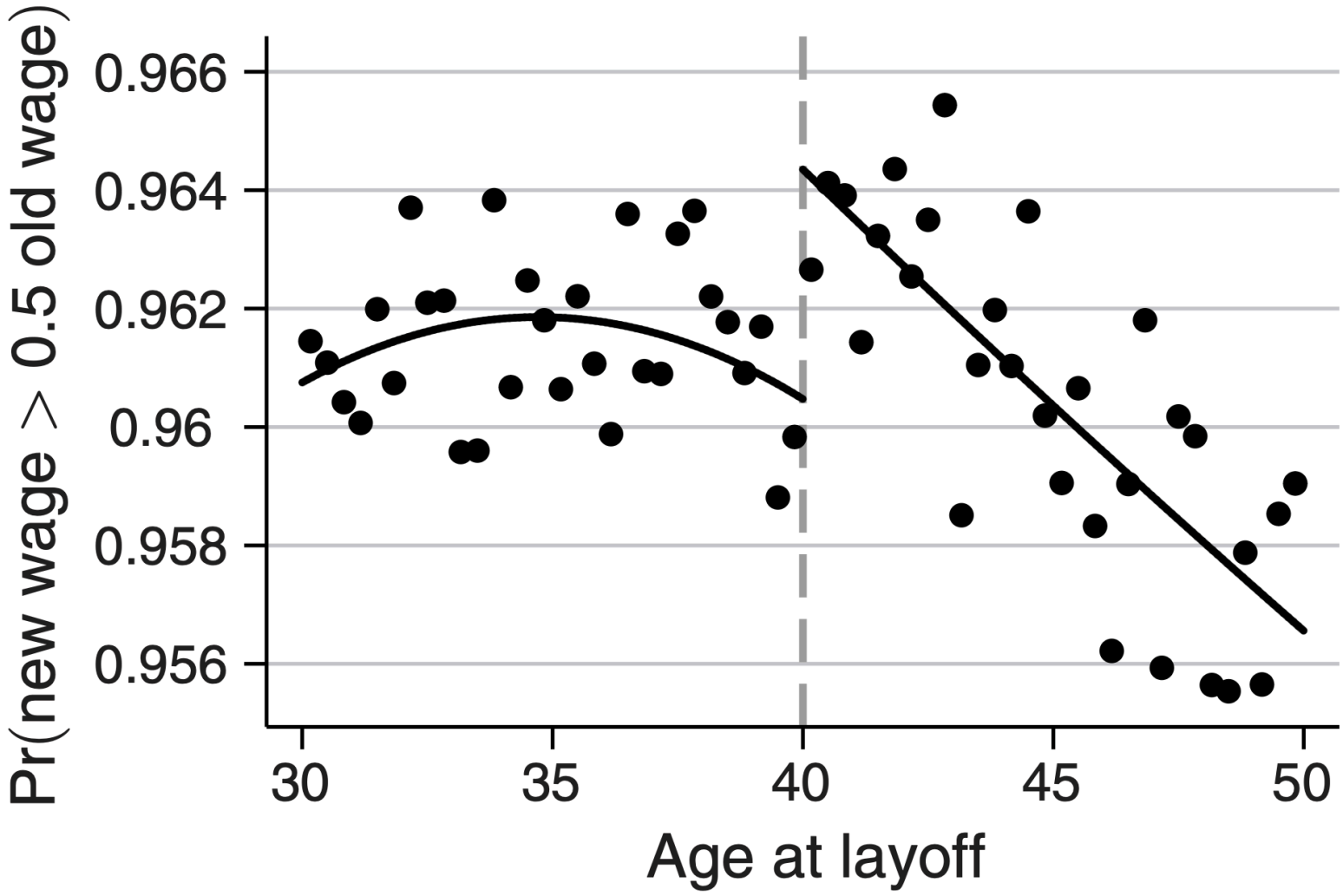

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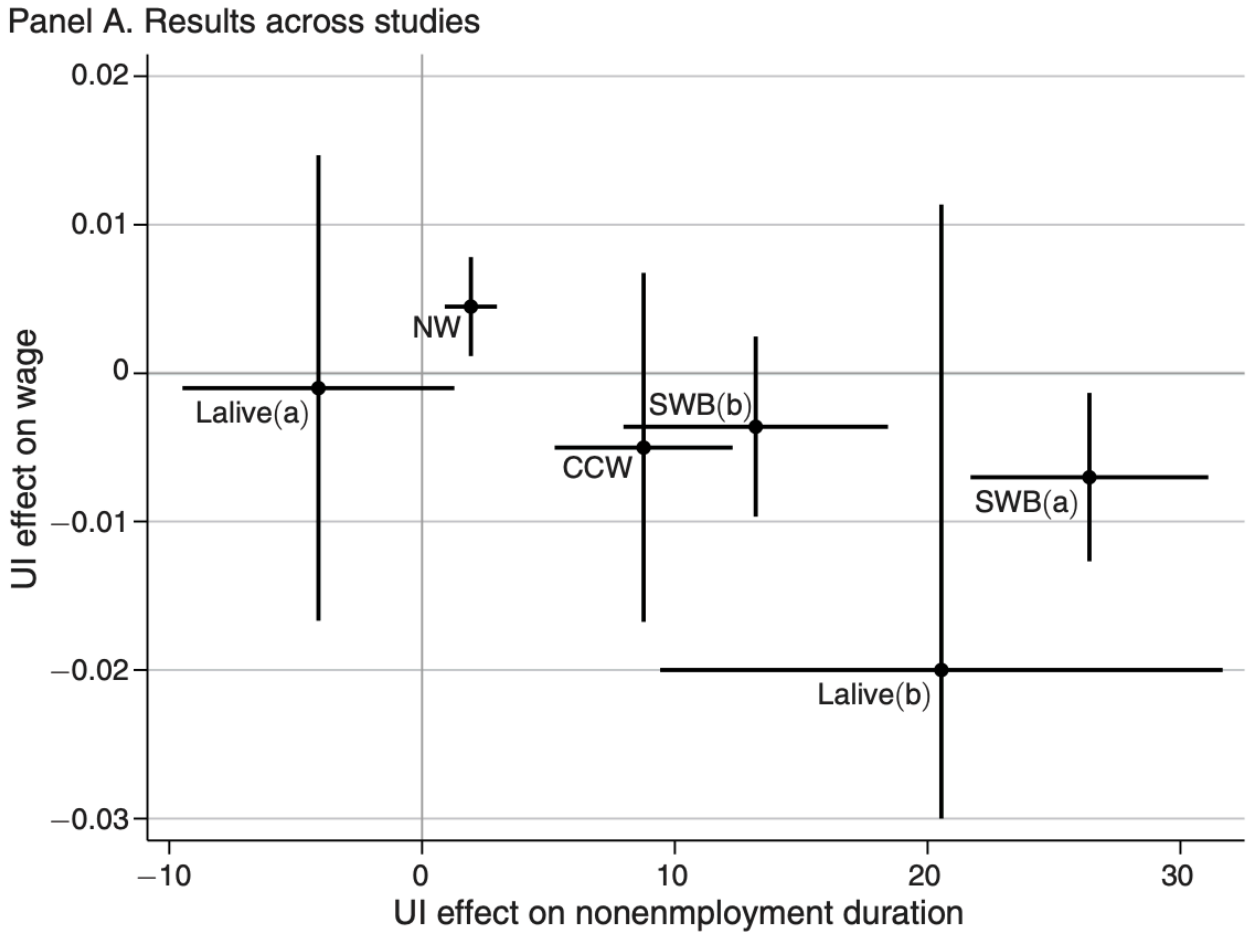
Meta-analysis



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What About LHS of Baily-Chetty?

- Measuring value of SI is challenging - good is not traded in a well-functioning market.

  $\Rightarrow$ hard to assess the willingness to pay.

- Value depends on agents' means to smooth consumption:

$$c_u = b + savings c_e \qquad = w - \tau - savings$$

- Private means: Use savings when unemployed; borrow from banks and family.
- Empirically, most have no savings and face borrowing constraints.
  - **Savings:** Engen Gruber '95
  - **Added worker:** Cullen and Gruber '00

Gruber '97

- Classic paper: Uses surveyed data on consumption from PSID.

- Today, better alternatives:

  Imputed consumption: Kolsrud et al. (2015)
  Bank account data: Ganong and Noel (2019)

- Gruber ran regression:

$$\left(\frac{c_e - c_u}{c_e}\right)_{i,j,t} = \beta_1 + \beta_2 \left(\frac{b}{w}\right)_{i,j,t} + \beta_3 \delta_j + \beta_4 \tau_t + \varepsilon_i$$

- and obtained $\hat{\beta}_1 = 0.24$; $\hat{\beta}_2 = -0.28$.

  $\Rightarrow$ Without UI, consumption falls by 24 %.

  $\Rightarrow$ A 10 pp increase in the replacement rate $\rightarrow$ consumption drop $\downarrow$ by 2.8 pp.

  $\Rightarrow$ Current replacement rate ($b/w = 0.5$) implies c-drop of 10%.

- Is current level optimal?

Calibrating the model

- Baily-Chetty formula:

$$\gamma \frac{\Delta c}{c} \approx \varepsilon$$

$$\gamma \left(\beta_1 + \beta_2 \frac{b^*}{w} \right) = \varepsilon$$

- Rearrange and solve for optimal replacement rate (using midpoint of elasticities, $\varepsilon = 0.5$.

$$\begin{aligned} \frac{b^*}{w} &= \frac{\varepsilon_{D,b}}{\beta_2} \frac{1}{\gamma} - \frac{\beta_1}{\beta_2} \\ &= \frac{0.5}{-0.28} \frac{1}{\gamma} - \frac{0.24}{-0.28} \end{aligned}$$

- Note that the elasticity may itself depend on b^*.

Summary

- Results: Optimal replacement rate $\frac{b^*}{w}$ varies tremendously with γ:

γ	1 (linear utility)	2	3	4	5	10
$\frac{b^*}{w}$	0	0	0.20	0.41	0.50	0.68

- Lesson from Gruber:

i. Moral hazard responses high relative to consumption smoothing gains.

ii. Surprising and very much against current practice.

- Challenged in later work:

  Kolsrud et al. '15'; Ganong and Noel '17: Unemployed are "hand-to-mouth"

Alternative Policies to Help Laid Off Workers

- Mandatory Notice (CederlÃ¶f, Fredriksson, Nekoei and Seim, '23)

- **Institutional Background**:
  - Swedish labor law → MN $\in \{1, 2, 3, 4, 5, 6\}$ months, based on tenure.
  - Collective Bargaining Agreements extend them.
    - Private-sector white-collar workers above age 55 → 6 months extension

- **Empirical Strategy**:
  - Regression Discontinuity Design at age 55

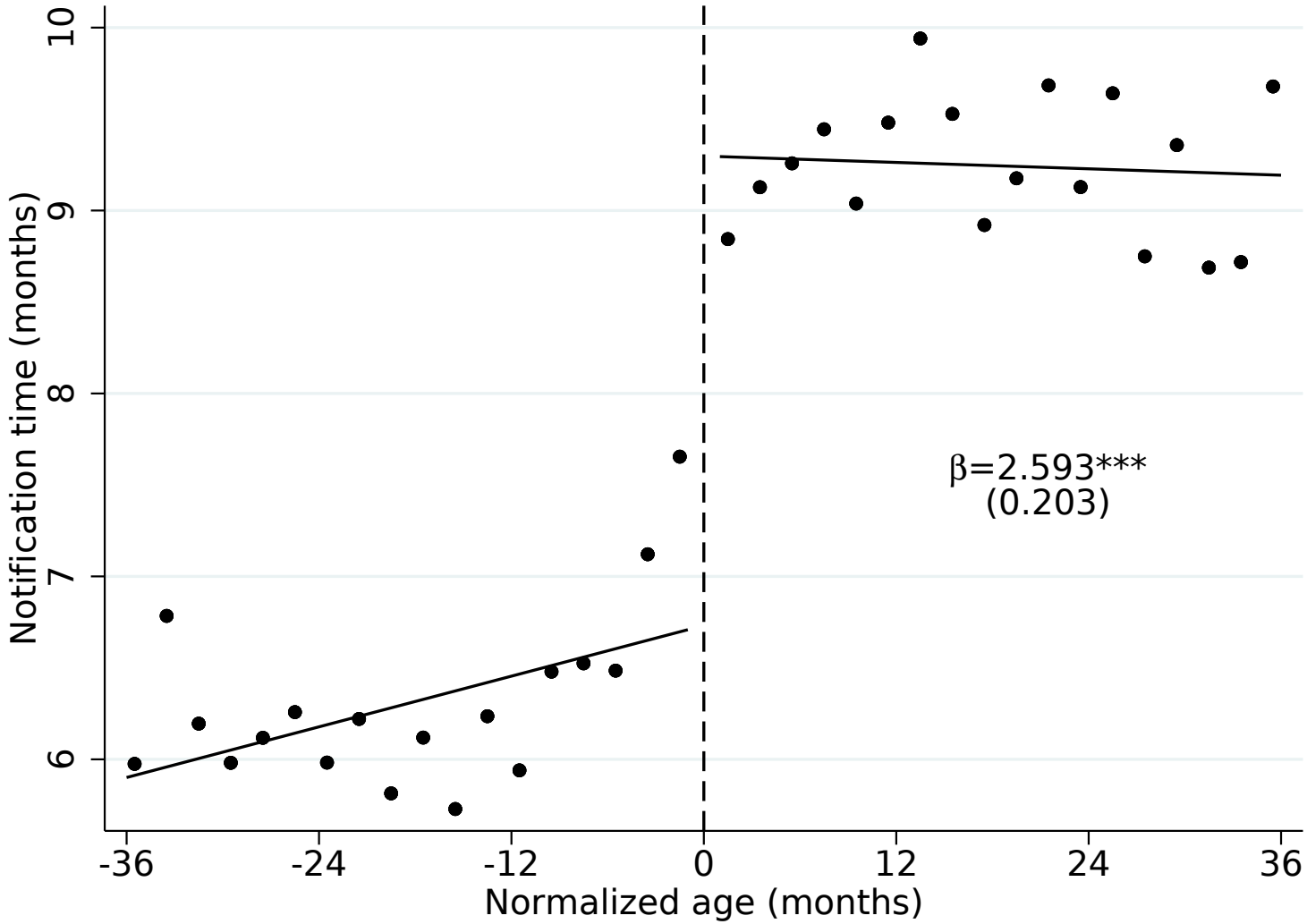
- **Identification Assumption**:
  - Age at displacement **random**.
  - Checks?
  - McCrary-test; Balance-tests.

MN Effect on Notice Period

- **Data**:
  - Measurement of notification periods:
    - **De Jure** notice: Legal notice period (varies by tenure and age)
    - **De Facto** notice: Actual notice period (notification and planned termination dates over 2005-2016)
    - Duration after notice: Time from notice until spell termination.
  - Typical administrative records:
    - Unemployment spell data;
    - Employer-employee match data;
    - Labor Force Survey – search measure;
    - Wage data **Firm reported, stratified sample, 50% of private sector**

- **Estimation Sample**:
  - 10k individuals around age 55.
  - 44% female; Mean tenure = 8 yrs; 38% college-educated; 30% manufacturing.

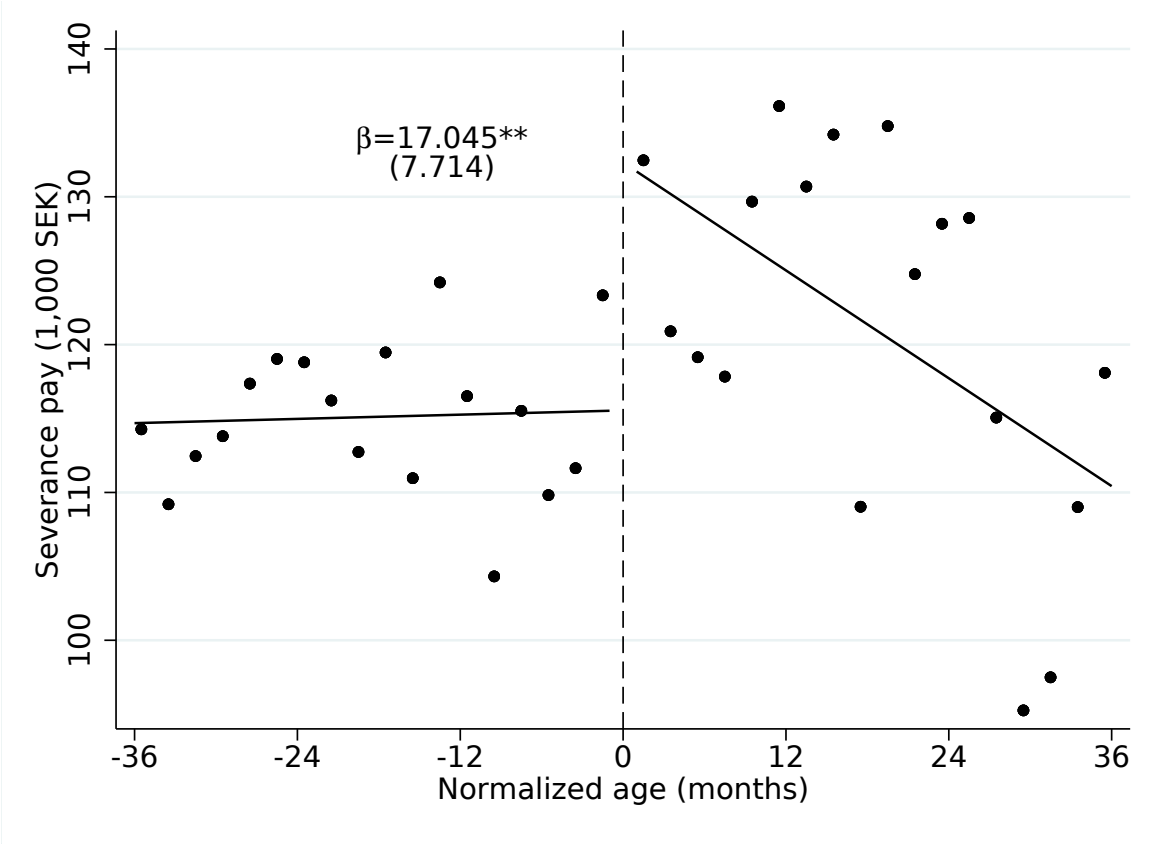
MN Effect on Notice Period



- Running variable: Age at notification (in months)

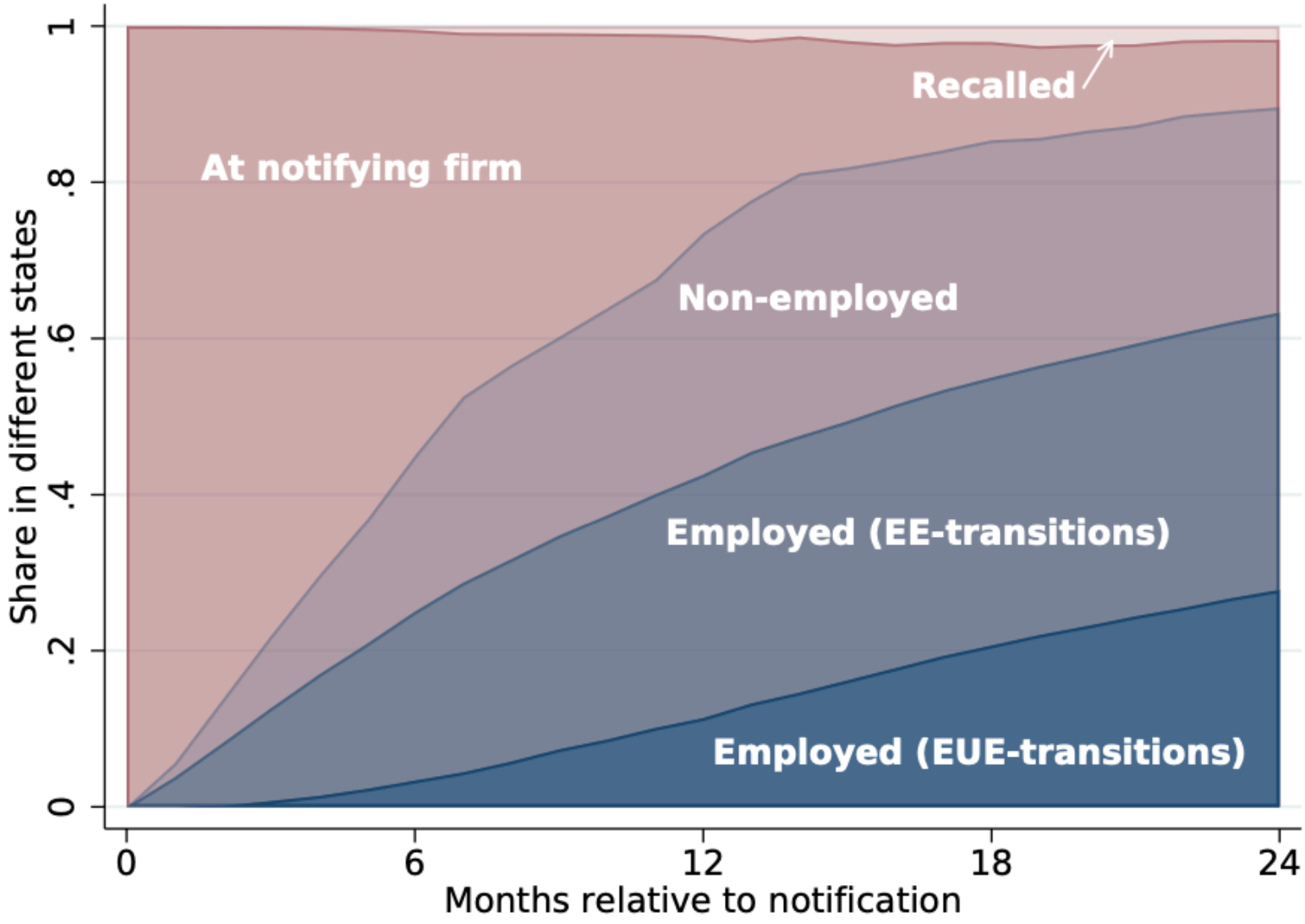
MN Effect on Severance Pay

- **Measurement**:
  i. Estimate monthly wage from previous years.
  ii. Subtract predicted earnings from actual earnings.
  iii. Measure includes other compensations → Differenced out at discontinuity.



→ Monetary side payments used to undo Mandatory Notice Lazear (1990)

MN Effect on Prob. Working at **Notifying** Firm



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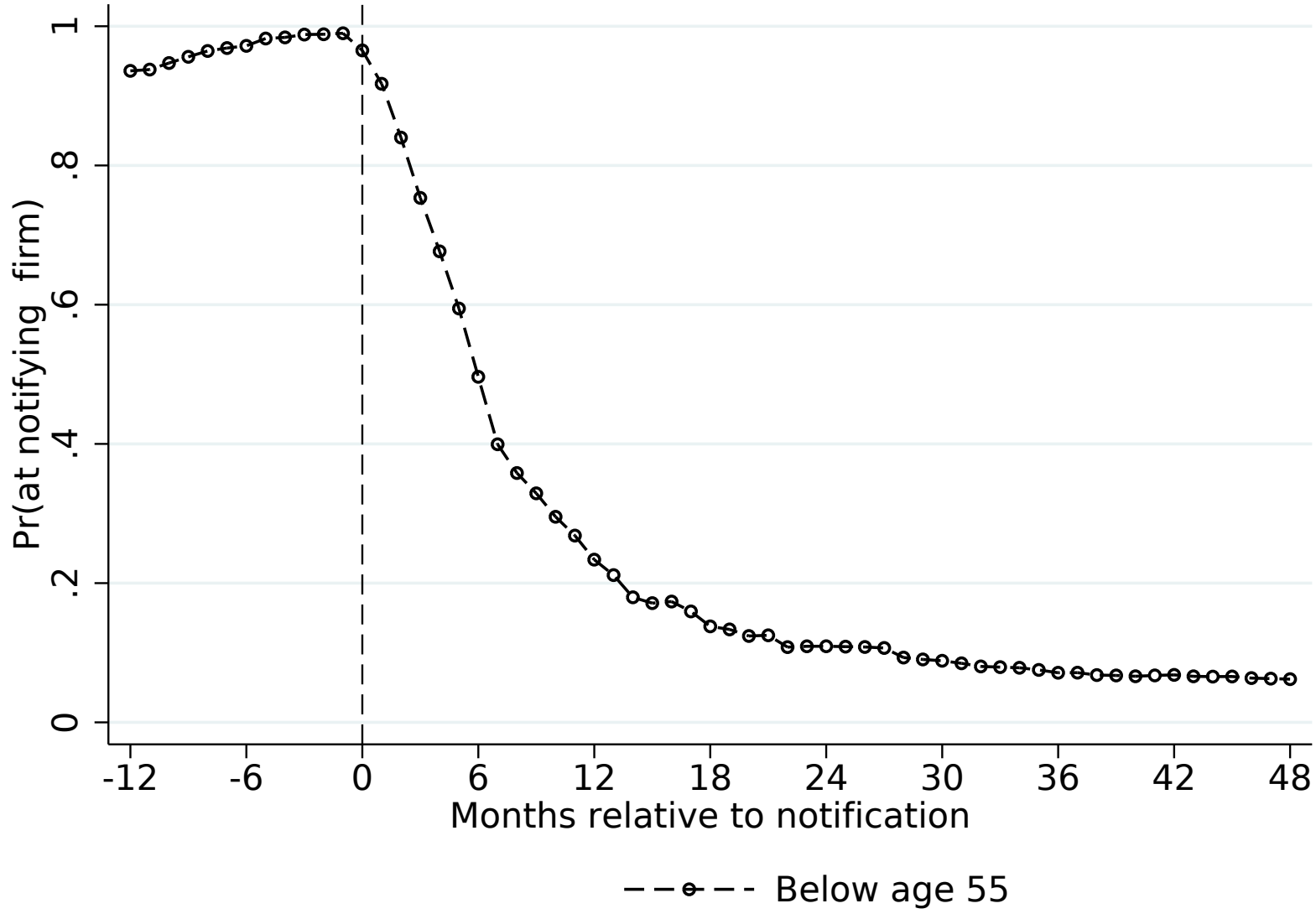

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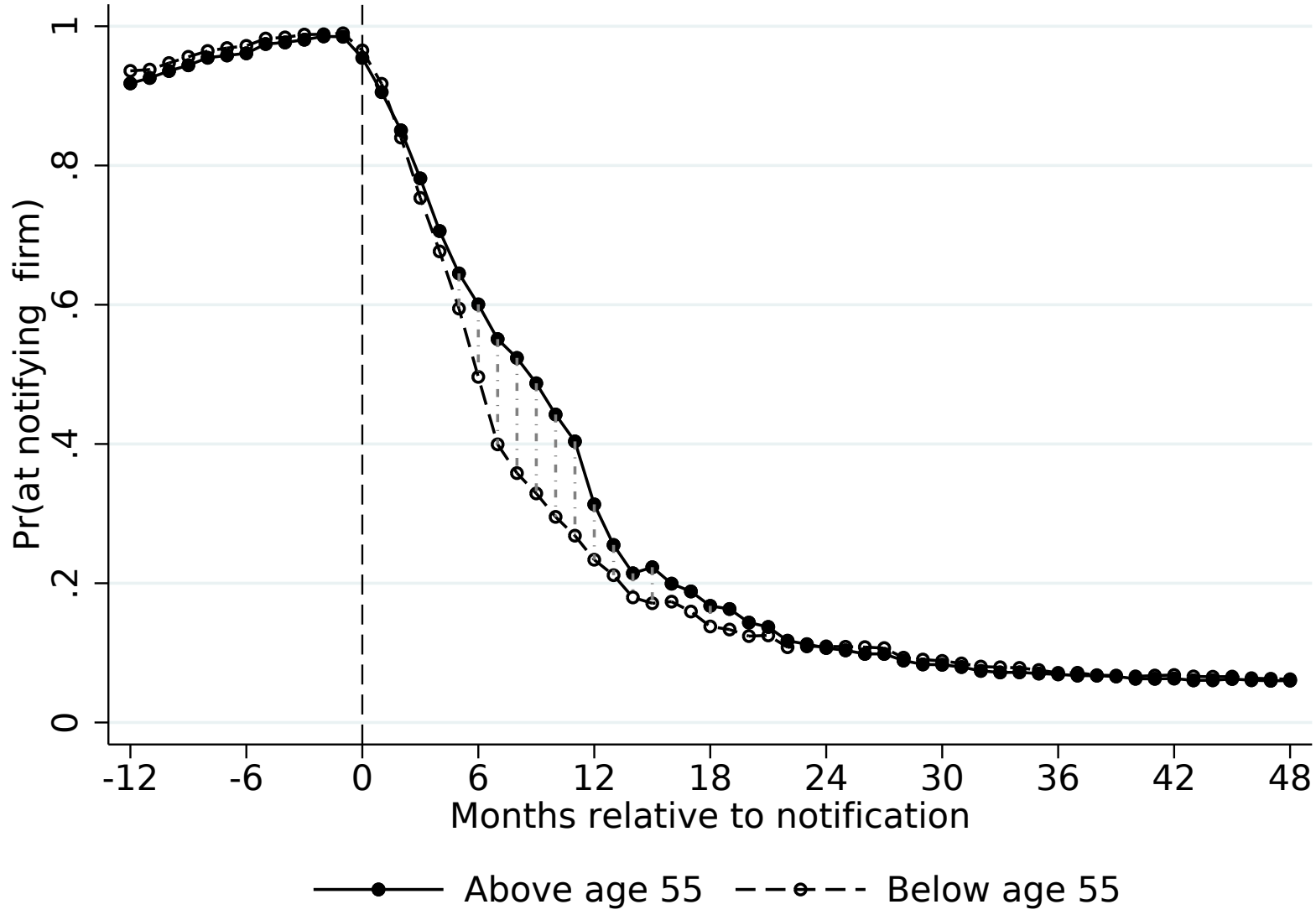
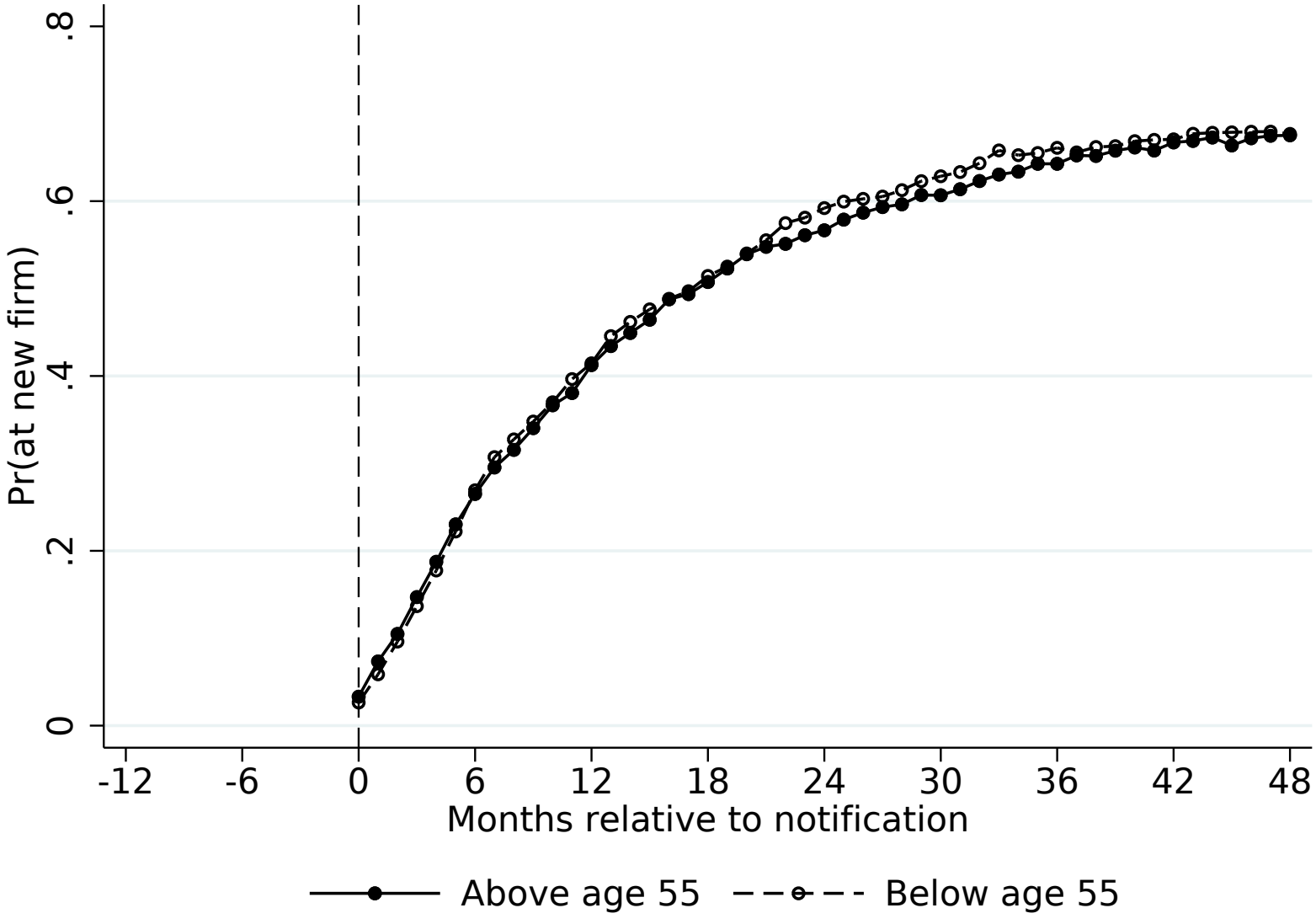
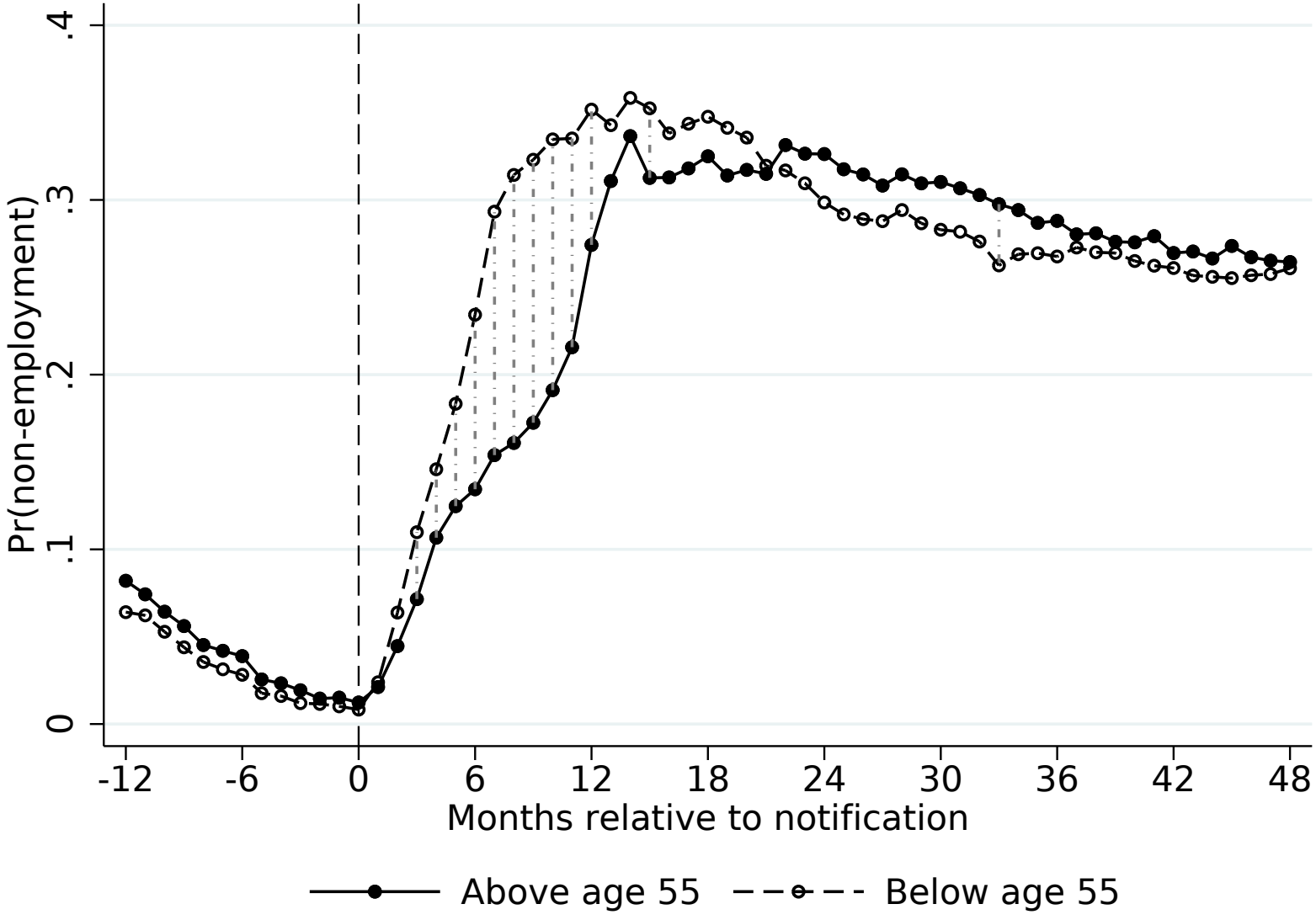


MN Effect on Prob. Working at **New** Firm



MN Effect on Prob. of **Non-employment** (residual)



MN Effect on labor market states

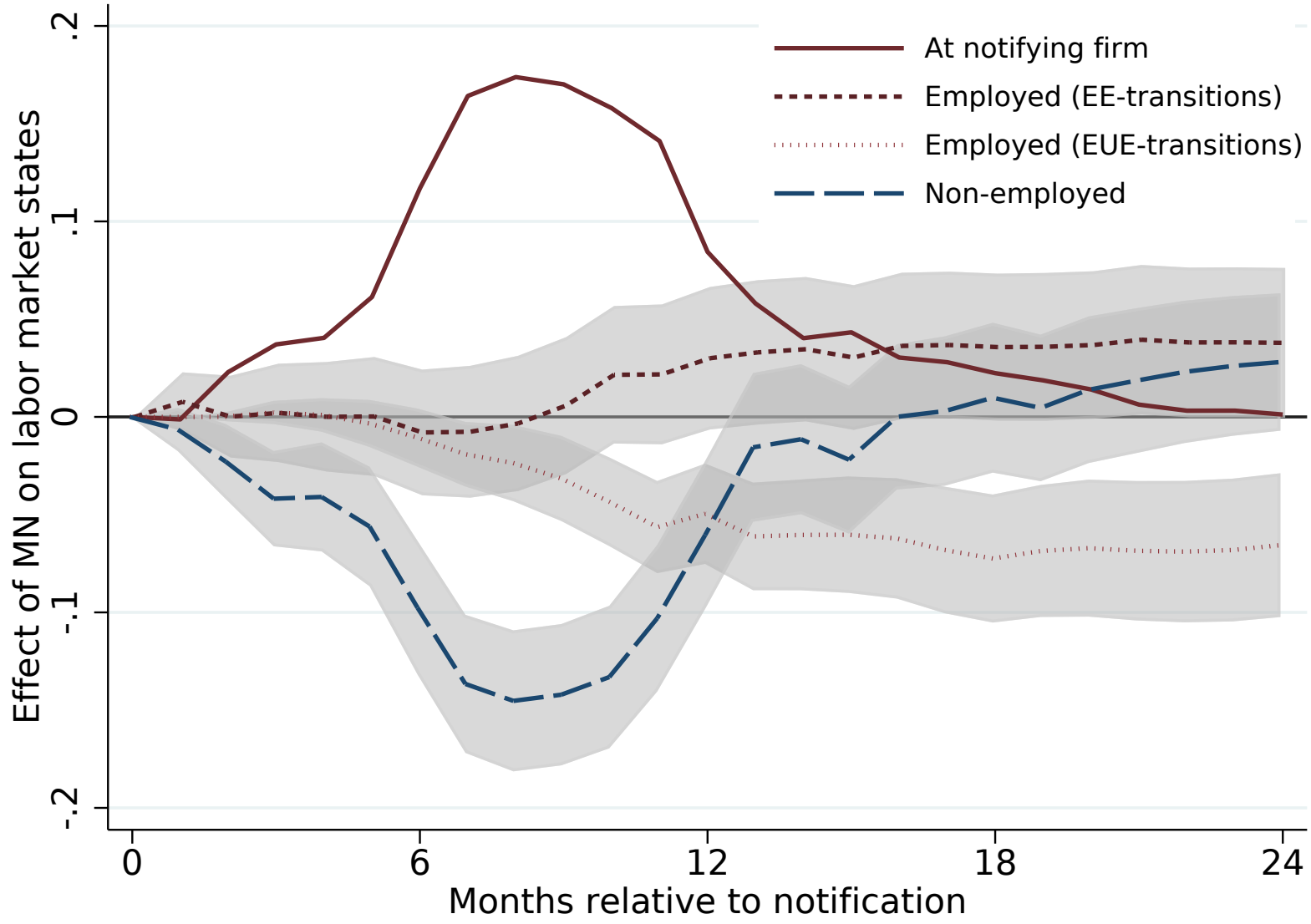


Table 2: Effect of MN on Employment Status Within Two Years

	Cumulated duration (months) within two years after notification				
	Notifying firm	New firm	Non-employment	Unemployment	Out of the LF
	(1)	(2)	(3)	(4)	(5)
Above Age-55	1.322***	-0.145	-1.177***	-0.472*	-0.705***
	(0.276)	(0.333)	(0.288)	(0.246)	(0.214)
Control mean	7.859***	9.372***	6.769***	4.668***	2.100***
	(0.217)	(0.253)	(0.212)	(0.178)	(0.147)
Number of clusters	4,158	4,158	4,158	4,158	4,158
Number of observations	10,275	10,275	10,275	10,275	10,275

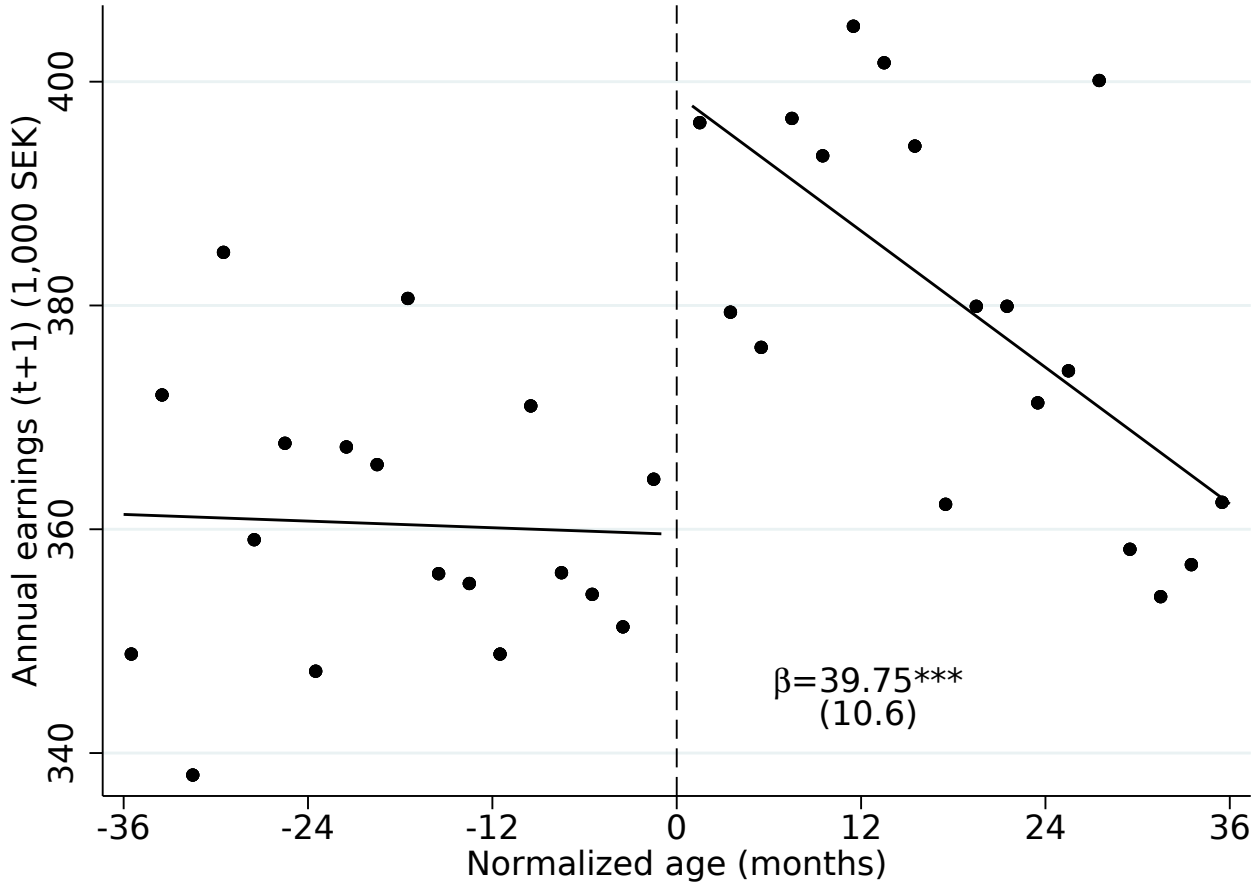
- MN has no effect on search duration (in contrast to UI).

MN Effect on **Wages**

	Re-employment wages				Pr(EE)
	$\ln(w)$	$\ln(w)$	$\Delta \ln(w)$	$\Delta \ln(w)$ EE $= 1, t \leqslant 6$	
	(1)	(2)	(3)	(4)	(5)
Above Age-55	0.029**	0.034**	0.032**	0.045*	0.075**
	(0.014)	(0.016)	(0.016)	(0.027)	(0.037)
Control mean	10.201***	10.200***	-0.093***	-0.077***	0.566***
	(0.010)	(0.011)	(0.011)	(0.019)	(0.027)
Number of clusters	2,229	1,713	1,353	561	1,713
Number of observations	3,932	2,752	2,276	749	2,752

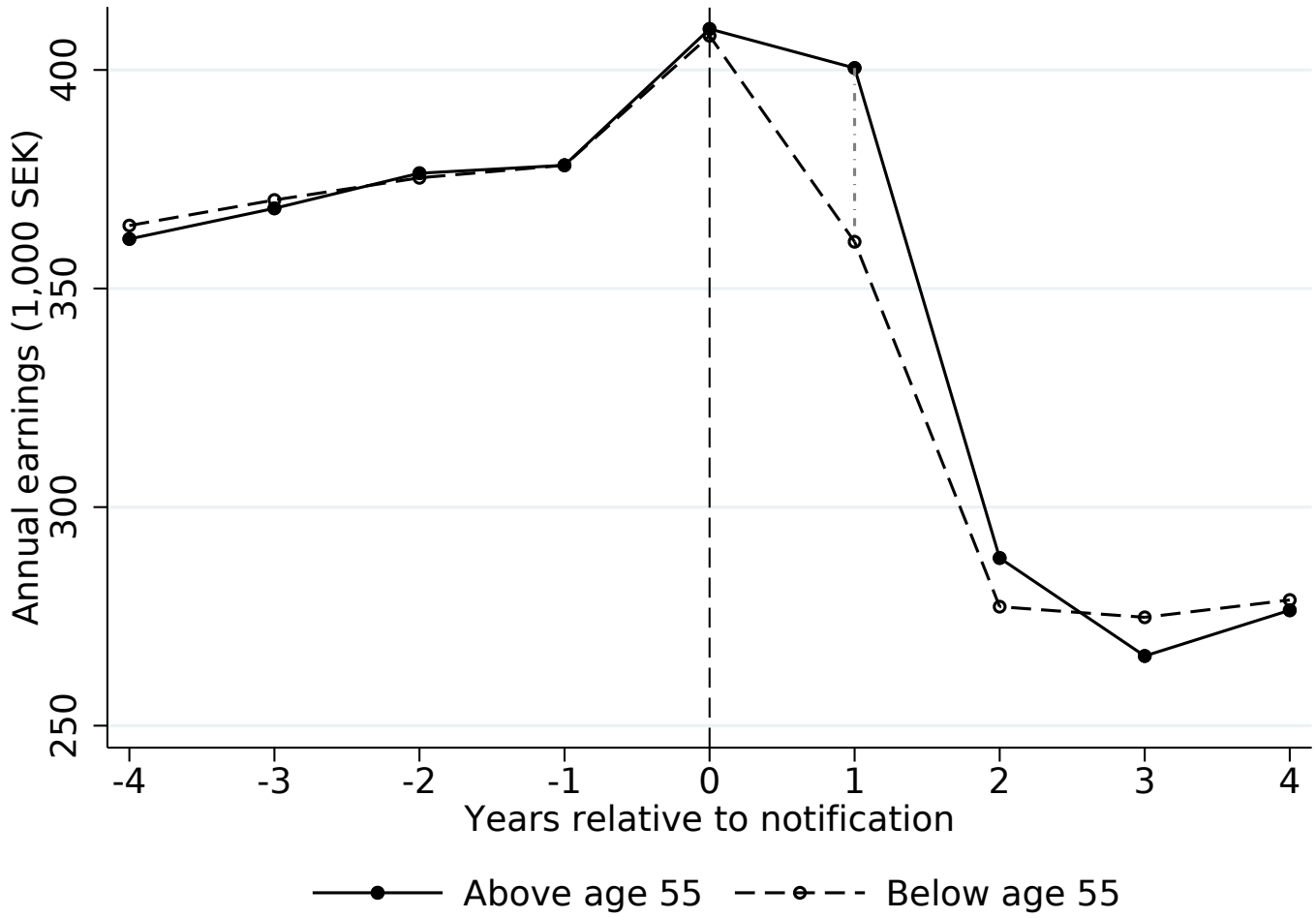
- Wages in the first new job w/n 2 yrs ↑

MN Effect on **Earnings** in Calendar Year After



- MN effect on earnings in year 1: 39.75 kSEK $\simeq 1.56m$ earnings

No Earnings Effects Beyond the First Year



- RD-estimates for each year around notification (dashed lines: stat sign. at 95%)
- increase in $t = 0$ for both T & C due to severance pay

Decomposition of the Earnings Effect

- Decompose the effect of longer MN over fixed period ($T = 2yrs$) as

$$\underbrace{\Delta y}_{\text{Earnings effect of MN}} = \underbrace{\Delta(w_0 l_0)}_{\text{Old job}} + \underbrace{\Delta(w_1 l_1)}_{\text{New job}} + \underbrace{\Delta SP}_{\text{Severance pay}},$$

  where w_0 (w_1) wage of old (new) job & l_0 (l_1) its duration within 2 years.

- Using $\Delta w_0 = 0$ and $T = l_0 + NE + l_1$, where NE denotes non-employment duration

$$\underbrace{\frac{\Delta y}{w_0}}_{\text{Earnings effect of MN}} = -\underbrace{\Delta NE}_{\text{non-emp duration}} - \underbrace{\frac{w_0 - w_1}{w_0}}_{\text{disp. wage loss}} \underbrace{\Delta l_1}_{\text{new job dur.}} +$$

$$\underbrace{\frac{\Delta w_1}{w_0}}_{\text{wage-effect}} l_1 + \underbrace{\frac{\Delta SP}{w_0}}_{\text{Severance-pay}}$$

$$\underbrace{1.56\text{months}}_{\text{Earnings effect of MN}} = \underbrace{50\%}_{\text{non-emp duration} \downarrow} + \underbrace{4\%}_{\text{disp. effect} \uparrow} + \underbrace{11\%}_{\text{wage} \uparrow} + \underbrace{35\%}_{\text{Severance-pay} \uparrow}$$

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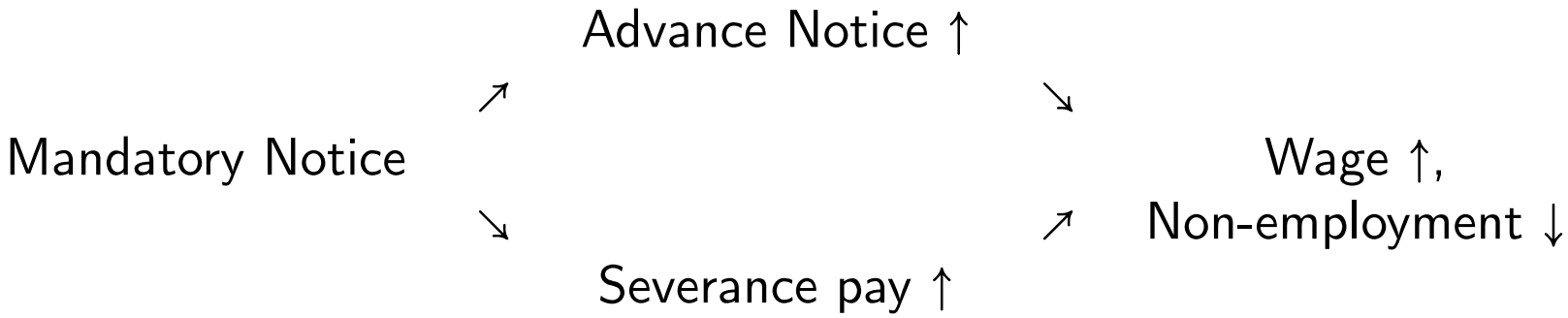
Separating the Effects of **Advance Notice** & **Severance Pay**

- **Challenge**:



- Not possible to isolate notice channel.

- Additional instrument: Age 55 discontinuity **among colleagues.**
- Intuition: Spill-over of long MN to non-eligible colleagues

Separating AN and SP effects

- Wage effect relative to UI; Card et. al 2007 Schmieder, et al 2013 Nekoei & Weber 2017
  - **Much larger.**

Panel (a):	**First-stage estimates**		**Reduced-form (RF) estimates**			
	Notification time (months)	Severance (1,000 SEK)	Search intensity	Months until new job	Non-employment (months)	$\Delta \ln(w)$
	(1)	(2)	(3)	(4)	(5)	(6)
Above age-55	2.593***	18.458**	-0.222***	0.112	-1.176***	0.035**
	(0.193)	(7.307)	(0.066)	(0.319)	(0.283)	(0.016)
Share coworkers above 55	0.776	30.428***	-0.064	1.500***	1.813***	-0.002
	(0.678)	(11.197)	(0.073)	(0.378)	(0.560)	(0.014)
Panel (b):			**2-IV estimates**			
Notification time			-0.087**	-0.205	-0.621***	0.017**
(months)			(0.038)	(0.241)	(0.161)	(0.008)
Severance			-0.001	0.035***	0.051***	-0.0001
(1,000 SEK)			(0.002)	(0.013)	(0.015)	(0.001)
Joint F-statistic	90	8	21	26	29	5
Number of clusters	4,285	4,212	4,011	4,060	4,285	2,564
Number of observations (RF)	55,987	49,340	35,515	36,689	56,531	12,590

Empirical Summary: Efficiency Considerations

- Efficiency effects of **Mandatory Notice**:
  - MN $\uparrow \Rightarrow$ Advance notice $\uparrow \Longleftrightarrow$ MN improves efficiency.
  - **Severance payments** used to avoid production losses of early notice.
    - Policy maker's worry: MN leads inefficient jobs to last.
    - Our evidence **mitigates** this worry.
  - MN $\uparrow \Rightarrow$ Non-employment $\downarrow$
  - MN $\uparrow \Rightarrow$ Re-employment wages $\uparrow$
  - AN $\uparrow \Rightarrow$ Non-employment $\downarrow$; Wages $\uparrow$
  - SP $\uparrow \Rightarrow$ Non-employment $\uparrow$; Wages $\rightarrow$

Reason for the Wage Effect

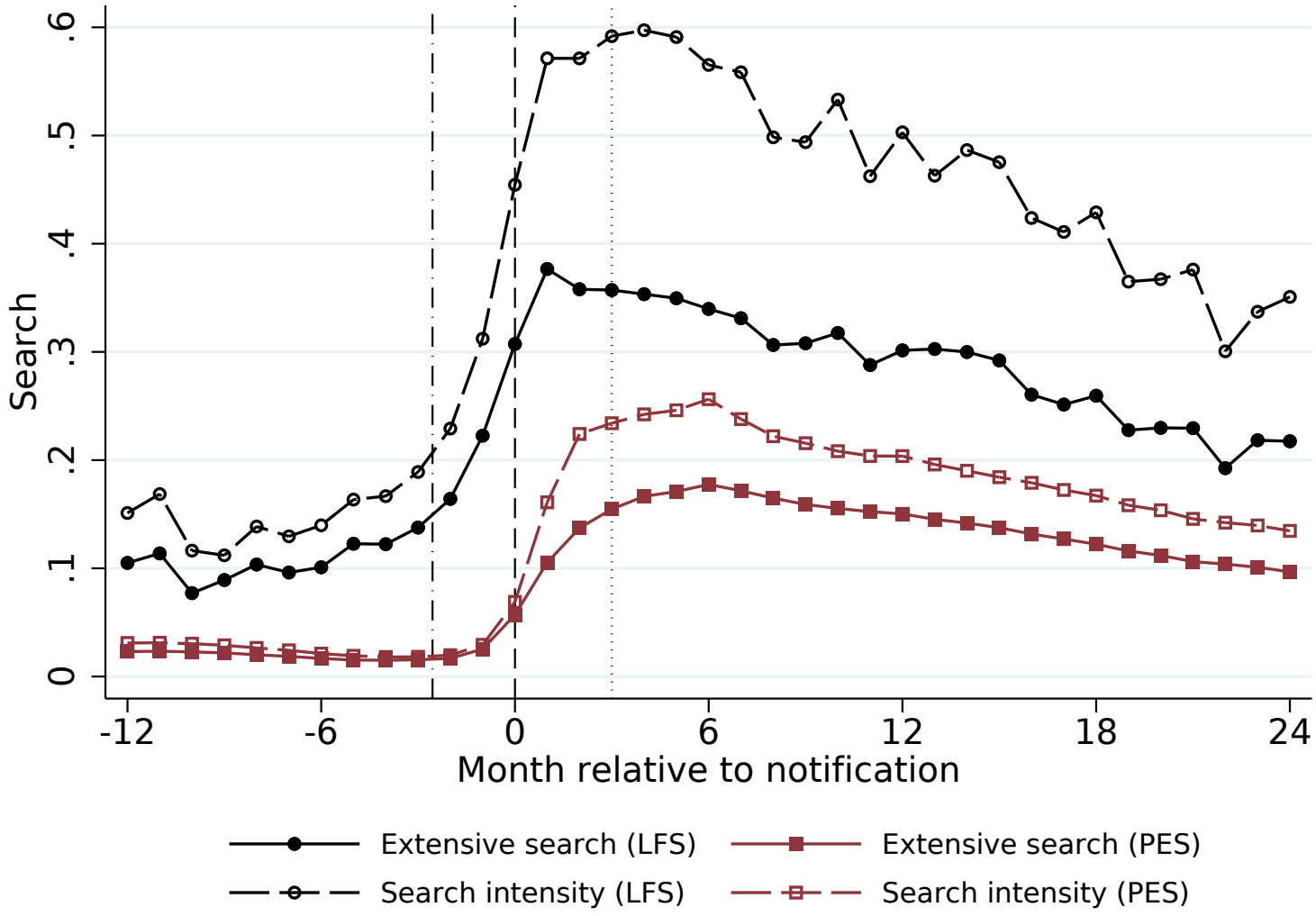
- Arrival rates of acceptable offers higher for the employed?
  - Is it more efficient to **search while employed**?

- Let the hazard rate for $j \in \{e, u\}$ be:

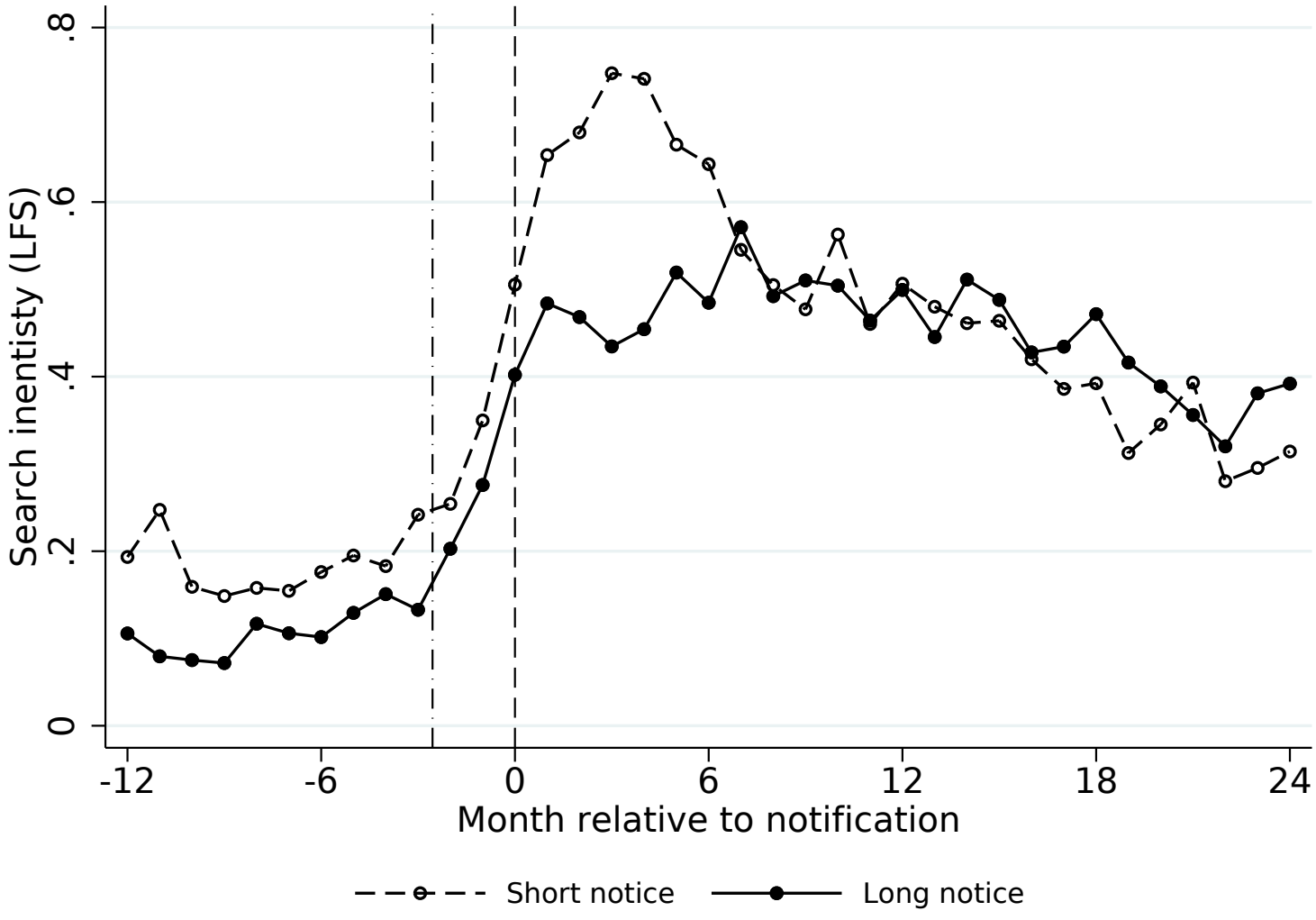
$$h^j = \underbrace{\lambda^j}_{\text{arrival rate}} \times \underbrace{A^j}_{\Pr(\text{acceptance})} \times \underbrace{s^j}_{\text{search}}$$

- Estimate relative search efficiency, $\frac{\partial h^e}{\partial s^e} / \frac{\partial h^u}{\partial s^u}$, for employed and unemployed.
- Exploit two measures of search:
  - Public Employment Service (PES) measure
    - Number of meetings with unemployment officers.
  - Labor Force Survey (LFS) measure
    - Have you searched in the past 4 weeks?
    - If yes, how have you searched?
- Three research designs:
  - 2-IV
  - OLS with individual-level FE.
  - Exogenous shifters of search in unemployment and employment.

Search After Notification

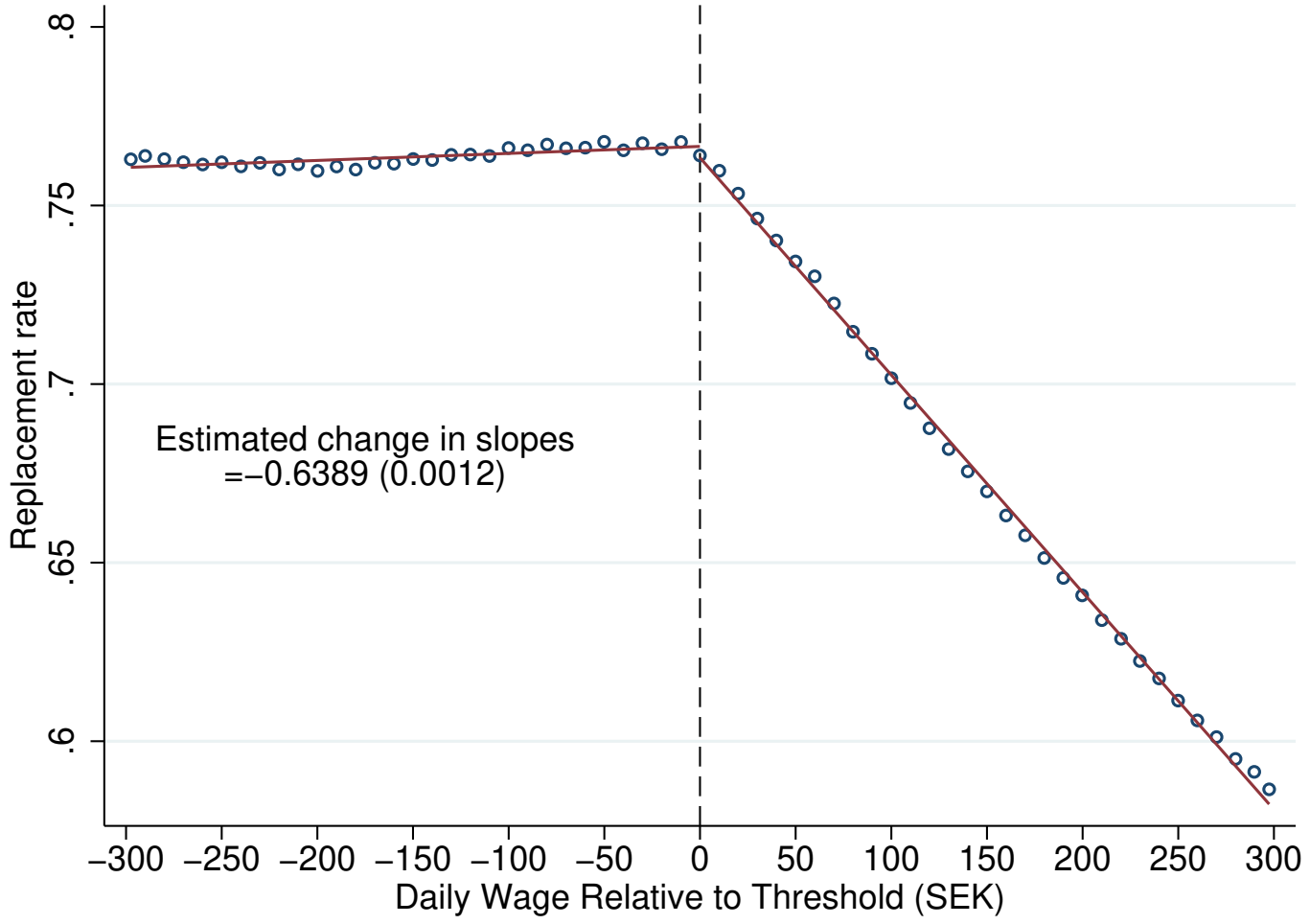


Search After Notification: By Advance Notice



Exogenous Search: **Unemployed**

- For unemployed: Leverage kinked benefit schedule:



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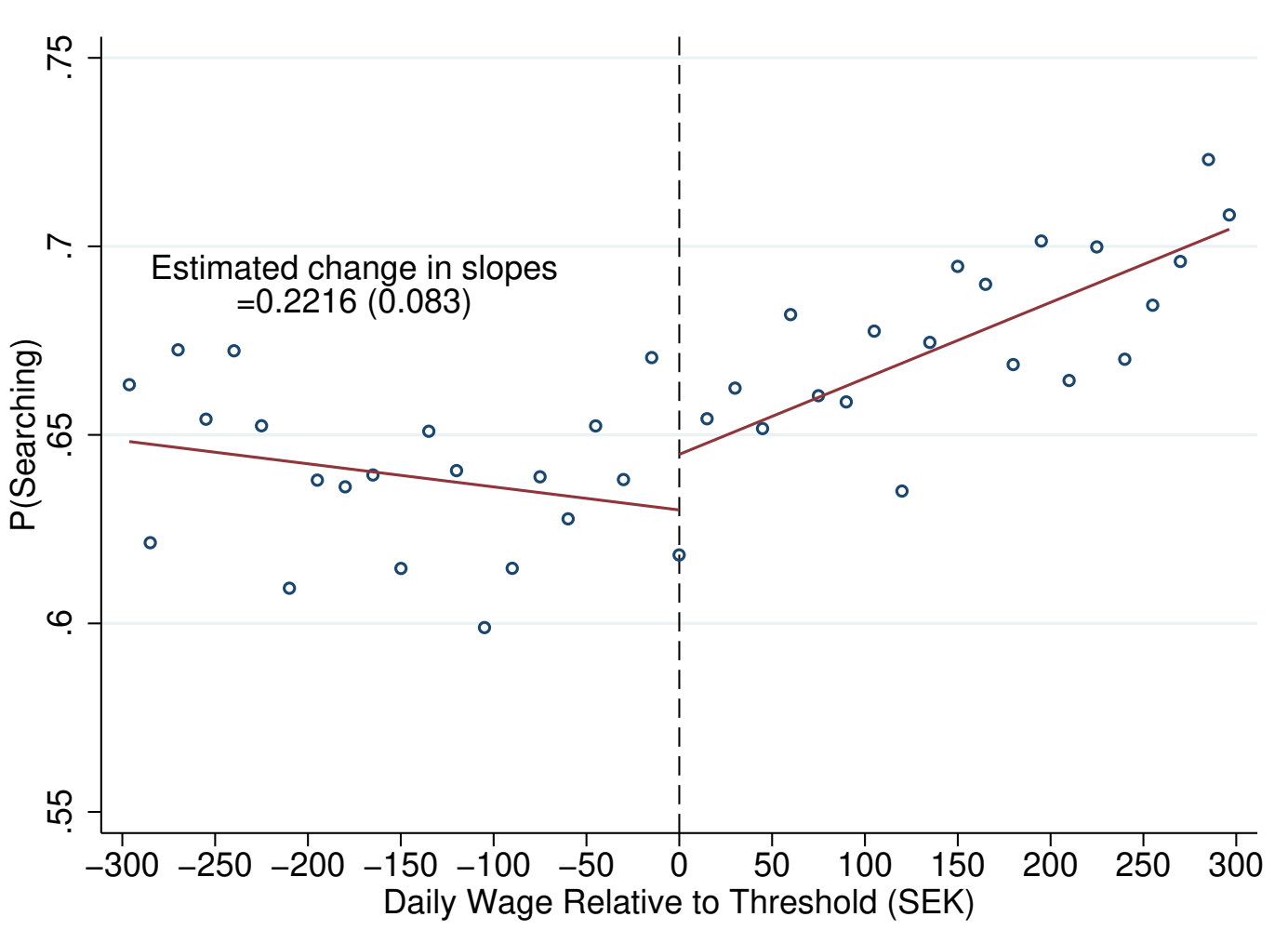
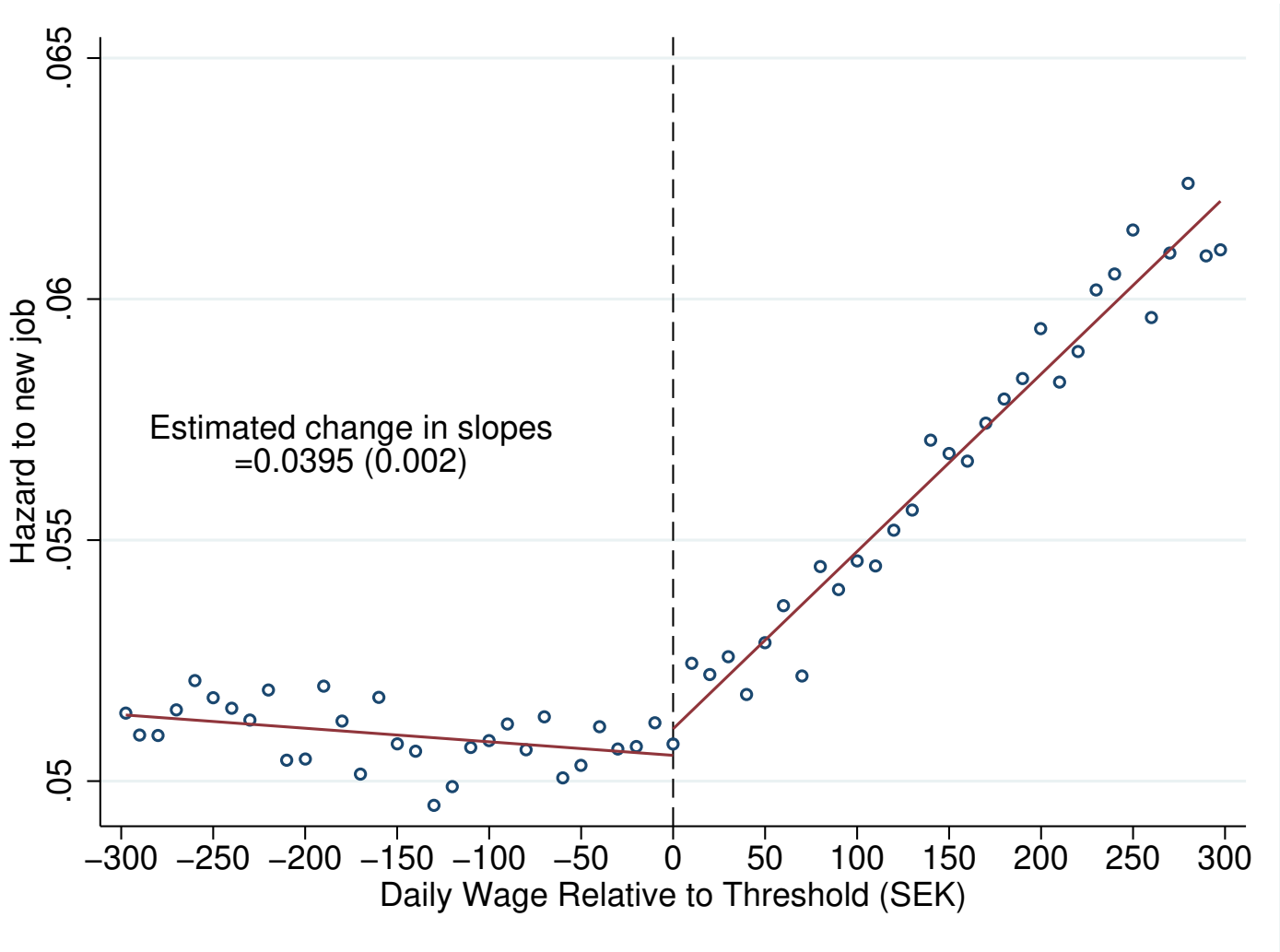
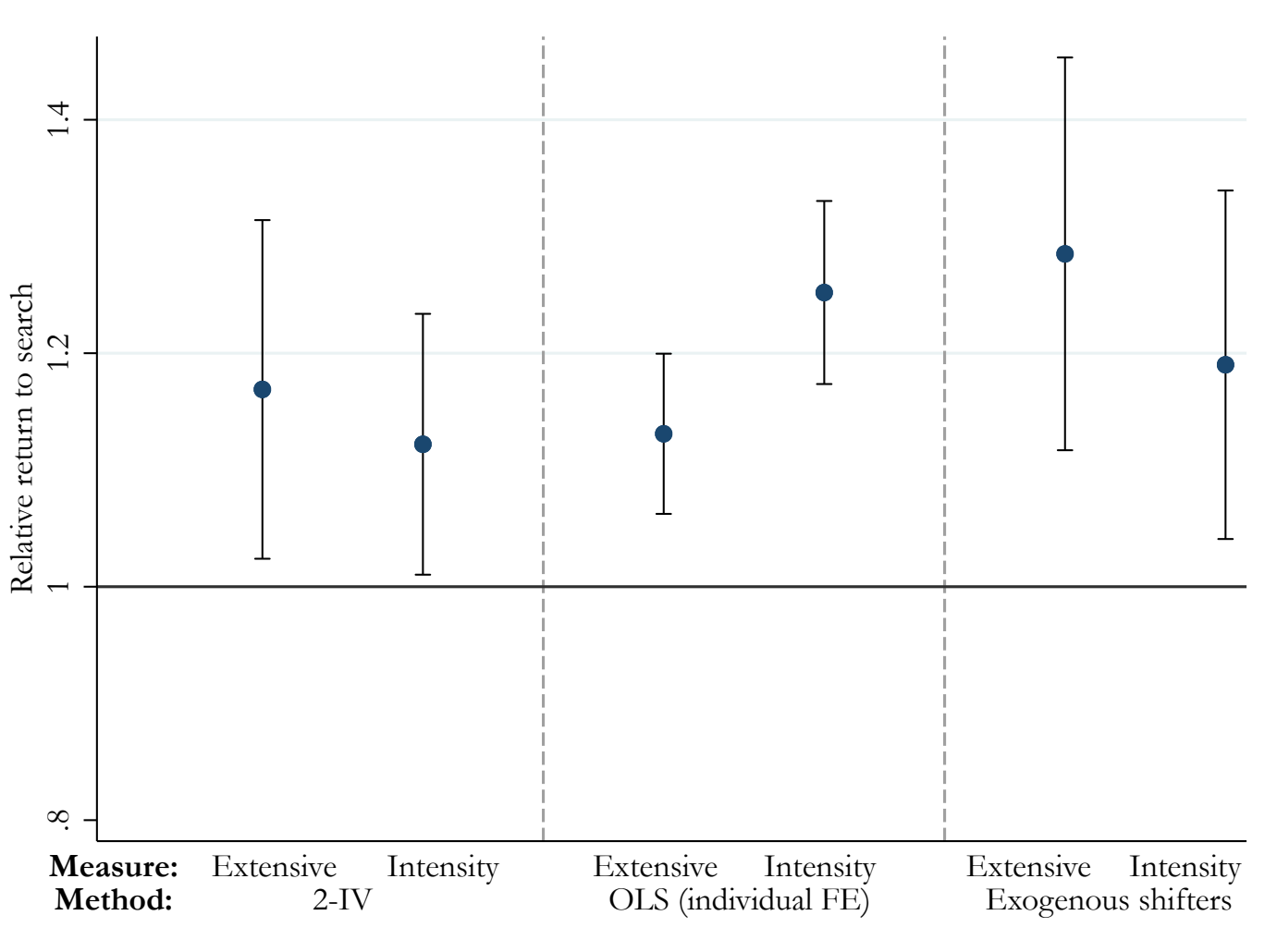


Exogenous Search: **Unemployed**



- Search increases the job-finding rate **as unemployed** by 11.5ppt. Comparison for employed is 16 ppt.

Relative Search Efficiency



Costs of MN: **Lower Productivity**

- Firm revenue:

$$Y_{it} = A_{it}\left(1 - \alpha\chi_{it}\right) L_{it}$$

- Productivity falls by a factor α among the share of labor under notice period, χ_t.

- Over time:

$$\Delta \log(Y_i) = \Delta \log A_i + \log\left(1 - \alpha\chi_{it}\right)$$

- We estimate this as follows:

$$\Delta \log(Y_i) = \beta\chi_i + d_t + \delta_j + f\left(s_i\right) + g\left(m_i\right) + h\mathrm{X}_i + \varepsilon_i$$

- where s_{it} = share laid-off workers; d time-FE; δ ind. FE; f and g are flexible functions of size of layoff and overall notice time.

$\hat{\alpha} = \left(1 - \exp\left(\hat{\beta}\hat{\chi}\right)\right)/\hat{\chi}$.

Costs of MN: **Lower Productivity**

- We use balance sheet data combined with information on layoffs and labor inputs to estimate the α's.

- Three versions of χ :
  1. Actual advance notice periods.

  2. Legislated mandated notice periods.

  3. MN for those workers who would have been laidoff under the tenure-ranking rule.

MN Effect on **Productivity**

Table 7: The Productivity Loss of Notice

	Dependent variable			
	$\Delta \ln y$		$\ln y - \sum_{t=-3}^{-1} \ln y_t/3$	
	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)
Share of workers on notice (χ)	-0.275**	-0.469***	-0.290**	-0.465***
	(0.111)	(0.161)	(0.118)	(0.162)
Estimate of productivity loss (α)	0.272**	0.461**	0.287**	0.458***
	(0.110)	(0158)	(0.116)	(0.160)
First stage				
First-stage F		221.7		221.7
Specification check (outcomes in $t-1$)				
Share of workers on notice (χ)	0.078	0.062	0.021	0.003
	(0.088)	(0.121)	(0.060)	(0.081)
Specification check (outcomes in $t-2$)				
Share of workers on notice (χ)	-0.033	-0.169	-0.055	-0.048
	(0.100)	(0.135)	(0.048)	(0.065)
Number of observations	3,218	3,218	3,218	3,218

- $\alpha_{post} \in [0.27, 0.46]$.

Summary

- Gains from MN > Losses.
- Some MN optimal.
- Other lessons:

1. MN >> Severance Pay
2. Firms and workers sidestep inefficient legislation.
3. Job-search more effective from employment than from unemployment.
   - Why?
   i. Connections from colleagues.
   ii. Discrimination
   iii. Induced to think about next job while working.