Teleworking and Workers' Careers

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October 28, 2026

This project was supported by the TRAILS project, financed by the European Union's Horizon Europe research and innovation program under grant agreement No 101132673.

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- Need for matched employer-employee data + info on WFH

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  2. Do *careers* of workers in TW vs non-TW jobs diverge after the pandemic?

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  - Keep ISCO codes for which O*Net codes are all $TW = 1$ or all $TW = 0$

Examples

- Non-teleworkable occupations
  - Retail and Wholesale Trade Managers (142)
  - Mining, Manufacturing and Construction Supervisors (312)
  - Life Science Technicians and Related Associate Professionals (314)
  - Medical and Pharmaceutical Technicians (321)
  - Travel Attendants, Conductors and Guides (511)
  - Cooks (512)
  - Machinery Mechanics and Repairers (723)
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- Teleworkable occupations
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  - Mathematicians, Actuaries and Statisticians (212)
  - Electrotechnology Engineers (215)
  - Sales and Purchasing Agents and Brokers (332)
  - Administrative and Specialized Secretaries (334)
  - General Office Clerks (411)
  - Keyboard Operators (413)
  - Numerical Clerks (431)

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- Answer 1: Full teleworking
- Answers 1, 2 or 3: Some Teleworking

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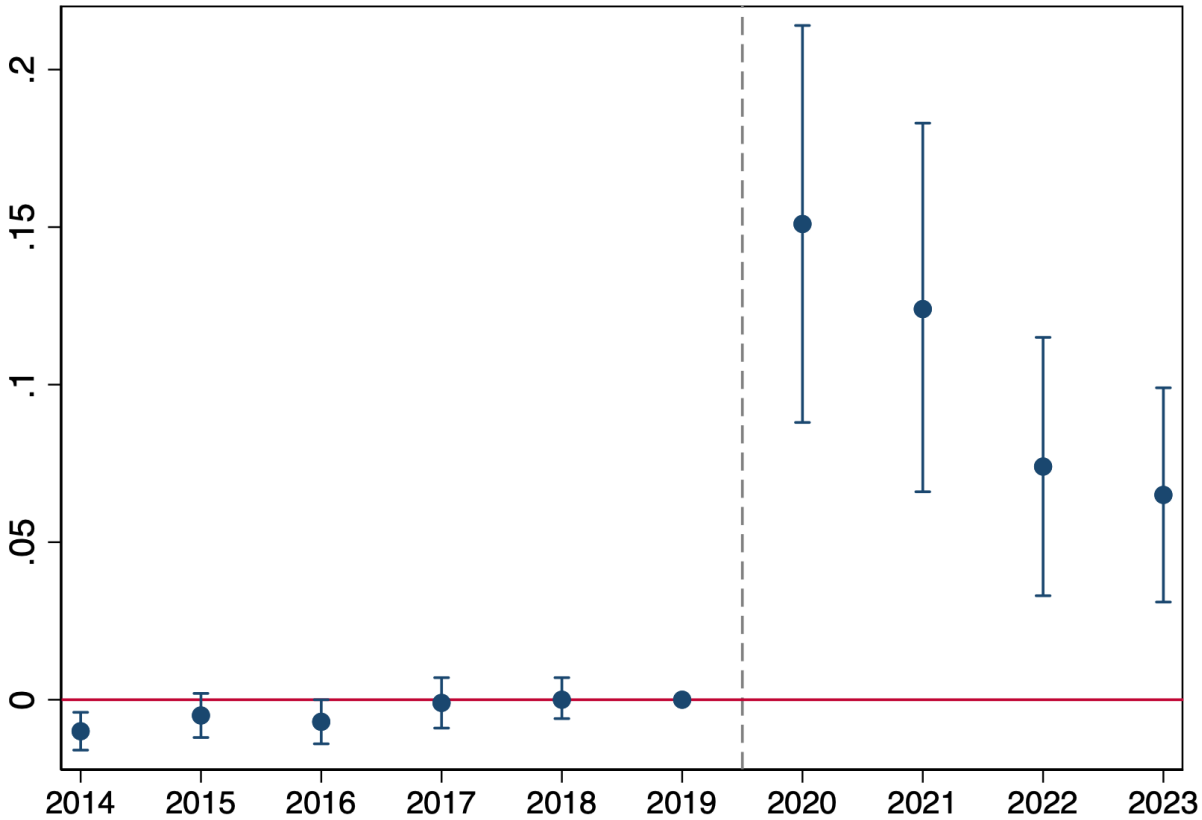
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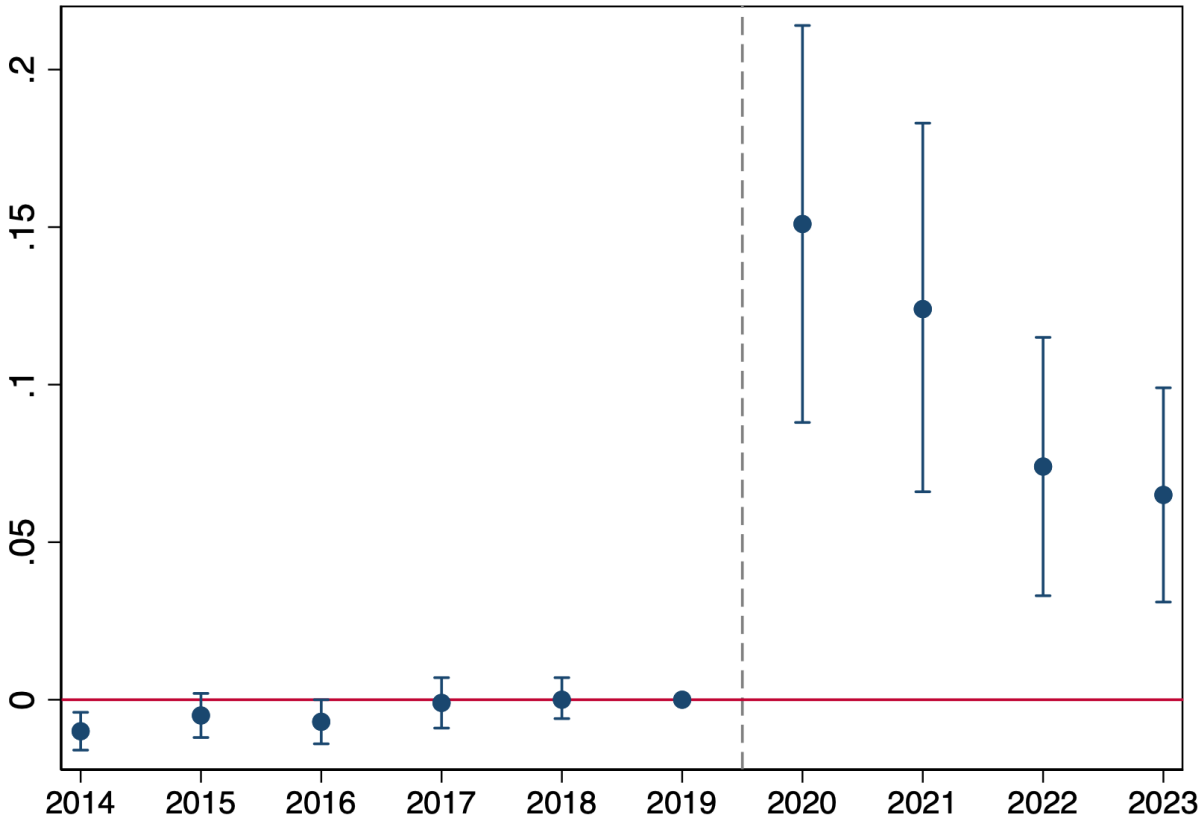
Full Teleworking

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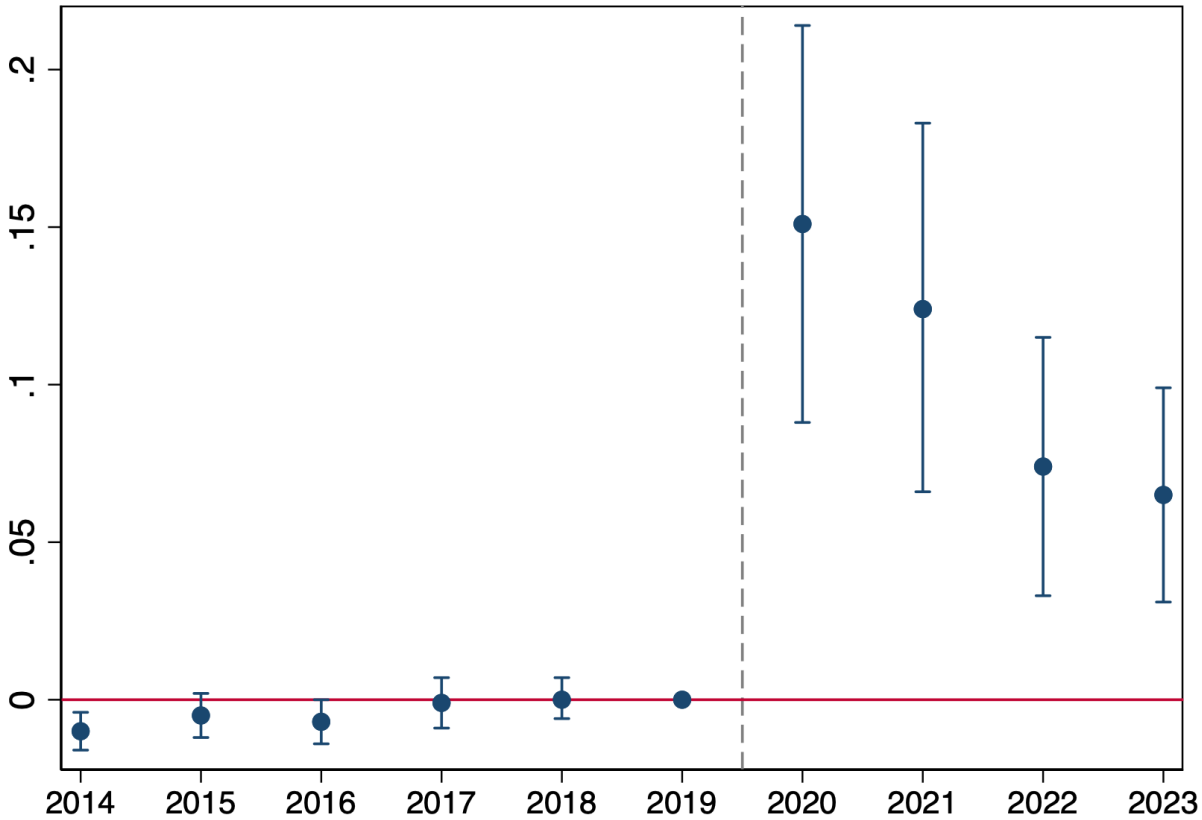
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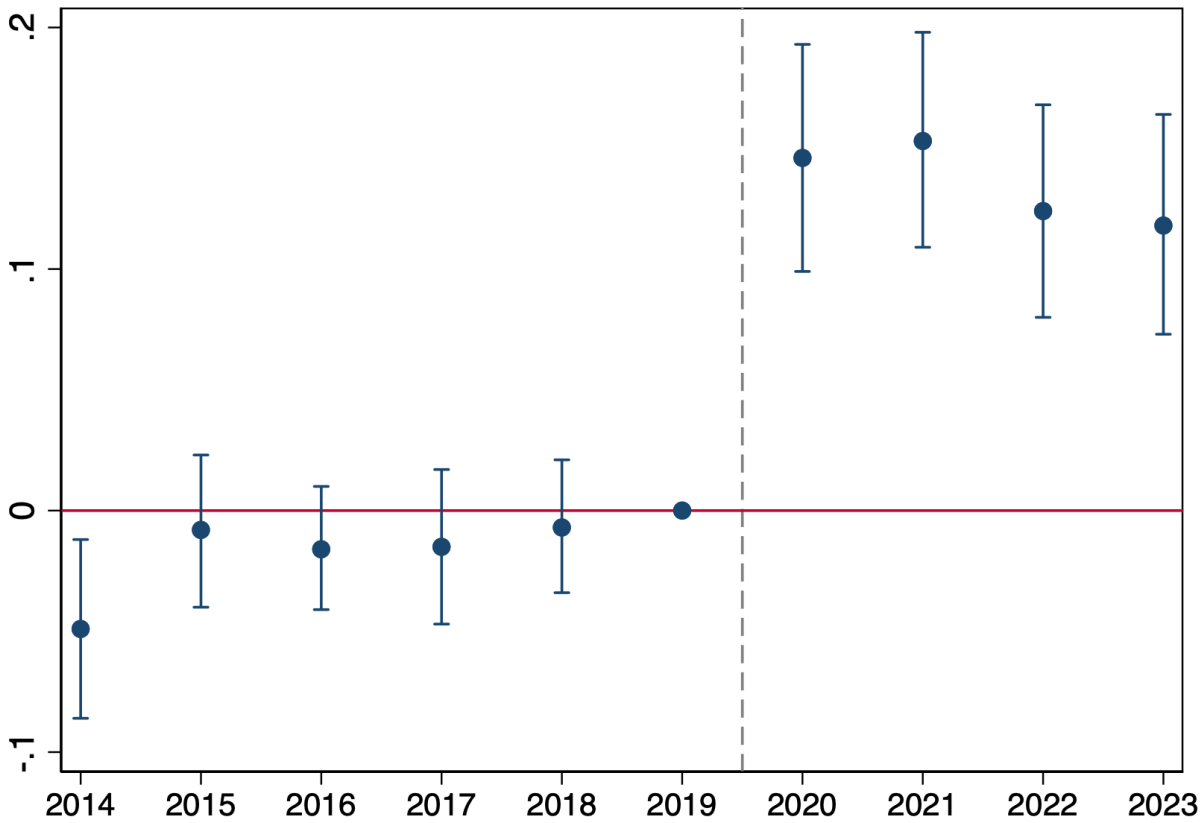
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- Effect large (in 2019: 1.4%)
- However, not persistent: 2/3 of the effect gone three years later



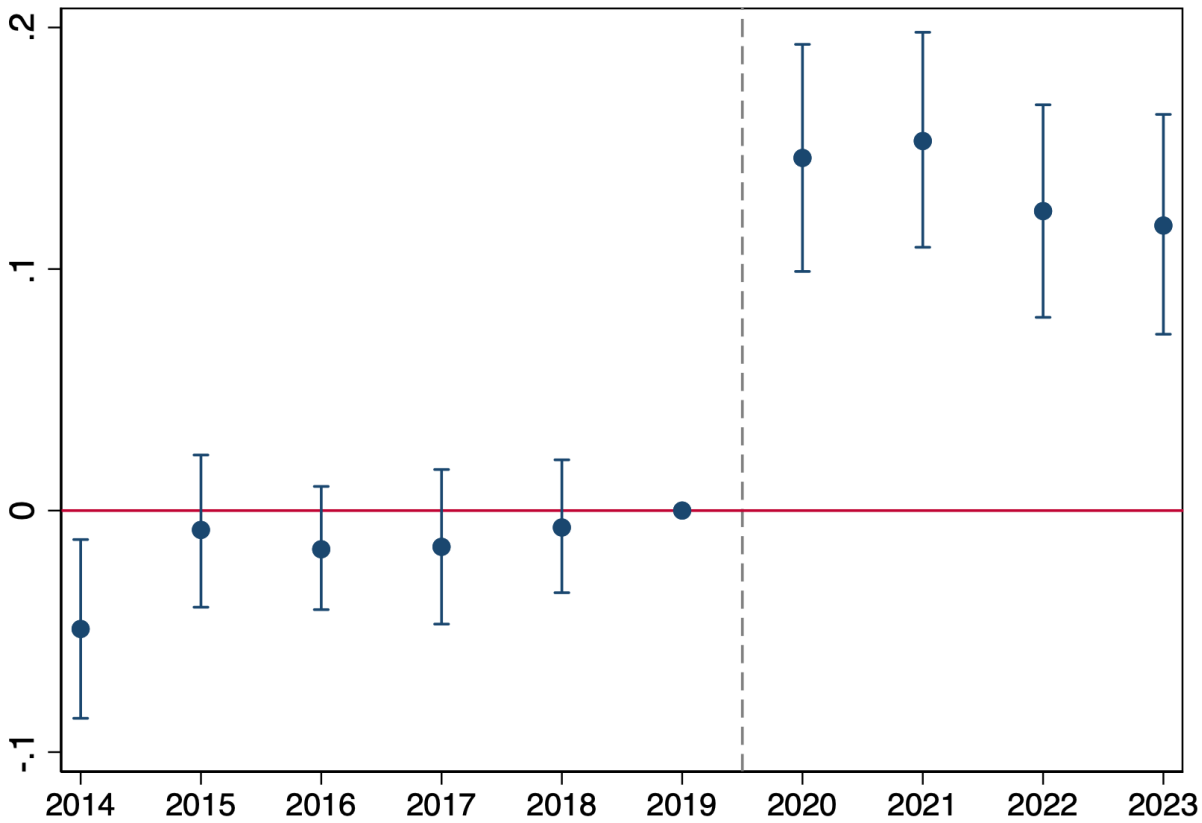
Effect on partial Teleworking

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  - work in smaller firms
  - are more likely to be female

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  - (log) Firm size
  - Gender, tenure, industry (exact)
- Two-year tenure restriction

Matching Results

	Full Sample			Matched Sample		
	Non-TW job	TW job	Δ	Non-TW job	TW job	Δ
Targeted						
Log(Wage)	10.281	10.568	0.287	10.439	10.404	-0.034
	(0.089)	(0,098)	(0.131)	(0.089)	(0.120)	(0.147)
Log(Wage)$_{t-2}$	10.206	10.501	0.294	10.369	10.331	-0.038
	(0.096)	(0.097)	(0.135)	(0.093)	(0.125)	(0.153)
High Tenure	0.585	0.622	0.037	0.582	0.582	0.000
	(0.016)	(0.027)	(0.031)	(0.015)	(0.017)	(0.022)
Age	45.608	44.797	-0.811	45.640	45.789	0.149
	(0.364)	(0.634)	(0.718)	(0,420)	(0.536)	(0,670)
Male	0.544	0.415	-0.128	0.520	0.520	-0.000
	(0.092)	(0.101)	(0.135)	(0.080)	(0.106)	(0.131)
Log(Firm Size)	5.778	5.521	-0.257	5.616	5.626	0.010
	(0.261)	(0.174)	(0.311)	(0.190)	(0.267)	(0.322)
Not Targeted						
Log(Hourly Wage)	2.978	3.250	0.273	3.079	3.123	0.044
	(0.043)	(0.057)	(0.070)	(0.045)	(0.057)	(0.072)
Log(Hourly Wage)$_{t-2}$	2.929	3.206	0.277	3.033	3.076	0.043
	(0.044)	(0.056)	(0.070)	(0.046)	(0.057)	(0.072)
Log(Hours)	7.305	7.319	0.015	7.358	7.281	-0.076
	(0.064)	(0.051)	(0.081)	(0.058)	(0.069)	(0.088)
Earnings	35271.438	47411.070	12139.632	41172.570	40524.297	-648.271
	(2460.517)	(4882.152)	(5357.080)	(2990.542)	(4375.945)	(5207.631)
Permanent Contract	0.816	0.855	0.039	0.829	0.814	-0.015
	(0.018)	(0.019)	(0.026)	(0.015)	(0.023)	(0.028)
Observations	25,237	22,016	47,253	6,098	6,098	12,196

Event Study Design

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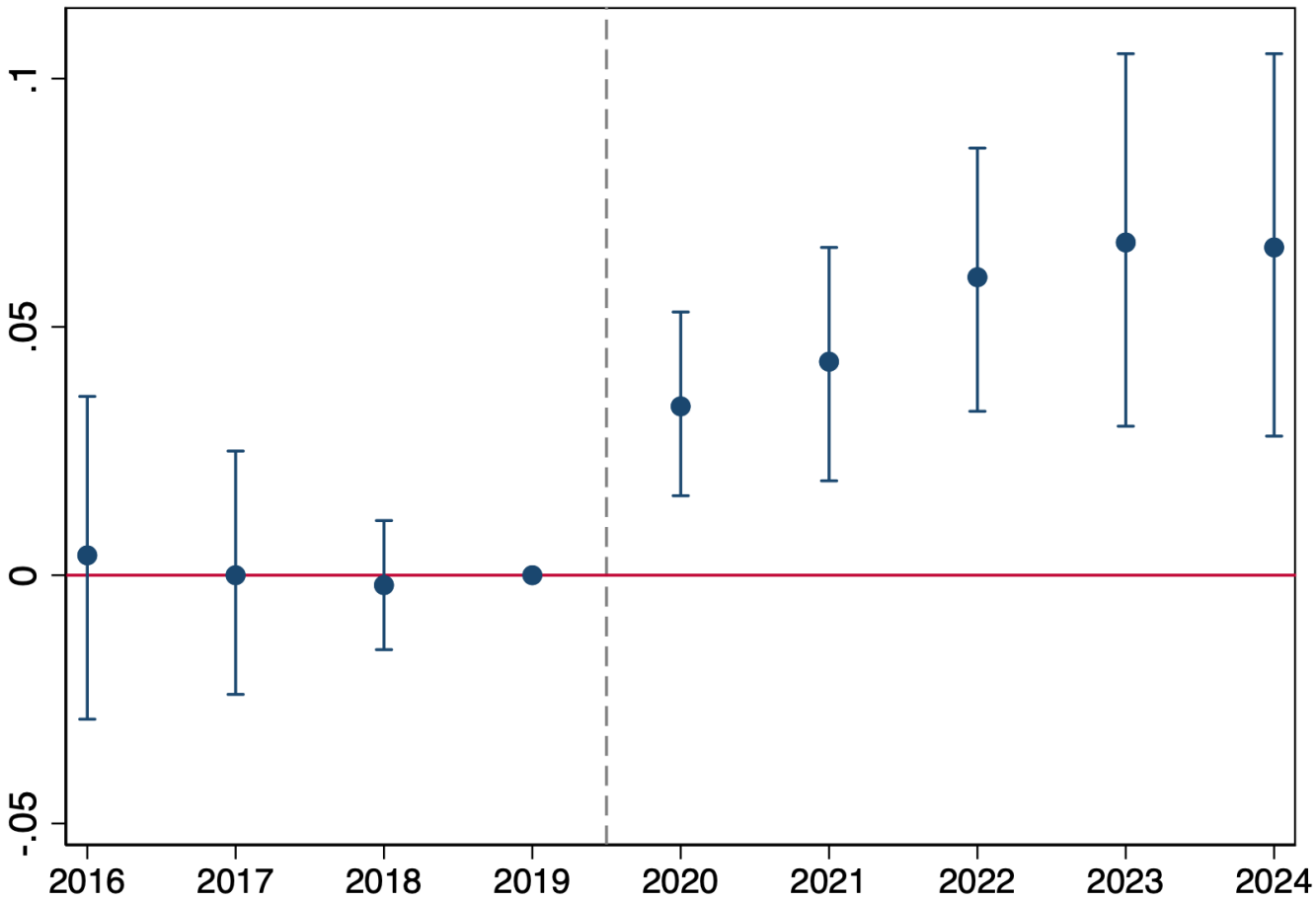
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Results: log(Wage)

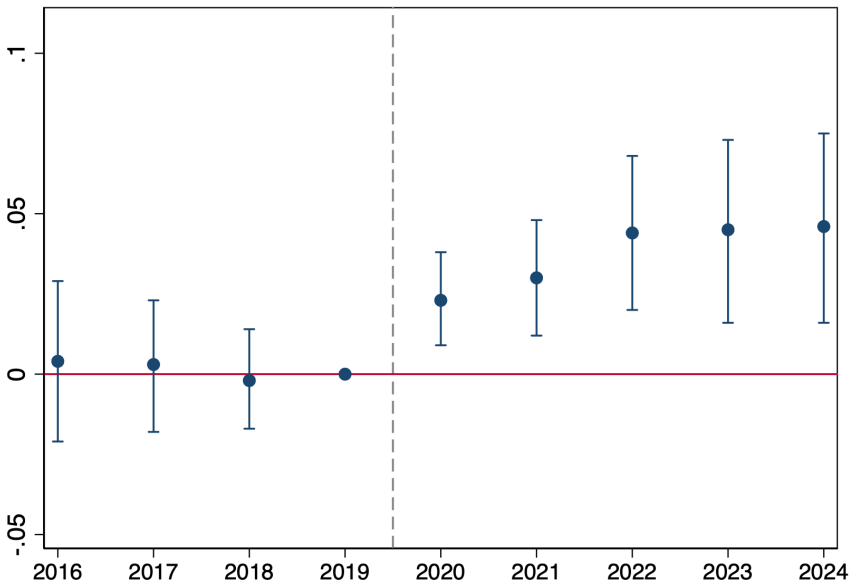
- Wage gains for TW occupations: up to +6.8 percent four years post-pandemic



Results: log(Hours) and log(Hourly Wage)

- Increase in hours accounts for 2/3 of teleworking effect

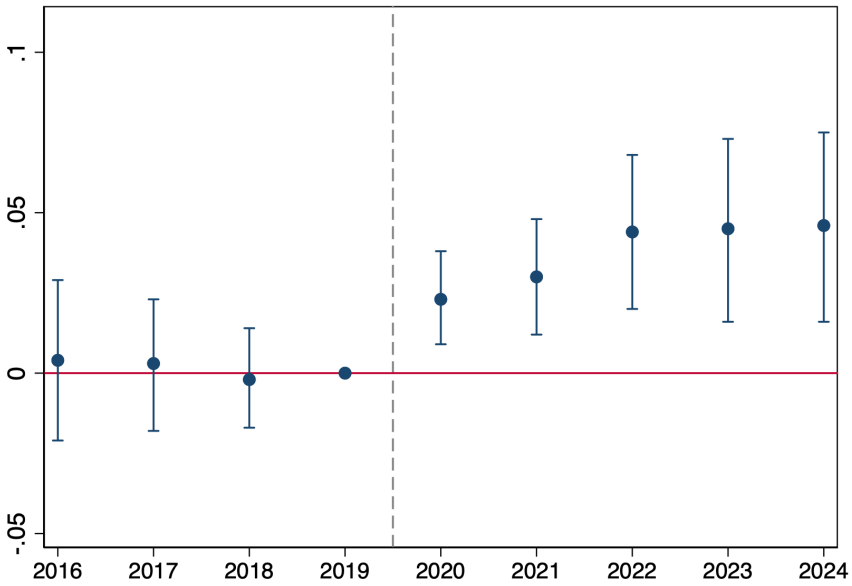
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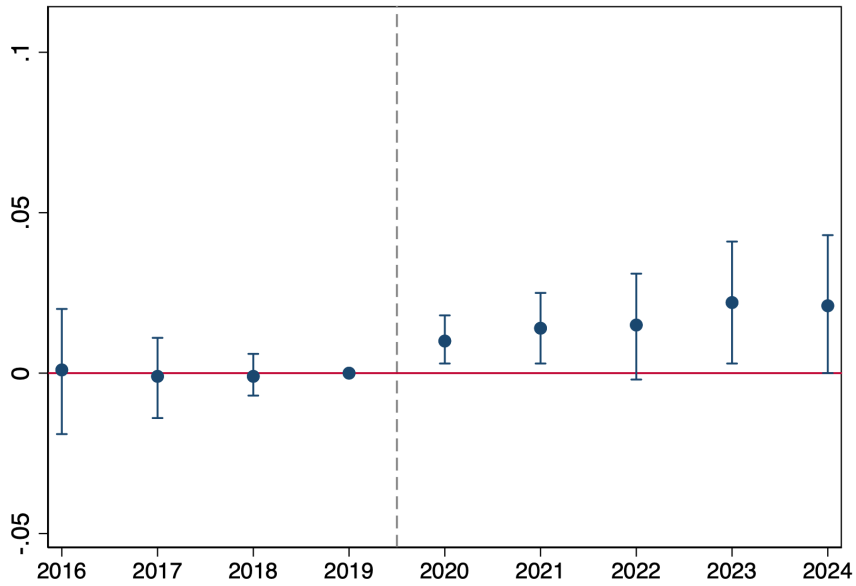
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- Increase in hours accounts for 2/3 of teleworking effect
- Similar but smaller effect on hourly wages: up to +2.2 percent

A. log(Hours)



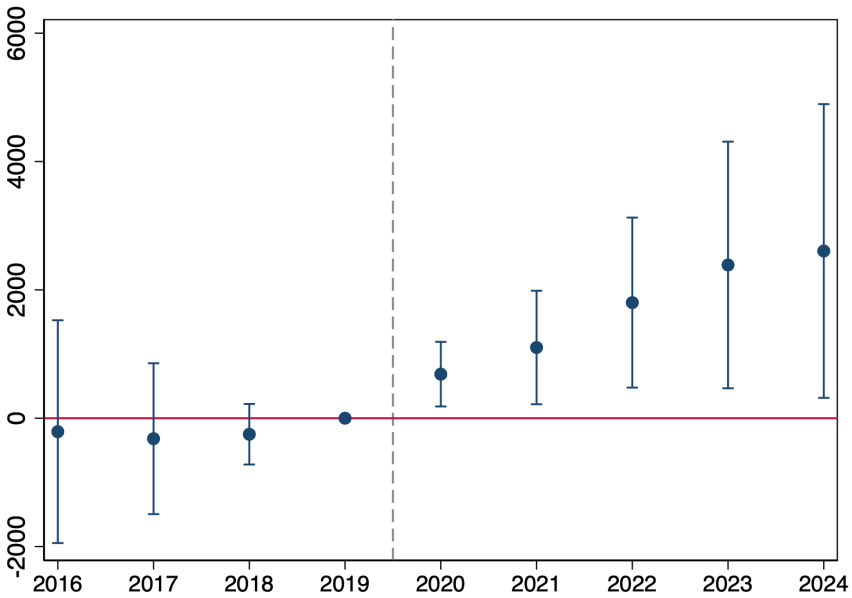
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Results: Total Earnings and Employment

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A. Total Earnings

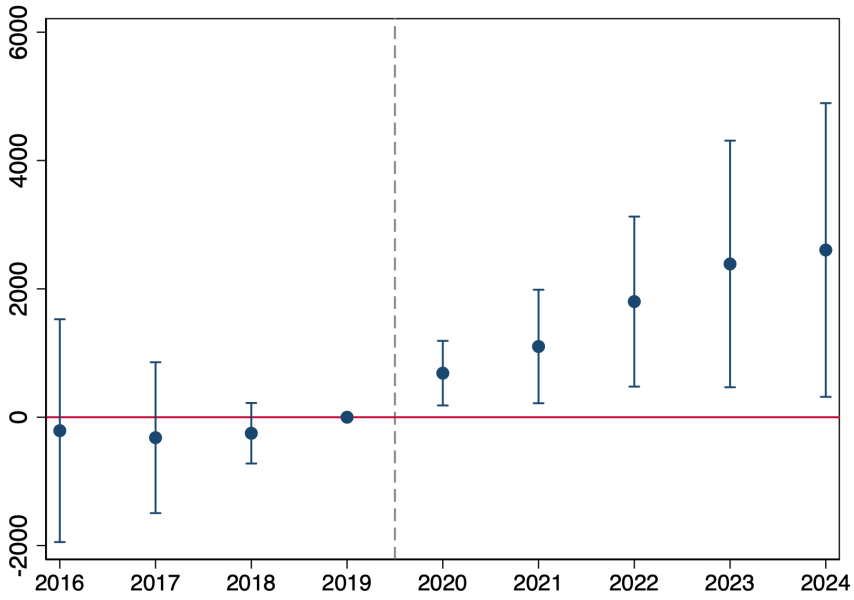


▸ Go to Broad Teleworkability Definition ▸ Excluding One Occupation at a Time

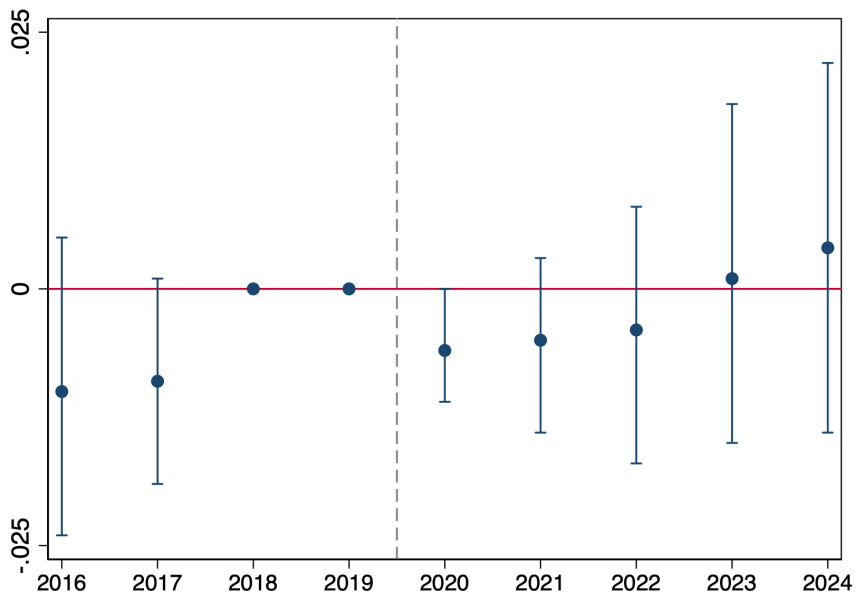
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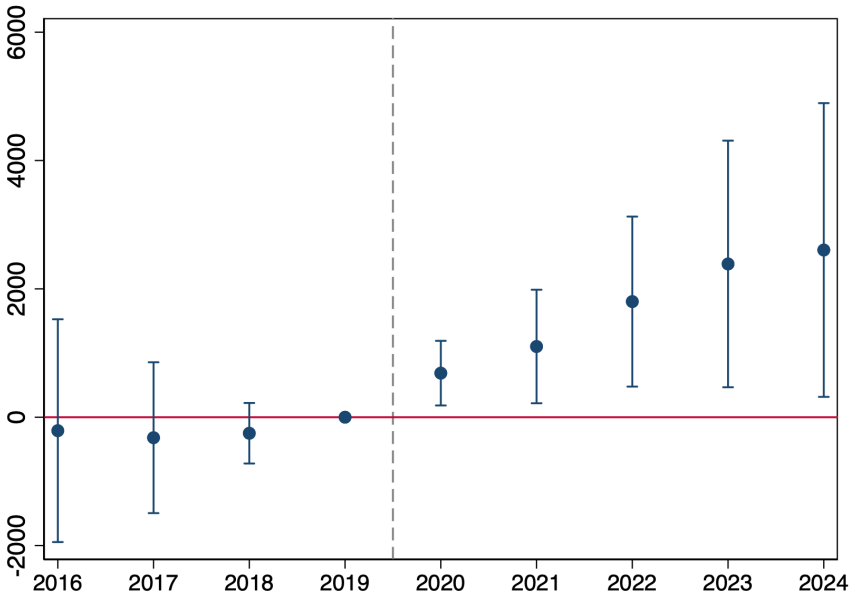


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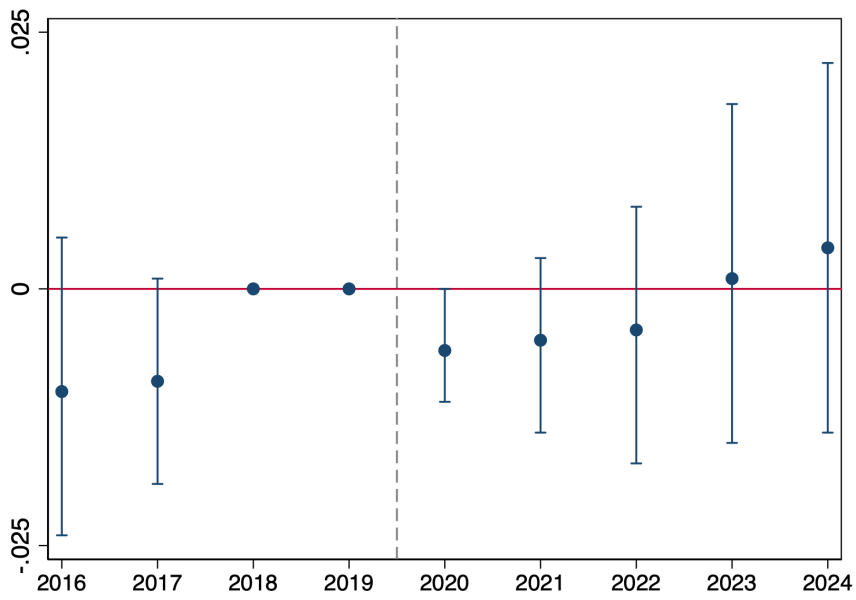
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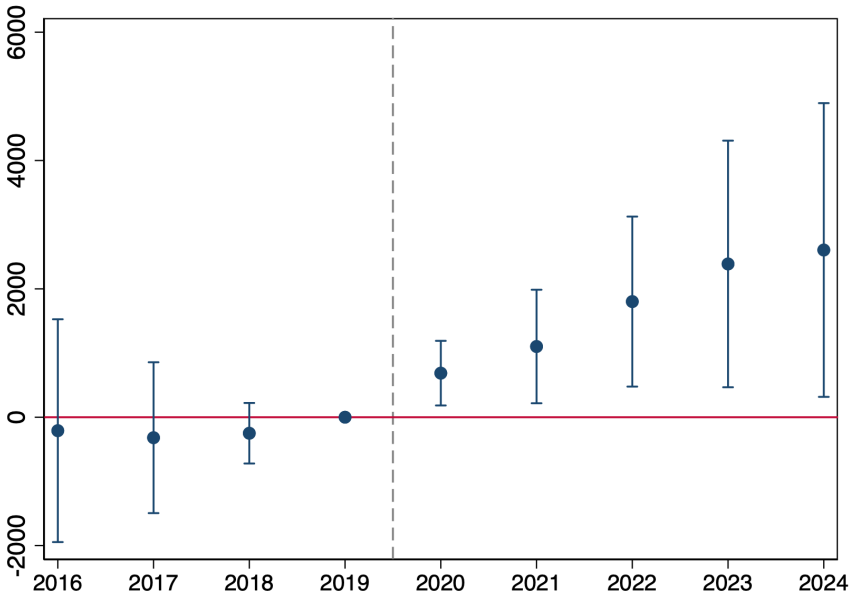


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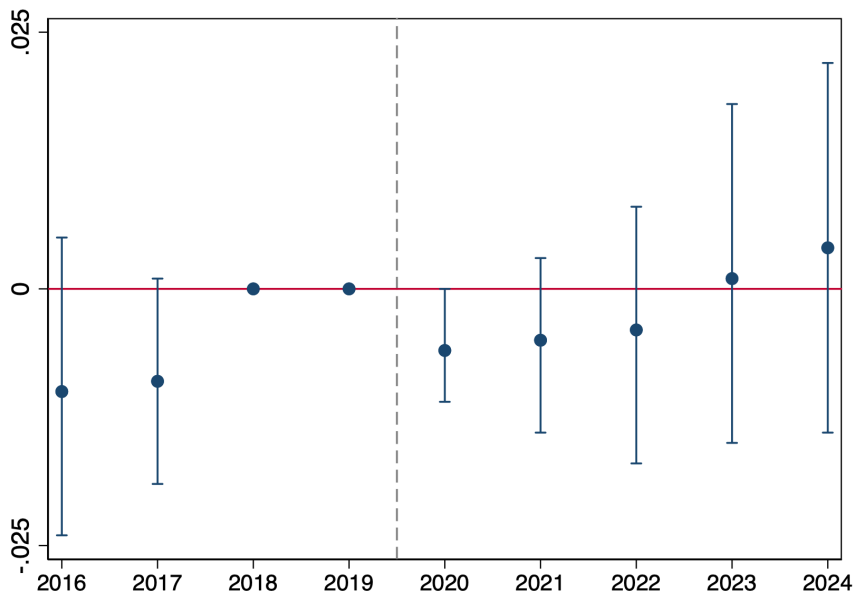
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Job-to-Job Flows

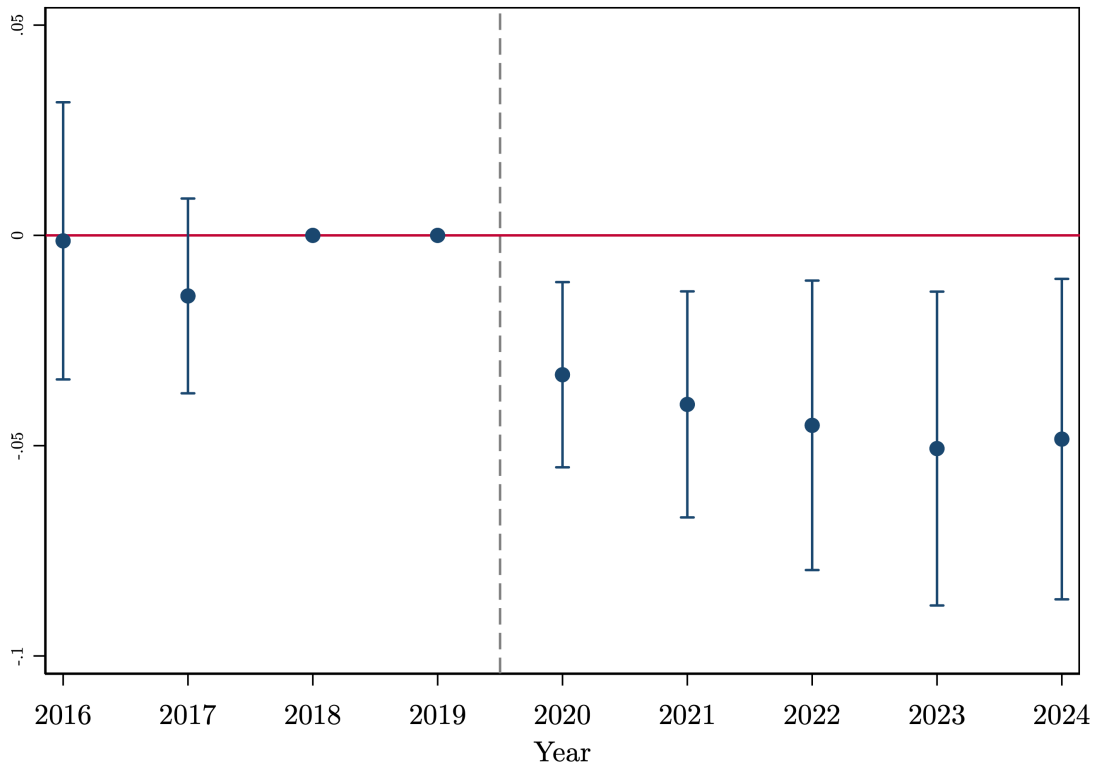
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- WFH reduces the probability of staying with same employer by 5 ppts
  $\rightarrow$ WFH availability increases the frequency of job-to-job transitions



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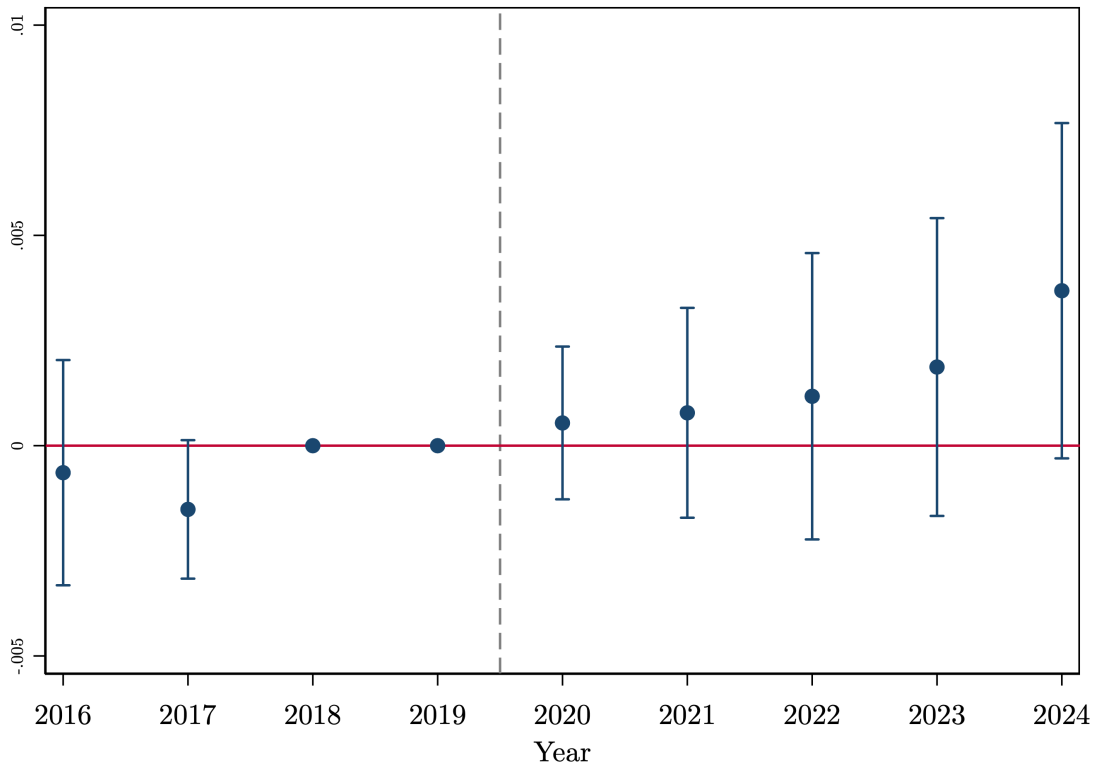
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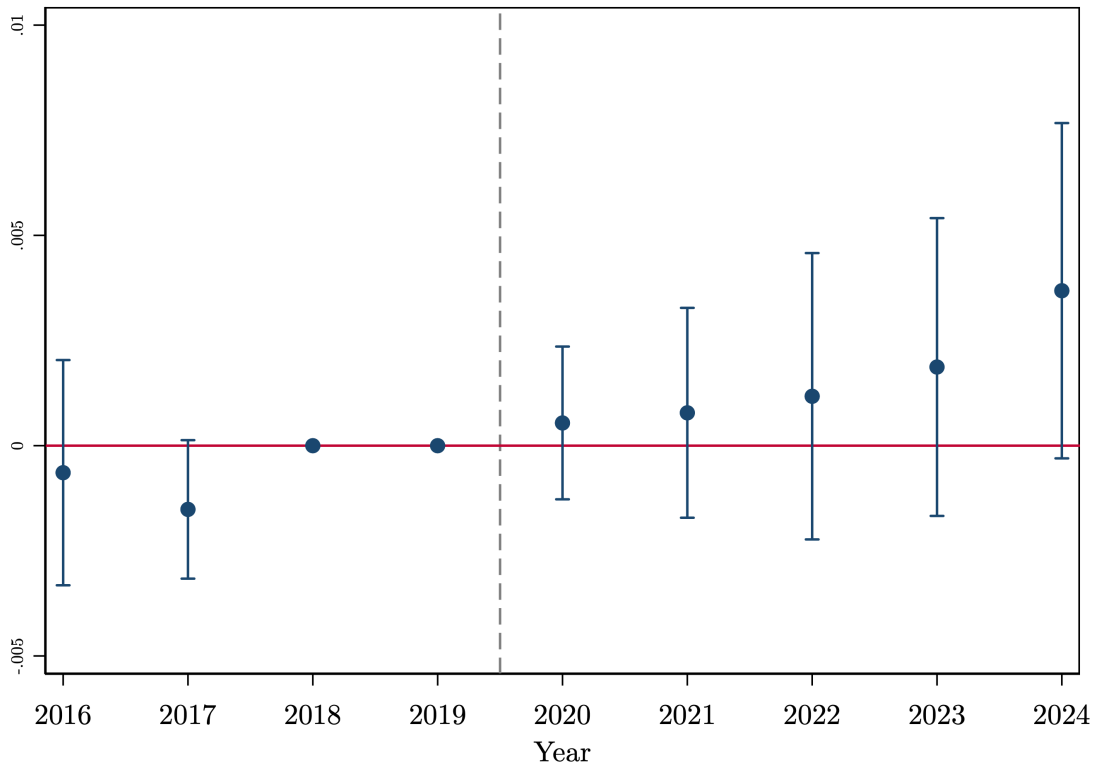
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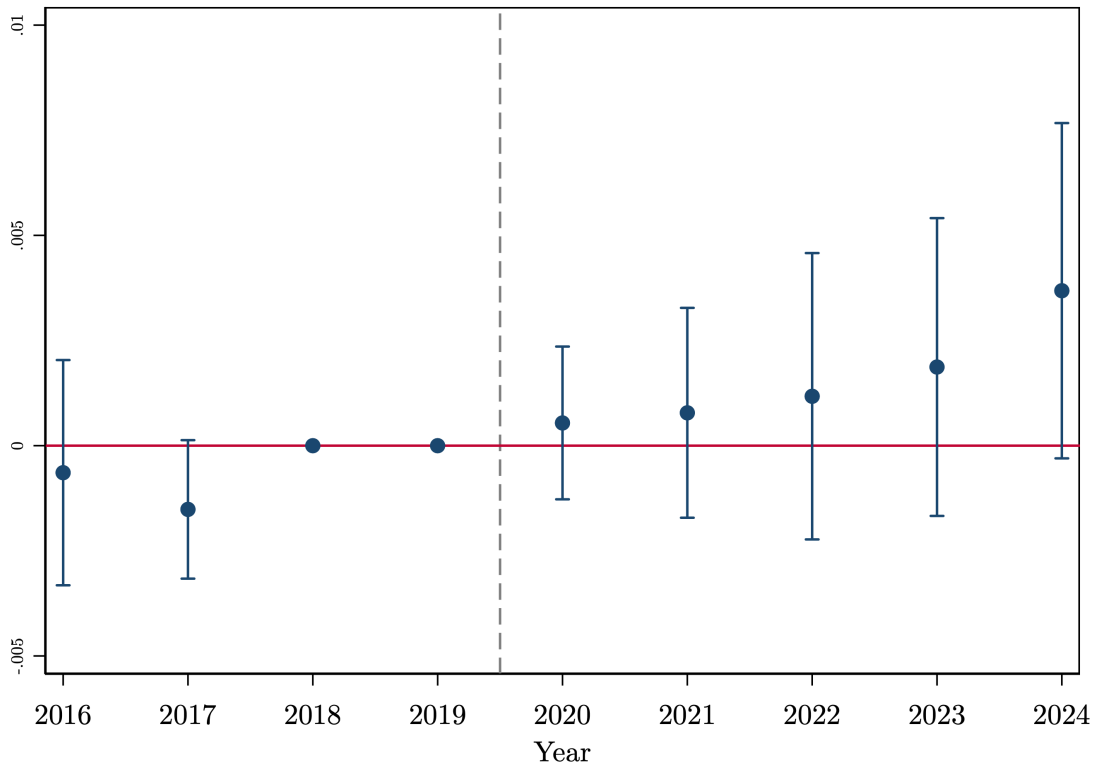
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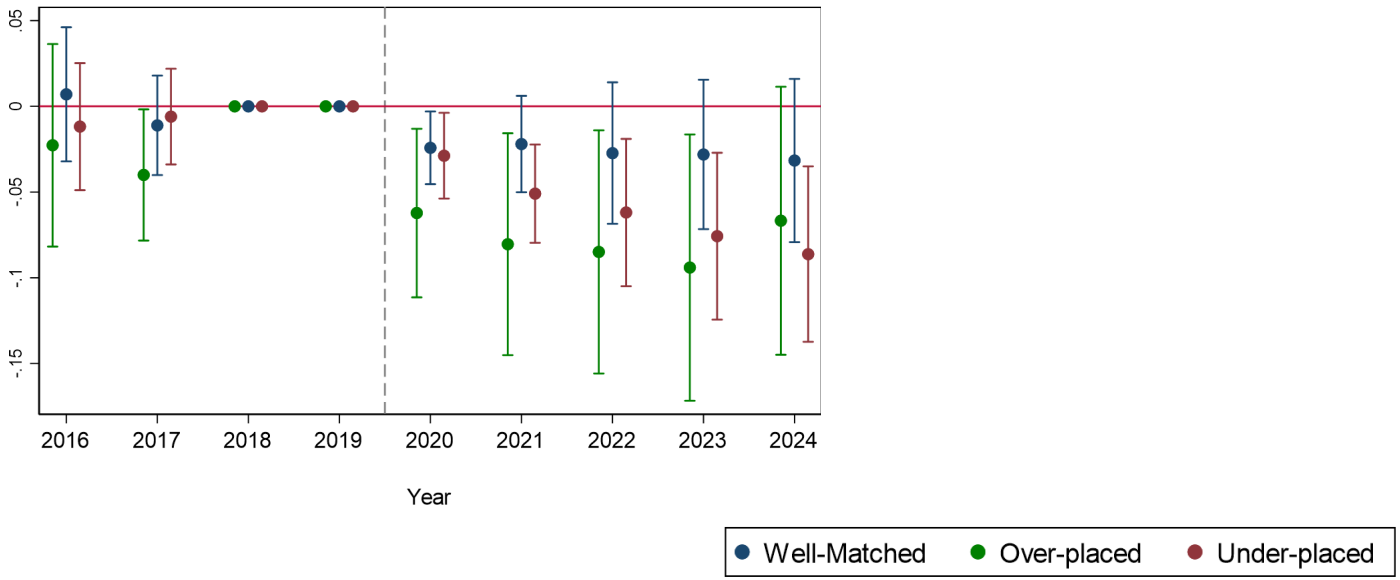
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- If WFH relaxes frictions: mobility where there is scope for match improvement

Job-to-Job Transitions – Heterogeneity Results

- Higher mobility concentrated among mismatched workers, insignificant among well-matched

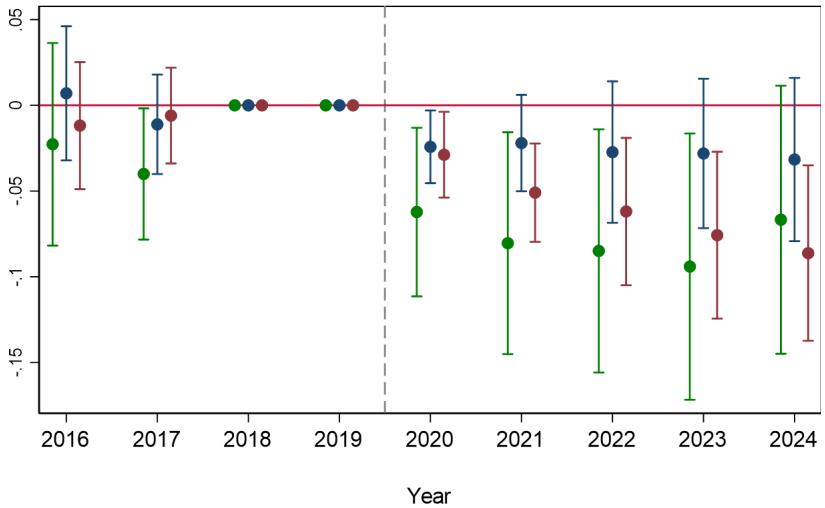
A. Retention



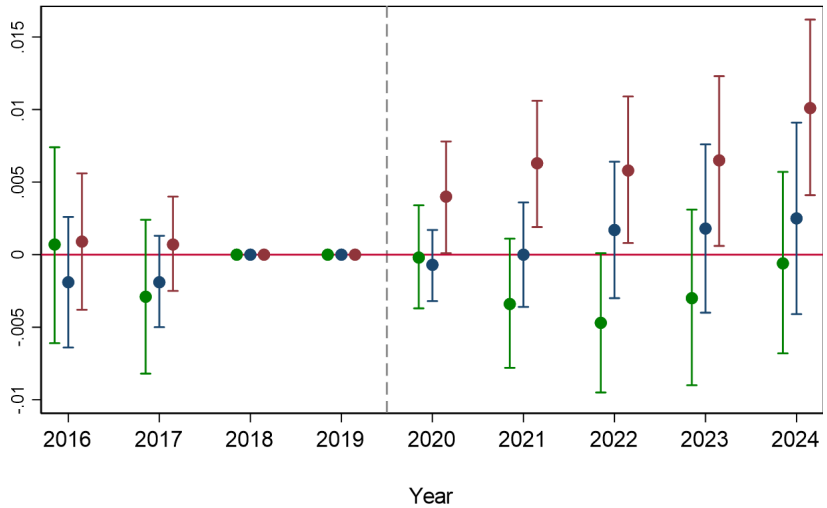
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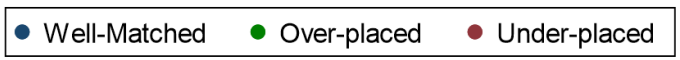
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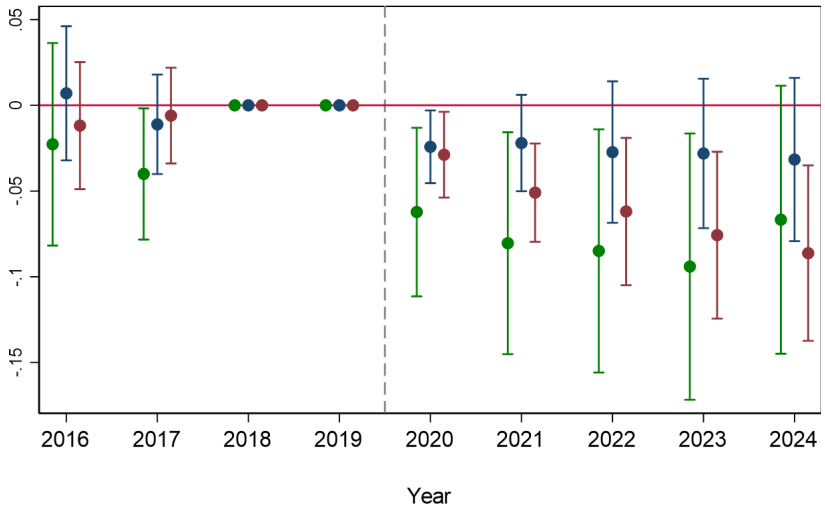




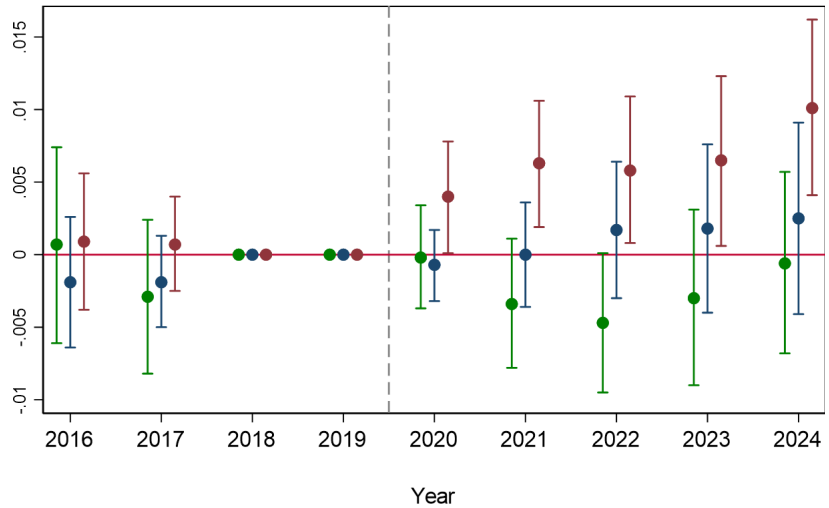
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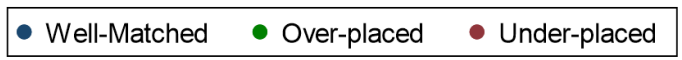
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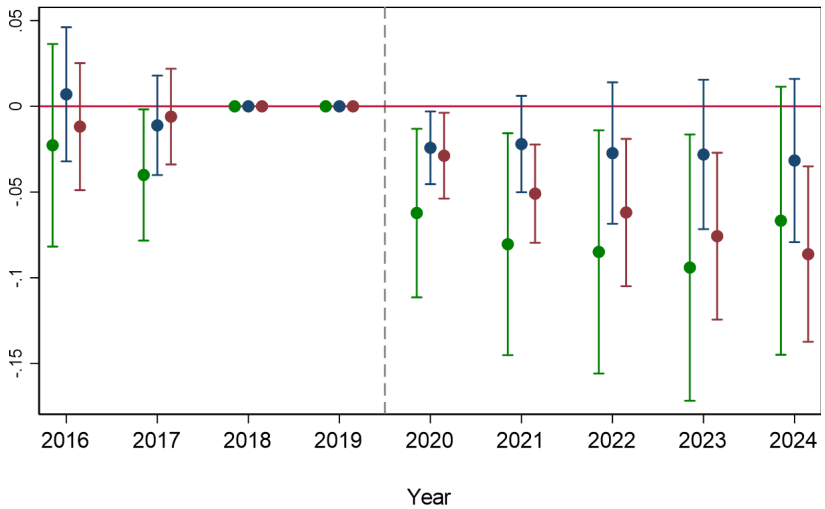




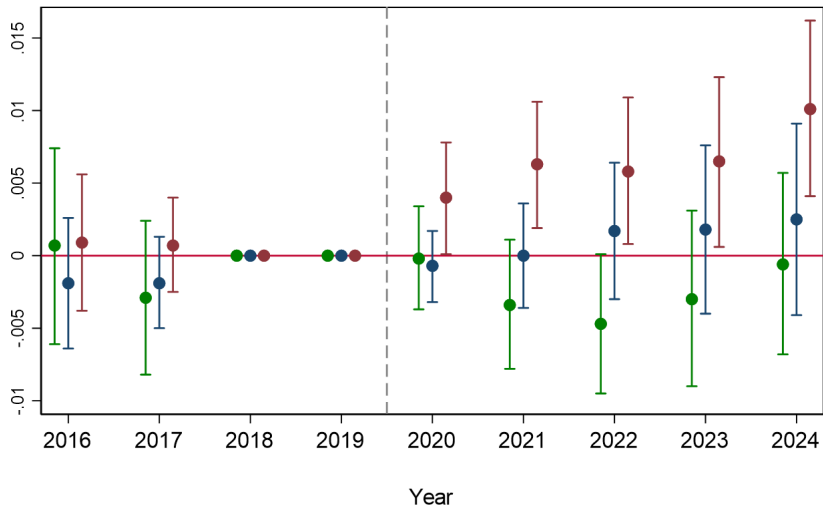
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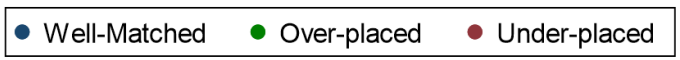
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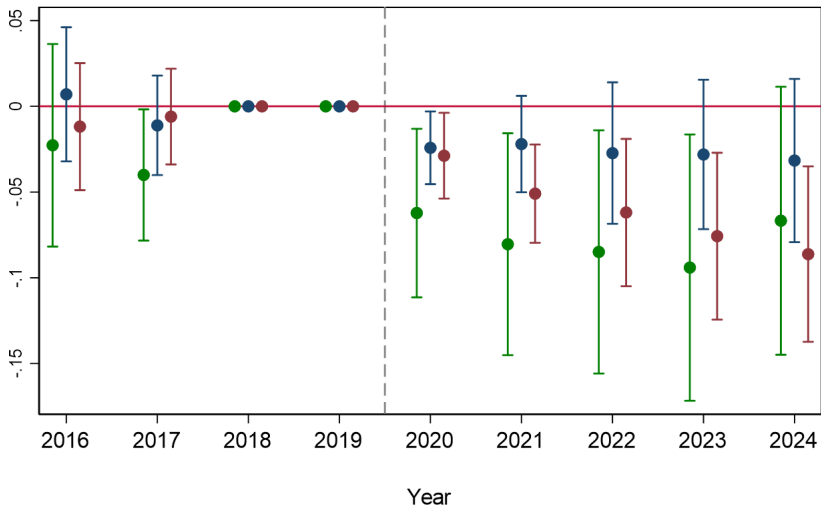




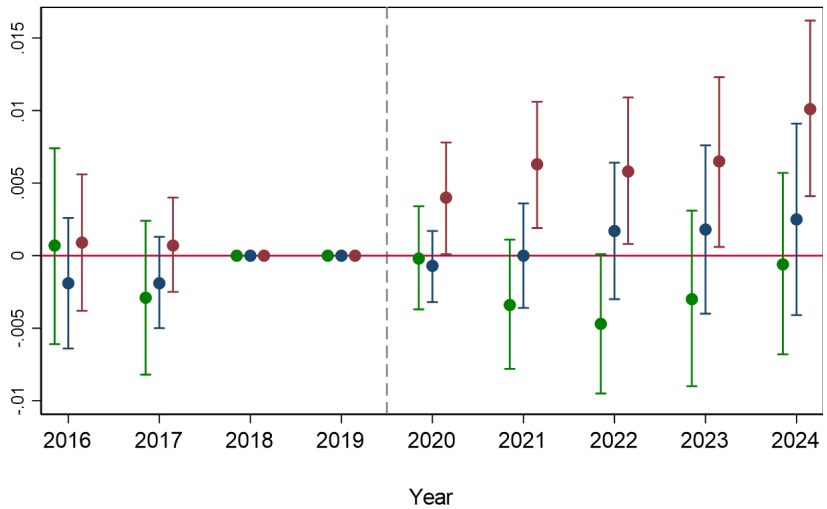
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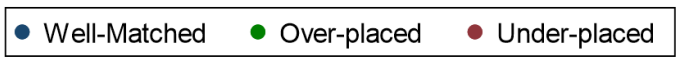
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WFH as a Shock to Search Frictions

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  - Well-matched stay: no gains from mobility

▸ Go to Conceptual Framework

Conclusion

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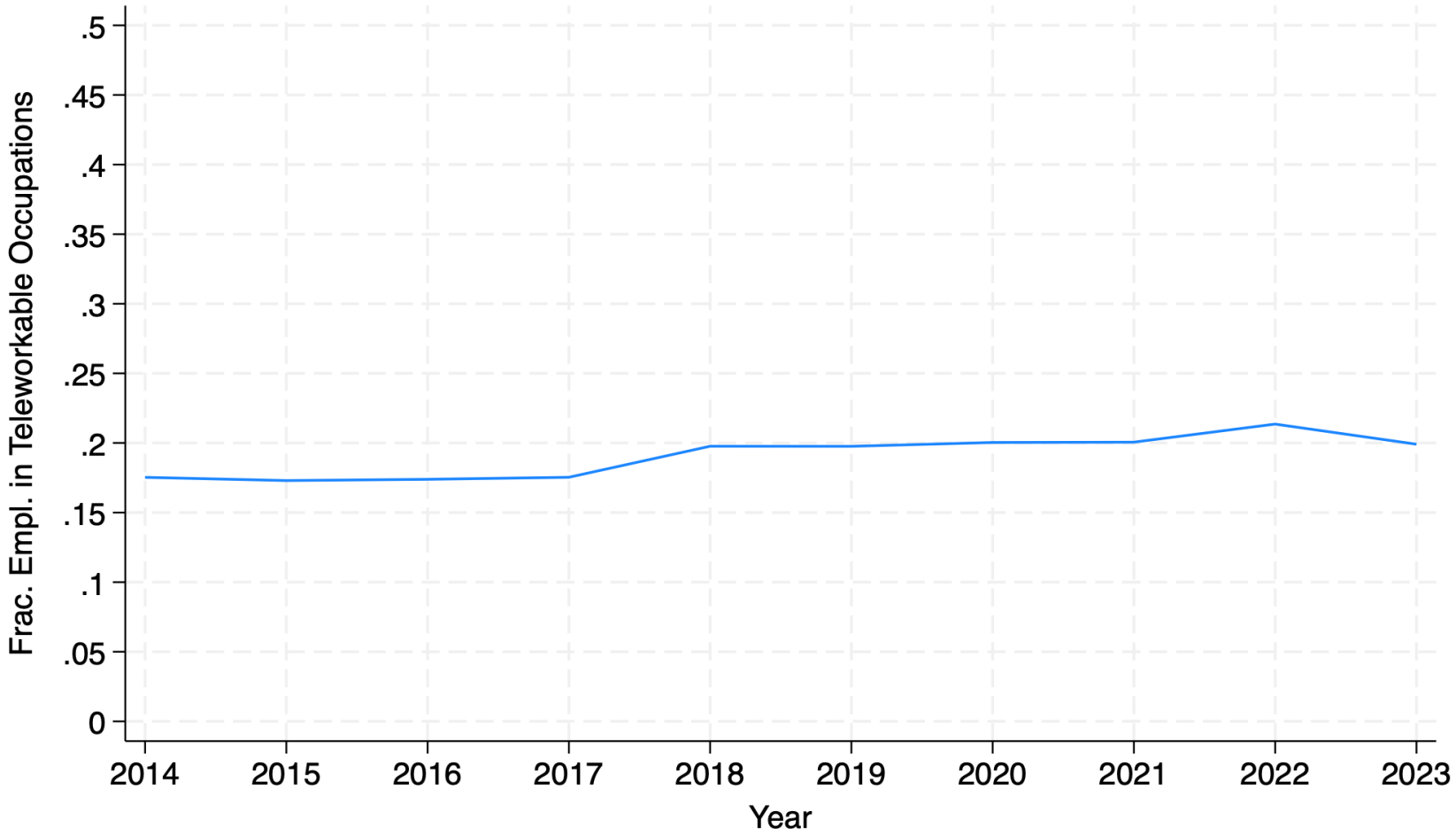
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  - Largely driven by hours
- Increased job mobility for workers in TW occupations
- WFH appears to facilitate assortative matching
  - Gains from mobility concentrated among high-skill workers

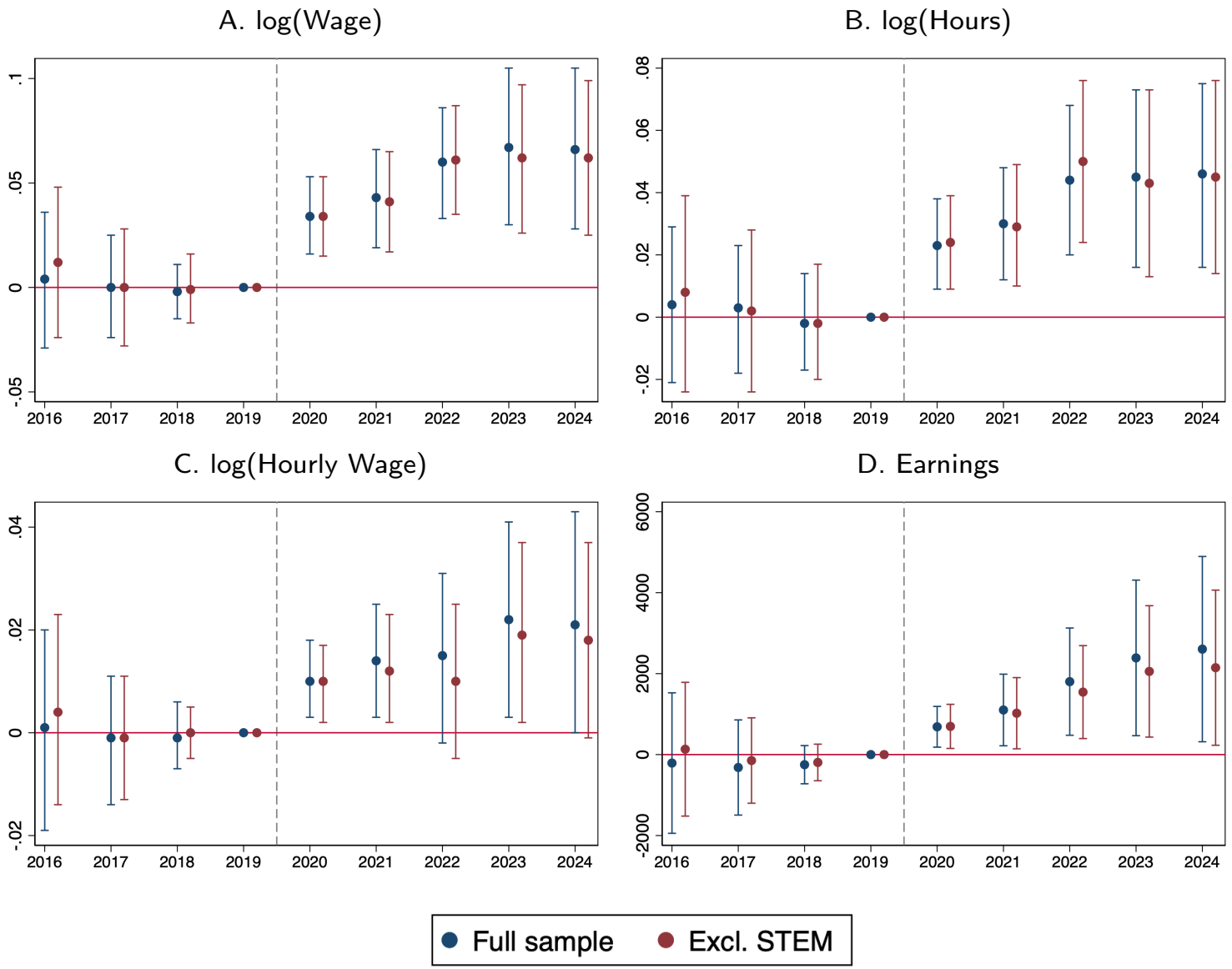
1. Trends in Employment

- No abrupt change in the demand for workers in TW occupations



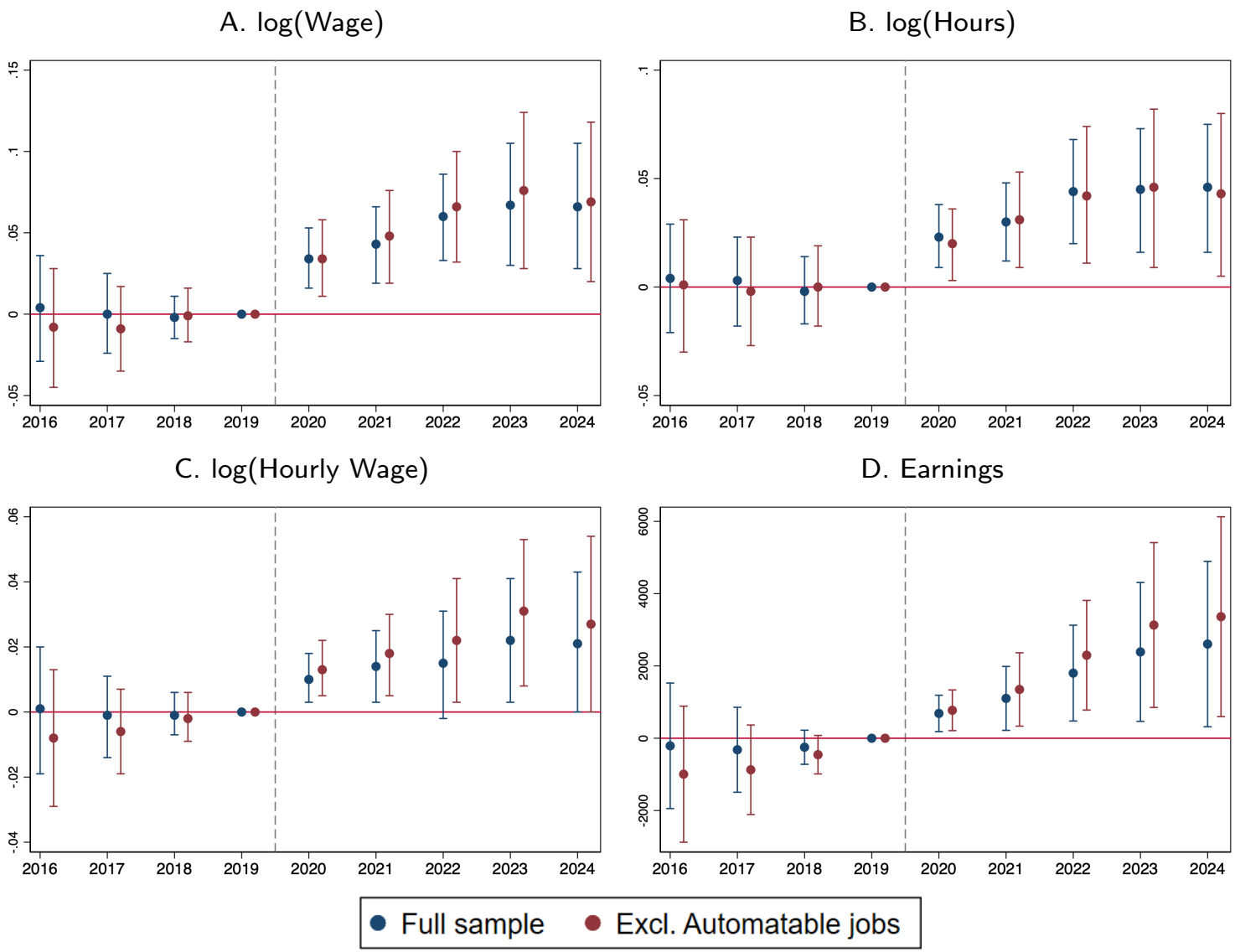
Return

2. Excluding STEM Graduates



Return

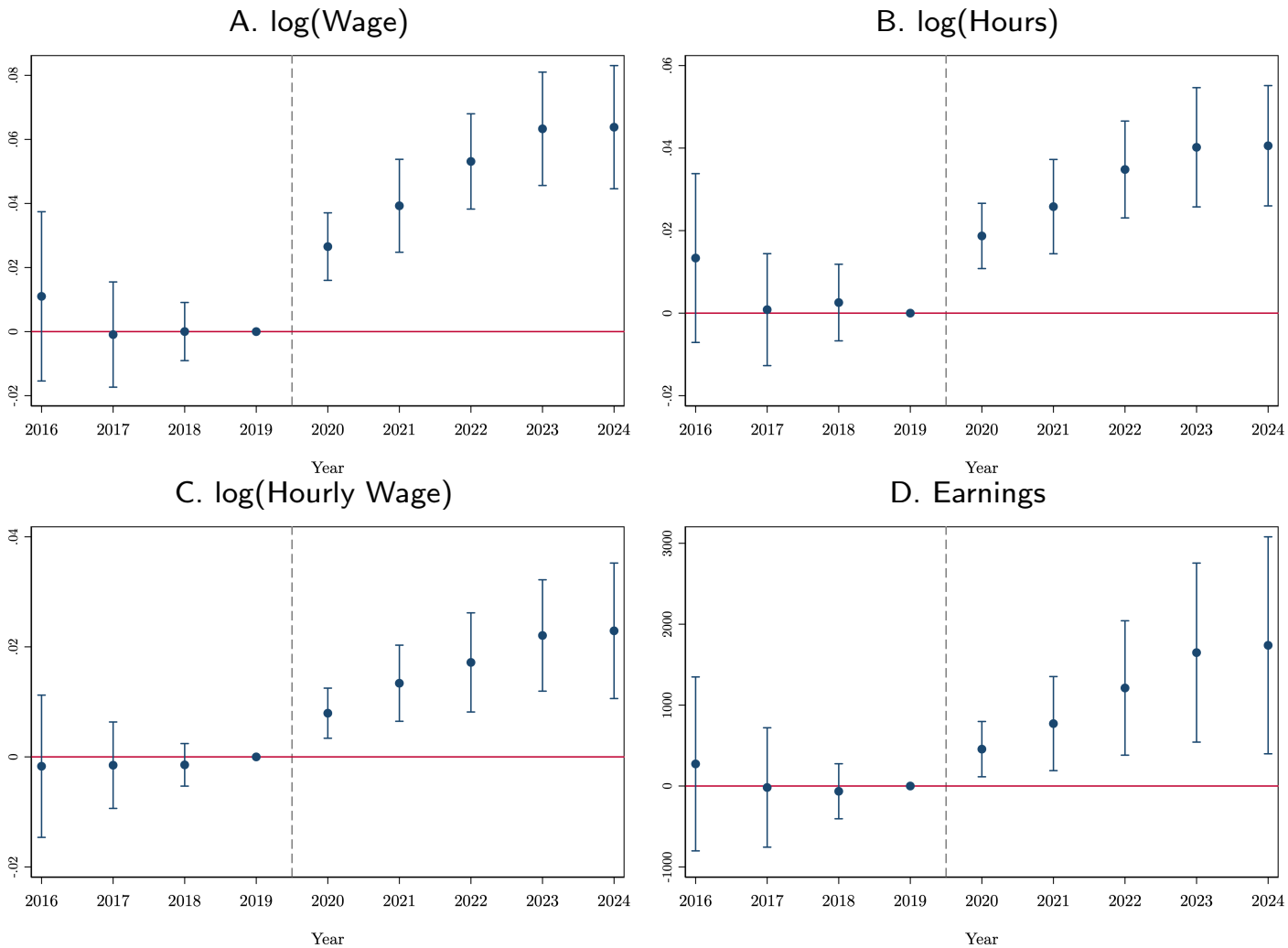
3. Excluding Occupation with Low Automation Risk



Return

Broad Teleworkability Definition

- Broad teleworkability definition: a job is teleworkable if the weighted average of the teleworkable tasks is above 0.5

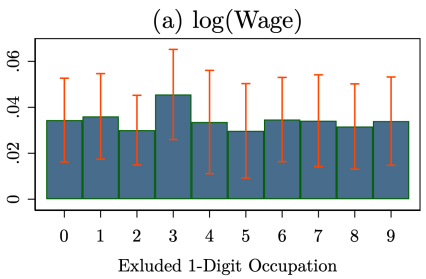


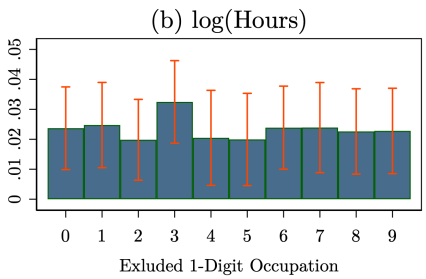
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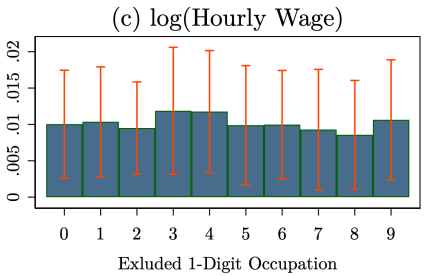
Excluding One Occupation at a Time

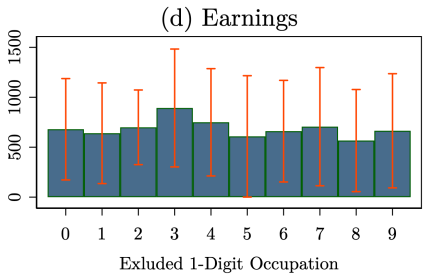
- Similar results when excluding one 1-digit occupation at a time and reestimating the baseline model

A. Effect on Impact (2020)

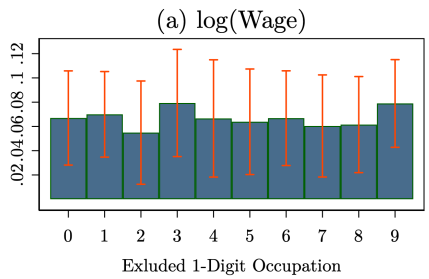


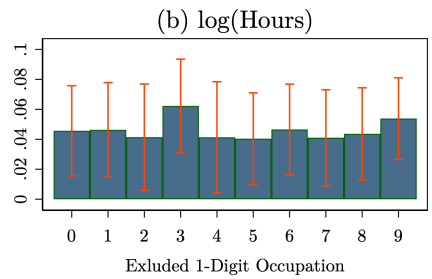


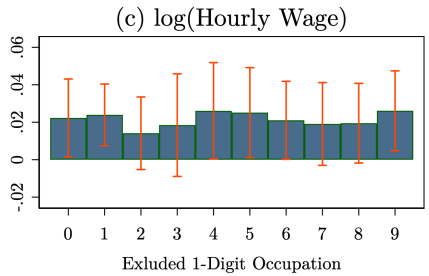


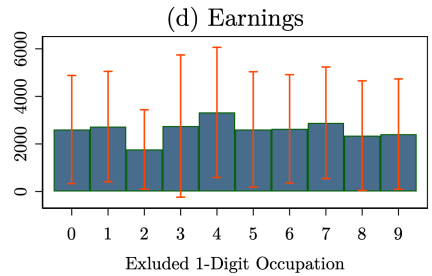


B. Long-Run Effect (2024)









Back

Conceptual Framework

- High- and low-ability workers match with high- and low-premium firms
- Complementarities in production imply assortative matching gains $\Pi > 0$
- Commuting costs sustain mismatched pairs
- Reassigning an under-placed and an over-placed worker generates net surplus:

$$\Delta V(d) = \Pi - 2c\kappa d,$$

where κ is commuting frequency, d is distance, and c is disutility from commuting

- **WFH shock:** Lower commuting frequency expands the distance over which reallocation is profitable:

$$d^*(\kappa) = \frac{\Pi}{2c\kappa} \qquad \Rightarrow \qquad \kappa \downarrow \Longrightarrow \; d^* \uparrow$$

- Predictions:
  1. Job mobility rises among mismatched workers
  2. Under-placed workers move to higher-premium firms; over-placed workers move to lower-premium firms

Back