Randomization as an Incentive Device

Evidence from Public Procurement of Immigrant Integration Services

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Two seemingly separate challenges

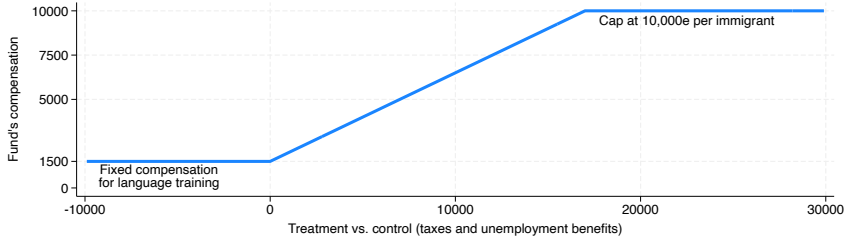
- How to design efficient contracts in public procurement?
  - governments routinely buy services and infrastructure from private providers
    - 13% of GDP in OECD countries, 19% in Finland, in 2021
  - challenge: quality typically unverifiable, sometimes unobservable
    $\rightarrow$ contracts incentivize cost minimization at the expense of service quality
- How to identify causal relationships?
  - challenge: constructing plausible counterfactual often difficult
- Our argument: **these are essentially the same challenges**
  - quality = the effect of a service on something the government cares about

  $\rightarrow$ both can be solved with randomized research designs

This paper

- We study a new service ("Integration SIB") for immigrant job seekers
  - job-specific language training and job placements contracted to a private provider
  - private provider covers upfront costs of the program, compensated based on performance

- Innovation: **contracted performance based on a randomized research design**
  - target: cumulative unemployment benefits and income taxes over a 3-year follow-up
  - randomized assignment to the private provider ($N = 3,662$)
  - performance measured relative to the control group (Public Employment Services, PES)



Preview of Findings

- The private fund outperformed the public employment services
  - earnings 4,500 euros or 15% higher in the 3-year follow-up period
  - work in jobs with higher expected earnings and skill requirements
  - net costs to public finances decreased by 2700 euros or 12%
- Positive effects extend on non-contracted outcomes
  - positive earnings effects persist after the three-year follow-up
  - reductions in transfers from other government welfare programs
- Effects larger for college educated immigrants
  - PES provides more limited job search assistance to high-skilled immigrants

Contribution 1: Public procurement

- Earlier work
  - unverifiable service quality limits the benefits of outsourcing (Hart, Shleifer, Vishny 1997), imperfect measures may create harmful multitasking (Holmström and Millgrom 1991), benchmarking ([add key references])
  - empirical results vary widely by context (Andersson et al. 2019; Fabre and Straub 2023); outsourcing active labor market policies (ALMP) has little effect (Bennmarker et al. 2013, Krug and Stephan 2013, Behaghel et al. 2014, Rehwald et al. 2017, Crépon 2018)

- Our contribution
  - **first to study incorporating randomization into a contract** (extending verifiability)
  - use non-contracted outcomes to examine unintended consequences (multitasking)
  - first to show that outsourcing can improve quality in ALPM

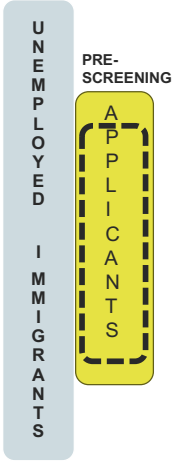
Contribution 2: Immigrant integration programs

- Earlier work
  - integration programs help immigrants (Åslund and Johansson 2011, Joona and Nekby 2012; Sarvimäki and Hämäläinen 2016, Foged et al., 2024; Arendt 2022; Bratu et al. 2023, Humlum et al., 2023, Dahlberg et al. 2024) and their children (Foged et al., 2023, Pesola and Sarvimäki, 2024)
  - all studied interventions focused on newly arrived immigrants, largely refugees
- Our contribution
  - first evidence on an intervention focused on high-skilled immigrants with longer residency
  - exceptionally clean identification and large number of participants

Outline

1. Treatment
2. Empirical Approach
3. Results
4. Mechanisms
5. Conclusions

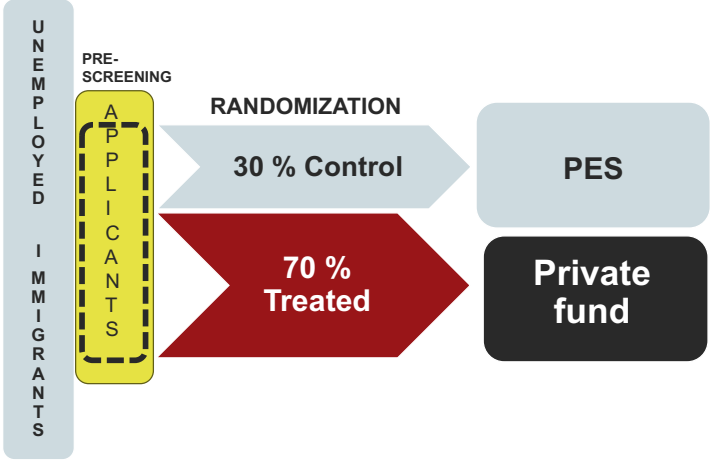
Selection into the Integration SIB Program



1. Immigrants can apply to Integration SIB online via service provider's website (most likely learn about program from PES caseworkers)

2. Service provider briefly interviews candidates

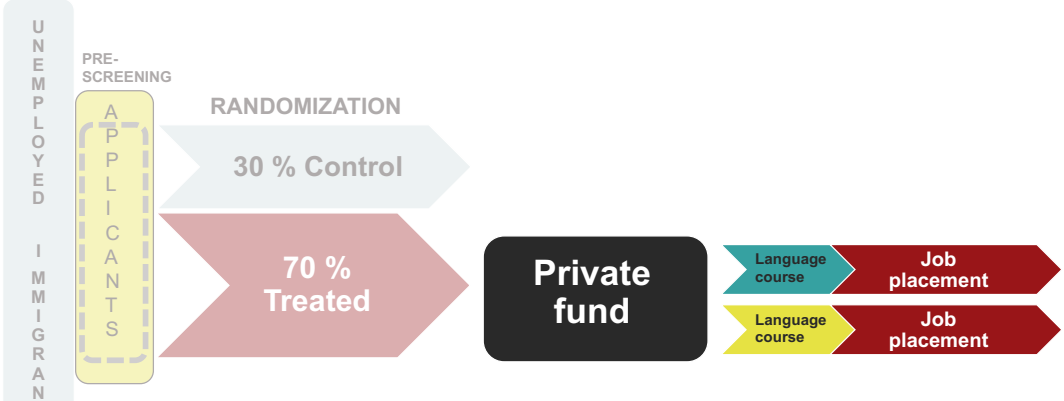
Selection into the Integration SIB Program



3. Service provider sends list of applicants to PES who checks eligibility (unemployed immigrants aged 17-63 who can read and write)

4. PES randomizes 70% to treatment, 30 % to control (randomization weekly by regional PES office)

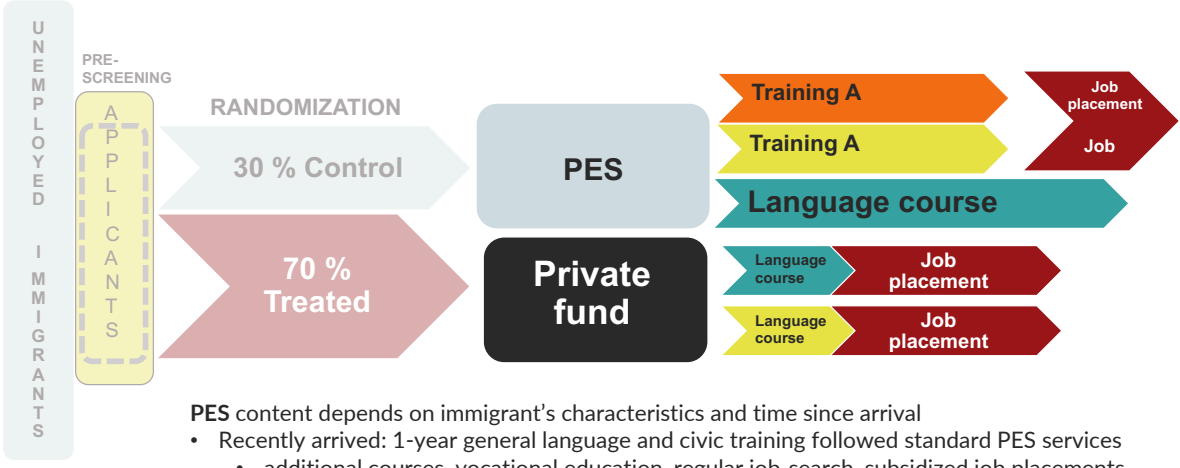
Integration SIB vs Business-as-usual model



Private fund (Integration SIB)

- 7-week language training tailored to the target job
- Tailored courses for college-educated immigrants
- Placement to real jobs in industries with labor shortages and low language requirements
  (logistics and warehousing; hotels, restaurants, catering; building and construction; cleaning, recycling; manufacturing)

Integration SIB vs Business-as-usual model

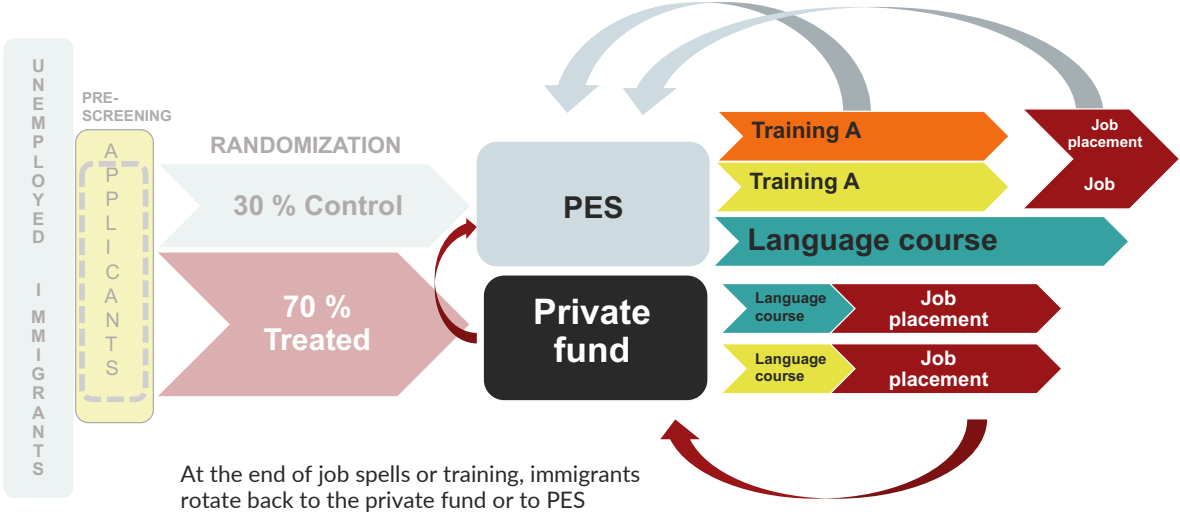


PES content depends on immigrant's characteristics and time since arrival

- Recently arrived: 1-year general language and civic training followed standard PES services
  - additional courses, vocational education, regular job-search, subsidized job placements...
- Others: standard PES services

Training procured from private providers that are paid by person-days

Integration SIB vs Business-as-usual model



At the end of job spells or training, immigrants rotate back to the private fund or to PES

Compensation based on treatment vs. control during the **three years following randomization**

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Data

We link individuals who applied to Integration-SIB between 2017-2019 ($N = 3,662$) to

- Income data
  - annual labor earnings, unemployment and other social benefits
  - monthly earnings 2019-
- Employment
  - job contracts
- Public Employment Service data
  - ALMPs, including language training and integration training days
- Education
  - general secondary or higher education

Empirical approach

- Identification: randomized design Balance Table
- Estimation

$$Y_{it} = \alpha + \beta_t \text{Treated}_i + \theta_{j(i)} + X_i\gamma + \varepsilon_{it} \quad (1)$$

  where
  - Y_{it} is the outcome of interest observed at time t
  - $\theta_{j(i)}$ is a fixed-effect for randomization event
  - X_i: age, gender and an indicator for having an integration plan (unnecessary for identification, but increases precision)
- Pre-analysis plan (AEARCTR-0012519)
  - primary outcome: annual labor earnings
    short-run: years 1–3, medium-run: years 4–5, winsorized at the 99th percentile
  - secondary outcomes: employment, taxes, benefits, ALPM training, language skills, enrollment in formal education, degrees
  - heterogeneity: time since arrival (more vs less than three years)

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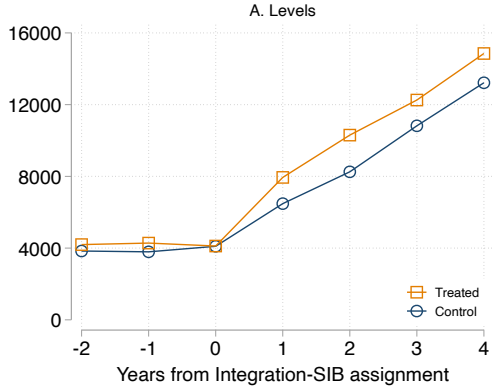
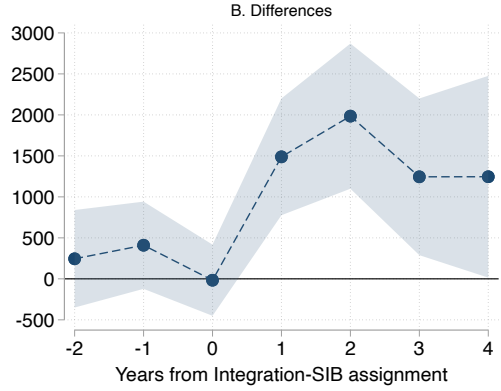
Main result: Effect on earnings





Pre-registered primary outcome: **cumulative earnings increased 4,549 euros (SE: 1,177) or 15 percent** during the first three years after randomization.

employment

Treatment effect heterogeneity and job quality

	Annual earnings
A: Average Treatment Effects	
Treated	1,548***
	(385)
B: Treatment Effects by Job Seeker's Skill	
Treated	729*
	(412)
Treated × College degree	2,608***
	(917)
Control mean	9,732
Non-college	8,812
College	12,088
Observations	10,667

Treatment effect heterogeneity and job quality

		Occupation quality		Firm quality	
	Annual earnings	Expected earnings	Share with college deg.	Co-worker av. earnings	log(Sales per worker)
A: Average Treatment Effects					
Treated	1,548***	1,229**	0.028**	1,511***	0.088**
	(385)	(423)	(0.009)	(580)	(0.038)
B: Treatment Effects by Job Seeker's Skill					
Treated	729*				
	(412)				
Treated × College degree	2,608***				
	(917)				
Control mean	9,732	29,304	0.159	22,506	11.3
Non-college	8,812				
College	12,088				
Observations	10,667	4,071	4,071	6,409	5,256

Treatment effect heterogeneity and job quality

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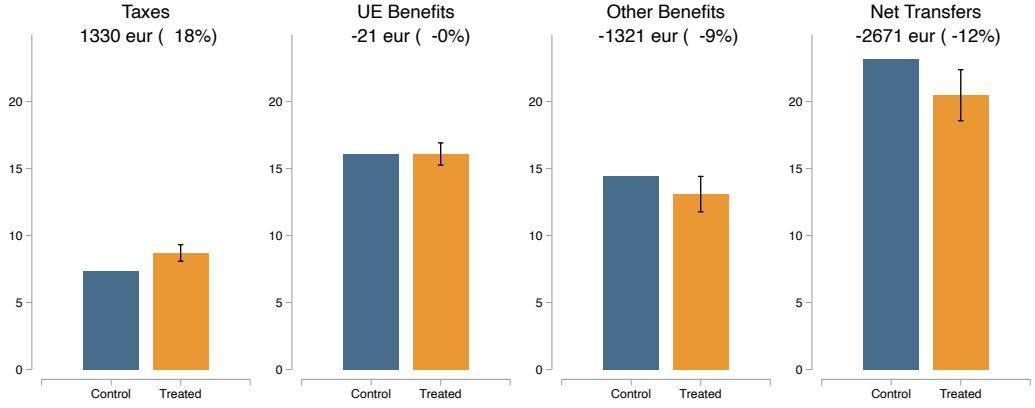
	(385)	(423)	(0.009)	(580)	(0.038)
B: Treatment Effects by Job Seeker's Skill					
Treated	729*	150	0.005	69	0.057
	(412)	(380)	(0.008)	(637)	(0.047)
Treated ×	2,608***	2,726**	0.054*	4,857***	0.120
College degree	(917)	(1,264)	(0.030)	(1,430)	(0.089)
Control mean	9,732	29,304	0.159	22,506	11.3
Non-college	8,812	27,084	0.098	20,220	11.3
College	12,088	34,742	0.308	28,314	11.4
Observations	10,667	4,071	4,071	6,409	5,256

Effect on Taxes and Transfers



On average, **the treatment group created a 2,671 euros or 12 percent lower cumulative net burden on public finances** over the three-year follow-up period than the control group. The short-term gain for the government was €6,8m.

More Results

- More treatment effect heterogeneity
  - effects on earnings larger for high-skilled and younger participants; no differences by gender or time since immigration link
- The effects extend also to non-contracted outcomes
  - improvement in non-contracted benefits (previous slide) and earnings after the 3yr follow-up link
  - → no evidence on multitasking (at least along these dimensions)
- No evidence on effects being driven by displacement
  - effects sizes similar in labor markets with more vs less participants link

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What did the private fund do differently?

- Qualitative evidence on services offered by the private fund
  - Document analysis + 35 in-depth interviews
    (PES employees, training providers, investors, fund personel, government officials)
  - take-away: the private fund invested heavily on match-making between immigrants and employers
- Counterfactual services offered by the PES
  - in-class language and general training, subsidized employment or education link
  - job search assistance via vacancy referrals
    - high-skilled immigrants get less assistance link and to jobs for which they are overqualified link
- Interpretation
  - private fund had stronger incentives to help and seems to have been more effective in helping high-skilled immigrants that receive less jobs search support from PES

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Conclusions

- Our big idea: **unverifiability is essentially an identification problem**
  - unverifiable quality prevents making efficient outsourcing contracts
  - quality = the effect of a service on something one cares about

→ Randomization protocols can extend the scope of efficient contracts

- The Integration SIB experiment is apparently the first attempt to implement this idea
  - proof of concept: such contracts can actually be written (and legally approved)
  - promising results: 15% increase in participants' earnings, 12% reduction in net transfers
  - similar approaches likely feasible also in other contexts

- Such contracts can also create information externalities
  - allows governments and other service providers to learn what works and for whom
  - here: investing in match-making and highly educated immigrants can have large returns

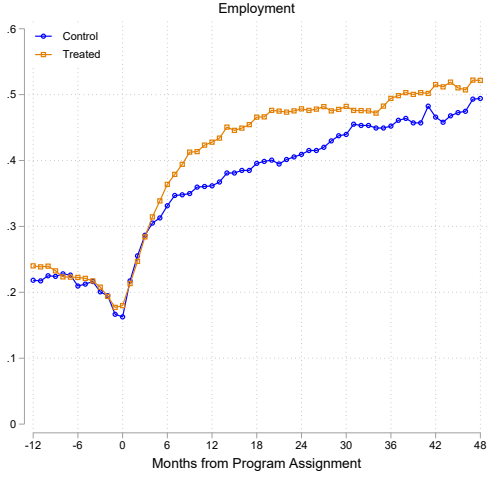
Appendix

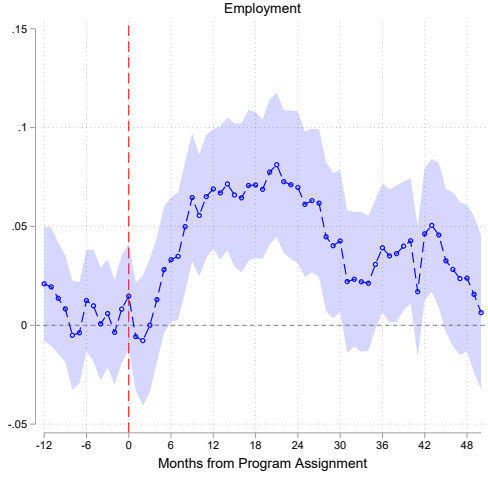
Descriptives: test for balance prior to program assignment

back

	Control (1)	Treated (2)	β^{SIB} (3)	SE (4)
Assignment Year	2018.3	2018.3	-0.00	(0.00)
Age	38.50	38.85	0.43	(0.35)
Woman	0.41	0.42	0.00	(0.02)
Married	0.56	0.59	0.02	(0.02)
Single	0.25	0.22	-0.03**	(0.01)
Divorced	0.17	0.18	0.01	(0.01)
Years in Country	6.87	6.84	0.08	(0.19)
Days Unemployed	214	232	18*	(11)
Earnings (t-1)	3792	4279	446	(297)
Social Benefits (t-1)	10394	9990	-274	(293)
Unemployment Benefits (t-1)	5749	5639	-46	(166)
Net Transfers (t-1)	-8759	-8286	346	(300)
Work Days (t-1)	74.82	82.54	7.43*	(4.49)
Enrolled in Education Program (t-1)	0.18	0.17	-0.01	(0.01)
Enrolled in Secondary Program (t-1)	0.15	0.14	-0.01	(0.01)
N	1026	2636		

Employment back





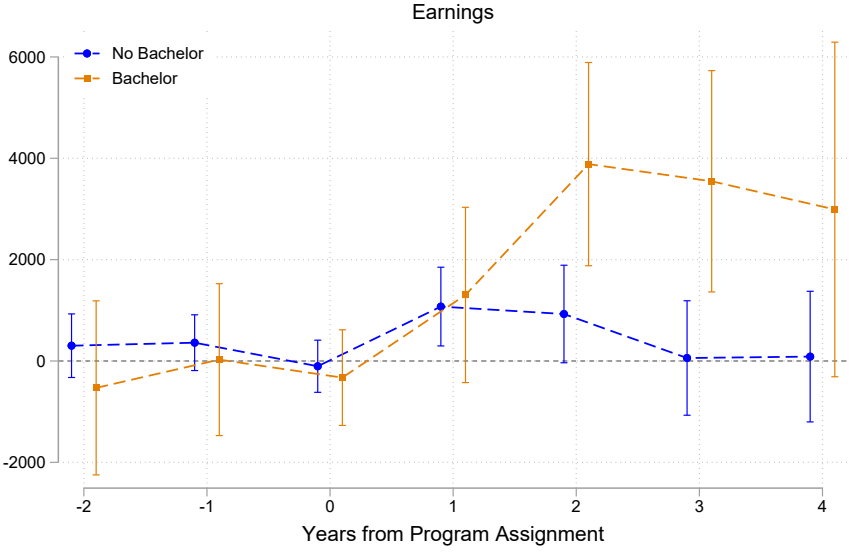
Heterogeneity in Earnings Effects back

	(1)	(2)	(3)	(4)
Panel A: Earnings				
Treated	4367***	5036***	4694***	2243*
	(1405)	(1541)	(1168)	(1239)
Treated X Recent	1173			
	(3246)			
Treated X Woman		-772		
		(2386)		
Treated X Age			-226*	
			(136)	
Treated X High Edu				7893***
				(2709)
Mean	28936	29181	29181	29177
N	3426	3645	3645	3550
Cluster FE	✓	✓	✓	✓

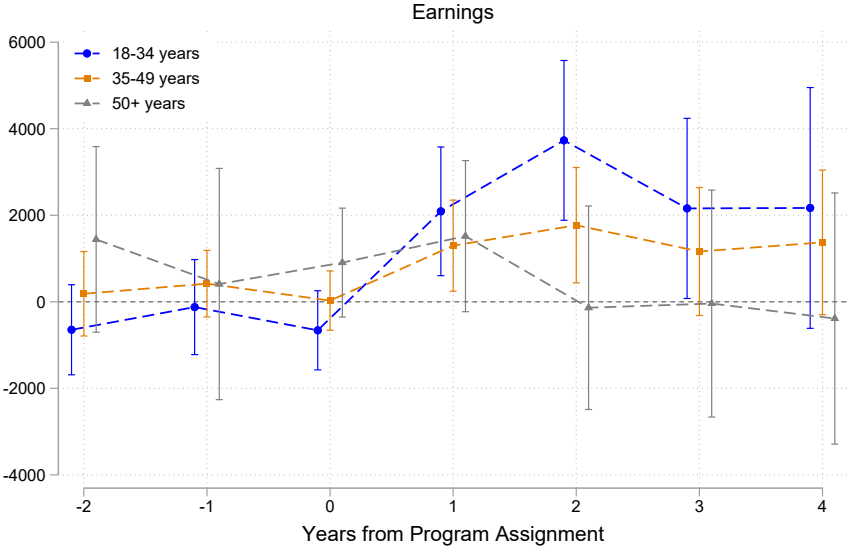
Heterogeneity in Employment Effects back

	(1)	(2)	(3)	(4)
Panel B: Employment (days)				
Treated	56***	52***	57***	48***
	(15)	(17)	(12)	(13)
Treated X Recent	-7			
	(31)			
Treated X Woman		13		
		(27)		
Treated X Age			-2	
			(1)	
Treated X High Edu				21
				(27)
Mean	386	393	393	391
N	3426	3645	3645	3550
Cluster FE	✓	✓	✓	✓

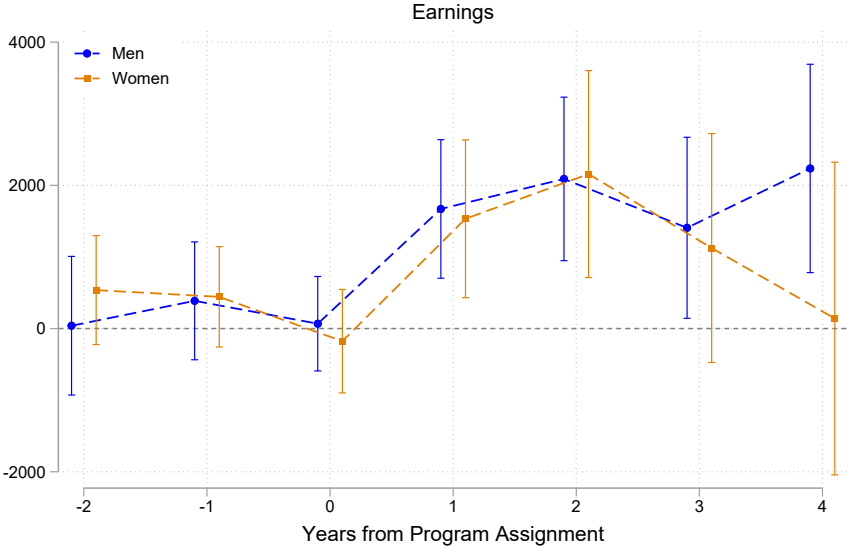
High-Skilled Participants Have the Highest Returns back



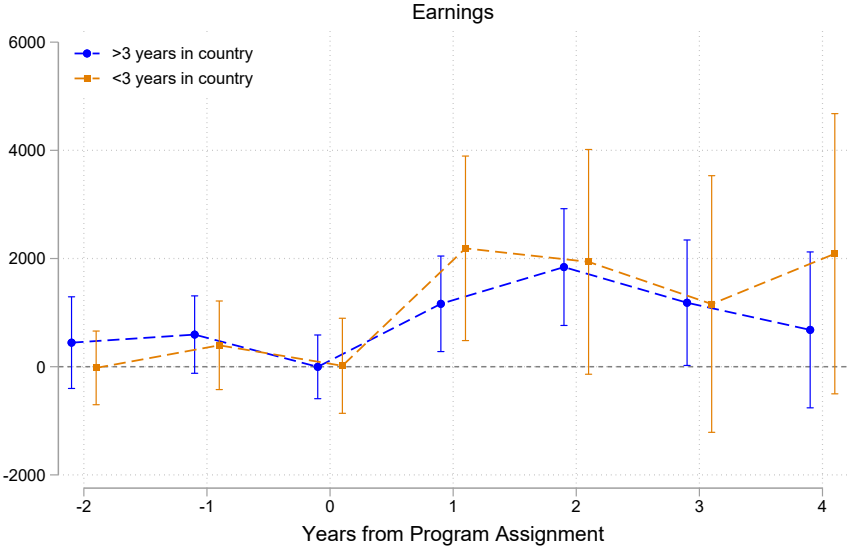
Returns Decrease with Age back



Gender Does not Predict Earnings Effects back

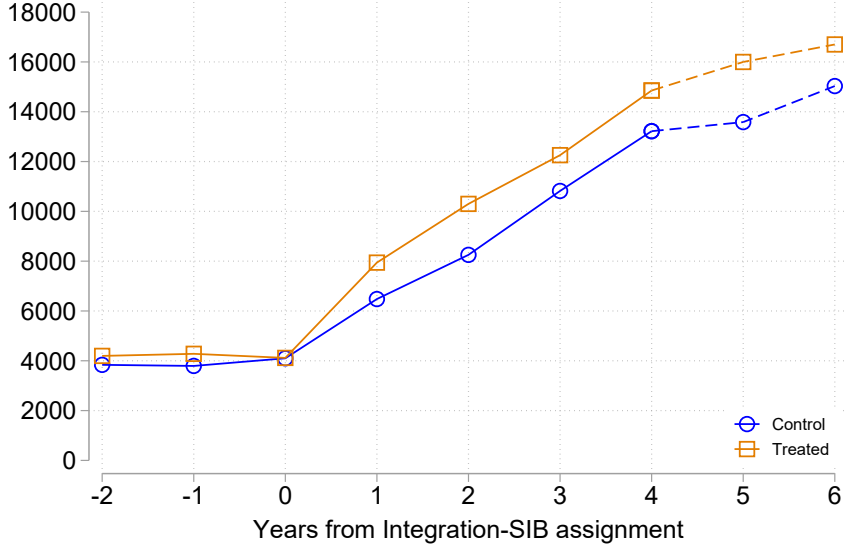


Time in Country Does not Predict Earnings Effects back



No sign of reversal in earnings over time

back



Displacement Effects back

- ALMPs could plausibly have displacement effects that affect results interpretation
- Limited scale (3,600+ participants), unlikely to be only displacements effects
- To evaluate, we leverage variation in program roll-out across labor markets

$$Y_{it} = \gamma_0 + \gamma_1 \text{Treated}_i * \text{Intensity}_{k(i)} + \gamma_2 \text{Treated}_i \theta_{j(i)} + X_i\gamma + \varepsilon_{it} \quad (2)$$

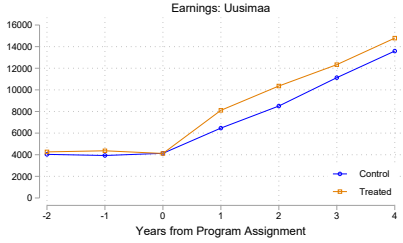
  where $\text{Intensity}_{k(i)}$ is the share of LF in region k participating in the program
- $\gamma_1 > 0$ would be consistent with displacement effects, assuming intensity is uncorrelated with other factors that affect the effectiveness of program

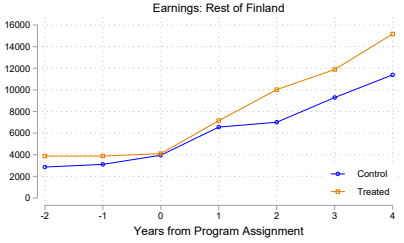
Roll-out by Labor Markets back

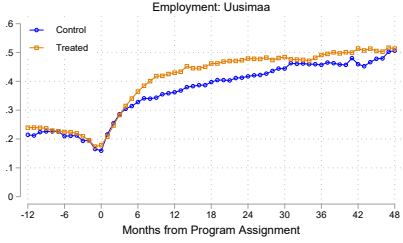
Region	(1) Labor Force	(2) Immigrants	(3) Immigrant Share	(4) Participants	(5) Participants per 1000	(6) Particpants per 1000 Immigrants
Uusimaa	843571	64704	0.08	3034	3.597	46.890
Varsinais-Suomi	227000	9362	0.04	253	1.115	27.024
Pohjois-Karjala	74397	1606	0.02	73	0.981	45.455
Pirkanmaa	245371	7058	0.03	187	0.762	26.495
Pohjois-Pohjanmaa	186439	3388	0.02	64	0.343	18.890
Pohjanmaa	115360	4969	0.04	23	0.199	4.629
Kaakkois-Suomi	136679	5509	0.04	17	0.124	3.086
Keski-Suomi	126637	2525	0.02	11	0.087	4.356
Satakunta	101175	2677	0.03	0	0.000	0.000
Häme	178050	5365	0.03	0	0.000	0.000
Etelä-Savo	61888	1293	0.02	0	0.000	0.000
Pohjois-Savo	114775	2379	0.02	0	0.000	0.000
Etelä-Pohjanmaa	89165	1770	0.02	0	0.000	0.000
Kainuu	33192	595	0.02	0	0.000	0.000
Lappi	82528	1698	0.02	0	0.000	0.000
Ahvenanmaa	15094	1711	0.11	0	0.000	0.000

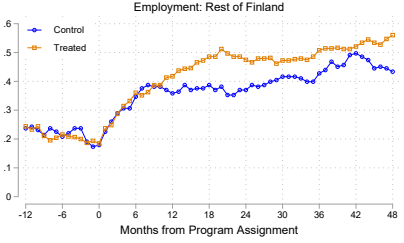
Lack of Displacement: Weakly Decreasing in Treatment Intensity

back







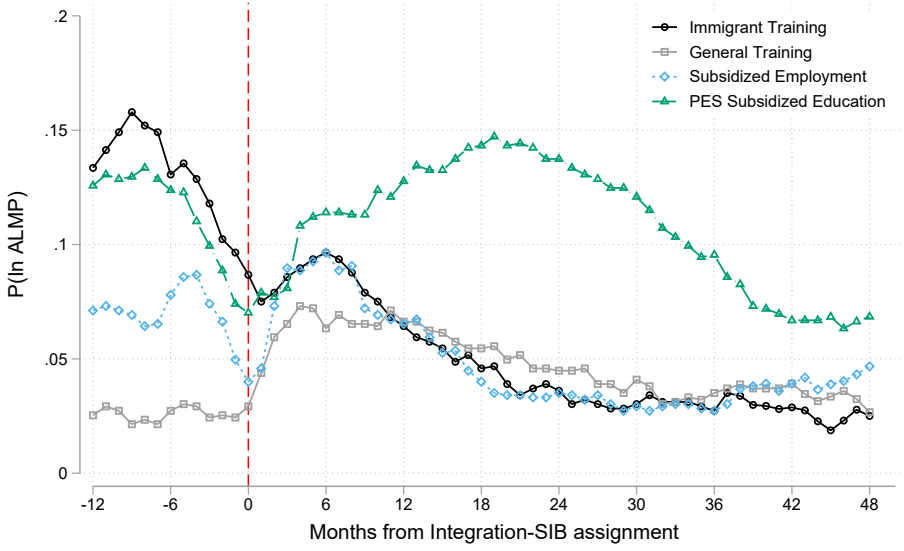


Lack of Displacement: Weakly Decreasing in Treatment Intensity

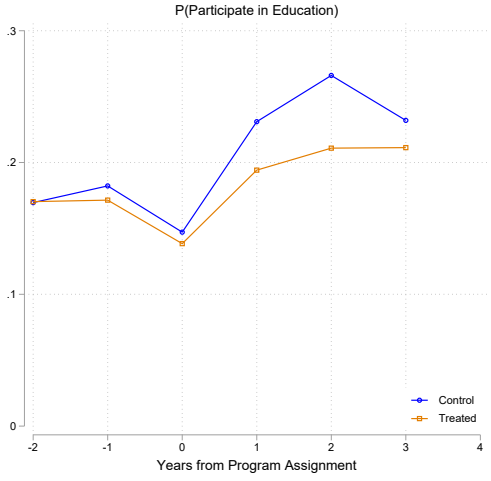
back

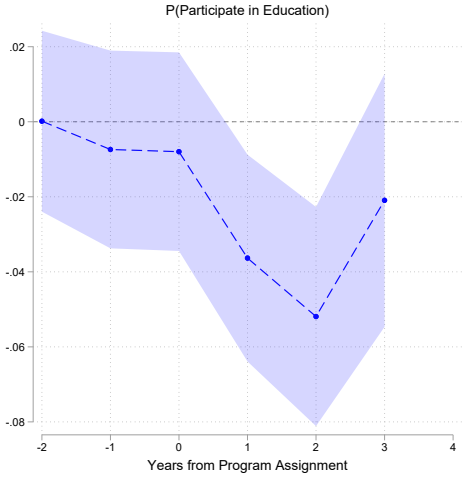
			By Region	
	(1) Pooled	(2) Pooled	(3) Uusimaa	(4) Rest-of-Finland
Panel A: Earnings				
Treated	6489.3**	5355.0**	4615.2***	5355.0**
	(3089.3)	(2104.8)	(1321.3)	(2162.9)
Treated X Intensity	-559.6			
	(959.8)			
Treated X Uusimaa		-739.9		
		(2487.2)		
Outcome mean	29180	29193	29583	27286
N	3,645	3,640	3,022	618
Panel B: Months of Employment				
Treated	2.578*	2.437**	1.640***	2.437**
	(1.416)	(1.062)	(0.500)	(1.091)
Treated X Intensity	-0.276			
	(0.425)			
Treated X Uusimaa		-0.798		
		(1.174)		
Outcome mean	15.063	15.069	15.107	14.880
N	3,645	3,640	3,022	618

PES Services in the Control Group back

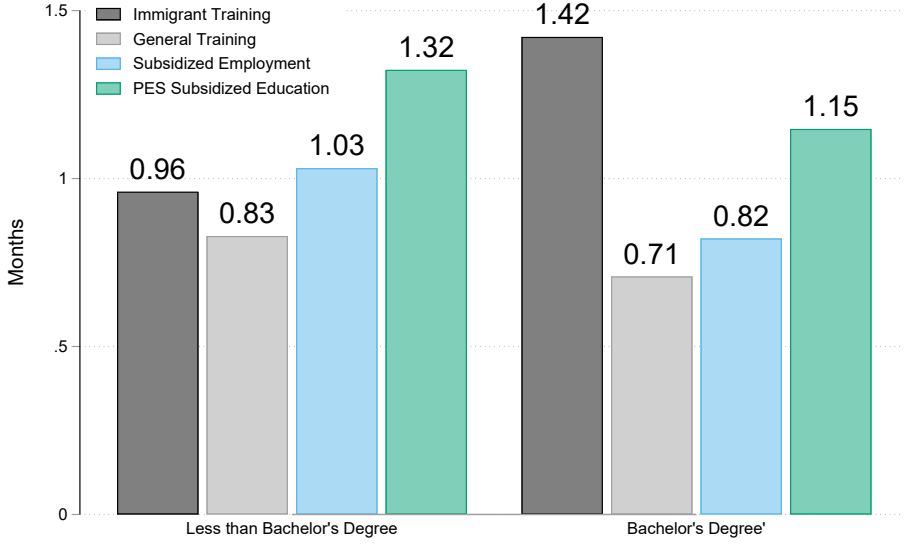


Participation in Secondary Education Drops back





PES Services in the Control Group back



High-Skilled Job Seekers Get Less Referrals in the Control Group

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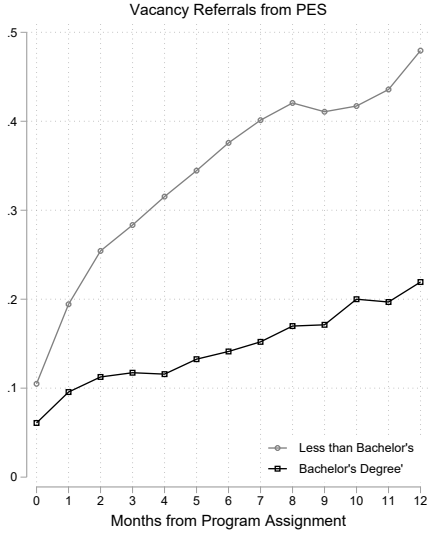

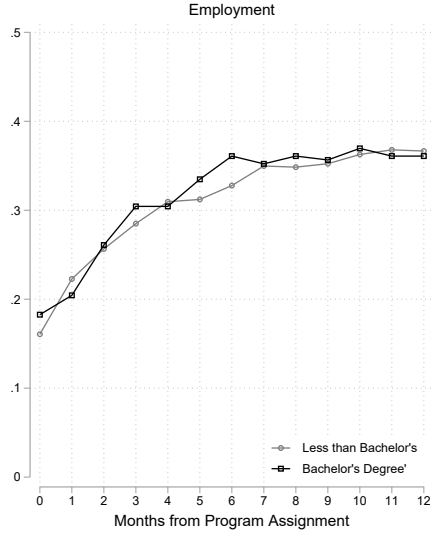

Occupational Placement vs Vacancy Referrals in First 6 Months

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	(1) Managers and Professionals	(2) Clerical and Service	(3) Manual and Elementary	(4) Total
Panel A: All participants				
Share of Jobs (Control)	0,14	0,27	0,58	1,00
Share of Referrals	0,05	0,30	0,65	1,00
Panel B: Low-skilled				
Share of jobs	0,08	0,28	0,64	1,00
Share of Referrals	0,03	0,31	0,66	1,00
Panel C: High-skilled				
Share of jobs	0,35	0,30	0,35	1,00
Share of Referrals	0,29	0,19	0,52	1,00

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