The Labor Market Effects of Restricting Refugees' Employment Opportunities

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Motivation

Why do immigrants, and refugees in particular, usually have **lower employment rates and wages** than observationally equivalent native citizens (e.g, Brell, Dustmann, and Preston, 2020)?

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One possible contributing factor is **policies** that restrict immigrants' **employment opportunities**.

- Restrictions on work permits, visa and priority rules, employment bans, etc., are common in various contexts.

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Such policies may reduce

- employment *in the short run* (i.e., while they apply).
- employment *in the long run* due to scarring effects.
- wages by reducing refugees' *outside options*.

What we do

We study how policies in Switzerland that regulate **whether, where, and for whom refugees are allowed to work** affect refugees' short- and long-run economic integration.

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- Priority for resident workers over refugees
- Regional and sectoral restrictions of the labor market

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Empirical approach exploits

- largely **exogenous allocation** of refugees to a canton
- rich **policy variation within cantons**
- a new **dataset of labor market policies 1999–2016 in Swiss cantons** combined with high-quality linked admin data

Main contributions

I. We **know little about the labor market effects of such policies** although similar or related policies are common in many countries. More details Related literature

- Six month average employment ban for refugees in Europe (Marbach, Hainmueller, and Hangartner, 2018)
- Dispersal and priority policies for refugees common in several European countries
- Sector/occupational restrictions also common for regular migrants (e.g. H-1B visas in US).

Our paper adds to the existing literature in terms of *scope* (novel policies and outcomes), *data quality*, and *research design*.

Main contributions

II. The setting arguably provides the **ideal experiment** to study the **elusive wage effects of outside options** (see Caldwell and Harmon, 2019).

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Outside options play a central role in models of labor markets.

- In models of imperfect competition, differences in outside options generate wage differentials for equally productive workers. Related literature

Sector and mobility restrictions generate shifts in outside options between initially identical workers that are

- observable
- large (restricting up to 2/3 of potential jobs)
- exogenous (unrelated to factors that shift productivity in the current job)

Preview of results

The restrictions help to explain why refugees have **worse labor market outcomes** than similar other workers:

- Restrictive policies strongly reduce refugees' employment and earnings *when they apply*, especially for refugees with high employability.
- Restrictive policies lower employment and earnings even *after they cease applying*.
- Sectoral and regional restrictions lower refugees' wages and *increase the wage gap* relative to natives, consistent with the outside option story.

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- Sectoral and regional restrictions lower refugees' wages and *increase the wage gap* relative to natives, consistent with the outside option story.

These costs appear to come **without measurable "benefits."**

- No effect on emigration.
- No evidence that labor market outcomes of competing workers improve.

Policies and data

Sketch of the asylum process in Switzerland

Asylum seekers (*N* permit) are assigned to a canton within 3 months after application.

- *Allocation is largely exogenous* (proportional to the cantonal population size). Balance test
- Most refugees cannot leave the canton for 5 years. Evidence

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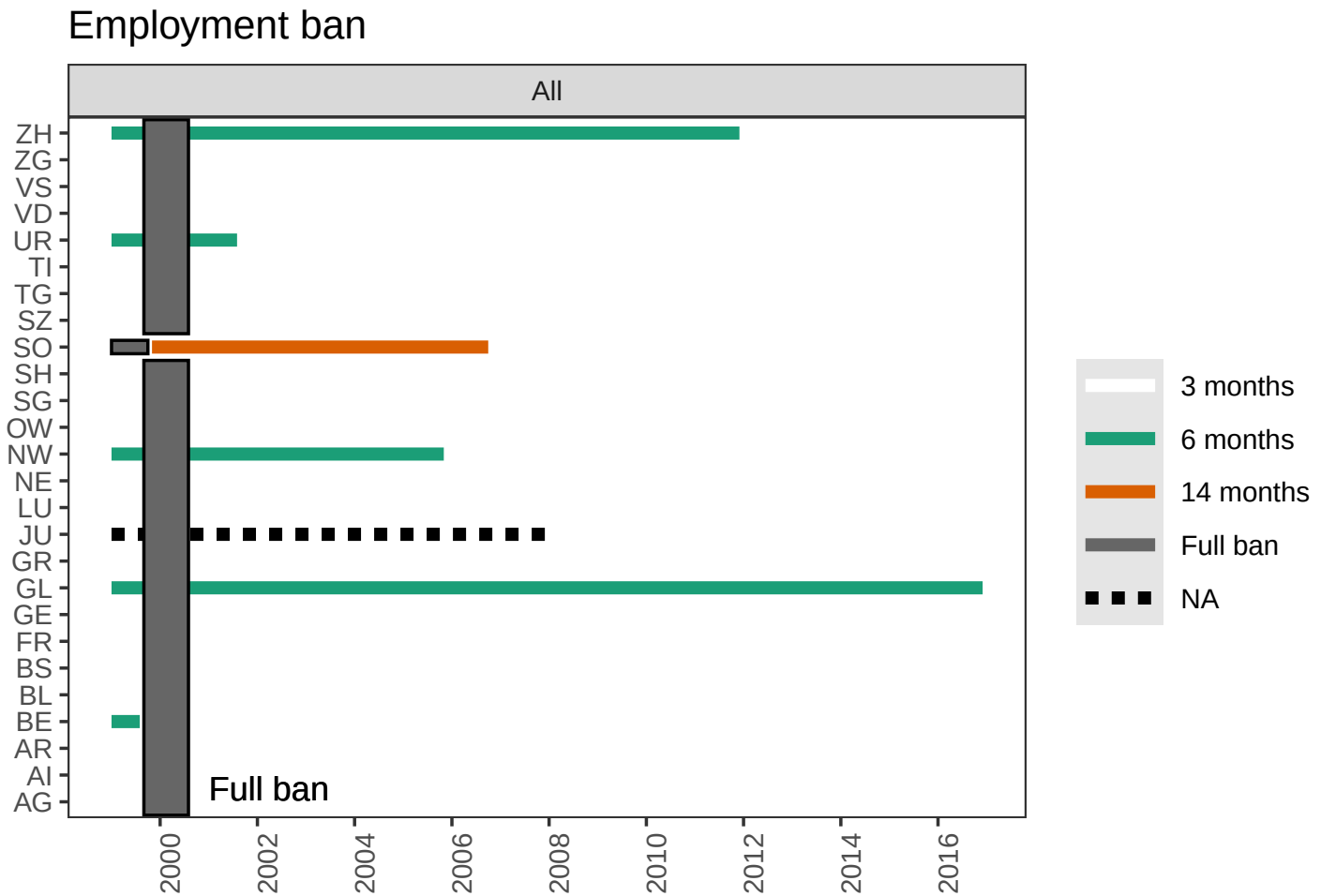
Outcome of the asylum process (after $\approx$ 2 years)

- *Asylum claim is granted*
  - $\Rightarrow$ Resident foreigner (*B* permit, 21.9%)
  - $\Rightarrow$ "Temporarily admitted refugee" if protection reasons have materialized after leaving the origin country (*TAR*, 5.1%)
- *Asylum claim is rejected*
  - $\Rightarrow$ "Temporarily admitted foreigner" if enforcement of return is infeasible/unreasonable (*TAF*, 36.5%)
  - $\Rightarrow$ Request to leave country (36.6%)

} F status

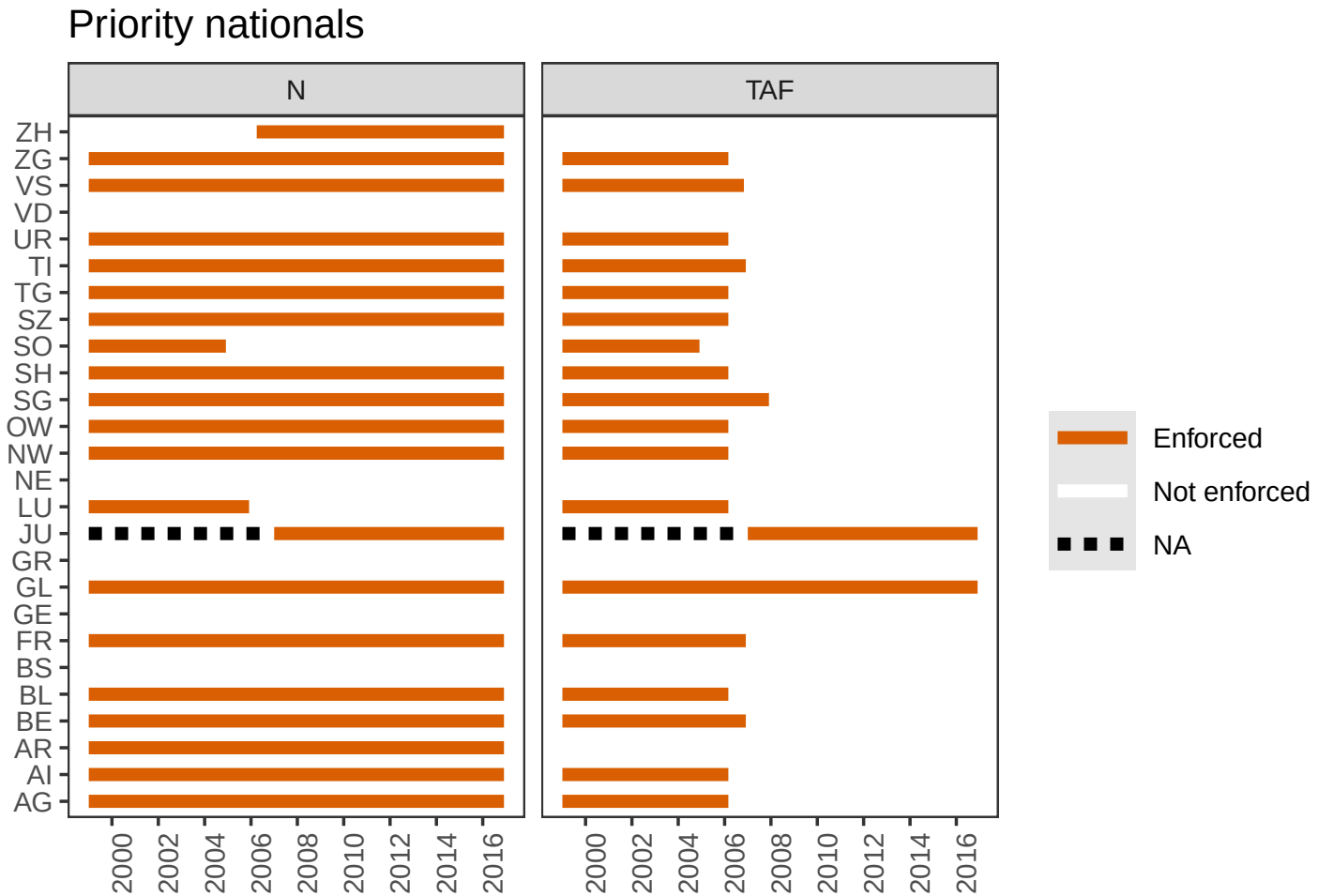
Employment bans, 1999–2016

Validation of coding



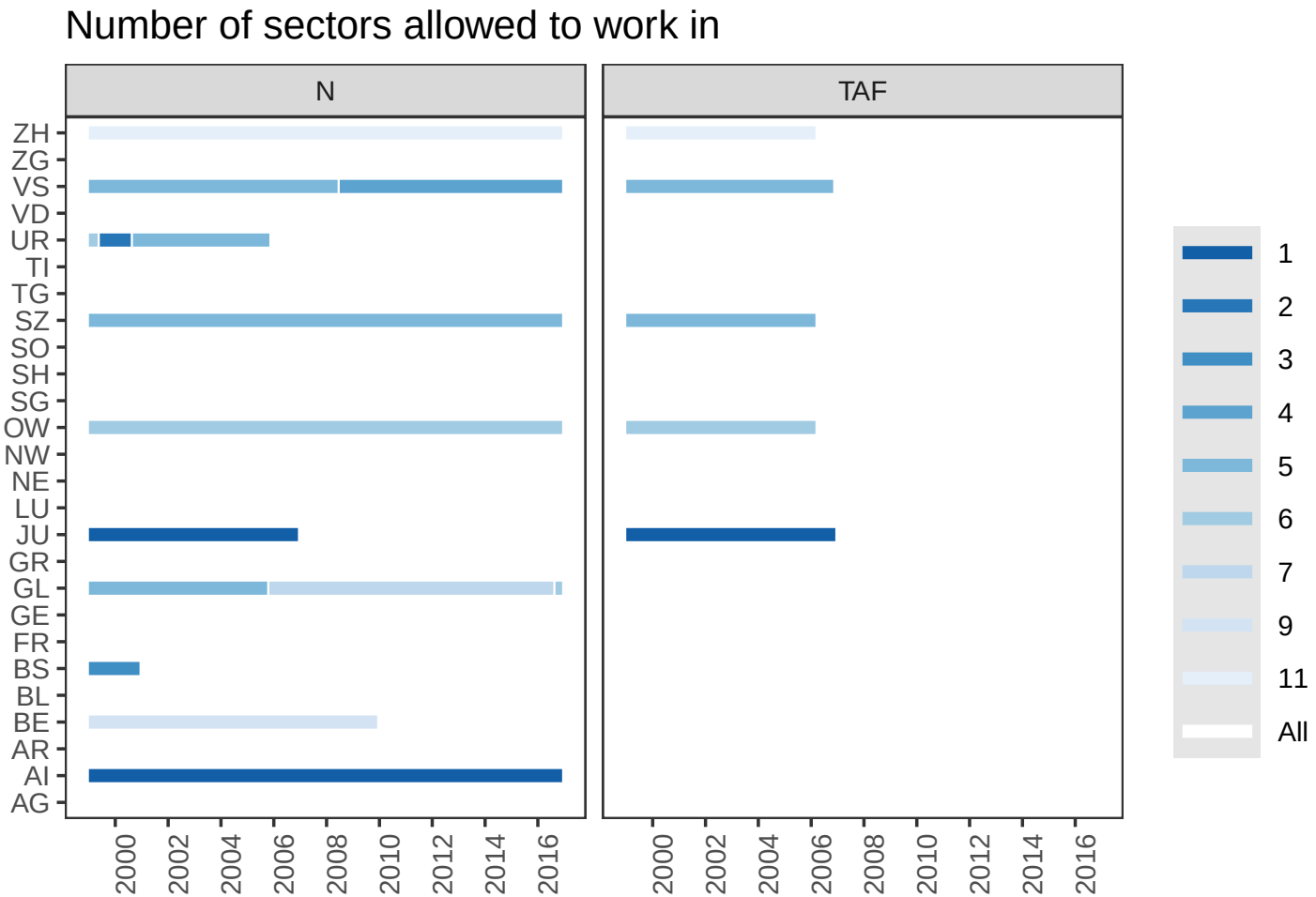
National ban of 3 months after application can be extended by canton.

Priority policy, 1999–2016



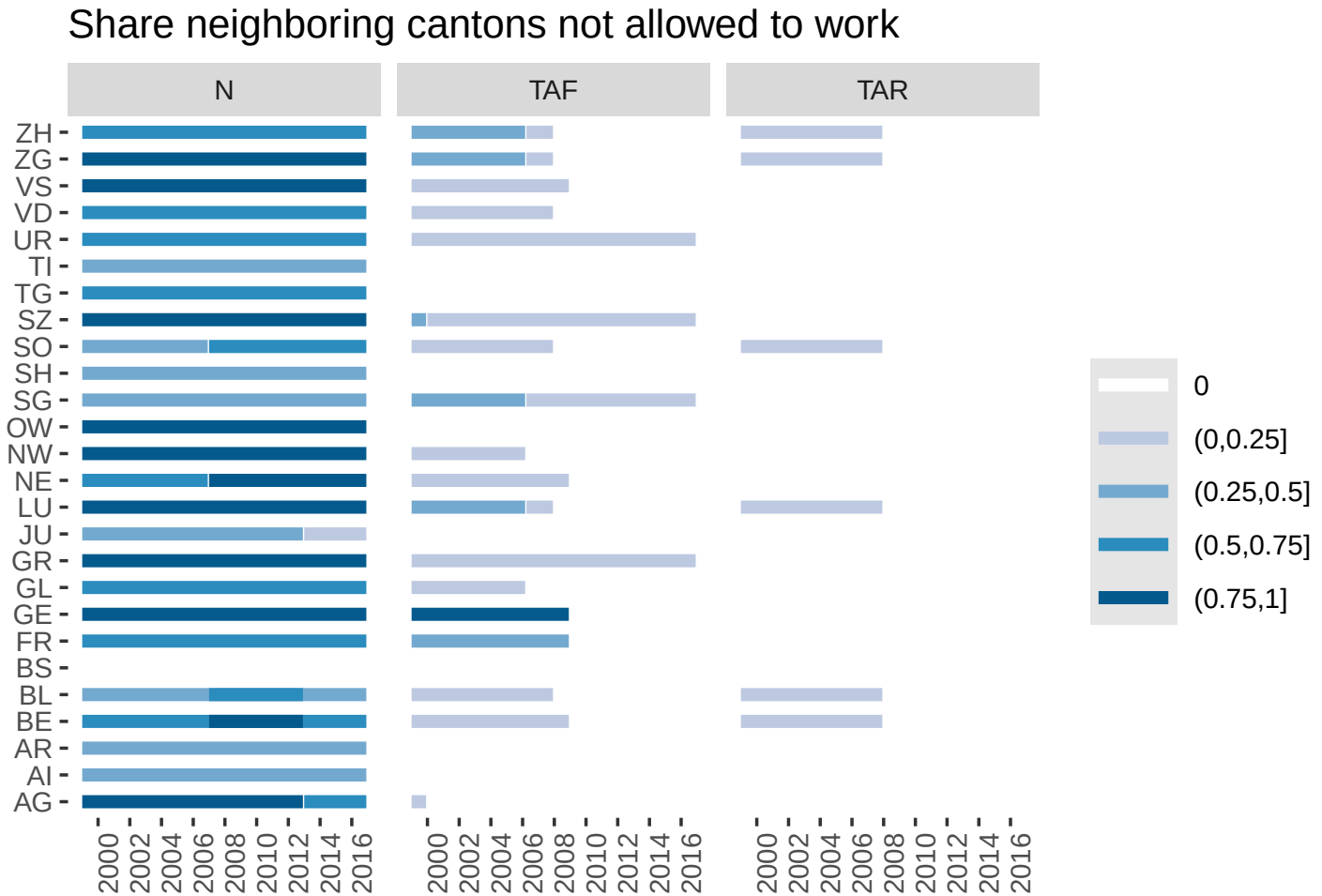
'Enforced' if canton requires firms to prove 'reasonable effort' that they could not find a resident worker.

Sector restrictions, 1999–2016



Work permits may be restricted to certain industries.

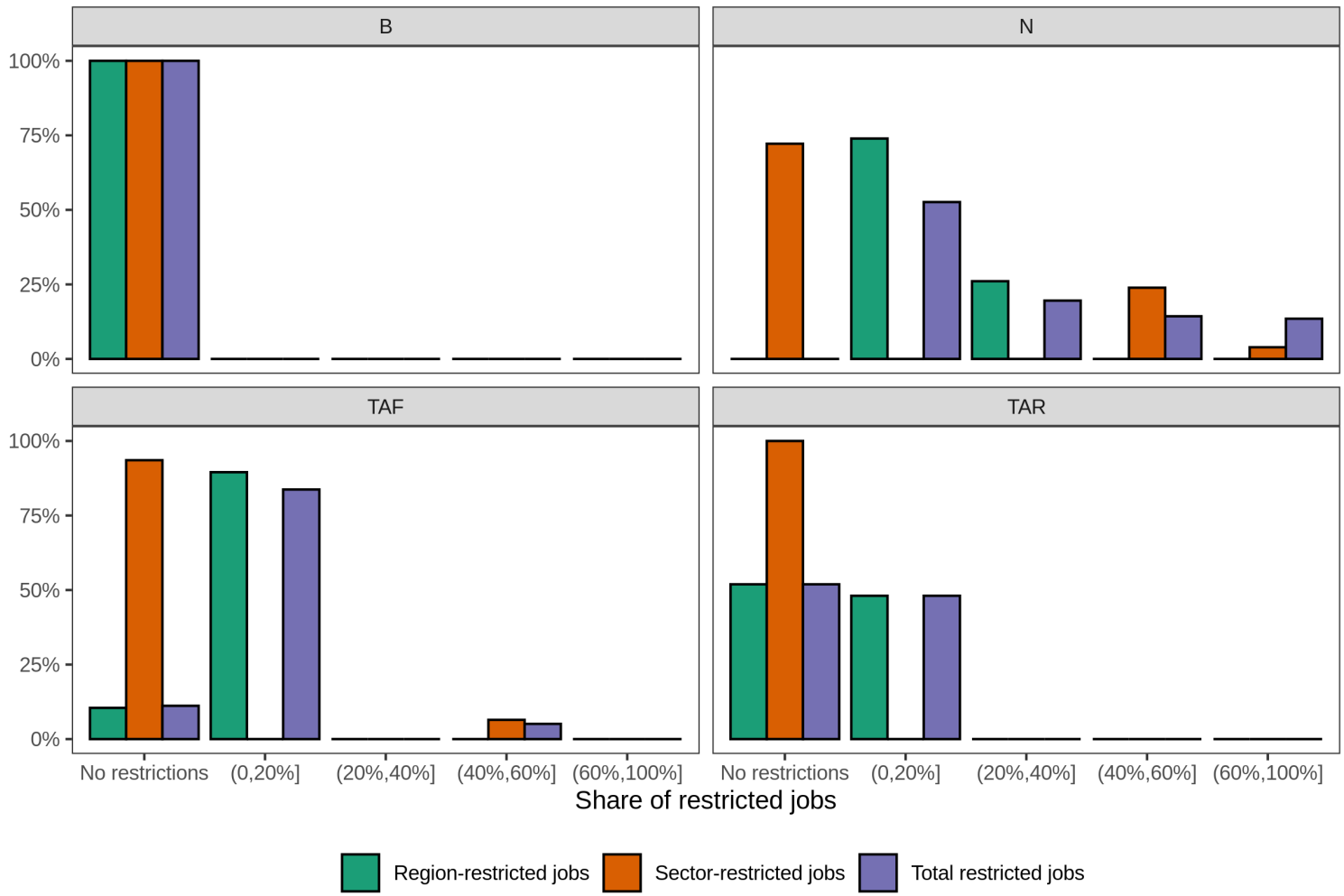
Regional restrictions, 1999–2016



Some cantons do not issue work permits for certain refugees from other cantons.

Shares of sectoral- and regional restricted jobs

We construct a *joint variable measuring the share of job opportunities not available to refugees*. Construction



Data sources

Central migration register (ZEMIS): 1999–2015

- asylum decision & permit status, date of entry, assigned canton

Social security earnings records (AHV): 1999–2016

- monthly employment spells and earnings for each job, job mobility

Register-based population census (STATPOP): 2010–2016

- emigration, place of living

Swiss earnings structure survey (SESS): 2012, 2014, 2016, 2018

- stratified random sample of firms covering $\approx$ 35% of workers
- hourly wages, monthly hours worked, job characteristics (occupation, management level), educational attainment

Descriptives

Employment and earnings effects

Research design: Intuition

Two reasons why refugee i may experience a policy change:

1. Canton c changes its policy
2. Refugee i changes her status (asylum decision)

Research design: Intuition

Two reasons why refugee *i* may experience a policy change:

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2. Refugee *i* changes her status (asylum decision)

We can rule out endogenous *sorting due to exogenous allocation* and, sometimes, individual FE.

But two main concerns remain.

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1. Within-canton variation

- *Concern:* Policy changes may be correlated with local labor market conditions or other policies.
- *Solutions:*
  - We only rely on *within-canton* variation to account for time-constant cantonal characteristics.
  - Control for local refugee policies and unemployment
  - High-frequency event studies to test for pre-trends.

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Two reasons why refugee *i* experiences a policy change:

1. Canton *c* changes its policy
2. Refugee *i* changes her status (asylum decision)

2. Status variation

- *Concern:* The asylum decision and its timing may not be independent of a refugee's labor market potential although legally it should be.

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Two reasons why refugee *i* experiences a policy change:

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2. Status variation

- *Concern:* The asylum decision and its timing may not be independent of a refugee's labor market potential although legally it should be.
- *Solutions:*
  - Compare only refugees that do the same transition and are at the same stage.
  - Show that results are similar without status variation.

Empirical approach

We utilize merged *monthly* ZEMIS-AHV data to estimate:

$$y_{icst} = \overbrace{\alpha' \mathrm{p}_{icst}}^{\text{Policies}} + \overbrace{\beta' x_{it} + \pi' w_i + \theta u_{ct}}^{\text{Controls}} + \underbrace{\mu_c + \delta_t + \gamma_{t-T(i),s}}_{\text{Fixed effects}} + \varepsilon_{icst}$$

for individual i, status s, canton c, month t; and

y_{icst}	employment, total earnings, monthly earnings, among others
p_{cst}	vector of policy measures
α'	effects of restrictions on outcome
x_{it}, w_i, u_{ct}	controls (age × sex, married, religion FE, arrival centre FE, nationality FE, unemployment, cash allowance, self-employment restrictions)
δ_t, μ_c	month & canton fixed effects
$\gamma_{t-T(i),s}$	months-since-arrival fixed effects × status
Sample	first 5 years in CH, employment age (18-64), with TAF/TAR/B decision.

Effects on employment

Dependent variable: dummy for monthly employment

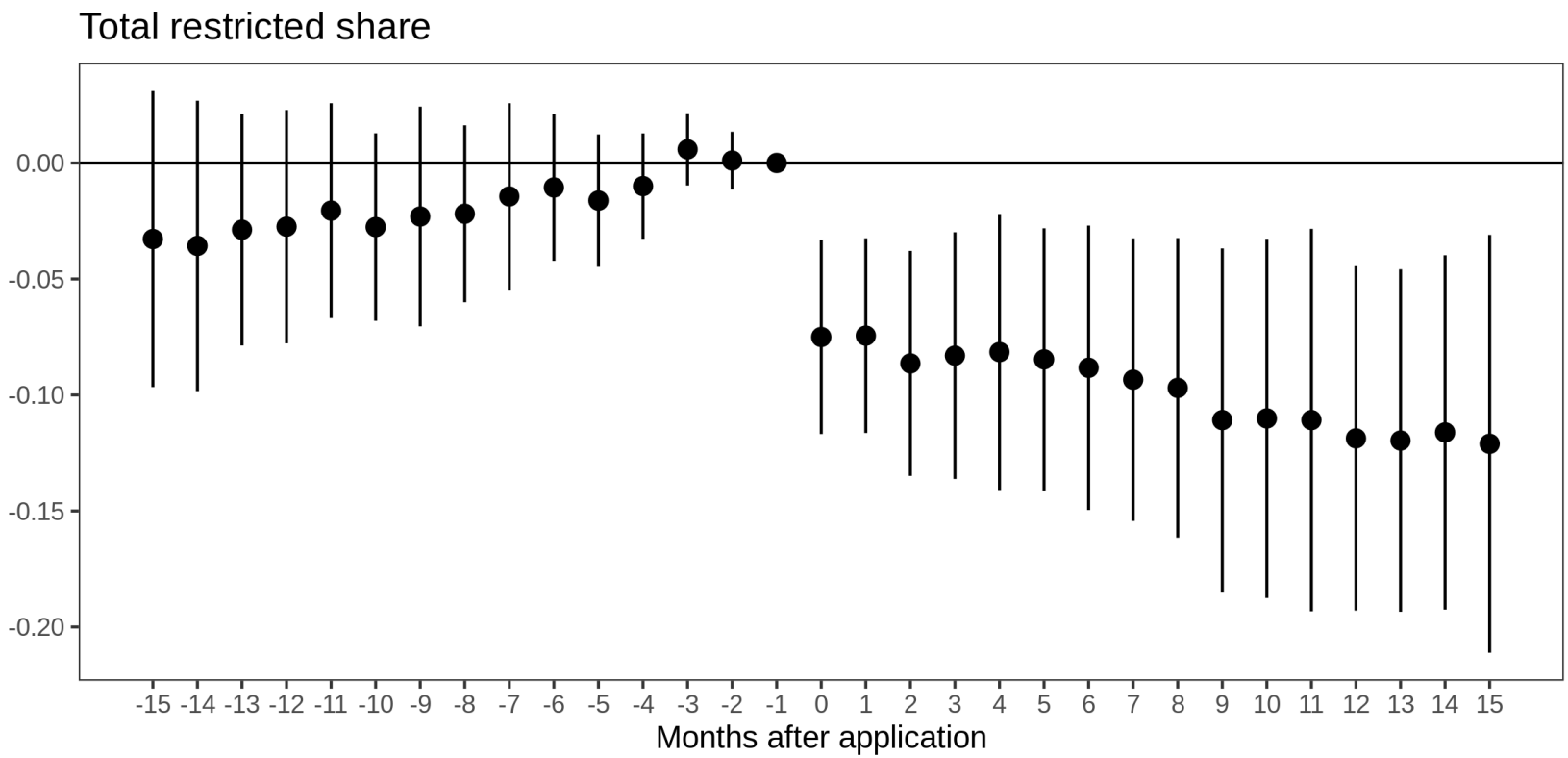
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Employment ban	-0.1078***	-0.2249***	-0.1466***	-0.1198***	-0.1153***	-0.0673***	-0.1229***
	(0.0245)	(0.0332)	(0.0237)	(0.0160)	(0.0195)	(0.0092)	(0.0281)
Priority enforced	-0.0551***	-0.0552*	-0.0607***	-0.0563***	-0.0555***	-0.0293***	-0.0638**
	(0.0138)	(0.0291)	(0.0204)	(0.0120)	(0.0134)	(0.0110)	(0.0262)
Share restricted jobs	-0.0518	-0.0393	-0.0454	-0.0522*	-0.0486	-0.0341*	-0.0767
	(0.0367)	(0.0302)	(0.0277)	(0.0269)	(0.0303)	(0.0203)	(0.0635)
Outcome mean	0.1889	0.1438	0.1452	0.1728	0.1728	0.1728	0.2294
Num. individuals	41,218	6,494	20,059	67,771	67,771	67,771	33,897
Observations	1,741,073	246,365	759,223	2,746,661	2,746,661	2,746,661	1,239,727
Sample	N->TAF	N->TAR	N->B	All	All	All	TAF
Canton FE	Yes	Yes	Yes	Yes	Yes		Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Months-since-arrival FE	Yes	Yes	Yes	Interacted	Interacted	Interacted	Yes
Individual FE						Yes	
Additional controls	Yes	Yes	Yes	Yes	No	No	Yes

Heterogeneity: Demographic groups | Employment score

Further results: Split measure

Event studies: Prioritization | Share restricted jobs | Employment ban

Event study: Share restricted jobs



Pre-event mean: 0.092; Pre-test p-value<=0.001

Effects on total earnings (Poisson FE)

Dependent variable: total monthly earnings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Employment ban	-1.241***	-2.606	-1.587***	-1.260***	-1.260***	-1.556***	-1.215***
	(0.1708)	(1.599)	(0.4062)	(0.1046)	(0.1225)	(0.1856)	(0.1478)
Priority enforced	-0.3914***	-0.7374***	-0.9848***	-0.4568***	-0.4741***	-0.3895***	-0.2561**
	(0.0685)	(0.1764)	(0.2005)	(0.0672)	(0.0661)	(0.0702)	(0.1075)
Share restricted jobs	-0.6302***	0.4792	-0.1221	-0.5054***	-0.5388***	-0.5399***	-0.3239
	(0.2006)	(0.5524)	(0.4036)	(0.1870)	(0.2060)	(0.1462)	(0.2738)
Outcome mean (CHF)	504.3	365.8	328.0	442.9	442.9	949.7	621.8
Num. individuals	41,218	6,494	20,059	67,771	67,771	23,050	33,897
Observations	1,739,868	246,047	759,222	2,746,496	2,746,496	1,280,860	1,239,677
Sample	N->TAF	N->TAR	N->B	All	All	All	TAF
Canton FE	Yes	Yes	Yes	Yes	Yes		Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Months-since-arrival FE	Yes	Yes	Yes	Interacted	Interacted	Interacted	Yes
Individual FE						Yes	
Additional controls	Yes	Yes	Yes	Yes	No	No	Yes

Wage effects

Effects on hourly wages

Theoretical considerations

We use changes in the share of restricted jobs to test labor market theories of wage setting.

In **competitive labor markets**, equally productive outside option always exists.

- $w = MP$: lower wages reflect lower MP.
- Wage effect could be due to sorting into low-wage industries, lack of of human capital accumulation or job-skill mismatch.

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In **imperfect labor markets**, worse outside options could lead to lower wages even relative to equally productive workers.

- *Static and dynamic monopsony* (e.g., Card et al., 2018; Manning, 2003)
- *Search and bargaining models* (e.g., Postel-Vinay and Robin, 2002)

Effects on hourly wages

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Log hourly wage	Log hourly wage	Log hourly wage	Log hourly wage	Log hourly wage	Log hourly wage	Log hourly wage
Sample	N to B	N to TAR/TAF	Both	Both	Both	Both	Both
Priority enforced	0.005	0.070	0.058	0.021	0.049	0.061	0.067
	(0.055)	(0.082)	(0.043)	(0.042)	(0.036)	(0.042)	(0.041)
Share restricted jobs	-0.296	-0.347**	-0.281***	-0.374***	-0.192**	-0.254**	-0.297***
	(0.196)	(0.153)	(0.102)	(0.102)	(0.086)	(0.106)	(0.099)
Observations	1,942	4,381	6,342	6,361	9,231	6,340	6,334
Observations per firm	First	First	First	First	All	First	First
Baseline controls	Yes	Yes	Yes	No	Yes	Yes	Yes
First year of tenure FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years-since-entry FE	No	No	No	No	No	Interacted	No
Industry FE	No	No	No	No	No	No	Yes
Canton of work FE	No	No	No	No	No	No	Yes

Effects on monthly earnings per worker (AHV) Approach 1 Effects on hours worked

10 ppt. rise in restricted share reduces hourly wages by 3.1%.

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Canton of work FE	No	No	No	No	No	No	Yes

Effects on monthly earnings per worker (AHV) Approach 1 Effects on hours worked

Similar effect when controlling for industry and canton.

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Effects on monthly earnings per worker (AHV) Approach 1 Effects on hours worked

No effect of priority rule on hourly wages.

Are the wage effects due to lower productivity?

Three leading "competitive market" explanations why sector/mobility restrictions reduce wages.

1. *Sorting* into low-paying industries/occupations.
   - Inconsistent with unaltered wage effects if we flexibly control for industry, occupation, and place of work.

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2. *Lack of human capital accumulation*/work experience
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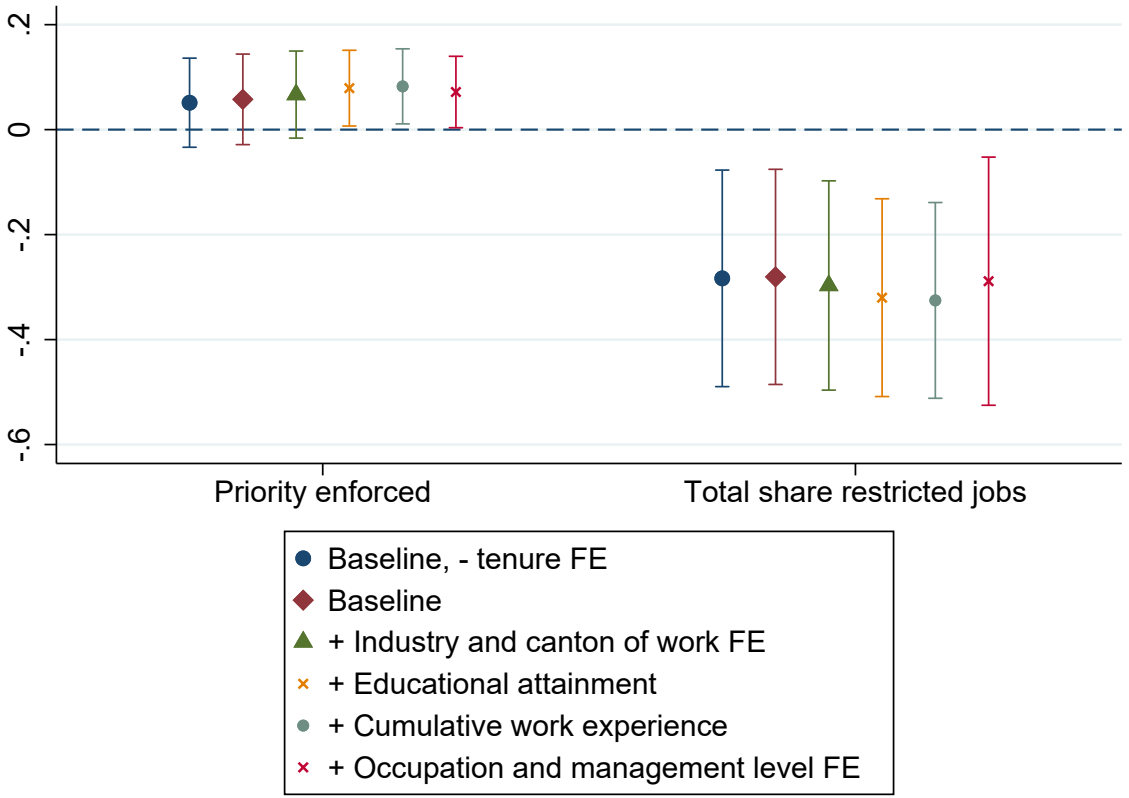
2. *Lack of human capital accumulation*/work experience
   - Inconsistent with unaltered wage effects if we control for refugees' education, accumulated work experience, and tenure.

3. *Increased mismatch*: Decrease in productivity of the marginally hired refugee (e.g., the clerk working as a cook)
   - Requires that some firms employ more refugees when policies become more restrictive. But we find the opposite.

Firm employment

Are the wage effects due to lower productivity?

Human capital and sorting across job types



Lack of human capital accumulation/experience does not explain results. Neither does sorting across industries/occupations.

Mechanisms how outside options affect wages

Monopsonistic models

Prediction: refugees earn less because they have fewer potential employers, ...

- Regional and sectoral restrictions strongly reduce job-to-job mobility. Evidence job mobility
- Regional but not sectoral restrictions increase employer concentration. Evidence employer concentration

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- Sector/region restrictions (and prioritization) are associated with lower wage elasticities of separations. Evidence separation elasticity

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Wage discrimination: restrictions should increase the wage gap between refugees and equally qualified native citizens.

- Sector & region restrictions increase gap—even within firms. See evidence following slides.

Mechanisms how outside options affect wages

Dynamic search models (monopsony and others)

Prediction: workers should find it harder to make their way into well-paying jobs.

- Restrictions strongly reduce job-to-job mobility to better-paying jobs *but* also to worse-paying jobs.

Evidence job mobility

Mechanisms how outside options affect wages

Dynamic search models (monopsony and others)

Prediction: workers should find it harder to make their way into well-paying jobs.

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Evidence job mobility

Search models with on-the-job wage bargaining

Prediction: restrictions should reduce on-the-job wage growth.

- Sector and region restrictions do not reduce on-the-job wage growth. Prioritization does. Evidence on-the-job wage growth

Do restrictions "explain" the wage gap to natives?

Dependent variable: hourly wage in October

VARIABLES	(1) Log hourly wage	(2) Log hourly wage	(3) Log hourly wage	(4) Log hourly wage	(5) Log hourly wage	(6) Log hourly wage	(7) Log hourly wage	(8) Log hourly wage
Refugee	-0.492***	-0.512***	-0.275***	-0.292***	-0.104***	-0.089***	-0.073***	-0.061***
	(0.015)	(0.031)	(0.015)	(0.038)	(0.010)	(0.026)	(0.007)	(0.016)
Foreigner	-0.122***	-0.122***	-0.055***	-0.055***	-0.021***	-0.021***	-0.016***	-0.016***
	(0.010)	(0.010)	(0.006)	(0.006)	(0.005)	(0.005)	(0.003)	(0.003)
Refugee × Priority enforced		0.044		0.053		0.037		0.050*
		(0.038)		(0.032)		(0.025)		(0.029)
Refugee × Share restricted jobs		-0.327***		-0.285**		-0.225*		-0.226***
		(0.121)		(0.118)		(0.131)		(0.083)
Observations	2,305,182	2,305,139	2,305,182	2,305,139	1,707,312	1,707,278	1,686,093	1,686,059
R-squared	0.151	0.151	0.296	0.296	0.493	0.493	0.659	0.659
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton of living FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton of work FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
First year of tenure FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Educational attainment FE	No	No	No	No	Yes	Yes	Yes	Yes
Occupation and management level FE	No	No	No	No	Yes	Yes	Yes	Yes
Firm-year FE	No	No	No	No	No	No	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

-0.491 corresponds to a 38% wage gap relative to natives.

Do restrictions "explain" the wage gap to natives?

Dependent variable: hourly wage in October

VARIABLES	(1) Log hourly wage	(2) Log hourly wage	(3) Log hourly wage	(4) Log hourly wage	(5) Log hourly wage	(6) Log hourly wage	(7) Log hourly wage	(8) Log hourly wage
Refugee	-0.492***	-0.512***	-0.275***	-0.292***	-0.104***	-0.089***	-0.073***	-0.061***
	(0.015)	(0.031)	(0.015)	(0.038)	(0.010)	(0.026)	(0.007)	(0.016)
Foreigner	-0.122***	-0.122***	-0.055***	-0.055***	-0.021***	-0.021***	-0.016***	-0.016***
	(0.010)	(0.010)	(0.006)	(0.006)	(0.005)	(0.005)	(0.003)	(0.003)
Refugee × Priority enforced		0.044		0.053		0.037		0.050*
		(0.038)		(0.032)		(0.025)		(0.029)
Refugee × Share restricted jobs		-0.327***		-0.285**		-0.225*		-0.226***
		(0.121)		(0.118)		(0.131)		(0.083)
Observations	2,305,182	2,305,139	2,305,182	2,305,139	1,707,312	1,707,278	1,686,093	1,686,059
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Industry FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Educational attainment FE	No	No	No	No	Yes	Yes	Yes	Yes
Occupation and management level FE	No	No	No	No	Yes	Yes	Yes	Yes
Firm-year FE	No	No	No	No	No	No	Yes	Yes

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*** p<0.01, ** p<0.05, * p<0.1

Roughly half of this gap can be explained by tenure and sorting across industry & canton.

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Further drop in gap when accounting for education & occupation.

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Within firm-year wage differential.

Do restrictions "explain" the wage gap to natives?

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Sector & region restrictions lead to substantially larger gap, even within the same firm.

Costs and (some) benefits

Costs: Summary

Immediate costs

- All policies reduce employment and earnings substantially.

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Long-run scarring effects

- Idea: Analyze *deviations from typical labor market integration path* after arrival due to *initial policy conditions*.
  Long-run specification
- Negative effects on employment, earnings and wages mainly in years 0-6 Long-run employment Long-run earnings Long-run wages

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Fiscal costs

- Our lower-bound estimates (excl. non-cash transfers & unemployment benefits) suggests that social welfare costs per refugee were 9.2% lower without restrictions. Cost estimates

"Benefits": Summary

- **Ensure refugees are paid like residents (priority)**
  - Starting wages are potentially higher but at the cost of lower wage growth, employment, and monthly earnings.
- **Emigration**
  - No or at most very small positive effects on emigration, even for temporally admitted refugees. Results
- **Improved labor market outcomes for residents**
  - No measurable effects on earnings and employment of EU-15 immigrants, not even at the lower end of the earnings distribution EU-15 employment EU-15 earnings

Conclusion

Labor market restrictions help to explain why refugees have **worse labor market outcomes** than similar other workers:

- Moving from the least to the most restrictive policy mix reduces refugees' labor earnings in the first five years by 60%.
- Restrictive policies lower employment and earnings even after they cease applying.
- Sectoral and regional restrictions lower refugees' wages because they lower refugees' outside options.

Conclusion

Labor market restrictions help to explain why refugees have **worse labor market outcomes** than similar other workers:

- Moving from the least to the most restrictive policy mix reduces refugees' labor earnings in the first five years by 60%.
- Restrictive policies lower employment and earnings even after they cease applying.
- Sectoral and regional restrictions lower refugees' wages because they lower refugees' outside options.

These costs appear to come **without measurable "benefits."**

- No effect on emigration.
- No evidence that outcomes of competing EU-15 immigrants improve.

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Appendix

A. Related Literature

Related literature I: Refugee policies

How do *policies affect the economic integration of refugees* into host countries' labor markets?

Previous studies look at:

- the geographic dispersal of refugees upon arrival,
  e.g., Bansak et al., 2018; Hangartner and Schmid, 2021
- the speed of asylum decisions,
  e.g., Bertoli, Brücker, and Fernández-Huertas Moraga, 2020; Aslund, Engdahl, Rosenqvist, et al., 2022
- the generosity of social assistance,
  e.g., LoPalo, 2019; Dustmann, Landerso, and Hojsgaard Andersen, 2021
- the recognition of educational certificates
  Brücker et al., 2021
- and temporary employment bans
  Marbach, Hainmueller, and Hangartner, 2018; Fasani, Frattini, and Minale, 2021

Our paper adds to this literature in terms of scope (novel policies and outcomes), data quality, and research design.

Back

Related literature II: Outside options & wages

The impact of the policies on refugees' *employment opportunities* may *explain* why immigrants are *paid less* than similar residents

Black, 1995; Chassamboulli and Peri, 2020; Hirsch and Jahn, 2015; Amior and Manning, 2020; Manning, 2021.

- But scarce empirical evidence that outside options lead to wage gaps between equally productive workers.
- *Main challenge:* outside options typically unobserved.

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- But scarce empirical evidence that outside options lead to wage gaps between equally productive workers.
- *Main challenge:* outside options typically unobserved.

Main exceptions outside of migration literature:

- Caldwell and Harmon (2019): Study wage effects of shocks to a worker's information about her outside options.
- Caldwell and Danieli (2021): Develop a method to estimate workers' outside employment opportunities and estimate empirical link to wages.
- Jäger et al. (2021): Show that workers wrongly anchor their beliefs about outside options on their current wage.

Back

Refugee policies

All four policies are commonly applied in developed countries.

- *Employment ban:* Median length of six month for refugees in Europe according to Marbach, Hainmueller, and Hangartner (2018).
- *Prioritization* of natives vs asylum seekers allowed by EU Receptions Directive and applied by Germany & Austria. Similar policy for seasonal farm workers in the US (H-2A).
- *Sector restrictions:* Employment often restricted to sectors (or occupations) with labor shortage; e.g. Austria, France, UK. Similar restrictions in the US for H-1B visa.
- *Regional restrictions:* Denmark, Germany, Norway, Sweden, Netherlands employ dispersal policies that tie asylum seekers temporarily to localities that differ in employment opportunities.

Back

Shares of sectoral- and regional restricted jobs

Total share restricted jobs for refugees living in canton c, working in canton j and sector ℓ:

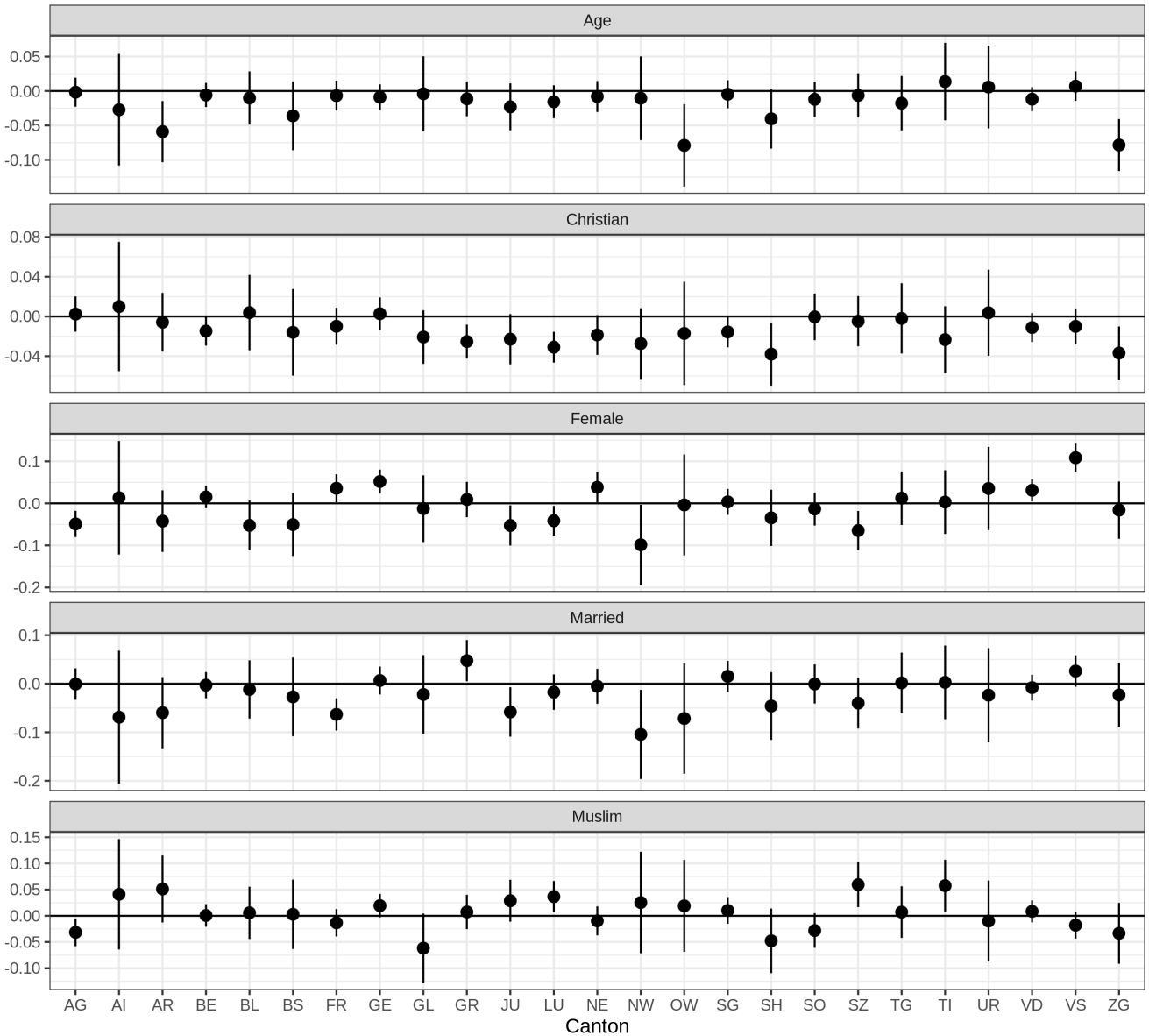
$$\textit{total share restricted jobs}_{c,ts} = \sum_{j} \sum_{\ell} \textit{share}_{c \to j\ell} \times \textit{restriction}_{c \to j\ell,ts}$$

where

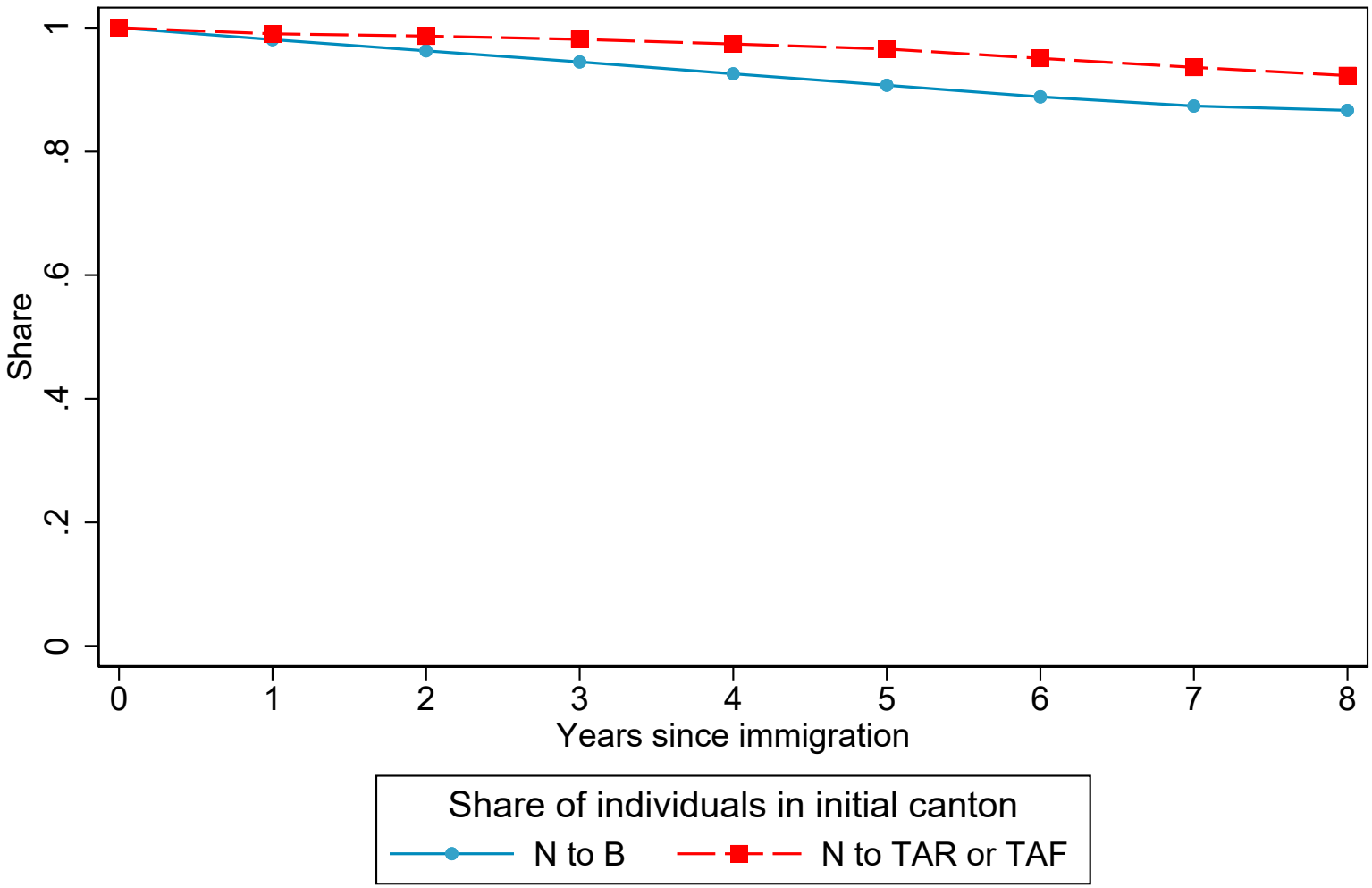
- $\textit{share}_{c \to j\ell}$ is the estimated share of residents in canton c that work in canton j and industry ℓ; s.t. $\sum_j \sum_\ell \textit{share}_{c \to j\ell} = 1$.
  - The *share* is estimated using Census 2000 commuter data and using sector shares of refugees who have never been exposed to sector restrictions.
- $\textit{restriction}_{c \to j\ell,ts}$ is 1 if a refugee of status s residing in canton c is not allowed to work in sector ℓ in canton j either due to extra-cantonal or sectoral restrictions, 0 otherwise.

Back

Balance test of random allocation across canton



Between-canton mobility of refugees



Back

Validation of coding

Back

Policy	Yes	No	Share
A. Banned from working		*Employed (AHV)*	
No	442838	2891312	13.28%
Yes	471	233120	0.2%
Missing	1191	17388	6.41%
B. Banned from working		*Employed (ZEMIS)*	
No	478806	2069231	18.79%
Yes	1688	223726	0.75%
Missing	1851	7145	20.58%
C. Extra-cantonal		*Cross-canton commuter*	
Allowed	76167	419725	15.36%
Not allowed	7982	132617	5.68%
Missing	1183	7041	14.38%
D. Sector restriction		*Employed in 'always restricted' sector (ZEMIS)*	
Any restrictions	7551	28146	21.15
No restrictions	74102	144920	33.83
	6198	9068	40.60
E. Sector restriction		*Newly employed in 'always restricted' sector (ZEMIS)*	
Any restrictions	520	1816	22.26
No restrictions	4308	7069	37.87

Descriptives

Back

	Mean	Sd.	$P_{.01}$	$P_{.50}$	$P_{.99}$	Obs.
Panel A. Merged AHV-ZEMIS data, January 2005						
Labor income	2747.51	1965.50	41.31	3173.61	6209.87	2562
Employed (AHV)	0.24	0.43	0.00	0.00	1.00	10657
Employed (ZEMIS)	0.16	0.36	0.00	0.00	1.00	10657
Age	30.89	8.58	18.00	30.00	59.00	10657
Female	0.38	0.49	0.00	0.00	1.00	10657
Months to decision	18.24	22.08	1.00	12.00	125.00	10657
Panel B. Merged AHV-ZEMIS data, January 2015						
Labor income	34007.90	23169.41	323.87	34303.50	88096.59	17888
Employed (AHV)	7.88	5.08	0.00	12.00	12.00	23047
Age	37.98	8.61	23.00	37.00	62.00	34687
Female	0.35	0.48	0.00	0.00	1.00	34687
Panel C. Merged AHV-ZEMIS-STATPOP data (2005)						
Labor income	24591.54	19002.57	262.00	21786.00	68244.27	5152
Employed (AHV)	6.65	5.04	0.00	7.00	12.00	6877
Age	32.20	7.66	19.00	31.00	53.00	13952
Female	0.39	0.49	0.00	0.00	1.00	13952
Panel E. Merged AHV-ZEMIS-STATPOP data (2015)						
Labor income	2290.39	1654.50	50.00	2098.04	5443.74	2382
Employed (AHV)	0.09	0.28	0.00	0.00	1.00	27416
Employed (ZEMIS)	0.08	0.27	0.00	0.00	1.00	27416
Age	30.86	9.30	18.00	29.00	60.00	27416
Female	0.37	0.48	0.00	0.00	1.00	27416
Months to decision	17.20	11.68	1.00	16.00	51.00	27416
Panel F. LSE data (October 2016)						
Hourly wage	25.32	7.84	11.58	24.10	52.65	3834
Monthly labor income	3566.55	1519.02	195.00	3899.81	6672.51	3834
Full-time equivalents	0.79	0.30	0.04	1.00	1.00	3834
Monthly hours worked	143.97	55.45	7.00	177.67	199.33	3834
Female	0.27	0.44	0.00	0.00	1.00	3834
Age	35.59	7.60	22.00	35.00	56.00	3834
Primary education	0.78	0.41	0.00	1.00	1.00	3473
Tertiary education	0.02	0.15	0.00	0.00	1.00	3473
Tenure	2.11	2.31	0.00	1.00	9.00	3834
Hospitality sector	0.22	0.42	0.00	0.00	1.00	3834
Trade sector	0.10	0.30	0.00	0.00	1.00	3834
Construction sector	0.02	0.13	0.00	0.00	1.00	3834

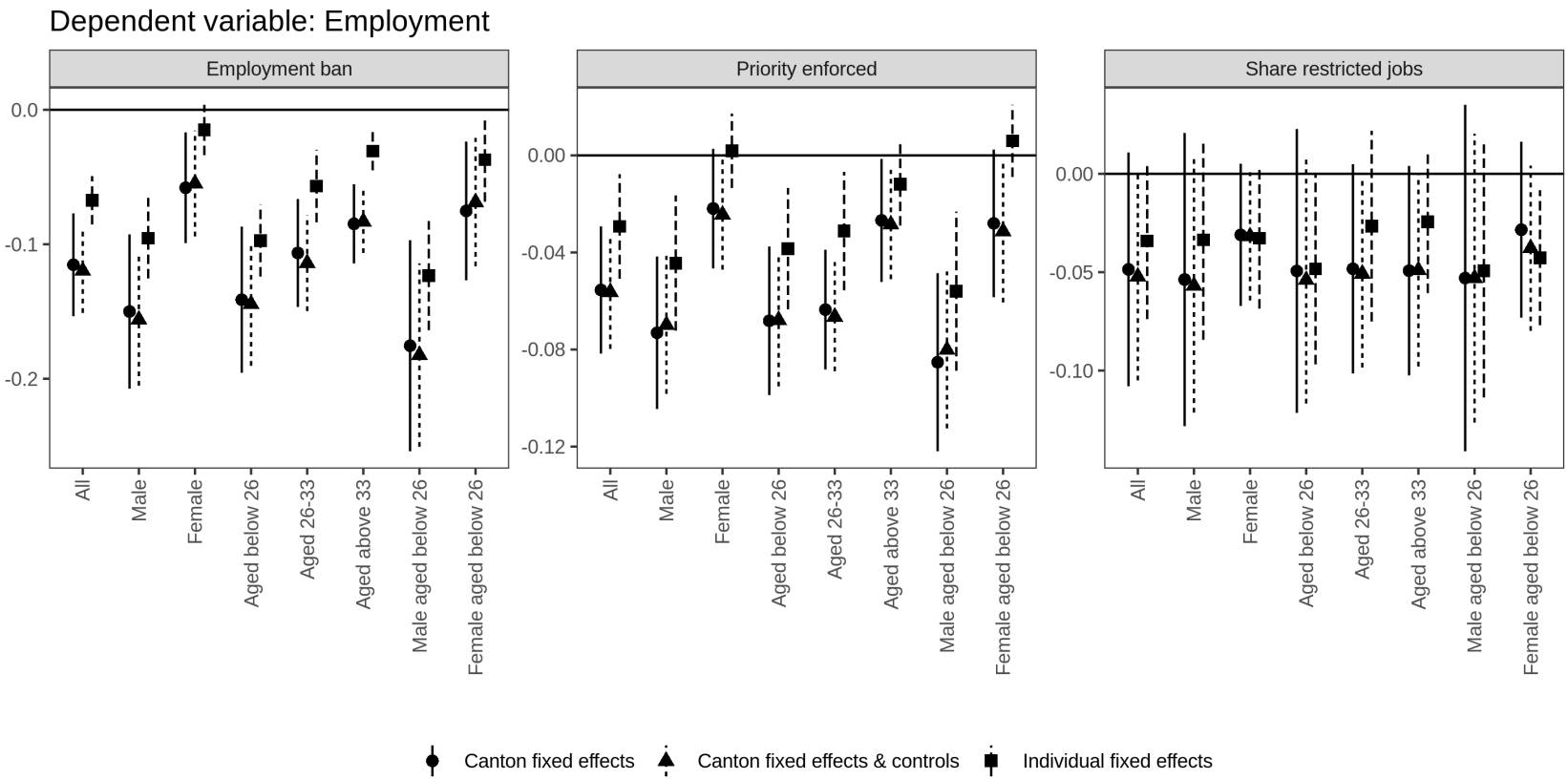
Effects on employment: Sector and mobility restrictions separately

Dependent variable: dummy for monthly employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Employment ban	-0.1032***	-0.2382***	-0.1592***	-0.1216***	-0.1161***	-0.0737***	-0.0764***
	(0.0246)	(0.0362)	(0.0224)	(0.0152)	(0.0190)	(0.0074)	(0.0261)
Priority enforced	-0.0554***	-0.0510*	-0.0551***	-0.0557***	-0.0551***	-0.0256**	-0.0511*
	(0.0146)	(0.0284)	(0.0183)	(0.0124)	(0.0139)	(0.0104)	(0.0267)
Share sector restricted jobs	-0.0405	-0.0110	-0.0181	-0.0351	-0.0349	-0.0195	-0.0738*
	(0.0357)	(0.0236)	(0.0267)	(0.0262)	(0.0291)	(0.0183)	(0.0419)
Share region restricted jobs	-0.0517	-0.2808***	-0.3053***	-0.1331**	-0.1007	-0.1951***	0.9399**
	(0.0658)	(0.0808)	(0.0900)	(0.0596)	(0.0633)	(0.0409)	(0.4154)
Outcome mean	0.1893	0.1438	0.1452	0.1732	0.1732	0.1732	0.2292
Num. individuals	41,227	6,494	20,059	67,780	67,780	67,780	34,093
Observations	1,767,187	246,365	759,223	2,772,775	2,772,775	2,772,775	1,265,841
Sample	N->TAF	N->TAR	N->B	All	All	All	TAF
Canton FE	Yes	Yes	Yes	Yes	Yes		Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Months-since-arrival FE	Yes	Yes	Yes	Interacted	Interacted	Interacted	Yes
Individual FE						Yes	
Additional controls	Yes	Yes	Yes	Yes	No	No	Yes

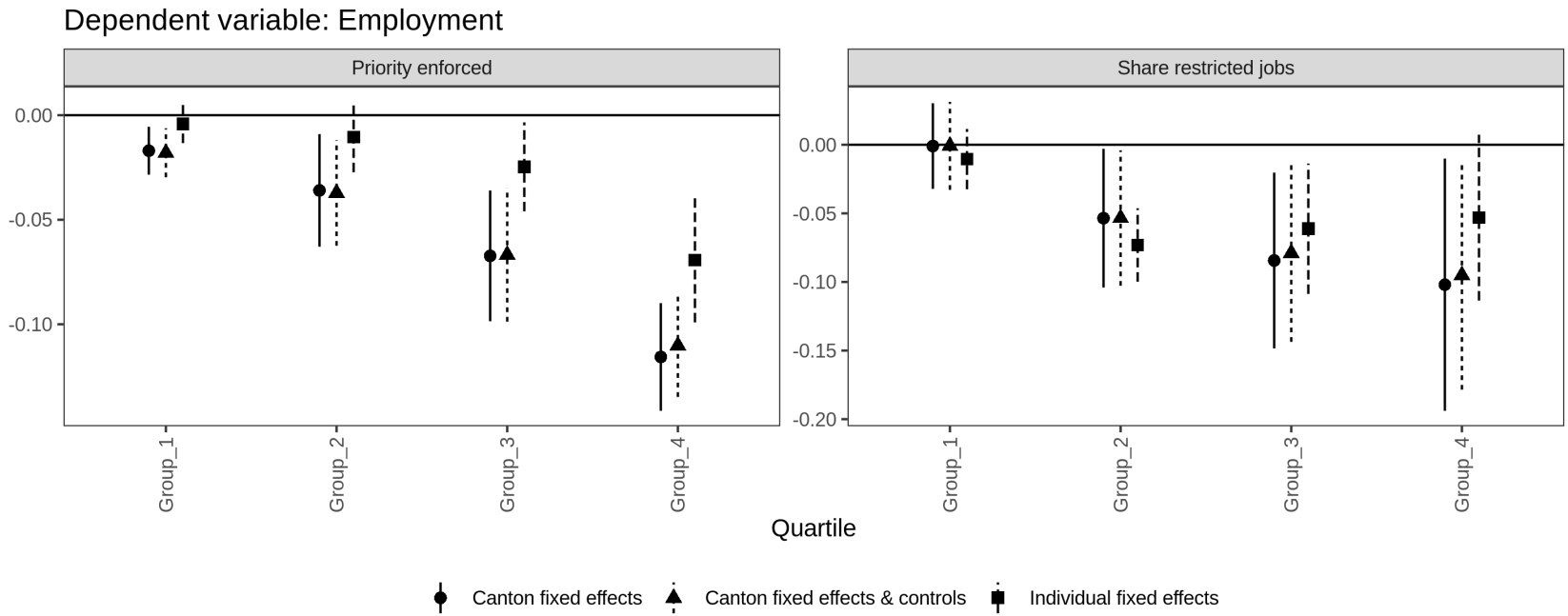
Back

Employment effects: Heterogeneity by demographic groups



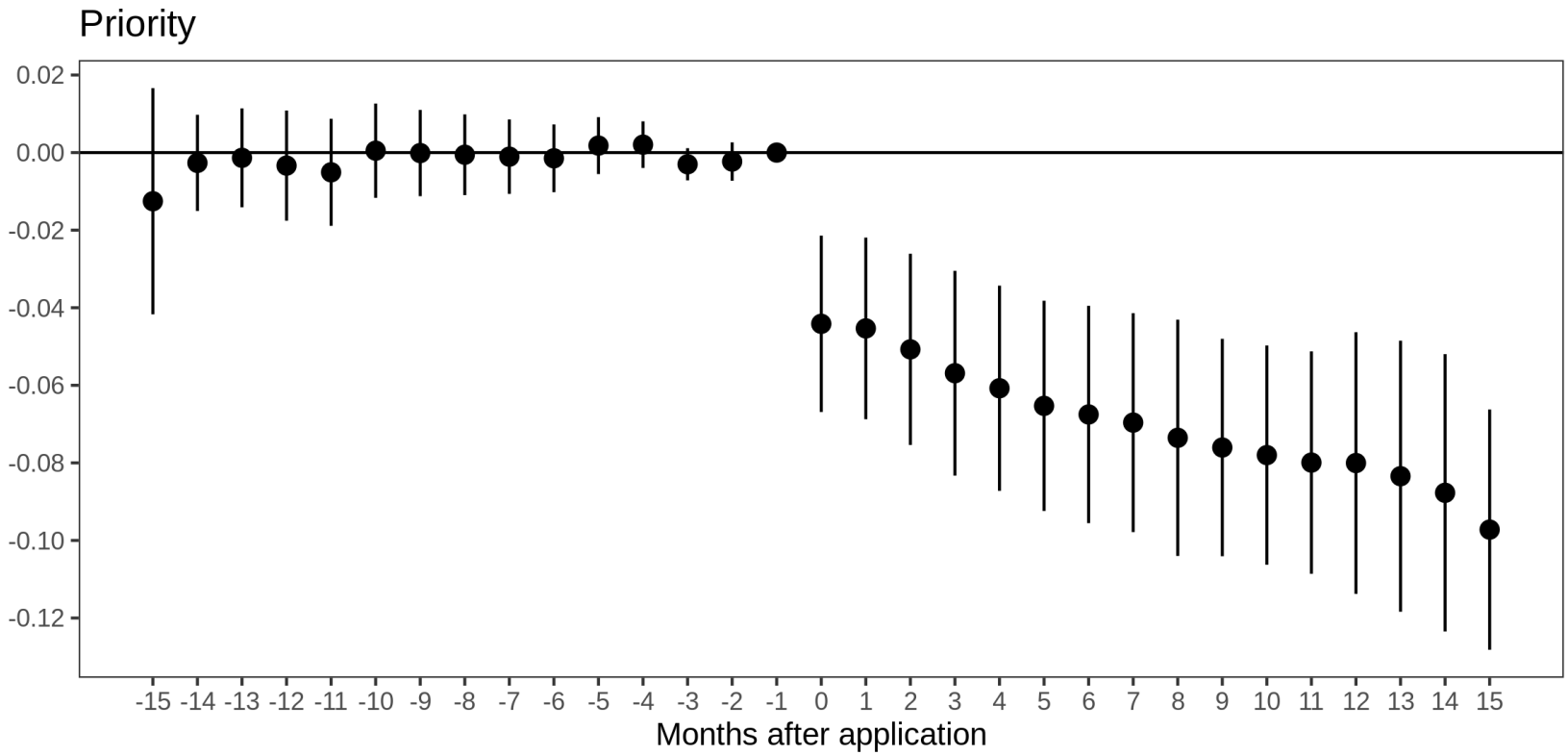
Back

Employment effects: Heterogeneity by employment score



Back

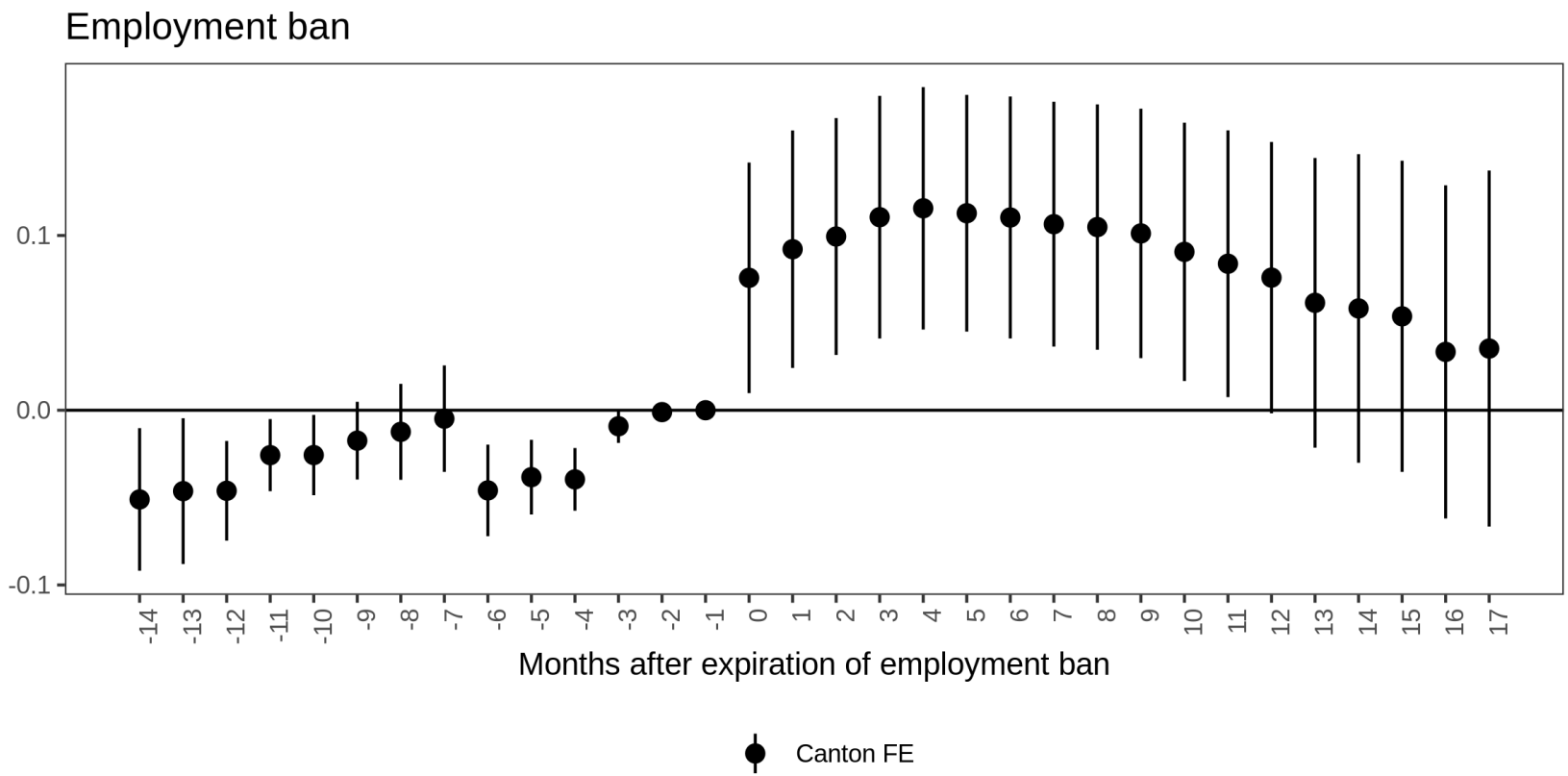
Event study: Prioritization



Pre-event mean: 0.043; Pre-test p-value<=0.001

Back

Event study: Employment ban



Back

Effects on monthly earnings of workers

Dependent variable: log monthly earnings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Priority enforced	-0.0718*	-0.4005**	-0.3913*	-0.1709***	-0.1670***	-0.1273**	0.0002
	(0.0374)	(0.1854)	(0.2135)	(0.0424)	(0.0466)	(0.0554)	(0.0279)
Share restricted jobs	-0.3218**	0.2851	-0.1323	-0.2070	-0.2084	-0.1659	-0.0880
	(0.1351)	(0.4647)	(0.3799)	(0.1351)	(0.1340)	(0.1540)	(0.1169)
Outcome mean (CHF)	2,667.9	2,540.9	2,259.2	2,563.4	2,563.4	2,563.4	2,710.8
Num. individuals	14,536	2,060	6,454	23,050	23,050	23,050	13,938
Observations	328,862	35,426	110,230	474,518	474,518	474,518	284,372
Sample	N->TAF	N->TAR	N->B	All	All	All	TAF
Canton FE	Yes	Yes	Yes	Yes	Yes		Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Months-since-arrival FE	Yes	Yes	Yes	Interacted	Interacted	Interacted	Yes
Individual FE						Yes	
Additional controls	Yes	Yes	Yes	Yes	No	No	Yes

Back

Effects on log hours worked per month

SESS data

VARIABLES	(1) N to B	(2) N to TAR/TAF	(3) Both	(4) Both	(5) Both	(6) Both	(7) Both
A. Log monthly hours worked							
Priority enforced	-0.213*	-0.056	-0.084	-0.090	-0.041	-0.080	-0.093
	(0.122)	(0.129)	(0.087)	(0.088)	(0.077)	(0.091)	(0.071)
Share restricted jobs	0.248	0.086	0.173	0.527***	0.152	0.170	0.285*
	(0.244)	(0.242)	(0.174)	(0.185)	(0.162)	(0.191)	(0.155)
Observations	1,942	4,381	6,342	6,361	9,231	6,340	6,334
Observations per firm	First	First	First	First	All	First	First
Baseline controls	Yes	Yes	Yes	No	Yes	Yes	Yes
First year of tenure FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years-since-entry FE	No	No	No	No	No	Interacted	No
Industry FE	No	No	No	No	No	No	Yes
Canton of work FE	No	No	No	No	No	No	Yes

Back

Wage effects (baseline short-run specification)

SESS data

Back

VARIABLES	(1) Log hourly wage	(2) Log hourly wage	(3) Log hourly wage	(4) Log hourly wage	(5) Log hourly wage	(6) Log hourly wage	(7) Log hourly wage first 5 years only
Priority enforced	-0.067	-0.089	-0.073	-0.041	-0.032	-0.167	-0.053
	(0.167)	(0.070)	(0.050)	(0.075)	(0.081)	(0.135)	(0.098)
Share restricted jobs	0.089	-0.535***	-0.884***	-0.732***	-0.425	-0.284	-0.569**
	(0.323)	(0.172)	(0.111)	(0.197)	(0.277)	(0.523)	(0.220)
Observations	1,439	4,453	4,465	4,447	4,447	2,172	1,123
R-squared	0.130	0.102	0.032	0.166	0.178	0.696	0.161
Sample	N→B	N→TAR/F	N→TAR/F	N→TAR/F	N→TAR/F	N→TAR/F	N→TAR/F
Additional controls	Yes	Yes	No	Yes	Yes	No	Yes
Canton FE	Yes	Yes	Yes	Yes	Yes	No	Yes
Survey wave FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes	Yes	No	No
Canton of work FE	No	No	No	Yes	Yes	No	No
Years-since-entry FE	No	No	No	No	Yes	No	No
Individual FE	No	No	No	No	No	Yes	No

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Effect of policies on job mobility, and on-the-job wage growth

	(1) Sepa-rations	(2) Separation non-emp.	(3) Separation employment	(4) Job-to-job change	(5) Job-to-job $\Delta e > 0$	(6) Job-to-job $\Delta e < 0$	(7) On-the-job $\Delta e > 0$	(8) On-the-job $\Delta e < 0$
A. Canton fixed effects								
Priority	-0.0038	0.0018	-0.0056**	-0.0050***	-0.0029***	-0.0020	-0.0368***	0.0257**
	(0.0037)	(0.0032)	(0.0024)	(0.0019)	(0.0011)	(0.0012)	(0.0117)	(0.0108)
Share restricted jobs	-0.0146	0.0076	-0.0223**	-0.0187**	-0.0085**	-0.0100**	-0.0020	0.0048
	(0.0110)	(0.0091)	(0.0094)	(0.0073)	(0.0033)	(0.0043)	(0.0291)	(0.0278)
B. Individual fixed effects								
Priority	-0.0021	0.0051	-0.0072*	-0.0074*	-0.0042*	-0.0033	-0.0408	0.0338
	(0.0067)	(0.0058)	(0.0043)	(0.0040)	(0.0025)	(0.0021)	(0.0246)	(0.0233)
Share restricted jobs	-0.0387*	-0.0152	-0.0234**	-0.0219**	-0.0081	-0.0133***	0.0015	0.0190
	(0.0226)	(0.0166)	(0.0109)	(0.0088)	(0.0058)	(0.0044)	(0.0705)	(0.0722)
Outcome mean	0.1108	0.0774	0.0333	0.0286	0.0153	0.0130	0.7248	0.2458
Num. individuals	11,515	11,515	11,515	11,515	11,515	11,515	259	259
Observations	394,779	394,779	394,779	394,779	394,779	394,779	19,273	19,273

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Back

Effect of policies on job mobility, and on-the-job wage growth

	(1) Sepa-rations	(2) Separation non-emp.	(3) Separation employment	(4) Job-to-job change	(5) Job-to-job $\Delta e > 0$	(6) Job-to-job $\Delta e < 0$	(7) On-the-job $\Delta e > 0$	(8) On-the-job $\Delta e < 0$
A. Canton fixed effects								
Priority	-0.0038	0.0018	-0.0056**	-0.0050***	-0.0029***	-0.0020	-0.0368***	0.0257**
	(0.0037)	(0.0032)	(0.0024)	(0.0019)	(0.0011)	(0.0012)	(0.0117)	(0.0108)
Share restricted jobs	-0.0146	0.0076	-0.0223**	-0.0187**	-0.0085**	-0.0100**	-0.0020	0.0048
	(0.0110)	(0.0091)	(0.0094)	(0.0073)	(0.0033)	(0.0043)	(0.0291)	(0.0278)
B. Individual fixed effects								
Priority	-0.0021	0.0051	-0.0072*	-0.0074*	-0.0042*	-0.0033	-0.0408	0.0338
	(0.0067)	(0.0058)	(0.0043)	(0.0040)	(0.0025)	(0.0021)	(0.0246)	(0.0233)
Share restricted jobs	-0.0387*	-0.0152	-0.0234**	-0.0219**	-0.0081	-0.0133***	0.0015	0.0190
	(0.0226)	(0.0166)	(0.0109)	(0.0088)	(0.0058)	(0.0044)	(0.0705)	(0.0722)
Outcome mean	0.1108	0.0774	0.0333	0.0286	0.0153	0.0130	0.7248	0.2458
Num. individuals	11,515	11,515	11,515	11,515	11,515	11,515	259	259
Observations	394,779	394,779	394,779	394,779	394,779	394,779	19,273	19,273

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Exit into non-employment: No effect. Back

Effect of policies on job mobility, and on-the-job wage growth

	(1) Sepa-rations	(2) Separation non-emp.	(3) Separation employment	(4) Job-to-job change	(5) Job-to-job $\Delta e > 0$	(6) Job-to-job $\Delta e < 0$	(7) On-the-job $\Delta e > 0$	(8) On-the-job $\Delta e < 0$
A. Canton fixed effects								
Priority	-0.0038	0.0018	-0.0056**	-0.0050***	-0.0029***	-0.0020	-0.0368***	0.0257**
	(0.0037)	(0.0032)	(0.0024)	(0.0019)	(0.0011)	(0.0012)	(0.0117)	(0.0108)
Share restricted jobs	-0.0146	0.0076	-0.0223**	-0.0187**	-0.0085**	-0.0100**	-0.0020	0.0048
	(0.0110)	(0.0091)	(0.0094)	(0.0073)	(0.0033)	(0.0043)	(0.0291)	(0.0278)
B. Individual fixed effects								
Priority	-0.0021	0.0051	-0.0072*	-0.0074*	-0.0042*	-0.0033	-0.0408	0.0338
	(0.0067)	(0.0058)	(0.0043)	(0.0040)	(0.0025)	(0.0021)	(0.0246)	(0.0233)
Share restricted jobs	-0.0387*	-0.0152	-0.0234**	-0.0219**	-0.0081	-0.0133***	0.0015	0.0190
	(0.0226)	(0.0166)	(0.0109)	(0.0088)	(0.0058)	(0.0044)	(0.0705)	(0.0722)
Outcome mean	0.1108	0.0774	0.0333	0.0286	0.0153	0.0130	0.7248	0.2458
Num. individuals	11,515	11,515	11,515	11,515	11,515	11,515	259	259
Observations	394,779	394,779	394,779	394,779	394,779	394,779	19,273	19,273

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Job mobility: Less switching to higher, but also to lower-paying jobs.

Back

Effect of policies on job mobility, and on-the-job wage growth

	(1) Sepa-rations	(2) Separation non-emp.	(3) Separation employment	(4) Job-to-job change	(5) Job-to-job $\Delta e > 0$	(6) Job-to-job $\Delta e < 0$	(7) On-the-job $\Delta e > 0$	(8) On-the-job $\Delta e < 0$
A. Canton fixed effects								
Priority	-0.0038	0.0018	-0.0056**	-0.0050***	-0.0029***	-0.0020	-0.0368***	0.0257**
	(0.0037)	(0.0032)	(0.0024)	(0.0019)	(0.0011)	(0.0012)	(0.0117)	(0.0108)
Share restricted jobs	-0.0146	0.0076	-0.0223**	-0.0187**	-0.0085**	-0.0100**	-0.0020	0.0048
	(0.0110)	(0.0091)	(0.0094)	(0.0073)	(0.0033)	(0.0043)	(0.0291)	(0.0278)
B. Individual fixed effects								
Priority	-0.0021	0.0051	-0.0072*	-0.0074*	-0.0042*	-0.0033	-0.0408	0.0338
	(0.0067)	(0.0058)	(0.0043)	(0.0040)	(0.0025)	(0.0021)	(0.0246)	(0.0233)
Share restricted jobs	-0.0387*	-0.0152	-0.0234**	-0.0219**	-0.0081	-0.0133***	0.0015	0.0190
	(0.0226)	(0.0166)	(0.0109)	(0.0088)	(0.0058)	(0.0044)	(0.0705)	(0.0722)
Outcome mean	0.1108	0.0774	0.0333	0.0286	0.0153	0.0130	0.7248	0.2458
Num. individuals	11,515	11,515	11,515	11,515	11,515	11,515	259	259
Observations	394,779	394,779	394,779	394,779	394,779	394,779	19,273	19,273

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

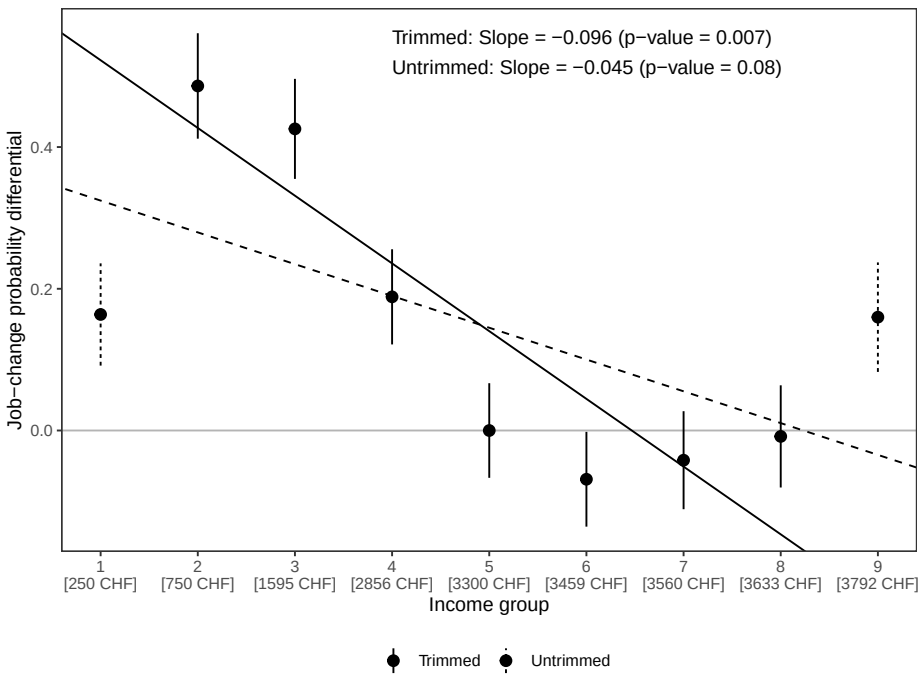
On-job wage increase: Priority policy ↓; no effect of the restricted share.

Back

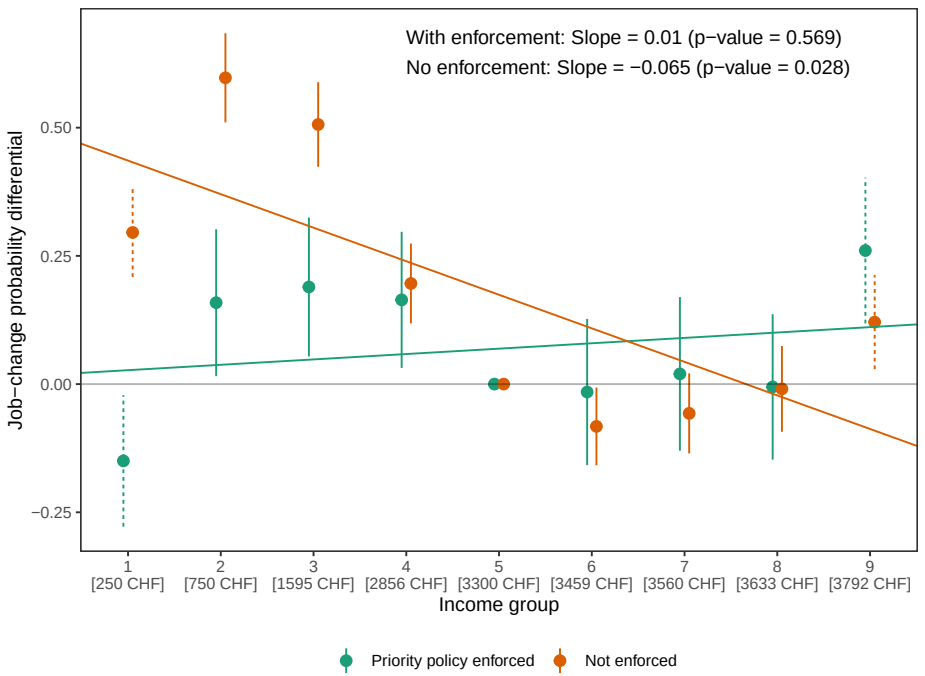
Separation elasticity

Back

Figure: Separations and residualized wages.



(a) Overall elasticity

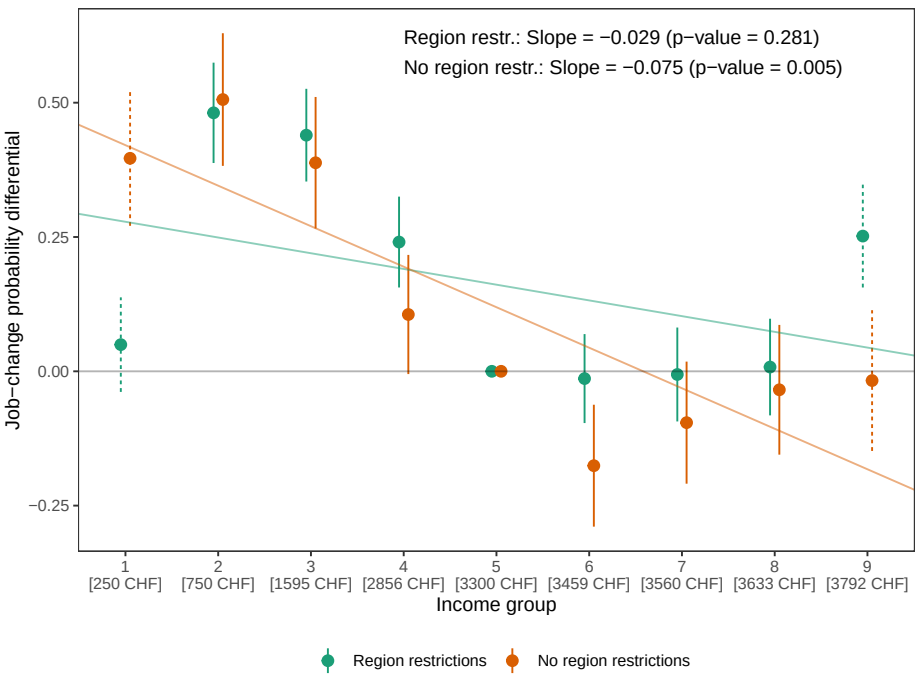


(b) By prioritization

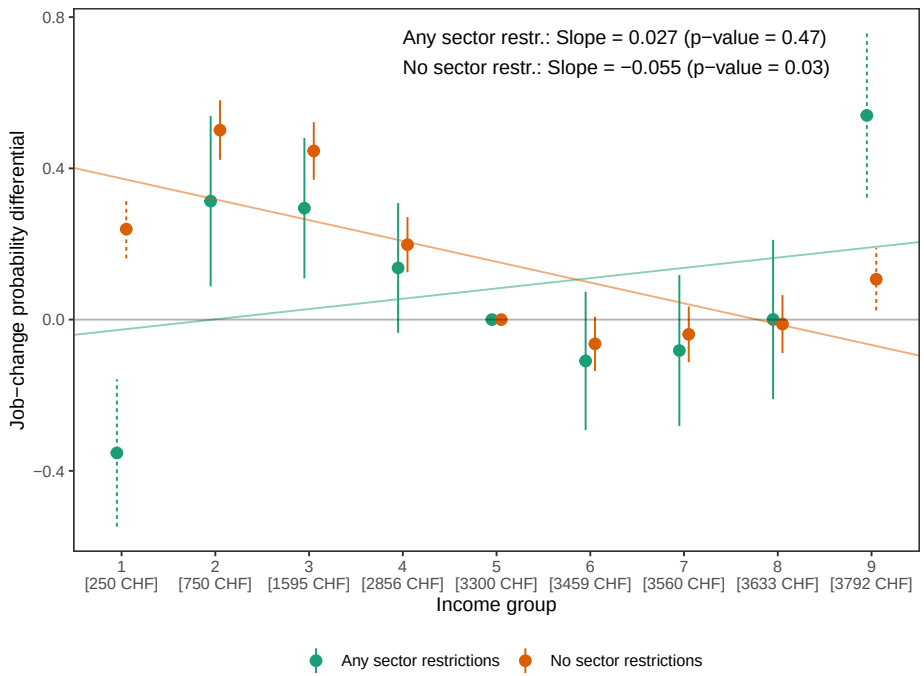
Separation elasticity

Back

Figure: Separations and residualized wages.



(a) By regional restrictions



(b) By sectoral restrictions

Employer concentration

Back

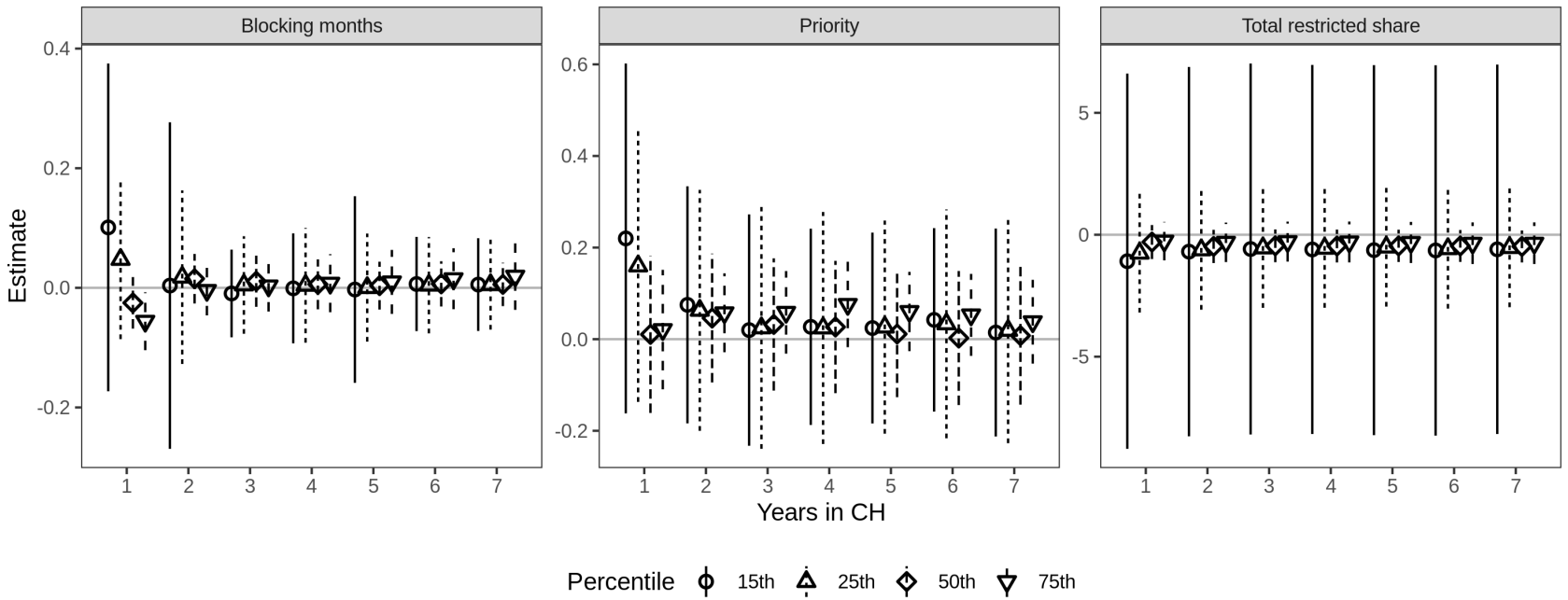
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share banned	−0.263	−0.051	−0.112	−0.130	−0.201	−0.056	−0.108	−0.133
	(0.204)	(0.054)	(0.104)	(0.126)	(0.160)	(0.046)	(0.086)	(0.106)
Priority enforced	0.045	−0.070***	−0.127***	−0.074*	0.034	−0.074***	−0.135***	−0.079*
	(0.043)	(0.024)	(0.042)	(0.043)	(0.046)	(0.025)	(0.045)	(0.047)
Share total restricted jobs	0.092	0.051	0.104	0.067				
	(0.135)	(0.036)	(0.066)	(0.075)				
Share commuter-restricted jobs					0.998*	0.316	0.683*	0.473
					(0.568)	(0.192)	(0.348)	(0.382)
Share sector-restricted jobs					0.070	0.043	0.084	0.059
					(0.114)	(0.033)	(0.063)	(0.062)
Measure	HHI	Gini	Log(Ratio)	Theil	HHI	Gini	Log(Ratio)	Theil
Num. obs.	1474	1474	1474	1474	1495	1495	1495	1495
N Clusters	104	104	104	104	104	104	104	104

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Effects on employment of EU-15 immigrants

Back

Idea: test whether restrictions affect employment and earnings of (low-paid) EU-15 immigrants



Long-run effects

Econometric approach

Deviations from typical labor market integration path due to initial policy conditions

$$Y_{it} = a_\tau + b_\tau{}' \mathrm{P}_{cT(i)} + d_\tau \bar{u}_{cT(i)} + \pi' w_i + \underbrace{\mu_c + \delta_t}_{\text{additive or multiplicative}} + \nu_{it}$$

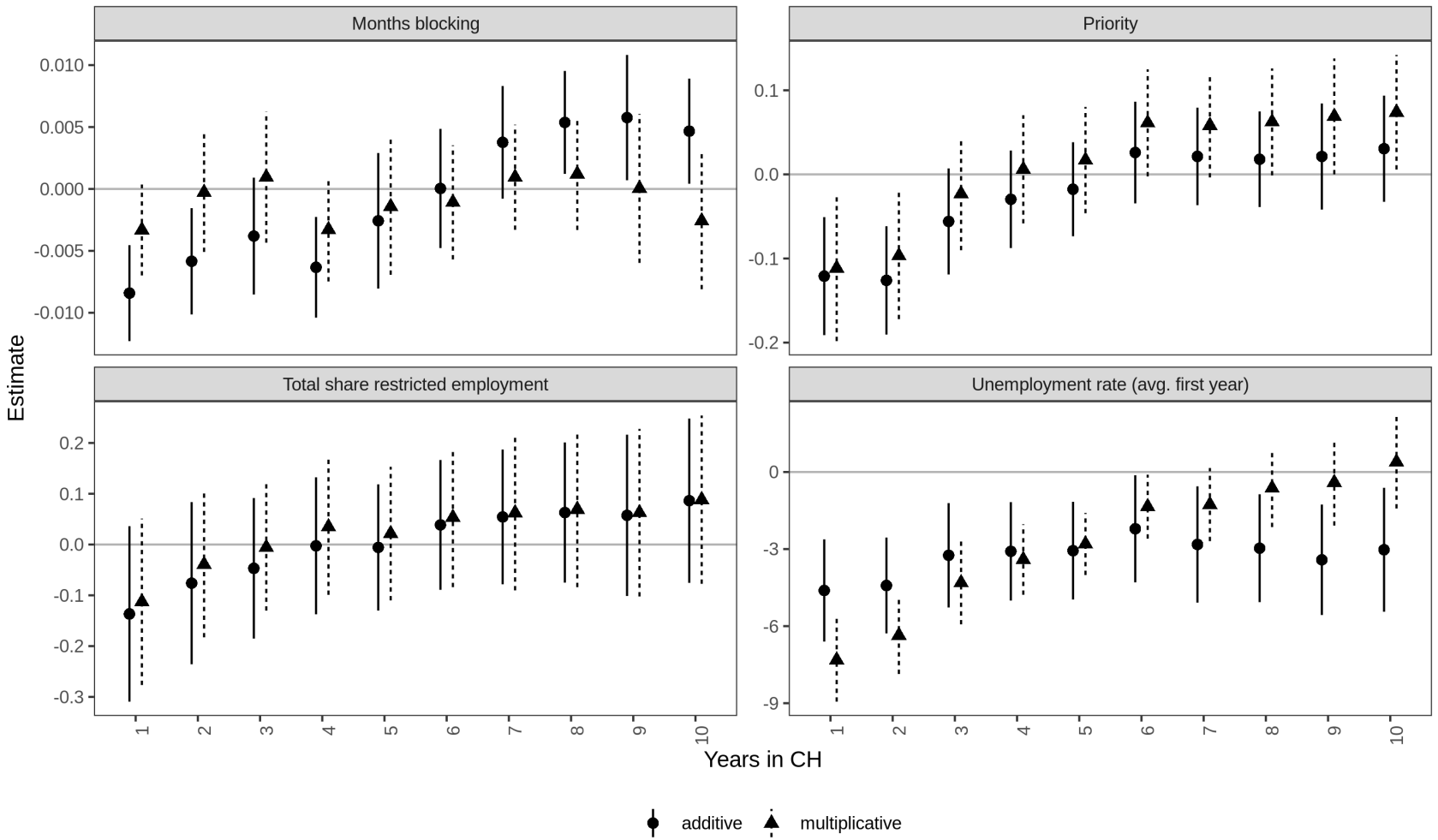
where individual i, initially assigned canton c, year t, year of arrival $T(i)$, years since arrival τ (Von Wachter, 2020)

Y_{it}	annual employment, earnings; emigration
$\mathrm{P}_{cT(i)}$	sector, cantonal, self-employment restrictions during first year since arrival
$u_{cT(i)}$	unemployment rate at arrival
δ_t, μ_c	year & canton fixed effects
w_i	controls
α_τ	measures typical integration path
b_τ	measures *deviation* from typical integration path due to policy
d_τ	measures the effect of initial labor market conditions

Back

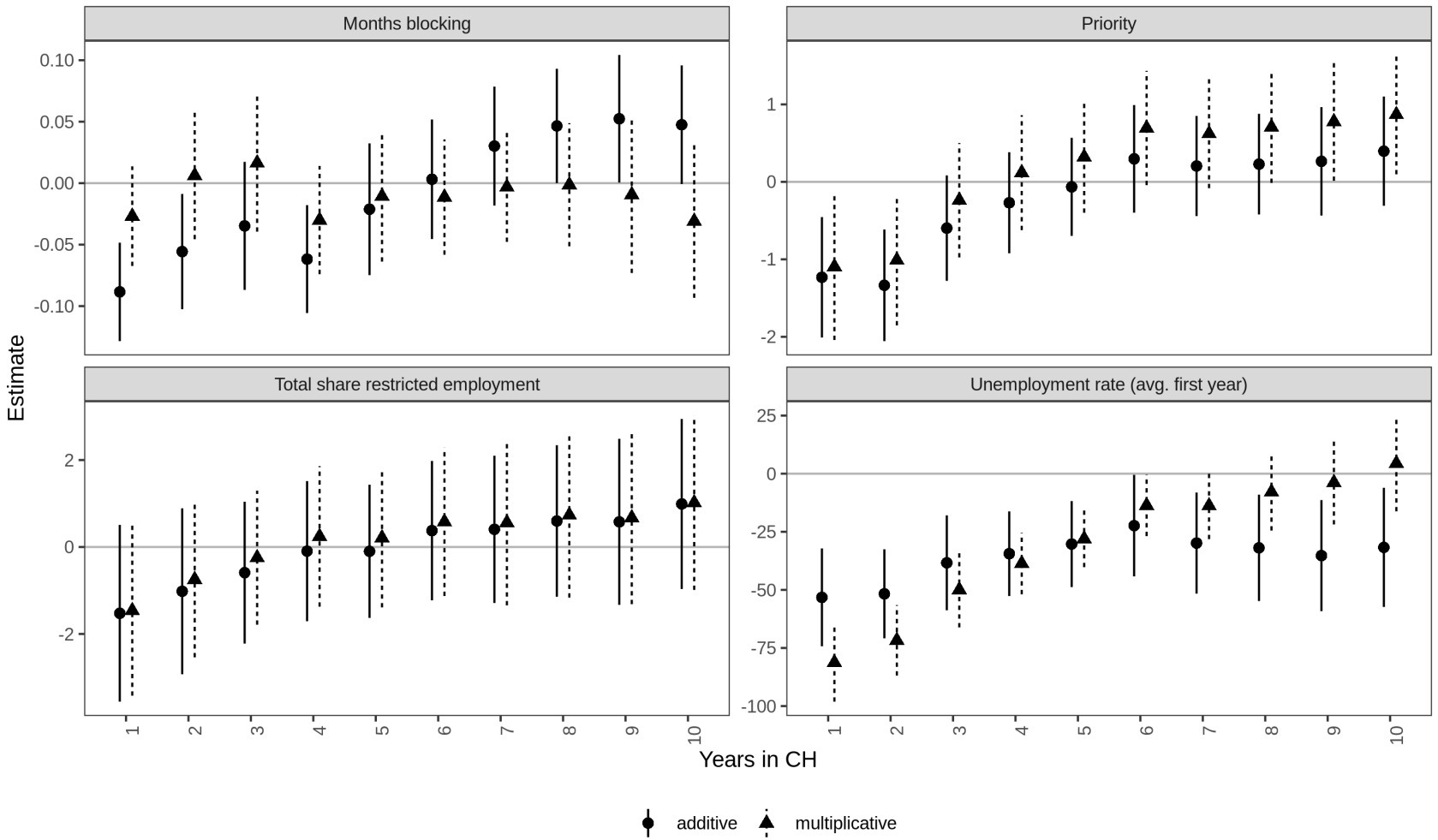
Long-run effects

Employment



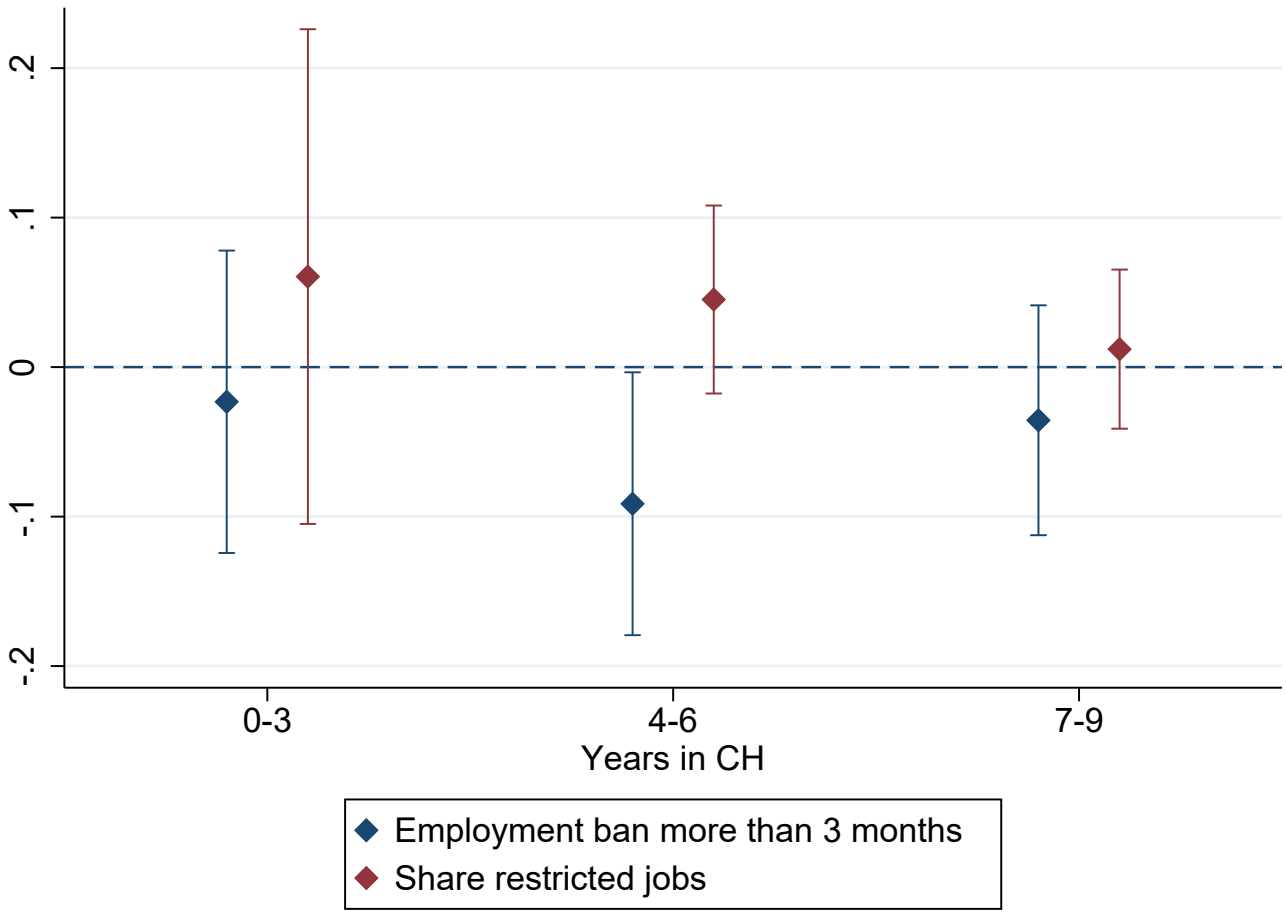
Back

Long-run effects on earnings



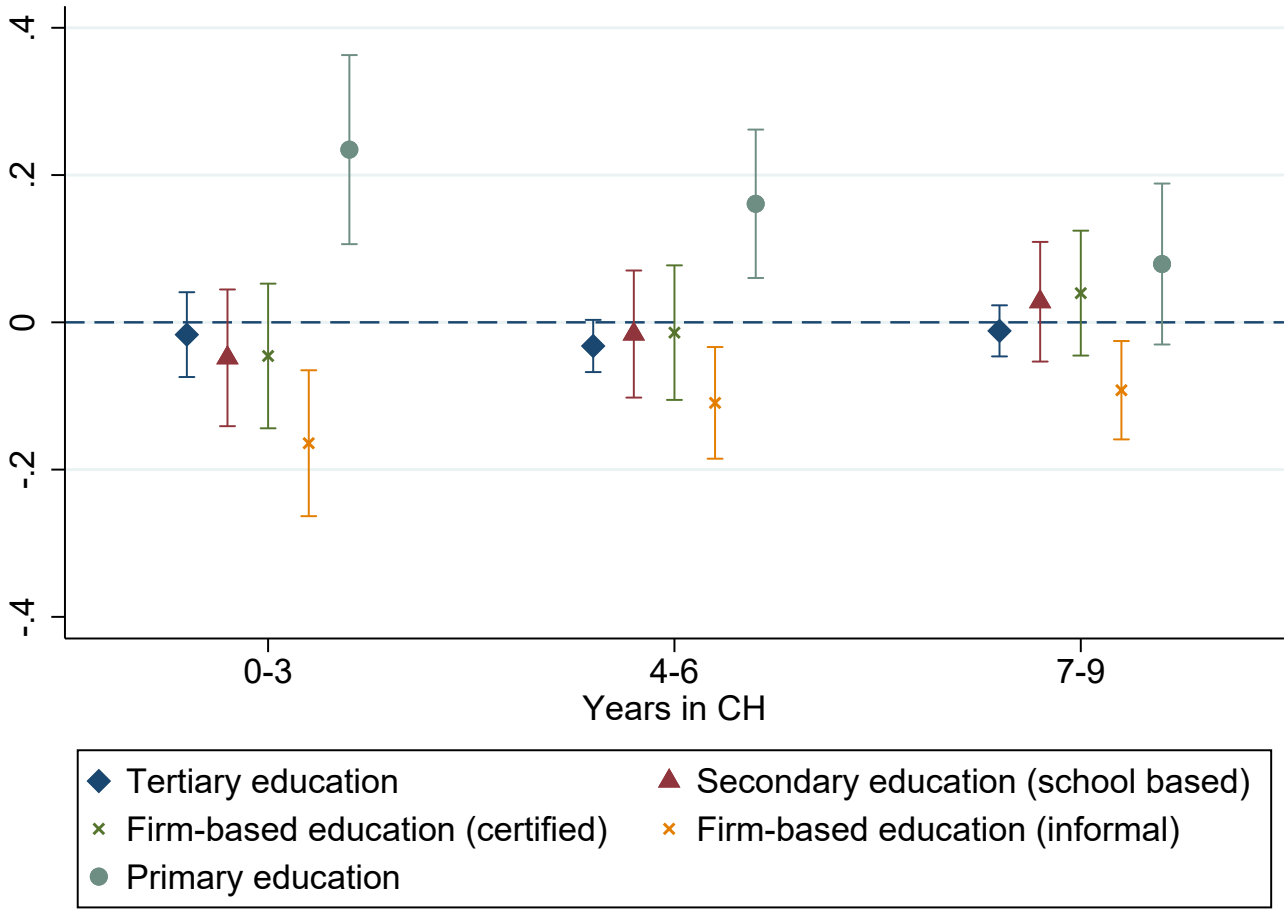
Back

Long-run effects on wages (SSES data)



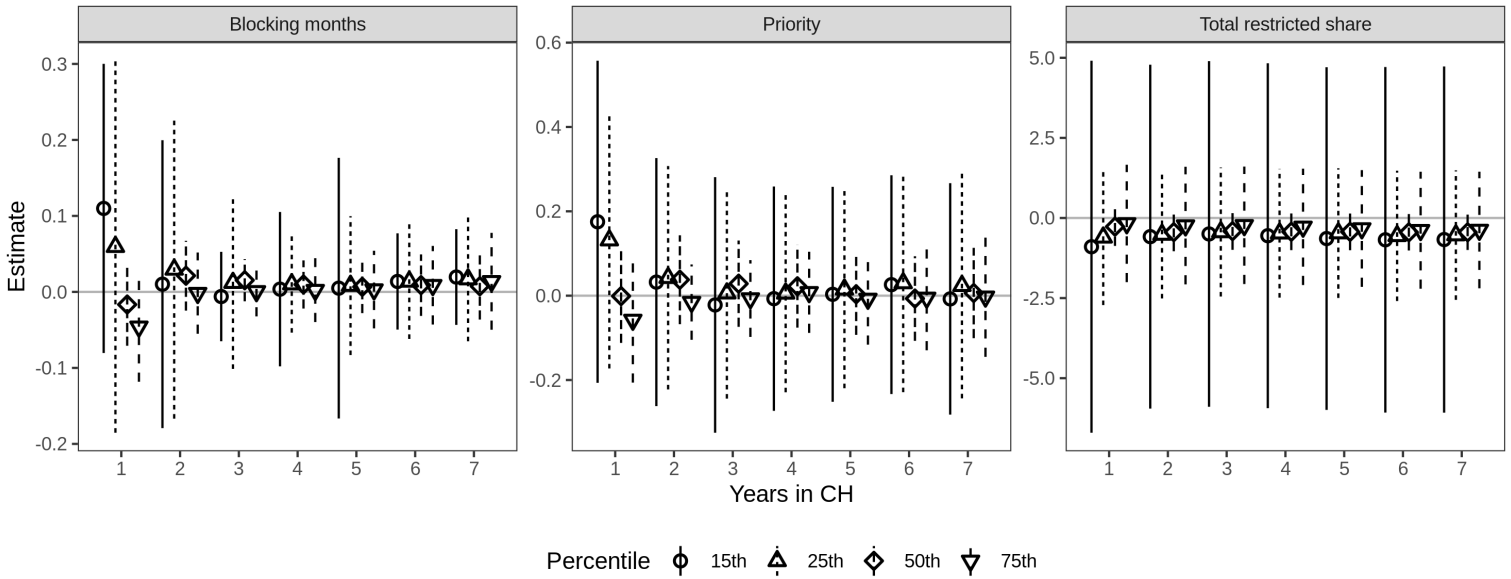
Back

Long-run effects on educational attainment (SSES data)



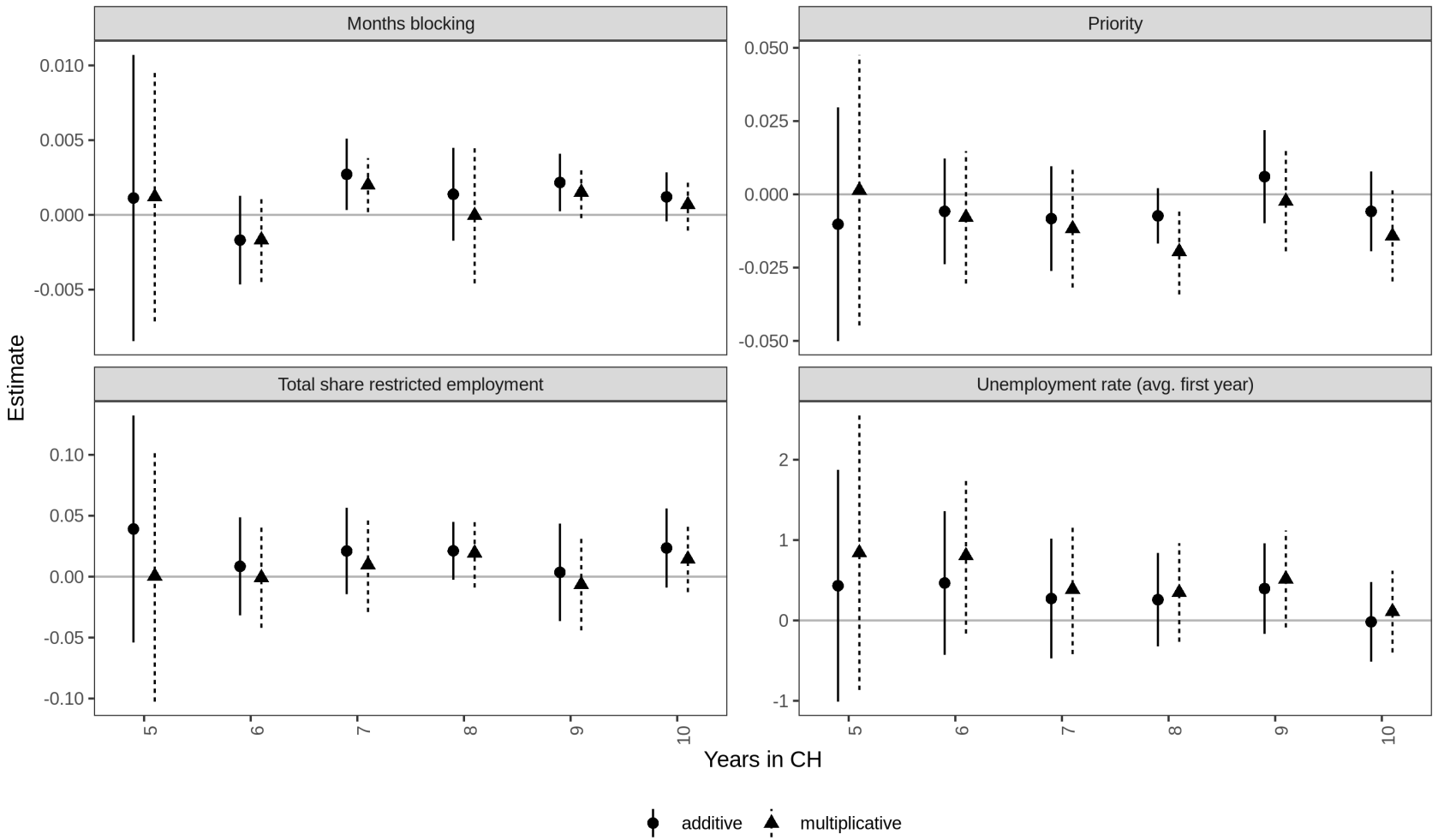
Back

Effects on earnings of EU-15 immigrants



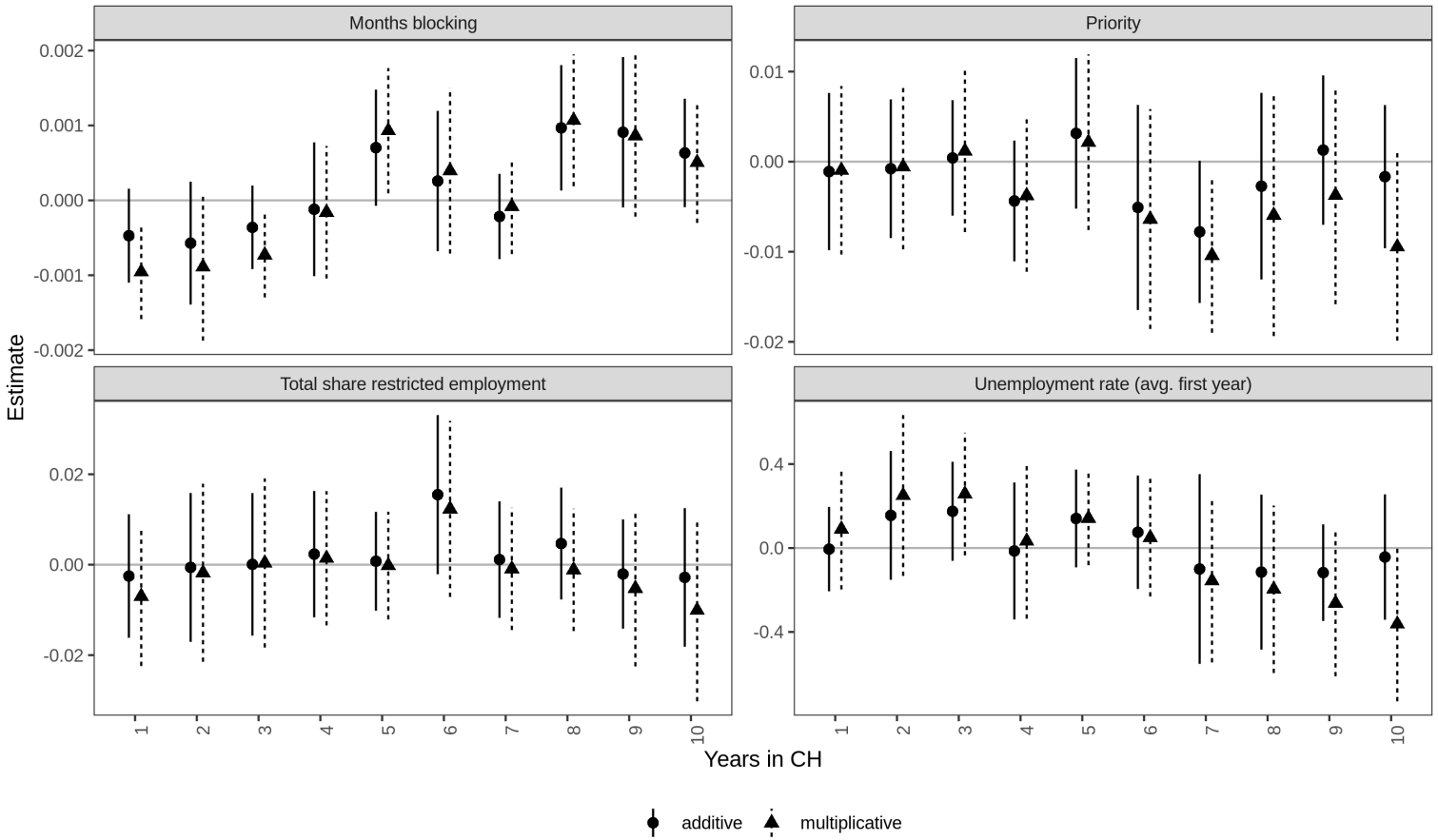
Back

Effects on emigration



Little to no evidence for an effect on emigration; confirmed by alternative emigration measure. AHV emigration Back

Effects on emigration



Back

Costs for refugees and host society: Estimates

Panel A. Total earnings (CHF)	*Mean*	*Total (Mio)*
Status quo	16562.00	1216.39
No restrictions	19404.40	1425.15
Most restrictive	12206.10	896.47
Difference: no restrictions vs status quo	2575.20	189.14
Difference: no restrictions vs most restrictive	7198.30	528.68

Panel B. Social costs (CHF)	*Mean*	*Total (Mio)*
Status quo	16472.00	1209.78
No restrictions	15027.20	1103.67
Most restrictive	27751.20	2038.19
Difference: no restrictions vs status quo	-1569.20	-115.25
Difference: no restrictions vs most restrictive	-12724.00	-934.51

Panel C. Employment months	*Mean*	*Total ('000)*
Status quo	6.50	474.55
No restrictions	7.30	538.73
Most restrictive	5.00	370.38
Difference: no restrictions vs status quo	0.80	57.60
Difference: no restrictions vs most restrictive	2.30	168.35

We consider three scenarios: no restrictions, status quo and maximum (observed) restrictions.

Back

Costs for refugees and host society: Estimates

Panel A. Total earnings (CHF)	*Mean*	*Total (Mio)*
Status quo	16562.00	1216.39
No restrictions	19404.40	1425.15
Most restrictive	12206.10	896.47
Difference: no restrictions vs status quo	2575.20	189.14
Difference: no restrictions vs most restrictive	7198.30	528.68

Panel B. Social costs (CHF)	*Mean*	*Total (Mio)*
Status quo	16472.00	1209.78
No restrictions	15027.20	1103.67
Most restrictive	27751.20	2038.19
Difference: no restrictions vs status quo	-1569.20	-115.25
Difference: no restrictions vs most restrictive	-12724.00	-934.51

Panel C. Employment months	*Mean*	*Total ('000)*
Status quo	6.50	474.55
No restrictions	7.30	538.73
Most restrictive	5.00	370.38
Difference: no restrictions vs status quo	0.80	57.60
Difference: no restrictions vs most restrictive	2.30	168.35

Comparison no restrictions vs. most restrictive regime Back

Costs for refugees and host society: Estimates

Panel A. Total earnings (CHF)	*Mean*	*Total (Mio)*
Status quo	16562.00	1216.39
No restrictions	19404.40	1425.15
Most restrictive	12206.10	896.47
Difference: no restrictions vs status quo	2575.20	189.14
Difference: no restrictions vs most restrictive	7198.30	528.68

Panel B. Social costs (CHF)	*Mean*	*Total (Mio)*
Status quo	16472.00	1209.78
No restrictions	15027.20	1103.67
Most restrictive	27751.20	2038.19
Difference: no restrictions vs status quo	-1569.20	-115.25
Difference: no restrictions vs most restrictive	-12724.00	-934.51

Panel C. Employment months	*Mean*	*Total ('000)*
Status quo	6.50	474.55
No restrictions	7.30	538.73
Most restrictive	5.00	370.38
Difference: no restrictions vs status quo	0.80	57.60
Difference: no restrictions vs most restrictive	2.30	168.35

Comparison status quo vs. no restrictions. Back