

The Equilibrium Effects of Workers' Outside Employment Options

Evidence from a Labor Market Integration

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Labor Market Integration of French-Swiss Border Region

- How does the access to high-paying Swiss jobs affect the French local labor market?
 - Access to swiss jobs → better outside options for french workers
 - How do wages and employment adjust?
 - Who benefits from better outside options?
 - On which margins do labour supply *and* demand adjust?
- We use a matched Diff-in-Diff approach to study the effects of the labor market integration

Main Findings

- Wages and Employment *increase* in French border region
- Effects are *heterogeneous* across skill groups
 - High-skilled workers main group to benefit directly from cross-border commuting, but wages and employment remain stable
 - Low and mid-skilled workers do not see rise in cross-border commuting propensity
 - Low-skilled and mid-skilled workers see rise in wages, and low-skill workers even in employment
- Disconnect between wages and commuting can be explained by:
 1. Elastic supply of high skill workers (across regions)
 - local increase in outside option is competed away by additional labor supply
 2. Local Product Demand \uparrow → demand for labor \uparrow
 - wages, labor force participation rate and employment rise, if across region supply of workers is not too elastic

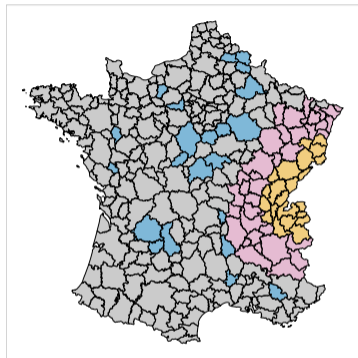
Related Literature

- **Integration of Local Labor Markets**
 - Bütikofer, Løken, and Willén (2022), Beerli, Ruffner, Siegenthaler, and Peri (2021), Dustmann, Schönberg, and Stuhler (2017)
- **Impact of Immigration on local labor markets**
 - Borjas (2003), Card (2009), Peri (2012), Dustmann, Schönberg, and Stuhler (2016), Dustmann and Glitz (2015)
- **Minimum wages and labor market competition**
 - Flinn (2011), Dustmann, Lindner, Schönberg, Umkehrer, and vom Berge (2021), Harasztosi and Lindner (2019)
- **Spatial spillovers and local labor markets**
 - Monte, Redding, and Rossi-Hansberg (2018), Manning and Petrongolo (2017), Moretti (2010), Schmutz and Sidibé (2019)
- **Outside options and wage setting**
 - Caldwell and Danieli (2024), Jäger, Schoefer, Young, and Zweimüller (2020)

Labor Market Integration in the French-Swiss Border Region from 1998

Switzerland & EU liberalize cross-border commuting for residents in the border region

- **Transition period, 1999-2003:** Facilitate mobility
 - Longer permit duration, weekly commuting, job switches in Switzerland
- **Free mobility period, 2004-2007**
 - Remove priority requirement for Swiss workers
- In practice: anticipation effects starting from 1999
 - Swiss authorities grant permits more leniently
 - French residents were aware of the reform
- The integration was accompanied by trade reform for a small set of sectors



Status

■ Treated

■ Matched Inland

■ Excluded Inland

■ Non-matched Inland

► Treatment Region

Data and Measurement

- DADS: Matched firm-worker data 1995-2007
 - Full-count data → Local employment counts; within firm, within worker wage growth
 - DADS Panel (subsample) → within worker individual wage changes
- FICUS - Firm Balance Sheets 1995-2007
 - Sales, Value Added, Input Costs
- Census
 - Commuting to Switzerland
 - Labor force participation, unemployment
 - Census: (1982), 1990, 1999, 2006, 2007
 - complement with Labour Force Survey, but it has a break in survey design in 2002-03

Wage gap CH-F

Group workers into 3 skill groups by occupation/education

- managers & engineers — administrative & skilled production workers — unskilled prod. workers & service employees (Cahuc et al, 2006)
- tertiary education — secondary education — mandatory education

Empirical Strategy: Differences-in-Differences

- Compare treated with matched control labor markets Balance
- Identification comes from variation across space and time

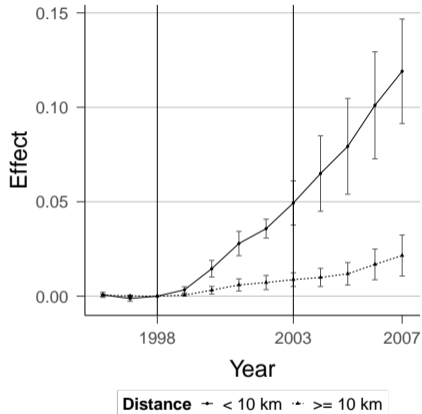
Year-specific effects for aggregate data at the market level

$$y_{mt}^g = \alpha_m^g + \alpha_t^g + \sum_{\tau \neq 1998} \beta_{\tau}^g \text{treat}_m \times 1[t = \tau] + \gamma^g X_{mt}^g + v_{mt}^g. \quad (1)$$

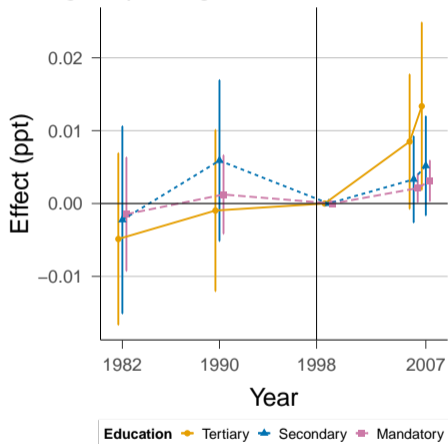
- m : labor market, g : worker group
- treat_m : indicator for labor markets at the French-Swiss border
- **Identifying assumption**: Parallel trends in absence of the labor market integration + no anticipation
- Cluster standard errors at the market level

Commuting to Switzerland rises

Commuters in Switzerland



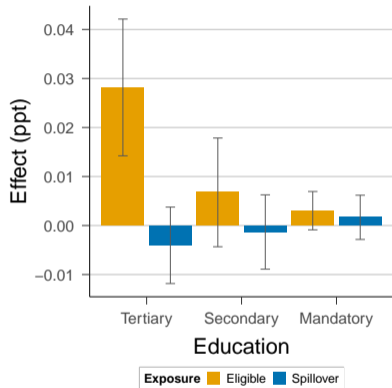
Commuting Propensity to Switzerland^a



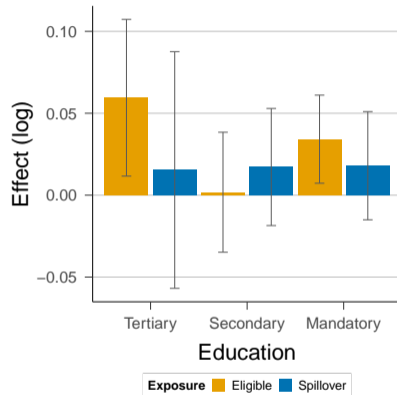
^aNo evidence for Gender Gap in commuting, contrast with Bütikofer et al. (2022)

Commuting Propensity and Population rise in eligible markets

Commuting Propensity to Switzerland



Population in French border region

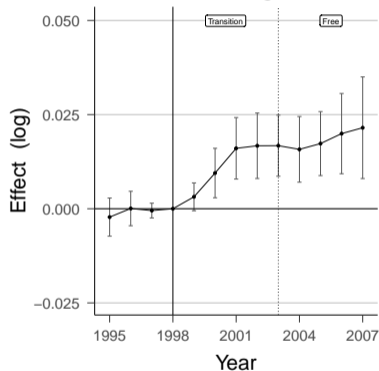


- Commuting Propensity to Switzerland rises in eligible labor markets

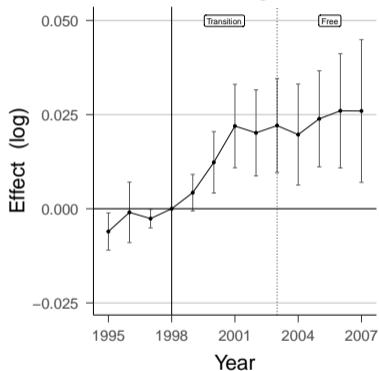
- Population increases in eligible labor markets

By Skill - Impact on Wages in France (i)

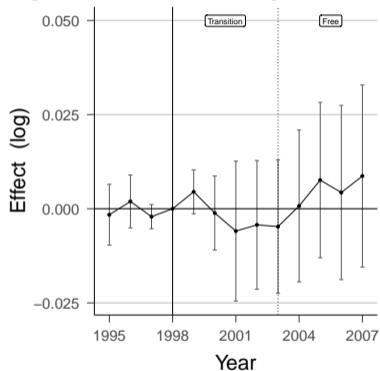
Low-skill workers' wages



Mid-skill workers' wages



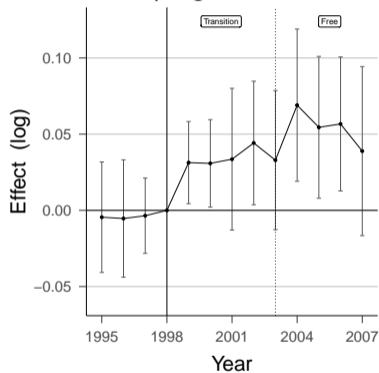
High-skill workers' wages



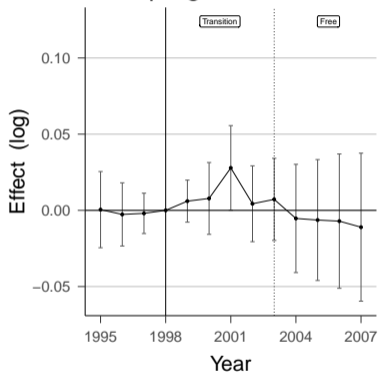
→ Wages in France rise for lower skill workers who have the least direct benefit from Swiss Jobs

By Skill - Impact on Employment in France

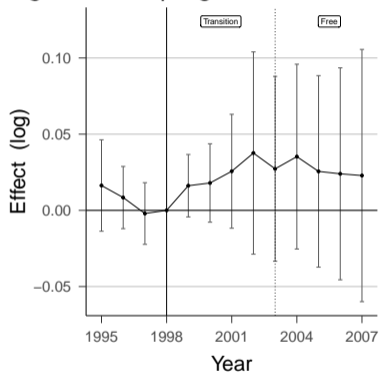
Low-skill Employment



Mid-skill Employment



High-skill Employment



→ Employment in France does not fall, even for high-skill workers who are most likely to take up Swiss Jobs

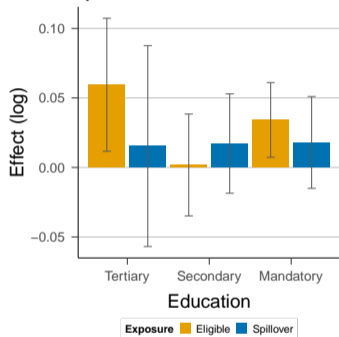
By Skill - Impact on Wages and Employment in France

Skill Group	Δ Commute Share CH	Δ Wages FR	Δ Emp FR	Δ Pop FR
Low	$\approx 0(+)$	+	+	+
Mid	$\approx 0(+)$	+	0	≈ 0
High	+	0	$\approx 0(+)$	+

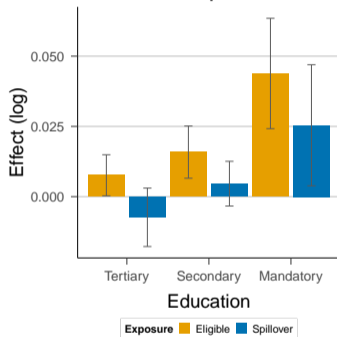
- High-skill workers commute to Switzerland, but see no increase in wages and stable employment in France
 - Outside options do not matter for wages?
 - How does Labor Supply adjust?
 - $\text{Employment} = \text{Population} \times \text{Participation Rate} \times (1 - \text{unemployment rate})$
- Low- and Mid-Skill workers do not commute more to Switzerland, but see increase in wages (and employment) → Are there productivity/demand spillovers?
 - Does local demand rise?
 - Does trade reform for particular sectors drive some of the results?

$$\text{Employment}_F = \text{Pop}_F \times \text{LF part}_F \times (1 - u_F) \times (1 - e_{CH})$$

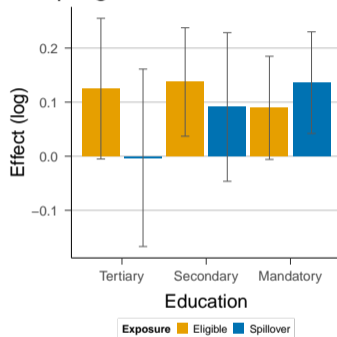
Local Population



Labor Force Participation Rate

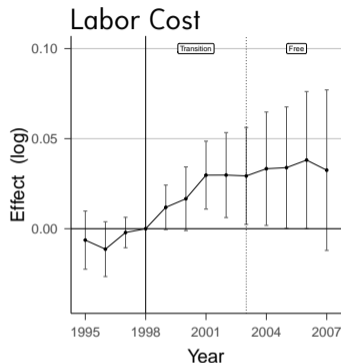
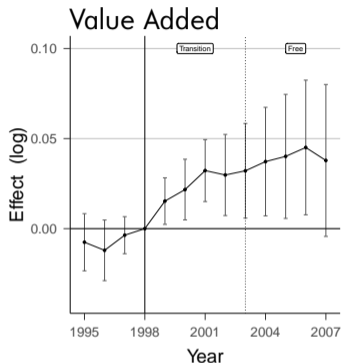
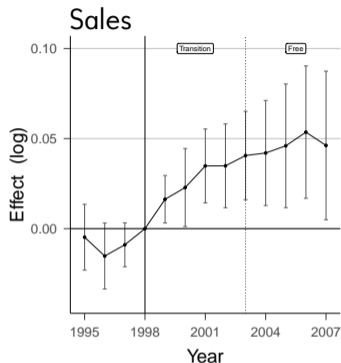


Unemployment rate



→ Boom in active workforce close to the border \geq increase in commuting to Switzerland

Firms' Adjustment - Sales, Value Added, Labor Cost



▶ Labor vs. Materials

▶ Sectors

- Sales, Value added and Labor Costs rise by approximately same amount

→ Labor share remains constant

→ Production expands

Summary Results - Labor Market Integration in the French-Swiss Border Region

1. Main Results ▶ Robustness

- Commuting to Switzerland rises
- Wages in France rise for low and mid-skill workers, but not for high-skill workers who commute most
- Employment in France rises for low skill workers

2. Labor Supply Adjustment

- Population rises in eligible labor markets
- Labor Force participation rises for low skill workers
- Labor Supply rises in response to labor market integration

3. Firms' Adjustment

- Firms increase sales and value added, Labor Share constant
- Firms achieve higher "productivity" per worker

4. Heterogeneity across sectors

- Tradables without reform limited response
- Local demand ↑

Search model of the labor market with endogenous Labor Supply (i)

- DMP + endogenous labour force participation and mobility across regions (Flinn, 2006, Roback, 1982, Rosen, 1982)
- Key Features:
 - Local Labor Supply curve $L = Pop \times Q(\rho V_u)$
 - Nash wage setting: $w(\varepsilon, V_u) = \beta\varepsilon + (1 - \beta)\rho V_u \rightarrow$ reservation wage $= \rho V_u$
 - Special Case with free mobility a la Roback (1982), Rosen (1982) $\iff \rho V_u = \rho \bar{V}$
- Implications:
 - Labor Force participation rate is positively related to reservation wage/value of job search in local market
 - Under free mobility, reservation wage does not respond due to population changes & Labor Force Participation Rate constant
- How does that shed light on our results?

Search model of the labor market with endogenous Labor Supply (ii)

- Key Results:

- i) High-skill workers see no wage increase in France, but commute to Switzerland
- ii) Low-skill workers see wage increases in France, and employment rises, but no commuting to Switzerland

i) High skill workers - Free mobility across regions

- reservation wage does not respond ✓
- population rises ✓
- labor force participation stays constant ✓
- unemployment should rise ✓

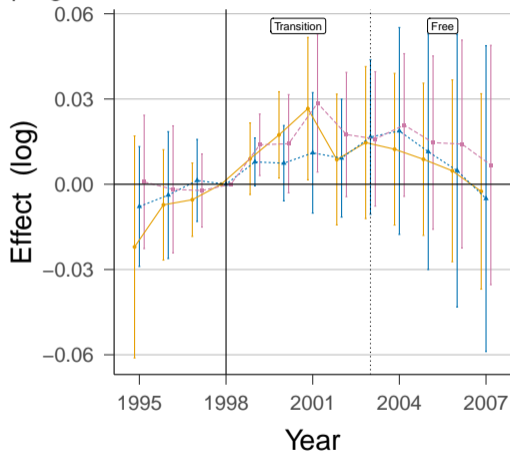
ii) Low + Mid skill workers: Local demand \uparrow + finite moving elasticity

- wage increases ✓
- labor force participation rises ✓
- population rises (depends on moving elasticity) ✓
- unemployment ambiguous, depends on relative strength of demand vs. supply shift

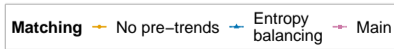
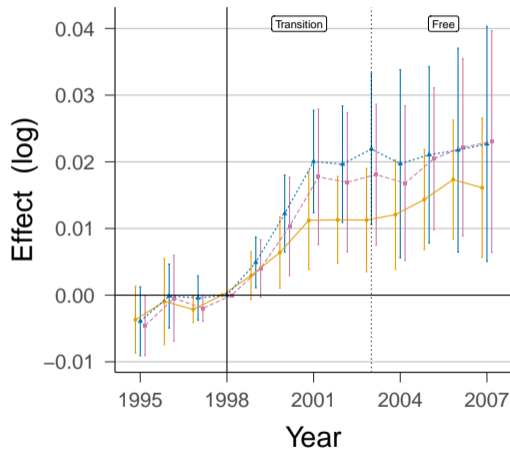
Conclusion - Labor Market Integration along French-Swiss Border

- More commuting to higher paying Swiss Jobs
- Boom *in France*: Higher wages and employment
 - Large labour supply response through both population and labor force participation
 - Local production expands
 - Labour supply adjustment so strong that commuting propensity does not rise for low and mid-skill workers
- Competition from Swiss Jobs absorbed by expansion of local labor supply
- Local Labor Market response to labor demand shocks depends strongly on response in supply of workers (contrasting results to Dodini, Løken, and Willén (2022))

Employment



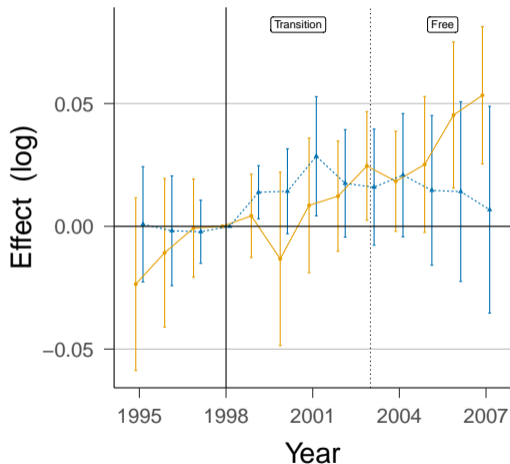
Wages



Placebo - Spanish Border

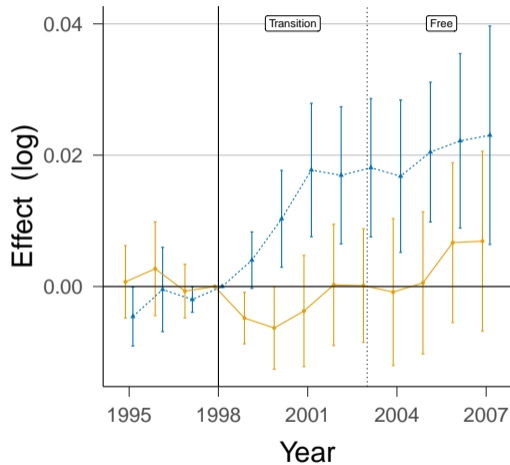
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Employment



Exercise — Placebo Spanish border — Main

Wages

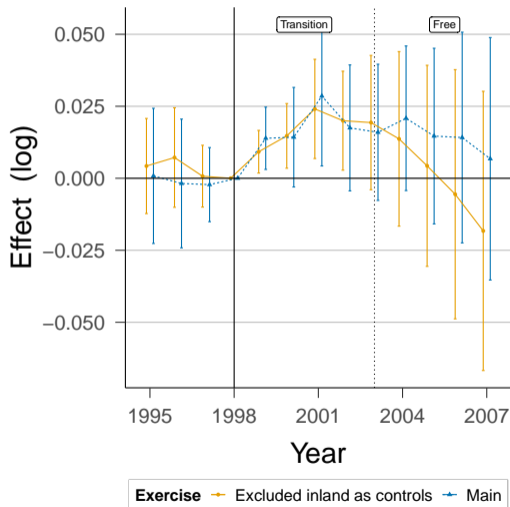


Exercise — Placebo Spanish border — Main

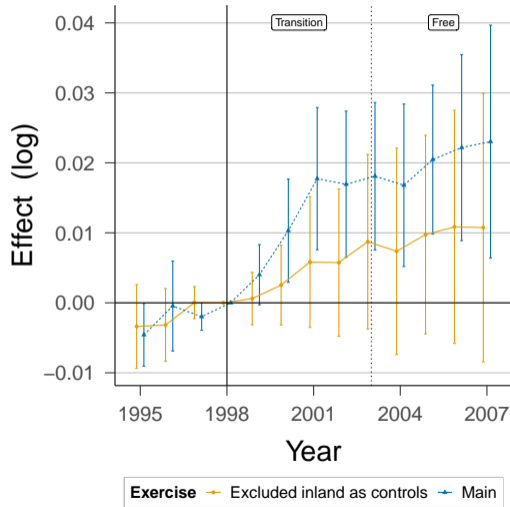
Robustness - Excluded Inland as Controls

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Employment



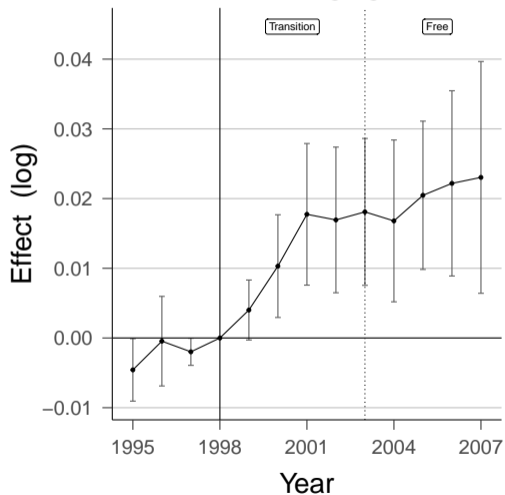
Wages



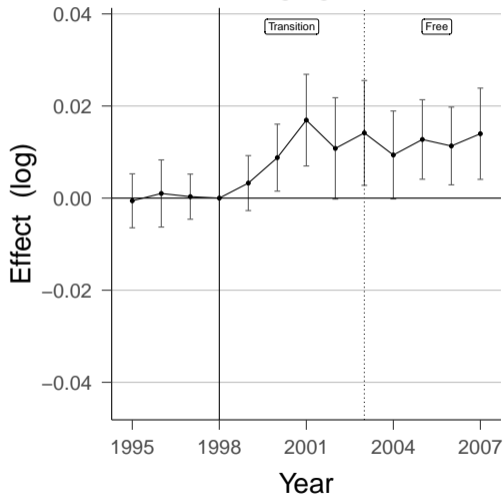
Impact on Wages in France – Panel DADS

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Within firm, Within worker wage growth



Panel – Within worker wage growth

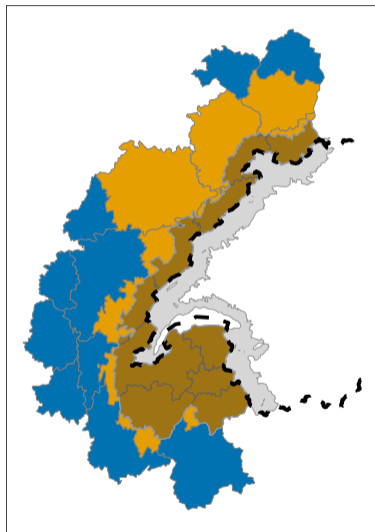


French workers earn a 20 percent premium in Switzerland (LFS)

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	Log(hourly wage)			
	(1)	(2)	(3)	(4)
Swiss job	0.474 (0.014)	0.192 (0.047)		
Swiss job - Low skill occ.			0.526 (0.016)	0.116 (0.059)
Swiss job - Mid skill occ.			0.494 (0.014)	0.204 (0.047)
Swiss job - High skill occ.			0.292 (0.015)	0.281 (0.039)
Worker FE	N	Y	N	Y
Tenure and industry controls	N	Y	N	Y
Observations	46620	46620	46620	46620
Number of years	10	10	10	10
R^2	0.60	0.93	0.60	0.93

Treatment Region: The eligible and affected labor markets [▶ Back](#)

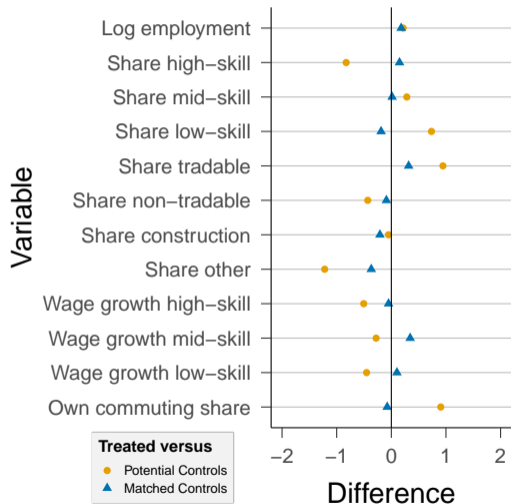


Type ■ Eligible ■ Spillover

- Grey: municipalities eligible for cross-border commuting (Swiss-French border region)
- Yellow: eligible labor markets – directly impacted by the reform
- Blue: labor markets we expect to be indirectly affected (Manning and Petrongolo, 2017)

Mahalanobis matching to improve balance

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Mahalanobis matching

- Potential controls $> 150\text{km}$ distance to Swiss Border (Manning and Petrongolo, 2017)
- Match one control unit to each treated unit
- Robust, use limited set of covariates (Stuart, 2010; Zhao, 2004)

Firms Adjustment - heterogeneity across sectors

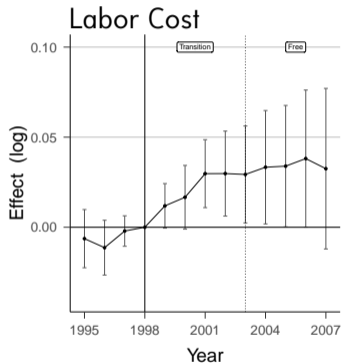
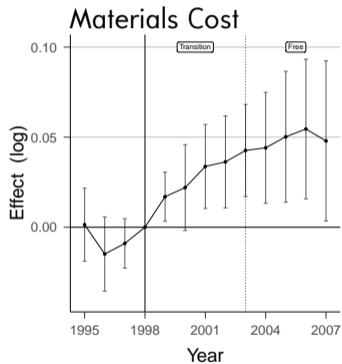
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	All sectors (1)	Non-tradable (2)	Construction (3)	Other (4)	Tradable		
					All (5)	w/ trade reform (6)	w/o trade reform (7)
Panel A: Sales							
<i>treat</i> × <i>transition</i>	0.013 (0.007)	0.035 (0.015)	0.017 (0.007)	0.021 (0.010)	0.008 (0.011)	0.041 (0.018)	-0.026 (0.014)
<i>treat</i> × <i>free</i>	0.031 (0.010)	0.045 (0.021)	0.057 (0.012)	0.011 (0.012)	0.027 (0.019)	-0.001 (0.031)	0.021 (0.018)
Observations	572	572	572	572	572	572	572
R ²	0.34	0.30	0.28	0.22	0.37	0.34	0.27
Panel B: Labour Cost							
<i>treat</i> × <i>transition</i>	0.017 (0.008)	0.027 (0.015)	0.041 (0.013)	0.027 (0.014)	0.002 (0.014)	0.023 (0.019)	-0.024 (0.017)
<i>treat</i> × <i>free</i>	0.040 (0.013)	0.045 (0.020)	0.078 (0.017)	0.042 (0.019)	0.016 (0.027)	-0.022 (0.036)	0.019 (0.028)
Observations	572	572	572	572	572	572	572
R ²	0.32	0.24	0.29	0.30	0.38	0.32	0.30
Panel C: Wages							
<i>treat</i> × <i>transition</i>	0.015 (0.004)	0.014 (0.007)	0.022 (0.008)	0.008 (0.004)	0.017 (0.005)	0.008 (0.007)	0.019 (0.005)
<i>treat</i> × <i>free</i>	0.022 (0.006)	0.025 (0.014)	0.026 (0.015)	0.020 (0.004)	0.021 (0.007)	0.015 (0.011)	0.024 (0.008)
Observations	572	572	572	572	572	572	572
R ²	0.48	0.48	0.36	0.53	0.36	0.26	0.39

- Local Demand ↑ Sales increase in non-tradables and construction
- Trade reform for particular sectors has an impact (excluded in main results)
- Wage increases common across sectors
→ Outside options
- Unaffected Tradables see no expansion
→ no direct productivity spillovers

Firms Adjustment' - Materials vs. Labor

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- Materials and Labor Costs rise by approximately same amount

- Value added and Material Costs rise faster than employment

→ higher productivity per worker

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