

The Schenghen effect on cross-border commuting to Switzerland

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Abstract

In this paper we study the effects of Switzerland implementing the Schengen agreement in 2008 on labour mobility. By allowing vehicles to cross borders without stopping and residents in border areas freedom to cross borders away from fixed checkpoints, we expect cross-border commuting to be higher between countries belonging to the Schengen area. Using data from the European Labour Force Survey (ELFS), we estimate a difference-in-differences model and find that the Schengen effect in the context of Switzerland is positive and significant. Our result is particularly important due the timely and meaningful policy implications.

Keywords: cross-border commuting, free movements of labour, labour mobility.

JEL Classification: J61, R1, R11, R23.

1 Introduction

The economic and political integration in Europe started after World War II with the objective to promote the economic development of all the countries involved. The integration process has been slow, but ongoing since then. Four are the major components of the European integration: free movements of goods, capital, services and workers among member states. Among those, freedom of movement of workers is the least used. In 2011, only 3.1 percent of working age (15-64) EU nationals lived in an EU state other than their own (Martin, 2014). In the past decades, EU leaders have been trying to increase intra-EU labour migration, calling for interventions to make it as easy to work inside as outside the national state in which one is a citizen.¹ As explained by Borjas (2001), labour mobility is an important equilibrating mechanism in the labour market, with the potential of reducing disparities in regional labour market outcomes, such as unemployment and wages. Therefore, interregional labour mobility can bring to an efficient spatial allocation of

¹Regulation 492/2011 issued April 5, 2011 detailed the rights of EU nationals moving within the EU. A proposed directive issued April 30, 2013 (9124/13) outlined steps to reduce "practical obstacles" to intra-EU labor mobility by requiring, for instance, each member state to create an ombudsman to whom EU citizens can turn when they encounter obstacles to working in another EU country.

labour and consequently to welfare gains, particularly in areas with marked differences in regional labour market performance, as is the case for many European countries.

The Schengen Agreement, signed in Schengen, Luxembourg in June 1985 between Belgium, France, Luxembourg, The Netherlands and West Germany, was one of the most important measures adopted to promote internal mobility. It proposed the gradual abolition of border checks at the signatories' common borders and the harmonisation of visa policies. In 1990, the Agreement was supplemented by the Schengen Convention which proposed the abolition of internal border controls and a common visa policy. The Schengen Area operates very much like a single state for international travel purposes with external border controls for travellers entering and exiting the area, and common visas, but with no internal border controls. This intervention, which aimed at increasing labour mobility, is particularly relevant for commuters. By allowing vehicles to cross borders without stopping and residents in border areas freedom to cross borders away from fixed checkpoints, the treaty made the inter-regional travels to work journey shorter and easier. According to a 2006 study from the Centre for Future Studies (CSF 2006) - Social Demographics in 2016 - EU citizens are increasingly living in one EU country, working in another, shuttling back and forth between the two. Based on data from the European Commission's 2011 report, Mobility in Europe, 7 in every 1000 people employed across the EU commute across European state borders for work. While these figures may seem relatively small, the degree of cross-border commuting varies significantly between countries and regions. The report also shows that cross-border commuting has increased over time, particularly between 2004 and 2007, due to the 2004 EU enlargement, while it has slowed down between 2007 and 2010 (Ralph, 2015).

The purpose of this paper is to analyse the effect of Switzerland joining the Schengen area in 2008 on inter-regional commuting. We choose Switzerland because it is a country located in the centre of Europe, which shares borders with many European countries and which is a destination country for many of the commuters from the EU (Fuller and Ward, 2011). We quantify the effects of the abolition of Switzerland's regional borders on commuting by means of a Difference in Differences model. We envision commuters to react to lower barriers to cross-border traveling and therefore we expect to observe an increase in the cross-border commuting flows. In line with our expectations, we find that the entrance of Switzerland in the Schengen area had a positive and significant effect on the probability to commute for work across borders.

This paper relates to the literature on labour mobility in response to regional shocks. Blanchard and Katz (1992) demonstrate the importance of labor migration as a reaction to regional shocks within the United States. Applying their analysis to Europe, Decressin and Fatas (1995) find that Europeans are far less willing to migrate in response to economic incentives, and that the reaction to regional shocks in Europe comes mostly through changes in the unemployment rate and participation rate. Overman and Puga (2002) show that the regional distribution of unemployment rates became even more polarized in the European Union between 1986 and 1996.

This paper is also closely related to the studies which evaluate whether country borders still represent an obstacle to the EU labour market integration. In a recent paper, Bloomfield et al. (2015) examine whether international regulatory harmonization increases cross-border labor migration. To study this question, they analyze European Union (EU) initiatives that harmonized accounting and auditing standards. They find that due to harmonization international labor migration in the accounting profession increases significantly relative to other professions. Niebuhr

and Stiller (2004) provide evidence of a measurable spatial segmentation of labour markets between EU15 countries along national borders. They show that on average, border regions in the EU are characterised by a lower degree of labour market integration with neighbouring regions than non-border areas due to significant border impediments that hamper equilibrating forces between labour markets on both sides of national frontiers.

Finally this paper fits into the literature that focus on the role of commuting in relation to regional disparities. Burda and Hunt (2001) analyzing labour mobility between East and West Germany, conclude that commuting is a substitute for migration from East Germany, particularly in the case of workers living in a region that shares a common border with West Germany. Along the same line, Hunt (2006) and Elhorst (2003) stress the importance of taking into account commuting as part of labour mobility, particularly when administratively defined regions are analysed.

The studies that more closely resemble our analysis are the ones by Bartz and Fuchs-Schündeln (2012) and Persyn and Torfs (2015). The former studies the causes of the low labour market integration in Europe. The authors test whether the abolition of the border controls through the Schengen agreement and the introduction of the Euro currency have led to an improvement in cross-border integration. Their empirical investigation shows that neither of the two events did have an effect in improving labour market integration, while language barriers seem to be the main impediment. The latter work quantifies the effect of regional borders on commuting in Belgium. After controlling for differences in local economic conditions and multilateral resistance, the authors conclude that regional borders are a strong barrier to commuters and impose strong spatial imperfection in the labour market. Our work contributes to the literature by specifically analysing the causal effect of the entrance in the Schengen area of a country, i.e., Switzerland, on the commuting decision of individual workers.

The rest of the paper is organized as follows. In the next section, we describe in detail the institutional background. Section 3 presents the data, while Section 4 discusses the empirical strategy. We show the main results in Section 5. Section 6 concludes the paper.

2 Institutional background

A core part of the original Treaty of Rome was the free movement of people. Since the European Economic Community (EEC) was established, nationals of EEC member states could freely travel from one member state to another by showing their passports or national identity cards. However, systematic identity controls were still in place at the border between most member states, since the complete abolition of border controls within the Community was not supported unanimously by the members. However, in 1985 five of the ten member states - Belgium, France, Luxembourg, the Netherlands, and West Germany - signed an agreement on the gradual abolition of common border controls. The agreement was signed near the town of Schengen, Luxembourg, where the territories of France, Germany and Luxembourg meet.²

The Schengen Agreement was signed independently of the European Union, first because there was no consensus among EU member states over whether or not the EU had the jurisdiction to

²Three of the signatories, Belgium, Luxembourg and the Netherlands, had already abolished common border controls as part of the Benelux Economic Union.

abolish border controls, and second, due to the impatience of the countries in favor. The Agreement provided for harmonization of visa policies, allowing residents in border areas the freedom to cross borders away from fixed checkpoints, the replacement of passport checks with visual surveillance of vehicles at reduced speed, and vehicle checks that allowed vehicles to cross borders without stopping.

In 1990, the Agreement was complemented by the Schengen Convention which proposed the abolition of internal border controls and a common visa policy. It was this Convention that created the Schengen Area through the complete abolition of border controls between Schengen member states, common rules on visas, and police and judicial cooperation. The Schengen Agreement and its implementing Convention were enacted in 1995 only for some signatories, but just over two years later during the Amsterdam Intergovernmental Conference, all European Union member states except the United Kingdom and Ireland had signed the Agreement. It was during those negotiations, which led to the Amsterdam Treaty, that the incorporation of the Schengen acquis³ into the main body of European Union law was agreed along with opt-outs for Ireland and the United Kingdom, which were to remain outside of the Schengen Area.

In December 1996 two non-EU member states, Norway and Iceland, signed an association agreement with the signatories of the Schengen Agreement to become part of the Schengen Area. While this agreement never came into force, both countries did become part of the Schengen Area after concluding similar agreements with the EU. The Schengen Convention itself was not open for signature by non-EU member states. In December 2008, Switzerland finalised its official entry to the Schengen Area with the acceptance of an association agreement by popular referendum in 2005. Liechtenstein joined the Schengen Area in 2011. De facto, the Schengen Area also includes three European micro-states, i.e., Monaco, San Marino and the Vatican City that maintain open or semi-open borders with other Schengen member countries. The remaining four EU member states, i.e., Bulgaria, Croatia, Cyprus and Romania are obliged to eventually join the Schengen Area.

Currently the Schengen Area consists of 26 European countries covering a population of over 400 million people and an area of 4,312,099 square kilometres. Due to the ongoing migration crisis, a number of countries (Austria, Belgium, Denmark, France, Germany, Norway, and Sweden) have recently re-introduced controls on some or all of their borders with other Schengen states.

Cross-border commuters to Switzerland are defined as foreign nationals who are resident in a foreign border zone and are gainfully employed within the neighbouring border zone of Switzerland. The term "border zone" describes the regions which have been fixed in cross-border commuter treaties concluded between Switzerland and its neighbouring countries. Cross-border commuters

³Now that the Schengen Agreement is part of the *acquis communautaire*, it has, for EU members, lost the status of a treaty, which could only be amended according to its terms. Instead, amendments are made according to the legislative procedure of the EU under EU treaties. Ratification by the former agreement signatory states is not required for altering or repealing some or all of the former Schengen *acquis*. Legal acts setting out the conditions for entry into the Schengen Area are now made by majority vote in the EU's legislative bodies. New EU member states do not sign the Schengen Agreement as such, instead being bound to implement the Schengen rules as part of the pre-existing body of EU law, which every new entrant is required to accept. This situation means that non-EU Schengen member states have few formally binding options to influence the shaping and evolution of Schengen rules; their options are effectively reduced to agreeing or withdrawing from the agreement. However, consultations with affected countries are conducted prior to the adoption of particular new legislation.

must return to their main place of residence abroad at least once a week. Cross-border commuters from EU/EFTA member states are granted professional and geographical mobility within all Switzerland’s border zones. These persons may live anywhere in the EU/EFTA region and work anywhere in Switzerland provided they return to their place of residence abroad once a week. The border zones remain in force for citizens from the EU-2 member states (Bulgaria and Romania). The EU/EFTA cross-border commuter permit is valid for five years, provided there is an employment agreement of unlimited duration or of more than one year’s duration. If an employment contract is concluded with a duration of less than a year, the period of validity of the cross-border commuter permit is identical with the duration of this employment contract.

3 Data and Descriptive Statistics

We use the European Labour Force Survey (ELFS) data for Switzerland and bordering states (France, Germany and Italy)⁴ to identify the patterns of commuting for the period 2005-2014. The ELFS provides individual level data on measures of mobility as well as demographic and socio-economic information. In this paper commuting is defined based on place of residence at the time of the interview and working place at the time of the interview being located in two different NUTS2 regions.⁵

We complement this data set with the European Regional Database elaborated by Cambridge Econometrics from Eurostat for the years 1990-2013, which contains multiple indicators on European regional growth, convergence and competitiveness. Specifically, it provides data on economic output, employment, unemployment, compensation per employee, population, GDP, gross fixed capital formation and other NUTS2/NUTS3 sub-state data observations.

We use unemployment and inflation rates as provided by Eurostat, as well as migration data as provided by the United Nations.

We focus on the period 2005-2014, during which the survey data collection has not changed neither over time neither across countries. Therefore, we are confident about the data comparability. We keep observations of individuals who live in regions, which share the border either with Switzerland or with a country belonging to the Schengen area.⁶ We include in our data set all employed individuals who are currently commuting, since we focus on individuals who commute for working reasons either internally or across borders. Our sample includes 87,052 commuters.

By analyzing the data, we observe an increasing trend of individuals who commute cross-border (Figure 1a). The total number went up from less than 2,500 individuals before Switzerland joined

⁴We exclude from our sample all individuals who live in Austria to avoid confounding effects. Please see Section 4 for additional details.

⁵The NUTS (Nomenclature of Units for Territorial Statistics) is a geocode standard for referencing the subdivisions of countries for statistical purposes. The standard is developed and regulated by the European Union, and thus only covers the member states of the EU in detail. For each EU member country, a hierarchy of three NUTS levels is established by Eurostat; the subdivisions in some levels do not necessarily correspond to administrative divisions within the country. We have information at NUTS2 level for Italy and France, which corresponds to the first-level administrative division of the country (regions); for Germany only information at NUTS1 level (macro-regions) is available.

⁶The list of regions includes: for Italy, ITC1, ITC2, ITC3, ITC4, ITD1, ITD2, ITD3; for Germany, DE10, DEA0, DEB0, DEF0, DEC0; for France, FR21, FR22, FR30, FR41, FR42, FR43, FR61, FR62, FR71, FR81, FR82.

the Schengen area (2005-2008), to more than 3,500 individuals in the years after the Schengen enlargement (2009-2014). We observe that the sectors which were most interested are the finance and the distribution, transportation and communication sectors. This trend is in line with the statistics provided by the Swiss Federal Statistics Office, which show that in 2009 the number of people crossing the border for work was 221,600 - that number rose remarkably over the next five years leading up to the end of 2014 by 29.6%. Specifically, in 2013 among the 270,000 Europeans who commuted across the border to work in Switzerland, French residents made up the largest group (143,000), followed by Italians (62,000), and Germans (56,000) (Figure 2). Just under two-thirds of the cross-border workforce are men (Figure 3), and the majority, nearly 62%, are part of the service sector (Figure 4).⁷

We split the sample according to whether the regions we selected share the border with Switzerland (treated group)⁸ or with a Schengen country (control group).⁹ Therefore, the cross-border commuters residing in regions which share the border with Switzerland are directly affected by Switzerland joining the Schengen area. Those cross-border commuters who reside in regions which share the border with a Schengen country, but not Switzerland are not affected by the treatment. Any impact of Switzerland entering the Schengen area should therefore affect the first group, while leaving the second group unchanged. In Figure ??, we report the number of cross-border commuters in treated and control regions. In the years before the entrance of Switzerland in Schengen (2009), we observe that even though the number of cross-border commuters was higher in treated regions, the trend was similar across the two groups. However, after 2009, the number of cross-border commuters increases significantly more among the treated regions.

Table 1 reports descriptive statistics for the variables used in our estimation, divided by groups. We observe that individual characteristics do not differ considerably across the two groups. Also in terms of employment features, we can state that the two groups are aligned.¹⁰ Nevertheless, we control for all individual and job characteristics when we estimate our model.

4 Empirical strategy

Our goal is to estimate the effect of entering the Schengen area on the probability to commute cross-border at a regional level. The enlargement of Schengen area to Switzerland in 2008 provides an exogenous source of variation that we exploit within a DiD framework. In particular, we select some of the countries around Switzerland (Germany, France and Italy).¹¹ Within these countries,

⁷The latest data from the Federal Statistical Office also show that the Lake Geneva region is the most popular part of the country for people who live abroad to commute for work in Switzerland. Some 34.8% of cross-border workers earn a living in the Lake Geneva region, 23.4% in North West Switzerland and 21.5% in canton Ticino. Although the Lake Geneva region had a higher number of cross-border workers in absolute numbers (99,900), adding up to 10.7% of the workforce in the area, in Ticino 26.2% of its labour force consists of foreigners who commute.

⁸The treated group includes the following regions: DE10, FR42, FR43, FR71, ITC1, ITC2, ITC4, ITD1, ITD2.

⁹The control group includes the following regions: DEA0, DEB0, DEF0, DEC0, FR21, FR22, FR30, FR41, FR61, FR62, FR81, FR82, ITC3, ITD3.

¹⁰The only exceptions are a slightly higher percentage of low skilled among the controls and the distribution of the firms' size where commuters work which is bigger for individuals in the control group.

¹¹We exclude Austria to avoid confounding effects as it also shares borders with Slovakia, Hungary and Czech Republic that joined the Schengen area in 2007.

we identify as treated those regions which share the border with Switzerland, and as control those regions which share the border with another European country already in the Schengen area from the beginning of the period (i.e., in 2005).

The key aspect of this setting is that by identifying the treated group as those region sharing a border with Switzerland, the control group is never observed to be exposed to the treatment and, consequently, this rules out the possibility that a misclassification affects our sample split.

We therefore specify the model as:

$$P(\text{CrossBorderCommuting} = 1|X)_{i,r,t} = \alpha + \beta\text{Ch-border}_{i,r} + \gamma\text{Schengen}_t + \delta\text{Ch-border}_{i,r}\times\text{Schengen}_t + \lambda X_{i,r,t} + \epsilon_{i,r,t} \quad (1)$$

where i identifies the individual, r the region of residence and t the time. *Ch-border* is the dummy variable which identifies the treated group. As such, it takes value one for those individuals who reside in a regions sharing the border with Switzerland and value zero for those individuals living in a region which borders with a country in the Schengen area. *Schengen* is the dummy variable equal to zero for the years before Switzerland joined the Schengen area (2005-2008) and equal to one for the years after (2009-2014). The matrix $X_{i,r,t}$ includes a series of individual characteristics such as age, a dummy for women, a dummy for being head of household, dummies for temporary contracts, a dummy for part-time work schedule, education and occupations dummies. It also includes regional macroeconomic variables (equals for all individuals residing in the same region), as the differential in compensations for employee and inflation rates, to takes into account time-varying differences across regions. Finally, $\epsilon_{i,r,t}$ is the iid individual error term.

We run this equation by using ordinary least squares, so the estimated coefficients are readily interpretable as marginal effects. The coefficient β measures the difference in the probability of cross-border commuting between treated and control groups. The coefficient γ measures the difference in the probability of cross-border commuting after the enlargement of Schengen area to Switzerland for both groups. The parameter of interest is δ that captures the differential effect of the entrance of Switzerland in the Schengen area on the individual probability to commute cross-border between the two groups. A positive δ reflects higher probability of commuting across the border to work in Switzerland after its entrance in the Schengen area, after having controlled for individual characteristics (i.e., individual-specific propensity to cross-commute) as well as regional differential in macro-economic variables which may change the economic incentives to commute. Conversely, a value of δ equal to zero indicates that the entrance does not have any effect.

This Difference-in-Differences analysis assumes that the evolution of the outcome of interest for the treated and control regions would not be systematically different in the absence of the event. Although there is no formal procedure of testing the validity of this assumption, we provide some encouraging evidence that supports this assumption. First, we compare how the probability of cross-border commuting evolves in treated and control regions. We report this analysis in Figure 6. The Figure reveals a striking similarity in the movements of the two series, reassuring on the validity of the Difference-in-Differences identifying assumption. Of course, we still assume that other time-varying factors that we may have omitted do not affect the two groups differentially.¹²

¹²In particular, including regional differential in macro-economic variables we aim at controlling for possible effects of the last financial crisis on the probability to cross-commute.

5 Results

Results of our estimations are reported in Table 2. In the first column, we report the baseline specification, where the probability to commute cross-border is regressed only on the dummy for whether the region shares the border with Switzerland (CH-border), the treatment dummy (Schengen), which takes value one for the years in which Switzerland is part of Schengen, and their interaction. In line with the evidence of Figure 6, we find that the effect of Switzerland implementing the Schengen agreement (CH-border \times Schengen) is positive and significant. Specifically, the probability to commute cross-border is 6.6% higher for individuals who reside in regions which share the border with Switzerland, after the country joined the Schengen area.

In order to control for the characteristics of the individuals, which may affect the probability to cross-border commute, we include in our specification information about the individual's gender, age, education, marital and household status. Results are shown in column 2 of Table 2. The coefficient of interest is still positive and significant. We also find that female, single, highly educated and head of household with children commute more, while young individuals commute less. Even when we control for job characteristics (column 3 of Table 2), the "Schengen" effect still shows a positive and significant sign. In terms of job features, employees who are permanently hired commute more, particularly if they work in the construction sector. As in Parenti and Tealdi (2016), we find that the longer the tenure, the lower the probability to commute.

So far, we have not taken into consideration the problem of migration. Indeed, the probability to commute cross-border may also be affected by the decision of individuals to relocate their residency across regions. In the ELFS data, we have information about whether the individual has migrated the year before, and we use it in our next specification (column 4 of Table 2) as a control. The migration variable gets a positive and significant sign, capturing the fact that if the individual moves to a region which shares a border with another country, the probability to cross-border commute is higher. Nevertheless, the variable of interest still keeps the positive and significant sign. Finally, in our last specification, we control for regional variables, such as the relative inflation rate, as well as the relative compensation per employee. In addition to controlling for regional effects, we also intend to capture the potential effect of the economic crisis which asymmetrically affected Europe in the late 2000s. The "Schengen effect" is still robust and shows a positive sign.

6 Conclusions and policy implications

In this paper we study the effects of Switzerland implementing the Schengen agreement in 2008 on cross-border commuting. By allowing residents in border areas freedom to cross borders away from fixed checkpoints, we expect cross-border commuting to be higher between countries belonging to the Schengen area. We use data from the European Labour Force Survey (ELFS) to estimate a difference-in-differences model in which the probability to cross-border commute is regressed on a number of individual, job and regional variables.

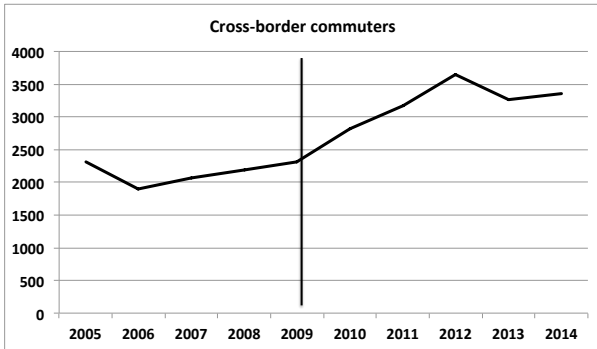
We find that the effect of Switzerland joining the Schengen area has a significant positive effect on cross-border commuting. Indeed, after 2009, the individual probability to commute

cross-border has increased by more than 6% for individuals who live in regions, which share the border with Switzerland. This result is very important because it represents an important contribution to the literature, as the Schengen effect has not been studied so far. Moreover, it is very relevant and timely for the noteworthy associated policy implications. Labour mobility is an important equilibrating mechanism in the labour market, with the potential of reducing disparities in regional labour market outcomes, such as unemployment and wages. Therefore, inter-regional labour mobility can bring to an efficient spatial allocation of labour and consequently to welfare gains, particularly in areas with marked differences in regional labour market performance, as it is the case of Europe.

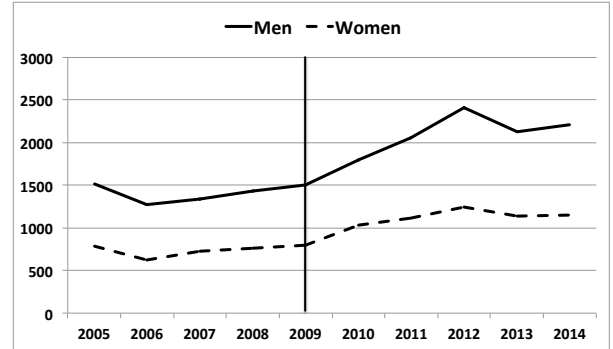
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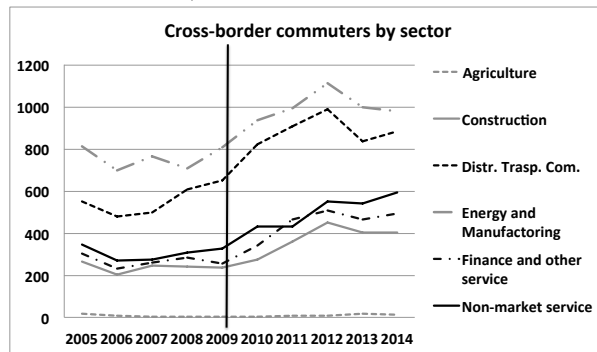
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(a) Total cross-border commuters to a Schengen country (from France, Germany and Italy).



(b) Cross-border commuters to a Schengen country by sex.



(c) Cross-border commuters to Switzerland by sector.

Figure 1. Cross-border commuters.

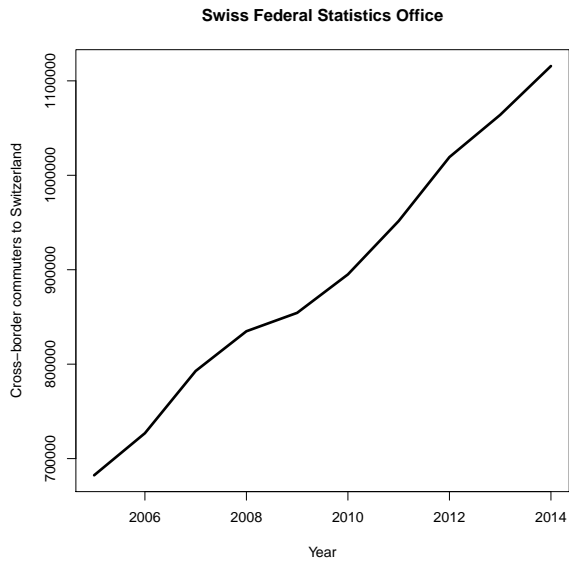


Figure 2. Cross-border commuters to Switzerland by country.

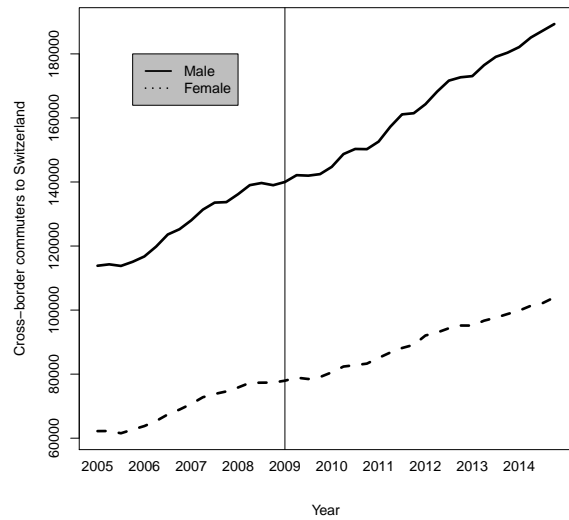


Figure 3. Cross-border commuters to Switzerland by gender.

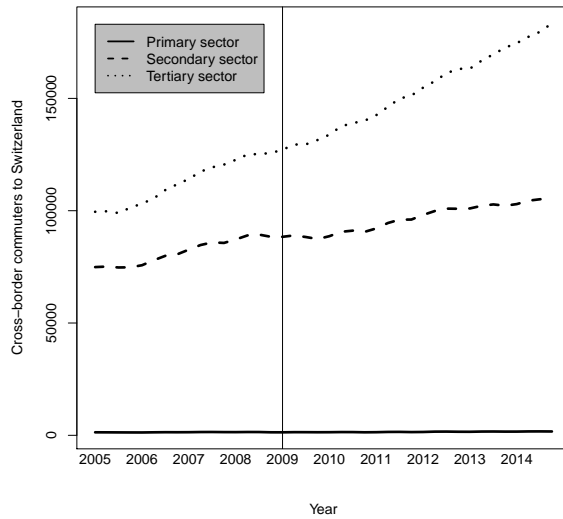


Figure 4. Cross-border commuters to Switzerland by sector.

Figure 5. Cross-border commuters. Source: Swiss Federal Statistics Office.

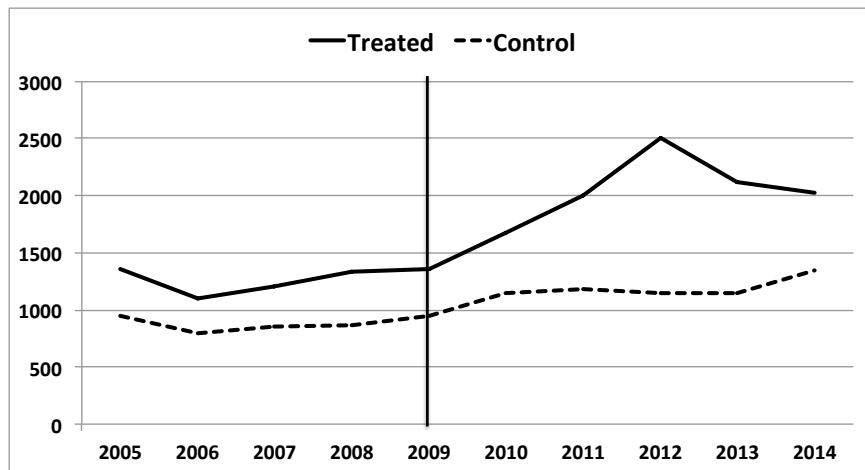


Figure 6. Cross-border commuters in treated and control regions.

Table 1. The effect of EPL on the coefficient of variation of unemployment and real wages.

	Controls		Treated		All	
	mean	s.d.	mean	s.d.	mean	s.d.
Female	0.348	(0.476)	0.331	(0.471)	0.340	(0.474)
Single	0.461	(0.498)	0.446	(0.497)	0.454	(0.498)
HOH	0.575	(0.494)	0.563	(0.496)	0.570	(0.495)
HOH size	2.986	(1.292)	3.004	(1.241)	2.994	(1.268)
Children (<16)	0.400	(0.490)	0.380	(0.485)	0.390	(0.488)
Age 16-24	0.082	(0.274)	0.072	(0.259)	0.077	(0.267)
Age 25-34	0.222	(0.416)	0.233	(0.423)	0.227	(0.419)
Age 35-49	0.269	(0.443)	0.281	(0.449)	0.274	(0.446)
Age 50-64	0.159	(0.366)	0.155	(0.362)	0.157	(0.364)
Primary education	0.202	(0.402)	0.236	(0.424)	0.218	(0.413)
Secondary education	0.498	(0.500)	0.476	(0.499)	0.487	(0.500)
Tertiary education	0.300	(0.458)	0.288	(0.453)	0.294	(0.456)
Degree of urbanization	2.000	(0.711)	2.064	(0.743)	2.030	(0.727)
Full-time	0.868	(0.338)	0.871	(0.335)	0.870	(0.337)
Self-employed	0.053	(0.223)	0.091	(0.288)	0.071	(0.257)
Employee	0.946	(0.227)	0.905	(0.293)	0.927	(0.261)
Family worker	0.002	(0.044)	0.003	(0.056)	0.003	(0.050)
Tenure	10.500	(10.022)	9.633	(9.547)	10.092	(9.811)
Hours worked	38.562	(9.840)	39.663	(9.498)	39.079	(9.696)
Permanent job	0.825	(0.380)	0.791	(0.406)	0.809	(0.393)
High Skilled-WC	0.447	(0.497)	0.469	(0.499)	0.457	(0.498)
Low Skilled-WC	0.231	(0.422)	0.199	(0.400)	0.216	(0.412)
High Skilled-BC	0.138	(0.345)	0.165	(0.371)	0.151	(0.358)
Low Skilled-BC	0.183	(0.387)	0.167	(0.373)	0.176	(0.380)
Firm size 1-10	0.178	(0.383)	0.232	(0.422)	0.204	(0.403)
Firm size 11-19	0.143	(0.350)	0.154	(0.361)	0.148	(0.355)
Firm size 20-49	0.133	(0.340)	0.138	(0.345)	0.135	(0.342)
Firm size >50	0.522	(0.500)	0.465	(0.499)	0.495	(0.500)
Agriculture	0.010	(0.097)	0.011	(0.104)	0.010	(0.101)
Construction	0.079	(0.270)	0.090	(0.286)	0.084	(0.278)
Energy and Manufacturing	0.229	(0.420)	0.311	(0.463)	0.268	(0.443)
Distribution, Transportation and Communication	0.299	(0.458)	0.269	(0.444)	0.285	(0.451)
Finance	0.160	(0.367)	0.134	(0.341)	0.148	(0.355)
Non-market services	0.220	(0.414)	0.182	(0.386)	0.202	(0.402)
Migration 1y	0.392	(0.488)	0.234	(0.423)	0.316	(0.465)
Relative Compensation per employee	0.841	(0.219)	0.561	(0.193)	0.710	(0.250)
Relative Unemployment rate	1.089	(0.557)	1.233	(0.458)	1.156	(0.518)
Relative Inflation rate	-0.296	(0.556)	0.990	(0.842)	0.307	(0.954)
Observations	46196		40856		87,052	

Table 2. Probability of commuting towards a Schengen region.

	(1)	(2)	(3)	(4)	(5)
Schengen	-0.009** (0.004)	0.006 (0.004)	0.005 (0.004)	0.011** (0.004)	0.039*** (0.004)
CH-border	0.139*** (0.005)	0.147*** (0.005)	0.156*** (0.005)	0.186*** (0.005)	0.296*** (0.006)
CH-border x Schengen	0.066*** (0.007)	0.065*** (0.007)	0.052*** (0.006)	0.045*** (0.007)	0.062*** (0.006)
Female		0.026*** (0.003)	0.051*** (0.004)	0.042*** (0.004)	0.041*** (0.004)
Single		0.019*** (0.004)	0.015*** (0.004)	0.004 (0.004)	0.001 (0.004)
HOH		0.028*** (0.004)	0.024*** (0.004)	0.019*** (0.004)	0.020*** (0.004)
HOH size		-0.001 (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.003* (0.002)
Children (<16)		0.043*** (0.004)	0.023*** (0.004)	0.011*** (0.004)	0.006 (0.004)
Age 16-24		-0.026*** (0.006)	-0.033*** (0.007)	-0.039*** (0.007)	-0.044*** (0.007)
Age 25-34		0.012*** (0.004)	-0.008* (0.004)	-0.009** (0.005)	-0.008* (0.005)
Age 35-44		0.000 (0.004)	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)
Secondary education		-0.003 (0.004)	0.033*** (0.004)	0.032*** (0.004)	0.032*** (0.004)
Tertiary education		-0.034*** (0.004)	0.051*** (0.005)	0.045*** (0.005)	0.039*** (0.005)
Degree of urbanization		-0.061*** (0.002)	-0.058*** (0.002)	-0.065*** (0.002)	-0.062*** (0.002)
Full-time			-0.176*** (0.006)	-0.171*** (0.006)	-0.169*** (0.006)
Employee			0.088*** (0.008)	0.075*** (0.008)	0.066*** (0.008)
Family worker			-0.118*** (0.016)	-0.106*** (0.017)	-0.106*** (0.017)
Tenure			-0.003*** (0.000)	-0.003*** (0.000)	-0.004*** (0.000)
Hours worked			0.005*** (0.000)	0.005*** (0.000)	0.005*** (0.000)
Permanent job			0.081*** (0.005)	0.080*** (0.005)	0.078*** (0.005)
Agriculture			-0.266*** (0.012)	-0.278*** (0.012)	-0.282*** (0.012)
Energy and Manufacturing			-0.076*** (0.006)	-0.076*** (0.007)	-0.067*** (0.007)
Distribution, Transportation and Communication			-0.112*** (0.007)	-0.111*** (0.007)	-0.109*** (0.007)
Finance			-0.105*** (0.007)	-0.106*** (0.007)	-0.102*** (0.007)
Non-market services			-0.139*** (0.007)	-0.136*** (0.007)	-0.133*** (0.007)
Migration 1y				0.195*** (0.003)	0.142*** (0.004)
Relative Compensation per employee					0.171*** (0.009)
Relative Inflation rate					-0.064*** (0.002)
Constant	0.231*** (0.003)	0.305*** (0.009)	0.318*** (0.015)	0.279*** (0.015)	0.125*** (0.016)
Observations	87052	86345	84500	79115	79115
R ²	0.041	0.054	0.116	0.153	0.170

Notes: Standard errors in parenthesis. Significance levels: *p<0.1; **p<0.05; ***p<0.01. Firm's size and individual's skill level are also controlled for.