Foreign Opportunity and Local Revival: Evidence from the French Rust Belt

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Abstract

This paper studies the short- and long-run adjustment of distressed regions to a positive globalization episode: access to an increasingly thriving Luxembourg labor market for residents of the French "Rust Belt". We document a three-phase expansion of local labor markets, driven by a short-run workplace substitution of incumbent workers towards cross-border commuting, a medium-term rise in labor force participation, and a long-run sustained increase in population via net domestic in-migration. Welfare effects for residents of treated areas are unequal: higher foreign incomes are partly offset by lower domestic employment, rising housing costs and congestion, and reduced fiscal transfers. Improved job opportunities abroad lead to a net decrease in far-right and anti-EU vote shares, muting the rise of populism visible elsewhere in former industrial regions of France. Taken together, our findings suggest that former industrial regions are not inherently rigid, but that their capacity to adjust depends critically on the nature, scale, and spatial incidence of economic shocks.

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1 Introduction

Local labor markets regularly face large and persistent shocks (Yagan, 2019; Greenstone, Hornbeck, and Moretti, 2010). Understanding how they respond, and over what horizon, is central to quantifying adjustment margins for workers and firms, and the welfare consequences of place-specific economic changes (Blanchard and Katz, 1992; Notowidigdo, 2020).

In recent decades, trade, migration, and financial integration have exposed many communities in advanced economies to consequential *external* disruptions. A large literature shows that adverse shocks, such as import competition or migration inflows, can generate persistent declines in employment and income in exposed regions, as well as rising support for populist parties (Autor, Dorn, and Hanson, 2013; Autor et al., 2020; Choi et al., 2024; Malgouyres, 2017). Taken together, these findings suggest that spatially concentrated foreign shocks have contributed to wage stagnation and the anti-globalization backlash, particularly in formerly industrial regions (Rodrik, 2021; Walter, 2021). They also highlight substantial frictions in spatial adjustment, shaping our understanding of how globalization affects local labor markets.

This paper provides a complementary view by studying how distressed regions adjust to a *positive* globalization shock. We focus on former industrial areas that experienced long-term economic decline and ask whether such regions are structurally constrained, or whether they can adapt and recover when new economic opportunities emerge. While prior work has emphasized limited recovery following adverse shocks – potentially reflecting mobility frictions, sectoral mismatch, or other reallocation barriers – we show that declining regions can respond strongly to rising foreign labor demand. Adjustment unfolds gradually and along multiple margins. Workers initially reallocate across commuting destinations and sectors. In the medium run, local labor supply increases through higher participation. In the longer run, population flows respond, amplifying local economic expansion. These adjustments are large enough to reshape not only local labor markets but also the local welfare distribution and key political outcomes. Taken together, our findings suggest that local labor markets are not inherently rigid, but that their capacity to adjust depends critically on the nature, scale, and spatial incidence of economic shocks.

We study the expansion of Luxembourg's labor market and its effects on neighboring regions in northeastern France, a historically industrial "rust belt" that experienced sustained

decline starting in the 1970s. Following EU-wide financial liberalization in the late 1980s, Luxembourg underwent rapid economic growth and became a high-wage service economy. Combined with improvements in transport infrastructure, this generated large and persistent differences in access to high-paying foreign jobs across French municipalities, depending on their distance to Luxembourg City. We exploit this variation to document how access to foreign labor demand reshapes local economies and political outcomes over nearly five decades.

This historical episode provides a rare setting to study how local labor markets respond to foreign opportunities. Identifying these effects has been challenging for several reasons. First, the benefits of globalization, such as exposure to foreign labor demand, are often spatially diffuse, making them difficult to study using local exposure designs. Second, standard Heckscher-Ohlin forces imply that trade openness tends to *reduce* labor demand in capital-abundant countries: integration episodes that benefit *workers* in advanced economies are rare. Third, when foreign labor demand rose, e.g. in skilled services (Eckert, Ganapati, Walsh, et al., 2019), it did so in densely populated, educated areas, already benefiting from skill-based technical change and agglomeration (Bakker et al., 2024), and less affected by populism.

Our setting overcomes these challenges by combining a large, externally driven increase in foreign labor demand with sharp, predetermined spatial differences in access to foreign jobs within a declining region. Because the variation originates abroad, it delivers plausibly exogenous differences in exposure to labor demand, while mitigating concerns about correlated local shocks. We implement a difference-in-differences design that exploits these differential exposure patterns across municipalities over time. A key advantage is that we can trace adjustment over five decades using a consistent and granular set of data covering cross-border commuting, employment, incomes, sector composition, migration flows, housing markets, fiscal externalities, and electoral behavior. This long panel allows us to jointly quantify short-, medium-, and long-run margins of adjustment within local economies, providing a unified account of how distressed regions respond economically and politically to foreign windfalls.

We evidence four core sets of results. First, improved labor market prospects in Luxembourg, combined with enhanced transport infrastructure, led to a sharp rise in cross-border commuting among residents of French municipalities close to the border. By the end of the sample period, more than 35 percent of prime-age workers (10 percent of the population) in

treated areas were employed in Luxembourg, while cross-border employment remained negligible in nearby control municipalities. This increase does not reflect broader changes in long-distance commuting, which remains flat in control areas and around other international borders. Using worker-level panel data, we show that many new commuters are incumbent residents exiting domestic employment, particularly higher-wage, male workers in tradable industries most exposed to the industrial bust. Workers in distressed regions commute longer distances to access high-paying jobs abroad, where wages are roughly 65 percent higher than for comparable workers in local labor markets. Together, these findings highlight spatial reallocation as a central adjustment margin, even in regions initially characterized by economic decline. Consistent with this, the France-Luxembourg corridor hosts the largest cross-border commuting flow in the EU, with cross-border workers accounting close to 10% of private employment in northeastern France.

Second, these commuting responses translate into broader labor market expansion. In the short run, increases in cross-border employment largely reflect a one-for-one reallocation away from domestic jobs, with little change in total employment. In the medium run, total employment rises as labor force participation increases among incumbent residents, while population remains largely unchanged. Improved access to foreign opportunities draws previously inactive individuals into the labor market, raising local activity rates. In the longer run, these effects are further amplified by substantial population inflows, particularly of working-age individuals, leading to sustained growth in local employment. Population growth is accompanied by a compositional shift toward younger, more educated residents with stronger labor market attachment, further raising employment rates and lowering unemployment. While domestic employment declines in tradable sectors, it expands in non-tradables and female employment, consistent with local demand spillovers partly offsetting the initial labor supply reallocation. Housing markets adjust through increased construction, smaller housing units, and declining vacancy rates. Together, these patterns point to a dynamic adjustment process in which labor supply responses among incumbents precede and attract longer-run population reallocation.

Third, the welfare effects of access to high foreign wages are large but unequal. Cross-border commuters experience large net income gains and higher consumption, and are more likely to be homeowners and to live in larger homes than observably similar non-commuters.

Access to high-paying foreign jobs also entails reduced reliance on social transfers, low-income tax credits, and unemployment insurance, but does not translate into higher domestic income tax revenues on the French side, consistent with EU tax rules governing cross-border workers. At the same time, domestic labor markets experience declines in employment and wages, partly reflecting compositional shifts. Rising demand for local non-tradables leads to higher land prices, rents, and commuting times in treated areas. As a result, non-commuting residents consume less residential space and are less likely to own their home. Overall, inequality rises–both within the labor market, between commuters and domestic workers, and between workers and non-workers. These patterns are consistent with a localized *Balassa-Samuelson* effect operating through access to foreign labor markets, similar to locations with stronger access to trade in *goods* (Fajgelbaum and Redding, 2022).

Fourth, these economic changes translate into political outcomes. Exposure to improved foreign labor market opportunities leads to a significant decline in far-right vote shares in treated municipalities. Given the strong association between the French far-right and opposition to globalization and European integration, this suggests increased support for international economic integration in exposed areas. These effects are economically large and offset much of the rise in far-right support observed in nearby control areas. While part of this decline reflects changes in income, employment, and population composition, these channels account for only about half of the total effect. We also find evidence of reduced voter turnout, consistent with a decline in protest voting, and no substitution toward other anti-globalization parties. Access to foreign employment opportunities appears to have acted as a local "escape valve," insulating treated areas from the political backlash observed in other declining regions.

We assess a range of alternative explanations and find that our results are stable across specifications. We find no evidence of differential pre-trends between treated and control areas over a long pre-period spanning 1968 to 1981, well before the French-Luxembourg wage divergence. The estimates are robust to including rich sets of time-varying controls and to allowing municipalities with different pre-existing characteristics, such as exposure to manufacturing or education, to follow flexible trends. We further exploit proximity to *other* international borders within the same declining region that did not experience comparable labor demand expansions, providing a natural placebo rarely available in studies of external shocks. Fi-

nally, our findings are robust to alternative treatment definitions, including varying treatment radius, excluding "donut hole" regions, and using pre-existing commuting networks.

Taken together, our findings provide a unified view of how distressed regions adjust to positive foreign labor demand shocks. First, in contrast to the limited mobility responses typically observed following adverse shocks, we uncover large and persistent population inflows, and significant pressures on local housing markets. Our long-run perspective is central to this result: adjustment unfolds sequentially, with an initial reallocation of workers across job locations (toward cross-border commuting), followed by increased labor force participation among incumbent residents, and only later by substantial population reallocation across places of residence. Second, in the presence of frictions to cross-border commuting, improved access generates unequal welfare gains: while new cross-border commuters benefit directly from higher foreign wages, domestic workers and non-workers bear part of the costs through rising housing prices and local congestion. Third, even in advanced economies, international integration can work both ways: while competition from cheaper foreign labor can lead to economic disruption and political discontent, conversely, a boost in foreign labor demand acts as economic stimulus and antidote to the rise of populist parties. In our context, it almost entirely muted the broad-based rise in the far-right visible in other former industrial regions.

Literature review A large literature attempts to quantify regional adjustment to economic shocks over the short- and medium-run (Blanchard and Katz, 1992), and to study their incidence on local prices and incomes (Notowidigdo, 2020; Hornbeck and Moretti, 2024). Some studies have relied on the intersection of time-varying national dynamics and pre-determined local industry structure (Goldsmith-Pinkham, Sorkin, and Swift, 2020). However, the low average intensity, serial correlation, and spatial structure of such instruments can blur the precise definition of treatment areas, limits the investigation of pre-existing trends, and bars a consistent quantification of effect sizes over long periods. When circumventing these concerns by studying precisely timed and localized shocks, such as a sudden rise in the valuation of local natural resources (Feyrer, Mansur, and Sacerdote, 2017) or a natural disaster (Nakamura, Sigurdsson, and Steinsson, 2022), researchers may lack both the time horizon to analyze short-, medium-, and long-run effects, and the ability to extrapolate from temporary natural condi-

tions to more standard labor demand shifts. Finally, places that neighbor each other are often subject to similar unobserved trends, limiting the potential for a sharp geographic treatment-control characterization when exploiting changes in *domestic* product market conditions. We make progress on all three limitations, by exploiting a well-defined, localized change arising from *abroad*, with limited potential for spatial correlation in treatment between control and treatment areas due to natural daily commuting range feasibility, while accounting for many margins of local adjustment over both the short- and medium-run.

We also relate to a strand of literature studying the determinants of cross-border employment and its economic consequences in destination and origin labor markets (Beerli et al., 2021; Muñoz, 2024; Illing, 2025; Butikofer, Loken, and Willen, forthcoming). These studies find varying degrees of short-run employment crowd-out for locals in *destination* areas. Some of them identify positive wage effects for commuters in sending regions, but no short-run population response. Instead, we take a longer time perspective and focus on the economic and political consequences for sending regions over four decades and across labor, housing, and political marketplaces. This allows us to evidence a subsequent spatial reallocation of employment and (especially younger, higher-skill) population towards exposed sending areas, leading to increased housing market congestion, and substantial changes in voting patterns.

Our paper is also related to recent work considering the effects of increased emigration for sending regions in emerging economies (Khanna et al., 2022). We consider the effects of temporary (rather than permanent) mobility on sending areas, which allows us to examine other forms of local consequences (notably, net domestic migration, fiscal transfers, and housing market congestion), but also to evidence long-term effects on electoral behavior.

The only studies of the political consequences of cross-border employment have focused on the effect of *inflows* on voters in *destination* regions, where locals compete with newly arrived foreign commuters (Maycas-Sardi and Serrano-Serrat, 2025; Alrababah et al., 2024). They find *increased* support for far-right and anti-immigration parties among incumbent residents after a rise in cross-border commuting arrivals, consistent with evidence on the electoral effects of immigration or import competition for receiving labor markets. By contrast, our paper highlights the political consequences of increased access to foreign labor markets for *sending* regions. It allows us to shed light on the voting consequences of (temporary) emigration for

home countries, an elusive empirical target – since most labor market-motivated out-migration is permanent and can thus hardly affect voting behavior at home except through selection (see Anelli and Peri (2017) and Auer and Schaub (2024)).

2 Institutional and Historical Background

2.1 Europe's Heartland and the French "Rust Belt"

The empirical setting of this paper lies within one of Europe's historical industrial cores: the corridor spanning northeastern France, western Germany, Belgium, and Luxembourg concentrated much of Europe's coal, steel, and heavy manufacturing throughout much of the twentieth century (Figure 1, A). The northeastern region of France – today the "Grand Est" and "Hauts-de-France" provinces – had long been central to the country's industrial base and exhibited the highest manufacturing employment shares in the country in the mid-1970s (Figure 1, B). Starting in the late 1970s, however, the region experienced a rapid and persistent process of de-industrialization. Between 1975 and the 2010s, the Grand-Est province lost roughly 60 percent of its manufacturing employment – corresponding to nearly 400,000 jobs. The contraction was particularly severe in traditional industrial clusters historically focused on coal mining and steel production, including the Lorraine-Alsace steel corridor.[1]

By the late 2000s, northeastern France had become emblematic of advanced-economy "rust belt" regions (Gagliardi, Moretti, and Serafinelli, 2023): historically industrial, heavily exposed to a dwindling manufacturing share, and characterized by weak local labor demand and wage growth as well as political discontent. Within this area, our analysis focuses in particular on the region of Lorraine, immediately bordering Luxembourg, Germany, and Belgium. In 2013, the region's gross domestic product amounted to just over €56 billion (approximately €24,190 per capita) making it one of the poorest areas in mainland France. Between 2000 and 2013, GDP per capita declined by about 0.3 percent per year, while the national average grew by 0.5 percent annually. Over the same period, total employment fell by 4.3 percent, making Lorraine the region with the largest aggregate employment losses according to INSEE. Unemployment

[1] As also discussed in Berland, Tabellini, and Tricaud (2026), large employers such as Usinor and Arcelor in steel, Creusot-Loire in heavy industry, Moulinex in manufacturing, and the coal mines of the North closed or underwent major restructuring, generating substantial and long-lasting employment losses.

reached 10.5 percent in 2014, exceeding the 9.8 percent rate in mainland France.

2.2 The Luxembourg-France Labor Market Integration Shock

Our empirical strategy exploits the combination of an economic pull factor (an EU-led financial liberalization reform that triggered a substantial divergence in wages between Luxembourg and France) and variation across French municipalities within the rust belt in commuting market access (driven by geographic distance to Luxembourg City and to the highway directly connecting France and Luxembourg), resulting in time-varying local exposure to high-wage employment opportunities abroad.

EU-wide Financial Liberalization and Sectoral Shift. For much of the twentieth century, Luxembourg shared a similar industrial structure with its neighbors in the Belgium-France-Luxembourg-Germany "Greater Region" (SaarLorLux), relying heavily on coal mining and steel production. In the 1960s, manufacturing accounted for roughly 31 percent of employment in Luxembourg, comparable to Belgium (30%) and France (29%) (OECD, 1964).

Starting in the mid-1980s, however, Luxembourg's industrial structure shifted toward a diversified financial services hub. This transformation was triggered by the liberalization of European capital markets, most notably the introduction of the "EU passporting system" in 1988, which enabled financial firms to serve clients across the EU from a single location.[2]

While these reforms applied uniformly across member states, Luxembourg disproportionately benefited due to its pre-existing legal and fiscal environment. In particular, long-standing policies favoring internationally mobile capital, such as the 1929 holding company regime, strong banking secrecy (enacted in 1981), and investor-protection rules, combined with preferential tax treatment for investment funds and multinational headquarters, made Luxembourg an especially attractive location for firms. Together, these institutional features fueled the rapid expansion of Luxembourg's economy after the late 1980s.[3]

[2]The 1985 UCITS Directive (85/611/EEC), which was adopted first by Luxembourg in 1988, enabled cross-border distribution of investment funds. In parallel, the 1988 Directive on the Liberalization of Capital Movements (88/361/EEC) removed remaining restrictions on capital flows. Appendix A provides more details on the reforms and the subsequent financial service growth.

[3]Although part of foreign investment in Luxembourg is linked to profit-shifting by multinational corporations, these inflows account for less than 2% of total employment, according to IMF estimates (De Mooij et al., 2020), see Appendix A.

Wage divergence. The shift toward a service-oriented economy led to much faster GDP and wage growth in Luxembourg than in neighboring countries. Figure 2 plots GDP per capita in Luxembourg and France over time. While the two countries were on similar trajectories prior to the mid-1980's, a clear divergence emerges around the time of the EU-wide financial liberalization. Incomes in Luxembourg rose dramatically relative to France by the end of the 1980s, and the gap persisted thereafter. By 2022, GDP per capita in Luxembourg was more than twice that of France. This pattern reflects a growth acceleration specific to Luxembourg rather than a stagnation specific to France. As shown in Figure A.2, France's real growth trajectory was broadly similar to those of its other neighbors (Germany, Belgium, and Switzerland). Of all countries in the region, only Luxembourg experienced exceptional real income growth coinciding with the introduction of the EU financial passport.[4]

While financial services account for roughly 11 percent of total employment, the country retains a diversified labor market structure, with approximately 8 percent of employment in manufacturing, 10 percent in construction, 17 percent in business services, and 23 percent in public administration. Luxembourg also hosts several European institutions and major multinational firms' headquarters (e.g., Amazon EU, ArcelorMittal, PwC, Goodyear, Ferrero), further contributing to diversification beyond core financial activities and labor demand across a wide range of occupations, skill levels, and industries. To illustrate this point, Panel B of Figure 2 plots average wage differences between French residents employed in Luxembourg and observationally similar workers from the same origin region employed in France, using data from Viglino and Hamez (2025). On average, cross-border workers earn approximately 65 percent more than comparable local workers (€47,700 versus €27,900 in 2019). The wage premium is substantial across all occupations (panel B1) and education levels (Panel B2), including among workers with only a high school diploma or no diploma. Because these figures are based on gross earnings, they likely understate the disposable income differential, as effective labor taxation is generally lower in Luxembourg than in France (OECD, 2023).[5]

[4]Figure 2 is expressed in *nominal* terms. This is the economic divergence most relevant for cross-border work. French residents employed in Luxembourg earn *nominally* higher wages but consume primarily in France, where prices are lower, so the effective gain in purchasing power is larger than what real GDP per capita comparisons adjusted for country-specific prices would suggest. Figure A.1 shows the divergence in real GDP was of similar magnitude and occurred exactly at the same time.

[5]Cross-border workers pay income taxes in Luxembourg, even if they reside in France, according to European *lex loci laboris*. They must however file French tax returns and fully *report* foreign-earned income to

Infrastructure Improvements Transport infrastructure between northeastern France and Luxembourg also improved substantially over the period. In particular, the construction and opening of the A31-E25 motorway in 1981 created a direct highway connection between northern France and Luxembourg City, following a decision by Luxembourg to expand cross-border road access to its capital. Because the cross-border region is largely rural and lacks major cities connected by dense rail networks, cross-border commuting occurs predominantly by car. As of 2022, roughly 83 percent of workers commuting to Luxembourg travel by car. Of these workers, 50% used the A31-E25 highway daily to cross the border (INSEE, 2024).

2.3 Aggregate Growth in Cross-Border Workers

Amid rising labor demand fueled by Luxembourg's economic expansion, the economic divergence between the country and its neighbors led to a surge in cross-border employment of workers living in neighboring countries into Luxembourg. EU rules allow full freedom of movement, and thus no border controls exist within the Schengen area.

Social security records from Luxembourg show the emergence of the country as a major destination for cross-border commuting over the past decades. Figure 3, Panel A, traces the long-run rise in daily commuting flows from all three neighboring countries (Germany, Belgium and France) towards Luxembourg. While cross-border commuting was very rare before the early 1980s, it rose sharply after that period, and in particular from the French side, reaching more than 120,000 daily commuters as of 2024 – representing close to half of all foreign residents employed in Luxembourg, themselves constituting half of all salaried employees in the country. The particularly strong response from France was facilitated by improved infrastructure, including the opening of a direct highway in 1981. Luxembourg's reliance on foreign labor is unique in Europe and ranks among the highest globally, close to the ratios found in Gulf States like the UAE.

On the *sending* side, the rise in cross-border commuting towards Luxembourg in northeastern France was particularly strong. Panel (b) of Figure 3 shows that cross-border commuting occurs almost exclusively in border *departements*. After the 1980's divergence, cross-border commuting rose substantially more at the Luxembourg border than at other frontiers, reflect-

ensure domestic earnings are taxed at appropriate marginal tax brackets.

ing larger wage gain opportunities. Given the wage difference, flows are highly unbalanced and effectively one-way, with a ratio of 220:1 relative to commuting from Luxembourg to France. Residential migration is negligible by comparison, with fewer than 1,000 Luxembourg nationals residing in France (less than 0.8% of daily commuters). As of 2024, the France-Luxembourg corridor is the largest cross-border commuting flow in the European Union, slightly ahead of Hungary-Austria (European Commission, 2024).[6]

Cross-border employment (mostly in Luxembourg, Switzerland, and Monaco) has thus become a consequential source of aggregate growth for the French economy. Residents employed abroad represent about 2.5% of private employment in the country, and close to 10% in the Grand-Est region we study. According to the World Bank (see Figure A.3), the country's reliance on salaries earned abroad places it in fourth place globally by sheer size of received remittances (just below emerging economies with numerous emigrant workers: India, Mexico, and the Philippines). Using income tax tabulations, we show in Appendix figure A.4 that, despite some concerns regarding under-reporting and evasion, wages received abroad reported on French tax returns rose to 4 percent of reported wage earnings in the country as of 2025, consistent with these salaries now representing a significant stake for the French economy.

2.4 Spatial Concentration and Commuting Feasibility

Daily commutes impose spatial constraints on workers' labor market choices. In France, the distribution of commuting distances is effectively right-truncated, with the vast majority of workers traveling relatively short distances between their residence and workplace. Figure A.7 shows that more than 95 percent of workers commute less than 50 kilometers one-way, while almost no workers travel more than 70 kilometers. This upper bound appears stable across locations and types of employment, suggesting that daily commuting beyond approximately 50-70 kilometers is rarely feasible. Importantly, this constraint is not specific to cross-border workers but characterizes commuting behavior more broadly across the French labor market.

The maps depicted in Figure 4 show that the expansion of cross-border employment to Luxembourg over our period of interest (from the 1960s to the early 2020s) occurred almost entirely within this feasible commuting range. While commuting to Luxembourg was virtually

[6]Outside the EU, the largest flow is between France and Switzerland.

nonexistent across municipalities in northeastern France in 1968, by 2022 it had become highly prevalent in municipalities located within 50 kilometers of Luxembourg City. In contrast, shares of residents commuting abroad remain close to zero in municipalities located beyond approximately 70 kilometers from Luxembourg City.[7]

Figure 5, Panel A further illustrates both the magnitude and the spatial gradient of commuting patterns. In 1968, the share of residents employed abroad was close to zero across the entire region. By 1990, a steep slope had emerged, with cross-border employment concentrated in municipalities located closest to Luxembourg City. The spatial reach of cross-border commuting widened gradually over time as employment opportunities in Luxembourg attracted workers from municipalities located farther away. By 2021, nearly 80 percent of employed residents in French municipalities located within 10 kilometers of Luxembourg City work abroad, and the share remains sizable (around 35 percent) even at distances of 20 to 30 kilometers. The intensity of cross-border employment decays rapidly with distance and becomes negligible beyond 70 kilometers from Luxembourg. We exploit this sharp spatial gradient in the intensity of cross-border commuting exposure to construct our empirical design in a difference-in-differences framework.

2.5 Data

Our primary unit of observation is a French municipality or *commune*; there are more than 35,000 municipalities in France. We harmonize municipalities to the smallest time-consistent geographic level to account for mergers and splits since the 1960s. This granular level of analysis allows us to measure outcomes at a fine geographic scale, and to evidence local differentials stemming from the feasibility of commuting while controlling for time-varying unobserved trends at higher levels of geographic aggregation.

We exploit long-run Census data covering French residents from 1968 to 2022. We use exhaustive French population census files data for the years 1968, 1975, 1982, 1990, 1999, 2010, 2015 and 2021.[8] Among the many benefits of the exhaustive Census data, they allow us

[7] Although cross-border commuters travel somewhat longer distances than domestic workers, the right tail of the commuting distribution remains thin: more than 99 percent of commuters to Luxembourg drive less than 70 kilometers one-way to their workplace.

[8] Up to 1999, the census was conducted as a traditional full census of the French resident population at discrete intervals. Beginning in 2004, it was replaced by a rotating sampling frame: municipalities with fewer

to distinguish people's place of work and place of residence at the *commune* level, and thus to construct long-term evidence on commuting flows across municipalities, while simultaneously observing a number of individual demographic, housing, and employment characteristics. The census has two main limitations. Individuals cannot be linked across waves, although information on previous place of residence allows us to construct migration flows and net migration rates at the municipality level. In addition, the census does not directly measure income.

We complement the census with several additional administrative sources. We use long-run municipality-level information on death and birth rates from administrative records; reported incomes and tax revenues from the French Treasury; municipality-level vote results for all rounds of presidential elections in the Fifth Republic (1969-2022) compiled by Piketty and Cagé (2023); and detailed modern-day data on housing rents, social transfers, consumption, and local public finance and infrastructure. We also incorporate geographic and infrastructure data, including driving times and road network information from OpenStreetMap.

Finally, to analyze worker-level labor market dynamics, we use employer-employee administrative data from the French DADS (Déclarations Annuelles de Données Sociales). The DADS covers approximately 4% of the French population for the early period, and then the universe of private-sector employees from 1996 onwards. These data, which capture employment records in France and do not include cross-border workers employed in Luxembourg, allow us to construct municipality-level measures of residence-based and workplace-based *domestic* employment, hours worked, and composition-adjusted wages. We also exploit the panel component of the dataset, which follows a representative sample of individuals over time, to track the labor market trajectories of incumbent workers residing or working in municipalities more or less exposed to cross-border employment opportunities.

3 Research design

To dissect labor market adjustments to the foreign demand shock in the short, medium and long-run, our identification strategy exploits the interaction between the economic "pull" generated by Luxembourg's post-1985 economic divergence and time-invariant, fine-grained vari-

than 10,000 inhabitants are surveyed exhaustively over a five-year cycle, while larger municipalities are covered through annual rotating samples.

ation in commuting feasibility on the French side of the border. Using balanced panel data at the local level, we estimate difference-in-differences specifications at the *place of residence* level, comparing municipalities within commuting distance of Luxembourg to nearby but non-exposed municipalities before and after the divergence. We validate this approach using a placebo design around the border with (non-booming) Belgium, and a spatial gradient approach exploiting the "censored gravity" relationship between commuting shares and distance.

3.1 Difference-in-Differences

We first exploit the fact that the ability of residents to commute daily vanishes somewhere between 50 to 70 km, limiting effective exposure to municipalities located within a feasible daily cross-border commuting range. Our difference-in-differences design compares trends in outcomes in municipalities located within 0-50 km of Luxembourg City to those located between 70 and 150 km away, before and after the 1981 divergence. We exclude municipalities between 50 and 70 km – the "donut hole" – to avoid contamination from partial commuting exposure in later years.[9] We first verify that our exposure measure accurately captures changes in cross-border commuting take-up. We then estimate the dynamic effects of increased international integration on local economic, demographic, financial, and political outcomes.

We implement a non-parametric event-study specification that traces the evolution of effects over time, reflecting the gradual increase in cross-border employment exposure experienced by border municipalities after the early 1980's. Most of our main figures display the time-varying coefficients β_k from the following specification:

$$Y_{it} = \alpha_i + \gamma_t + \sum_{k=1968, k\neq 1981}^{2022} \beta_k \mathbb{1}(t = k) \times T(i) + \delta_X X_{it} + \epsilon_{it} \tag{1}$$

where Y_{it} is an (economic, demographic, or political) outcome of interest for municipality i in census-year t, $T(i)$ is a time-invariant measure of treatment for municipality i, and X_{it} is a (potentially empty) vector of time-varying controls (which can include the interaction

[9] Our main measure of spatial exposure is proximity to the city of Luxembourg, where the majority of cross-border workers are employed. Approximately 60 percent of cross-border workers residing in France and working in Luxembourg are employed in the Luxembourg City metropolitan area. All results are robust to using distance to the centroid of employment in Luxembourg.

of time-invariant municipality characteristics Z_i with census-year fixed effects). The exact sample period varies by outcome variable due to data availability, but we generally begin in 1968 and end in 2022. We cluster standard errors by municipality. In addition to the dynamic event-study estimates, we report aggregated post-1981 treatment effects from a conventional difference-in-differences specification.

The coefficients β_k measure the differential evolution of outcomes in municipalities within commuting distance of Luxembourg relative to more distant municipalities, normalized to the pre-1981 period. In post-divergence years, these capture the reduced-form effect of exposure to Luxembourg's booming labor market on local outcomes. Under the identification assumption that, absent Luxembourg's expansion, treated and control municipalities would have followed similar trends, they can be interpreted as causal effects of exposure to cross-border employment opportunities. In pre-1981 years, the coefficients provide direct credibility for the parallel trends assumption by assessing whether treated and control areas exhibited differential trajectories for close to two decades prior to the shock.

Threats to identification The validity of our design rests on the assumption that proximity to Luxembourg affects economic outcomes only through access to cross-border employment opportunities. We consider and address three main threats to this identification assumption.

A first concern is that municipalities located closer to Luxembourg may differ systematically from more distant municipalities in ways that generate differential economic trends unrelated to cross-border employment opportunities. While municipality fixed effects account for level differences in outcomes, different baseline economic or demographic characteristics, such as sectoral composition or skill structure, could be correlated with exposure to other trends (e.g., trade integration or automation) that affected local labor markets over time. To address this concern, we control for initial manufacturing employment shares and initial college educated shares, each interacted with year fixed effects.

A second concern is that our estimates may capture general trends associated with border regions rather than exposure to the rise in foreign employment opportunities. Proximity to an international border could influence economic and political outcomes through other forms of cross-border interactions unrelated to Luxembourg's booming labor market, such

as cultural exchanges, immigration or trade flows. To address this possibility and clarify the interpretation of our estimates, we implement two complementary designs. First, we directly control for distance to the national border interacted with census-year fixed effects. This specification only exploits variation in commuting distance to Luxembourg city within narrow bands of distance to France's northern border, thus adjusting for the potential time-varying effects of overall proximity to foreign countries on economic and political outcomes of interest. Second, we implement a placebo design using municipalities from the same declining French region (*Grand-Est*) located near Mons, Belgium– the first major French-speaking city along the main France-Belgium transportation corridor (highway E29). These municipalities have similar geography, cross-border market access infrastructures, and baseline economic conditions on the French side of the border, but wage differentials between France and Belgium remained minimal during the period (see Figure A.2).

A final concern is that spatially correlated shocks or broader regional trends may generate differential outcomes near Luxembourg independent of cross-border employment. For example, input-output linkages or local pollution could differentially affect municipalities closer to the border. Our design mitigates this concern by exploiting granular spatial variation within a narrowly defined region that otherwise experienced similar long-run decline. Furthermore, we note that aggregate trade and migration patterns between France and Luxembourg remained economically insignificant during the period, and if anything, declined. Finally, we adjust inference for spatial correlation using Conley standard errors as a robustness exercise.

Sensitivity analysis around treatment definition We vary the definition of treatment and control municipalities to probe the robustness of our findings. First, we vary the maximum distance to Luxembourg city used to define treatment and control municipalities, and the presence or absence of a "donut hole" exclusion region. Second, we use either driving time, or physical distance to the E25 highway (rather than distance "as the crow flies" to Luxembourg city) as alternative measures of spatial exposure. Third, we also exploit continuous distance as an exposure measure across the entire 0-150 km region, ensuring that our results do not rely on arbitrary cutoffs for treatment definition and donut exclusion.

Dynamic IV The difference-in-differences estimates capture the reduced-form effect of geographic exposure to Luxembourg's labor demand shock. To quantify the impact of cross-border employment intensity more directly, we estimate dynamic instrumental-variable specifications that use geographic proximity to instrument for the long-run realized cross-border employment change in the post-1988 period. The IV estimates translate the reduced-form exposure effects into the local impact of increases in cross-border employment intensity on municipal outcomes (i.e. elasticities and semi-elasticities).

3.2 Cross-sectional spatial gradient design

In addition to the difference-in-differences design, we exploit cross-sectional variation in distance to Luxembourg to estimate spatial exposure gradients. Both strategies rely on the same underlying source of variation: differential exposure to a foreign labor demand shock mediated by commuting feasibility. While the difference-in-differences design leverages the interaction between discrete geographic exposure and the timing of Luxembourg's expansion, the spatial-gradient approach exploits continuous variation in access to Luxembourg. We exploit the fact that commuting has a "censored" gravity structure: distance predicts a log-linear decline in cross-border commuting within the feasible commuting zone, but has no predictive power beyond it. This intuition is summarized in Panel B of Figure 5. This generates a distance gradient in outcomes within the commuting range, but none outside of it, and thus a kinked reduced-form relationship between distance and outcomes.

We implement this additional design for two reasons. First, it provides a complementary test of whether proximity to Luxembourg's economic center predicts economic outcomes in France's "Rust Belt" only *within* the feasible commuting zone. Second, for some outcomes, such as rents and income and consumption inequality, for which long panel data are unavailable, it allows us to infer the causal relationship between cross-border commuting intensity and local outcomes using exclusively cross-sectional variation.

Unlike the DiD design, which nets out time-invariant structural differences, cross-sectional outcomes may exhibit systematic level differences near international borders for reasons unrelated to foreign labor demand (e.g., amenities, border regulations, or persistent spatial sorting). To single out Luxembourg-specific effects, we thus systematically perform a placebo

spatial gradient analysis around the Mons border, which is not characterized by large wage differentials. To formalize our analysis, we estimate piecewise linear specifications, allowing the relationship between local outcomes and distance to the border to differ inside and outside the feasible commuting zone, and to depend on the closest country. Specifically, we estimate regressions of the form:

$$Y_i = \alpha + \beta_1 \, \text{dist}_i + \beta_2 \, (\text{dist}_i \times \mathbb{1}[\text{dist}_i \leq 70]) + \varepsilon_i, \tag{2}$$

where Y_i denotes the outcome of interest, dist_i is distance to Luxembourg City, and the interaction term allows the slope of outcomes with respect to distance to differ within and outside the feasible commuting radius. β_2 captures the change in the distance gradient inside the feasible commuting zone relative to areas located further away. We formally net out the effects of an international border by estimating the full specification:

$$Y_i = \alpha + \beta_1 \text{dist}_i + \beta_2 (\text{dist}_i \times \mathbb{1}[\text{dist}_i \leq 70]) \tag{3}$$

$$+ \gamma Lux_i + \delta (\text{dist}_i \times Lux_i) + \theta (\text{dist}_i \times \mathbb{1}[\text{dist}_i \leq 70] \times Lux_i) + \varepsilon_i. \tag{4}$$

where dist_i denotes distance to the relevant foreign city (Luxembourg City for $Lux_i = 1$, Mons for $Lux_i = 0$). The coefficient θ captures the effect of proximity in the within-zone around Luxembourg relative to outside (δ), netting out both level differences with the placebo border, (γ) and common distance-related gradients inside (β_2) and outside (β_1) the commuting radius that reflect common effects of proximity to borders.

The identifying assumption is that, in the absence of Luxembourg's labor demand, the spatial relationship between local outcomes and distance to the foreign city would evolve smoothly and similarly near the two international borders and be independent of commuting feasibility. Under this assumption, a differential slope change within the commuting zone around Luxembourg city can be attributed to exposure to Luxembourg's labor demand shock.

Empirical Roadmap We proceed in four steps. First, we document how access to Luxembourg's labor market affects cross-border employment and the reallocation of workers across

locations (4). Second, we examine the implications of these new opportunities for local labor market outcomes in formerly industrial regions, focusing on total employment, unemployment, and labor force participation (5). Third, we study population responses, showing how migration flows contribute to the long-run expansion and revival of distressed local economies (6). Finally, we analyze the broader distributional consequences of these adjustments, including effects on local incomes, inequality, and political outcomes (8).

4 Cross-border Commuting and Worker Reallocation

In this section, we first examine how exposure to a positive foreign labor demand shock affects the choice of workplaces among residents of distressed regions. We document how cross-border commuting reshapes which types of individuals work where, and assess the extent to which these changes reflect reallocation across locations and worker groups.

4.1 Spatial Reallocation of Employment Patterns

Aggregate cross-Border commuting response We begin by documenting how access to Luxembourg's labor market affects cross-border commuting at the municipality-level. Figure 6 displays coefficient estimates for equation 1 where the outcome is the share of resident workers employed abroad. After rising nominal wages abroad combined with improved road access made Luxembourg both an attractive and easily reached workplace location, municipalities closer to Luxembourg experienced a sharp and persistent increase in the share of cross-border commuters. The statistically significant and economically large increase represents a differential rise of roughly 35 percentage points relative to more distant municipalities over three decades. There was no differential increase in cross-border employment between treated and control municipalities during the pre-shock 1968-1982 period, when wages in France and Luxembourg were similar. The effects kickstart sharply in the late 1980's, consistent with the timing of Luxembourg's economic expansion. By 1990, the number of residents employed abroad in municipalities within commuting distance of Luxembourg City had already increased by approximately 160 percent relative to more distant municipalities compared to the pre-1981 period. The effect continues to grow gradually over the following decades, in line with the

persistent wage gap between France and Luxembourg.[10]

Substitution between domestic and foreign workplaces We next study how improved opportunities abroad reshape workplace location choices among residents between domestic and foreign employment. To do so, we repeat our baseline municipality-level specification, using the log *number* of residents employed in France as the outcome. As shown in Figure A.9, employment in France declines substantially among residents of treated municipalities, by about 6 percent in the short run and over 20 percent in the long run. This pattern is consistent with French workers responding to improved opportunities abroad by reallocating their employment across locations, moving away from domestic jobs in relatively weaker local labor markets toward the booming labor market in Luxembourg.

4.2 Reallocation of Incumbent Workers

We assess whether these adjustments reflect changes among existing resident workers or are exclusively driven by new labor market entrants. Distinguishing between these channels is key to assessing whether access to foreign labor markets allows incumbent workers in distressed regions, including those previously employed in declining sectors, to benefit from new economic opportunities, or whether gains are primarily captured by new workers.

Using longitudinal administrative employer-employee data covering a random sample of 4% of the French population, we track outcomes workers initially employed in France *prior* to Luxembourg's expansion. We focus on workers aged 25-54 in 1985 who were continuously employed in France between 1982 and 1985. Because residence is not observed in the pre-period,[11] we construct a measure of exposure based on commuting linkages. Using exhaustive data covering the full population of France (rather than our worker panel), we compute, for each *workplace* municipality the share of its workers residing in treated municipalities (i.e., within the 50km commuting distance to Luxembourg). This out-of-sample measure captures

[10] "As the crow flies" distance to Luxembourg City predicts cross-border employment more strongly than distance to the highway alone, as shown in Figure A.6, although both treatments (expressed in shares of the resident population) exhibit similar qualitative patterns and dynamics. As illustrated in Figure 4, many municipalities lie close to the border but west of the main highway and can still reach Luxembourg City via alternative surface road connections.

[11] We observe municipality of work from 1982 onward and municipality of residence only from 1993 onward (if and when a worker is employed in France in a given year).

how much of its workers a given town draws from residents of highly-treated areas, without relying on individual-level endogenous residence or workplace measure.[12] We then assign to each worker the exposure intensity of their 1982 municipality of work. We estimate difference-in-differences specifications on the probability of remaining employed in France that interact this continuous measure with year fixed effects. By construction, exposure intensity provides a proxy for our (unobservable) baseline treatment based on initial residence: workers initially employed in municipalities where a larger share of workers reside in treated areas are more likely to be exposed to the Luxembourg pull.

We then study whether incumbent workers remain employed in France. Because the data only capture employment in France, a decline in this outcome can reflect either non-employment or employment abroad. Under our identifying assumption that more and less exposed local labor markets would have followed similar trends in French labor market participation absent the expansion of the Luxembourg labor market, we interpret *differential* declines in French employment as reflecting transitions into cross-border employment.[13]

Figure 7 shows that more exposed workers experience a substantial decline in employment in France, with the probability of remaining employed in France falling by approximately 10 percentage points relative to less exposed workers. The timing of these effects is informative. French employment among incumbent workers declines sharply in the late 1990s and stabilizes thereafter. By contrast, as shown previously, aggregate cross-border commuting continues to increase over the same period. This divergence suggests that the *initial* cross-border employment response is driven largely by incumbent workers transitioning into foreign jobs, while the later expansion reflects additional margins, such as increased labor force participation, in-migration, and changes in the commuting choices of newly employed young workers.

Our data allow us to further characterize which incumbents re-allocate. We find that both male and female workers, as well as workers across the wage distribution, are more likely to take up employment opportunities abroad. However, these effects are substantially larger for male workers and those with above-median wages in 1985 (Figure 8). We also examine heterogeneity

[12]The earliest we can compute this exposure measure in the exhaustive DADS data when both residence and workplace are observed is 1996; and 1988 for a non-exhaustive version of the DADS. We use the value for 1996, but also the average between 1988 and 2000, to test the robustness of our results to potential measurement errors.

[13]Any potential *positive* spillovers on domestic labor demand in more exposed areas would then lead us to understate the reallocation effects on incumbents.

by sector of employment in 1985. The largest effects are observed among workers initially employed in tradable sectors: their probability of remaining employed in France declines by approximately 14 percentage points. We also find a significant but small effect for workers initially employed in construction. By contrast, we find no decline for workers employed in the public sector, whose domestic employment attachment is substantially stronger.[14]

Taken together, these results indicate that cross-border employment opportunities were not limited to new entrants but involved substantial take-up among incumbent workers, including those initially employed in declining manufacturing and other tradable sectors. While the existing literature emphasizes sizable reallocation frictions, particularly across sectors, our findings suggest that workers in former industrial regions were able to adapt to sizable changes in available employment opportunities, even when these arose in sectors that differed from their initial employment.[15]

4.3 External Validity and Alternative Explanations

We briefly assess whether the patterns documented above reflect responses to Luxembourg's economic expansion or broader trends affecting distressed regions of northeastern France.

Placebo border. We first replicate our analysis around the France-Belgium border, focusing on municipalities near the Belgian city of Mons, where no comparable economic expansion occurred (Figure A.2). We find no increase in cross-border commuting to Belgium. Over the same period, the share of cross-border workers rises by at most 0.5 percentage points in municipalities closest to Mons, two orders of magnitude less than near Luxembourg. This suggests that the patterns documented above are not driven by general trends affecting the French rust belt, but instead reflect the proximity to a rapidly expanding foreign labor market. Within the otherwise declining region of northeastern France, only municipalities near Luxembourg benefited from immediate proximity to a dynamic hub.

[14] Civil servants in France have lifetime employment protections and low mobility rates.

[15] Figure A.10 examines *all* exits (permanent and temporary) from the domestic labor market, again finding similar qualitative and quantitative effects on the probability that incumbents in treated areas are not observed as working in France in a given year after the rise in the cross-border commuting corridor.

Long-distance commuting. We next examine whether the increase in cross-border commuting reflects a broader rise in long-distance commuting from distressed areas. To do so, we redefine the outcome as the share of employees working outside the *department*, either elsewhere in France or abroad. We find that the increase in long-distance commuting is almost entirely driven by cross-border employment, and no increase in long-distance commuting in control areas (Figure A.8). This indicates that the observed patterns are not simply evidence of a general increase in commuting distances among residents of northeastern France, but are specific to access to employment opportunities in Luxembourg.

Size of foreign labor demand differentials. Finally, we examine whether the commuting response reflects features specific to Luxembourg or a broader response to foreign labor demand shocks. Exploiting variation across all international borders in northeastern France, we relate commuting responses to cross-border income differentials. Figure 9 shows that commuting responses increase monotonically with the income gap between French municipalities and neighboring foreign labor markets. Luxembourg lies at the upper end of this distribution, consistent with the exceptionally large wage premium available to French workers commuting there. These patterns indicate that the commuting responses documented above reflect a broadly externally valid mechanism where workers from distressed regions systematically respond to nearby foreign labor demand opportunities, and are not driven by idiosyncratic features of Luxembourg's economic structure or tax policies.

5 Labor Market Responses to Foreign Labor Demand

We next examine how improved access to foreign labor demand affects broader labor market outcomes, and whether changes in commuting patterns translate into net employment gains.

5.1 Aggregate Employment Effects

We begin by estimating the effect of exposure to Luxembourg on total employment (foreign and domestic) of local residents. Figure 10, Panel A, reports event-study estimates from our baseline specification. Treated and control areas follow parallel trends prior to 1982. After the

onset of Luxembourg's economic expansion, employment increases steadily in municipalities closer to Luxembourg. The effects are economically large. In our preferred specification, thirty years after the shock, total employment of local residents is approximately 35 percent higher in municipalities closer to Luxembourg relative to nearby municipalities without access to cross-border commuting opportunities. These effects are robust to controlling for initial sectoral composition and skill structure, and are absent in placebo estimates around the Belgian border (yellow series), indicating that they are specific to Luxembourg's labor demand shock.

A key feature of the dynamics is that employment increases with a delay of roughly one census wave (about seven years), relative to the initial cross-border commuting reallocation effect. This pattern suggests that the initial response operates through a *full* re-allocation of existing residents across workplace locations, from local to cross-border jobs, without immediately increasing total employment. A decade later, however, total employment in treated areas begins to grow and continues rising thereafter, consistent with crowd-in effects whereby new economic activity amplifies the initial shock.

5.2 Reallocation and Net Employment Gains

To further unpack these dynamics, Panel B of Figure 6 decomposes total employment into employment of local residents abroad (green series) and employment in France (pink series). We normalize both series by the initial (1975) population to abstract – for now – from the effect of changes in population size. In the short run, increases in cross-border employment are largely offset by declines in domestic employment, leaving total employment relative to initial population roughly unchanged. Over time, this substitution gives way to net local employment gains. By the end of the period, an additional 165 jobs abroad (per 1000 initial residents) is accompanied by only a decline of 45 domestic jobs, leading to an overall increase in employment of approximately 115-120 in treated municipalities.

Figure A.11 evidences that employment gains are broad-based, with net gains in most sectors and occupations. We find an increase in the share of retail, business services, and professional workers, and a small decline in the share of blue-collar workers and lower-level employees. Gains are particularly large in services and construction, leading to a rise in the employment share of these industries (relative to agriculture and manufacturing) among locally

employed residents in municipalities near the Luxembourg border relative to untreated areas. Overall, the patterns suggest a widespread increase in employment opportunities not specific to a single occupation or industry, combined with an accelerated re-allocation of employment towards services jobs in treated locations.

5.3 Unemployment and Labor Force Participation

We next ask whether employment gains in formerly declining regions reflect improved labor market conditions (e.g. unemployment decline) or a crowd-in of labor supply (e.g. higher labor market participation). We proceed in two steps. We first normalize outcomes by the initial population (Figure 11, Panel A), so that outcomes are measured in absolute terms. Panel A shows no significant change in unemployment and labor force participation in the short run, consistent with the reallocation mechanism documented earlier. Labor force participation begins to increase with a delay of about a decade, while unemployment remains essentially unchanged throughout the period. This pattern indicates that the subsequent expansion in local employment is driven in part by a rising number of labor force participants, rather than a reduction in the *number* of unemployed residents.

We then turn to specifications that use standard definitions of unemployment and participation rates, taking contemporaneous working-age population as the denominator (Figure 11, Panel B) to account for changes in local population size. Under this specification, we find economically large effects of the foreign demand shock on local labor market outcomes. In the long run, the unemployment *rate* declines by approximately 1.5 percentage points in treated municipalities. This decline, despite the flat pattern in unemployment relative to the initial population shown in Panel A, reflects that the expansion of the local population over time is tilted towards employed residents and not accompanied by a commensurate rise in unemployed workers. The increase in labor force participation is more muted under this specification, reflecting the key role of population growth in the overall expansion of employment, but remains large. The contemporary employment-to-population ratio increases by about 4 percentage points in municipalities exposed to the foreign demand shock.

We can decompose the treatment effect on local log employment observed in Figure 10 into three margins: the labor force participation rate, the unemployment rate, and working-age

population growth, to which we return below.[16] We find that, to a first order, of the 31 log points increase in 25-54 employment in treated areas, roughly 5.5 points come from the change in labor-force participation rates and 2.2 points from the change in unemployment rate, with the rest arising from local working-age population growth and non-linear interactions.

These findings indicate that improved access to foreign labor demand leads to a net expansion of local labor supply. In the medium run, it is reflected in higher labor force participation, while in the longer run it is accompanied by improvements in both participation and unemployment rates. The results point to a meaningful expansion of labor utilization at the local labor market level in some parts of the French "rust belt" caused by the foreign demand shock. They may reflect higher labor force participation among incumbent residents, but also among additional workers. In the next section, we examine in more detail how the timing, structure, and composition of population adjustments contribute to these patterns.

6 Migration and Long-Run Regional Expansion

The previously documented increases in local employment and labor market participation reflect both changes in labor supply among incumbents and changes in population size and composition in response to the foreign shock. We next examine these population responses directly and document large and persistent migration inflows into formerly declining treated municipalities. We then assess how the composition of these population adjustments contributes to the long-run expansion of local economies.

[16] Let P denote working-age population, $LFPR \equiv A/P$ the labor force participation rate, and $UR \equiv U/A$ the unemployment rate. Since employment satisfies

$$E = P \times LFPR \times (1 - UR),$$

the treatment effect on log employment can be written as

$$\Delta \log E = \Delta \log P + \log\left(1 + \frac{\Delta LFPR}{LFPR^0}\right) + \log\left(1 - \frac{\Delta UR}{1 - UR^0}\right),$$

where $LFPR^0$ and UR^0 denote the counterfactual labor force participation and unemployment rates , and $\Delta LFPR$ and ΔUR are the treatment-induced changes in those rates.

6.1 Population Responses to Foreign Labor Demand

Previous work has found no or little population and domestic mobility responses to negative employment effects induced by foreign supply shocks through trade (Autor, Dorn, and Hanson, 2013; Choi et al., 2024) or migration (Muñoz, 2024). In contrast to these findings, we document substantial population adjustments (operating through net migration responses) after a positive foreign labor demand shock.

Figure 12, Panel A, reports event-study estimates using the log of municipality resident population as the outcome variable. Prior to 1988, population trends are similar in control and treatment municipalities, consistent with our parallel pre-trends assumption. For close to two decades following the shock, municipalities more exposed to Luxembourg do not experience statistically or economically meaningful population growth relative to less exposed areas. This absence of differential population growth implies null migration responses in both the short and medium run, despite the substantial expansion of cross-border job opportunities and local employment rates over the same time horizon. A differential only begins to emerge around 2010, more than two decades after the initial divergence. From that point on, exposed municipalities experience sustained population growth. By 2021, population levels are approximately 13 percent higher in municipalities closer to Luxembourg relative to control municipalities. These results are robust to the inclusion of flexible time-varying controls and to allowing for differential trends based on initial manufacturing shares or pre-period educational composition. Over the same period, population levels in municipalities closer to the non-booming foreign labor market remained flat, with precisely estimated null effects (Figure A.12) that are statistically different from the population growth observed in municipalities near Luxembourg starting in 2010.

6.2 Expansion through migration flows

Our data further allow us to dissect the population effects by computing implied annualized net migration flows from population changes, observed births, and observed deaths, which we do in Panel B of Figure 12. Our results suggest that positive net migration flows (not differential changes in fertility or mortality rates) are driving the overall increase in local population. Annualized net migration rates rise by about 1 percentage point in treated ar-

eas during the later part of our sample relative to control locations, leading to substantial population divergence over the course of multiple decades.

Since we find substantial population reallocation in response to the employment gains induced by access to Luxembourg, we investigate whether highly exposed municipalities experienced changes in their demographic composition (appendix figure A.13). We find no evidence that growing municipalities became disproportionately male or younger by the end of the period, suggesting that the positive migration response to the local economic opportunity shock is not primarily driven by these demographic groups. However, we do detect a positive and significant effect on the share of working-age individuals (25-54) and in particular on educational composition: treated municipalities experience a roughly 5 percentage point increase in the share of college-educated residents. This indicates that the differential migration response to the opportunity shock in treated areas was partly driven by either more educated workers becoming more likely to move in, or less educated workers becoming more likely to move out.

Note: future access to additional individual-level census migration files will allow us to directly decompose total net-migration to treated areas by gross inflows and gross outflows, and to assess differential changes in the destinations and origins of moves towards and away from treated areas relative to control locations.

6.3 Local housing stock expansion

Given our finding that the local population increased due to the foreign labor demand shock, we turn to investigating how the local housing market accomodates this rise. Large population inflows can have very different implications for local economies and existing residents depending on how easily the housing stock can adjust to the new population. In Figure 13, Panel A, we study how the local housing stock evolved in French municipalities with better access to Luxembourg. The event-study estimates show a significant increase in the number of housing units, with dynamics that closely mirror the timing of the population increase. However, the expansion of the housing stock is consistently smaller than the corresponding increase in population, indicating that adjustments in the supply of housing did not fully accommodate new residents, and pointing towards housing market congestion. This less than proportional adjustment of the housing stock relative to population is consistent with evi-

dence described below (section 7) showing that residents of more exposed areas (especially remaining domestic workers) consume relatively less housing space per person at the end of the sample period than those of untreated municipalities, following a gradient consistent with a causal effect of exposure to cross-border commuting opportunities on individual housing services consumption.

Confirming the hypothesis that additional congestion led to increased utilization of the existing housing stock, we find a roughly 2-percentage-point decline in the local vacancy rate as showed in Panel B. This suggests that the adjustment of the housing market operated both through new construction and through tighter utilization rates. In other words, the increase in residents was absorbed both by expanding the number of dwellings and by reducing the share of unoccupied units.

As a result of this additional pressure on local housing markets, housing costs increased significantly in treated areas. While long-term data on home values for the area do not exist,[17] we exploit our spatial gradient design (and associated placebo exercise at the Belgian border) to show that proximity to Luxembourg is causally associated with higher current housing costs (as proxied by rents for apartments and for single-family homes). Figure 14 shows that housing costs increase sharply with proximity to Luxembourg. Within the commuting zone, moving ten kilometers closer to Luxembourg is associated with approximately 12 percent higher rents relative to the Belgian border. These patterns indicate that positive labor demand shocks are partly capitalized into higher non-tradable prices and land values, compressing real income gains for some residents, particularly renters, and amplifying inequality between local homeowners and non-homeowners. We return below to the unequal welfare implications of this tightening of local housing markets in the most exposed municipalities for residents depending on their employment status and commuting opportunities.

[17]Exhaustive administrative price data on home sales in France (the *DV3F* database) only exist for the post-2010 period. More importantly, the three French provinces closest to Germany (*Bas-Rhin, Haut-Rhin, and Moselle*), which include part of the region of interest in this paper, do not follow the same reporting standards due to different local regulations regarding notaries since the Franco-Prussian war of 1870 and the German occupation that followed. They are therefore not included in the *DV3F* data.

6.4 Implications for Regional Adjustment

The results above reveal a gradual, three-stage adjustment process to the positive foreign labor demand shock generated by Luxembourg's expansion. Rather than producing immediate population and employment responses, exposure to the foreign labor market triggers a sequence of labor market responses that unfold over nearly three decades. Table 2 summarizes how local labor markets adjust to the foreign labor demand shock over time for all outcomes. In this section, we characterize the dynamic mechanisms through which distressed regions respond to new economic opportunities. We identify three phases of adjustment.

Phase 1: Reallocation (0–5 years). In the short run, adjustment occurs through the reallocation of existing workers across labor markets. In the years immediately following the 1988 shock, cross-border employment rises sharply in municipalities within commuting distance of Luxembourg. This immediate increase in employment abroad is matched one-for-one by a decline in employment within France, implying that local French residents reallocate across labor markets without raising overall employment. During this early phase, total employment and population remain essentially unchanged. This rapid commuting response, combined with muted short-run effects on local employment and migration, is consistent with the existing literature documenting larger elasticities of commuting flows relative to employment and population adjustments (Monte, Redding, and Rossi-Hansberg, 2018). Importantly, in this earlier stage, the reallocation mostly involves incumbent workers transitioning to foreign job opportunities, in particular among those workers (male, full-time, tradable industry) most exposed to the challenge of a widespread domestic industrial decline.

Phase 2: Employment Expansion (5–10 years). In the medium run, improved opportunities lead to an expansion of local employment through an expansion of local labor supply. Beginning in the late 1990s, total employment of local residents starts to increase. The substitution effect weakens, and employment gains abroad are no longer fully offset by losses in domestic employment. However, population levels remain flat. The employment expansion during this period is therefore driven by higher employment rates among incumbent residents rather than by in-migration. As we documented, this increase reflects a rise in labor force

participation among local residents (the "incumbents").

The lack of substantial population adjustment over a 10-15 year horizon is consistent with previous studies documenting limited migration responses to *negative* trade, migration or global recession shocks over comparable time periods (Autor, Dorn, and Hanson, 2013; Choi et al., 2024; Muñoz, 2024; Yagan, 2019). Our findings also imply that in labor markets operating below full employment, local employment can expand meaningfully in response to positive foreign demand shocks even in the absence of significant population growth. This is consistent with evidence in other contexts, e.g. fracking booms in the U.S. (Feyrer, Mansur, and Sacerdote, 2017) where initial employment slack allowed the positive labor demand shock to increase overall regional employment. In our setting, the French rust belt was characterized by low baseline employment rates, allowing incumbent residents to absorb much of the positive labor demand shock during the first decade following Luxembourg's expansion. This result also implies that reduced-form commuting responses are not constant, but rise over time, as we observe in the data. As the adjustment margin shifts over time from pure reallocation toward net employment expansion among incumbents, the pool of potential cross-border commuters on the French side of the border increases, amplifying the commuting response to the wage divergence shock.

Phase 3: Population Adjustment (20–30 years). In the long run, population inflows reinforce these gains and fuel local labor market expansion. It is only in the long run, nearly twenty years after the initial shock, that local population starts to adjust. While most studies in the literature focus on the short- to medium-run effects of local labor market shocks, our results suggest that longer time horizons may be necessary to detect meaningful population responses. We find that the absence of population adjustment is followed by substantial demographic responses: in response to the positive labor demand shock, local population ultimately increases by nearly 15 percent. Our long panel allows us to further decompose this response and identify its underlying drivers. We show that the population growth is driven by net in-migration and is accompanied by an increase in the share of college-educated residents.

Beyond the longer time horizon in our study, a second potential explanation for the sizable migration responses we document is that in-migration flows may be more elastic than out-

migration flows. Much of the existing literature focuses on negative local labor demand shocks, where adjustment requires residents to leave distressed areas. In contrast, positive labor demand shocks operate primarily through in-migration, which may face fewer adjustment frictions. For example, Monras (2018) show that internal migration responses to economic shocks occur predominantly through in-migration rather than out-migration. As a result, relocating toward expanding labor markets may be easier than exiting declining ones, even when the initially affected areas are economically distressed.

7 The Unequal Distribution of Foreign Opportunity: Incidence and Spillovers

In this section, we show how proximity to a booming foreign labor demand has nuanced consequences for local incomes, prices, consumption, transfers, and broader measures of welfare.

7.1 Local incomes and fiscal externalities

We begin by examining the long-difference change in average nominal taxable income at the municipality level, shown in Figure 15, Panel A. The figure, in line with our spatial gradient approach described in equation 3, plots averages of the outcome variable by distance to Luxembourg city (green series) and Mons (yellow series) by 5-km bins of distance. We plot flexible local-polynomial fits estimated separately on each side of the 70 km commuting threshold (the vertical dotted line), for both Luxembourg city and Mons.

Within the feasible commuting zone close to the border, long-run income growth since the 1980's exhibits a steep gradient and decays sharply with distance to Luxembourg. Beyond the 70km threshold, the relationship becomes flat, consistent with the idea that the variation reflects commuting feasibility, and thus exposure to Luxembourg's labor demand, which no longer varies with distance beyond this radius. In contrast, income growth is unrelated to distance from Mons both within and outside its commuting range, confirming that the income spatial gradient observed near Luxembourg does not reflect a general border effect. Panel B illustrates the corresponding level differences. By the end of the period, municipalities located closest to Luxembourg, where cross-border employment rates approach 80 percent,

reach average taxable incomes of around €50,000, compared to approximately €30,000 in municipalities outside the commuting zone and near the Belgian border.

After estimating our spatial-gradient specification (3), the estimated difference-in-slope coefficient implies that, within the commuting zone, moving ten kilometers further from Luxembourg is associated with €2,790 (6.9%) lower average taxable income relative to the placebo gradient. Since the same 10-kilometer increase in distance to Luxembourg is associated with a slightly more than 10 p.p. decrease in the share of cross-border commuters in employment (see figure 5), the estimates line up with the 60-65 percent wage premium associated with Luxembourg employment documented in section 2. While the linear specification summarizes average exposure effects, the nonparametric patterns reveal stronger gains very close to the border, suggesting that these estimates provide a conservative measure of the income effects for the most exposed municipalities.

Exposure to Luxembourg's labor demand also generates sizable fiscal spillovers for the French central government. As shown in Figure A.19, municipalities with access to Luxembourg experience lower unemployment rates (panel A) and reduced reliance on major means-tested transfer programs, including housing allowances (panel B), child allowances (panel D), and earned income tax credits (panel C). At the same time, average taxes paid per household (panel E) and effective French income tax rates (panel F) decline substantially, reflecting both the legal principle of taxation of cross-border workers at source in Luxembourg, and the reallocation of employment away from France. These findings highlight that foreign labor demand not only raises local incomes but also reshapes the composition of domestic public finances, reducing transfer expenditures but also shifting part of the income tax base abroad, leading to ambiguous fiscal externalities for the country as a whole.

7.2 Inequality and the Incidence of Gains

We next examine how these income gains are distributed within local economies. While access to foreign employment opportunities raises average income, it also generates substantial heterogeneity in welfare effects across residents.

Nominal inequality between commuters and non-commuters A first margin operates within the labor market. As cross-border employment expands, a subset of workers earns substantially higher wages abroad, while workers who remain locally employed do not experience comparable gains. This divergence mechanically increases income dispersion. Consistent with this mechanism, Panel A of Figure 16 shows that municipalities more exposed to Luxembourg exhibit significantly higher D9-D1 interdecile ratios. Quantitatively, moving ten kilometers closer to Luxembourg is associated with a 7 percent increase in income dispersion relative to the Belgian border.

Nominal inequality between workers and non-workers Inequality also increases between workers and non-working residents. Cross-border employment generates large income gains for employed individuals, but these gains do not extend to retirees and other inactive households. Panel B illustrates this by showing that the ratio of average pension income to average taxable income declines with exposure to Luxembourg. As labor income rises while pension income remains largely unchanged, the income gap between working-age residents and retirees increases.

Real income and consumption inequality Finally, nominal inequality understates disparities in real income in the presence of local price adjustment. As shown in figure 14, rents increased differentially in areas most exposed to the foreign commuting boom. To directly evidence how nominal income inequality combined with local non-tradable price congestion translates into real consumption differences at the end of our sample period, we examine two objects of interest: the consumption differentials, within a municipality, between cross-border commuters and observably similar non-commuting resident workers; and the consumption differentials between non-commuters in highly exposed municipalities and non-commuters in untreated locations. We study the former by regressing within-municipality variation in proxy outcomes for consumption on an indicator for working abroad, along with a series of observable individual-level controls. We assess the latter by instrumenting for the local share of cross-border workers in a municipality using distance to Luxembourg city and studying its causal effect on individual-level outcomes for non-cross border commuters, controlling again for the same observables at the individual level.

Table 3, panel A, shows that, relative to domestic workers in the same municipality with identical ages, education, immigration status, and family size, cross-border commuters consume more living space and more rooms per capita (columns 1 and 2); are more likely to own multiple cars (column 3); and are more likely to be homeowners (column 4) and less likely to live in publicly provided social housing (column 5). By contrast, panel B evidences the contrasting finding that, within the feasible commuting range, a decrease in distance to Luxembourg city (and the resulting increase in the share of cross-border commuters) predicts that non-commuters experience lower non-tradable consumption (rooms per capita and living space per capita), a lesser (although not statistically significantly so) likelihood of home-ownership, and a higher chance of living in social housing, although they also have slightly *higher* tradable consumption, as reflected per the number of cars. Taken together, these findings indicate that rising access to highly-paid foreign labor markets causes a divergence in domestic living standards, to the benefit of "compliers" who take up cross-border commuting opportunities, but partly at the expense of non-commuters and non-workers in the most exposed areas who experience rising congestion costs, material non-tradable consumption reductions, and real incomes losses.

7.3 Labor Market Spillovers

The gains associated with cross-border employment may also spill over to workers who remain employed locally. To examine these effects, we complement the census data with matched employer-employee administrative records (DADS), which allow us to track wages and employment outcomes for workers employed in France. These data enable us to isolate changes experienced by incumbent workers in exposed municipalities from compositional changes driven by migration. We use these data to assess whether improved access to foreign labor demand affects wages and employment conditions in local labor markets.

Note: Results embargoed until disclosure authorization

7.4 Geographic Spillovers

The effects of foreign labor demand may also extend beyond directly exposed municipalities through spatial spillovers. Figure 5 suggests that the geographic reach of cross-border

commuting expands over time, while population inflows into treated areas may induce a substantial reallocation of residents across space. As a result, the positive foreign demand shock could also affect welfare in control French regions beyond the initial radius of opportunity and generate SUTVA assumption violations.

To assess these spillovers, we first test the robustness of our results to alternative control groups. Using municipalities near Mons as a placebo control group in Figure A.14 yields similar patterns of cross-border employment, employment growth, and population responses. Refining our baseline control group by excluding municipalities where residents can commute to treated areas (i.e., within 70 km of our treatment group), reducing potential contamination from within-France commuting spillovers, also yields similar results (Appendix Figure A.15).

We then directly test for spillovers by defining our former control group (municipalities located 70 to 150 km from Luxembourg) as treated, and comparing them to a "super-control" group of more distant areas (150 to 200 km) in Figure A.16. The results show little evidence of economically meaningful spillovers. Employment remains stable, and population declines modestly, with effects that are economically small (below two percentage points) and imprecise relative to the substantial gains observed in treated municipalities. Overall, these findings together suggest that the benefits of foreign labor demand increases remain spatially concentrated and do not substantially spill over to neighboring control regions.

Taken together, our results show that access to foreign labor demand generates substantial but uneven economic gains, raising average income while increasing inequality along various dimensions and reshaping local economic conditions. While improved labor market opportunities may reduce the economic discontent often associated with support for far-right and anti-globalization parties in former industrial regions, the unequal distribution of gains could instead fuel political polarization. The net political effects are therefore ambiguous. We next examine how exposure to this positive foreign labor demand shock affected political outcomes in the French Rust Belt.

8 Political Consequences of Local Economic Adjustment

We next examine whether improved access to foreign labor demand translates into changes in political behavior. This question is particularly salient in the French "Rust Belt," where the rise in far-right support over the past decades has often been interpreted as a backlash against globalization and European integration (Malgouyres, 2017).

8.1 Exposure to Commuting Opportunities and Far-Right Voting

French presidential elections provide a useful setting to study this question. First-round vote shares capture preferences over a wide range of political platforms, rather than strategic coordination between two blocs, and are measured consistently at the municipality level over several decades. We focus on the vote share of far-right candidates, whose platform has remained relatively stable over time and is explicitly opposed to European economic integration.

Using our municipality-year event-study specification, Figure 17, Panel A evidences that exposure to Luxembourg's thriving labor market is associated with a *decline* in far-right presidential vote share beginning in the early 1990s, following a flat trend in the pre-shock period. By 2022, far-right vote share is approximately 7 percentage points lower in municipalities that benefited from access to Luxembourg's dynamic labor market relative to nearby but non-exposed municipalities within the same region.

These effects are robust to the inclusion of flexible controls interacting initial demographic characteristics with year fixed effects. If anything, controlling for baseline manufacturing employment and educational composition slightly increases the magnitude of the estimated decline in far-right vote share. This pattern suggests that, absent access to Luxembourg's labor market, these municipalities would likely have experienced even stronger increases in far-right support, consistent with high baseline manufacturing shares and relatively low levels of college attainment being associated with greated political backlash over the period.

The placebo analysis around the Belgian border in Panel B shows no comparable decline in far-right support. If anything, municipalities near Mons display a small increase in far-right vote share over the same period. Taken together, these results indicate that improved access to high-paying employment opportunities across the border acted as a stabilizing economic

force, dampening the rise in far-right support in exposed rust-belt municipalities relative to comparable distressed areas without such access.

Electoral Reallocation We next examine how the decline in far-right support reallocates votes across the political spectrum, focusing on the 2022 presidential election. Figure 18 shows precisely estimated null effects on the vote shares of left and far-left parties. Instead, exposure to Luxembourg increases support for centrist candidates (primarily Emmanuel Macron) by roughly 2 percentage points, and for the mainstream right by about 4 percentage points. These parties support mainstream market-oriented economic policies, including lower taxes, pro-market reforms, business-friendly policies, and deeper European economic integration. Overall, the evidence suggests that the decline in far-right support reflects a shift toward established, pro-integration parties rather than polarization toward the left.

Mobilization margin While Figure 18 captures changes in voting behavior at the intensive margin, the decline in far-right support could in principle also reflect changes at the extensive margin, such as differential mobilization. Figure A.20 shows that turnout declines slightly in treated municipalities in the long run (by approximately 2 percentage points).

Political Polarization Finally, we also examine whether exposure to Luxembourg's labor market increased political polarization within municipalities. Rising income inequality could, in principle, generate internal political fragmentation even if aggregate far-right support declines. We measure polarization using the standard deviation and coefficient of variation of far-right vote shares across voting booths within municipalities. In Figure A.22, we find no evidence on higher within-municipality dispersion for areas more exposed to foreign labor market opportunities. The decline in local far-right support therefore reflects a broad-based shift in voting behavior and wasn't associated with more political polarization in these areas.

8.2 Voter Composition or Preference Shifts?

Given the substantial population effects we document in the long run, the decline in far-right support following access to foreign labor market opportunities could be explained by two mechanisms: demographic composition effects and preference shifts among incumbent voters.

First, the timing of the effects helps identifying the pure composition mechanism. The decline in far-right vote share begins in the early 1990s, shortly after cross-border commuting expands, whereas population only starts increasing in 2010, more than two decades after the initial shock. The political response precedes the population adjustment, making it unlikely that in-migration and composition effects drive the full decline in support for populist parties.

Second, the pattern of electoral reallocation in the long run points to a shift in economic preferences rather than a broader change in voter composition. The main beneficiaries of the decline in far-right support are the mainstream right and, to a lesser extent, centrist candidates. The mainstream right shares many conservative positions with far-right voters on social and identity-related issues, making it the closest alternative on non-economic dimensions. The key difference between these parties lies in their economic platform and their stance toward European *economic* integration. These patterns are more consistent with voters adjusting their views on economic policy and integration than with a broad reshuffling of the electorate.[18]

Finally, we implement a prediction-based validation exercise to assess more directly the role of composition in explaining our results. We estimate a model of far-right vote share in the 2022 French presidential election using all French municipalities located outside our study region (i.e., beyond 150 km from Luxembourg). The model includes a rich set of demographic and economic characteristics at the local level, such as educational attainment, age structure, employment composition, manufacturing shares, and income. We then use this model to predict vote shares for municipalities in our treatment and control groups and compare predicted to actual political outcomes.

Figure 19 plots the difference between actual and predicted far-right vote share by distance to Luxembourg. The vertical axis represents the prediction gap, defined as actual minus predicted vote share. A zero prediction gap indicates that a municipality votes exactly as its observable characteristics would predict based on national patterns, while negative values indicate systematically lower far-right support than predicted.

The red series reports prediction gaps based on demographic and employment controls only. Municipalities located beyond the feasible commuting zone exhibit gaps close to zero, indicating that their voting behavior closely follows national voting patterns. In contrast,

[18]The slight decline in turnout is also inconsistent with a compositional story driven by highly politically mobilized in-migrants, who would increase participation rates in treated municipalities.

municipalities within commuting distance of Luxembourg display large negative gaps, with the magnitude of the deviation increasing as distance declines. In the mroe exposed municipalities, the far-right vote share is 15 percentage points lower than predicted by demographics and employment structure alone.

The blue series augments the prediction model by including local income. Two lessons emerge. First, adding income reduces the magnitude of the prediction gap by half, indicating that part of the political divergence operates through income gains. However, if income differences in treated municipalities were fully explained by demographic and employment composition, controlling for income would not affect the prediction gap. The fact that it attenuates the gap suggests that income captures an additional dimension of exposure to Luxembourg's labor market beyond compositional change. Second, even after including income, the gap in the closest municipalities remains substantial– declining from roughly 15 to 7 percentage points– implying that income explains less than half of the observed divergence.

The placebo analysis around Mons in Panel B provides an additional validation test. Municipalities located near the Belgian border do not exhibit systematic negative prediction gaps. If anything, actual far-right support slightly exceeds predicted levels for the entire 0-150 km distance band, and there is no discontinuity within the feasible commuting zone. This contrast reinforces the interpretation that the negative prediction gap observed near Luxembourg reflects exposure to foreign labor demand rather than a mechanical border effect.

Table 4 quantifies how much current observable characteristics explain the political divergence between exposed and non-exposed municipalities. Column (1) shows that municipalities within commuting distance of Luxembourg have far-right vote shares that are approximately 5.3 percentage points lower than control municipalities. This gap remains stable as we progressively add demographic, industrial, and labor market controls in Columns (2)-(4). When local income is included in Column (5), the treatment coefficient falls to -2.6 percentage points. This implies that roughly half of the political divergence operates through income gains associated with exposure to Luxembourg's labor market, while a substantial residual effect remains unexplained by observable characteristics.

These patterns suggest that improved economic opportunities reduce support for anti-globalization platforms, even in regions historically exposed to industrial decline.

8.3 Pro-Integration Attitudes or Other Political Adjustments?

We hypothesize that improved access to foreign labor markets fosters more favorable attitudes toward European integration, explaining the preference shifts documented above.

To assess this mechanism more directly, we extend our prediction gap approach to the 2005 French referendum on the European Constitutional Treaty, a national vote centered on the future of European integration. In that referendum, a "No" vote rejected the proposed treaty, which aimed to deepen economic integration within the European Union. The "No" campaign was supported by Eurosceptic parties, including the far right, and has widely been interpreted as reflecting opposition to further European integration (Muñoz, 2025).

Figure A.21 displays the difference between actual and predicted "No" vote shares by distance to Luxembourg. As in the presidential election analysis, municipalities within commuting distance of Luxembourg exhibit systematically lower anti-EU vote shares than predicted by their demographic and employment characteristics. While the model fit is somewhat weaker than in the presidential vote analysis, likely reflecting the distinct political context of the one-time referendum, the spatial gradient remains visible among the most exposed municipalities. This pattern is consistent with the timing of economic adjustment. As we showed before, by 2005, cross-border commuting had expanded primarily among municipalities closest to Luxembourg, whereas more distant areas experienced substantial exposure only later.

9 Conclusion

This paper documents how access to a booming foreign labor market can reshape local economic trajectories, population patterns, and political preferences. We study the case of Northeastern France, where proximity to Luxembourg exposed nearby municipalities to a large and sudden increase in cross-border employment opportunities following EU-wide financial liberalization and the rapid expansion of Luxembourg's economy.

We first show that improved access to Luxembourg generated a substantial and persistent rise in long-distance commuting, concentrated in municipalities located closest to Luxembourg City. This shift led to sizable long-run increases in local employment and population, driven first by increased labor force participation in the medium-run, then later by positive net mi-

gration flows and a modest improvement in the educational composition of residents. Housing markets adjusted in parallel through both new construction and fuller use of the existing stock, but also exhibit rising prices, leading to diverging welfare effects between cross-border commuters and local residents without access to foreign opportunities.

Finally, we show that exposure to this positive labor market opportunity moderated the rise in far-right support that otherwise characterized many declining areas in France's rust belt. Treated municipalities experienced significantly lower far-right vote shares, consistent with the idea that access to expanding external demand can dampen the political backlash typically associated with economic decline and globalization.

Together, we highlight how international labor market integration can have broad and persistent effects, not only on local economies but also on demographic reallocation and political outcomes. Our results, beyond the direct case of positive cross-border employment opportunities, underscore the critical importance of considering long-run patterns of adjustment when evaluating the distributional and political consequences of globalization.

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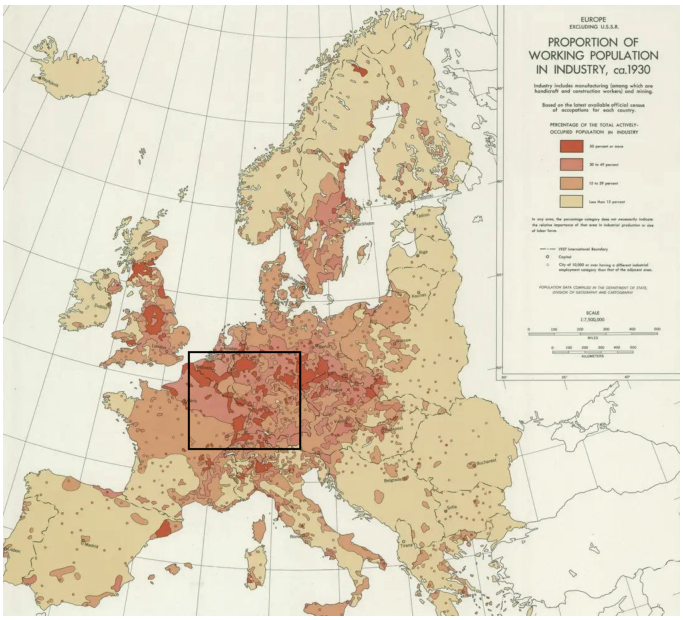
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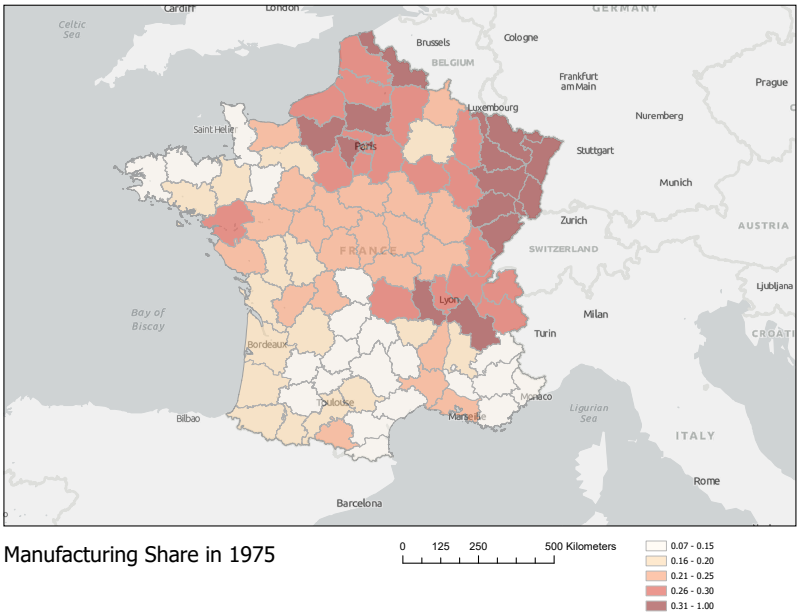
Main figures

Figure 1: **Europe's Industrial Core**

A. Europe's Historical Heartland



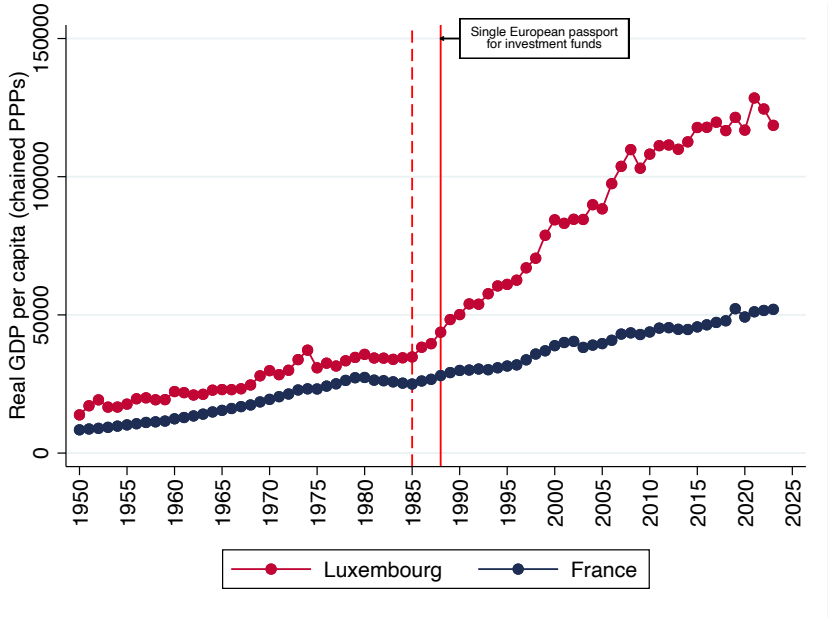
B. France's "Rust Belt"



Notes: Panel A plots historical shares of working population employed in industry circa 1930 in Europe. Panel B plots the 1975 manufacturing employment shares at the department level in France, using exhaustive census data.

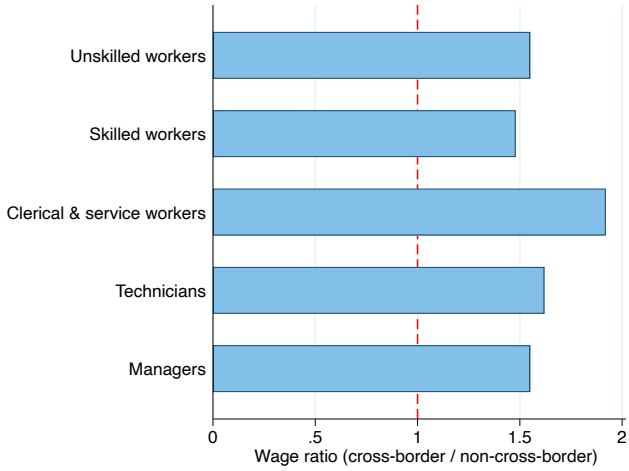
Figure 2: **Economic Divergence between Luxembourg and France**

A. Economic Growth Following the EU-Passporting System

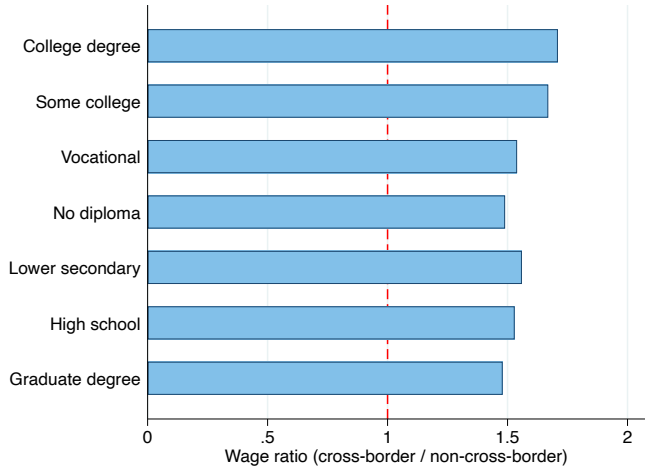


B. Wage Premium for French Cross-Border Workers

B1. By Occupation



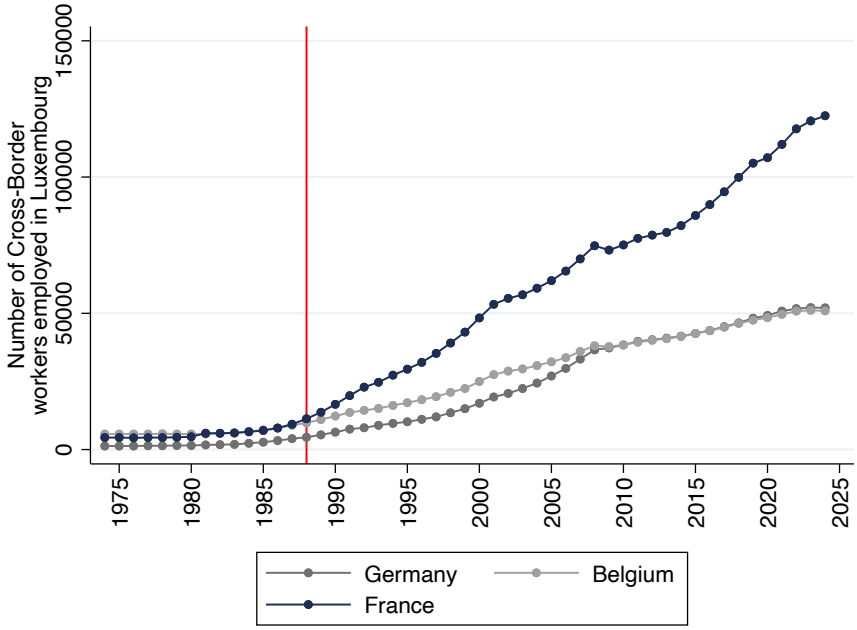
B2. By Education



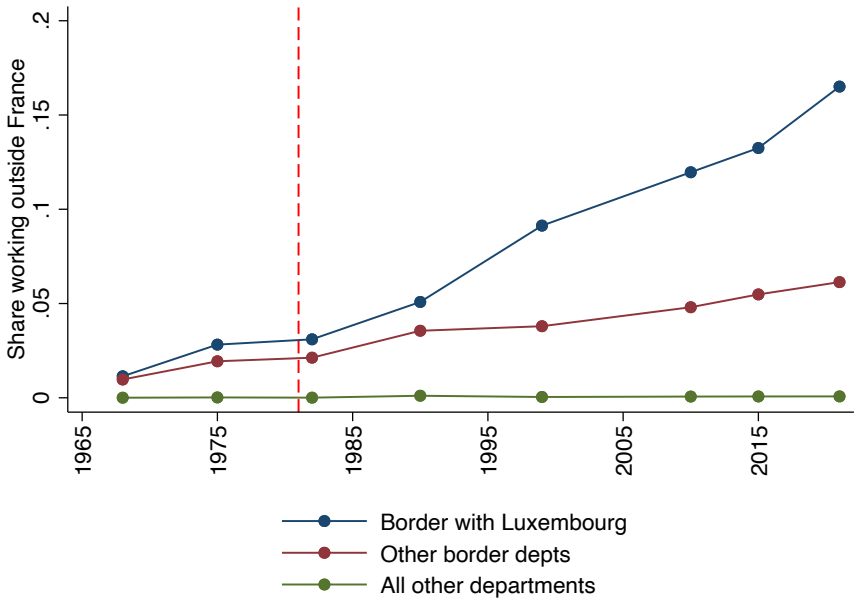
Notes: Panel A plots nominal GDP per capita in Luxembourg and France (current USD), normalized to 1 in 1985, using data from the World Bank World Development Indicators. Panel B shows the wage ratio between French cross-border workers employed in Luxembourg and observationally similar French workers employed in their origin region, by occupation and education levels. Ratios above one indicate a wage premium associated with cross-border employment. Data is from a report by the French statistical institute (Viglino and Hamez, 2025).

Figure 3: **Surge in Cross-Border Work in Luxembourg**

(a) Cross-Border Workers in Luxembourg by Origin Country



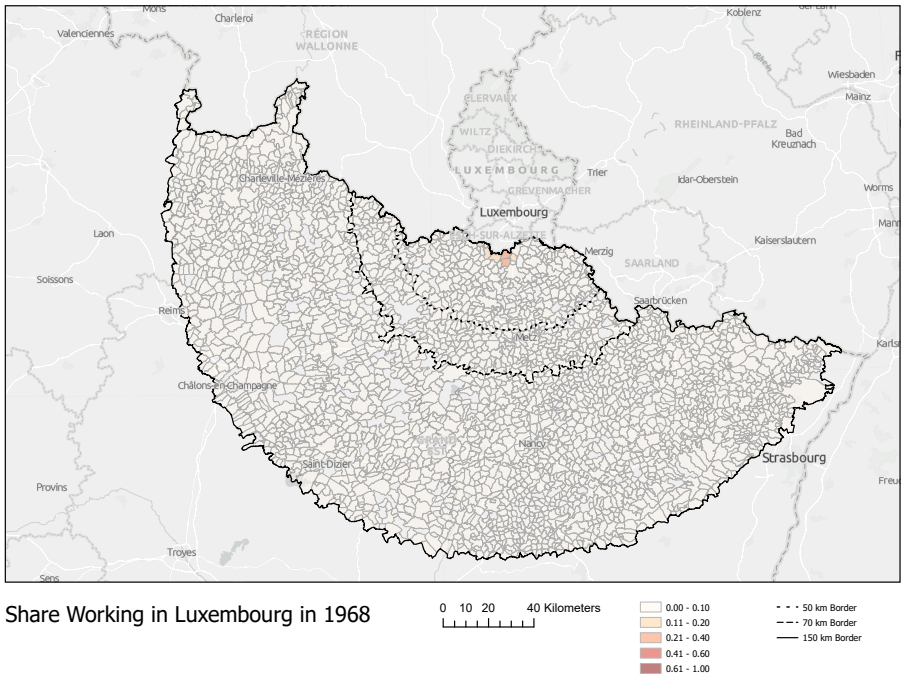
(b) Cross-Border Workers from France by Geography



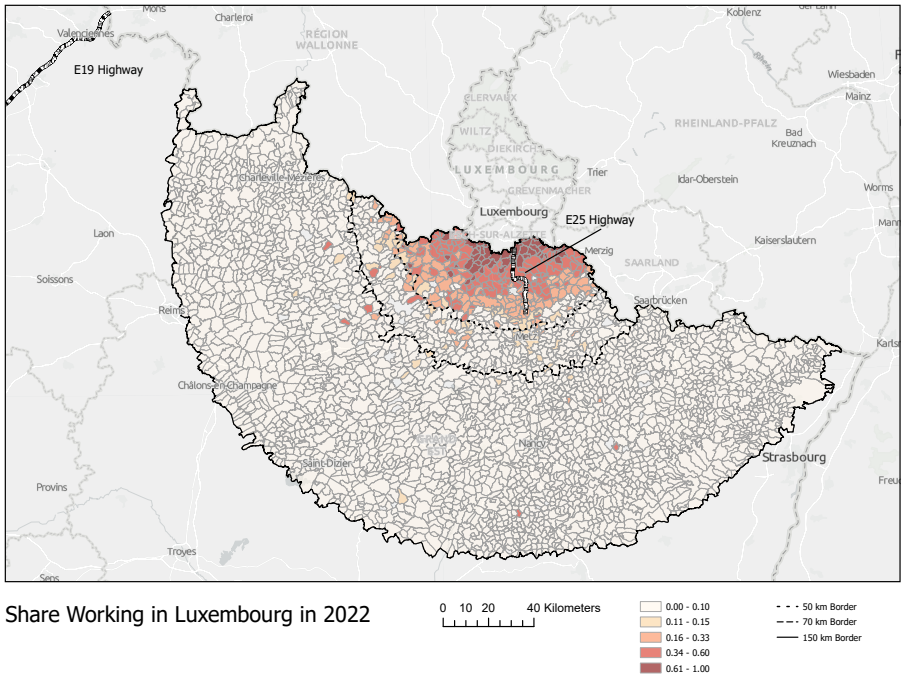
Notes: This figure shows the evolution of cross-border work between France and Luxembourg. Panel A shows the evolution of cross-border workers employed in Luxembourg by country of residence, using administrative data from STATEC. Panel B shows the share of French resident employed outside France by French regions (departements), using administrative harmonized Census data from INSEE.

Figure 4: **Spatial Exposure to Luxembourg Labor Market Over Time**

(a) Cross-Border Worker Share in 1968



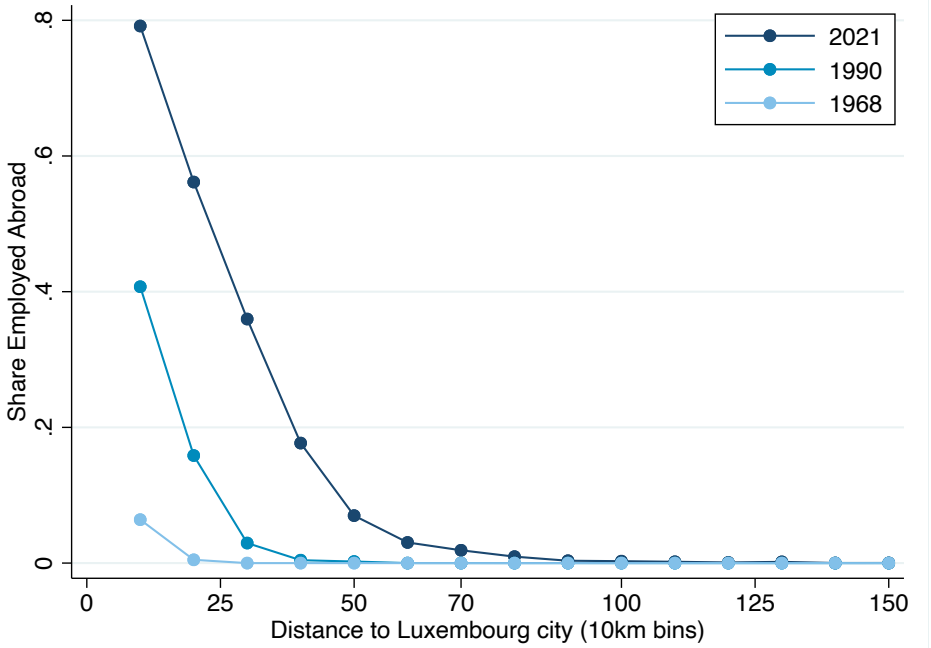
(b) Cross-Border Worker Share in 2022



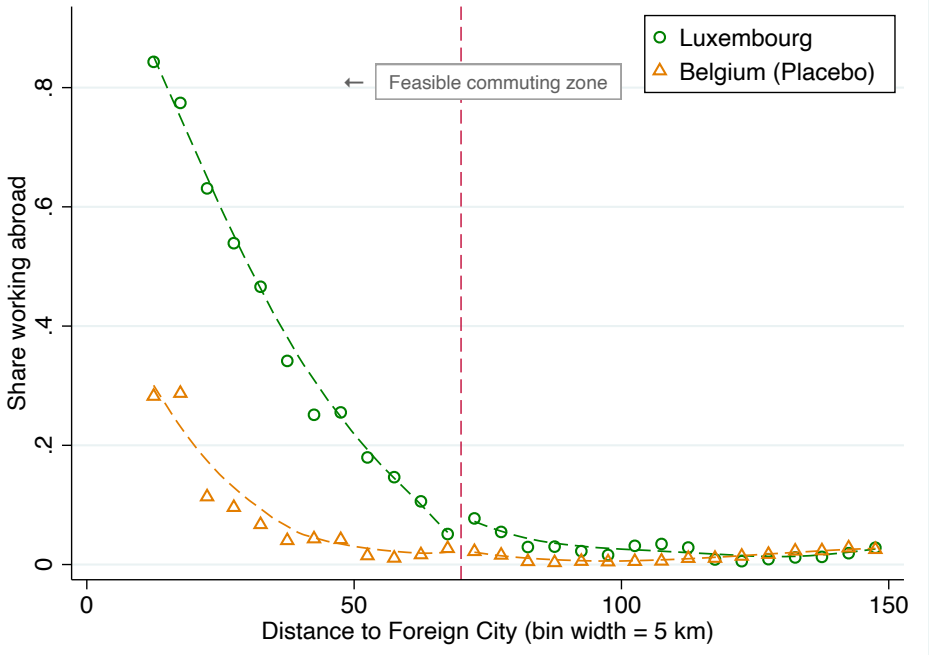
Notes: This figure shows spatial variation in the share of workers employed in Luxembourg but residing in France (cross-border workers) in 1968 and 2022. The unit of observation is a municipality (commune).

Figure 5: **Spatial Decay of Cross-Border Employment**

A. Distance to Luxembourg City and Cross-Border Employment



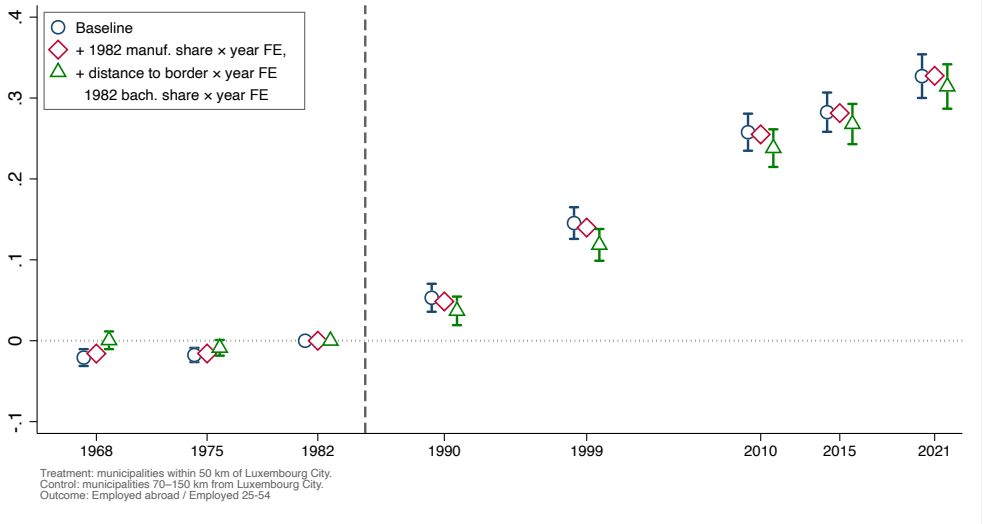
B. Distance Gradients: Luxembourg (Booming) vs. Mons (Placebo)



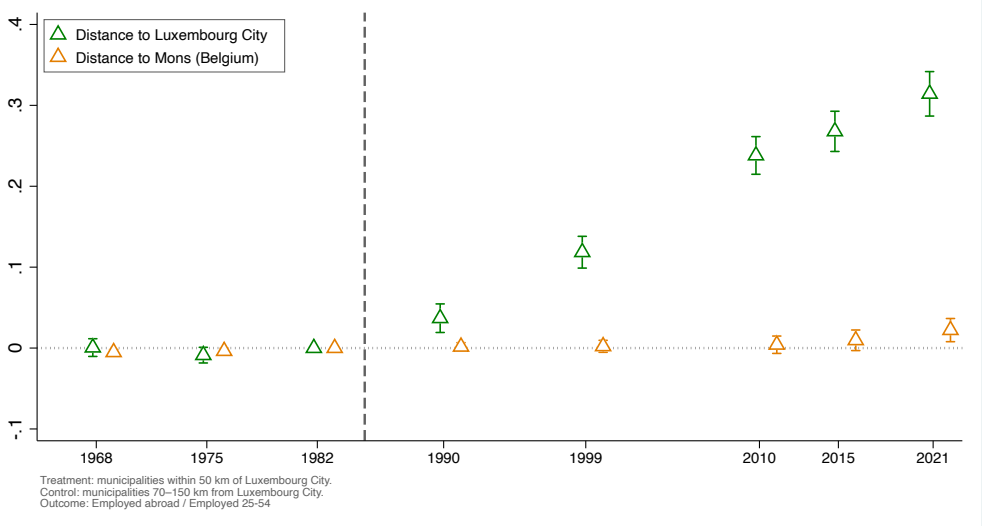
Notes: The figure plots the share of employed residents aged 25–54 working abroad as a function of distance to the foreign employment center. Panel A shows the evolution of the distance gradient relative to Luxembourg City. Panel B compares the spatial gradient near Luxembourg (a rapidly expanding labor market) to the gradient near Mons (Belgium), a similar but non-booming border city. Distance bins are 5 km. Lines show local polynomial fits (bandwidth = 10 km).

Figure 6: **Cross-Border Employment Responses**

A. Share Employed Abroad: Baseline and Alternative Specifications

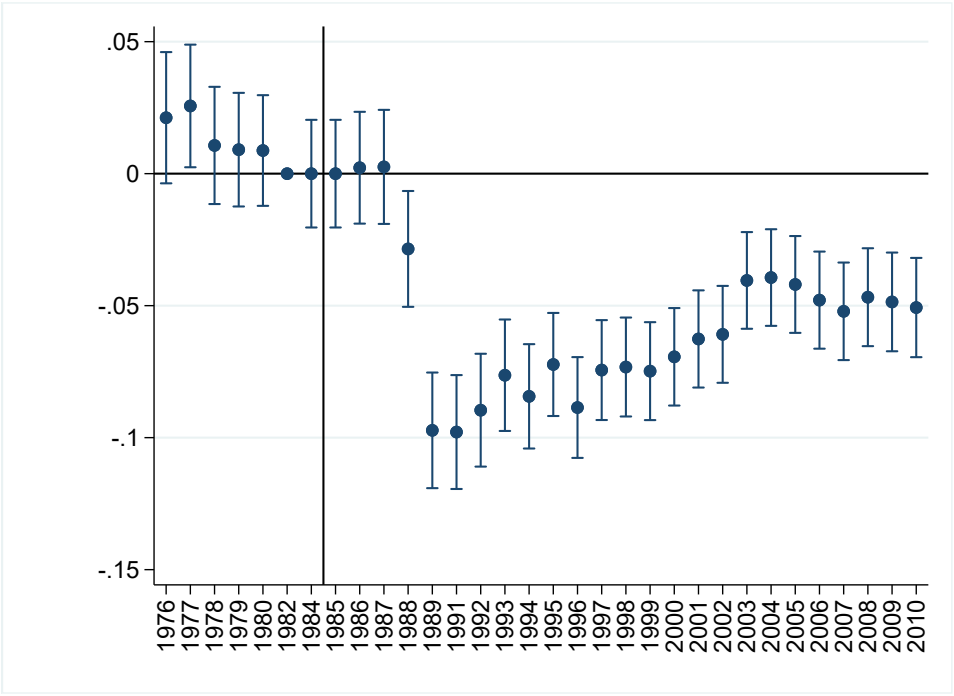


B. Placebo Border: Mons (Non-Booming Labor Market)



Notes: Panel A plots the estimated effect of exposure to Luxembourg's economic pull on the share of employees in French municipalities employed abroad. Exposure is defined by distance to Luxembourg. Treated municipalities are located within 50 km of Luxembourg City, while control municipalities lie outside the feasible commuting radius (70–150 km). Estimates come from spatial difference-in-differences specifications with municipality and census-year fixed effects. Alternative specifications vary the set of controls interacted with census-year fixed effects. Panel B reports the corresponding placebo exercise using distance to Mons (Belgium), a geographically similar but non-booming foreign labor market.

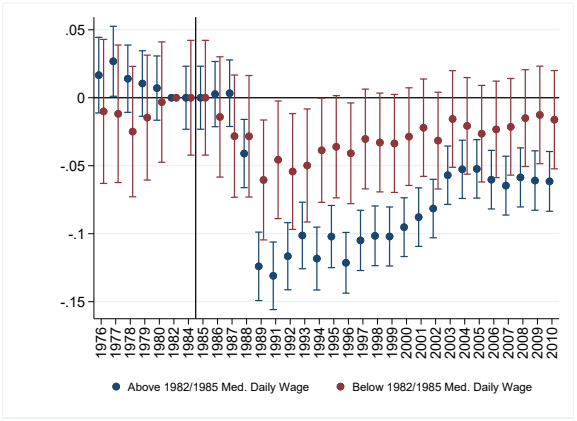
Figure 7: **Individual Exit Dynamics for Incumbent Workers from French Rust Belt**



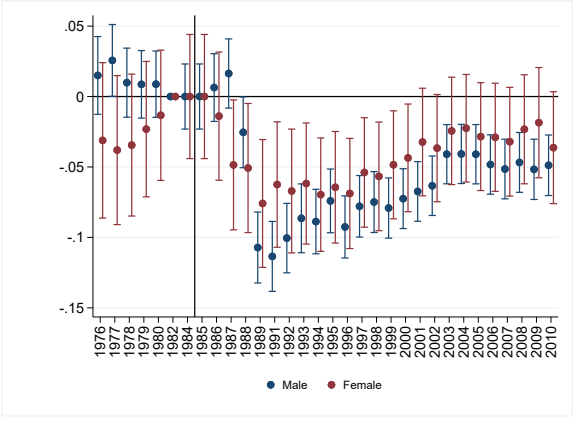
Notes: The figure plots the estimated effect of exposure to Luxembourg's economic pull on the probability of remaining in the French labor market for individual incumbent workers who were continuously present in the French employer-employee panel between 1982 and 1985. Exposure is defined using commuting linkages: for each worker, we assign the share of workers in their 1982 municipality of work who reside in treated municipalities (i.e., within commuting distance to Luxembourg), computed from exhaustive French employer-employee DADS data in 1996 (earlier year available). The exposure measure ranges from 0 to 1, with a value of 1 corresponding to workers employed in 1982 in municipalities where all workers reside in treated areas (as measured in 1996). Estimates come from spatial difference-in-differences specifications that interact this continuous exposure measure with year fixed effects and include worker and year fixed effects. The outcome is equal to 1 in year t for workers in the panel who are observed in the French employer-employee data in year t or later, and to 0 for those who do not appear in the panel from year t onward.

Figure 8: **Heterogeneous Exit Dynamics for Incumbent Workers**

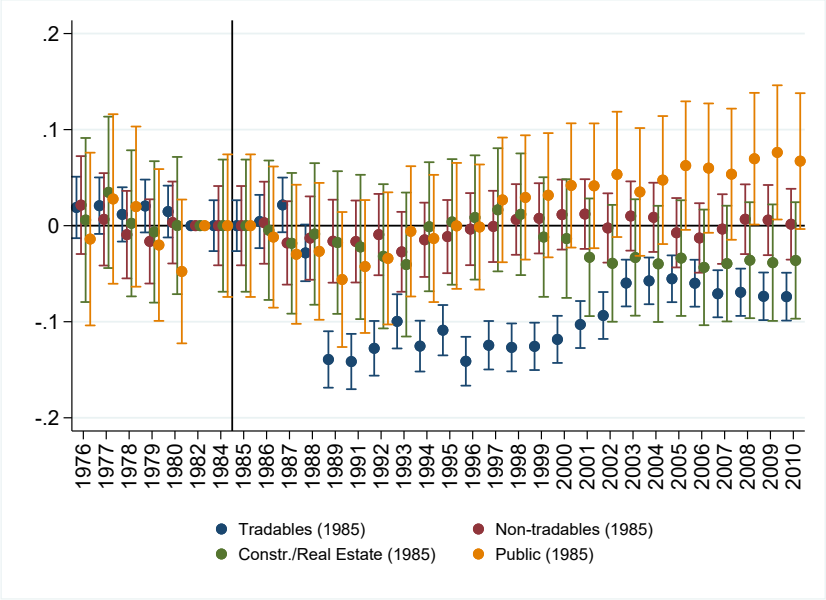
A. By Initial Wage (1985)



B. By Gender

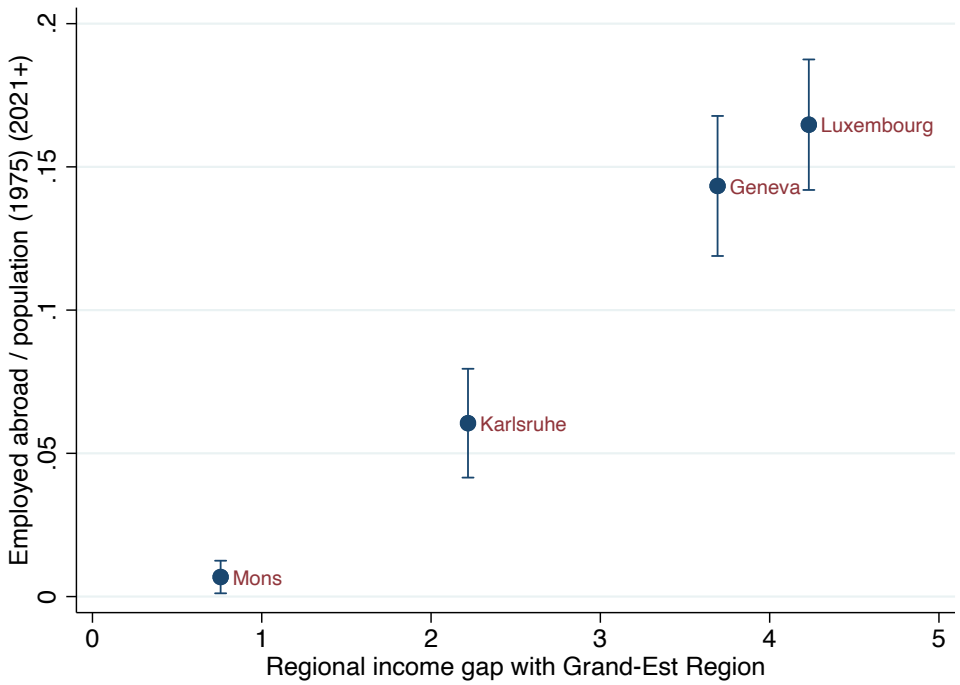


C. By Initial Sector of Employment (1985)



Notes: The figure plots the heterogeneous estimated effects (by initial sector and characteristics) of exposure to Luxembourg's economic pull on the probability of remaining in the French labor market for individual incumbent workers who were continuously present in the French employer-employee panel between 1982 and 1985. Exposure is defined using commuting linkages: for each worker, we assign the share of workers in their 1982 municipality of work who reside in treated municipalities (i.e., within commuting distance to Luxembourg), computed from exhaustive French employer-employee DADS data in 1996 (earlier year available). The exposure measure ranges from 0 to 1, with a value of 1 corresponding to workers employed in 1982 in municipalities where all workers reside in treated areas (as measured in 1996). Estimates come from spatial difference-in-differences specifications that interact this continuous exposure measure with year fixed effects and include worker and year fixed effects. The outcome is equal to 1 in year t for workers in the panel who are observed in the French employer-employee data in year t or later, and to 0 for those who do not appear in the panel from year t onward.

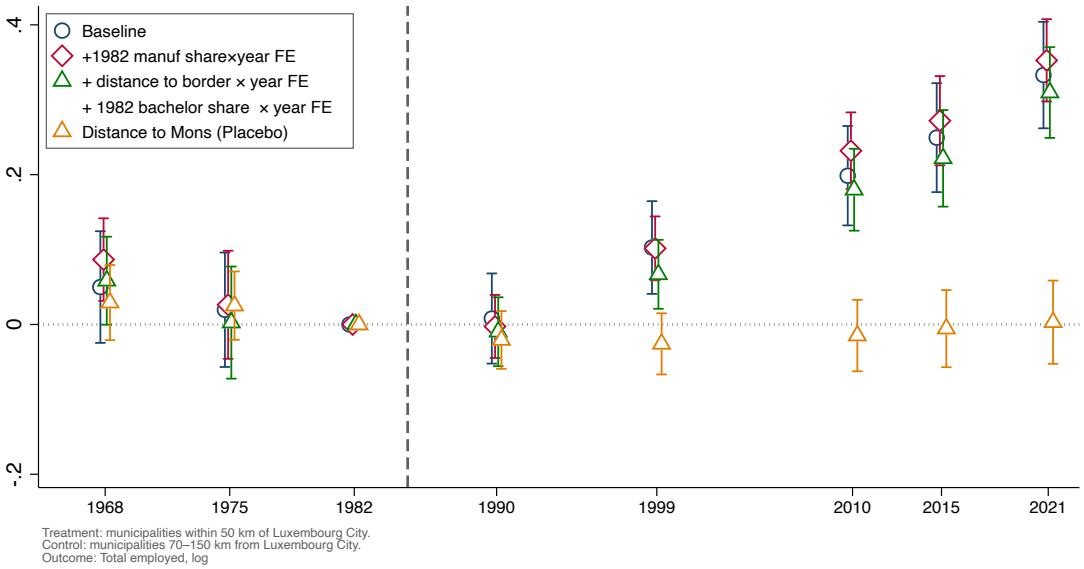
Figure 9: **Commuting Abroad and Foreign Income Gaps in Northeastern France**



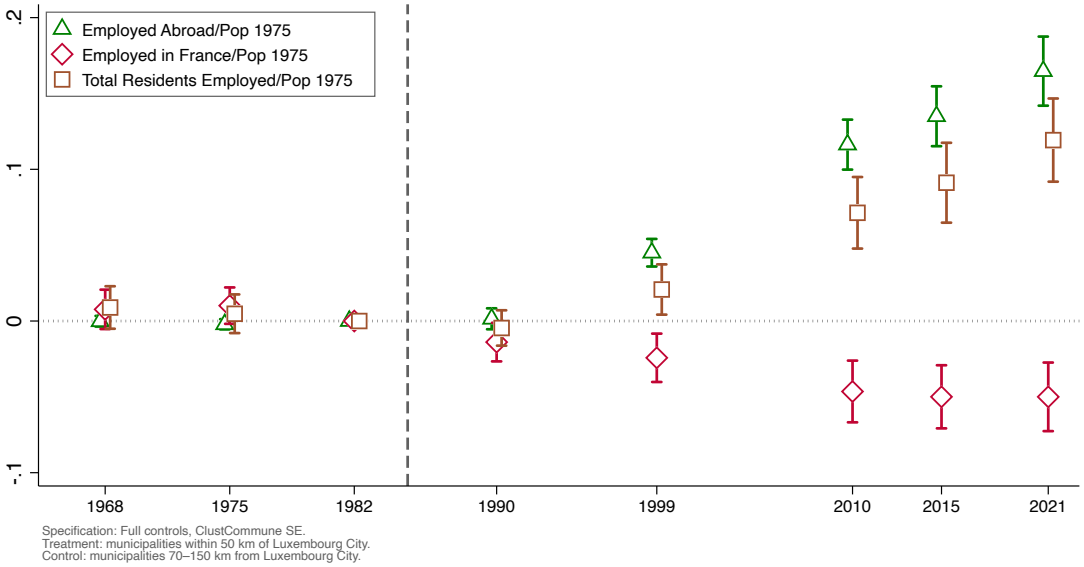
Notes: This figure relates the magnitude of cross-border commuting responses to income differentials across international borders in northeastern France over the period 1968-2021. Each point corresponds to a border region where we replicate the baseline empirical design using the nearby foreign labor market as the destination. The horizontal axis plots the income gap between the foreign labor market and neighboring French municipalities, while the vertical axis reports the corresponding increase in the share of residents employed abroad. The figure shows a strong positive relationship between foreign income differentials and cross-border commuting responses. Luxembourg appears at the upper end of the distribution, reflecting the exceptionally large wage premium available to French workers commuting there.

Figure 10: **The Dynamics of Local Labor Market Expansion over 30 years**

A. Log Local Employment (Ages 25–54)



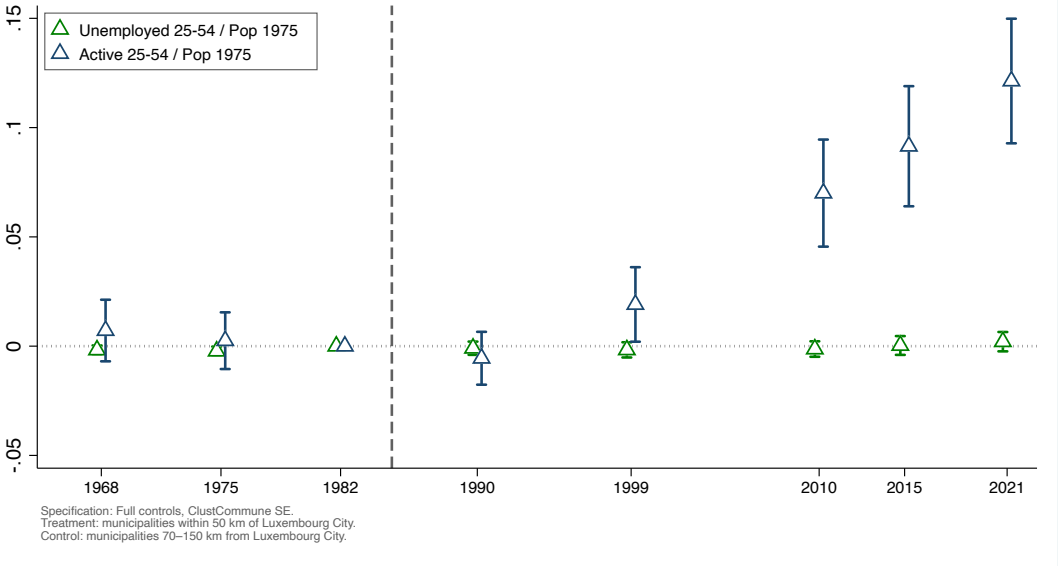
B. Decomposition of Local Employment Gains



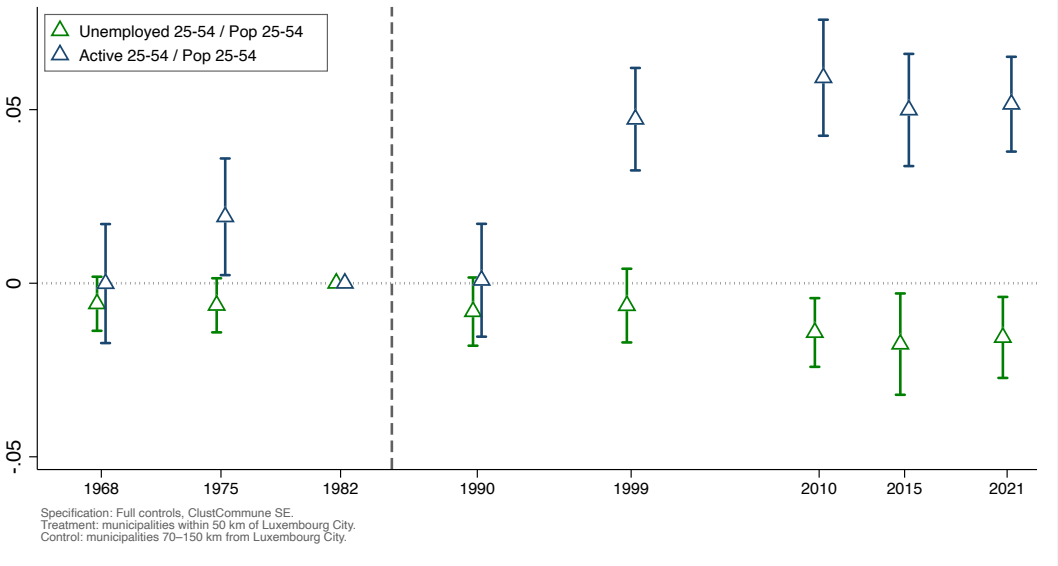
Notes: Panel A plots event-study estimates of the effect of exposure to Luxembourg's labor demand on log local employment among residents aged 25–54. Treated municipalities are located within 50 km of Luxembourg City, and control municipalities are 70–150 km away. Estimates include municipality and census-year fixed effects. The yellow series reports a placebo test using similar municipalities in the French Rust Belt located near Mons (Belgium), a close and well-connected french-speaking foreign city without a booming labor market. Panel B decomposes the total employment response into cross-border employment and domestic employment components.

Figure 11: **Labor Market Adjustment Margins: Unemployment and Participation**

A. Relative to Initial Population

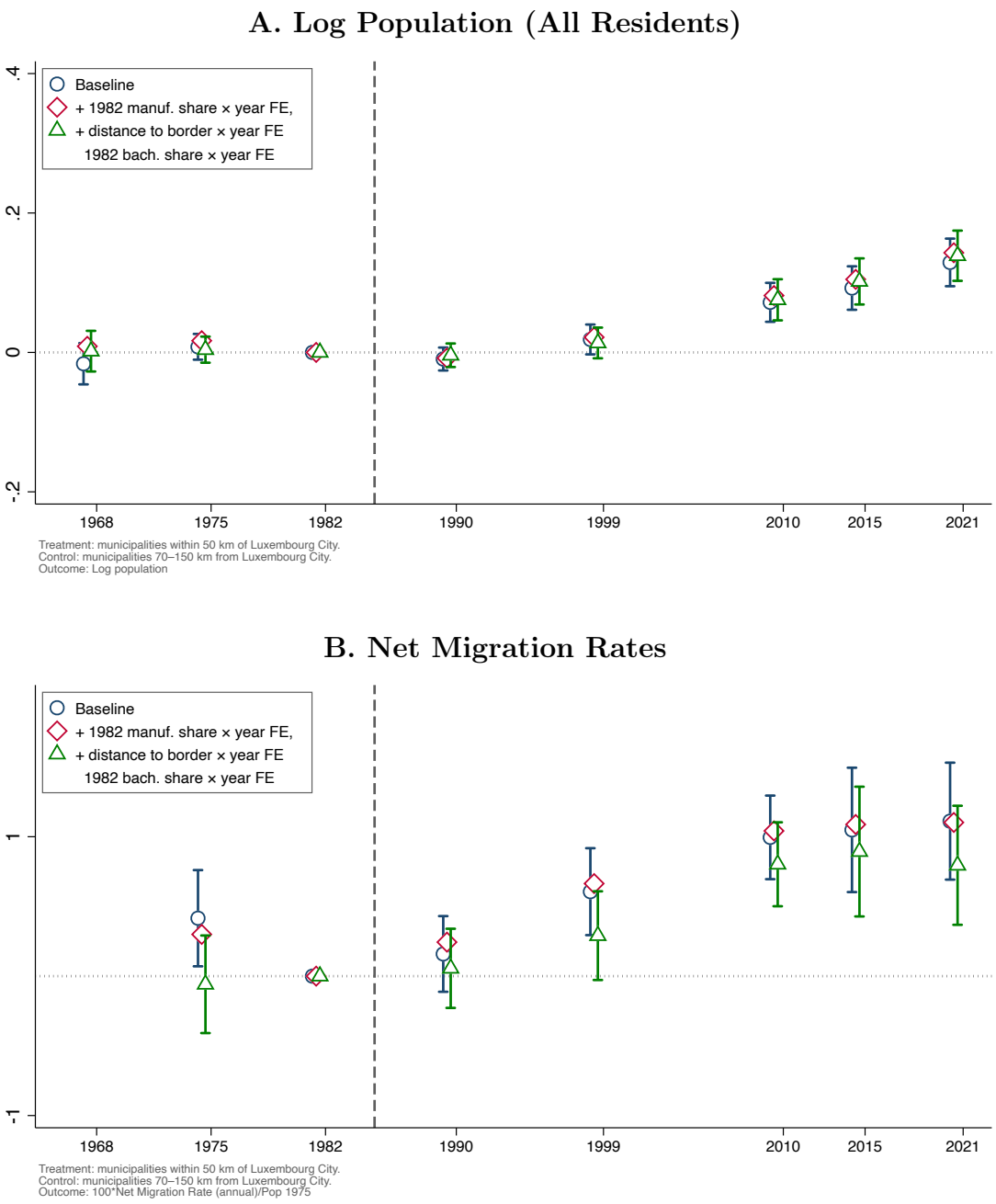


B. Relative to Contemporaneous Population



Notes: This figure reports event-study estimates of unemployment and labor force participation in treated and control municipalities. Panel A expresses outcomes as shares of the initial (1975) population, holding population size fixed. Panel B expresses outcomes relative to contemporaneous population, capturing both labor market adjustments and changes in local population size. Coefficients are estimated from equation 1 and normalized to zero in the reference year.

Figure 12: **Dynamics of Local Population Responses**



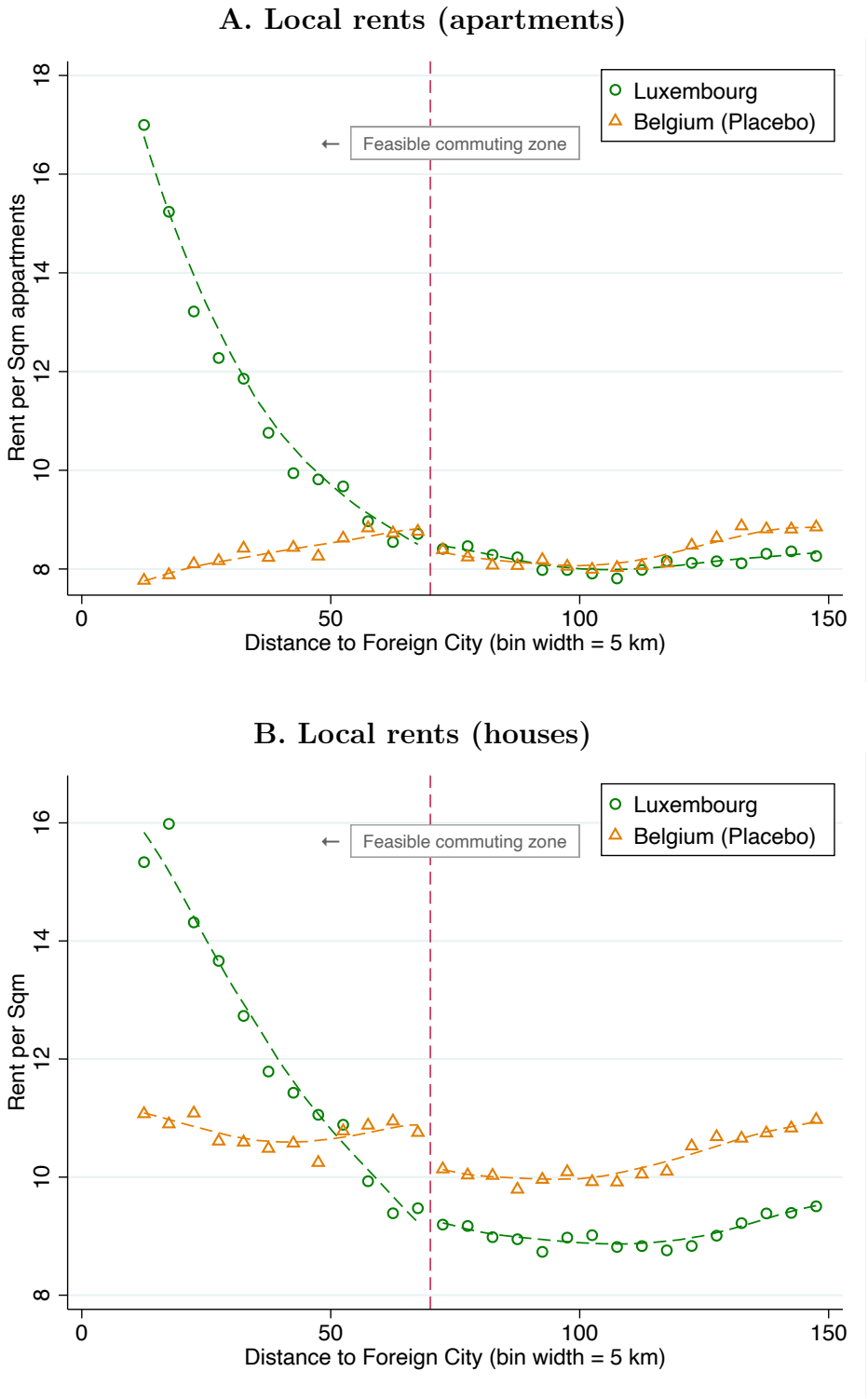
Notes: Panel A plots event-study estimates of the effect of exposure to Luxembourg's labor demand on log municipal population. Treated municipalities are located within 50 km of Luxembourg City, and control municipalities are 70–150 km away. Estimates include municipality and census-year fixed effects. Panel B reports corresponding effects on annualized inter-census net migration rates.

Figure 13: **Long-Run Congestion in the Local Housing Market**



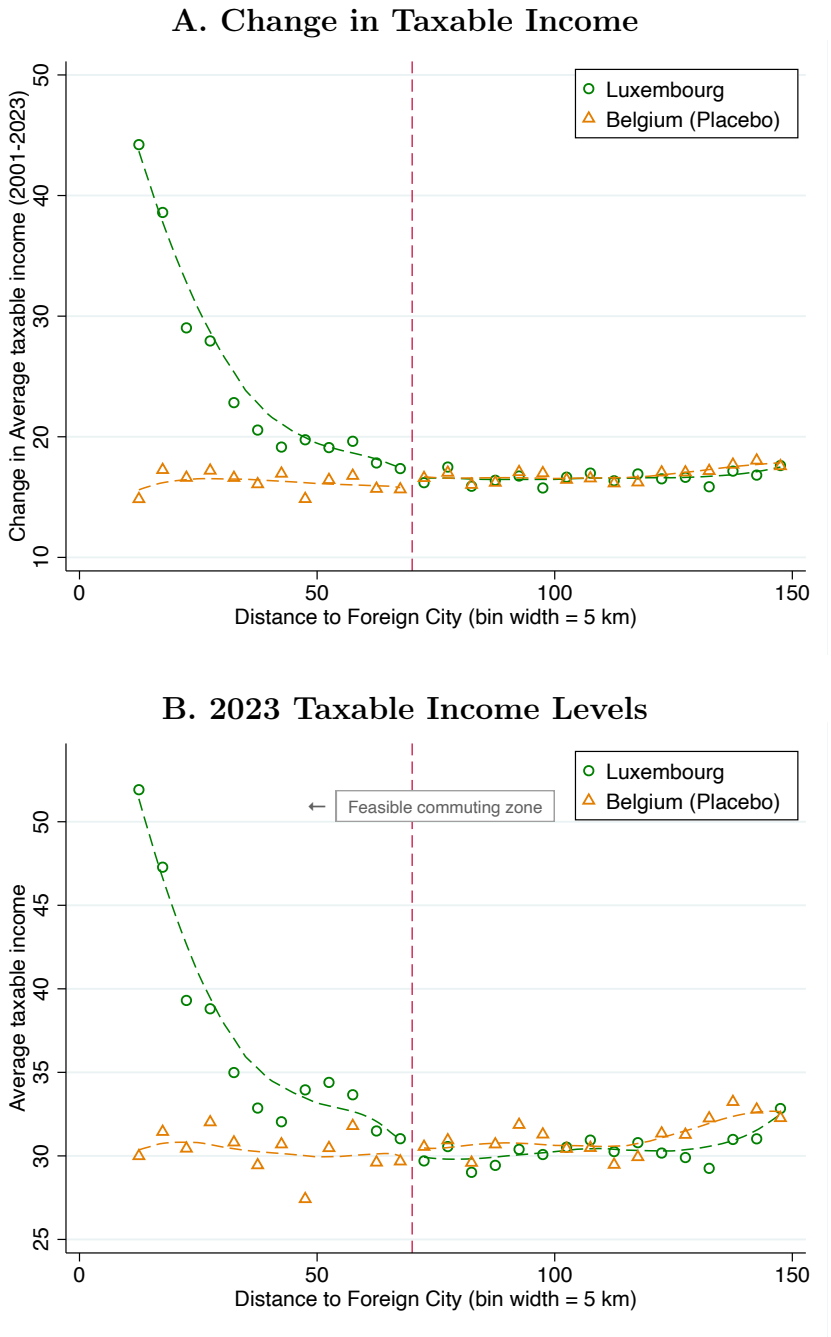
Notes: Panel A plots event-study estimates of the effect of exposure to Luxembourg's labor demand on log housing units and log population. Treated municipalities are located within 50 km of Luxembourg City, and control municipalities are 70–150 km away. Estimates include municipality and census-year fixed effects, as well as controls for initial manufacturing share, bachelor's share, and distance to the border, each interacted with census-year fixed effects. Panel B reports corresponding effects on local vacancy rates, also including a placebo exercise on municipalities nearing Belgium, a geographically similar but non-booming foreign labor market.

Figure 14: **Rents Increase in Exposed Housing Markets**



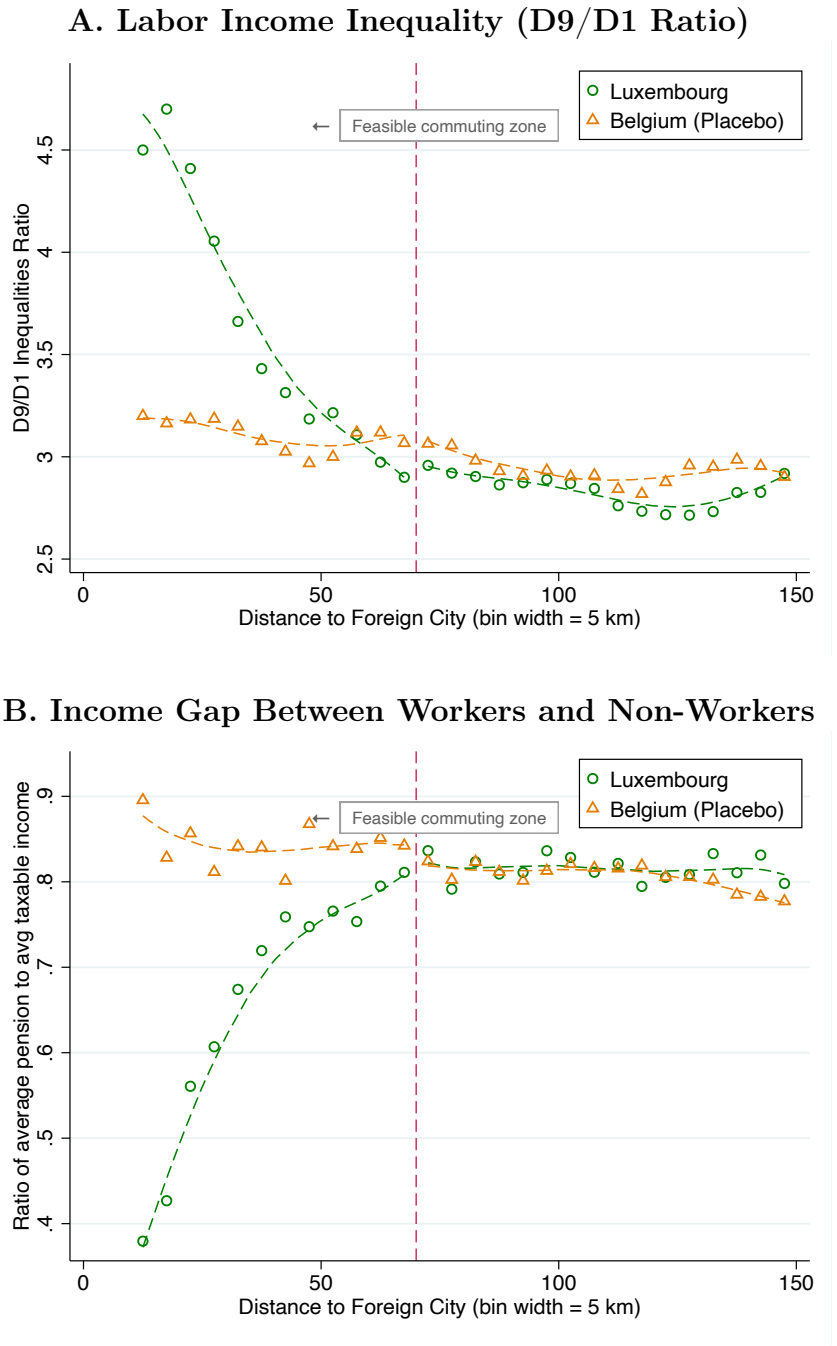
Notes: Panel A (resp. panel B) plots measures of local rents (as of 2022) for apartments (resp. single-family homes) as a function of distance to Luxembourg City. Dots represent 5 km distance bins; lines are local polynomial fits (bandwidth = 10 km). The vertical line marks the boundary of the feasible commuting zone (70 km). Yellow series report the corresponding gradients around Mons (Belgium), a geographically similar but non-booming labor market.

Figure 15: **Effects of Access to Foreign Labor Demand on Nominal Taxable Income**



Notes: The figure plots municipal taxable income as a function of distance to Luxembourg City. Panel A shows the change in average nominal taxable income relative to the pre-boom period. Panel B shows income levels in 2023. Dots represent 5 km distance bins; lines are local polynomial fits (bandwidth = 10 km). For comparison, the yellow series reports the corresponding gradient around Mons (Belgium), a geographically similar but non-booming labor market. The vertical line marks the boundary of the feasible commuting zone (70 km), outside which daily cross-border work is not feasible.

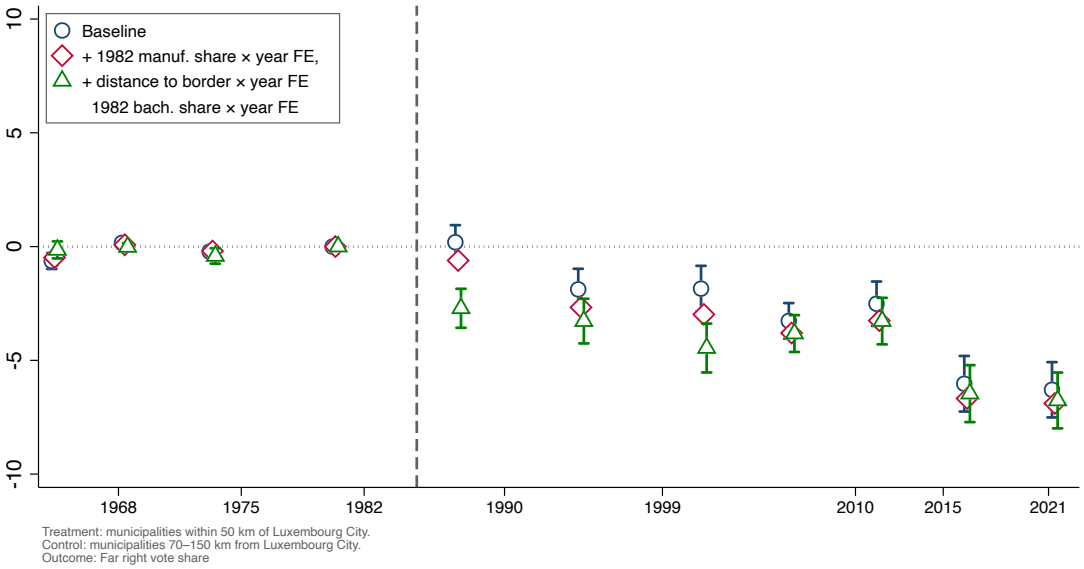
Figure 16: **Distributional Effects of Access to Foreign Labor Demand**



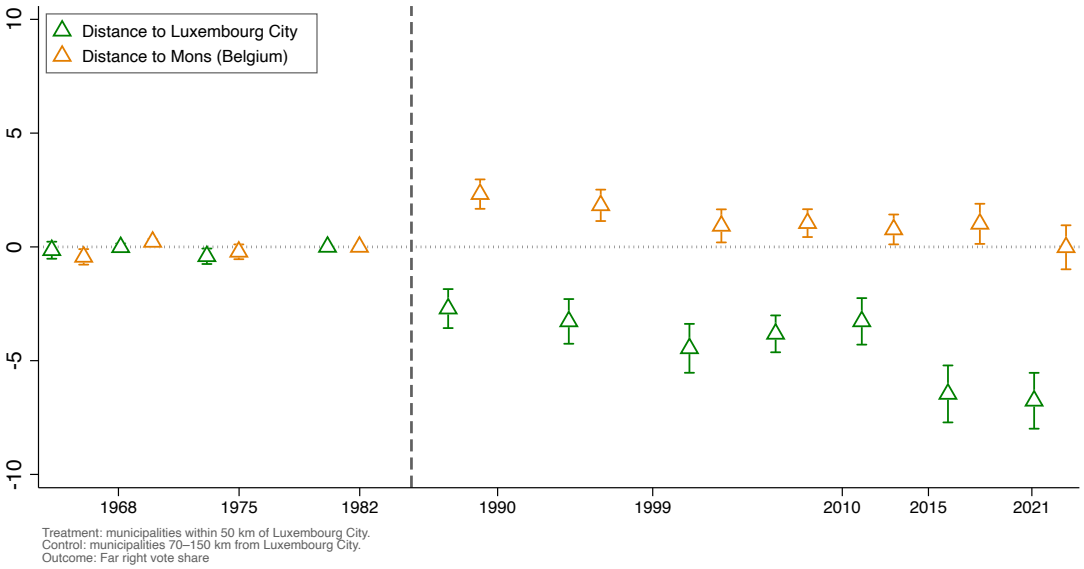
Notes: The figure plots measures of income inequality as a function of distance to Luxembourg City. Panel A shows the ratio of the 9th to the 1st decile (D9/D1) of labor income in 2021. Panel B reports the ratio of average income among employed residents to that of non-employed residents (retirees). Dots represent 5 km distance bins; lines are local polynomial fits (bandwidth = 10 km). The vertical line marks the boundary of the feasible commuting zone (70 km). Yellow series report the corresponding gradients around Mons (Belgium), a geographically similar but non-booming labor market.

Figure 17: **Exposure to Foreign Labor Demand and Far-Right Support**

A. Far-Right Vote Share in Presidential Elections

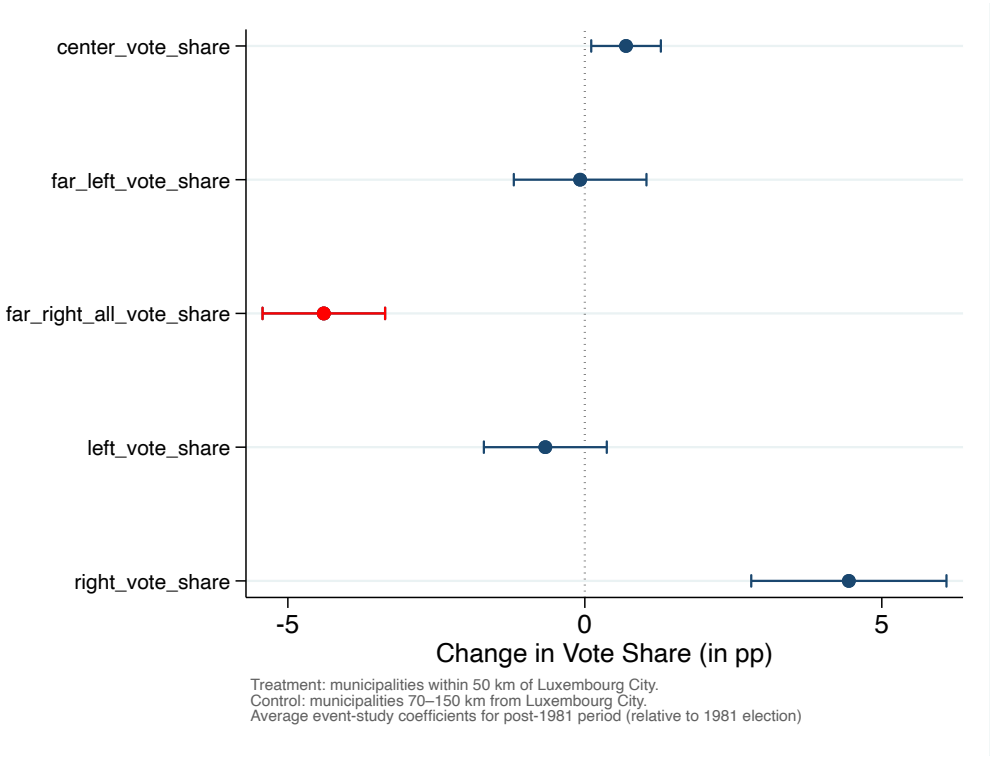


B. Proximity to Booming versus Non-Booming Foreign Labor Markets



Notes: Panel A plots difference-in-differences estimates of the effect of exposure to Luxembourg's labor demand on the far-right vote share in French presidential elections (first round). Treated municipalities are located within 50 km of Luxembourg City, and control municipalities are 70–150 km away. Specifications include municipality and election-year fixed effects, with controls interacted with election-year fixed effects. Panel B reports the corresponding placebo exercise using municipalities from the French Rust Belt close to Mons (Belgium), a geographically similar but non-booming labor market.

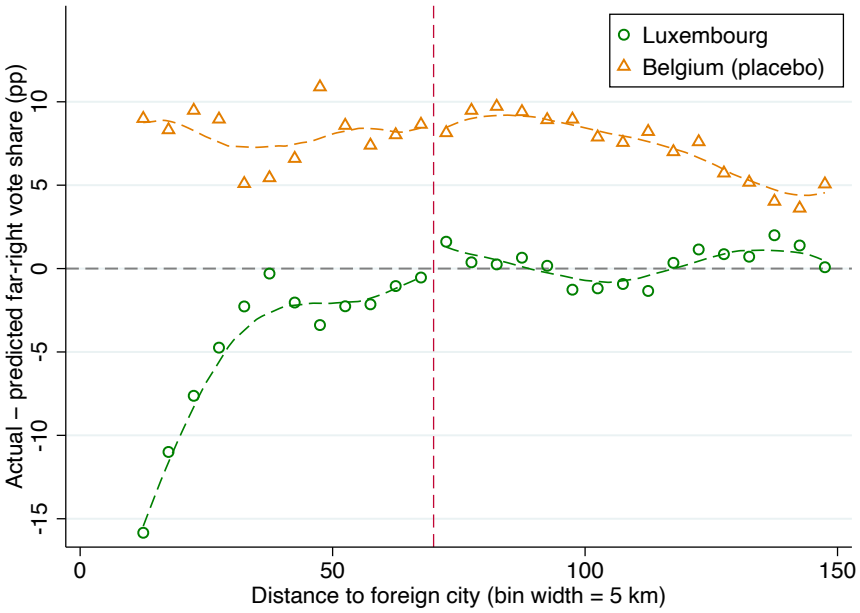
Figure 18: **Vote Share Reallocation in the 2022 Presidential Election**



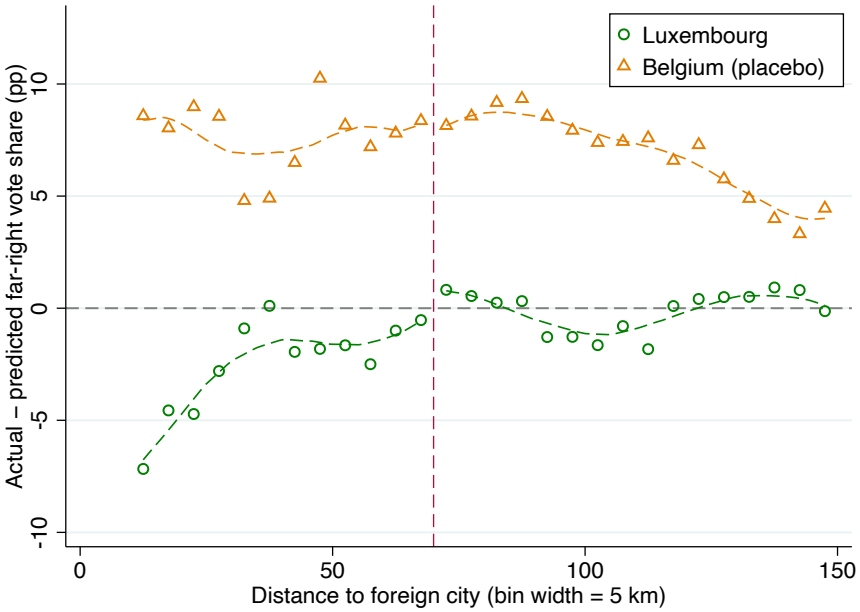
Notes: The figure reports event-study estimates of the effect of exposure to Luxembourg's labor demand on vote shares by party in the 2022 presidential election. Treated municipalities are located within 50 km of Luxembourg City, and control municipalities are 70–150 km away. Estimates include municipality and election-year fixed effects, and controls for initial manufacturing share, bachelor's share, and distance to the border, each interacted with election-year fixed effects. The omitted category is the pre-shock election (1981). Coefficients correspond to the 2022 interaction term and represent the differential change in vote shares between treated and control areas for each political party.

Figure 19: **Exposure to Foreign Labor Demand and Excess Far-Right Support**

A. Prediction Model Using Demographics and Employment



B. Prediction Model Using Demographics, Employment and Income



Notes: The figure plots the gap between actual far-right vote share and vote share predicted by an out-of-sample demographic voting model. The prediction model is estimated using municipalities in France excluding the study region. The baseline specification (blue series) predicts vote share using age structure, education composition, and employment structure. The augmented specification (red series) additionally controls for local income. Predicted vote shares are then computed for municipalities in the study region. Dots represent 5 km distance bins. The vertical line marks the 70 km commuting radius. Panel A shows the pattern around Luxembourg, a booming foreign labor market, while Panel B shows the corresponding pattern around Mons, a geographically similar but non-booming foreign labor market.

Main tables

Table 1: **Baseline Characteristics of Municipalities**

Panel A: Luxembourg Design			
	Treated	Control	France
Population	1742.68	784.64	1506.17
	(3874.04)	(3225.20)	
Employment rate	0.32	0.37	0.39
	(0.09)	(0.12)	
Manufacturing emp. share	0.42	0.28	0.23
	(0.17)	(0.20)	
Foreign-born share	0.11	0.09	0.08
	(0.02)	(0.02)	
Vacancy rate	0.08	0.09	0.09
	(0.05)	(0.06)	
Share with bachelor degree	0.09	0.09	0.11
	(0.06)	(0.08)	
Share Below Age 30	0.46	0.43	0.41
	(0.09)	(0.12)	
Population density	233.25	76.80	135.23
	(456.20)	(278.13)	
Observations	302	2440	35091
Panel B: Mons Placebo Design			
	Treated	Control	France
Population	2414.00	1073.95	1506.17
	(4524.30)	(5437.79)	
Employment rate	0.35	0.36	0.39
	(0.07)	(0.11)	
Manufacturing emp. share	0.36	0.27	0.23
	(0.13)	(0.18)	
Foreign-born share	0.07	0.06	0.08
	(0.00)	(0.02)	
Vacancy rate	0.07	0.08	0.09
	(0.03)	(0.05)	
Share with bachelor degree	0.11	0.10	0.11
	(0.06)	(0.08)	
Share Below Age 30	0.47	0.43	0.41
	(0.07)	(0.11)	
Population density	298.44	115.62	135.23
	(493.27)	(328.69)	
Observations	276	2875	35091

Table 2: **Dynamic Local Labor Market Adjustment Over Time**

Outcome	Short Run (0–5 yrs)	Medium Run (5–10 yrs)	Long Run (20–30 yrs)
Labor Market Outcomes			
Employed Abroad / Pop	0.007**	0.041***	0.115***
	(0.003)	(0.004)	(0.006)
Log Employment	0.006	0.106***	0.285***
	(0.021)	(0.023)	(0.027)
Employment 25–54 / Pop	-0.003	0.013**	0.046***
	(0.005)	(0.005)	(0.006)
Employment 25–54 (France) / Pop	-0.012**	-0.026***	-0.072***
	(0.005)	(0.005)	(0.006)
Demographics and Housing			
Log Population	-0.004	0.014	0.139***
	(0.009)	(0.011)	(0.018)
Log Housing Units	-0.015**	-0.013	0.096***
	(0.007)	(0.010)	(0.018)
Net Migration Rate	-0.059	2.077*	3.704***
	(1.075)	(1.185)	(1.186)
Net Migration Rate (Annualized)	0.012	0.265	0.681***
	(0.148)	(0.160)	(0.191)

Notes: The table reports selected event-study coefficients at three post-shock horizons relative to the pre-1988 period. Standard errors (in parentheses) are approximated from reported 95% confidence intervals. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: **Cross-border commuting and individual consumption outcomes**

	Housing space		Cars	Tenure	
	(1)	(2)	(3)	(4)	(5)
	Sq.m. per cap.	Rooms per cap.	≥ 2 cars	Homeowner	Social housing
Panel A: Cross-border commuter indicator (OLS)					
Sample: all employed workers within 70 km of Luxembourg					
Cross-border worker	2.739***	0.086***	0.042***	0.094***	-0.073***
	(0.107)	(0.005)	(0.003)	(0.003)	(0.002)
Observations	202,740	202,740	202,740	202,740	202,740
R^2	0.561	0.508	0.346	0.246	0.143
Panel B: Share of cross-border commuters (IV)					
Sample: employed non-commuters within 70 km of Luxembourg; instrument: distance to Luxembourg					
Share cross-border (IV)	-6.830***	-0.216***	0.036***	-0.013	0.027***
	(0.339)	(0.017)	(0.008)	(0.009)	(0.007)
Observations	136,003	136,003	136,003	136,003	136,003
First-stage F	4.1e+05	4.1e+05	4.1e+05	4.1e+05	4.1e+05
Fixed effects	Municipality, education, age group, immigration status, household size				

Notes: Robust standard errors in parentheses. Significance levels: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. The table uses 2022 census data to examine end-of-period consumption patterns for cross-border commuters and highly-exposed non-commuters. Panel A estimates the coefficient on an indicator for being a cross-border commuter relative to domestic workers in the same municipality, controlling for education, age group, immigration status, and household size (absorbed as fixed effects), using survey weights (`ipondl`). Panel B instruments the municipal share of cross-border commuters with distance to Luxembourg city and restricts the sample to non-commuters. The first-stage F-statistic is the Kleibergen–Paap rk Wald F-statistic.

Table 4: **Exposure to Luxembourg and Far-Right Vote Share (2022)**

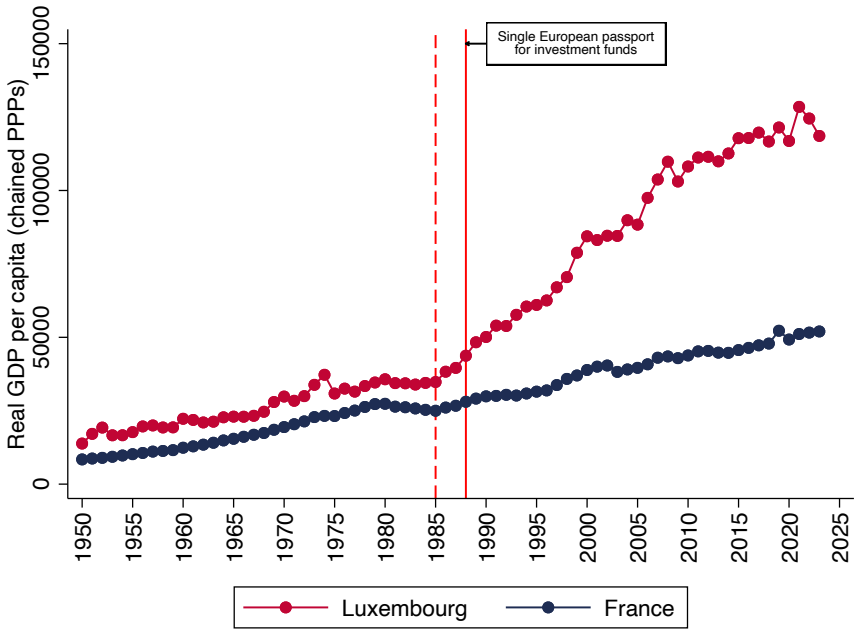
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed to Luxembourg	-5.348***	-5.162***	-5.148***	-5.128***	-4.191***	-1.390***
	(0.551)	(0.548)	(0.545)	(0.544)	(0.542)	(0.473)
Demographic controls		Y	Y	Y	Y	Y
Manufacturing share			Y	Y	Y	Y
Employment / unemployment				Y	Y	Y
Density control					Y	Y
Income control						Y
R^2	0.034	0.075	0.083	0.088	0.121	0.295
Observations	2659	2659	2659	2659	2659	2165

Notes: Dependent variable is far-right vote share (percentage points) in the 2022 presidential election. The sample includes communes within 50 km of Luxembourg City (treated) and communes located 70-150 km away (control). Robust standard errors in parentheses. *** $p < 0.01$.

Appendices

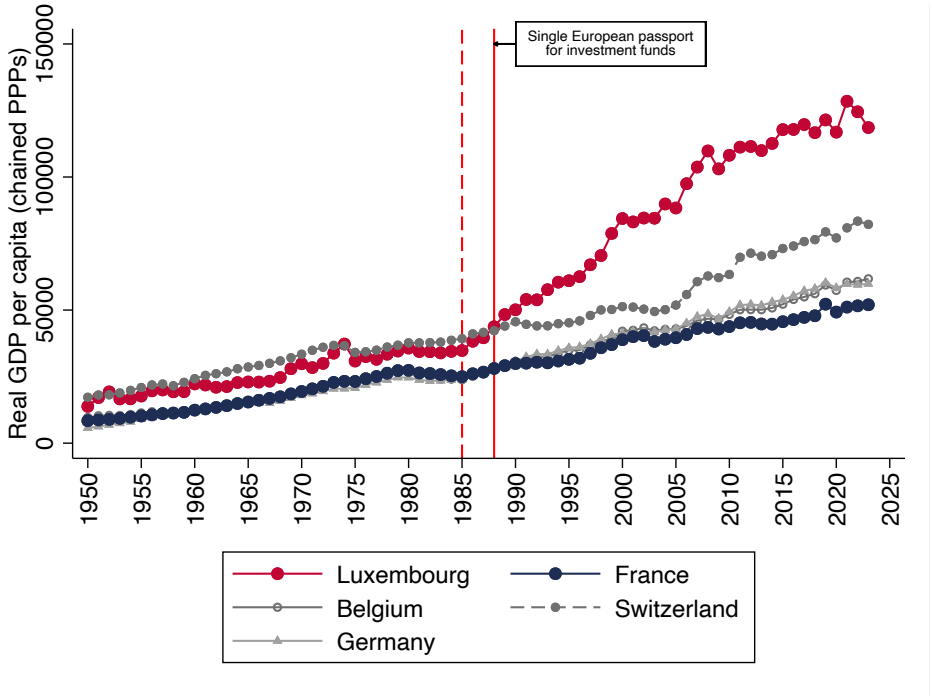
Appendix Figures

Figure A.1: **Financial Liberalization and Real Economic Growth in Luxembourg**



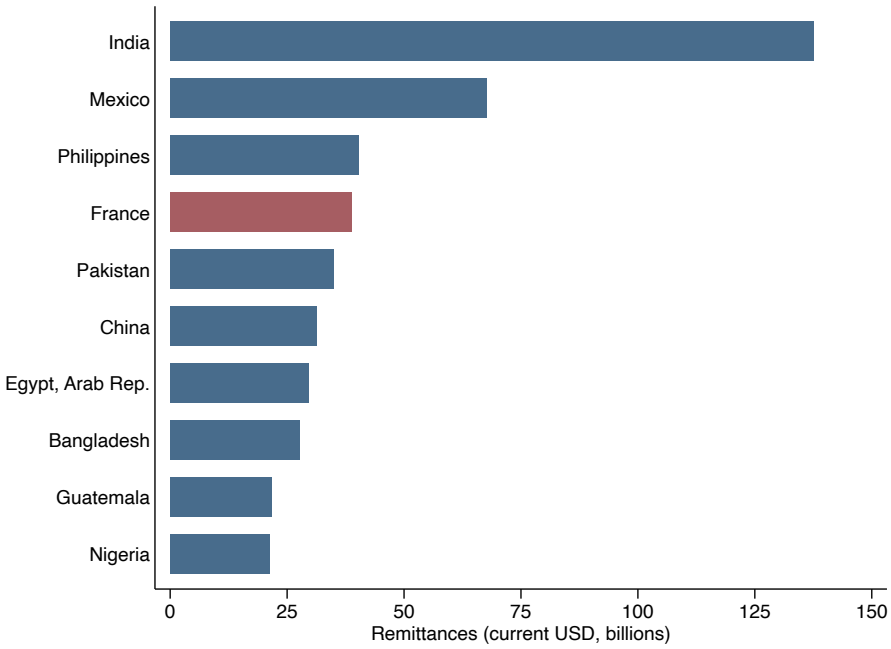
Notes: This figure shows the economic divergence between Luxembourg and France in terms of real GDP per capita. We indicate the beginning of the EU-wide episode of financial liberalization by a dashed vertical line, and the single EU passport for investment funds by a solid vertical line. Source: PwT Tables.

Figure A.2: **Economic Divergence of Luxembourg vs all Neighboring Countries**



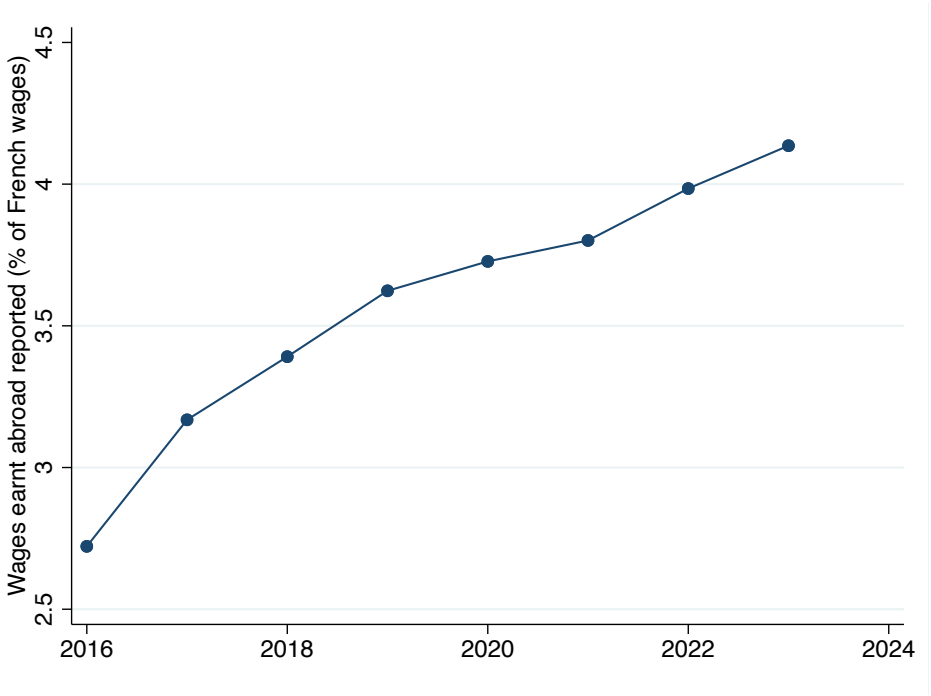
Notes: This figure compares real GDP per capita (expressed in chained PPPs) between Luxembourg and its neighboring countries. We indicate the beginning of the EU-wide episode of financial liberalization by a dashed vertical line, and the single EU passport for investment funds by a solid vertical line. Source: PwT Tables.

Figure A.3: **Ranking of Countries by Remittances**



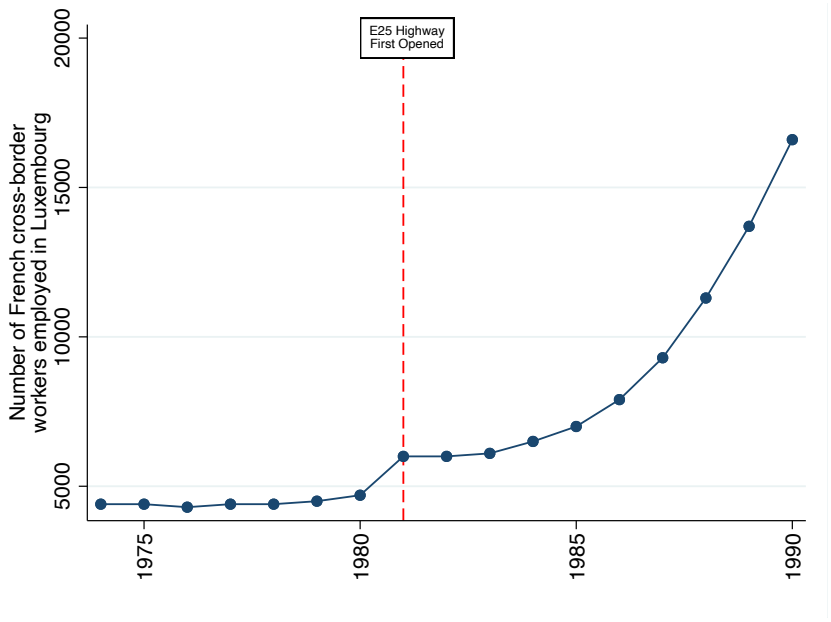
Notes: The figure presents the ranking of the top 10 countries by size of remittances received for the latest year of data available as of 2026, in current USD (billions). Source: World Bank.

Figure A.4: **Share of Foreign Wages on French Tax Returns**



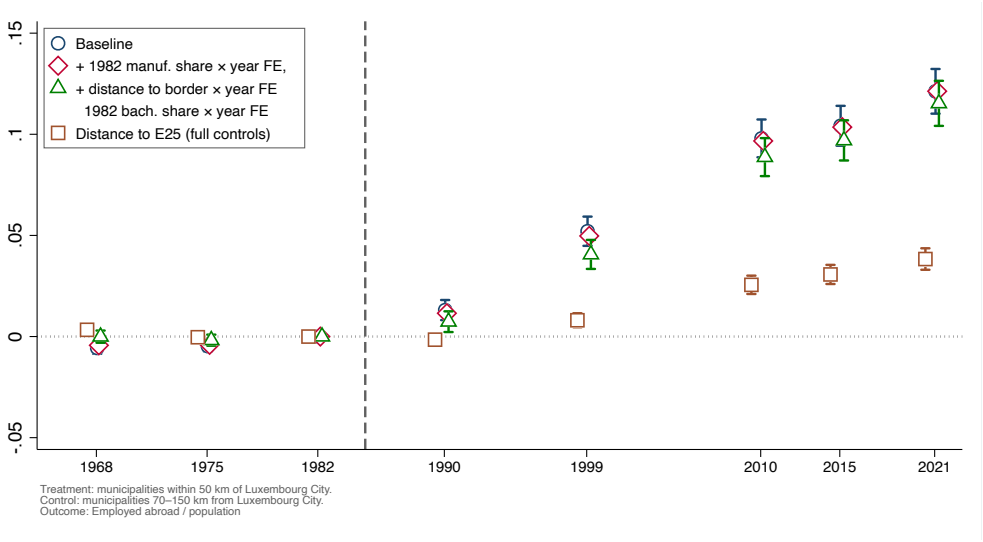
Notes: The figure presents the amount of wages reported on French tax returns as originating from abroad (boxes 1AF, 1BF, 1AC, 1BC, 1AG and 1BG), relative to the overall amount of wages including French wages reported by French taxpayers (boxes 1AJ and 1BJ), using national reports from the tax authorities (*Declarations nationales 2042*) for the years 2016 to 2023.

Figure A.5: **E25 Highway and Number of Cross-Border Workers, Zooming-in**



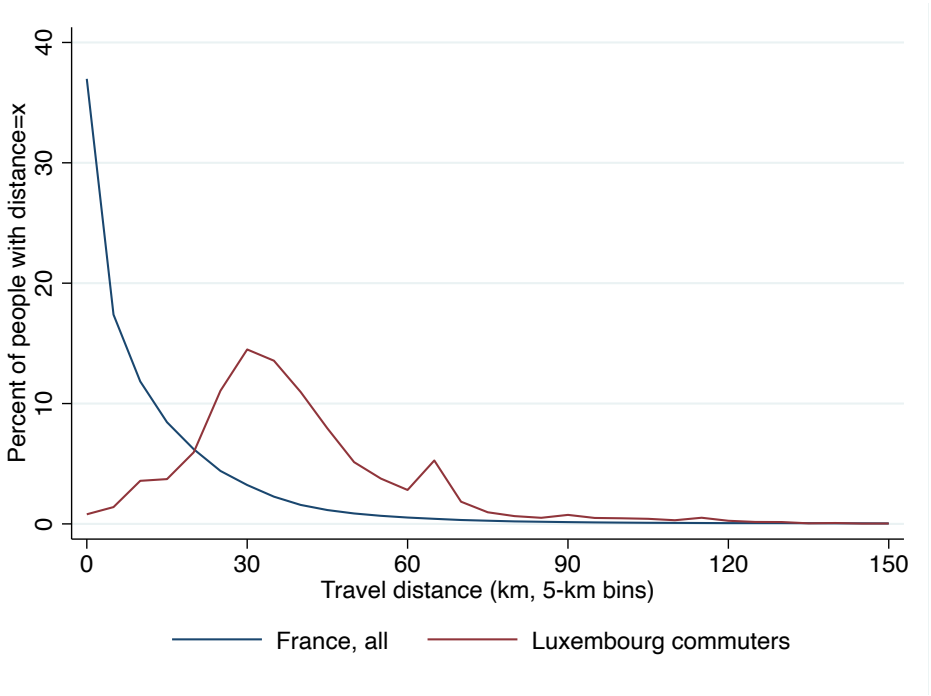
Notes: This figure shows the number of workers in Luxembourg with a residence location in France before and after the construction of the A31/E25 highway. The source is Luxembourg's national statistical institute (STATEC).

Figure A.6: **Cross-Border Employment Responses by Proximity to Highway**



Notes: The figure plots the estimated effect of exposure to Luxembourg's economic pull on the share of residents in French municipalities employed abroad. Exposure is defined by distance to the main highway connecting France and Luxembourg, the E25 road. Treated municipalities are located within X km of E25, while control municipalities lie further away. Estimates come from spatial difference-in-differences specifications with municipality and census-year fixed effects. Alternative specifications vary the set of baseline characteristics (in 1982) that are interacted with census-year fixed effects.

Figure A.7: **Commuting patterns for French residents, 2022**



Notes: This figure plots the probability density distribution of commuting distances for all French commuters and for French cross-border commuters working in Luxembourg, separately. The x-axis measures one-way daily commuting distance (driving) in kilometers. Source: French Census.

Figure A.8: **Share Working Outside Department**

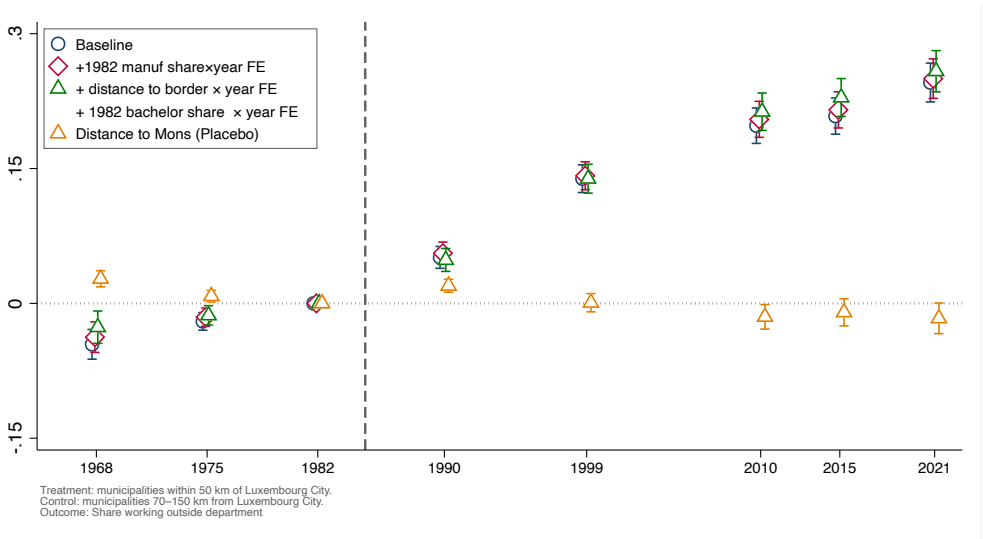
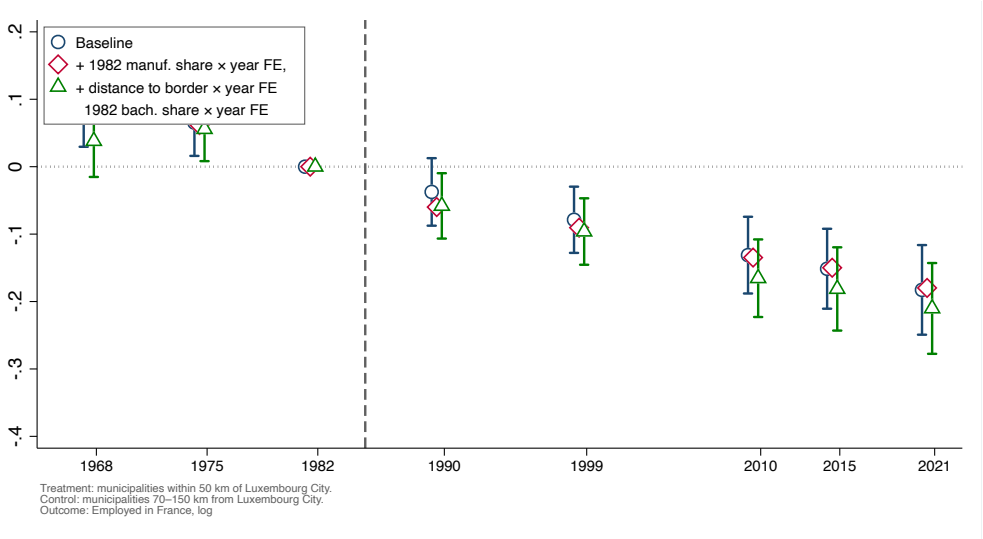
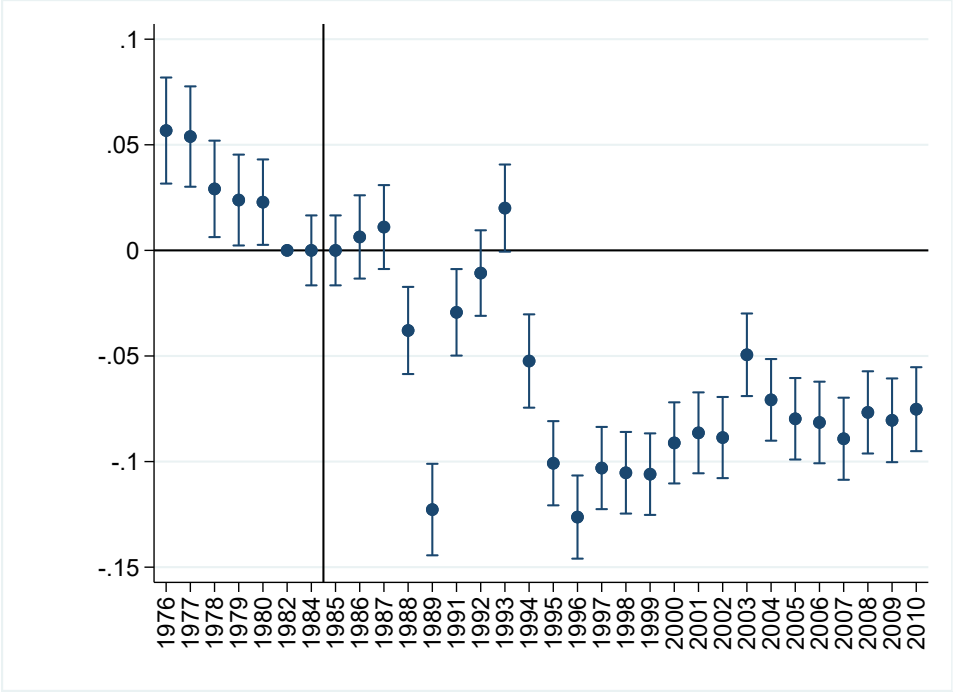


Figure A.9: **Employment of Residents in France**



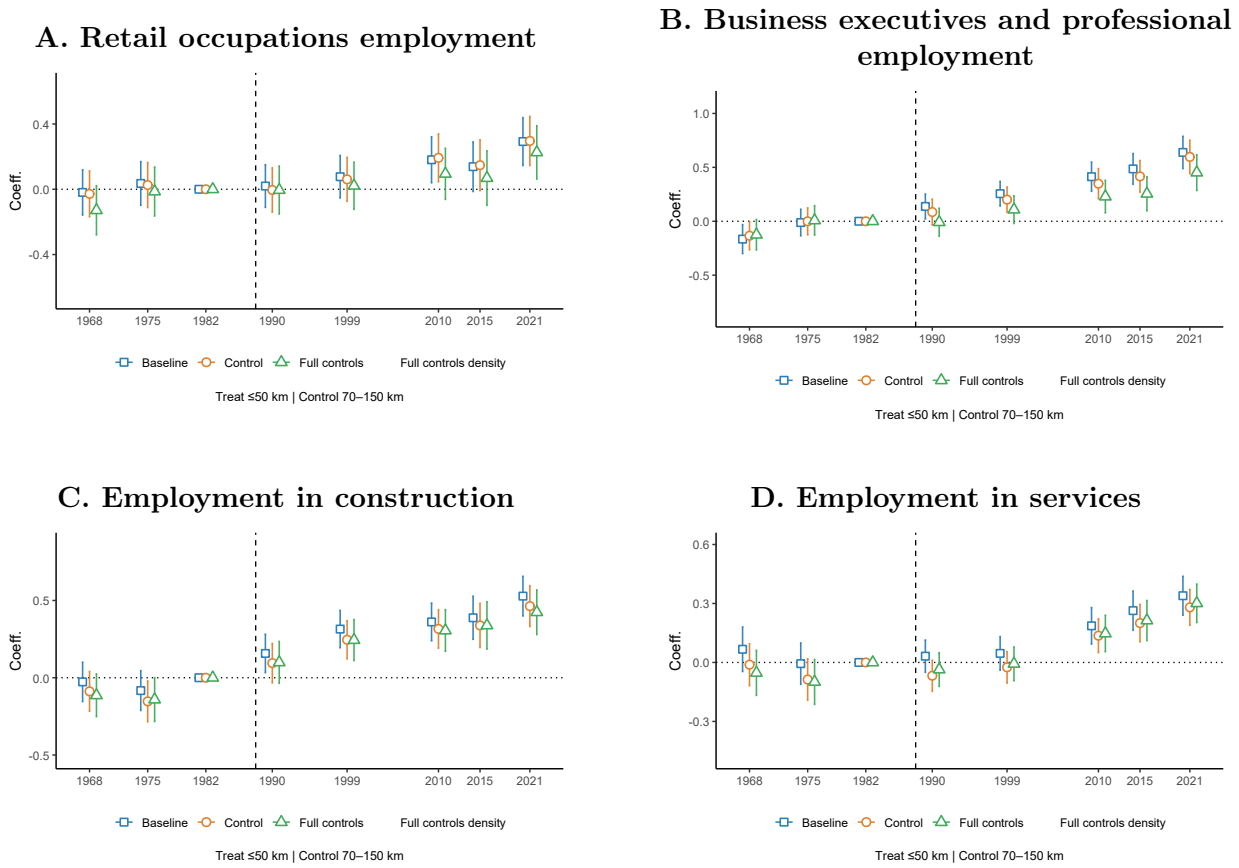
Notes: This figure shows the event-study coefficients for the log number of residents employed in France.

Figure A.10: **Individual Exit Dynamics for Incumbent Workers from French Rust Belt**



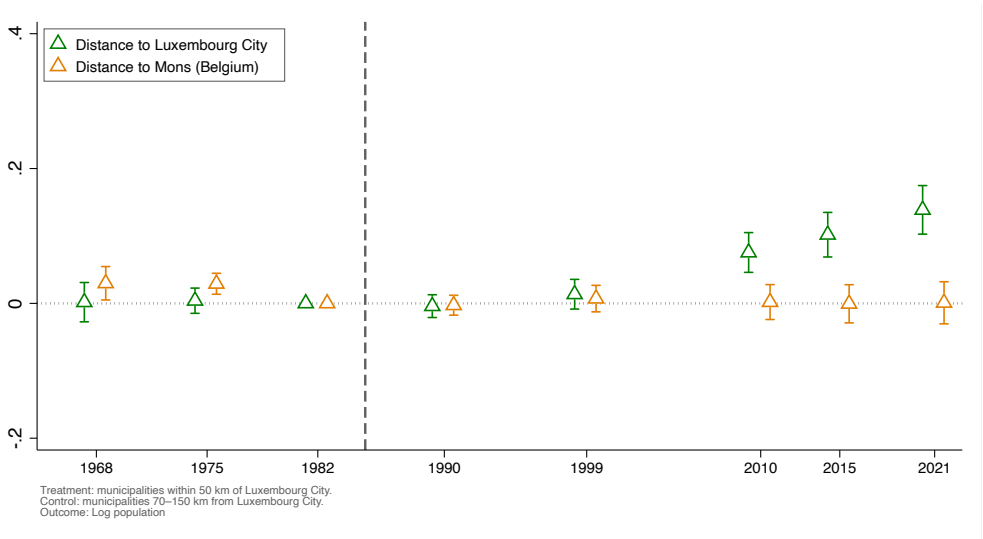
Notes: The figure plots the estimated effect of exposure to Luxembourg's economic pull on the probability of remaining in the French labor market for individual incumbent workers who were continuously present in the French employer-employee panel between 1982 and 1985. Exposure is defined using commuting linkages: for each worker, we assign the share of workers in their 1982 municipality of work who reside in treated municipalities (i.e., within commuting distance to Luxembourg), computed from exhaustive French employer-employee DADS data in 1996 (earlier year available). The exposure measure ranges from 0 to 1, with a value of 1 corresponding to workers employed in 1982 in municipalities where all workers reside in treated areas (as measured in 1996). Estimates come from spatial difference-in-differences specifications that interact this continuous exposure measure with year fixed effects and include worker and year fixed effects. The outcome is equal to 1 in year t for workers in the panel who are observed in the French employer-employee data in year t, and to 0 for those who are not.

Figure A.11: **Treatment Effects on Employment Composition**



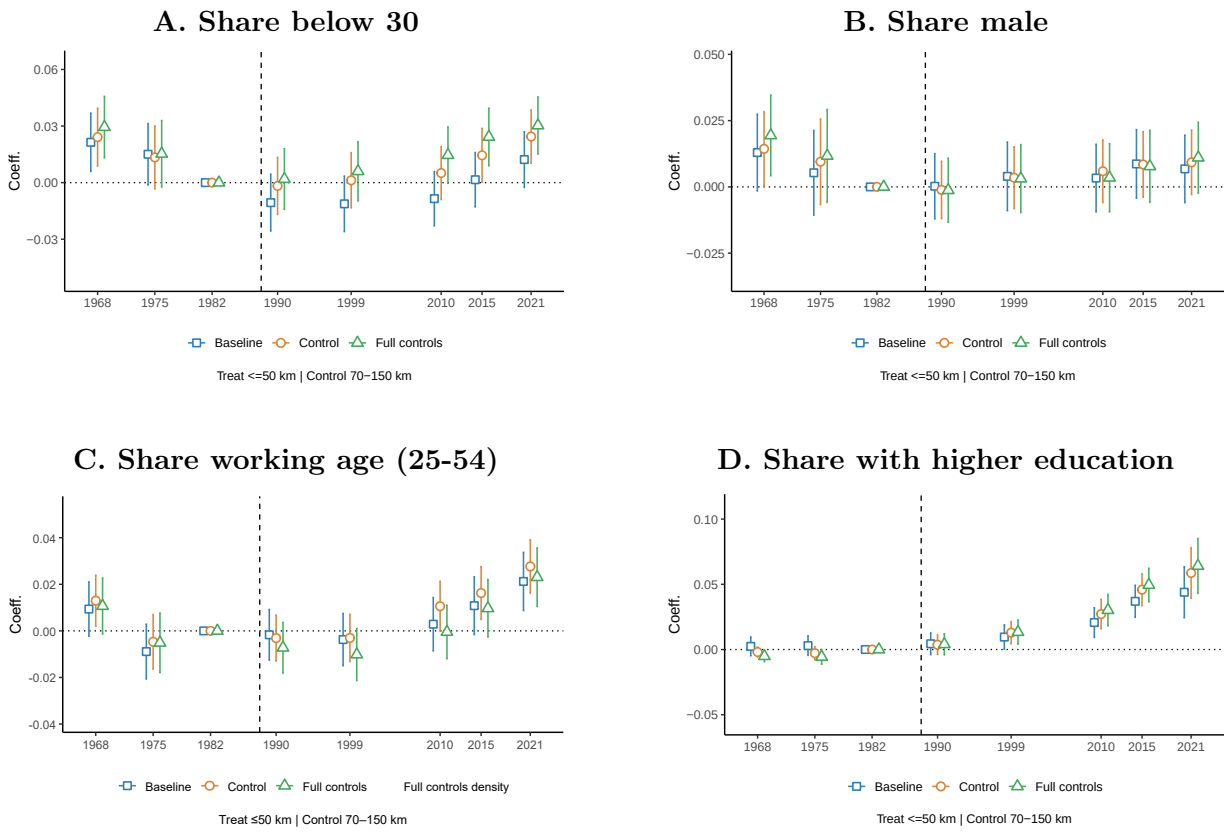
Notes: This figure reports event-study estimates on the composition of employment, according to equation 1. Treated municipalities are located within 50 km of Luxembourg City. Control municipalities are from 70 to 150km. All specifications include municipality and census-year fixed effects, as well as controls based on 1982 municipal characteristics (including manufacturing share, education structure, and distance to the border) interacted with census-year fixed effects. Standard errors are clustered at the commune level.

Figure A.12: **Log Population Effects: Placebo**



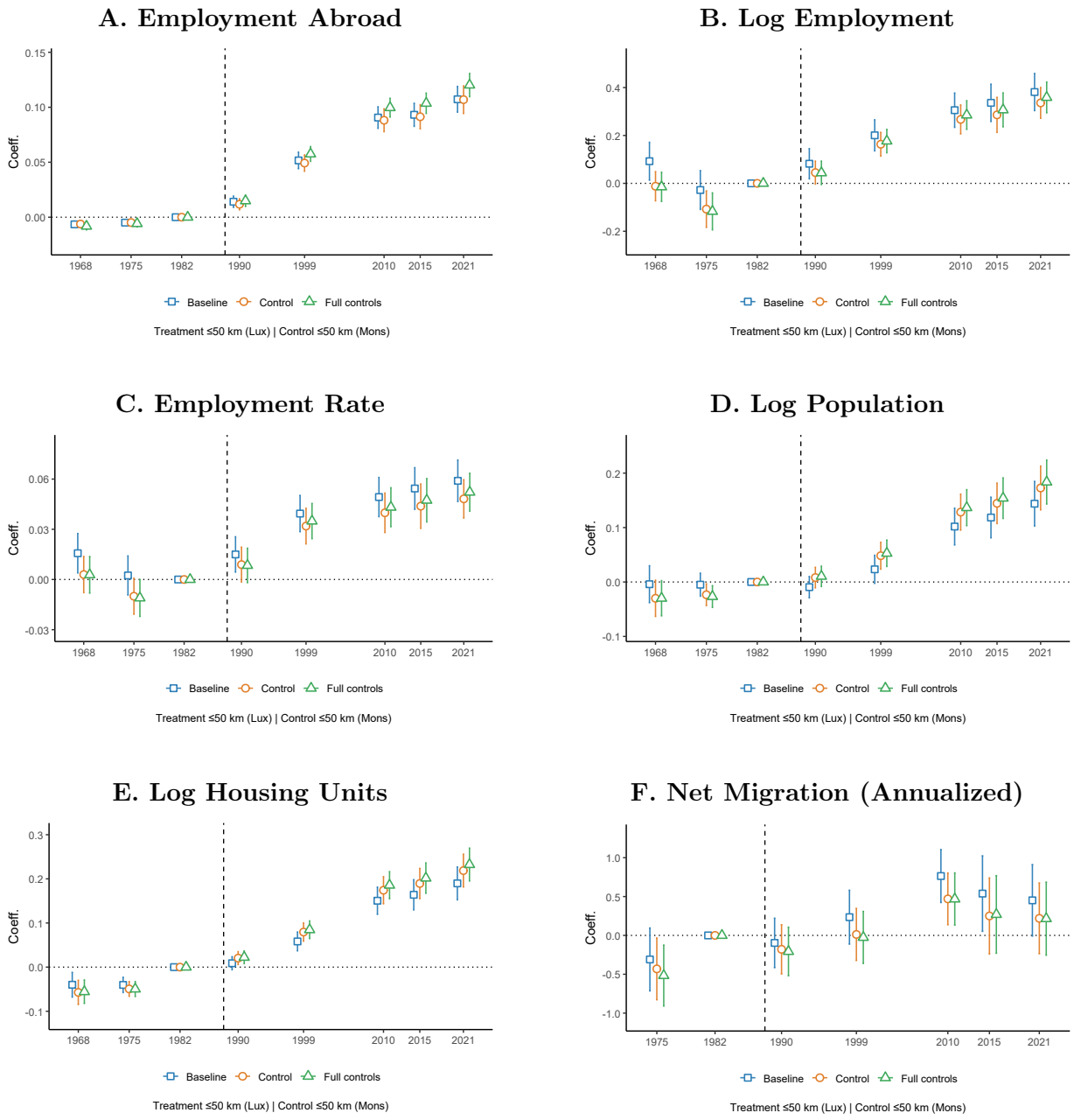
Notes: The figure reports event-study estimates of the effect of proximity to Mons (Belgium), a geographically similar but non-booming foreign labor market, on log municipal population. Treated municipalities are located within 50 km of Mons, and control municipalities are 70–150 km away. Estimates include municipality and census-year fixed effects, as well as control for initial manufacturing share, initial bachelor's share, and distance to border, each interacted with census-year fixed effects.

Figure A.13: **Treatment Effects on Population Composition**



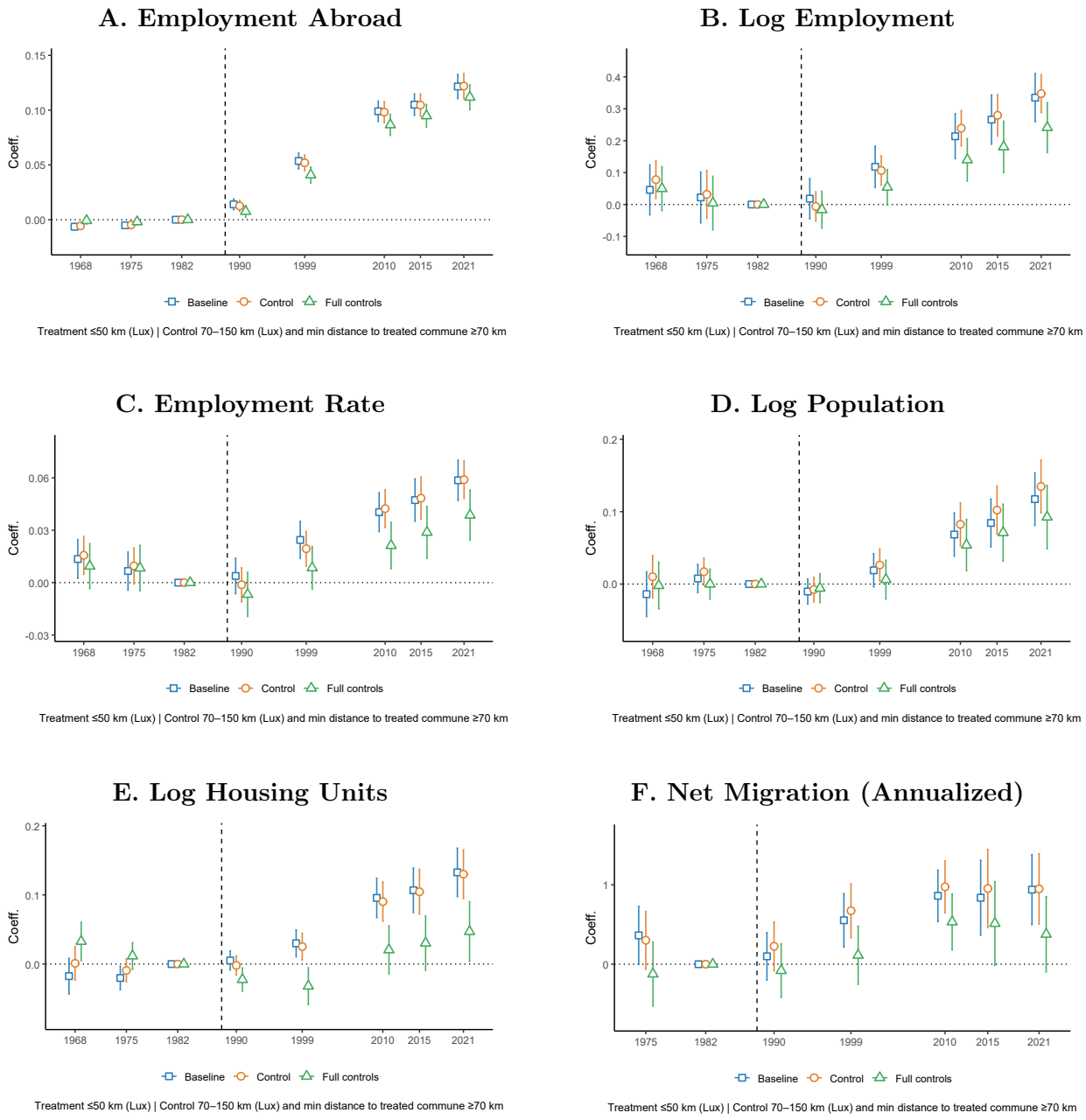
Notes: This figure reports event-study estimates on the composition of population, according to equation 1. Treated municipalities are located within 50 km of Luxembourg City. Control municipalities are from 70 to 150km. All specifications include municipality and census-year fixed effects, as well as controls based on 1982 municipal characteristics (including manufacturing share, education structure, and distance to the border) interacted with census-year fixed effects. Standard errors are clustered at the commune level. Panels A-D report effects on the share of younger residents, the share of men, the share of working-age residents and the share with a higher education.

Figure A.14: **Alternative Control Group: Municipalities Located 0-50 km from Mons**



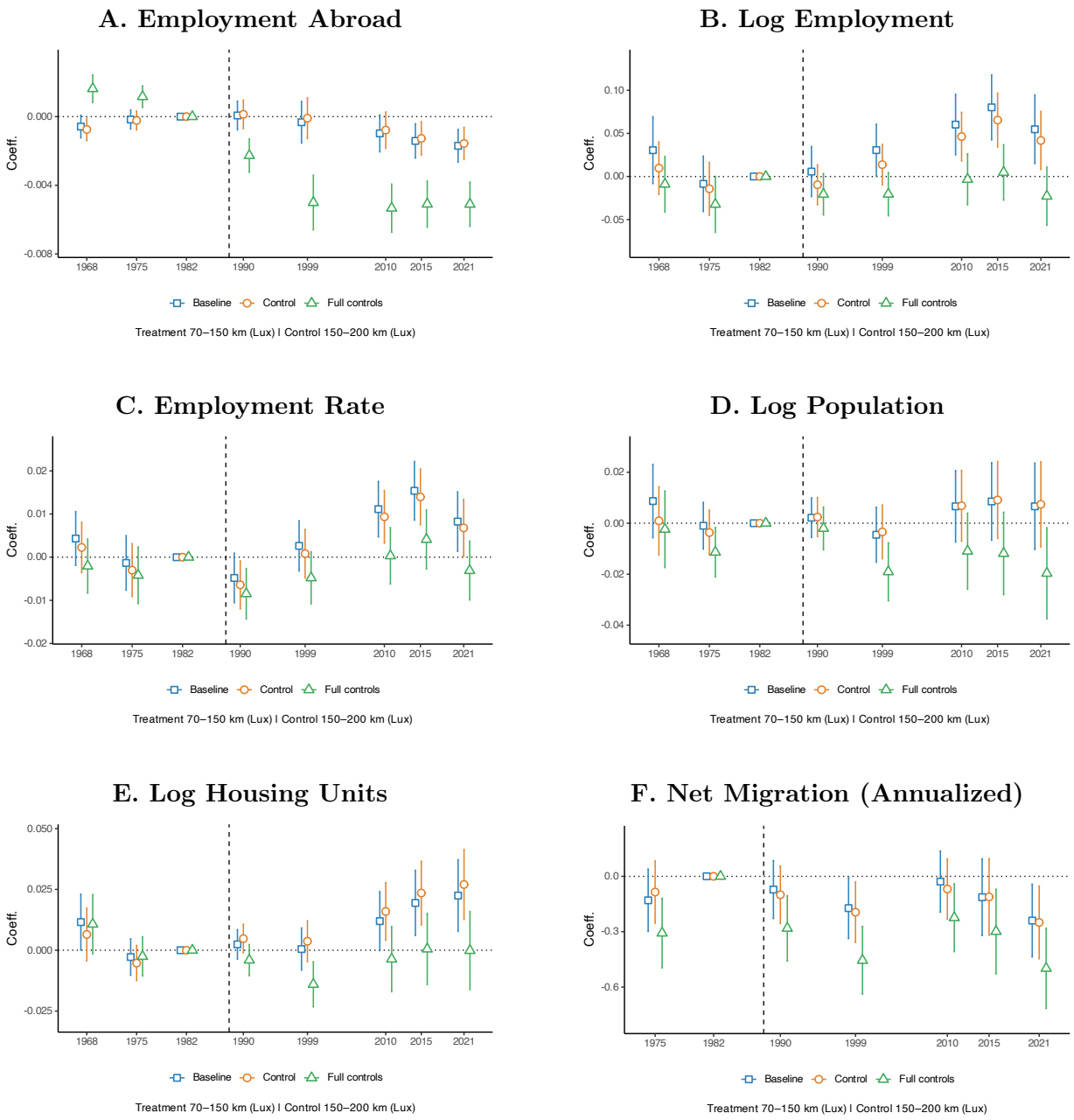
Notes: This figure reports event-study estimates using municipalities located within 50 km of Mons (Belgium) as an alternative control group. Treated municipalities are located within 50 km of Luxembourg City. All specifications include municipality and census-year fixed effects, as well as controls based on 1982 municipal characteristics (including manufacturing share, education structure, and distance to the border) interacted with census-year fixed effects. Standard errors are clustered at the commune level. Panels A-F report effects on cross-border employment, log employment, employment rates, log population, log housing units, and annualized net migration rates.

Figure A.15: **Alternative Controls: Excluding Municipalities within 70 km of Treated Areas**



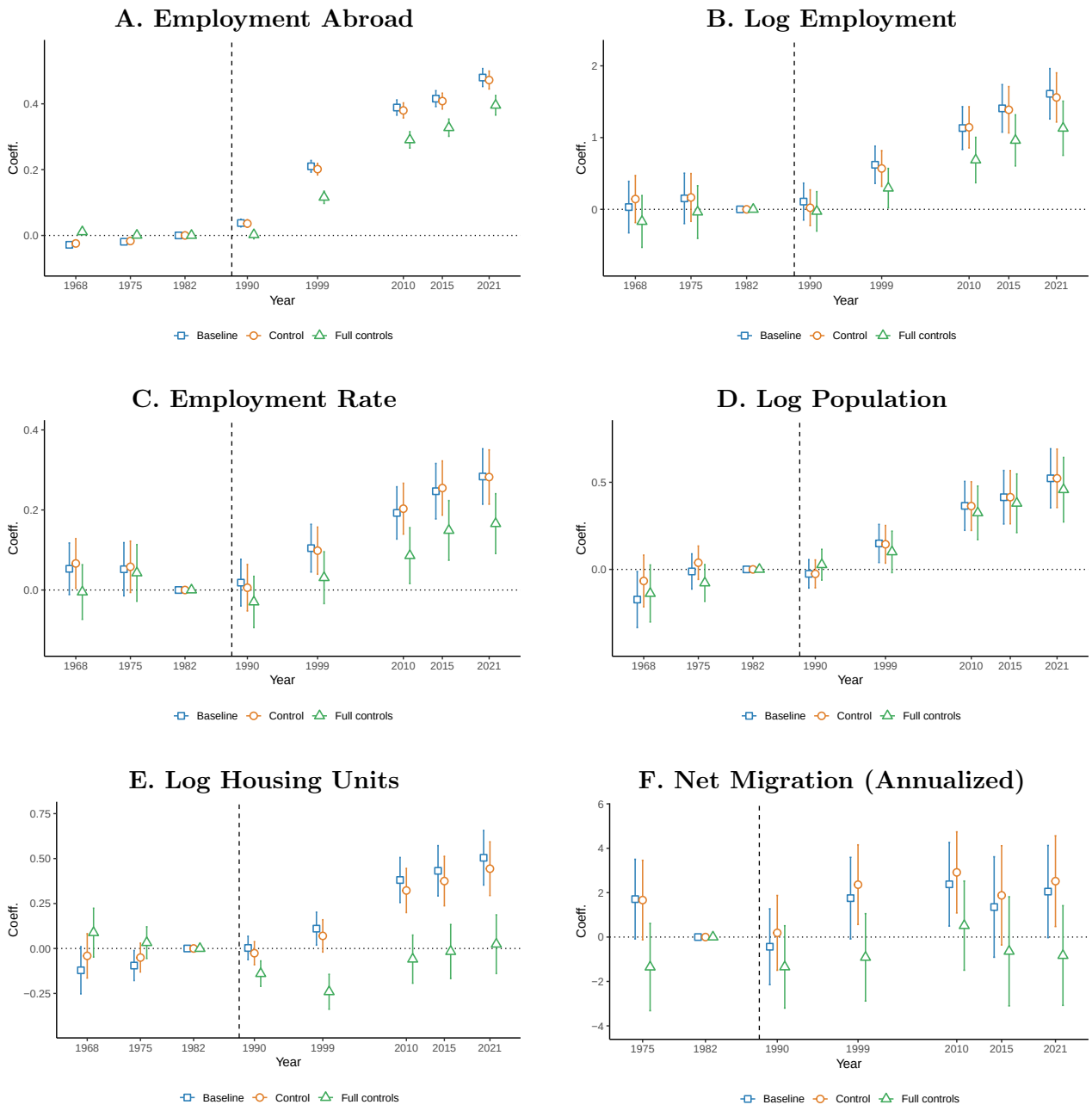
Notes: This figure reports event-study estimates using municipalities located 70-150 km from Luxembourg City as the control group, excluding municipalities within 70 km of treated areas to eliminate spillovers from within-France commuting. Treated municipalities are located within 50 km of Luxembourg City. All specifications include municipality and census-year fixed effects, as well as controls based on 1982 municipal characteristics (including manufacturing share, education structure, and distance to the border) interacted with census-year fixed effects. Standard errors are clustered at the commune level. Panels A-F report effects on cross-border employment, log employment, employment rates, log population, log housing units, and annualized net migration rates.

Figure A.16: **Alternative Test: Control Areas relative to More Distant Locations**



Notes: This figure reports event-study estimates defining municipalities located 70-150km of Luxembourg as treated, and those 150-200 km from Luxembourg City as the control group. Treated municipalities are located within 50 km of Luxembourg City. All specifications include municipality and census-year fixed effects, as well as controls based on 1982 municipal characteristics (including manufacturing share, education structure, and distance to the border) interacted with census-year fixed effects. Standard errors are clustered at the commune level. Panels A-F report effects on cross-border employment, log employment, employment rates, log population, log housing units, and annualized net migration rates.

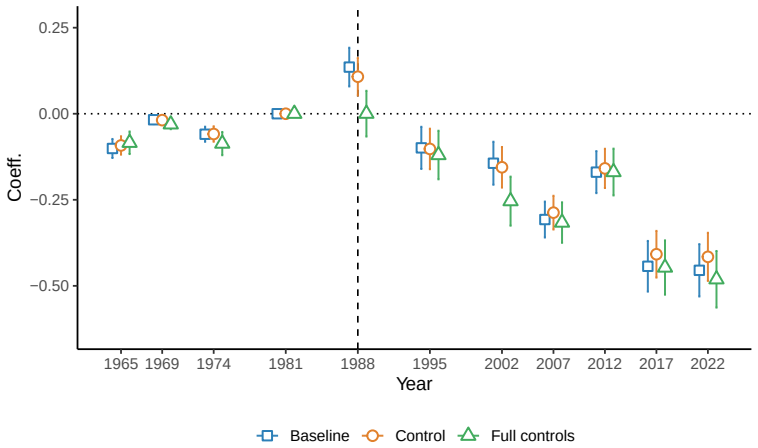
Figure A.17: **Proximity to Luxembourg: Dynamic IV**



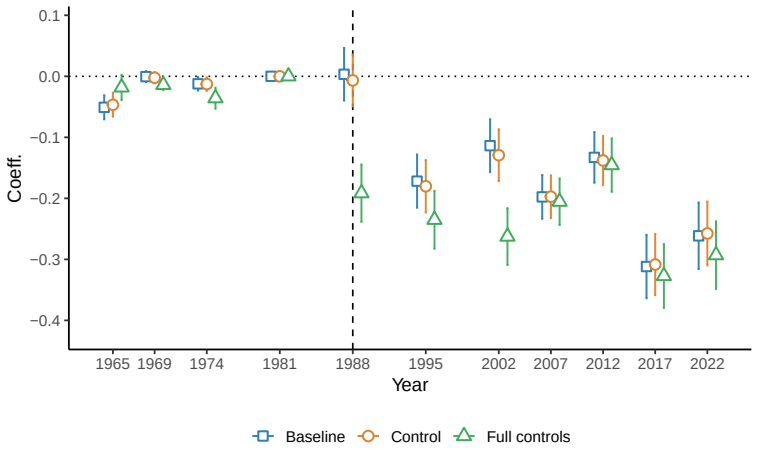
Notes: The figure reports dynamic instrumental-variables estimates of the effect of cross-border employment on far-right vote share. The endogenous variable is the share of residents working abroad. Event-time coefficients are obtained from two-stage least squares specifications with municipality and election-year fixed effects. Panel A instruments long-run cross-border employment increases using proximity to the E25 highway, which reduces commuting costs to Luxembourg. Panel B instruments using proximity to Luxembourg City. Both specifications include controls for initial municipal characteristics (manufacturing share, education structure, and distance to the border) interacted with election-year fixed effects. Standard errors are clustered at the commune level.

Figure A.18: **Effect of Cross-Border Work on Far-Right Vote Share: Dynamic IV**

A. Instrument: Proximity to E25

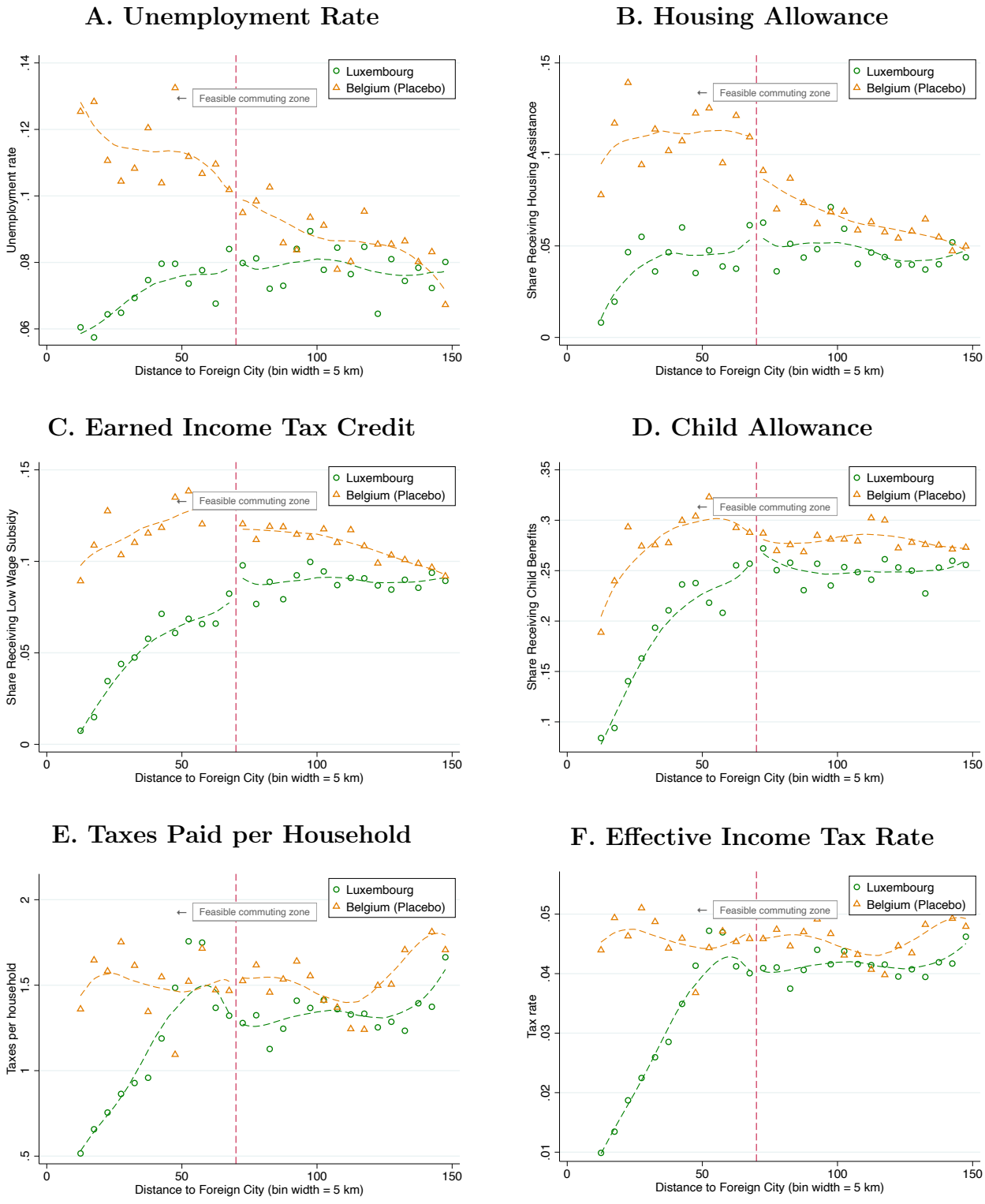


B. Instrument: Proximity to Luxembourg City



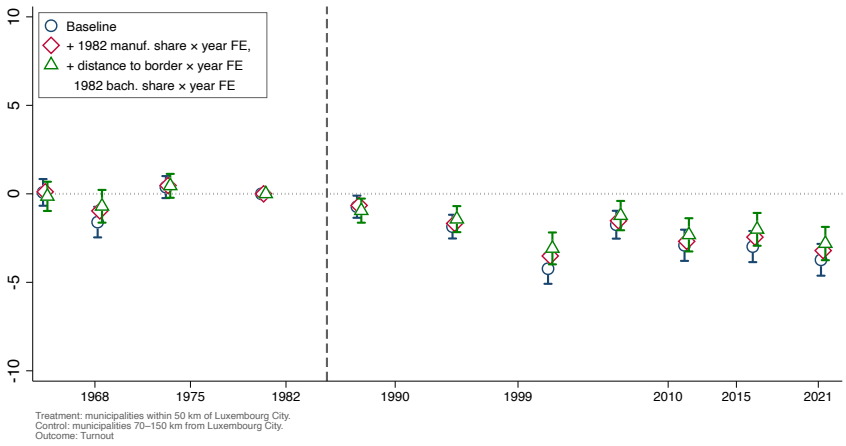
Notes: The figure reports dynamic instrumental-variables estimates of the effect of cross-border employment on far-right vote share. The endogenous variable is the share of residents working abroad. Event-time coefficients are obtained from two-stage least squares specifications with municipality and election-year fixed effects. Panel A instruments long-run cross-border employment increases using proximity to the E25 highway, which reduces commuting costs to Luxembourg. Panel B instruments using proximity to Luxembourg City. Both specifications include controls for initial municipal characteristics (manufacturing share, education structure, and distance to the border) interacted with election-year fixed effects. Standard errors are clustered at the commune level.

Figure A.19: **Fiscal Externalities for the Central French Government**



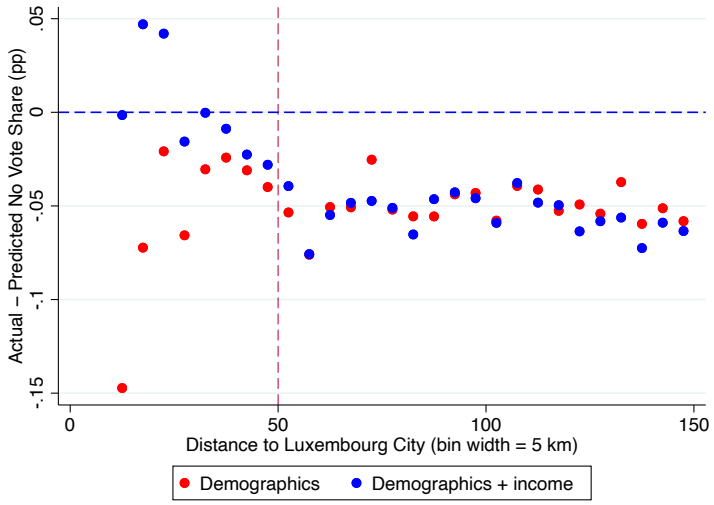
Notes: The figure plots fiscal outcomes as a function of distance to Luxembourg City. Dots represent 5 km distance bins, dashed lines are local polynomial fits (bandwidth = 10 km). The vertical line marks the boundary of the feasible commuting zone (70 km). Yellow series report the corresponding gradients around Mons (Belgium), a geographically similar but non-booming labor market. Panels A-D report public expenditure outcomes, including unemployment rates and coverage by major transfer programs. Panels E-F report tax outcomes, including average taxes paid per household and effective income tax rates.

Figure A.20: **Effects of Local Exposure on Voter Turnout**



Notes: The figure reports event-study coefficients for voter turnout in presidential elections, using the baseline difference-in-differences specification. Coefficients measure the differential evolution of turnout in municipalities within commuting distance of Luxembourg relative to control municipalities, normalized to the pre-1988 period. See Figure 6 for specification details.

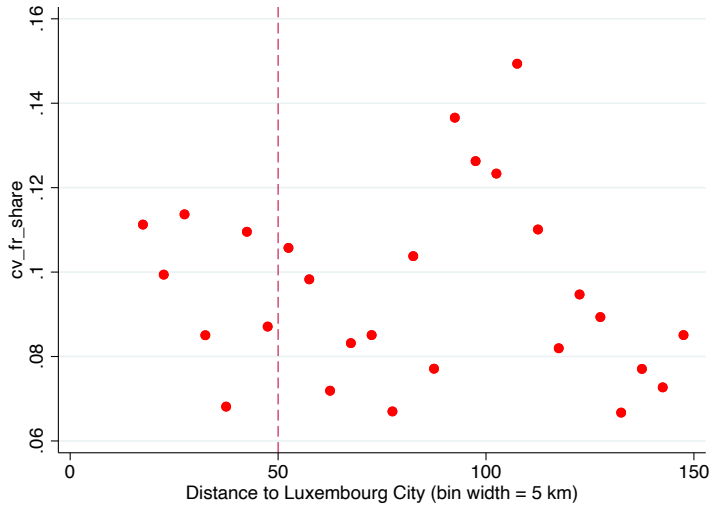
Figure A.21: **2005 EU Referendum: Prediction Gap in "No" Vote Share**



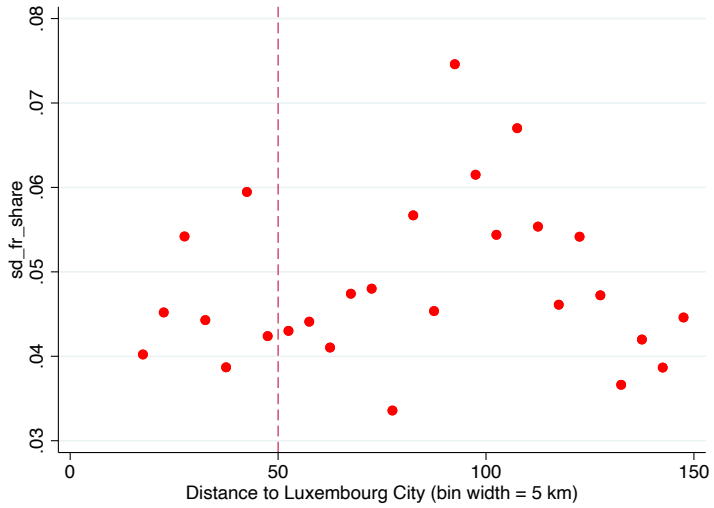
Notes: The figure plots the prediction gap in the 2005 EU referendum "No" vote share by distance to Luxembourg. The prediction gap is defined as actual minus predicted vote share, where predictions are obtained from a model estimated on municipalities located outside the 0-150 km band from Luxembourg. The model includes demographic characteristics, educational attainment, employment structure, manufacturing shares, and income. A value of zero indicates that voting behavior is fully accounted for by observable characteristics, while negative values indicate lower anti-EU vote share than predicted by fundamentals. See Section X for details.

Figure A.22: **Within-Municipality Political Fragmentation**

A. Coefficient of Variation of Far-Right Vote Share



B. Standard Deviation of Far-Right Vote Share



Notes: Each panel reports cross-sectional binned scatter plots for within-municipality dispersion of far-right vote shares across voting booths in presidential elections. The coefficient of variation (Panel A) and the standard deviation (Panel B) are computed at the municipality level.

A Additional Details on Luxembourg's Expansion

This section provides additional details on Luxembourg's economic expansion and its resulting economic structure.

A EU liberalization of capital markets

The main steps toward financial liberalization affecting Luxembourg in the 1980s were undertaken at the level of the European Union (then the European Community or EC). The 1985 UCITS Directive (85/611/EEC) created a harmonized framework for collective investment funds and introduced the possibility of cross-border distribution of funds authorized in any member state. This is often referred as the "EU passporting system" for financial investments. Luxembourg was the first EU country to adopt a national implementation ("transposition") of this rule in 1988, allowing investment products domiciled in Luxembourg to be marketed across the EC. In parallel, the 1988 Directive on the Liberalization of Capital Movements (88/361/EEC) removed remaining restrictions on cross-border capital flows.

These reforms were part of a wider process of European financial integration aimed at creating a single market for financial services. By allowing financial institutions and investment products to operate across borders under a unified regulatory framework, these directives substantially increased the returns to locating financial activities in jurisdictions offering a favorable institutional environment.

B Pre-existing institutional features supporting the expansion of financial sector

Luxembourg's rise as a financial center was supported by a set of complementary institutional features adopted over several decades. First, the country introduced a favorable legal framework for holding companies (notably the 1929 holding company regime), which facilitated the location of multinational corporate and financial structures in Luxembourg. Second, Luxembourg enacted one of the strongest banking-secrecy laws in Europe in 1981, supporting the development of private banking and cross-border wealth management activities. Third, Luxembourg developed a robust investor-protection framework. In particular, its life-insurance

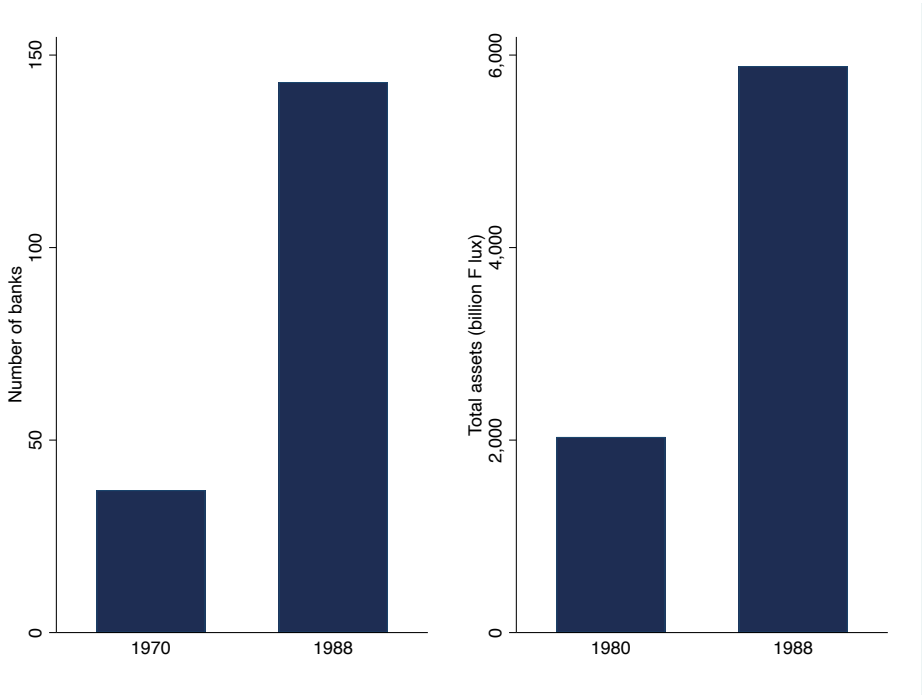
system includes a legal mechanism that strictly separates policyholdersâ assets from the insurerâs balance sheet and grants priority to investors over other creditors in the event of bankruptcy. As a result, Luxembourg-based life-insurance contracts and investment funds are considered among the safest in the EU. These features made Luxembourg a highly attractive location for footloose financial firms which, starting in 1988, could newly choose to establish operations in the country while serving clients across the EU. Following the introduction of EU passporting in 1988, these institutional advantages became especially valuable, as financial firms could locate in Luxembourg while serving clients across the European Community, creating strong incentives for international companies to establish operations in the country.

Figure A.23 shows the rapid expansion of the banking sector in Luxembourg around the reform. The number of banks located in the country increased from only 37 in 1970 to 143 in 1988. Over the same period, the total assets managed by these banks almost tripled. In the longer run, the scale of Luxembourg's financial centre expanded even more dramatically: total net assets rose from EUR 247,077 million in 1993 to over EUR 6,025,044 million in 2025, reflecting a more than twenty-fold increase in just three decades (Figure A.24).

Other natural advantages Luxembourg was also particularly well positioned to benefit from this integration due to its small size and openness. Luxembourgâs ability to capitalize on European financial integration was also facilitated by its geographic and linguistic characteristics. Located at the intersection of major European economies (France, Germany, and Belgium) Luxembourg is well positioned within the core of the European market. In addition, the country's workforce was already highly multilingual, with three spoken languages (French, German, and English). Luxembourg also offers a stable, predictable fiscal environment, with reduced regulatory risk for multinational firms.

Luxembourg also hosts a number of key European institutions, reinforcing its role as a central administrative and financial hub within the European Union. These include the Court of Justice of the European Union, the European Court of Auditors, the European Investment Bank, and the Statistical Office of the European Union (Eurostat). The Secretariat of the European Parliament is also located in Luxembourg. In addition, the country hosts the EFTA Court, which serves members of the European Economic Area outside the EU. The presence

Figure A.23: **Rise of Banking Sector in Luxembourg Around EU-Wide Liberalization**

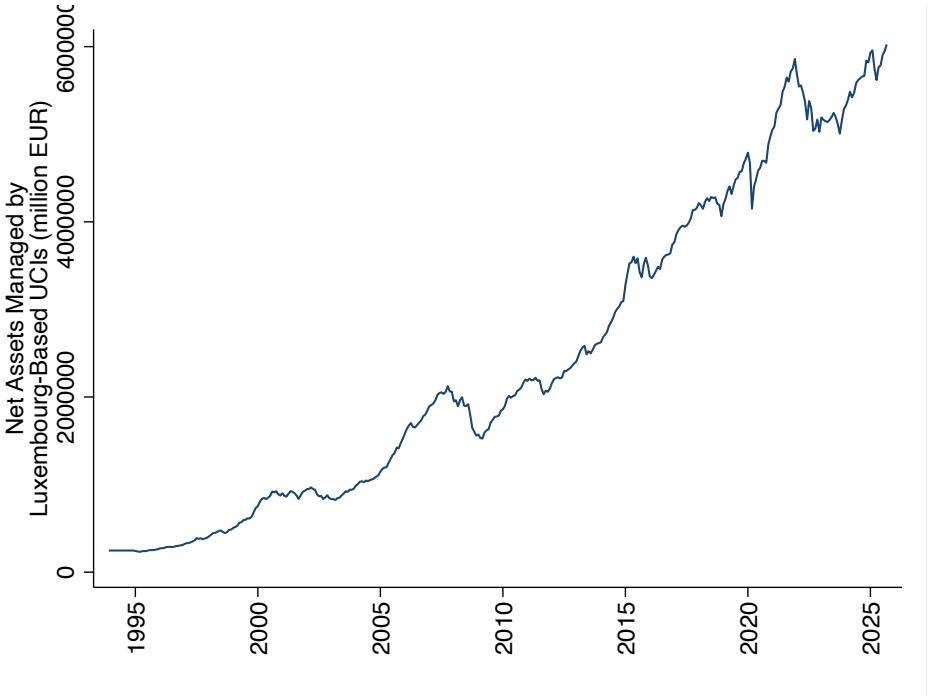


Notes: This figure plots the total assets managed by Luxembourg-based UCIs. Source: Institut Monetaire Luxembourgeois.

of these institutions contributes to Luxembourgâs international orientation and supports a range of high-skilled administrative, legal, and financial activities.

Tax policy and specialized activities Business-friendly policies further reinforced these advantages. Luxembourg combined a corporate income tax rate around 23.87% in Luxembourg city (which is about the EU average but lower than statutory rates in some of its neighboring countries, like France) with targeted regimes for internationally mobile activities. In particular, holding companies benefit from broad tax exemptions, while investment funds are generally exempt from corporate income tax and instead subject to a low subscription tax, typically 0.05 percent of net assets annually, and as low as 0.01 percent for certain institutional funds. Effective tax rates on capital income are also substantially lower, due to favorable rules related to the tax base (such as depreciation allowances, inventory valuation, interest deductibility and general tax incentives) see De Mooij et al. (2020). Luxembourg also has aggressive preferential

Figure A.24: **Total Net Assets Managed by Luxembourgish UCIs**



Notes: Source: Banque Centrale Luxembourgeoise.

tax treatment of income from intellectual property to encourage innovation. Finally, payroll tax rates are also much lower than in neighboring countries (for instance, 9% versus 40% in France).

Given the large exemptions granted to international corporatations for pass-through investments, a natural question is whether Luxembourg's expansion primarily reflects the presence of special purpose entities engaged in profit-shifting, with limited implications for real economic activity. Based on IMF estimates (De Mooij et al., 2020), these large international flows "booked" in Luxembourg have very little employment contribution: around 4,500 direct jobs, i.e. less than 2 percent of total employment in Luxembourg. This number implies that pass-through financial structures cannot account for the broader expansion of labor demand, including the large inflows of cross-border workers. Instead, employment growth is more closely linked to the development of regulated financial intermediation and the associated ecosystem of services, including asset management, fund administration, legal, and accounting activities.