The Long-Run Effects of Immigration: Evidence Across a Barrier to Refugee Settlement

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Abstract

We identify the causal effect of immigration on productivity, wages, incomes, and rents in the long run using a spatial regression discontinuity design (RDD). Our spatial RDD builds on a short-lived barrier to refugee settlement within West Germany after WWII. Comparing municipalities in a narrow band around this barrier, we find no socio-economic differences before WWII. In particular, population density had always been identical. But when the barrier to refugee settlement was removed, population density was about 20 percentage points higher where refugees had been allowed to settle. In 2020, 70 years later, the higher population density still persists. Today's higher density coincides with higher productivity, wages, and rents. We argue that these economic differences are the result of agglomeration economies driven by the higher population density where refugees had been allowed settle. We present three findings on the nature of these agglomeration economies.

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1 Introduction

Some 280 million people around the world are first-generation immigrants and in OECD countries, first-generation immigrants make up around 14% of the population (United Nations, 2019). The economic effects of immigration have become better understood in recent decades (Friedberg and Hunt, 1995; Card, 2001; Borjas, 2014; Peri, 2016). A new focus of research is the long-run impact on productivity and income (Droller, 2017; Rocha et al., 2017; Sequeira et al., 2020; Peters, 2022).

We contribute to this research by examining the long-run economic effects of the arrival of refugees in West Germany after the end of WWII in 1945. In the three years after the war, 12 million (mostly) ethnic Germans from eastern parts of pre-war Germany, Czechoslovakia, Hungary, Poland, and Romania were displaced into the Allied occupation zones (Statistisches Bundesamt, 1953). When in spring 1949, the French, UK, and US occupation zones were dissolved into West Germany,[1] the ratio of refugees to non-refugees in the new country was around one to five.

We identify the causal effect of refugee settlements on productivity, wages, incomes, and rents using a spatial regression discontinuity design (RDD). Our RDD builds on a barrier to refugee settlement during the 1945-1949 period of Allied occupation. The barrier arose because the French government severely restricted the immigration of refugees into its occupation zone between the summer of 1945 and spring 1948—when post-WWII refugee arrivals were the largest.[2] As a result, the vast majority of refugees had to settle in the occupation zones of the Soviet Union, the UK, and the US. The consequence can be seen clearly along the inner-German border of the French occupation zone in South-West Germany—the only longer border segment where municipalities on both sides ended up in the same state of West Germany.[3] In 1950, one year after the occupation zones were dissolved, the ratio of refugees to non-refugees was 18 percentage points higher on the former US side than on the former French side of the border.

Comparing municipalities located in a narrow band around this 1945-1949 border, we find that productivity, wages, and rents today are higher on the former US side. In particular, drawing on municipality-, establishment-, and property-level data, we document that on the former US side of the border, output per worker is 13% higher; hourly wages

[1] Officially the Federal Republic of Germany. Section 2 provides more historical background.

[2] See Archive de l'occupation française en Allemagne et en Autriche - Colmar (1945); Ausweisungsplan (1945), and the legal orders in Staatssekretariat für das französisch besetzte Gebiet Württembergs und Hohenzollerns (1946); Staatsarchiv Sigmaringen (1946). The French government argued it wasn't bound by the agreements on refugee resettlement as it hadn't been invited to the Potsdam Conference (Benz, 1999) where the expulsions had been decided on.

[3] As a result, municipalities on both sides have been subject to the same federal institutional framework since the foundation of West Germany in 1949 and the same state-level institutional framework since the foundation of Baden-Württemberg in 1952.

are 8% higher; and rents are 12% higher. Our empirical evidence indicates that these differences are the result of agglomeration economies driven by the higher population density following the arrival of WWII refugees in the US occupation zone.

A cornerstone of our analysis is that there were no socio-economic differences before WWII across what in 1945 would become the south-western border between the French and US occupation zones. Before 1945, this border never coincided with a national or state border. Drawing on exceptionally detailed data collected by South-West German municipalities—including income per capita, revenues from a variety of taxes, and real-estate values—we show that there were no significant differences in a wide range of pre-WWII socio-economic indicators. The data on population density is especially interesting as we can go back to the foundation of Germany in 1871. We find no differences in population density across what became the occupation-zone border in 1945.

However, in 1950, population density was around 20 percentage points higher on the (by then) former US side of the 1945-1949 border. This is still true in 2020, more than 70 years after the refugees arrived and the occupation zones were dissolved.

It is not difficult to account for the greater population density in 1950 on the former US side of the 1945-1949 occupation-zone border. The massive arrival of refugees and extensive war destruction in cities led to refugees settling in all corners of the US zone (Benz, 1999; Kossert, 2009). This turned the balanced pre-war population density across the border with the French zone into a strong discontinuity.

But what explains the persistence until today of the greater population density on the former US side of the border? Our findings point to agglomeration effects. The agglomeration literature typically puts forth input sharing, labor-market matching, and learning spillovers as the most important economic channels through which greater population density translates into higher productivity and wages (Duranton and Puga, 2004; Rosenthal and Strange, 2004; Glaeser, 2008; Combes and Gobillon, 2015). Higher productivity and wages can, in turn, sustain greater population density, even though housing is generally more expensive in denser places. This interaction between population density on the one hand and wages and rents on the other, helps to explain the persistently uneven spatial distribution of population in many countries (Mill, 1967; Roback, 1982; Glaeser and Gottlieb, 2009). Our results on population density, productivity, wages, and rents are consistent with this explanation based on agglomeration effects.

We present three findings on the nature of these agglomeration effects. First, using matched employer-employee data, establishment-level data, and patent data, we find evidence for labor-market matching, input sharing, and learning spillovers (Duranton and Puga, 2004; Rosenthal and Strange, 2004; Andersson et al., 2007; Maystadt and Duranton, 2019; Dauth et al., 2022). Second, the effects spill across neighboring municipalities. While the discontinuity in refugee settlement is sharp, higher productivity, wages, and rents are also observed in close neighborhood of municipalities in the former US occu-

pation zone. Third, following Peters (2022), we use county-level data to show that the effects built up gradually over time. Counties in the former US zone did not have higher productivity in the early 1950s. The economic advantages on the former US side only started to emerge in the mid-1950s.

We also consider a range of potential alternative explanations for the long-run effects that we find. The main alternative hypotheses we examine are the role of a historic highway through South-West Germany; the legacy of policy differences between the French and US occupation zones; and the human capital of the WWII refugees.

First, we assess the role of the A8 highway, a historic highway on the US side of 1945-1949 border that determined the shape of the border. In summer 1945, the US employed its political power to expand its territory southward to encompass all counties crossed by this highway. The resulting border with the French zone disregarded any political divisions or the line between the territories conquered by the French and US troops during the war (Mosely, 1949). Because of how the border was drawn, municipalities on the former US side of the 1945-1949 border were somewhat closer on average to the A8 highway. To examine whether the highway could explain the higher population density today, we construct placebo borders along other highways and evaluate whether similar differences in population density emerged across these borders. We do not find any such differences and conclude that today's difference in population density across the 1945-1949 border is unlikely to be driven by the rule the US used to draw the border.

Second, we examine the potential legacy of differences in social and economic policies, regulations, laws, and institutions between the French and US occupation zone between 1945 and 1949 (other than the differences in dealing with the refugees). While France, the UK, and the US cooperated in many policy areas in post-WWII Germany,[4] there were also differences. According to historical accounts, the main difference regarded the dismantling of industry structures agreed upon by the Allied forces (Pünder, 1966). While the UK and US reduced dismantling in 1948, the French zone adhered to the plan until 1949. Based on newly digitized lists of dismantled establishments, we confirm that there were relatively fewer dismantled establishments on the US side of the occupation-zone border in South-West Germany. However, when we control for industry dismantling at the municipality level, we find that differences in industry dismantling cannot explain today's differences across the 1945-1949 border.

Other differences in policies, such as the lower official food rations in the French occupation zone until 1947, could also persist through the health or education of those born

[4]For instance, the three Western occupation zones had identical tax policies from the outset (Franzen, 1994), and, in 1948, they together introduced the currency reform, merged their offices to manage foreign trade, agreed on the same food rations, and jointly entered the European Recovery Program to implement the Marshall Plan (Pünder, 1966).

during occupation. Using the German Socio-Economic Panel (SOEP), we compare children born during the occupation period to those born between 1950 and 1954. We find no significant differences in various measures of health and education between the former French and US occupation zones. Moreover, using newly digitized municipality-level data on secondary and university education in 1970, we find no evidence of spatial discontinuities at the border between the 1945-1949 French and US occupation zones in South-West Germany. It is also possible that the French and US occupation zones resulted in differences in individual attitudes and norms that persist to today. However, using the SOEP, we find no such differences in the answers to questions about the importance of different policy goals, risk preferences, interest in politics, party preferences, and unionization.

Third, we assess the role of the human capital of refugees. Becker et al. (2020) consider forcibly relocated households and their descendants in Poland and show that Poles with a family history of relocation are more educated than other Poles, although there were no differences in education before relocation. In our historical context, however, WWII refugees and the local population had similar education levels in the first and second generation (Grosser, 2006; Bauer et al., 2013). Moreover, in 1970—more than 20 years after the arrival of the refugees—we find no spatial discontinuity in secondary or university education across the former South-West German border between occupation zones. Only after an extended period of greater population density, we see somewhat higher levels of university education on the US side of the former border (Glaeser and Gottlieb, 2009).

In summary, we contribute causal empirical evidence on the long-run effects of immigration on main economic outcomes like productivity, wages, income, and rents. We do so using a spatial regression discontinuity design (RDD). To our best knowledge, there is no previous spatial RDD evidence on the effect of immigration on the economic outcomes we consider.[5] In light of our findings, we conclude that today's economic differences across the 1945-1949 occupation-zone border are sustained by agglomeration economies that gradually built up following the arrival of refugees in the US zone. We do not find any evidence for alternative explanations: municipalities across the 1945-1949 border were not different before WWII and today's economic differences across the former border do not appear to be the legacy of distinct social and economic policies, regulations, laws, or institutions during the 1945-1949 period of French and US occupation (other than the US policy of admitting refugees and the French policy of restricting access).

Most closely related to our work are studies of the consequences of the arrival of WWII refugees in what became West Germany (Schumann, 2014; Peters, 2022); the long-run effects of displacement in other contexts (Sarvimäki, 2011; Murard and Sakalli, 2018); and the long-run effects of immigration (Hornung, 2014; Droller, 2017; Rocha et al.,

[5] Verme and Schuettler (2021) provide a meta analysis of the empirical literature on the impacts of forced migration on host countries and "could not find any paper using a discontinuity design".

2017; Sequeira et al., 2020).

Schumann (2014) employs a spatial RDD on the South-West German border between the 1945-1949 French and US occupation zones to show that the population shocks induced by WWII refugees persisted to 1970. While he analyzes the population shocks per se, we examine their economic consequences—i.e., effects on productivity, wages, rents, etc. There is also a subtle, yet relevant, difference. Schumann shows that by 1950, refugee arrival had increased population density on the US side of the former border relative to the French side. We show that density on the US side rose *above* the French side. It is the emergence of this density differential that we see as the cause of today's higher productivity, wages, and rents on the US side the 1945-1949 border.

Peters (2022) analyzes the effect of WWII refugees on the West German economy using a calibrated semi-endogenous growth model. Like us, he sees the economic effects as rooted in local agglomeration economies driven by the effect of refugees on population (density). His model predicts that refugees raised West German income per capita by about 12% in the long run, which is similar to the effect we estimate. We see Peters's and our work as complements. While he provides a structural general-equilibrium analysis for the West German economy, we contribute a research design to identify causal effects.[6] In addition, our empirical work offers evidence on wages and rents—which play a central role in the literature on local productivity effects—and a long-run perspective.[7] We also examine direct evidence on the channels of agglomeration economies involved.[8]

[6]Some parameters of Peters's structural model are informed by OLS estimates, regressing GDP-per-capita growth for periods up to 1996 on the share of refugees in 1950. Estimation is at the county level and conditional on several covariates and state fixed effects. For the shorter time period up to 1961, Peters considers a complementary instrumental-variables (2SLS) approach, again conditional on covariates and state fixed effects. The approach builds on fewer refugees settling in counties further away from the expulsion regions (Braun and Kvasnicka, 2014; Braun and Mahmoud, 2014). Peters's 2SLS estimate uses multiple instruments obtained by interacting state fixed effects with expulsion distance. The effect of refugees on GDP growth is assumed to be homogeneous. In Appendix Table C6, we test the model's overidentifying restrictions. This test can be interpreted as testing whether the 2SLS estimates using one instrument at a time identify the same causal effect of refugees on GDP growth (Angrist and Pischke, 2009). This hypothesis is rejected, which indicates heterogeneous treatment effects. We also find that Peters's 2SLS estimate cannot be interpreted as a weighted average of heterogeneous causal effects, as several of the one-instrument-a-time estimates enter his 2SLS estimate with negative weights. See Blandhol et al. (2022) and Abadie et al. (2023) for an explanation of when 2SLS estimates can and cannot be interpreted as weighted averages of heterogeneous causal effects. A key issue is that reduced-form estimates indicate that in Bavaria, which contributes 1/3 of the counties, growth up to 1961 was faster in counties further away from the expulsion regions. If greater distance to expulsion regions led to fewer refugees and refugees had a positive effect on growth, one would expect lower growth further away from the expulsion regions (conditional on covariates).

[7]Peters's OLS estimates of the effect of refugees on GDP growth are mostly insignificant after 1974. One possible explanation for the difference with our findings—in addition to the identification strategies—is the spatial granularity of our municipality-level analysis compared to Peters's county-level analysis. In line with this argument, our estimates for the long-run effects of exposure to the arrival of refugees on income per capita tend to become smaller and lose significance when we increase the spatial range for spillovers to values corresponding to the average size of counties in Baden-Württemberg.

[8]Additional related works based on the arrival of WWII refugees in West Germany are Wyrwich (2020)

The recent literature on the economic effects of forced migration as a consequence of wars, civil conflicts, or natural disasters is surveyed in Becker and Ferrara (2019), Verme and Schuettler (2021), and Becker (2022). The more closely related papers are Sarvimäki (2011) and Murard and Sakalli (2018). Sarvimäki studies a forced relocation program in Finland using an instrumental-variables (IV) strategy and finds positive long-run effects on wages.[9] Murard and Sakalli study forced migration into Greece around 1920 and document positive long-run effects on education and earnings.

Hornung (2014), Droller (2017), and Rocha et al. (2017) also study the economic effects of immigration at the local level. Hornung uses an IV strategy based on population losses during the Thirty Years' War to show that (the specialized skills of) Huguenot immigrants in Prussia in 1695 had positive long-run effects on productivity in textile manufacturing. Droller and Rocha et al. find that immigrants with relatively high human capital compared to natives had a positive long-run effect on education and income in, respectively, Argentina and Brazil. Droller uses an IV strategy based on the availability of land for settlement and the time of immigrant arrival, whereas Rocha et al. employ a panel-data approach.

Sequeira et al. (2020) assess the local economic effects of European immigrants in the US during the 1850-1920 period using an IV strategy based on the interaction between aggregate immigration and the expansion of the railway network. They find that today, counties with more immigration are more urbanized and have higher education levels and incomes. Just like Peters (2022) and us, Sequeira et al. argue that these effects are driven by agglomeration economies following immigrant arrival.[10]

The remainder of the paper is structured as follows. Section 2 provides some historical background. Section 3 introduces the data and the empirical framework. Section 4 presents our results on pre-WWII socio-economic characteristics, the distribution of

and Braun et al. (2021). Braun et al. use instrumental-variable strategies to analyze the effect of refugees on population growth up to 1970. Wyrwich studies the persistence of the population shock generated by the refugee inflow up to 2010 based on a difference-in-difference comparison between the French occupation zone and the combined British and US zones. Somewhat less closely related is Burchardi and Hassan (2013), who examine how, after the fall of the Berlin Wall in 1989, personal relationships between East Germans and refugees in West Germany affected local growth. There are also recent studies that examine the consequences of refugees on integration outcomes and vote shares of political parties (Chevalier et al., 2023; Braun and Dwenger, 2020; Lang and Schneider, 2022).

[9] Using the same episode, Sarvimäki et al. (2022) find a positive effect on the income of relocated households as they switched out of agriculture (although the relocation program provided agricultural land). In our historical context, there is evidence that refugees who worked in agriculture before WWII switched to manufacturing (Grosser, 2006). However, when we look across the 1945-1949 border we focus on, the effect on the production structure appears to have been short-lived, see Table 5, Panel D.

[10] Burchardi et al. (2019) analyze the effect of the ancestry composition of US counties on foreign direct investment using an IV strategy based on the timing of immigration from different countries of origin. Our study also relates to the literature on short- and medium-run effects of internal and international migration on local labor markets, see, e.g., Boustan et al. (2010), Peri (2016), and Abramitzky et al. (2023).

WWII refugees, and the population density shock across the border between the 1945-1949 French and US occupation zones in South-West Germany. Section 5 discusses our findings on post-WWII outcomes across the border and the channels of agglomeration economies. Section 6 examines alternative explanations. Section 7 concludes. Additional results are in the Appendix.

2 Historical Background

Reorganization of Germany after WWII Towards the end of WWII, as the German defeat became apparent, the Allied powers held several conferences to plan the future of Europe. In the Yalta Conference in January 1945, the UK, the US, and the Soviet Union decided to divide Germany into four occupation zones. However, except for the Soviet zone in eastern Germany, they were unable to reach an agreement as to the location of the occupation zones. The division of Germany among the occupying forces was finalized in the Potsdam Conference in the summer of 1945. The Allied forces also agreed to reverse all German annexations and to shift the eastern border of Germany westward. Appendix Figure C1, Panel A, depicts the borders of Nazi Germany just before WWII. The striped areas mark the German territories in the east and the territories annexed by Nazi Germany. The two blue areas highlight the two historical states of Baden and of Württemberg that form the focal area of our study. Panel B delineates the four occupation zones in post-WWII Germany.

The decisions taken in both the Yalta and Potsdam conferences were made by the UK, the US, and the Soviet Union. France had not been invited to participate. Nevertheless, the UK and the US decided to accommodate the French provisional government's demands for a French occupation zone (Willis, 1962), even though this reduced their own occupation zones (Mosely, 1949). After WWII, the US used its political power to draw the border between its occupation zone and the French occupation zone in South-West Germany. The border "was based on strictly logistical conceptions [...] so as to leave in the American zone the main highway [...]. Administrative and traditional divisions were disregarded completely" (Mosely, 1949, p. 600). The front lines conquered respectively by the French and US troops were also ignored in delineating the border. At the end of WWII, the line of contact between the French and US forces was roughly 50 km north of what would become the border between their 1945-1949 occupation zones in South-West Germany. The French combat forces had expanded their territory further northwards than stipulated by the Supreme Headquarters of the Allied Expeditionary Forces, with the intention of increasing their future occupation zone (Willis, 1962).[11] Nevertheless,

[11]The fact that municipalities on both sides of the 1945-1949 border were freed by the French forces eliminates concerns about a differential effect of potential misdeeds during the military liberation period,

the US position prevailed and the territory under US control was expanded southward to include all counties crossed by the highway through South-West Germany.[12] An often cited motive for the French demand for an occupation zone is the restoration of national pride after France had been occupied by Nazi Germany during WWII (Koop, 2005, p. 19). At the same time, the Nazi occupation had left France in a difficult economic situation. Since the provisional French government was not invited to the Potsdam Conference, it did not feel bound by the agreements made there. This became particularly apparent in the French refusal to accommodate refugees in the context of the forced population resettlements that were part of the reorganization of Germany.

The arrival of the refugees The reorganization of Germany's boundaries was planned to be accompanied by an "orderly and humane" forced resettlement of the German and German-speaking populations living beyond the new borders of Germany to within the new borders (Potsdam, 1945). This implied a new phase of the population movements that had started during the final stages of the war. Since early 1945, with the advances of the Soviet army towards the eastern parts of pre-war Germany, the population had begun to flee westward (Kossert, 2009). Moreover, over the spring and summer of 1945, local militia and military forces expelled German-speaking people from Czechoslovakia and Poland. Including the population transfers organized by the Allied forces, a total of 12.4 million people had been displaced from the eastern parts of pre-war Germany, from Czechoslovakia, and from other countries in East and South-East Europe by the end of 1950 (Statistisches Bundesamt, 1953). 7.9 million people arrived in the territory of what would become West Germany in 1949.

Due to the arrival of these refugees, the population in West Germany grew by almost 20% between 1939 and 1950, despite the many fatalities in WWII. The population within the territory of the 1945-1949 US occupation zone in South-West Germany grew by 21%, mainly driven by an inflow of refugees from Czechoslovakia who made up 54% of the incoming refugees (Statistisches Bundesamt, 1955). In contrast, France restricted access to their occupation zone for refugees (Benz, 1999). Arguing not to be bound by the Potsdam agreement, the French delegation in the Allied Control Council strove to prevent "any increase in the number of hungry mouths" (Archive de l'occupation française en Allemagne et en Autriche - Colmar, 1945). As a consequence, the official expulsion plan of the Allied Control Council stipulated that only a vanishingly small proportion of refugees should end up in the French zone.[13]

as documented by Ochsner (2021) in Austria (see also Blumenstock, 1957).

[12] As a result, the highway fell entirely within the US occupation zone. We discuss potential economic implications of the highway in Section 4.3.

[13] According to the plan (Ausweisungsplan, 1945), 2 Million refugees were supposed to end up in the Soviet zone, 1.5 Million refugees in the British zone, 2.25 Million refugees in the US zone, and only 150,000 refugees from Austria in the French zone. The French zone further delayed and prevented the

In many regards, refugees were similar to the local population. They spoke German, had similar education levels, and shared other demographic characteristics. Based on data from a supplementary German microcensus in 1971 that was conducted to study the refugees' origin and integration, Grosser (2006) shows that refugees in the US occupation zone in South-West Germany had similar education levels, pre-WWII employment, and occupational status compared to the local population. Appendix Table C1 shows that refugees in the former US zone had 8.4 years of education on average compared to 8.5 in the local population. In both groups, roughly 66% of the working age population were employed in 1939. The main differences between the two groups are higher shares among the refugees of people with only an elementary education and of farmers plus helping family members. This reflects the greater economic weight of agriculture in the refugees' origin regions and is consistent with the literature comparing refugees and locals more broadly.[14] Table C1 also compares characteristics of refugees in the former French zone to locals. These refugees arrived somewhat later and in lower numbers compared to those on the former US zone. There is, however, no indication that they are negatively selected in terms of their education or occupational status.

Despite the many similarities, refugees faced substantial opposition from the local population. According to historical accounts, they were often treated as inferiors and strangers.[15] One reason for this hostility was the scarcity of housing.[16]

The 1945-1949 occupation period in West Germany The economic and social policies across the four occupation zones in post-WWII Germany were supposed to be coordinated by the Allied Control Council established in August 1945. In some instances this worked as intended. For example, up until 1948, the four occupation zones followed a common tax policy, as agreed upon by the council (Franzen, 1994). Over time, coordination through the council deteriorated due to increasing disagreement between the Soviet Union and the Western Allies (Koop, 2005, p. 15ff.). However, the Western Al-

implementation of this plan, so that estimates suggest that no more than 3,000 people from Austria actually ended up in the French zone (Sommer, 1990). For all other refugees, the French military government completely blocked immigration into its zone in a legal order of March 12, 1946 (Staatssekretariat für das französisch besetzte Gebiet Württembergs und Hohenzollerns, 1946), and a tightening note of August 8, 1946 (Staatsarchiv Sigmaringen, 1946).

[14] Bauer et al. (2013) examine the supplementary microcensus from 1971 for the whole of West Germany and find no differences between refugees and the local population in the pre-WWII age structure, education, employment and occupational status, and house ownership. The only difference is that a larger share of refugees was employed in the agricultural sector before WWII. Peters (2022) reports very similar findings. Based on survey data from 1982 and 1990, Schmidt (1997) shows that education, employment, industry structure, and earnings of refugees and locals remained similar in later periods.

[15] Literature Nobel laureate Günter Grass, himself a refugee, describes the hostility in Grass (2007).

[16] Housing scarcity was the product of the large number of refugees and war destruction. In many cases, the occupying powers forced locals to host refugees. According to census data from 1950 for counties along the 1945-1949 occupation-zone border in South-West Germany, 65% of refugees lived as subtenants, about 8% lived in emergency shelters or camps, and 27% lived in normal housing.

lies continued to cooperate in many policy areas. In 1947, Britain and the US merged their occupation zones into the Bizone. Starting in 1948, the Bizone coordinated its policies closely with the French occupation zone. For example, in 1948, the Bizone and the French zone together introduced the currency reform, merged their offices to manage foreign trade, abolished controls at the occupation-zone borders, agreed on the same food rations, and jointly entered the European Recovery Program to implement the Marshall Plan (Pünder, 1966) where they received roughly equal amounts of funds on a per capita basis (see Appendix Table C4). The Bizone and the French zone also jointly implemented a tax reform in 1948 (e.g., Franzen, 1994, p. 34). The close policy coordination among the three Western powers paved the way for the dissolution of their occupation zones and the foundation of West Germany in 1949.[17]

The foundation of Baden-Württemberg In South-West Germany, the US and France had structured their occupation zones into three states during the occupation period. In the US zone, the new state of Württemberg-Baden unified the northern parts of the two historical states of Baden and Württemberg. In the French zone, the southern parts of these historical states became part of the new states of Baden and Württemberg-Hohenzollern (Matz, 2003). All three South-West German states joined West Germany in 1949. There had been discussion, promoted by the Western Allies, on how to restructure the South-West German states since 1948 (Matz, 2003). It took, however, until April 1952 to found the federal state of Baden-Württemberg as the union of the three states in the territory of the former French and US occupation zones in South-West Germany. The delay was due to disagreement over the mode of voting on the two proposals: the restoration of the historical states of Baden and Württemberg versus a unified south-western state. A clear majority ultimately voted for a unified state, which was finally implemented in the foundation of Baden-Württemberg.

3 Data and Empirical Framework

3.1 Data

To implement our spatial regression discontinuity design, we combine data from a broad variety of sources. We highlight the key points in this section and provide a detailed overview of the variables and sources in Appendix A.

The historical data is hand-digitized from censuses at the municipality level in Baden (1871, 1895, 1903, 1930, and 1939), Württemberg (1871, 1895, 1907, and 1933), and

[17] France, the UK, and the US reserved veto power and ultimate authority over sensitive policy areas in an Occupation Statute until the Bonn-Paris conventions put an official end to the Allied occupation of West Germany in 1955.

Baden-Württemberg (1950, 1960, 1970/71). We also digitized 1980 income tax statistics at the municipality level, provided by the Statistical Office of Baden-Württemberg. At the county level, we digitized income tax statistics (1954 and 1971), sales tax revenues (1935 and 1950), and regional GDP measures (1957 and 1970). The most recent municipality-level data on productivity, income, and education comes from the online database of the Statistical Office of Baden-Württemberg. We complement the municipality-level data with micro-data from several sources. To examine value added per hour, hourly wages, intermediate inputs, and exports, we use data for the manufacturing sector provided by the German Statistical Offices. For rents, we use property-level data from the 1987 census and 2008-2016 data from the internet platform ImmobilienScout24. To examine patenting activity, we use the PatentCity data (Bergeaud and Verluise, 2024). To examine labor market matching, we use municipality-level aggregates of worker- and establishment-level estimates obtained from matched employer-employee data by Dauth et al. (2022). To examine individual health, education, norms, and attitudes of those born or living in the former French and US occupation zones, we use survey data from the German Socio-Economic Panel (SOEP). For language courses chosen in school, we employ data provided by the Statistical Office of Baden-Württemberg. Additionally, we digitized municipality-level data on WWII destruction, industry dismantling after WWII, official food rations, and the presence of military bases after the 1945-1949 occupation period.

All outcome data are linked to geo-data for Baden-Württemberg using historical maps provided by the House of History Baden-Württemberg and the German Federal Agency for Cartography and Geodesy. For each municipality, we obtain an indicator for location in the 1945-1949 US occupation zone; longitude and latitude of the municipality center; distance to Stuttgart; distance to the closest highway exit; distance to the 1945-1949 occupation-zone border; and a list of municipalities located within a certain radius around the municipality center. All geospatial calculations are done using QGIS. For most of the analysis, we aggregate historical data to modern municipality borders.[18]

[18]Baden-Württemberg implemented a territorial reform in the early 1970s that reduced the number of municipalities from 3,379 to less than half that number. We use correspondence tables provided by the Statistical Office Baden-Württemberg to assign historical data to modern municipalities. In this process, we drop six modern municipalities because they stretch across both sides of the 1945-1949 occupation-zone border in South-West Germany and hence cannot be assigned unambiguously to either the former French or former US side.

3.2 Empirical Framework

Our baseline empirical framework is a standard spatial regression discontinuity (RD) design (Dell et al., 2018; Van Patten and Mendez, 2022)

$$y_m = \alpha + \gamma USZoneLocation_m + f(\text{geo location}_m) + X_m'\beta + \sum_i^S seg_m^i + \varepsilon_m, \quad (1)$$

where y_m is the outcome of interest in municipality m, $USZoneLocation$ is the relevant treatment indicator—whether ($USZoneLocation = 1$) or not ($USZoneLocation = 0$) a municipality is located in what was the US occupation zone between 1945 and 1949—, and $f(\text{geo location}_m)$ is the RD polynomial. In the baseline specification, the polynomial is linear in longitude and latitude. The regression model is specified as a local linear regression (Gelman and Imbens, 2019) with a triangular kernel where weights decline linearly with distance to the border. In our sensitivity analysis, we consider alternative specifications for the functional form of the RD polynomial. The control variables X_m include quadratic functions of distance from the municipality's center to Stuttgart, the capital of Baden-Württemberg, and to the closest highway exit of the historic highway crossing South-West Germany (today, the A8 highway). Depending on the model, we include further control variables. In particular, models that pool several time periods include year fixed effects. Models that are based on firm-level manufacturing data include 4-digit industry and 11 firm-size group fixed effects. Models that are based on property-level housing data include property characteristics. In our sensitivity analysis, we consider additional control variables.

In the baseline, we include municipalities within a 15 km bandwidth around the border and have five boundary segment fixed effects seg_m^i. In our sensitivity analysis, we consider different bandwidths and different numbers of boundary segment fixed effects.

The main parameter of interest in equation (1) is γ, the effect of being located on the former or the future US side rather than the French side of the border between the 1945-1949 French and US occupation zones in South-West Germany. Inference is based on Conley (1999) standard errors that allow for arbitrary correlations in the spatial dimension and, in models with several time periods, the time dimension (see also Colella et al., 2019). We implement a Bartlett-type kernel with a 25 km cutoff in the spatial dimension in the baseline and consider different cutoffs in our sensitivity analysis. In models with several time periods, we use a 20 year cutoff in the time dimension.

In equation (1) we use the simplest definition of treatment in our context: a treatment indicator capturing whether a municipality was located in what was the US occupation zone between 1945 and 1949. While simple, the definition might be too narrow given the relatively small size of municipalities and the evidence on the spatial reach of agglomeration economies (Rosenthal and Strange, 2020). We therefore also consider an

alternative definition of treatment, which we refer to as exposure to the US occupation zone. To obtain US-zone exposure, we first draw a circle with a certain radius around the center of municipality m—10 km in our baseline and different radii in our sensitivity analysis. We then take all municipalities whose centers are within this circle and calculate the 1939 population share of those municipalities that ended up in the US occupation zone in 1945. This population share is the basis of our measure of US-zone exposure for municipality m. We use 1939 population as this captures basic determinants of where refugees could potentially settle, but avoids endogeneity issues related to where refugees actually settled within the US and within the French occupation zones. Appendix Figure C2 illustrates the construction and distribution of the 1939 population share for municipalities in our border region. For many municipalities, US-zone exposure is identical to the US treatment indicator variable in (1). This is because either all municipality in the circle are located in the 1945-1949 US occupation zone or all municipality in the circle are located in the 1945-1949 French occupation zone. For municipalities at the 1945-1949 occupation-zone border, US-zone exposure is generally strictly between 0 and 1, as some municipalities within the circle lie on the other side of the 1945-1949 border. Also, because of the jagged shape of the occupation-zone border, some municipalities located in the 1945-1949 US zone actually have *lower* US-zone exposure than some municipalities located in French zone.[19]

The model specification adding US-zone exposure is

$$\begin{aligned} y_m = \alpha + \theta USZoneLocation_m + \delta USzoneExposure_m \\ + f(\text{geo location}_m) + X'_m\beta + \textstyle\sum_i^S seg_m^i + \varepsilon_m. \end{aligned} \tag{2}$$

The new parameter of interest in equation (2) is δ, the effect of the $USzoneExposure$ of municipality m on outcome y. If some agglomeration economies range beyond municipality borders, $USzoneExposure$ should result in higher levels of productivity, wages, and rents today. $USzoneExposure$ is obtained by subtracting 0.5 from the 1939 population share within a 10-km radius in the 1945-1949 US occupation zone.[20] Subtracting 0.5 from the 1939 population share does not affect the estimate of δ. However, it affects (the interpretation of) the parameter θ on the indicator $USZoneLocation$ for municipalities located in the 1945-1949 US occupation zone. This parameter now captures the effect in a municipality located in the 1945-1949 US occupation zone but so close to the border that half of the 1939 population of municipalities within a 10-km radius was in what became the 1945-1940 French occupation zone. That is, θ is the effect of US-zone location when

[19] See the case of the municipalities of Bondorf (located in the US zone) and Dettingen an der Ems (located in the French zone) in Appendix Figure C2.

[20] Formally, let $d(o,m)$ denote the distance between the municipality centers of o and m in km. Then $USzoneExposure_m = \sum_{o:\, d(o,m)\leq 10} pop39_o \times USZoneLocation_o / \sum_{o:\, d(o,m)\leq 10} pop39_o$ - 0.5.

comparing municipalities on opposite sides of, but very close to, the 1945-1949 border.

4 Refugees and Population Density, the 1945-1949 Border Before WWII, and the Role of the Highway

4.1 WWII Refugees and Population Density

In the 1950 census, WWII refugees constituted more than 15% of the total population in West Germany of around 50 million. The map in Figure 1 illustrates the population share of refugees in 1950 at the municipality level in what became the state of Baden-Württemberg in 1952. The census defines refugees as individuals who in 1939 (i) resided in the territories of pre-WWII Germany east of the post-WWII occupation zones or (ii) resided outside of pre-WWII Germany and were native German speakers. The map suggests a spatial discontinuity in the share of refugees in 1950 that coincides with the South-West German border between the 1945-1949 French and US occupation zones.

Table 1 quantifies the spatial discontinuity in the distribution of refugees, focusing on municipalities within 15 km of the 1945-1949 border. Of these municipalities, 102 are in the former French and 116 in the former US occupation zone. Column (1) estimates equation (1) for the population share of refugees in 1950. The estimate for the indicator $USZoneLocation$ is 0.126 and highly statistically significant. Hence, the population share of refugees in 1950 is 12.6 percentage points higher on the former US side of the 1945-1949 border. When we consider the number of refugees relative to non-refugees as the outcome variable in column (3), the ratio is 18 percentage points higher on the former US side of the 1945-1949 border. Columns (2) and (4) show results when we add US-zone exposure as in equation (2). US-zone exposure is statistically insignificant and the spatial discontinuity in the distribution of refugees at the 1945-1949 border changes little.

The arrival of post-WWII refugees resulted in a sizable, differential shock to population density at the border between the 1945-1949 French and US occupation zones in South-West Germany. Figure 2 illustrates the shock based on separate estimates of equation (1) for years between 1871 and 2020. Before WWII, there is no spatial discontinuity in population density at what became the 1945-1949 border. But starting in 1950 and up to 2020, there is a persistent discontinuity in population density at the former border—with density being around 20% larger on the former US side.[21] The differential shock to population density on the US side of the 1945-1949 border is similar in size to the discontinuity in the ratio of refugees to non-refugees in 1950 in Table 1, columns

[21] The increase in population density between 1939 and 1950 is consistent with Schumann's (2014) finding that population growth during the 1939-1950 period was about 20 percentage point higher on the US side of the 1945-1949 border.

(3)-(4). The arrival of refugees after WWII can therefore account for the discontinuity in population density that emerged in 1950.

4.2 Economic Characteristics Before WWII

That there is no spatial discontinuity in population density before WWII at what became the border between the 1945-1949 French and US occupation zones in South-West Germany suggests that municipalities across the border were similarly attractive places to live. We now examine additional socio-economic indicators for spatial discontinuities before WWII at the 1945-1949 border.

A standard measure of historical economic development available in municipality censuses around 1900 and before WWII is the sectoral production structure.[22] Figure 3 shows our results based on equation (1). We observe no spatial discontinuity at what became the 1945-1949 occupation-zone border for the employment share of manufacturing in manufacturing & agriculture. Nor is there a spatial discontinuity for the employment share of manufacturing & trade in manufacturing & trade & agriculture.

We also examine several measures of income and wealth from municipality censuses for the period around 1900 and for the period just before WWII. In particular, we digitized data on taxable income per capita in 1895/1907; houses per capita in 1903/1908; house values in 1903/1908 assessed by fire insurance; and the value of land and businesses for tax purposes in 1930/1933.[23] None of these indicators reveal spatial discontinuities at what would become the border between the 1945-1949 French and US occupation zones in South-West Germany. Neither is there any spatial discontinuity in the share of self-employed workers or the number of farms per capita. The only statistically significant pre-WWII difference across the 1945-1949 border we find is a smaller number of non-agricultural businesses per capita in 1933/39 on what would become the US side.

Taken together, the evidence in Figure 3 suggests that there were no significant economic differences before WWII across what became the border between the 1945-1949 French and US occupation zones in South-West Germany.[24] Furthermore, the figure shows that at the end of WWII in 1945, there was no spatial discontinuity in the percentage of housing and industrial structures destroyed during the war.

[22] As described in Appendix A, some variables are measured in different years in Baden and in Württemberg. For example, the sectoral production structure in Baden for the period around 1900 is available for 1895 and in Württemberg for 1907. In these cases, our regressions include a dummy variable which is equal to one for municipalities in Baden.

[23] The value of land and businesses for tax purposes refers to official valuations by the tax authorities that are used as a tax base.

[24] Appendix Figure C3 shows that this is also true for US-zone exposure in equation (2).

4.3 Examining the Effect of Highways

As explained in Section 2, the location of the border between the 1945-1949 French and US occupation zones in South-West Germany was determined by the highway crossing South-West Germany (today, the A8 highway). After WWII, the US employed its political power to expand its territory southward to include all counties crossed by the highway. Figure 4(a) shows the border and the A8 highway in Baden-Württemberg. As a consequence of this border delineation, municipalities on the US side of the border were on average somewhat closer to the highway than those on the French side.

Before and shortly after WWII, there was little road traffic. In the 1950s, however, traffic increased rapidly. As a result, the highway may explain today's differences in population density across the South-West German border between the French and US occupation zones. One way to account for the role of the A8 highway is to control for the distance of municipalities to the highway (Schumann, 2014). In addition, we examine the role of the A8 highway for population density today using a placebo strategy. In a first step, we construct a placebo-US occupation zone along a given highway by replicating the US rule that all historical counties crossed by the highway should be part of the US occupation zone. Second, we construct a placebo-French occupation zone. As any band of counties crossed by a highway has two outer borders, there are generally two choices for the placebo-French occupation zone (and the placebo border). Third, we examine differences across the borders between the placebo occupation zones using equation (1). Our baseline includes municipalities within 15 km of the placebo borders. We implement this placebo strategy for the A5, A6, A7, A8, and A81 highways in Baden-Württemberg.[25] Except for the A8, these highways were all constructed or completed after WWII. We therefore also implement the placebo strategy for the segment of the A8 highway that runs through the state of Bavaria, which neighbors Baden-Württemberg to the west and was occupied by the US (except for one county far off the A8 highway). This highway segment is as old as the one in Baden-Württemberg and was located entirely within the 1945-1949 US occupation zone. The placebo-US occupation zone in Bavaria along the A8 highway again replicates the US rule that all historical counties crossed by the highway should be part of the US occupation zone. Again, there are two possibilities for the placebo-French occupation zone (and the placebo border). Figure 4(b) illustrates the

[25]The A6 highway runs east to west within what was the 1945-1949 US occupation zone. The other highways run north to south and cut nearly perpendicularly across what was the border between the 1945-1949 French and US occupation zones. We can only place one placebo border (west of) the A5 highway as this highway runs close to the border with France. Similarly, we can only place one placebo border (east of) the A7 highway as it runs close to the border with the state of Bavaria. We can also only place one placebo border (north of) the A8 highway as the border south of that highway is the actual 1945-1949 border between the French and US occupation zones in South-West Germany. Of the 225 municipalities within 15 km of this placebo border (108 in the placebo-French zone and 117 in the placebo-US zone), 218 were in the 1945-1949 US occupation zone.

Bavarian placebo when we place the placebo-French occupation zone to the south of the placebo-US occupation zone (and to the south of the A8 highway).

Figure 5 shows the results of applying our placebo strategy to examine (log) population growth between 1939 and the year indicated on the horizontal axis using equation (1). The estimates in red are those for the placebo borders. For comparison, the estimates in blue show the results for the actual border between the 1945-1949 French and US occupation zones. No time period after 1939 and no set of placebo borders yields a statistically significant difference for population growth across our placebo borders. This holds true whether we pool the placebo borders for all highways in Baden-Württemberg; pool the two placebo borders for the highway A8 in Bavaria; pool the three placebo borders for the highway A8 in Baden-Württemberg and Bavaria;[26] or only consider the placebo for the A8 highway in Bavaria where the placebo-French zone is to the south of the placebo-US zone. These results indicate that the spatial discontinuity in population growth at the border between the 1945-1949 French and US occupation zones in South-West Germany is not due to the rule the US used to draw the border.

5 Economic Outcomes Across the 1945-1949 Border After WWII

5.1 Economic Outcomes in the Long Run

Table 2 contains our main results for long-run differences in productivity, wages, rents, income, and education in municipalities across the border between the 1945-1949 French and US occupation zones in South-West Germany based on equations (1) and (2). Our sensitivity analysis is in Appendix B.

Aggregate productivity Table 2, Panel A contains results for (log) aggregate productivity at the municipality level in 2007-2018. Aggregate productivity is measured as the (taxable) sales of goods and services per worker of all active firms in a municipality. The result in column (1) is based on equation (1) and shows a significant spatial discontinuity at the border between the 1945-1949 French and US occupation zones. The effect of US-zone location (0.13) implies that aggregate productivity is 13% higher on the former US than the former French side of the 1945-1949 border. Column (2) is based on equation (2) adding US-zone exposure. This yields two findings. First, US-zone exposure has a significantly positive effect on aggregate productivity. Second, once we account for

[26] We can only place one placebo border along the A8 highway in Baden-Württemberg (north of the highway) as the border south of that highway is the actual 1945-1949 border between the French and US occupation zones in South-West Germany.

municipalities' US-zone exposure, the effect of US-zone location drops by around 60% and is no longer statistically significant. Hence, when we take into account that agglomeration economies range beyond municipality borders, the former occupation zone where the municipality is located loses statistical significance as a determinant of aggregate productivity. The effect of US-zone exposure implies that a municipality surrounded by former US-zone municipalities has 27% higher productivity today than a municipality surrounded by municipalities in the former French zone. Assuming a share of intermediate inputs and services of 50% (the value for Germany in 2020 according to Statistisches Bundesamt, 2021), implies an effect for value added per worker of 13.5%.

Wages and value added in manufacturing Table 2, Panel B contains results for (log) hourly wages at the municipality level. The data comes from a representative survey covering 45% of manufacturing firms with 20+ employees between 1995 and 2012. As we want to capture wages at the municipality level and the data includes firms with establishments in multiple municipalities, we focus on firms with a single establishment.

The result in column (1) based on equation (1) shows a spatial discontinuity in hourly wages at the border between the 1945-1949 French and US occupation zones. The specification controls for 4-digit industry fixed effects and 11 firm-size group fixed effects. The effect of US-zone location indicates that hourly wages are 7.6% higher on the former US side of the border. Column (2) based on equation (2) adds US-zone exposure. The effect of US-zone location drops by around 40% and is no longer statistically significant. US-zone exposure has a significantly positive effect on wages. A municipality surrounded by municipalities on the former US side of the 1945-1949 border has 10.5% higher wages than a municipality surrounded by municipalities on the former French side.

The manufacturing survey also provides data on the value added of the firms we examined in columns (1)-(2). Columns (3)-(4) use this data to analyze differences in (log) value added per hour across the border between the 1945-1949 French and US occupation zones. The result in column (3) based on equation (1) shows a positive but statistically insignificant difference at the border. In column (4) based on equation (2), we find that US-zone exposure has a significantly positive effect on value added per hour. The magnitude of the effect of US-zone exposure indicates that a municipality surrounded by municipalities on the former US side of the border between 1945-1949 occupation zones has 26.7% higher value added per hour in manufacturing today than a municipality surrounded by municipalities on the former French side.

Rents Table 2, Panel C contains results for (log) rents. Columns (1)-(2) examine rental prices offered in 2008-2016 on ImmobilienScout24—Germany's largest rental website with a market share of about 50%—controlling for a range of property characteristics listed in Appendix A1. The result in column (1) based on equation (1) shows a significant spatial discontinuity at the border between the 1945-1949 French and US occupation

zones. The effect of US-zone location indicates that rents are 12% higher on the former US of the border. Column (2) adds US-zone exposure to the specification. US-zone location is no longer statistically significant. US-zone exposure has a significantly positive effect on rents. The estimate implies that a municipality surrounded by former US-zone municipalities has 23.2% higher rents today than a municipality surrounded by municipalities in the former French zone.

Columns (3)-(4) contain results for rental prices from the 1987 census. We focus on properties rented between 1985 and 1987, excluding social housing and controlling for a range of property characteristics listed in Appendix A1. The results are qualitatively the same as those obtained for the 2008-2016 period, but quantitatively about 1/3 smaller. Columns (5)-(6) contain results for average rental prices at the municipality level from the 1970/71 census (not adjusted for any property characteristics since no data is available at the individual property level). The effects are qualitatively similar but smaller.

Income per capita Table 2, Panel D contains results for (log) income per capita from municipality-level tax statistics. In column (1) we show that US-zone location has a small and statistically insignificant effect. However, in column (2), we find a positive and statistically significant effect of US-zone exposure on income per capita. The point estimate indicates that a municipality surrounded by municipalities in the 1945-1949 US occupation zone has 13.9% higher income per capita today than a municipality surrounded by municipalities in the French occupation zone.

Columns (3)-(4) show results for income per capita in 1980, the earliest available year with data at the municipality level after WWII. Results are qualitatively and quantitatively similar to those we obtained for the 2007-2017 period. Thus, the modern income effects across the 1945-1949 border appear to have already been in place in 1980.

Our results for income per capita today and in 1980 could potentially reflect spatial income patterns rooted in history. Columns (5)-(6) examine this possibility using income per capita from municipality-level income tax statistics for around 1900.[27] We do not observe a spatial discontinuity across what would become the border between the 1945-1949 French and US occupation zones. Nor is there a statistically significant effect of US-zone exposure. Hence, there is no evidence that our results for the period since 1980 reflect spatial income patterns rooted in history.

Education Table 2, Panel E contains results for university education at the municipality level. Columns (1)-(2) examine university education in 1999-2020. The result in column (1) shows a spatial discontinuity at the border between the 1945-1949 French and US occupation zones. The share of workers with a university education is 1.3% higher

[27]The data comes from the 1895 municipality census in Baden and the 1907 municipality census in Württemberg, the only pre-WWII income data available at the municipality or county level.

on the former US side of the border. Column (2) adds our measure of US-zone exposure. US-zone exposure has a significantly positive effect on university education. The estimate indicates that the share of workers with a university education in a municipality surrounded by former US-zone municipalities is 4.9% higher today than in a municipality surrounded by municipalities in the former French zone. The effect of US-zone location becomes smaller and is no longer statistically significant once we account for municipalities' US-zone exposure. Columns (3)-(4) contain our results for university education in 1989-1999. The results are similar to 1999-2020, but smaller. Columns (5)-(6) contain our results for the share of the population with a university education in 1970. Neither US-zone location nor US-zone exposure are statistically significant.

Summary Overall, the results in Table 2 paint a consistent picture. Our baseline specification examining the effect of location in the US occupation zone along the 1945-1949 border, yields that aggregate productivity, hourly wages in manufacturing, rents, and the share of workers with a university education are significantly higher today on the former US side of the border. Effects become stronger when we account for agglomeration economies ranging beyond municipality borders by examining the effect of exposure to the US occupation zone. In this case, we obtain positive and statistically significant effects of US-zone exposure on productivity, hourly wages, value added per hour, rents, income per capita, and university education. The effect for income per capita was already present in 1980. For rents and education, we see a gradual increase in the magnitude of the effects between 1970 and today. For university education, there is no significant effect in 1970 and the higher levels today on the former US side of the 1945-1949 border appear to only have emerged after an extended period of greater population density.

Sensitivity analysis Appendix B shows that the long-run effects on productivity, income, rents, and education are not driven by particular choices regarding the bandwidth around the border, the structure of the error terms, the functional form of the RD polynomial, or the number of boundary segment fixed effects. We also document that the relationship between US-zone exposure and income, productivity, rents, and education remains positive and significant if we additionally control for each municipality's distance to the 1945-1949 border. In this specification, we implicitly compare municipalities with the same distance to the former border and exploit variation in US-zone exposure induced by the irregular shape of the border. Finally, we vary the radius of the circle used to define our measure of US-zone exposure. We find that the magnitude of the coefficient on US-zone exposure in equation (2) follows an inverse u-shape. The largest coefficient is found for a radius around 10 km. We provide simulation evidence that an inverse u-shape with a maximum at 10 km would be expected if the true data-generating process involves spillover effects over a 10 km range.

5.2 The Channels of Agglomeration Economies

Our finding of sustained differences in population density accompanied by higher rents, higher productivity, and higher wages today is consistent with the presence of agglomeration economies. Agglomeration economies is a catch-all for the economic channels that translate higher population density into higher productivity and wages (Duranton and Puga, 2004; Rosenthal and Strange, 2004; Glaeser, 2008; Combes and Gobillon, 2015). The economic channels underlying the productivity effects of density are typically classified into sharing, matching, and learning (Duranton and Puga, 2004). We provide empirical evidence for each of these channels around the 1945-1949 occupation-zone border in South-West Germany in Table 3.

Sharing The sharing channel for agglomeration economies can refer to the common use of publicly provided goods like transport infrastructure or to gains from a greater variety or quality of privately provided intermediate inputs that involve increasing returns in production or transportation. Panel A of Table 3 first shows that the transport infrastructure has seen a more favorable development in municipalities located in the former US zone. Column (1) indicates that the travel distance from each municipality to the closest highway exit has decreased 5% more on the former US side of the 1945-1949 occupation-zone border than on the former French side. Column (2) shows that US-zone exposure also has a positive and significant effect on the change in travel distance to the closest highway exit. The remaining columns in the upper part of Panel A show the difference in travel distance in km across the border. Due to their geographic location, municipalities on the former US side of the border were on average 0.5 km closer to the highway in 1940. Today, the difference is two-and-a-half times larger. Using data on land use available from 1980 onward, the lower part of Panel A shows that municipalities in the former US zone use almost one percentage point more of their area for transportation (e.g. streets, roads, railways, airports). The effect becomes larger when we consider US-zone exposure in column (2). Panel A also examines the share of revenue that manufacturing firms spend on intermediate goods and energy inputs. We observe a significantly higher share of such inputs on the former US side of the border.

Matching The matching channel for agglomeration economies is mostly associated with a higher quality of matches in thicker labor markets. To assess this channel, we draw on the data and analysis of Dauth et al. (2022), who use German matched employer-employee data to examine the correlation between worker and establishment quality in different local labor markets. They proxy worker and establishment quality by fixed effects from a decomposition of log wages following the work of Abowd et al. (1999). For a given local labor market, they then compute the correlation coefficient between the worker and establishment fixed effects located in that market as a measure of positive

assortative matching (PAM). The authors of Dauth et al. kindly provided their data for municipalities. Column (1) in Panel B of Table 3 shows that PAM is significantly higher on the former US side of the 1945-1949 border, indicating that there are better matches formed on the side of the border where population density is higher.

The positive relationship between population density and PAM is a key finding of Dauth et al. In Table 4, we replicate their result using only the about 200 municipalities in our border region or only the 11 local labor markets in our border region.[28] Although we focus on the area around the 1945-1949 occupation border—and therefore end up which a much smaller sample—results are remarkably similar to Dauth et al.. They find that doubling population in a local labor market increases PAM by 3.8% to 6.1% depending on the time period. In Panel B, column (1), we estimate an effect of 5.3% for the 11 local labor markets in our border region. In Panel A, column (1), we find an effect of 4.2% for the about 200 municipalities in our border region. The effect increases to 6.1% in column (2) where we include the controls from our baseline model in equation (1). Column (3) indicates that the relationship between labor market thickness and PAM is driven by density, not by being located in the former US occupation zone. This motivates column (4) where we use US-zone location as an instrument for population density. Taken together, our results indicate that the increase in population density triggered by the different policies regarding refugees between the US and French occupation zones increased positive assortative matching in the labor market.

Additional differences in today's labor markets across the 1945-1949 border between the occupation zones are examined in columns (3)-(6) of Table 3. In columns (3) and (4), we find that municipalities located in the 1945-1949 US zone or exposed to it form part of larger local labor markets today. In columns (5) and (6), we show that workers residing in municipalities on the former US side of the border are less likely to commute to work in municipalities on the former French side of the border than vice-versa.

Learning The learning channel for agglomeration economies is based on the idea that density facilitates the generation and the diffusion of knowledge (Duranton and Puga, 2004). While our data does not allow us to explicitly measure the diffusion of knowledge, Panel C of Table 3 provides evidence that there are higher levels of innovation in municipalities more exposed to the 1945-1949 US occupation zone. To measure innovation in each municipality, we use geo-located data from the PatentCity database (Bergeaud

[28] Dauth et al. include more than 8,000 municipalities and more than 200 local labor markets in their analysis for Germany. Local labor markets are defined as labor market regions (*Arbeitsmarktregionen*) based on the classification of the German Labor Agency. At the municipality level, three municipalities from our border region are not included in the regression since they include less than three establishments and are therefore censored. Due to the low number of municipalities and local labor markets we pool the data across the five time periods considered in Dauth et al. and include dummy variables for each time period while Dauth et al. also consider trends in PAM.

and Verluise, 2024) and compute the number of patents and patents per capita created in each municipality.[29] Our findings indicate that since the 1980s patenting activity is almost twice as high when surrounded by municipalities in the former US zone than by municipalities in the former French zone. In per-capita terms, the gap is 60%. This marks a substantial effect of US-zone exposure on patenting activity as estimates point in the opposite direction before WWII. Because many municipalities do not create any patents over several decades, the lower part of Panel C uses an indicator for having patenting activity above the median municipality with very similar conclusions as before.

5.3 The Adjustment Process Before 1970

Municipality-level data on income per capita is only available for around the year 1900 and after 1980. The income data available between these years comes from county-level income tax statistics for the 1954-1971 period. We use this data to estimate equation (1) for the 20 counties that have at least one municipality within 15 km of the border between the 1945-1949 French and US occupation zones in South-West Germany. US-zone location now indicates counties located in the 1945-1949 US occupation zone. All relevant distances for a county are calculated based on population-weighted averages of the coordinates of municipalities in the county.

Table 5, Panel A, columns (1)-(2) contain results for annual income-per-capita growth. As can be seen in column (1), between 1900 and 1954, income growth was similar across the border between the occupation zones. However, between 1954 and 1971, income grew significantly faster on the former US side of the border as can be seen in column (2). The difference in 1954-1971 annual income-per-capita growth between the former US and French side of the border is 1.1%. Over the 1954-1971 period, this implies 18 percent higher income per capita on the former US side, about the same magnitude as the effect we obtain at the municipality level in 1980 (Table 2, Panel D).[30]

Table 5, Panel B, examines growth using county-level GDP (and GDP proxies based on value-added taxes following Peters, 2022). In column (1), we find that annual GDP-per-capita growth was similar across the border between 1935 and 1950. However, between 1957 and 1970, annual growth on the former US side of the border is 1% higher as can be seen in column (2).[31]

[29] For each municipality, we aggregate the number of patents within a decade. We then pool multiple decades as indicated in the column headers and include decade fixed effects in the regressions. We deviate from our usual strategy of pooling yearly data because for most municipalities patent creation is a rare event, particularly in the earlier time periods.

[30] In column (3), we consider (log) differences in income per capita in 1954 across the border between the 1945-1949 French and US occupation zones. The point estimate is small and statistically insignificant. Unsurprisingly, standard errors are large.

[31] In column (3), we consider (log) differences in GDP per capita in 1950 across the 1945-1949 border.

Panels A and B indicate that the US side of the 1945-1949 border only started growing faster after 1950. Until the early 1950s there was no growth differential across the border.

Table 5, Panel C uses municipality-level population statistics to provide additional evidence that the US occupation zone was not a more attractive place to live just after the occupation period. In column (1) we look at population adjustments across the border between the 1945-1949 French and US occupation zones just after the occupation period.[32] The result in column (1) indicates that between 1949 and 1951, the population grew about 5% more slowly on the former US side of the 1945-1949 border. We see this as consistent with the idea that due to the arrival of refugees in the US zone, housing conditions were relatively crowded compared to the French zone at the end of the occupation period and this disadvantage was not (yet) compensated for by higher incomes. In Panel C, column (2), we examine population growth between 1950 and 1960. Growth was similar across the former occupation-zone border. We see this as evidence that living conditions were improving at a similar pace. In column (3) we analyze the settlement of refugees from East Germany—founded in 1949 in the Soviet occupation zone—along the 1945-1949 occupation-zone border.[33] In contrast to what would be expected if the former US occupation zone was a more attractive place to live than the former French zone, there is no spatial discontinuity in refugee settlement in 1960.

Table 5, Panel D examines changes in the employment share of manufacturing in manufacturing & agriculture. Column (1) looks at the period from before WWII to 1950. Manufacturing grew faster on the US side of the 1945-1949 border. This is consistent with the observation by historians that few refugees ended up in agriculture, even among those who worked in agriculture before WWII (Grosser, 2006). However, as can be seen in column (2), in the 1950s it was the former French side that experienced faster manufacturing growth.[34] This stands in contrast to what would be expected if by the end of the occupation period, the French zone had become a less efficient place for manufacturing than the US zone. Column (3) shows that between 1960 and 1970, the difference in manufacturing growth across the former border is statistically insignificant.

The adjustment processes up to 1970 indicate a gradual build-up starting after 1950 of today's economic differences across the border between the 1945-1949 French and US

The point estimate is small and statistically insignificant (as in Panel A, standard errors are large).

[32]We combine population in 1950 with data on the average annual change in population between the start of 1949 and the end of 1951 (Statistisches Landesamt Baden-Württemberg, 1952) in order to compute a proxy for population growth between 1949 and 1951.As we know only the average annual change in population of municipalities between the start of 1949 and the end of 1951 (not the value for each year) and population levels in 1950, we cannot calculate exact population growth between the start of 1949 and the end of 1951.

[33]The official name of East Germany was German Democratic Republic. Estimates of the total number of refugees from East to West Germany vary between 3.1 and 3.6 millions (Benz, 1999).

[34]The results do not change when we control for industry dismantling, see Appendix Table C3.

occupation zones in South-West Germany. There is no evidence that economic conditions were better in the US occupation zone at the end of the post-WWII occupation period.

6 Alternative Explanations

Our analysis in Section 4.2 and Figure 3 indicates that before WWII, municipalities on opposite sides of the border between the 1945-1949 French and US occupation zones in South-West Germany had similar socio-economic characteristics. Moreover, the border did not coincide with a national or state border before WWII, and municipalities along the border have been part of West Germany since 1949 and the same state since 1952. Our examination of potential alternative explanations for today's economic differences across the occupation-zone border therefore focuses on the potential legacy of differences that might have emerged during the 1945-1949 period of French and US occupation.

As described in Section 2, the three Western occupying powers coordinated on a range of policies and jointly implemented the central economic reforms of 1948. Moreover, Appendix Table C4 shows that the aid provided by the European Recovery Program (Marshall Plan) was divided roughly equally across the former occupation zones on a per-capita basis. Nevertheless, in addition to the differences in dealing with WWII refugees there were other areas where policy in the French and US occupation zones diverged. We examine whether these differences might play a role for today's economic differences across the border between the occupation zones in South-West Germany.

Industry dismantling According to historical accounts, the main difference between the policies in the 1945-1949 French occupation zone and the US occupation zone (or the British-US Bizone since 1947) regarded the dismantling of industry structures around the end of the occupation period (e.g., Pünder, 1966, p. 246). To examine the extent and any long-run effects of industry dismantling, we link detailed digitized lists of dismantled establishments (Reichelt, 1947; Harmssen, 1951) to the municipality level. Table 6, Panel A shows results for the share of dismantled establishments along the 1945-1949 border using equations (1)-(2). The effect of US-zone location in column (1) implies that the share of dismantled establishments was 0.11 percentage points lower on the US than the French side of the border. This effect is statistically significant, confirming that—even very close to the 1945-1949 border—there were fewer dismantled establishments in the US zone than the French zone. In column (2), we include US-zone exposure. We find no statistically significant effect of US-zone exposure on industry dismantling. This stands in contrast to the significantly positive effect of US-zone exposure on income, productivity, rents, wages, value added, and education in Table 2. We see this as a first piece of evidence that industry dismantling cannot explain the economic patterns today along the 1945-1949 border. Moreover, we examine the long-run economic effects of industry

dismantling by including the share of dismantled establishment at the municipality level as a control variable in the regressions of Table 2. Our results remain unchanged and the control for industry dismantling is mostly statistically insignificant (see Appendix B).

Our finding that industry dismantling cannot account for the economic differences we see today is in line with the quantitative literature in economic history. Manz (1968) documents a small impact of industry dismantling on the aggregate capital stock in 1948 in the French occupation zone and in what became West Germany. Ritschl (1985) observes that in the summer of 1949, total industrial production in the former British-US Bizone was only a few percentage points closer to its 1936 level than in the former French occupation zone.[35] Moreover, our results in Table 5 indicate that counties across the border between the 1945-1949 French and US occupation zones in South-West Germany had similar income per capita in the years after the occupation period.

Military bases after 1949 Another potential explanation for today's economic differences along the border between the 1945-1949 French and US occupation zones in South-West Germany is the prolonged presence of Allied military bases after the occupation period. To examine this possibility we construct an indicator that captures whether a municipality hosted a French or US military base following the 1945-1949 occupation period. In Table 6, Panel A, columns (3)-(4), we see no statistically significant link between the prolonged presence of Allied military bases and US-zone location or exposure.

Trade and hours worked The 1945-1949 French and US occupation in South-West Germany might have sparked persistent economic effects through the export orientation of firms. Specifically, firms in the former US occupation zone might be more export oriented than those in the former French occupation zone, or more oriented towards trade with the US. Table 6, Panel B, columns (1)-(4) examine this possibility using detailed export data for the manufacturing firms in Table 2. There is no statistically significant effect of US-zone location on export revenues today, whether we look at the ratio of export revenues to total revenues or the ratio of non-EU export revenues to total revenues. Nor is there a statistically significant link between overall exports or non-EU exports and US-zone exposure. Another potential explanation for today's better economic performance on the US side of the 1945-1949 border could be that employees work more hours on average.

[35] We reproduce the figure for industrial production in Ritschl (1985) in the left part of Appendix Figure C4. In July 1949, the Bizone is only a few percentage points closer to industrial production levels in 1936 than the French occupation zone. The figure on the right makes an (imperfect) adjustment for differences in the number of workers using data on employment in industry and handicrafts from Vonyó (2018). This adjustment is potentially important because the arrival of refugees in the 1945-1949 US occupation zone led to faster employment growth in the US than in the French occupation zone. The adjustment is imperfect since pre-WWII employment in Vonyó (2018) is for 1939 and post-WWII employment is for 1950, while the corresponding production data is for 1936 and 1949 respectively. The right part of Appendix Figure C4 shows that, after the employment adjustments, it is the French zone that is a few percentage points closer to its 1936 level than the Bizone.

However, in Panel B, columns (5)-(6) we actually find somewhat lower hours worked on the former US than the former French side of the border.

Headquarters and establishment/firm size We also examine whether manufacturing establishments on the former US side of the 1945-1949 occupation-zone border in South-West Germany are more likely to be located in the same municipality as their firm's headquarters. The data comes from the firm-level survey already used in Table 2. Table 6, Panel C, columns (1)-(2) indicate that there is no statistically significant difference in establishment-headquarter co-location at the 1945-1949 border. In Panel C, columns (3)-(6) we look at the size of all establishments and firms in municipalities across the 1945-1949 border. Again, there are no statistically significant differences at the border. We also find that there is no statistically significant link between establishment-headquarter co-location or firm/establishments size and US-zone exposure.

Language preferences We consider the broader cultural legacy of French and US occupation by examining today's preferences for learning English or French in school. Our analysis is based on the 2005-2019 share of students who chose English rather than French as their first foreign language in secondary schools along the 1945-1949 occupation-zone border in Baden-Württemberg. Table 6, Panel D, shows no statistically significant differences at the border. We also use information on advanced English and advanced French courses in upper secondary school. These courses provide advanced teaching of the language, the literature and the history of, respectively, English- and French-speaking countries. Again, we do not find a significant difference at the border. We also fail to find a statistically significant link between the preference for English versus French courses in (upper) secondary school and US-zone exposure.

Taxes at the municipality level The three Western powers adopted the same tax policies throughout the 1945-1949 occupation period (Franzen, 1994).[36] This was also true for the laws governing municipal taxation, which were not changed during occupation. As a consequence, municipalities in the Western occupation zones continued to set their own tax rates on businesses and on agricultural and non-agricultural land. This is still the case today. It is therefore possible that differences between the French and US occupation zones have persistent economic effects through municipal tax rates. We examine this possibility using data on business tax rates and tax rates on land in 1950, 1960, and 1970 for municipalities along the 1945-1949 border.[37] For business tax rates, we never find any statistically significant differences across the 1945-1949 border, see Appendix Table C5. For tax rates on land, we find that these were lower on the former US than the

[36]There were some differences in new, minor taxes introduced by the state legislatures in the three Western occupation zones, see Franzen (1994).

[37]These tax rates are customarily expressed as multiples of a state-wide base rate.

former French side of the border in 1950. However, in 1960, there were no longer any statistically significant differences, and in 1970, the tax rate on non-agricultural land was actually somewhat higher on the former US side of the 1945-1949 border.

Health and education Differences in social or economic policies between the 1945-1949 French and US occupation zones might have persistent economic effects through the health or education of those born during the occupation period. An example of such a policy difference that could have triggered long-lasting effects is the size of official food rations, which was smaller in the French occupation zone in 1946 and 1947.[38] We examine the possibility that differences across occupation zones affected long-run health outcomes using the German Socio-Economic Panel (SOEP). We consider differences in body weight, body height, physical health, and mental health between individuals born during the occupation period (1945-1949) and those born afterwards (1950-1954), and examine whether the magnitude of the difference depends on whether individuals were born in the 1945-1949 French or US occupation zone.[39] Table 7, Panel A, shows that there are no significant differences between individuals born in the 1945-1949 French and US occupation zones. The SOEP also allows us to compare the educational attainment of those born or educated during and after the 1945-1949 occupation period. Again, there are no significant differences across occupation zones, see Table 7, Panel A.[40]

Attitudes and norms The 1945-1949 French and US occupation might have led to persistent differences in attitudes and norms. We examine this possibility using individual responses to questions related to attitudes and norms in the SOEP. Table 7, Panel B shows our estimates based on the sample of individuals who at the time of the survey had lived in Baden-Württemberg for at least five years. We find no statistically significant differences in general interest in politics or the leaning towards a specific party between the 1945-1949 French and US occupation zones. In a few survey waves, the SOEP also asks individuals whether there is a union (work council) that represents workers in the establishment where they are employed. There is no significant difference between the 1945-1949 occupation zones. Another SOEP question of interest concerns the extent to

[38] We reproduce the available data in Figure C5. Note that this data represents official food rations, not the amount of food that was available to the population. The evidence in Kesternich et al. (2015) suggests that this distinction matters. Using the Survey of Health, Ageing and Retirement in Europe (SHARE), they find no significant difference in self-reported hunger between the 1945-1949 French and US occupation zones, whether or not they control for the official caloric intake. A potential explanation is that the actual availability of food depended on local agricultural conditions. In this case, the availability of food might not differ significantly in narrowly defined local areas, such as the one we focus on here.

[39] To ensure a large enough sample in the relevant age ranges we look at French and US occupation zones in Baden-Württemberg and three bordering states—Bavaria, Hesse, and Rhineland-Palatine.

[40] Moreover, in Table 2, we found no spatial discontinuity in university education in 1970 at the border between the 1945-1949 French and US occupation zones in South-West Germany. In Appendix Table C2, we show that there also was no spatial discontinuity in 1970 in the population share with an upper-secondary school degree or a vocational school degree.

which individuals are willing to take risks. Again, there is no significant difference between the 1945-1949 occupation zones. Finally, answers do not differ significantly between the 1945-1949 French and US occupation zones when individuals are asked whether the most important policy objective should be protecting the right to free speech; fighting against inflation; increasing citizen influence on government decisions; or maintaining peace and order in the country.

Summary Although we look at a very broad range of relevant outcomes, we find no empirical evidence for potential alternative explanations for today's economic differences along the border between the 1945-1949 French and US occupation zones. Economic differences cannot be explained by industry dismantling during the occupation period or the prolonged presence of military bases. There is no difference in the location of headquarters or the size of establishments and firms. Trade volumes and trade patterns today do not differ along the former border and hours worked are actually somewhat lower on the former US side of the border. The first foreign language chosen in secondary school doesn't point to a lasting broader cultural legacy of French and US occupation nor does the data on attitudes and norms.

7 Conclusion

While the US occupation zone in post-WWII Germany admitted refugees, the French zone restricted immigration. The consequence for refugee settlements can be seen clearly comparing municipalities in a narrow band around the border between the two occupation zones in South-West Germany. In 1950, one year after the occupation zones were dissolved, the ratio of refugees to non-refugees was 18 percentage points higher on the former US side of the border. This is not too surprising. After the war, because of the large inflow of refugees and extensive war destruction in cities, refugees searched for housing throughout the occupation zones that admitted them.

As a result of the inflow of refugees, population density on the US side rose above the French side of the South-West German occupation-zone border. Never before had there been a significant difference in density. The differential in population density persists to 2020, more than 70 years after the occupation zones were dissolved. The higher population density today on the former US side of the border coincides with higher productivity, wages, and rents. We argue that these economic differences reflect agglomeration effects driven by the higher population density where refugees had been allowed settle. We provide evidence on the type of agglomeration effects involved; show that effects spill across neighboring municipalities; and document a gradual built up of economic differences after the occupation zones were dissolved. In contrast, although we look very broadly, we find no empirical evidence for potential alternative explanations.

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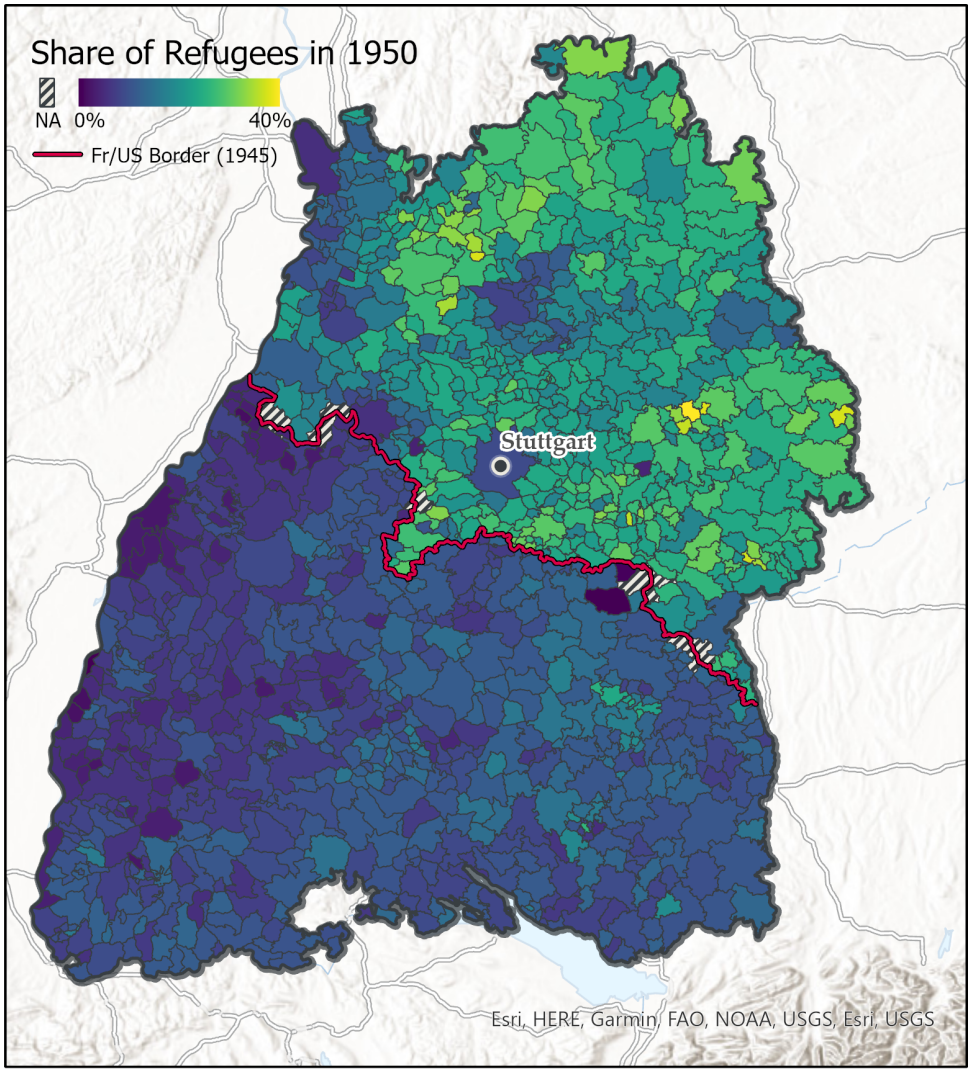
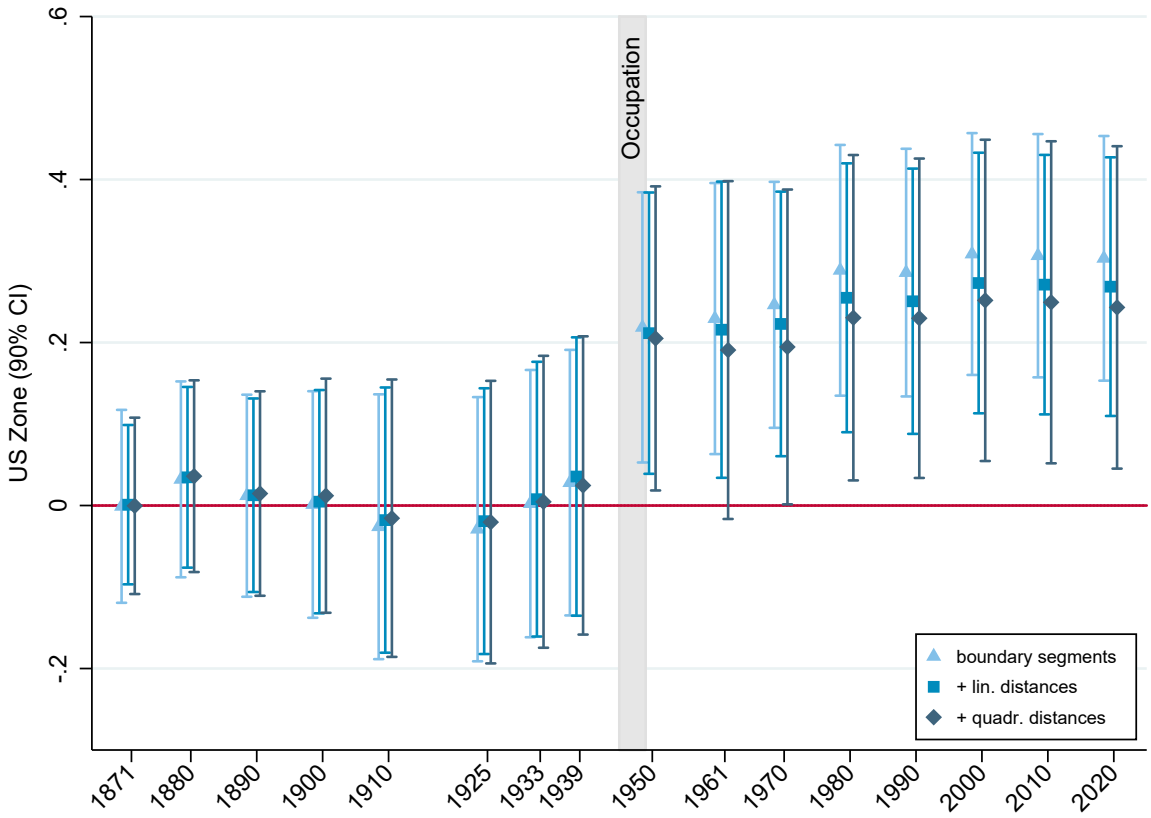
Figure 1: Population Share of WWII Refugees in 1950



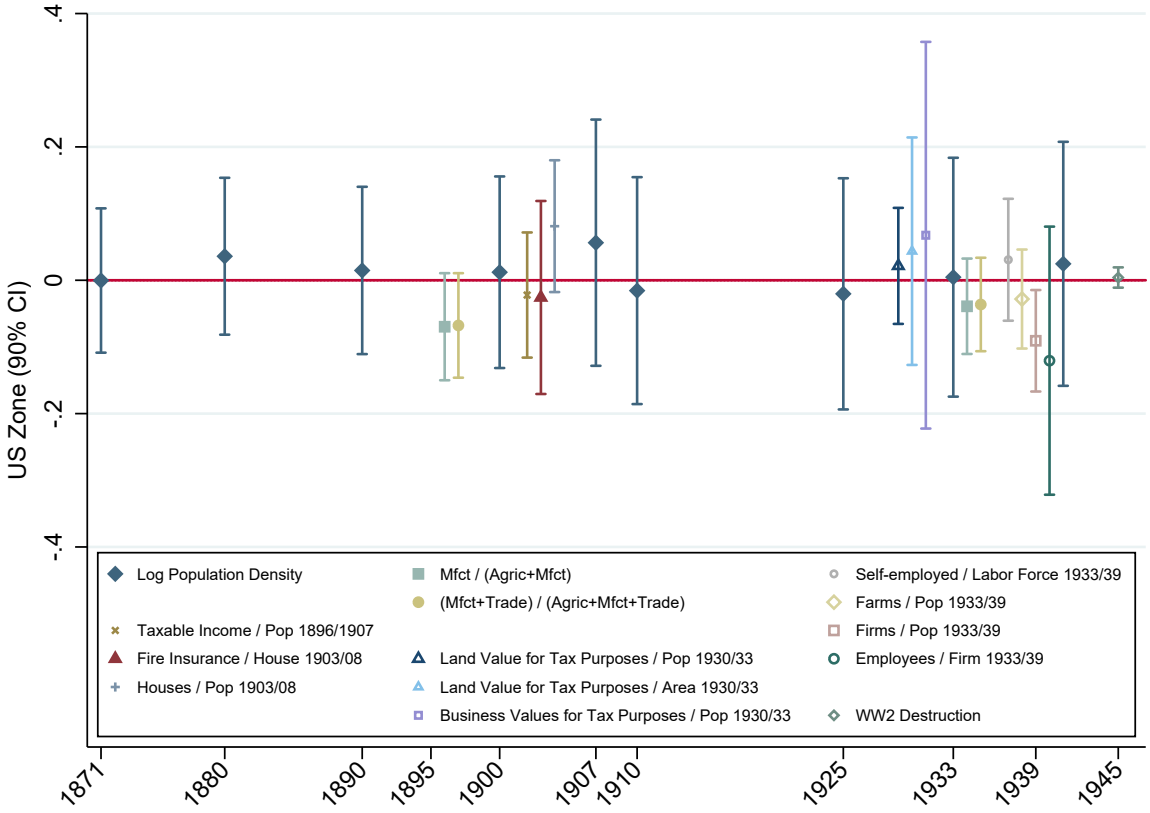
Notes: The map shows the population share of refugees in 1950 at the municipality level for Baden-Württemberg. Refugees are defined as individuals who in 1939 (i) resided in the territories of pre-WWII Germany to the east of the four post-WWII occupation zones or (ii) resided outside of pre-WWII Germany and were native German speakers. The red line indicates the border between the 1945-1949 French and US occupation zones. The data is aggregated at the level of modern municipalities. The six municipalities marked with stripes subsume historical municipalities that before the territorial reform of the early 1970s were on different sides of the 1945-1949 occupation-zone border. We exclude these municipalities from our empirical analysis.

Figure 2: Population Density from 1871 to 2020



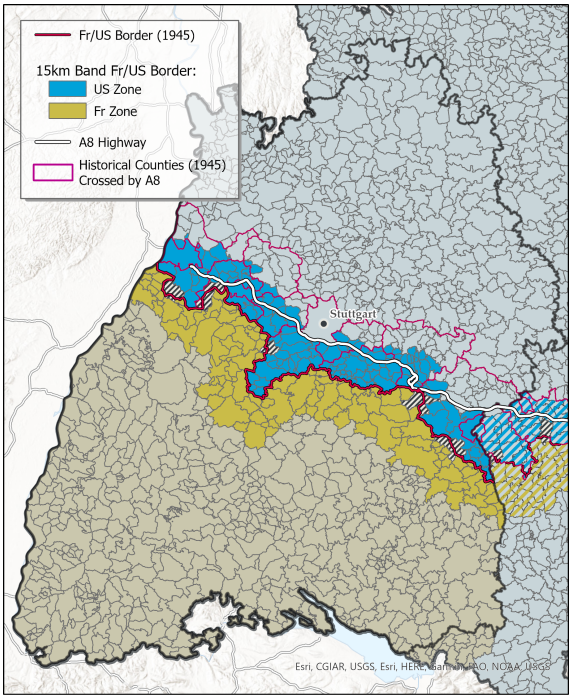
Notes: The figure shows regression coefficients for the difference in population density across the border between the 1945-1949 French and US occupation zones and corresponding 90% confidence intervals. The analysis includes municipalities within 15 km from the 1945-1949 occupation-zone border. Confidence intervals are based on Conley (1999) standard errors with a Bartlett kernel and a cutoff value of 25 km. Results are from separate regressions for years between 1871 and 2020. All regressions are local linear regressions controlling for longitude and latitude and fixed effects for five boundary segments. The estimates marked in light blue additionally control for linear distance to Stuttgart and the closest highway exit. The estimates marked in dark blue control for linear and quadratic distance to Stuttgart and to the closest highway exit—our baseline specification for all following results.

Figure 3: Economic Characteristics Before WWII

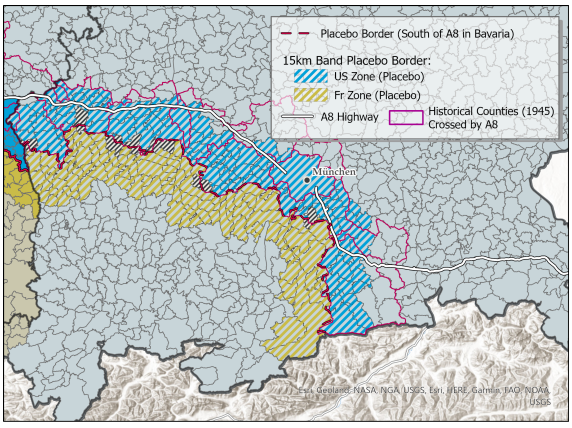


Notes: The figure shows regression coefficients for the difference in pre-WWII characteristics across what would become the border between the 1945-1949 French and US occupation zones and corresponding 90% confidence intervals. Confidence intervals are based on Conley (1999) standard errors with a Bartlett kernel and a cutoff value of 25 km. The analysis includes municipalities within 15 km from the 1945-1949 occupation-zone border. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects.

Figure 4: The 1945-1949 Border in Baden-Württemberg, the A8 Highway, and a Placebo in Bavaria



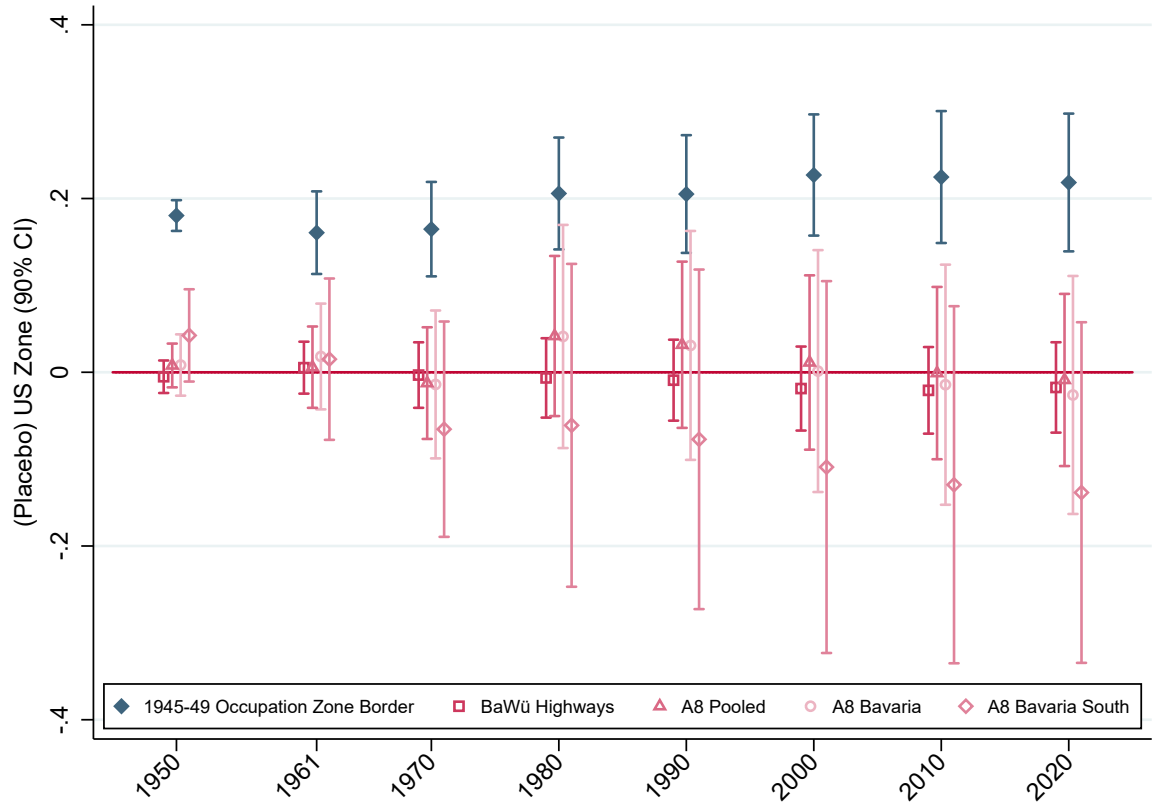
(a) Baden-Württemberg



(b) Bavaria

Notes: Figure (a) shows a map of the state of Baden-Württemberg and highlights municipalities within 15 km of the border between the 1945-1949 French and US occupation zones. The map also shows the location of the A8 highway that determined where the 1945-1949 border was placed. The exact shape of the 1945-1949 border was determined by the shape of the borders of the historical counties crossed by the A8 highway. We therefore also show the borders of all historical counties crossed by the A8 highway. Figure (b) displays municipalities, historical county borders, and the A8 highway in the neighboring state of Bavaria. This state was part of the 1945-1949 US occupation zone (with the exception of one county, far off the A8 highway). To examine today's economic effects across the 1945-1949 occupation-zone border in Baden-Württemberg using a placebo strategy, we construct placebo borders along the Bavarian segment of the A8 highway. These placebo borders are drawn by replicating the rule the US employed to determine its 1945-1949 occupation-zone border within Baden-Württemberg (i.e., all historical counties crossed by the A8 highway should be in the US occupation zone). The figure illustrates the placebo border and municipalities within 15 km of the placebo border in the case where we place the placebo-French occupation zone to the south of the placebo-US occupation zone. We also examine the case where the placebo-French occupation zone is placed to the north of the placebo-US occupation zone and analogous placebo borders along highways in Baden-Württemberg.

Figure 5: Population Growth Across the 1945-1949 Border and Across Placebo Borders



Notes: The figure shows regression coefficients for the difference in population growth since 1939 across the border between the 1945-1949 French and US occupation zones in blue. Results are for population growth up to different years between 1950 and 2020. The analysis includes municipalities within 15 km from the 1945-1949 occupation-zone border. Equivalent regression coefficients across placebo borders along highways in Baden-Württemberg and Bavaria are shown in different shades of red. Placebo borders are drawn by replicating the rule the US employed to determine its 1945-1949 occupation-zone border within Baden-Württemberg. The 90% confidence intervals are based on Conley (1999) standard errors with a Bartlett kernel and a cutoff value of 25 km. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to either Stuttgart in Baden-Württemberg or to Munich in Bavaria, quadratic polynomials in distance to the closest highway exit, and five boundary segment fixed effects.

Table 1: Refugees in 1950 Across the 1945-1949 Border

	(1)	(2)	(3)	(4)
	Refugees / Pop		Refugees / non-Refugees	
US-zone Location	0.126***	0.122***	0.181***	0.176***
	(0.009)	(0.012)	(0.014)	(0.019)
US-zone Exposure (10km)		0.016		0.017
		(0.024)		(0.037)
Observations	217	217	217	217

Notes: The table shows regression results for the population share of refugees in 1950 and the ratio of refugees to non-refugees at the municipality level. Refugees are defined as individuals who in 1939 (i) resided in the territories of pre-WWII Germany to the east of the four post-WWII occupation zones or (ii) resided outside of pre-WWII Germany and were native German speakers. The analysis includes municipalities within 15 km from the 1945-1949 occupation-zone border. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. Standard errors are Conley standard errors with a Bartlett kernel and a cutoff value of 25 km. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table 2: Economic Outcomes in the Long Run, the Medium Run, and Prior to WWII

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Aggregate Productivity						
	2007-2018					
US-zone Location	0.130**	0.053				
	(0.057)	(0.065)				
US-zone Exposure (10km)		0.270*				
		(0.148)				
Observations	2,558	2,558				
Panel B: Hourly Wages and Value Added in Manufacturing						
	Hourly Wages 1995-2012		Value Added / hr. 1995-2012			
US-zone Location	0.076**	0.045	0.074	-0.006		
	(0.034)	(0.037)	(0.052)	(0.064)		
US-zone Exposure (10km)		0.105**		0.267***		
		(0.054)		(0.098)		
Observations	3,415	3,415	3,402	3,402		
Panel C: Rents						
	2008-16		1987		1970	
US-zone Location	0.120***	0.011	0.080***	0.011	0.056*	0.031
	(0.026)	(0.027)	(0.015)	(0.026)	(0.032)	(0.036)
US-zone Exposure (10km)		0.232***		0.155***		0.087
		(0.057)		(0.042)		(0.062)
Observations	314,765	314,765	255,969	255,969	215	215
Panel D: Income per Capita						
	2007-2017		1980		1895/1906	
US-zone Location	0.014	-0.025	-0.000	-0.048	-0.022	-0.000
	(0.018)	(0.023)	(0.032)	(0.032)	(0.057)	(0.063)
US-zone Exposure (10km)		0.139***		0.170***		-0.071
		(0.046)		(0.054)		(0.111)
Observations	1,519	1,519	217	217	217	217
Panel E: University Education						
	1999-2020		1989-1998		1970	
US-zone Location	0.013**	-0.001	0.006*	-0.004	-0.006	-0.012
	(0.006)	(0.006)	(0.004)	(0.004)	(0.007)	(0.009)
US-zone Exposure (10km)		0.049***		0.036***		0.021
		(0.012)		(0.008)		(0.014)
Observations	4,786	4,786	2,180	2,180	218	218

Notes: The table shows regression results for productivity, hourly wages and value added in manufacturing, rents, income, and education. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. The analysis includes municipalities within 15 km from the 1945-1949 occupation-zone border. Standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively. Regressions that pool multiple years include year fixed effects. Regressions for rents in Panel C control for property characteristics. Rents from ImmobilienScout24 are offered rents, rents from the census 1987 are self-reported rents for properties rented after 1985, and rents in 1970 are average self-reported rents at the municipality level. Panel E shows results from the sample of all one-establishment firms in the manufacturing sector surveyed in the cost structure survey from 1995 to 2012. We control for dummies for 11 firm size groups and fixed effects for 4-digit industries.

Table 3: Agglomeration Mechanisms Across the 1945-1949 Border

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Sharing						
	Road Distance to Nearest Highway Exit in km					
	Δ % 1940-2015		1940		2015	
US-zone Location	-0.054*	-0.011	-0.58	-1.14*	-1.55***	-1.52***
	(0.030)	(0.034)	(0.507)	(0.395)	(0.534)	(0.289)
US-zone Exposure (10km)		-0.151**		1.99*		-0.115
		(0.066)		(1.812)		(1.118)
Observations	217	217	217	217	218	218
	Land use		Intermediate input use			
	Transport Infrastructure 1980-2021		Intermediate Goods / Revenue		(Intermediate Goods + Energy) / Revenue	
US-zone Location	0.008**	0.003	0.034**	0.040**	0.035**	0.041***
	(0.003)	(0.004)	(0.014)	(0.016)	(0.014)	(0.016)
US-zone Exposure (10km)		0.019**		-0.021		-0.020
		(0.010)		(0.262)		(0.026)
Observations	5,856	5,856	3,866	3,866	3,866	3,866
Panel B: Labor Market Matching						
	Positive Assortative Matching (1985-2014)		Size of LLM (1985-2014) Log Employment		Commuters to Other Zone (2021)	
US-zone Location	0.0452**	0.0414	1.78***	1.46***	-0.102***	-0.111***
	(0.0227)	(0.0290)	(0.375)	(0.375)	(0.031)	(0.042)
US-zone Exposure (10km)		0.0134		1.13**		0.033
		(0.0560)		(0.457)		(0.051)
Observations	1070	1070	1070	1070	217	217
Panel C: Patents						
	Log Patents					
	1980-2019		1950-1979		1871-1939	
US-zone Location	0.053	-0.247	0.022	0.029	-0.067	0.320
	(0.220)	(0.273)	(0.287)	(0.361)	(0.208)	(0.274)
US-zone Exposure (10km)		0.946*		-0.205		-1.150*
		(0.522)		(0.648)		(0.669)
Observations	809	809	479	479	397	397
	Log Patents per Capita					
	1980-2019		1950-1979		1871-1939	
US-zone Location	-0.039	-0.224	0.040	0.291	-0.063	0.077
	(0.119)	(0.151)	(0.219)	(0.321)	(0.155)	(0.201)
US-zone Exposure (10km)		0.584**		-0.747		-0.422
		(0.273)		(0.504)		(0.401)
Observations	809	809	479	479	397	397
	Patents per Capita Above Median					
	1980-2019		1950-1979		1871-1939	
US-zone Location	0.022	-0.080	-0.040	-0.002	-0.051	-0.026
	(0.058)	(0.082)	(0.082)	(0.099)	(0.051)	(0.064)
US-zone Exposure (10km)		0.334**		-0.122		-0.080
		(0.151)		(0.180)		(0.119)
Observations	856	856	642	642	1498	1498

Notes: This table provides evidence on agglomeration mechanisms. In Panel A, we examine transport infrastructure and intermediate inputs. First, we consider the change in the road distance to the closest A8 highway exit between 1940 and 2015. 2015 distance is measured using openstreetmap and 1940 distance using US army maps. Second, we consider the share of each municipality's area used for transport infrastructure like streets, roads, railways, and airports. Third, we use manufacturing establishment-level data to examine the revenue share of intermediate goods and energy inputs. In Panel B, we consider the correlation coefficient at the municipality level between estimated worker fixed effects and establishment fixed effects (residualized using industry dummies) obtained from AKM wage decompositions by Dauth et al. (2022) as a measure of positive assortative matching in the labor market. We further examine the size of the local labor market (*Arbeitsmarktregion*) each municipality is part of. Finally, we use 2021 commuter statistics to examine the share of workers who live in a municipality but work in a municipality on the other side of the former occupation-zone border. In Panel C, we use the PatentCity data (Bergeaud and Verluise, 2024). For each municipality, we aggregate all patents created within a decade. We then pool several decades as indicated in the column headers and include decade fixed effects in our main regressions. The upper part of Panel C considers the log number of patents per decade in each municipality, the middle part considers the log number of patents per capita, and the lower part considers a dummy that is equal one if a municipality created more patents than the median municipality in our border region. Standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table 4: Positive Assortative Matching - Details

	(1)	(2)	(3)	(4)
Panel A: Municipalities				
	Dauth et al.	+ Controls	+ US Dummy	IV
Population Density	0.0421***	0.0609***	0.0563***	0.1490**
	(0.0072)	(0.0171)	(0.0172)	(0.0572)
US-zone Location			0.0281	
			(0.0220)	
Observations	1075	1070	1070	1070
First Stage F-Stat				51.46
Panel B: Local Labor Markets				
	Dauth et al.			IV
Population Density	0.0525***		0.0150	0.0802***
	(0.0191)		(0.0361)	(0.0166)
US-zone Exposure		0.0716***	0.0583	
of Local Labor Market		(0.0271)	(0.0495)	
Observations	55	55	55	55
First Stage F-Stat				74.67

Notes: This table replicates and extends the headline result of Dauth et al. (2022) for the municipalities in our border region. Panel A considers the correlation coefficient between estimated worker fixed effects and establishment fixed effects (residualized using industry dummies) obtained from AKM wage decompositions by Dauth et al. at the municipality level as a measure of positive assortative matching (PAM) in the labor market. Column (1) regresses PAM on population density. We pool the data across the five different time periods reported in Dauth et al. (overlapping seven-year intervals ranging from 1985 to 2014) and include dummies for each period. Column (2) adds the controls, weights, and standard error specification of our baseline specification in equation (1). Column (3) adds the dummy for US-zone location. Finally, column (4) uses the US-zone location dummy as an instrumental variable for population density at the municipality level. Panel B considers PAM at the level of 11 local labor markets (LLMs or *Arbeitsmarktregionen*) in our border region, corresponding to the main level of analysis in Dauth et al.. Again, column (1) regresses PAM on population density. Column (2) regresses PAM on US-zone exposure at the LLM-level, i.e., the share of the 1939 population in the LLM that was located in the former US occupation zone. Column (3) uses both measures. Finally, column (4) uses US-zone exposure as an instrumental variable for population density at the LLM level. Note that the regressions at the LLM level do not use further control variables (as in Dauth et al.). *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table 5: Adjustments Across the 1945-1949 Border before 1971

	(1)	(2)	(3)
Panel A: Income per Capita			
	Annual Growth		Level
	1900-1954	1954-1971	1954
US-zone Location	0.001	0.011**	-0.001
	(0.002)	(0.004)	(0.193)
Observations	20	20	20
Panel B: GDP per Capita			
	Annual Growth		Level
	1935-1950	1957-1970	1950
US-zone Location	0.001	0.010*	0.009
	(0.028)	(0.006)	(0.400)
Observations	20	20	20
Panel C: Population			
	Gain 1949-1950	Annual Growth 1950-1960	Refugees from SZ 1960
US-zone Location	-0.048***	-0.002	-0.001
	(0.008)	(0.003)	(0.004)
Observations	216	217	217
Panel D: Manufacturing Share			
	Annual Growth		
	1933/39-1950	1950-1960	1960-1970
US-zone Location	0.005***	-0.003***	0.002
	(0.001)	(0.001)	(0.002)
Observations	217	217	217

Notes: Regressions in Panels A and B are at the county level. The sample consists of all counties with at least one municipality within 15 km of the border between the 1945-1949 French and US occupation zones in South-West Germany. The income data comes from tax statistics. In 1935 and 1950, GDP is approximated by total revenue subject to value-added tax. GDP in 1957 and 1970 comes from regional GDP accounts published by the German Statistical Offices. Growth regressions measure the difference in annual log growth of the outcome across the border, level regressions measure the log difference across the border. Regressions in Panels C and D are at the municipality level. The sample includes municipalities within 15 km of the 1945-1949 occupation-zone border. Panel C examines a proxy for 1949-1951 population growth, population growth from 1950 to 1960, and the population share of refugees from East Germany (1945-1949 Soviet occupation zone) in 1960. These refugees started arriving in West Germany in the 1950s. Panel D examines changes in the share of manufacturing employment in manufacturing & agriculture. All regressions are local linear regressions on the county level controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, five boundary segment fixed effects. Standard errors are Conley standard errors with a Bartlett kernel and a cutoff value of 25 km. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table 6: Additional Outcomes Across the 1945-1949 Border

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Industry Dismantling and Military Bases						
	Share Dismantled Establishments		Military Base Indicator			
US-zone Location	-0.0011**	-0.0014***	0.005	0.046		
	(0.00058)	(0.00054)	(0.023)	(0.033)		
US-zone Exposure (10km)		0.0010		-0.143		
		(0.00078)		(0.094)		
Observations	218	218	218	218		
Panel B: Exports and Working Hours in Manufacturing						
	Internat. Revenue / Revenue		Non-EU Revenue / Revenue		Working Hours per Worker	
US-zone Location	-0.013	-0.016	-0.006	-0.004	-0.053**	-0.042
	(0.021)	(0.024)	(0.015)	(0.015)	(0.025)	(0.026)
US-zone Exposure (10km)		0.010		-0.008		-0.038
		(0.032)		(0.021)		(0.036)
Observations	3,840	3,840	1,468	1,468	3,415	3,415
Panel C: Headquarters in Manufacturing and Firm Size						
	Headquarter in same Municipality		Workers / Firm		Workers / Plant	
US-zone Location	0.025	-0.031	-0.148	-0.134	-0.078	-0.045
	(0.103)	(0.130)	(0.119)	(0.138)	(0.106)	(0.130)
US-zone Exposure (10km)		0.162		-0.047		-0.118
		(0.187)		(0.262)		(0.233)
Observations	6,119	6,119	2,563	2,563	2,559	2,559
Panel D: English in Secondary School						
	English as First Foreign Language		English as Advanced Course			
US-zone Location	-0.006	0.001	-0.006	-0.006		
	(0.006)	(0.005)	(0.016)	(0.022)		
US-zone Exposure (10km)		-0.016		0.000		
		(0.015)		(0.028)		
Observations	1,933	1,933	690	690		

Notes: Panel A examines the share of all (non-agricultural) establishments that were dismantled and an indicator if the municipality continued to host a military base after the occupation period. Panel B examines the share of international revenue in total revenue and the share of revenue from non-EU countries in total revenue for the manufacturing firms in Table 2 and working hours per worker in the manufacturing sector. Panel C examines an indicator for whether the firm headquarters of a manufacturing establishment is located in the same municipality, the log of the size of establishments in the municipality, and the size of firms registered in the municipality. Panel D examines the share of students in secondary school who take English rather than French as their first foreign language, and the share of students who elect advanced English rather than advanced French in upper-secondary school. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. The analysis includes municipalities within 15 km of the 1945-1949 occupation-zone border. Regressions that pool multiple years include year fixed effects. Standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table 7: Individual-Level Characteristics from the German Socio-Economic Panel

	(1)	(2)	(3)	(4)	(5)
Panel A: Health and Education					
	Body Height	Body Weight	Mental Health	Physical Health	Years of Education
Occupation Period	-0.000	0.009	0.027	0.006	0.006
	(0.004)	(0.021)	(0.014)	(0.016)	(0.013)
US-zone Location	0.000	0.005	-0.002	-0.009	-0.005
	(0.004)	(0.019)	(0.014)	(0.016)	(0.014)
US-zone Location × Occupation Period	0.006	-0.012	0.001	0.046	0.034
	(0.008)	(0.038)	(0.022)	(0.032)	(0.020)
Observations	1,098	1,090	1,818	1,818	3,815
Panel B: Norms and Attitudes					
	Interest in Politics	Leaning towards Party	Union in Estab	Risk Preferences	
US-zone Location	-0.036	-0.037	0.049	-0.002	
	(0.023)	(0.024)	(0.044)	(0.131)	
Observations	48,233	48,228	4,934	25,345	
	The most important policy objective is				
	Peace and Order	More Citizen Influence	Price Stability	Free Speech	
US-zone Location	0.024	-0.002	-0.024	0.008	
	(0.038)	(0.034)	(0.087)	(0.091)	
Observations	5,788	5,777	5,761	5,779	

Notes: The table is based on individual-level data from the German Socio-Economic Panel (SOEP). In Panel A, columns (1)-(4), the sample consists of individuals in the SOEP born after 1945 and before 1955 in Baden-Württemberg, Bavaria, Hesse, or Rhineland-Palatine (the states neighboring Baden-Württemberg). In column (5), the sample consists of individuals in the SOEP born after 1923 and before 1955. The occupation period indicator variable equals one if the individual was born before 1949 in columns (1)-(4) and before 1943 in column (5). The US zone indicator variable equals one if the individual was born in the 1945-1949 US occupation zone. The regressions pool survey years and include survey-year fixed effects. In Panel B, the sample consists of SOEP respondents who have lived in Baden-Württemberg for at least five years. The regressions pool all survey years in which the respective question was asked and include survey-year fixed effects. All regressions are linear regressions controlling for longitude and latitude, linear polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. Additionally, we control for a gender dummy, a quadratic function of age, an indicator for having a partner in the household, years of work experience, unemployment, log household income, a dummy for first-generation migrants, and years of education (unless this is the outcome). Standard errors are Conley standard errors with a Bartlett kernel and a cutoff value of 25 km. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

A Data

Historical census data Our historical outcome data is collected from historical censuses at the municipality level in Baden (1871, 1895, 1903, 1930, and 1939), Württemberg (1871, 1895, 1907, and 1933), and Baden-Württemberg (1950, 1960, and 1970/71). Table A1 provides a detailed overview of all variables and sources. We hand-digitized most historical data from the original sources, only population density is provided by the Statistical Office of Baden-Württemberg. For some statistics, data for Baden and Württemberg is not available for the same year. In these cases, we use information from different census years (e.g., sectoral employment shares in Württemberg 1933 and in Baden 1939) and include an indicator that equals one if the data is from Baden in all regressions that combine data from different years. We also obtain historical data from income tax statistics in 1954 and 1971 (provided by the Statistical Office of Baden-Württemberg), value-added taxes in 1935 and 1950, and regional GDP accounts in 1957 and 1970. These measures are only available at the county level.

Modern outcome data The data on municipality-level sales per worker, income per capita, and education comes from a collection of online databases put together by the Statistical Office of Baden-Württemberg. Variable descriptions and detailed sources are in Table A1. The statistical office also provided 1980-2021 data on land use, 2005-2020 data on foreign-language courses in secondary schools, and 2021 data on commuters across municipalities.

Geographic data We use several sources to collect data on the geography of Baden-Württemberg. Historical maps are obtained from the House of History Baden-Württemberg in Stuttgart. These maps are used to obtain the longitude and latitude of municipality centers, the required geographic distances, and the territory for municipalities and counties before the territorial reform in the early 1970s. For modern geographic data, we combine information from the German Federal Agency for Cartography and Geodesy with the municipality directory (*Gemeindeverzeichnis*) of the German Statistical Office (2016). For part of the analysis, we aggregate historical municipality-level data to modern municipality borders.[41] All geospatial calculations are done using QGIS.

Wartime destruction and military bases We obtain data on wartime destruction from the Historical Atlas of Baden-Württemberg (Ch. 7,11, Kommission für geschichtliche Landeskunde in Baden-Württemberg (eds.), 1972-1988). The atlas reports a percentage score of wartime destruction of housing and industry at the municipality level that is collected from various sources. We gather lists of French and US military bases in Baden-Württemberg and their year of dissolution from Wikipedia.

Industry dismantling We use detailed information on industry dismantling provided by Reichelt (1947) who lists establishments that had been dismantled or were planned to be dismantled by the occupation forces. We also rely on Harmssen (1951), who adjusts the list for establishments that were later saved from dismantling. We digitize this information, assign each listed establishment to its location, and construct a municipality-level measure of industry dismantling by computing the share of pre-war establishments that were dismantled.

[41] The territorial reform in the early 1970s created six municipalities that stretch out across both sides of the 1945-1949 border between the French and US occupation zones. We exclude these municipalities from our empirical analysis.

Micro-data on establishments We use plant-level micro data provided by the German Statistical Offices in the project "Administrative Firm-Data for Germany" (AFiD, Statistische Ämter der Länder, 2017a). This data contains a panel of the universe of plants in manufacturing and collects information on employment, working hours, and revenues. Of particular interest is the subset of establishments for which we also have data on wages, value-added, and exports in a representative survey (*Kostenstrukturerhebung*, Statistische Ämter der Länder, 2017b). In contrast to the AFiD panel, the data on wages, value-added, and exports is provided at the firm level. It covers 45% of all firms with at least 20 employees and is available for 1995, 1997, 1999, 2003, 2008, and 2012. Firms are sampled stratified by industry and firm size and are required by law to report their information.

Micro-data on rents We use property-level data to measure rents in 1987 and from 2008 to 2016. For 1987, we use the census (Statistische Ämter der Länder, 1987), which is based on the full population count in Germany and contains housing information including rental prices. For the years 2008-2016, we use data from ImmobilienScout24 published by the RWI (Schaffner, 2020). ImmobilienScout24 is the largest real-estate internet platform in Germany with a market share of about 50%. The data contains information on offer rental prices and property characteristics.

Patents We use data on the location and nature of patentees from the database *PatentCity* (Bergeaud and Verluise, 2024), which provides information derived from an automated extraction of relevant information from patent documents published by the German, French, British and US Intellectual Property offices. Geo-located patent data from Germany is available from 1871 onwards.

Labor Market Matching Our analysis of labor market matching is based on data that we kindly received from the authors of Dauth et al. (2022). The data includes municipality and local labor market (LLM) aggregates of estimated worker and establishment fixed effects, their correlation, as well as the size of local labor markets. The estimates in Dauth et al. (2022) are based on the Integrated Employment Biographies provided by the German Institute for Labor Market Research (IAB). Municipality cells for with fewer than three establishments are censored.

Data on individuals We complement our analysis using individual information from the German Socio-economic Panel (SOEP), a longitudinal survey conducted since 1984 that is representative of the population living in Germany (Goebel et al., 2019). We use the spatial extension of the SOEP and measure health and education outcomes, norms and attitudes, and the preferences of individuals born or living in the 1945-1949 French and US occupation zones.

Bavaria The data on population, income, and education in Bavaria are provided by the Statistical Office of Bavaria (provided at https://www.statistikdaten.bayern.de/genesis/online/). The measure of aggregate productivity available for Baden-Württemberg is not published for Bavarian municipalities and education for Bavarian municipalities is only available for the years 2007, 2010, and 2013.

Table A1: Variable Description and Sources.

Outcome	Description	Source
Population		
1871-2020	Population	Statistical Office Baden-Württemberg via https://www.statistik-bw.de/BevoelkGebiet/Bevoelkerung/
Bavaria 1939-2020	Population	Statistical Office Bavaria via https://www.statistikdaten.bayern.de/genesis/online/
(GDR) Refugees		
1950 (refugees)	People who in 1939 (i) had their place of residence in the territories of pre-WWII Germany to the east of the four post-WWII occupation zones or (ii) resided outside of pre-WWII Germany and were native German speakers.	Gemeinde- und Kreisstatistik Baden-Württemberg 1950 (Statistisches Landesamt Baden-Württemberg, 1952)
1960 (GDR refugees)	People who came to West Germany from East Germany (officially the German Democratic Republic; 1945-1949 Soviet occupation zone)	Gemeindestatistik Baden-Württemberg 1960/61. Teil 1: Bevölkerung und Erwerbstätigkeit (Statistisches Landesamt Baden-Württemberg, 1964)
Sectoral Shares		
Baden 1895	Workers in agriculture, manufacturing, and trade	Beiträge zur Statistik des Grossherzogthums Baden. Heft 55. Die Berufszählung vom 14. Juni 1895 (Statistisches Landesamt Baden, 1895)
Württemberg 1907	Workers in agriculture, manufacturing, and trade	Württembergische Gemeindestatistik. Zweite Ausgaben nach dem Stand vom Jahre 1907 (Königliches Statistisches Landesamt Württemberg, 1910)
Württemberg 1933	Workers in agriculture, manufacturing, and trade	Württembergische Gemeinde und Bezirksstatistik. Dritte Ausgabe nach dem Stand vom Jahre 1933 (Statistisches Landesamt Württemberg, 1935)
Baden 1939	Workers in agriculture, manufacturing, and trade	Statistik des Deutschen Reichs. Band 557. Volks-, Berufs- und Betriebszählung vom 17. Mai 1939. Die Berufstätigkeit der Bevölkerung in den Reichsteilen. Heft 25: Baden (Statistisches Reichsamt, 1942)
1950	Workers in agriculture, manufacturing, and trade	Gemeinde- und Kreisstatistik Baden-Württemberg 1950 (Statistisches Landesamt Baden-Württemberg, 1952)
1960	Workers in agriculture, manufacturing, and trade	Gemeindestatistik Baden-Württemberg 1960/61. Teil 1: Bevölkerung und Erwerbstätigkeit (Statistisches Landesamt Baden-Württemberg, 1964)
1970	Workers in agriculture, manufacturing, and trade	Statistik von Baden-Württemberg. Gemeindestatistik 1970. Ergebnisse der Grosszählungen 1968-1971. Heft 2: Bevölkerung und Erwerbstätigkeit 1970 (Statistisches Landesamt Baden-Württemberg, 1973)
Houses & Fire Insurance		
Baden 1903	Fire insurance value & number of houses	Beiträge zur Statistik des Grossherzogthums Baden. Heft 61: Der pfandrechtlich gesicherte Schuldenstand auf 1. Januar 1903 (Statistisches Landesamt Baden, 1910)
Württemberg 1907	Fire insurance value & number of houses	Württembergische Gemeindestatistik. Zweite Ausgaben nach dem Stand vom Jahre 1907 (Königliches Statistisches Landesamt Württemberg, 1910)
Taxable Income		
Baden 1895	Total taxable income per capita	Die Ergebnisse der im Jahre 1895 vollzogenen Veranlagung der Einkommensteuer (Finanzministerium und Steuerdirektion des Grossherzogthums Baden, 1896)
Württemberg 1907	Total taxable income per capita	Württembergische Gemeindestatistik. Zweite Ausgaben nach dem Stand vom Jahre 1907 (Königliches Statistisches Landesamt Württemberg, 1910)
1954-71 (county level)	Total taxable income per capita	Income Tax Statistic (*Einkommensteuerstatistik*) 1954 and 1971. Provided by the Statistical Office Baden-Württemberg
1980	Total taxable income per capita	Income Tax Statistic (*Einkommensteuerstatistik*) 1980. Provided by the Statistical Office Baden-Württemberg
2007-2017	Total taxable income per capita	Wage and Income Tax Statistic (*Lohn- und Einkommensteuerstatistik*) via https://www.regionalstatistik.de
Aggregate Productivity		
1935 (county level)	Total revenue subject to sales taxes; number of assessed firms	Statistik des Deutschen Reichs. Volume 1. Heft 511: Umsatzsteuerstatistik 1935 (Statistisches Reichsamt, 1938)
1950 (county level)	Total revenue subject to sales taxes; number of assessed firms	Statistische Monatshefte Baden-Württemberg. II. Jahrgang. Heft 12 (Statistisches Landesamt Baden-Württemberg, 1954)
1957-70 (county level)	GDP	Das Bruttoinlandsprodukt der kreisfreien Städte und Landkreise. Heft 3 and Heft 4 (Statistische Landesämter, 1968, 1973)
2006-2018	Taxable sales (goods and services) per worker (subject to social security payments) for firms with at least one worker or at least 22,000 Euro in annual sales (excluding firms in agriculture, public administration, and private households)	Company Register (*Unternehmensregister*) via https://www.statistik-bw.de/GesamtwBranchen/UnternehmBetriebe
Land Values and Taxes		

Continuation of Table A1

Outcome	Description	Source
Baden 1926	Value of land for tax purposes (Steuerwerte Grundvermögen)	Staatliche Grund- und Gewerbesteuer in Baden fuer das Rechnungsjahr 1926 auf Grund amtlichen Materials (Statistisches Landesamt Baden, 1930)
Württemberg 1933	Value of land for tax purposes (Kataster Grund)	Württembergische Gemeinde und Bezirksstatistik. Dritte Ausgabe nach dem Stand vom Jahre 1933 (Statistisches Landesamt Württemberg, 1935)
1950	Land tax rates (multiples of a state-wide base rate)	Gemeinde- und Kreisstatistik Baden-Württemberg 1950 (Statistisches Landesamt Baden-Württemberg, 1952)
1960	Land tax rates (multiples of a state-wide base rate)	Gemeindestatistik Baden-Württemberg 1960/61. Teil 5: Gemeindefinanzen (Statistisches Landesamt Baden-Württemberg, 1964)
1970	Land tax rates (multiples of a state-wide base rate)	Statistik von Baden-Württemberg. Gemeindestatistik 1970. Ergebnisse der Grosszählungen 1968-1971. Band 161. Heft 5: Weitere Strukturdaten (Statistisches Landesamt Baden-Württemberg, 1973)
Business Taxes		
Baden 1926	value of businesses for tax purposes (Steuerwerte Betriebsvermögen)	Staatliche Grund- und Gewerbesteuer in Baden für das Rechnungsjahr 1926 auf Grund amtlichen Materials (Statistisches Landesamt Baden, 1930)
Württemberg 1933	value of businesses for tax purposes (Kataster Gewerbe)	Württembergische Gemeinde und Bezirksstatistik. Dritte Ausgabe nach dem Stand vom Jahre 1933 (Statistisches Landesamt Württemberg, 1935)
1950	Business tax rates (multiples of a state-wide base rate)	Gemeinde- und Kreisstatistik Baden-Württemberg 1950 (Statistisches Landesamt Baden-Württemberg, 1952)
1960	Business tax rates (multiples of a state-wide base rate)	Gemeindestatistik Baden-Württemberg 1960/61. Teil 5: Gemeindefinanzen (Statistisches Landesamt Baden-Württemberg, 1964)
1970	Business tax rates (multiples of a state-wide base rate)	Statistik von Baden-Württemberg. Gemeindestatistik 1970. Ergebnisse der Grosszählungen 1968-1971. Band 161. Heft 5: Weitere Strukturdaten (Statistisches Landesamt Baden-Württemberg, 1973)
Agricultural Establishments		
Württemberg 1933	Establishments in agriculture and forestry	Württembergische Gemeinde und Bezirksstatistik. Dritte Ausgabe nach dem Stand vom Jahre 1933 (Statistisches Landesamt Württemberg, 1935)
Baden 1939	Establishments in agriculture and forestry $>$ 0.5ha	Endgültige Ergebnisse der Volks-, Berufs- und Betriebszählung am 17. Mai 1939 in den Gemeinden, Stadt- und Landkreisen, Landeskommissärbezirken und für das Land Baden im Ganzen (Badisches Statistisches Landesamt, 1941)
Non-Agricultural Establishments) & Employees		
Württemberg 1933	Non-agricultural establishments; workers	Württembergische Gemeinde und Bezirksstatistik. Dritte Ausgabe nach dem Stand vom Jahre 1933 (Statistisches Landesamt Württemberg, 1935)
Baden 1939	Non-agricultural establishments; workers	Endgültige Ergebnisse der Volks-, Berufs- und Betriebszählung am 17. Mai 1939 in den Gemeinden, Stadt- und Landkreisen, Landeskommissärbezirken und für das Land Baden im Ganzen (Badisches Statistisches Landesamt, 1941)
1950	Non-agricultural establishments; workers	Gemeinde- und Kreisstatistik Baden-Württemberg 1950 (Statistisches Landesamt Baden-Württemberg, 1952)
1960	Non-agricultural establishments; workers	Gemeindestatistik Baden-Württemberg 1960/61. Teil 3: Arbeitsstätten ohne Landwirtschaft (Statistisches Landesamt Baden-Württemberg, 1964)
1970	Non-agricultural establishments; workers	Statistik von Baden-Württemberg. Gemeindestatistik 1970. Ergebnisse der Grosszählungen 1968-1971. Heft 3: Nichtlandwirtschaftliche Arbeitsstätten 1970 (Statistisches Landesamt Baden-Württemberg, 1973)
Self-Employed		
Württemberg 1933	Self-employed workers in agriculture, trade, manufacturing, and other professions	Württembergische Gemeinde und Bezirksstatistik. Dritte Ausgabe nach dem Stand vom Jahre 1933 (Statistisches Landesamt Württemberg, 1935)
Baden 1939	Self-employed workers	Endgültige Ergebnisse der Volks-, Berufs- und Betriebszählung am 17. Mai 1939 in den Gemeinden, Stadt- und Landkreisen, Landeskommissärbezirken und für das Land Baden im Ganzen (Badisches Statistisches Landesamt, 1941)
WW2 Destruction	Percentage score of war destruction	Historischer Atlas von Baden-Württemberg. Erläuterungen 7, 11. Kriegsschäden in Baden-Württemberg 1939-1945 (Kommission für geschichtliche Landeskunde in Baden-Württemberg (eds.), 1972-1988)
Industry Dismantling	Dismantled establishments / (non-agricultural) establishments in 1933/39	Reichelt (1947) and Harmssen (1951)
Military Bases	Indicator that equals one if a municipality hosted a US or French military base that was dissolved later than 1950	Wikipedia via https://de.wikipedia.org/wiki/Liste_der_franz%C3%B6sischen_Milit%C3%A4rstandorte_in_Deutschland and https://de.wikipedia.org/wiki/Liste_der_amerikanischen_Milit%C3%A4rstandorte_in_Deutschland, last accessed on Nov 3rd

Continuation of Table A1

Outcome	Description	Source
Education		
1970	Highest completed degree in population (high school, vocational, college)	Gemeindestatistik 1972. Ausgewählte Ergebnisse der Volks- und Arbeitsstättenzählung 1970 in der Gliederung nach den neuen Kreisen und Regionalverbänden. Heft 2: Bevölkerung und Erwerbstätigkeit Arbeitsstätten und Beschäftigte (Statistisches Landesamt Baden-Württemberg, 1972)
1989-1998	Share of workers (subject to social security contributions) at place of residence with university degree	Available at Statistics Service of the Bundesagentur für Arbeit
1999-2020	Share of workers (subject to social security contributions) at place of residence with university degree	Bundesagentur für Arbeit via https://www.statistik-bw.de/Arbeit/Besch\unhbox\voidb@x\bgroup\accent127a\protect\penalty\@M\hskip\z@skip\egroupftigte/
Bavaria 2007, 2010, 2013	Share of workers (subject to social security contributions) at place of residence with university degree	Statistical Office Bavaria via https://www.statistikdaten.bayern.de/genesis/online/
Rents		
1970	Average (cold) rent in the municipality per square meter, aggregated to modern municipalities using the share in the total number of apartments	Statistik von Baden-Württemberg. Gemeindestatistik 1970. Ergebnisse der Grosszählungen 1968-1971. Band 161. Heft 1: Gebäude und Wohnungen 1968 (Statistisches Landesamt Baden-Württemberg, 1973)
1987	(Cold) rent and characteristics (size, number of rooms, year of construction, kitchen or kitchenette, bathroom, toilet, mode of heating, building type (building with normal apartments or building including community use areas)) for properties that were rented between 1985 and 1987 excluding social housing	Volkszählung 1987 (Statistische Ämter der Länder, 1987)
2008-2016	Offer prices (cold rent) and characteristics (size, number of rooms, year of construction, balcony, basement, lift, quality of equipment, number of floors, floor, garden, terraced house, exclusive house, semi-detached house) for apartments and houses for rent from the internet platform ImmobilienScout24	RWI Real Estate Data: Apartments for Rent & Houses for Rent. RWI-GEO-RED (RWI; ImmobilienScout24, 2020)
Manufacturing Establishments	Value added, revenue, wages, employees, total work hours, international revenues, non-EU revenues, intermediate input use, energy use for one-establishment firms in 1995, 1997, 1999, 2003, 2008, and 2012	AFiD Panel Industriebetriebe 1995-2016 (Statistische Ämter der Länder, 2017a). Panel der Kostenstrukturerhebung im Bereich verarbeitendes Gewerbe, Bergbau und Gewinnung von Steinen und Erden 1995-2012 (Statistische Ämter der Länder, 2017b).
Patents	Number of Patents granted aggregated at the municipality times decade level	PatentCity database (Bergeaud and Verluise, 2024)
Labor Market Matching	Correlation Coefficient between AKM worker fixed effects and (residualized) establishment fixed effects; number of employees for five time intervals between 1985 and 2014	Dauth et al. (2022) based on Integrated Employment Biographies from the German Institute for Labor Market Research (IAB)
Land Use	Share of Municipality Area that is used for Traffic Infrastructure (Streets, Roads, and Squares; Railway; Airports; Ships)	Flächennutzung in Baden-Württemberg, available via https://www.statistik-bw.de/Service/Veroeff/Statistische_Daten/221722001.bs
Commuters	Commuters among residents in each municipality by place of work	Pendlerstatistik via https://www.regionalstatistik.de/genesis/online?operation=statistic&levelindex=0&levelid=1696417437803&code=19321#abreadcrumb
SOEP Data		
	Body height, body weight, mental health score, physical health score, years of education, unemployment duration, income, interest in politics, tendency towards a certain political party, most important policy objective, union at workplace, risk preferences	Sozio-oekonomisches Panel (SOEP) (2019)
English Language		
2005-2019	Share of students in secondary school with English/French as first foreign language; share of students in upper-secondary school in advanced English/French course	Available at the Statistical Office of Baden-Württemberg

B Sensitivity Analysis

Bandwidth Our baseline sample consists of municipalities whose center is less than 15 km from the border between the 1945-1949 French and US occupation zones in Baden-Württemberg. In Figure B1 we show the main coefficients and 90% confidence intervals based on Conley standard errors for a range of bandwidth choices between 2 and 100km. The left-most figures in each row show the coefficient γ for the US zone indicator in equation (1).[42] The figures in the middle and on the right show the coefficient θ for the US zone indicator and δ for our measure of US-zone exposure in equation (2).

Standard errors Our baseline results are based on Conley (1999) standard errors that account for spatial and temporal correlation in the error terms. Our baseline choice for the spatial cutoff is 25 km and our baseline choice for the temporal cutoff is 20 years. In Tables B1-B4, Panel A, we provide results for alternative assumptions on the error structure. This includes default heteroscedasticity-robust errors, clustered standard errors on the municipality or county level, and alternative values for the spatial cutoff in the Conley standard errors.

RD polynomial In our baseline specification, the RD polynomial is a linear function of longitude and latitude. We use a triangular kernel where the weight for each municipality within the bandwidth declines linearly with distance to the border. In Tables B1- B4, Panel B, we provide results for alternative specifications of the RD polynomial. In particular, we use a uniform kernel that puts equal weight on each municipality within the bandwidth. For the multidimensional polynomial, we examine the sensitivity when we use quadratic or a cubic functions of longitude and latitude. In addition, we consider a one-dimensional regression discontinuity specification where the geographic location of a municipality is captured by a running variable in the distance to the border (instead of the location's latitude and longitude). We estimate versions with a local linear specification of the running variable interacted with the US zone indicator variable and with a local quadratic specification of the running variable interacted with the US zone indicator variable. This specification is similar to Schumann (2014).

Boundary segments In our baseline specification, we split the border into five segments of equal length and include indicator variables for the closest boundary segment. This ensures that we compare municipalities in spatial proximity on opposite sides of the border. In Tables B1-B4, Panel C, we provide results for a number of boundary segments ranging from 1 to 50.

Further controls In Tables B1-B4, Panel D, we provide results including additional controls. Columns (1)-(2) control for industry dismantling. The data on industry dismantling comes from detailed lists of dismantled establishments. We measure dismantling as the share of dismantled establishments among all non-agricultural establishments. The results in columns (3)-(4) examine the effect of US-zone exposure controlling for distance to the border between the 1945-1949 French and US occupation zones. Distance to the border is defined as the distance to the border for municipalities in the 1945-1949 US

[42] The Covid-19 pandemic severely restricted the opening hours of the research data centers where the micro-data for manufacturing used in Table 2 is made available. As a consequence, we were unable to implement the sensitivity analysis for these outcomes within the access period stipulated in our contract with the German Statistical Offices. However, we can make these results available in the future upon request.

occupation zone and negative distance to the border for municipalities in the 1945-1949 French occupation zone. Because of the irregular shape of the 1945-1949 occupation-zone border, municipalities at the same distance from the border can differ in their US-zone exposure.

Range of spillover effects In our baseline specification, the measure of US-zone exposure is based on pre-WWII population within a 10 km radius around municipality centers. In Figure B2, we provide results when we vary the radius between 2 and 25 km. The figures on the left show the coefficient θ for the US zone indicator in equation (2) and the figures on the right show the coefficient δ for our measure of US-zone exposure. The coefficient δ tends to be an inverse u-shaped function of the radius, with a maximum at around 10 km.

In order to better understand the figures for the coefficient δ, we conduct a simulation exercise. We assume that the true range of spillovers is 10 km and assess how estimates of δ in equation (2) vary with misspecification of the radius used to obtain US-zone exposure. The geographic and population data in the simulation exercise is for municipalities that are within 15 km from the border between the 1945-1949 French and US occupation zones. The starting point of our simulation exercise is an artificial economic outcome that we generate according to

$$y_m = 1 + 0.139 * USzoneExposure_m + u_m, \tag{B1}$$

where $USzoneExposure_m$ is the share of 1939 population in a circle with a 10 km radius on what would become the 1945-1949 US occupation zone and $u_m \overset{i.i.d.}{\sim} \mathcal{N}(0, 0.07)$. That is, the artificial economic outcome is generated assuming that the true range of spillovers is 10 km. The effect of US-zone exposure on the artificial outcome (0.139) is the value estimated for income in Table 2, Panel A, column (2). The side of the 1945-1949 occupation-zone border where the municipality is located is assumed to be irrelevant.

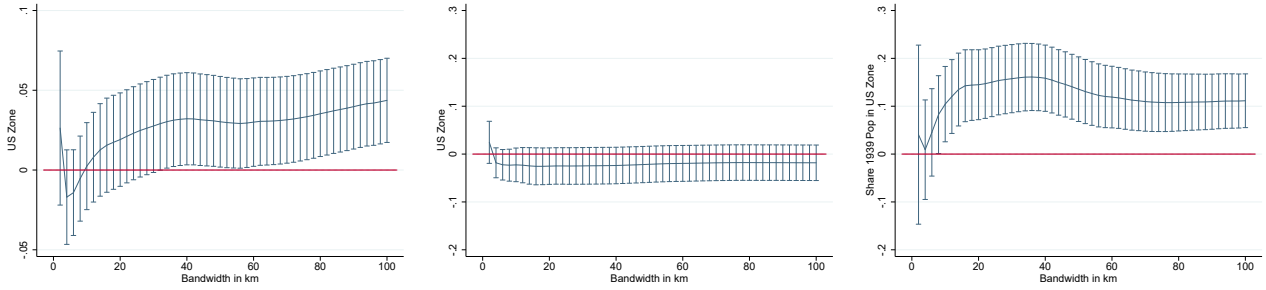
We then use the artificial outcome generated using equation (B1) to estimate

$$y_m = \alpha + \theta US_m + \delta USzoneExposure_m^{(r)} + \varepsilon_m, \tag{B2}$$

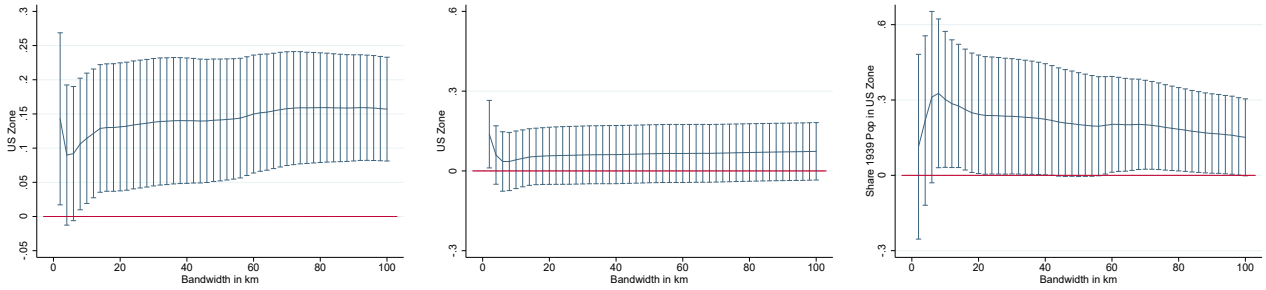
for values of $r \in \{2km, \ldots, 25km\}$. For each r, we repeat the process 100 times and obtain the average for θ, the average for δ, and the 90% confidence interval based on the standard deviation across simulations. Our results are displayed in Figure B3. The figure on the right depicts the results for δ as a function of the radius used to obtain US-zone exposure. The pattern appears similar to the one we find in the data. In particular, δ increases with the radius used up to 10 km (the true range of spillovers) and declines above 10 km.

Figure B1: Varying the Bandwidth around the 1945-1949 Border

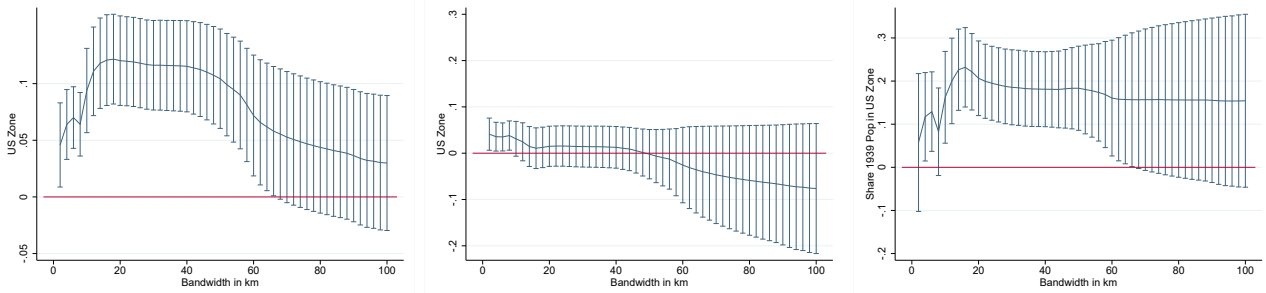
(a) Income per Capita (2007-2017)



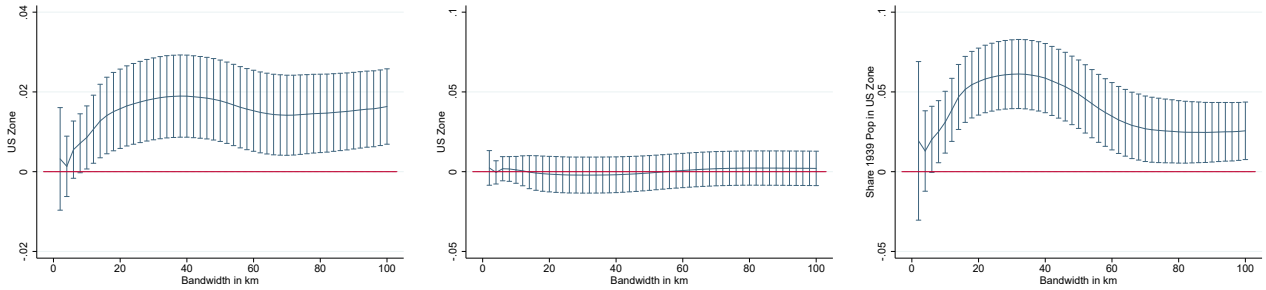
(b) Aggregate Productivity (2006-2018)



(c) Rents ImmobilienScout24 (2008-2016)



(d) Share University (1999-2020)

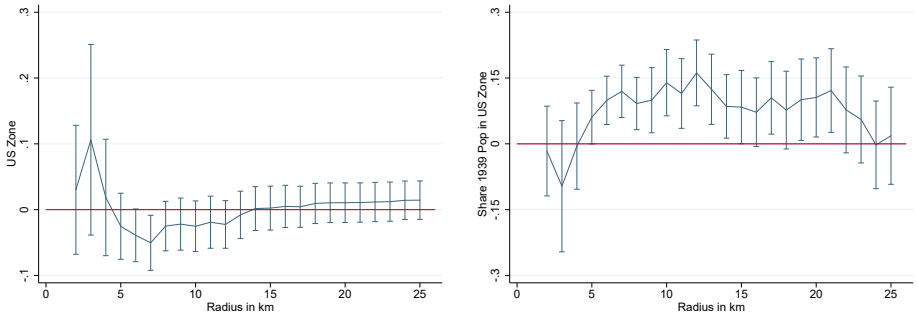


γ in equation (1) θ in equation (2) δ in equation (2)

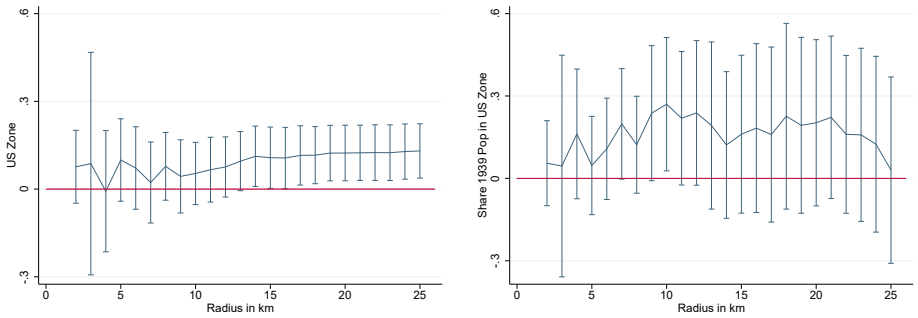
Notes: The left-most figure in each row plots the coefficient γ for the US zone indicator in equation (1) for varying bandwidths around the border between the 1945-1949 French and US occupation zones. The figures in the middle and on the right plot the coefficients θ and δ in equation (2) for varying bandwidths around the border. δ is the effect of our measure of US-zone exposure within a 10 km radius. θ is the effect for a (hypothetical) municipality that is on the former US side of the border between the 1945-1949 French and the US occupation zones, but close enough to the border so that half of the pre-WWII population within a 10 km radius is on what became the French side of the 1945-1949 occupation-zone border. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. All regressions pool multiple years and include year fixed effects. 90% confidence intervals are based on Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years.

Figure B2: Varying the Range of Spillover Effects

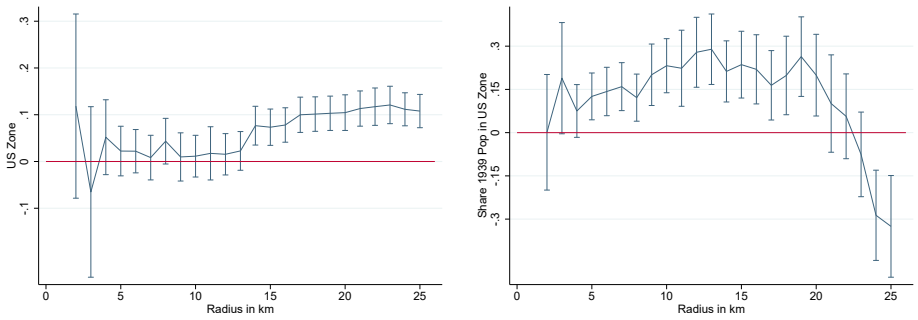
(a) Income per Capita (2007-2017)



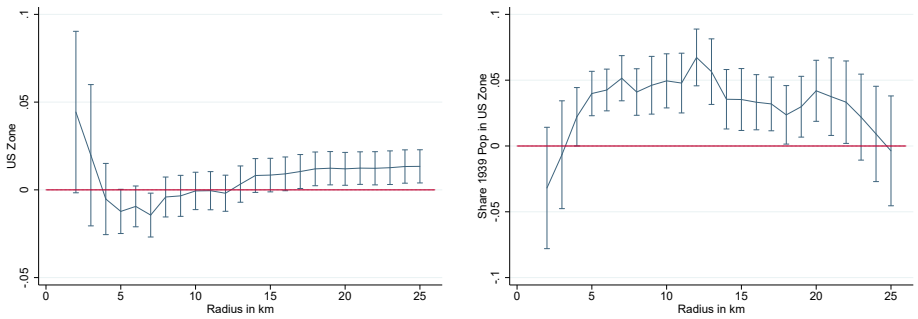
(b) Aggregate Productivity (2006-2018)



(c) Rents ImmobilienScout24 (2008-2016)



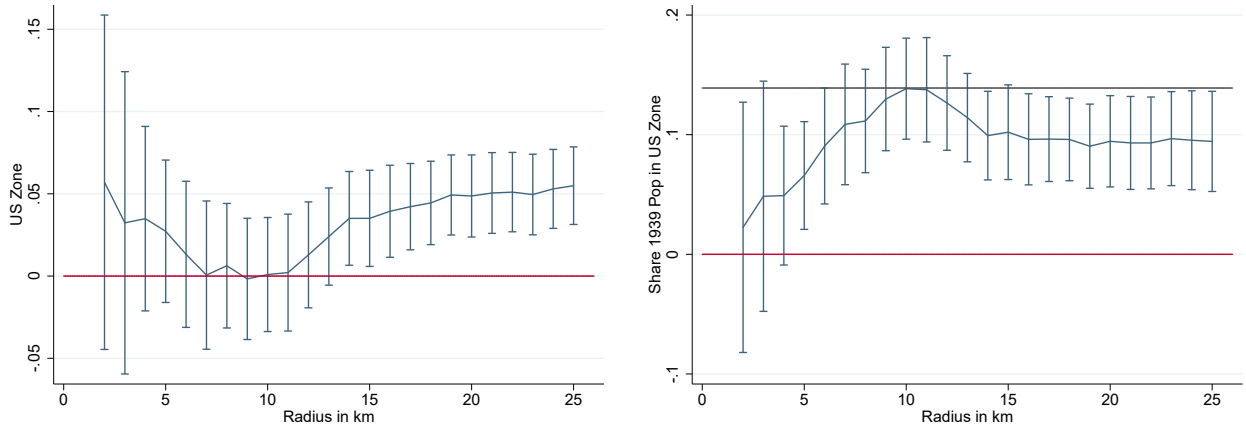
(d) Share University (1999-2020)



θ in equation (2) δ in equation (2)

Notes: The figure plots the coefficients θ and δ in equation (2) using different radii to obtain our measure of US-zone exposure within a certain distance of municipality centers. δ is the effect of our measure of US-zone exposure within the radius while θ is the effect for a (hypothetical) municipality that is on the former US side of the border between the 1945-1949 French and US occupation zones but close enough to the border that half of the pre-WWII population within the radius is on what became the French side of the 1945-1949 occupation-zone border. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. All regressions pool multiple years and include year fixed effects. 90% confidence intervals are based on Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years.

Figure B3: Understanding Estimates of the Range of Spillover Effects



θ in equation (2)

δ in equation (2)

Notes: This figure shows results of a simulation exercise for municipalities in a 15 km bandwidth around the border between the 1945-1949 French and US occupation zones in Baden-Württemberg. We first use equation (B1) to generate a synthetic outcome variable. The outcome is solely determined by the share of 1939 population within a 10 km circle (the true range of spillovers in the simulation exercise) around municipality centers on what would become the 1945-1949 US occupation zone. We then estimate equation (B2) for the synthetic outcome variable and vary the radius used to calculate our measure of US-zone exposure between 2 and 25 km. Average point estimates and 90% confidence intervals across 100 simulations are shown for the US zone indicator variable (θ, on the left) and for the measure of US-zone exposure to the arrival of refugees in 1945-1949 US occupation zone (δ, on the right).

Table B1: Sensitivity of the Results for Income per Capita (2007-2017)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Standard Errors	Baseline		Robust		Cluster Municip.		Cluster County			
US-zone Location	0.014	-0.025	0.014*	-0.025**	0.014	-0.025	0.014	-0.025		
	(0.018)	(0.023)	(0.007)	(0.010)	(0.018)	(0.024)	(0.018)	(0.016)		
US-zone Exposure (10km)		0.139***		0.139***		0.139***		0.139**		
		(0.046)		(0.019)		(0.047)		(0.049)		
Observations	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519		
	Conley 2km		Conley 10km		Conley 50km		Conley 75km		Conley 100km	
US-zone Location	0.014	-0.025	0.014	-0.025	0.014	-0.025	0.014	-0.025	0.014	-0.025
	(0.018)	(0.024)	(0.018)	(0.024)	(0.018)	(0.023)	(0.018)	(0.023)	(0.018)	(0.023)
US-zone Exposure (10km)		0.139***		0.139***		0.139***		0.139***		0.139***
		(0.047)		(0.047)		(0.045)		(0.044)		(0.044)
Observations	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519
Panel B: RD Polynomial			Multidimensional Polynomial				One-Dimensional RD			
	Uniform Kernel		Quadratic		Cubic		Linear		Quadratic	
US-zone Location	0.029	-0.028	0.016	-0.024	-0.006	-0.036*	-0.024	-0.036	-0.042	-0.032
	(0.019)	(0.024)	(0.018)	(0.023)	(0.018)	(0.021)	(0.022)	(0.024)	(0.037)	(0.037)
US-zone Exposure (10km)		0.169***		0.139***		0.124***		0.107**		0.109*
		(0.045)		(0.046)		(0.045)		(0.054)		(0.059)
Observations	1,526	1,526	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519
Panel C: Boundary Segments	1		2		10		25		50	
US-zone Location	0.023	-0.021	0.019	-0.021	0.011	-0.027	-0.002	-0.037*	-0.008	-0.053***
	(0.017)	(0.023)	(0.017)	(0.023)	(0.018)	(0.023)	(0.015)	(0.020)	(0.014)	(0.016)
US-zone Exposure (10km)		0.149***		0.140***		0.132***		0.134***		0.173***
		(0.044)		(0.045)		(0.049)		(0.045)		(0.037)
Observations	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519	1,519
Panel D: Control Variables	Dismantling		Distance to Border							
US-zone Location	0.013	-0.028	-0.031	-0.042*						
	(0.018)	(0.022)	(0.023)	(0.024)						
US-zone Exposure (10km)		0.141***		0.102*						
		(0.045)		(0.053)						
Share Dismantled Establishments	-1.139	-1.939								
	(3.785)	(3.927)								
Distance to 1945-1949 Border			0.008***	0.005*						
			(0.003)	(0.003)						
Observations	1,519	1,519	1,519	1,519						

Notes: The table contains a sensitivity analysis of our baseline results in Table 2, Panel A. These results are based on local linear regressions with a triangular kernel, a bandwidth of 15 km around the border, and control for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. All regressions pool multiple years and include year fixed effects. In the baseline, standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. Panel A varies how we compute standard errors. We use heteroscedasticity-robust standard errors, clustering by municipality, and clustering by county. We also vary the spatial cutoff used in estimating Conley standard errors. Panel B varies the kernel used in the local linear regression and the RD polynomial. For the multidimensional polynomial, we examine the sensitivity to quadratic and cubic specifications in the coordinates. In addition, we consider a one-dimensional polynomial in the linear and quadratic distance to the border (estimated separately on each side of the border). Panel C varies the number of boundary segments used in the estimation. Panel D varies the control variables included in the regression. Distance to the border is defined as the distance to the border for municipalities in the 1945-1949 US occupation zone and negative distance to the border for municipalities in the 1945-1949 French occupation zone. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table B2: Sensitivity of the Results for Aggregate Productivity (2006-2018)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Standard Errors	Baseline		Robust		Cluster Municip.		Cluster County			
US-zone Location	0.130**	0.053	0.130***	0.053**	0.130**	0.053	0.130**	0.053		
	(0.057)	(0.065)	(0.019)	(0.022)	(0.058)	(0.066)	(0.047)	(0.055)		
US-zone Exposure (10km)		0.270*		0.270***		0.270*		0.270		
		(0.148)		(0.049)		(0.150)		(0.181)		
Observations	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558		
	Conley 2km		Conley 10km		Conley 50km		Conley 75km		Conley 100km	
US-zone Location	0.130**	0.053	0.130**	0.053	0.130**	0.053	0.130**	0.053	0.130**	0.053
	(0.058)	(0.065)	(0.057)	(0.065)	(0.056)	(0.064)	(0.056)	(0.064)	(0.055)	(0.064)
US-zone Exposure (10km)		0.270*		0.270*		0.270*		0.270*		0.270*
		(0.149)		(0.148)		(0.147)		(0.147)		(0.147)
Observations	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558
Panel B: RD Polynomial			Multidimensional Polynomial				One-Dimensional RD			
	Uniform Kernel		Quadratic		Cubic		Linear		Quadratic	
US-zone Location	0.145**	0.066	0.129**	0.051	0.139**	0.057	0.134*	0.094	0.100	0.135
	(0.059)	(0.066)	(0.057)	(0.066)	(0.064)	(0.068)	(0.074)	(0.074)	(0.108)	(0.108)
US-zone Exposure (10km)		0.233		0.272*		0.341**		0.359**		0.384**
		(0.144)		(0.148)		(0.157)		(0.176)		(0.184)
Observations	2,570	2,570	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558
Panel C: Boundary Segments	1		2		10		25		50	
US-zone Location	0.134**	0.066	0.141**	0.065	0.138**	0.063	0.166***	0.068	0.170***	0.052
	(0.056)	(0.065)	(0.057)	(0.066)	(0.057)	(0.067)	(0.057)	(0.068)	(0.055)	(0.063)
US-zone Exposure (10km)		0.227		0.264*		0.264*		0.373**		0.452***
		(0.146)		(0.148)		(0.146)		(0.160)		(0.143)
Observations	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558	2,558
Panel D: Control Variables	Dismantling		Distance to Border							
US-zone Location	0.130**	0.051	0.127*	0.091						
	(0.058)	(0.064)	(0.076)	(0.075)						
US-zone Exposure (10km)		0.272*		0.354**						
		(0.146)		(0.174)						
Share Dismantled Establishments	-0.318	-1.850								
	(6.278)	(6.889)								
Distance to 1945-1949 Border			0.001	-0.011						
			(0.009)	(0.010)						
Observations	2,558	2,558	2,558	2,558						

Notes: The table contains a sensitivity analysis of our baseline results in Table 2, Panel B. These results are based on local linear regressions with a triangular kernel, a bandwidth of 15 km around the border, and control for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. All regressions pool multiple years and include year fixed effects. In the baseline, standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. Panel A varies how we compute standard errors. We use heteroscedasticity-robust standard errors, clustering by municipality, and clustering by county. We also vary the spatial cutoff used in estimating Conley standard errors. Panel B varies the kernel used in the local linear regression and the RD polynomial. For the multidimensional polynomial, we examine the sensitivity to quadratic and cubic specifications in the coordinates. In addition, we consider a one-dimensional polynomial in the linear and quadratic distance to the border (estimated separately on each side of the border). Panel C varies the number of boundary segments used in the estimation. Panel D varies the control variables included in the regression. Distance to the border is defined as the distance to the border for municipalities in the 1945-1949 US occupation zone and negative distance to the border for municipalities in the 1945-1949 French occupation zone. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table B3: Sensitivity of the Results for Rents (2008-2016)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Standard Errors	Baseline		Robust		Cluster Municip.		Cluster County			
US-zone Location	0.120***	0.011	0.120***	0.011***	0.120***	0.011	0.120***	0.011		
	(0.026)	(0.027)	(0.002)	(0.002)	(0.024)	(0.027)	(0.036)	(0.037)		
US-zone Exposure (10km)		0.232***		0.232***		0.232***		0.232***		
		(0.057)		(0.003)		(0.057)		(0.061)		
Observations	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765		
	Conley 2km		Conley 10km		Conley 50km		Conley 75km		Conley 100km	
US-zone Location	0.120***	0.011	0.120***	0.011	0.120***	0.011	0.120***	0.011	0.120***	0.011
	(0.024)	(0.027)	(0.025)	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.026)	(0.026)
US-zone Exposure (10km)		0.232***		0.232***		0.232***		0.232***		0.232***
		(0.057)		(0.057)		(0.058)		(0.057)		(0.056)
Observations	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765
Panel B: RD Polynomial			Multidimensional Polynomial				One-Dimensional RD			
	Uniform Kernel		Quadratic		Cubic		Linear		Quadratic	
US-zone Location	0.130***	-0.004	0.107***	0.010	0.065***	0.010	0.046*	0.006	0.073	0.054
	(0.028)	(0.031)	(0.022)	(0.027)	(0.020)	(0.023)	(0.028)	(0.022)	(0.050)	(0.044)
US-zone Exposure (10km)		0.250***		0.212***		0.212***		0.157**		0.173***
		(0.057)		(0.054)		(0.050)		(0.062)		(0.054)
Observations	315,111	315,111	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765
Panel C: Boundary Segments	1		2		10		25		50	
US-zone Location	0.072**	-0.034	0.121***	0.016	0.108***	-0.016	0.068***	-0.001	0.061***	0.001
	(0.033)	(0.036)	(0.028)	(0.027)	(0.024)	(0.030)	(0.019)	(0.021)	(0.019)	(0.019)
US-zone Exposure (10km)		0.230***		0.226***		0.262***		0.168***		0.148***
		(0.080)		(0.055)		(0.057)		(0.042)		(0.046)
Observations	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765	314,765
Panel D: Control Variables	Dismantling		Distance to Border							
US-zone Location	0.116***	0.032	0.017	-0.018						
	(0.021)	(0.025)	(0.031)	(0.026)						
US-zone Exposure (10km)		0.181***		0.140*						
		(0.047)		(0.073)						
Share Dismantled Establishments	18.959***	15.095***								
	(6.793)	(5.780)								
Distance to 1945-1949 Border			0.014***	0.010**						
			(0.003)	(0.004)						
Observations	314,765	314,765	314,765	314,765						

Notes: The table contains a sensitivity analysis of our baseline results in Table 2, Panel C. These results are based on local linear regressions with a triangular kernel, a bandwidth of 15 km around the border, and control for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. All regressions pool multiple years and include year fixed effects. In the baseline, standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. Panel A varies how we compute standard errors. We use heteroscedasticity-robust standard errors, clustering by municipality, and clustering by county. We also vary the spatial cutoff used in estimating Conley standard errors. Panel B varies the kernel used in the local linear regression and the RD polynomial. For the multidimensional polynomial, we examine the sensitivity to quadratic and cubic specifications in the coordinates. In addition, we consider a one-dimensional polynomial in the linear and quadratic distance to the border (estimated separately on each side of the border). Panel C varies the number of boundary segments used in the estimation. Panel D varies the control variables included in the regression. Distance to the border is defined as the distance to the border for municipalities in the 1945-1949 US occupation zone and negative distance to the border for municipalities in the 1945-1949 French occupation zone. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

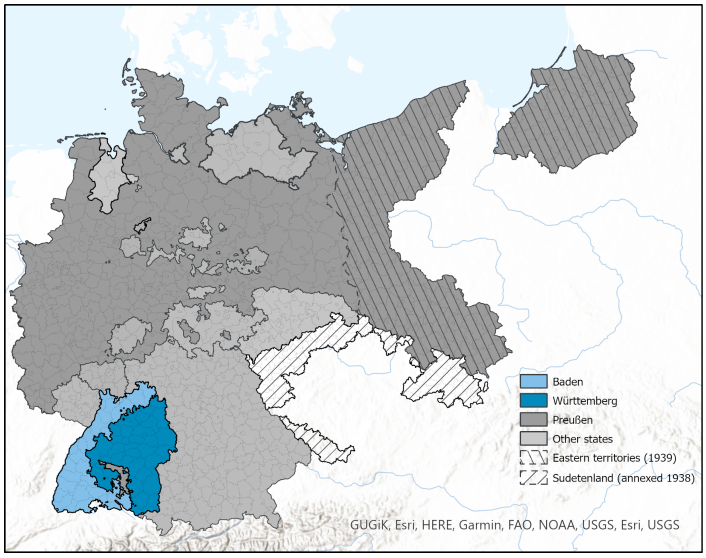
Table B4: Sensitivity of the Results for Share University Education (1999-2020)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Standard Errors	Baseline		Robust		Cluster Municip.		Cluster County			
US-zone Location	0.013**	-0.001	0.013***	-0.001	0.013**	-0.001	0.013	-0.001		
	(0.006)	(0.006)	(0.001)	(0.002)	(0.006)	(0.006)	(0.009)	(0.009)		
US-zone Exposure (10km)		0.049***		0.049***		0.049***		0.049***		
		(0.012)		(0.003)		(0.012)		(0.014)		
Observations	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786		
	Conley 2km		Conley 10km		Conley 50km		Conley 75km		Conley 100km	
US-zone Location	0.013**	-0.001	0.013**	-0.001	0.013**	-0.001	0.013**	-0.001	0.013**	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
US-zone Exposure (10km)		0.049***		0.049***		0.049***		0.049***		0.049***
		(0.012)		(0.013)		(0.012)		(0.012)		(0.012)
Observations	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786
Panel B: RD Polynomial			Multidimensional Polynomial				One-Dimensional RD			
	Uniform Kernel		Quadratic		Cubic		Linear		Quadratic	
US-zone Location	0.020***	-0.003	0.015***	0.001	0.003	-0.005	0.000	-0.004	-0.012	-0.009
	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.011)	(0.011)
US-zone Exposure (10km)		0.065***		0.048***		0.032**		0.038***		0.037**
		(0.014)		(0.013)		(0.014)		(0.014)		(0.014)
Observations	4,808	4,808	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786
Panel C: Boundary Segments	1		2		10		25		50	
US-zone Location	0.015***	0.002	0.016***	0.002	0.014**	0.003	0.007	-0.000	0.003	-0.004
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
US-zone Exposure (10km)		0.046***		0.049***		0.039***		0.027**		0.028**
		(0.014)		(0.012)		(0.014)		(0.012)		(0.013)
Observations	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786	4,786
Panel D: Control Variables	Dismantling		Distance to Border							
US-zone Location	0.013**	-0.002	-0.007	-0.010						
	(0.006)	(0.006)	(0.007)	(0.007)						
US-zone Exposure (10km)		0.051***		0.027**						
		(0.012)		(0.013)						
Share Dismantled Establishments	-0.924	-1.216								
	(1.194)	(1.103)								
Distance to Border			0.004***	0.003***						
			(0.001)	(0.001)						
Observations	4,786	4,786	4,786	4,786						

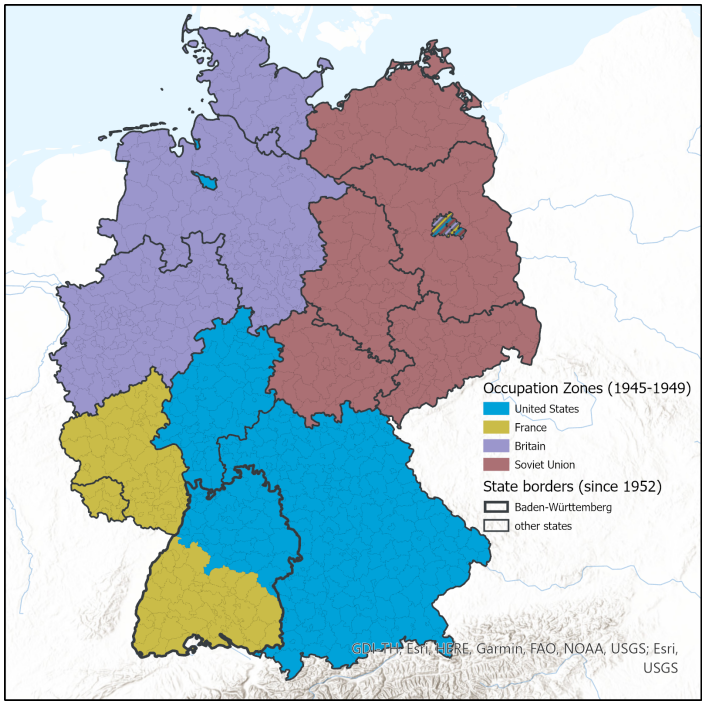
Notes: The table contains a sensitivity analysis of our baseline results in Table 2, Panel D. These results are based on local linear regressions with a triangular kernel, a bandwidth of 15 km around the border, and control for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. All regressions pool multiple years and include year fixed effects. In the baseline, standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. Panel A varies how we compute standard errors. We use heteroscedasticity-robust standard errors, clustering by municipality, and clustering by county. We also vary the spatial cutoff used in estimating Conley standard errors. Panel B varies the kernel used in the local linear regression and the RD polynomial. For the multidimensional polynomial, we examine the sensitivity to quadratic and cubic specifications in the coordinates. In addition, we consider a one-dimensional polynomial in the linear and quadratic distance to the border (estimated separately on each side of the border). Panel C varies the number of boundary segments used in the estimation. Panel D varies the control variables included in the regression. Distance to the border is defined as the distance to the border for municipalities in the 1945-1949 US occupation zone and negative distance to the border for municipalities in the 1945-1949 French occupation zone. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

C Additional Figures and Tables

Figure C1: Germany before and after WWII



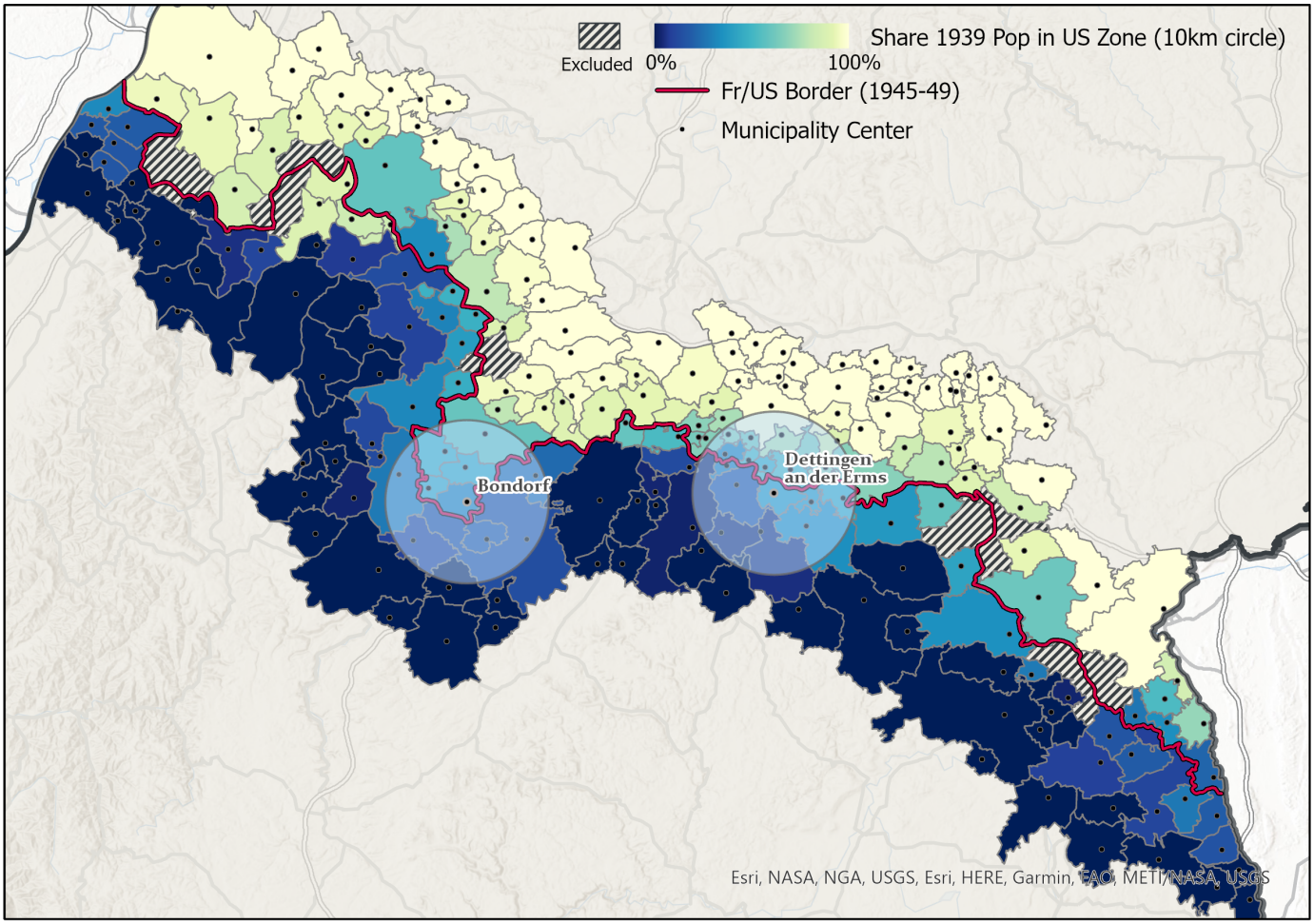
(a) Germany in 1939



(b) Germany after WWII

Notes: Figure (a) shows the pre-WWII borders of Germany in 1939. The shaded areas mark the eastern territories of pre-WWII Germany and some territories annexed in the years just before WWII that had to be ceded after WWII. The map also shows the historical states of Baden and Württemberg, the two states that together form the focal area of our paper. Figure (b) depicts the borders of Germany today and the four occupation zones that existed between 1945 and the foundation of West Germany in 1949. The dark boundaries mark the 16 federal states, while the thicker boundary corresponds to the state of Baden-Württemberg, founded in 1952. The border between the 1945-1949 French and US occupation zones we focus on is the border within Baden-Württemberg.

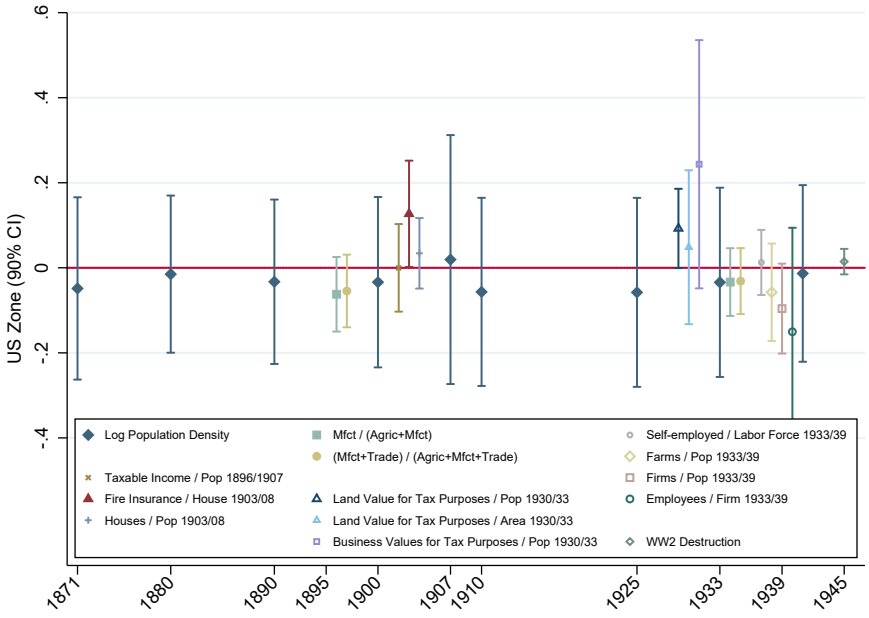
Figure C2: Illustrating the Measure of US-zone Exposure



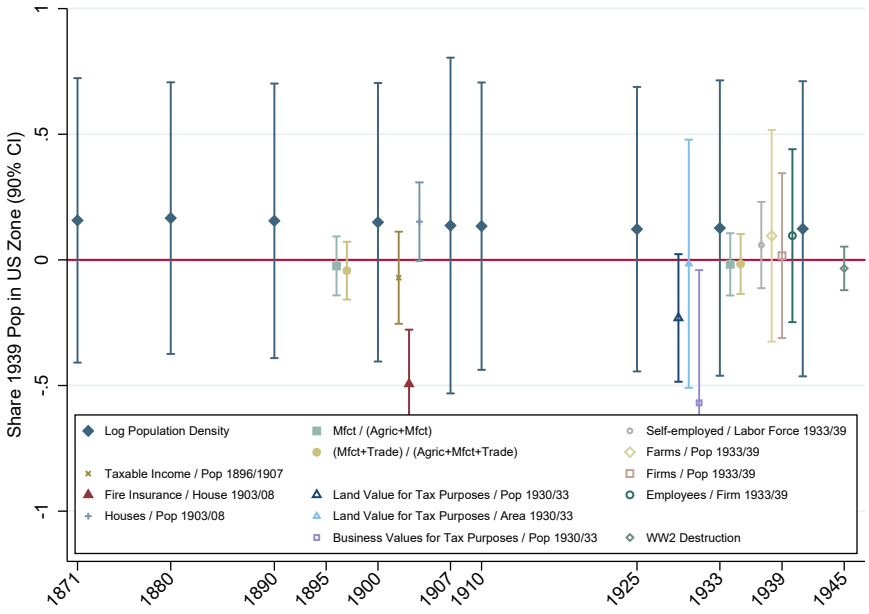
Notes: The figure illustrates our measure of US-zone exposure in South-West Germany. The map shows municipalities within 15 km of the 1945-1949 border between occupation zones and the location of their municipality centers. Municipalities are colored according to the share of the 1939 population within a 10 km radius around municipality centers that lived on what would become the US side of the 1945-1949 border. To construct the share for a municipality m, we first obtain all municipalities whose center is located within a circle with a radius of 10 km around m. Then, we compute the sum of the population in 1939 in municipalities within the circle that would become part of the 1945-1949 US occupation zone and divide it by the total population within the circle. Lighter colors denote higher shares of 1939 population in what became the US occupation zone. We use the 1939 population as this captures basic determinants of where refugees could potentially settle, but avoids endogeneity issues related to where refugees actually settled within the US and within the French occupation zones.

The two circles shown in the figure are centered on the municipalities of Bondorf (circle on the left) and of Dettingen an der Erms (circle on the right). Both are located close to the 1945-1949 border. Bondorf was in the US occupation zone, whereas Dettingen was in the French occupation zone. Bondorf has 30% of the 1939 population within its circle in what became the US occupation zone. Dettingen has 40% of the 1939 population within its circle on what became the US occupation zone. Hence, US-zone exposure is larger for Dettingen than Bondorf, although Dettingen was in the French zone whereas Bondorf was in the US zone.

Figure C3: Economic Characteristics Before WWII — Extended Model



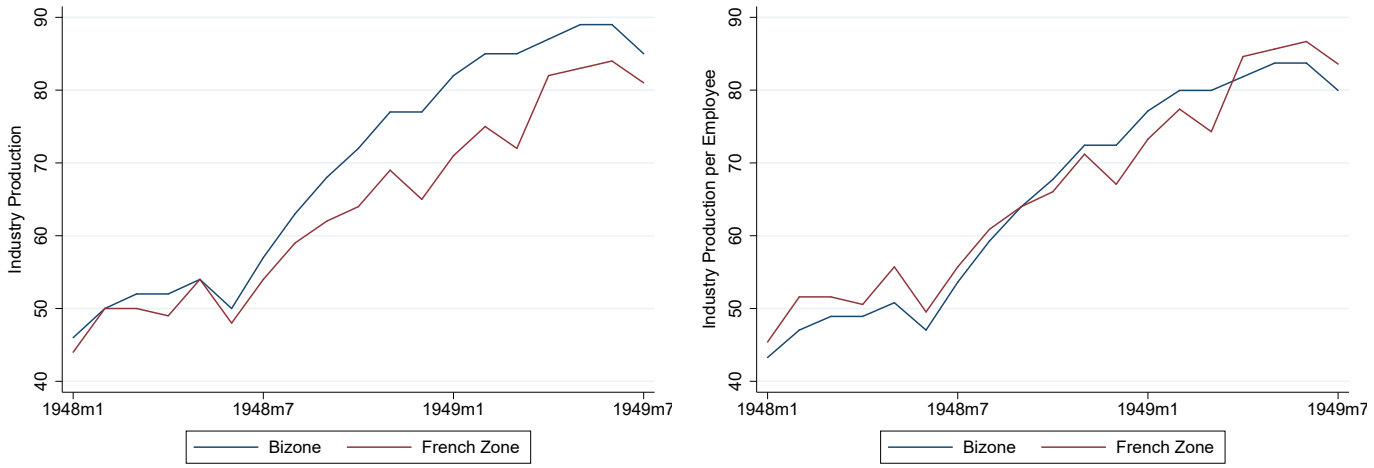
θ in equation (2)



δ in equation (2)

Notes: The figure shows regression coefficients θ and δ in equation (2) for pre-WWII characteristics across what would become the border between the 1945-1949 French and US occupation zones and corresponding 90% confidence intervals. δ is the effect of our measure of US-zone exposure within the radius while θ is the effect for a (hypothetical) municipality that is on the former US side of the border between the 1945-1949 French and US occupation zones but close enough to the border that half of the pre-WWII population within the radius is on what became the French side of the 1945-1949 occupation-zone border. Confidence intervals are based on Conley (1999) standard errors with a Bartlett kernel and a cutoff value of 25 km. The analysis includes municipalities within 15 km from the 1945-1949 occupation-zone border. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects.

Figure C4: Industrial Production 1948-49 (Ritschl, 1985)

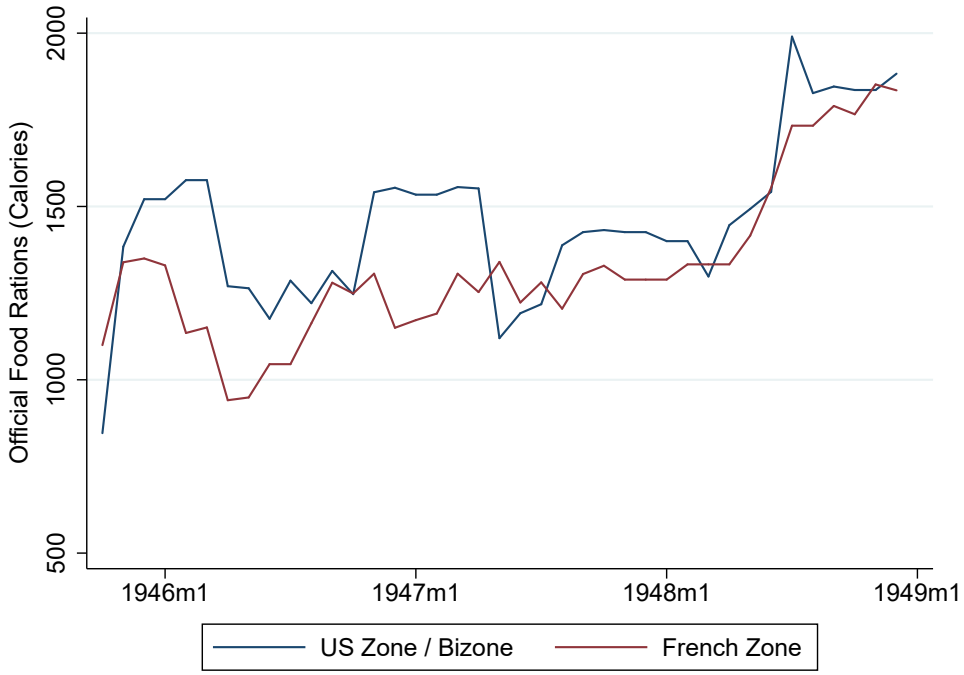


Total Production (1936=100)

Production per Worker (1936=100)

Notes: The figure on the left reproduces the index of total industrial production (1936=100) as calculated by Ritschl (1985) for the Bizone (the combined UK and US occupation zone) and the French occupation zone. The figure on the right is meant to approximate an index of industrial productivity (1936=100) and is obtained by adjusting industrial production in 1936 by the number of workers in industry and handicrafts in 1939 and industrial production in 1948-1949 by the number of workers in industry and handicrafts in 1950. The employment data comes from Vonyó (2018). We use employment in 1939 and 1950 as there is no data for 1936 and 1948-1949.

Figure C5: Official Food Rations



Notes: The figure shows the caloric intake of official food rations in the French and US (Bizone from 1947) occupation zones. The data comes from Manz (1968) and Schlange-Schöningen (1955).

Table C1: Pre-WWII Characteristics of Refugees and Local Population in South-West Germany (Grosser, 2006)

		1945-1949 US Zone		1945-1949 French Zone	
	Locals	Refugees	Difference	Refugees	Difference
Education					
Years of education	8.5	8.4	-0.1	8.5	0.0
No elementary school degree	2.0	3.9	1.8	2.3	0.3
Elementary school degree	59.5	61.3	1.8	59.1	-0.4
Vocational school degree	20.2	15.3	-4.9	17.4	-2.8
Comprehensive school degree	12.3	13.6	1.3	14.6	2.3
High school degree	2.7	3.1	0.4	3.4	0.7
University degree	2.6	2.4	-0.2	2.4	-0.2
Employment and Occupational Status					
Employed	65.7	66.2	0.5	63.3	-2.4
Self-employed farmers	5.3	7.9	2.6	3.8	-1.5
Self-employed	5.4	5.4	0.0	3.7	-1.7
Family members working in family businesses	8.0	9.2	1.2	6.8	-1.2
Civil servants	4.2	4.1	-0.1	5.8	0.9
White-collar workers	11.8	10.1	-1.7	12.7	0.9
Unskilled blue-collar workers	19.0	17.8	-1.2	18.4	-0.6
Skilled blue-collar workers	10.3	11.1	0.4	10.8	0.5
Foremen	1.7	1.0	-0.7	1.3	-0.4
Unemployed	0.1	0.1	0.0	0.0	-0.1
Out of labor force	25.7	27.0	1.3	28.4	2.7

Notes: The table reproduces the data in Grosser (2006) for the local population and refugees and in the former US and French occupation zones in Baden-Württemberg. The original source is the supplementary micro census in 1971 (*Mikrozensus Zusatzerhebung "Berufliche und soziale Umschichtungen der Bevölkerung"*). Education refers to the highest educational degree in 1971 for individuals born before 1930. Employment and occupational status in 1939 is retrospective information for individuals born before 1920. The sample consists of individuals who lived in the 1945-1949 US or French occupation zones in 1971 and therefore also captures relocation after the initial arrival of refugees.

Table C2: Education in 1970 - Other Levels

	(1)	(2)	(3)	(4)
	Share High-School Degree		Share Vocational Degree	
US-zone Location	0.010	0.034	-0.004	-0.022
	(0.024)	(0.026)	(0.024)	(0.027)
US-zone Exposure (10km)		-0.086**		0.065
		(0.042)		(0.043)
Observations	218	218	218	218

Notes: This table examines the share of residents in 1970 who have a high-school degree and the share of residents in 1972 who have a vocational degree. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. The analysis includes municipalities within 15 km of the 1945-1949 occupation-zone border. Standard errors are Conley standard errors with a Bartlett kernel and cutoff values of 25 km and 20 years. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table C3: Adjustments in Manufacturing Share before 1971 - Controlling for Industry Dismantling

	(1)	(2)	(3)
	Annual Growth		
	1933/39-1950	1950-1960	1960-1970
US-zone Location	0.005***	-0.003***	0.001
	(0.001)	(0.001)	(0.002)
Share Dismantled Establishments	-0.198	-0.120	-0.764**
	(0.304)	(0.127)	(0.321)
Observations	217	217	217

Notes: This table examines changes in the manufacturing employment over different periods. In addition to the specification in Panel D of Table 5, we control for the share of dismantled establishments. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. The analysis includes municipalities within 15 km of the 1945-1949 occupation-zone border. Standard errors are Conley standard errors with a Bartlett kernel and a cutoff value of 25 km. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively.

Table C4: Distribution of Funds in the European Recovery Fund (Marshall Plan)

	(1)	(2)
	Württemberg-Baden (former US Zone)	Württemberg-Hohenzollern and Baden (former French zone)
Panel A. Subscription Amount for KfW Bonds in 1949		
Total (million DM)	2.42	1.55
DM per capita	0.620	0.614
Panel B. Guarantees by the Federal States		
Total (million DM in 1950)	1.81	3.37
DM per capita (1950)	0.46	1.34
Total (million DM in 1951)	16.90	2.72
DM per capita (1951)	4.32	1.08
	former Bizone	former French zone
Panel C. First Export Credit Agency Tranche (Million DM in 1949)		
Manufacturing	200.5	33.5
Agriculture	106	15.5
Energy	93	17
Gas and Water	33.6	1.4
Total	433.1	67.4
DM per capita	10.56	11.23

Notes: This table reports data from the annual reports of the *Kreditanstalt für Wiederaufbau* (KfW) for the years 1949 to 1951 (Kreditanstalt für Wiederaufbau, 1950-1952). Panels A and B are based on statistics that are reported separately by state. From 1952 on, the three Southwest German states Württemberg-Baden (former US occupation zone), Württemberg-Hohenzollern, and Baden (both in former French occupation zone) are subsumed in the new state Baden-Württemberg. Panel A reports the total amount of subscriptions to the KfW bonds (*Zeichnungsbetrag*) and the corresponding per capita values. Panel B reports total and per capita amounts of guarantees provided by the federal states (*Länderbürgschaften*). Panel C reports amounts provided to companies by sector in Million Deutsche Mark (DM). Here, the data is separated into the former Bizone and the former French occupation zone, i.e., it comprises all of West Germany. Note that in addition to the listed industries, the former Bizone received support in industries that are not present in the former French occupation zone, in particular in Sea Ships, Iron and Steel, and Mining. To calculate per capita values, we calculate with a population of 41 Million in the former Bizone and 6 Million in the former French occupation zone.

Table C5: Tax Rates at the Municipality Level

	(1)	(2)	(3)	(4)	(5)	(6)
	1950		1960		1970	
Business Tax Rate						
US-zone Location	-0.063	-0.080	-0.002	-0.006	0.006	0.001
	(0.054)	(0.060)	(0.014)	(0.017)	(0.012)	(0.008)
US-zone Exposure (10km)		0.060		0.013		0.018
		(0.063)		(0.025)		(0.020)
Observations	613	613	613	613	591	591
Land Tax Rate, Type A						
US-zone Location	-0.220***	-0.265***	-0.008	-0.028	0.018	0.008
	(0.039)	(0.029)	(0.031)	(0.038)	(0.031)	(0.025)
US-zone Exposure (10km)		0.157**		0.070		0.037
		(0.075)		(0.062)		(0.045)
Observations	611	611	611	611	599	599
Land Tax Rate, Type B						
US-zone Location	-0.171***	-0.255***	0.034	0.007	0.038**	0.019
	(0.037)	(0.042)	(0.031)	(0.044)	(0.019)	(0.023)
US-zone Exposure (10km)		0.296**		0.095		0.069**
		(0.125)		(0.074)		(0.030)
Observations	611	611	611	611	599	599

Notes: The table examines the three main tax rates set at the municipality level: a local business tax and two land taxes (type A for agricultural land, type B for non-agricultural land). These tax rates are customarily expressed as multiples of a state-wide base rate. Estimates refer to differences across the border between the 1945-1949 French and US occupation zones. All regressions are local linear regressions controlling for longitude and latitude, quadratic polynomials in distance to Stuttgart and to the closest highway exit, and five boundary segment fixed effects. Standard errors are Conley standard errors with a Bartlett kernel and a cutoff value of 25 km. *, **, and *** denote statistical significance at the 10%, 5%, and 1% level respectively. The analysis includes municipalities within 15 km of the border between the 1945-1949 French and US occupation zones. Due to the inherent difficulty of aggregating tax rates across municipalities, the analysis considers municipalities as defined before the territorial reform in the early 1970s. We observe no significant difference in the local business tax rates across the 1945-1949 border. Land tax rates in 1950 are lower on what had been the US side of the 1945-1949 border. In 1960 and 1970, land tax rates are either higher on the former US side or differences are statistically insignificant.

Table C6: Discussion of 2SLS Estimation in Peters (2022)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Multiple Instruments IV			Individual IV			
	First Stage	Reduced Form	2SLS	First Stage	Reduced Form	2SLS	Weights
All Instruments			0.517*				
			(0.271)				
First-stage F-stat			24.38				
Overidentifying Restrictions Test			34.58***				
Baden-Württemberg × Expulsion Distance	-0.64***	0.26		-0.54***	-0.07	0.13	0.549
	(0.07)	(0.26)		(0.05)	(0.19)	(0.33)	
First-stage F-stat				102.12			
Bavaria × Expulsion Distance	-0.02	0.70**		0.17	0.61***	3.54	-0.023
	(0.09)	(0.27)		(0.10)	(0.20)	(2.33)	
First-stage F-stat				2.75			
Hesse × Expulsion Distance	-0.20	1.09***		0.03	0.74***	21.11	-0.005
	(0.13)	(0.32)		(0.10)	(0.22)	(53.95)	
First-stage F-stat				0.13			
North Rhine-Westphalia × Expulsion Distance	-0.19**	0.05		0.02	-0.34	-19.29	-0.005
	(0.08)	(0.34)		(0.08)	(0.28)	(93.77)	
First-stage F-stat				0.05			
Lower Saxony × Expulsion Distance	-0.45***	0.14		-0.34***	-0.32	0.95*	0.467
	(0.12)	(0.31)		(0.09)	(0.20)	(0.51)	
First-stage F-stat				12.99			
Rhineland-Palatine × Expulsion Distance	-0.07	-0.95**		0.10	-1.16***	-11.84	-0.002
	(0.13)	(0.47)		(0.11)	(0.42)	(15.50)	
First-stage F-stat				0.74			
Schleswig-Holstein × Expulsion Distance	-0.32***	-0.17		-0.14**	-0.46***	3.28***	0.020
	(0.09)	(0.21)		(0.06)	(0.09)	(1.25)	
First-stage F-stat				5.89			

Notes: Columns (1)-(3) summarize the first-stage, reduced-form, and 2SLS estimates for the 1935-1961 GDP-growth analysis in Table VII, column (7), Panel E in Peters (2022). The instruments are the 7 state fixed effects interacted with distance from the expulsion regions. The first-stage effects in column (1) indicate, as expected, that greater distance from the expulsion regions is associated with fewer refugees within each state. The reduced-form effects in column (2) are negative for Rhineland-Palatine and Schleswig-Holstein, consistent with Peters's hypothesis that greater distance from expulsion regions led to fewer refugees and, because of the positive effect of refugees on GDP, slower GDP growth. However, for the remaining 5 states, reduced-form effects are positive, indicating that greater distance from the expulsion regions is associated with faster GDP growth. These effects are statistically significant for Bavaria and Hesse. The 2SLS estimate in column (3) combines all instruments. The reported Sargan test of overidentifying restrictions can be interpreted as a test whether the 2SLS estimates obtained using one instrument at a time identify the same causal relation (e.g., Angrist and Pischke, 2009, Chapter 4.2.2). This hypothesis is rejected at the 0.1% level. This indicates heterogeneous treatment effects. In this case, 2SLS estimates can sometimes be interpreted as a weighted average of heterogeneous causal effects (Angrist and Imbens, 1995; Angrist and Pischke, 2009). We examine this interpretation in columns (6) and (7). Column (6) contains the 2SLS estimates for the 7 just-identified models using one instrument at a time. Column (7) uses Windmeijer (2019) to obtain the weights that the multiple-instrument 2SLS estimate in column (3) puts on each of the just-identified 2SLS estimates. Four out of seven weights are negative. Blandhol et al. (2022) and Abadie et al. (2023) explain how negative weights can arise and why 2SLS estimates cannot be interpreted as weighted averages of heterogeneous causal effects in this case. Column (5) contains the reduced-form results for the just-identified models. The estimates of the models using distance from the expulsion regions within Bavaria and Hesse indicate that greater distance from the expulsion regions is associated with statistically significant, faster GDP growth. Nevertheless, the 2SLS point estimates of these models are positive, as the corresponding first-stage effects in column (4) indicate that greater distance from expulsion regions is also associated with more refugees. Peters notes that results involving the distance from the expulsion regions within Bavaria could reflect measurement issues but that dropping Bavaria results in a statistically insignificant 2SLS estimate (the estimate in column (3) becomes -0.047 with a standard error of 0.45).

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