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by

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Migration restrictions and long-term regional development: evidence from large-scale expulsions of Germans after World War II¹

Michael Wyrwich

Abstract

Migration restrictions are a hotly debated topic in the current refugee crisis in Europe. This paper investigates the long-term effect of a restrictive migration policy on regional development. The analysis is based on the large-scale expulsion of Germans from Central and Eastern Europe after World War II (WWII). Expellees were not allowed to resettle in the French occupation zone in the first years after the War while there was no such legislation in the other occupation zones (U.S.; U.K; Soviet Union). The temporary migration barrier had long-lasting consequences. In a nutshell, results of a Difference-in-Difference (DiD) analysis show that growth of population has been significantly lower in the long run, if a region was part of the French occupation zone. Even 60 years after the removal of the barrier the degree of agglomeration is still significantly lower in these areas. The paper discusses implications for the current refugee crisis.

Keywords: Migration barrier; population shock; refugee migration; long-term regional development;

JEL classification: J11; J61; N34; R11; R23

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1 Introduction

Since the onset of the current refugee crisis many countries discuss or already implemented migration barriers (e.g., Huertas-Moraga & Rapoport, 2015a; Dustmann et al., 2017). The long-run effects of these migration restrictions on labor markets and regional development cannot yet be investigated empirically. Historical episodes of refugee migration are marked by peculiarities which make it difficult to generalize empirical findings to other contexts (Engel & Ibanez, 2007; Ruiz & Vargas-Silva, 2013). The current paper circumvents issues arising from several such peculiarities. It is also the first study that analyzes the long-run effects of migration barriers on regional development.

The analysis is based on the large-scale expulsions of Germans from Central and Eastern Europe after World War II (WWII) to remaining parts of Germany that were administered by the allied powers (US; UK; France; Soviet Union). The focus in this paper is on West Germany (US, UK, and French occupation zone) due to availability of data. The expulsion of Germans had a huge impact on the population structure of West Germany since ca. 8 million of expellees arrived in the late 1940s. The population share of expellees in West Germany was about 17 percent in 1950 while it was zero five years earlier.

In some West German areas a severe migration barrier was imposed in the first years after WWII. The migration restriction prohibited the resettlement of expellees into the areas affected by this regulation. This policy was only effective in regions that belonged to the French occupation zone while no such barriers existed in the UK and the US zone.² The barrier was abolished in 1949 when the Federal Republic of Germany (FRG) was founded. After 1949, expellees could freely move across all West German regions. This setting, where one region is introducing a restrictive migration policy while other regions do not, is of high relevance against the background of the current uncoordinated refugee policy within the European Union (e.g., Huertas-Moraga & Rapoport, 2015a; b).

The inflow of expellees after WWII can be regarded as a massive population (labor supply) shock. Previous studies on such shocks are dealing with immediate wage and employment effects (for examples, see Card, 1990, Friedberg, 2001, Dustmann et al., 2016; Mäkelä, 2017; Clemens and Hunt, 2017). The novel feature of the present study is

² There was also no barrier in the Soviet occupation zone which is not part of the empirical analysis here due to data constraints.

the assessment of a population shock for the long-term development of hosting regions in terms of population levels. This also contrasts with previous literature on regional impacts of refugee crises which mainly analyzes how source regions develop after the refuge or expulsion of a massive number of people. Examples are papers dealing with refugee migration in response to natural catastrophes (e.g., Boustan et al., 2012; Hornbeck & Naidu, 2014), expulsions (Chaney & Hornbeck, 2016; Cuberes & Gonzalez-Val, 2017), and military occupation (Ochsner, 2017). Nunn (2008) and Nunn and Wantchekon (2011) investigate adverse long-run effects of slavery (involuntarily migration) on the economic development of countries particularly affected by slave trades. Hornung (2014) is one of the few exceptions in the literature taking a host country perspective. He analyzes a selective expulsion and its regional impact, namely the Huguenot Diaspora across Prussia in the 18th century, and finds a positive effect of Huguenot inflow on productivity.³

One concern regarding the external validity of the studies on the impact of refugees on labor markets and regional development is that there are either endogenous decisions to migrate and refuge⁴ or selective expulsions. In contrast, the present paper deals with a non-selective expulsion where *every* person from the source region was forced to move. There are further methodologically appealing features of the empirical setting that circumvents issues in migration research like self-selection which is typically also present in the assessment of economic impacts of refugee crises (Engel & Ibanez, 2007; Ruiz & Vargas-Silva, 2013; Haan et al., 2017).

The empirical features of the post-WWII expulsion episode are highlighted by Bauer et al. (2013). They mention that return migration is no issue since German expellees could not move back to their former home regions in Central and Eastern Europe. Thus, there have been immediate incentives for labor market integration in the host region. This is a difference to most refugee crises where incentives to invest in human capital that is productive in the host country is inhibited by uncertainty regarding the outcome of the asylum claims (Dustmann & Gorlach, 2016; Dustmann et al., 2017). The likelihood of return migration does not need to be modeled in the empirical setting utilized in the present paper. The same applies to skill transfer since expellees and indigenous

³ In a somewhat similar vein, Moser et al., (2014) find that Jewish émigrés who left Nazi Germany toward the US had a positive impact on innovation and patent output.

⁴ For a discussion of selectivity of refugee migration, see Engel & Ibanez (2007). Studies on the economic integration of refugee vs. economic migrants suggest that not only the former group is positively selected (Cortes, 2004; Dustmann et al., 2017).

population in the remaining parts of Germany spoke the same language and were exposed to the same formal education system before WWII. Finally, most expellees arrived in a short period in a shock-like wave of mass migration which can be regarded perhaps as one of the “largest single movement of population in human history” (Douglas, 2013). Thus, time and cohort effects do not matter as well. This contrasts with other historical episodes of refugee inflows. Altogether, many issues impacting on the external validity of historical episodes can be ruled out and do not need to be “controlled” for in the case of the post-WWII expulsions of Germans.

Previous research on short-term effects of the expulsion of Germans after WWII found that expellees promoted structural change and productivity growth (Braun & Kvasnicka, 2014; Semrad, 2015).⁵ Furthermore, the inflow had negative employment effects for natives in the first post-War years while economic integration of expellees was lower in high-influx areas (Braun & Mahmoud, 2014; Braun & Weber, 2016; Braun & Dwenger, 2017). Short-term effects of the French migration barrier have been analyzed by Schumann (2014) and more recently by Braun et al. (2017). Schumann (2014) finds that selected municipalities that belonged to the French occupation zone have lower rates of population growth well into 1970 when compared to places formerly being part of the US occupation zone. The analysis has no direct information on expellee flows and is restricted to regions adjacent to the border between the French and the US occupation zones. Braun et al. (2017) find that there is no persistent effect when population growth is assessed at the level of large labor market areas.

In contrast to the papers by Schumann (2014) and Braun et al. (2017), the present study analyzes long-run regional development until the year 2010 for all West German regions. It also considers direct information on expellees and their migration behavior. It also explores the channels behind population growth after the removal of the migration barrier, in particular, spatial sorting patterns. By this assessment, the paper also contributes to the literature on the long-run effects of migration barriers. Previous studies on effects of migration barriers are sparse and limited to shorter periods (e.g., Hanson & Spilimbergo, 1999; 2001). They are also silent on implications for regional development except few recent papers like Abel (2016) and Bakker et al. (2016)

⁵ There are also micro studies on the economic integration of expellees (Falck et al., 2012; Bauer et al., 2013).

who study urbanization tendencies and social capital in South Africa after the removal of migration barriers. These studies have a limited time frame as well.

Apart from its contribution to the literature on the effect of refugee migration on regional development, the present paper is also informative for research on the persistent effects of place-based policies (e.g., Kline & Morretti, 2014; von Ehrlich and Seidel, 2015), and more generally for the literature on how shocks affect trajectories of regional development (e.g., Davis & Weinstein, 2002; Brakman et al., 2004; Fritsch et al., 2016).

The results of the present study reveal that the restrictive migration policy had persistent effects. So, regions that were exposed to migration restrictions until 1949 are marked by a lower short-run and long-run population growth. An assessment of treatment effects over time shows that there is no tendency of convergence or return to the pre-treatment spatial equilibrium. So, the level of urbanization is significantly lower well into 2010, the last year of the observation period. The findings are robust to controlling for several regional characteristics such as war-time destruction, industry structure, and natural conditions. Shedding light on the mechanisms behind this persistent spatial differences shows that there was a modest convergence in population levels in the first years after removing the barrier which appears to be entirely driven by public resettlement schemes. There might have been negative selection of expellees into resettlement schemes. Conversely, there was a massive internal migration of expellees into cities in the 1950s which can be interpreted as delayed spatial sorting which was not possible in the first post-WWII years due to the severe war-time destructions of cities.

The remainder of the paper is as follows: section 2 informs about the historical background of the expulsion of Germans after WWII. The third section is devoted to introducing the empirical strategy of the paper. Section 4 presents and discusses results while the fifth section concludes the paper.

2 The historical background

In the first years after WWII West Germany was split into occupation zones administered by the US, UK, and France. At the Potsdam conference in July 1945, the Allied powers agreed on resettling Germans from Central and Eastern Europe into the remaining parts of the country (for further details, see Douglas, 2013). Since France did not participate in the Potsdam conference, it did not feel obliged to the agreements regarding the intake of refugees. Schumann (2014) provides an excellent overview of the background

leading to the restrictive migration policy in the French occupation zone. In a nutshell, the official line of argumentation was that housing conditions in this occupation zone have been worse than in the rest of Germany. This is highly disputed (Douglas, 2013) and cannot be confirmed empirically (Burchardi & Hassan, 2013; and section 4.1. of the present paper).

The French occupation zone comprised the area of southwest Germany including the current State of Rhineland-Palatinate and the southern part of the current State of Baden-Wuerttemberg. The border did not follow any historical state borders within Germany. It is also unlikely that there was “selection” of regions into the French occupation zones that impact on long-run regional development (for a discussion see Schumann, 2014; for details on how borders of occupation zones were drawn, see Moseley, 1950).

The temporary migration barrier could have had different effects on regional development after its removal. French regions did not share the burden of hosting expellees in the first years after WWII. This may imply that regions have relatively attractive regional conditions at the time when the barrier was removed (e.g., low unemployment rates, high per capita income) providing manifold incentives to migrate into the area.⁶ If internal migrants are positively selected then regions formerly occupied by the French may even yield additional growth. Furthermore, there was public support for resettlements of expellees after 1949 into areas with low shares of expellees. For these reasons one should expect above-average population growth in the French zone.

Previous evidence by Schumann (2014) finds that there is still a striking difference between adjacent French and US areas in 1970 in terms of population levels. There is no concrete explanation for this persistence provided in this paper. It might be the case that this pattern is specific to municipalities adjacent to the French occupation zone border. These areas might be specific because there is no need for relocation of population and economic activity after removing the barrier. Spatial proximity between non-treated and treated regions in the border zone implies (market) access without relocating to areas of the former French occupation zone (for a similar argument, see Braun et al., 2017). Finally, there is no assessment of long-term persistence beyond the year

⁶ Based on a modified Solow-Swan growth model one should expect that a lower rate of population growth implies a higher steady-state output per worker due to the capital dilution effect if expellees have no own capital which can be readily assumed.

1970. The present paper extends the analysis to the year 2010, considers all West German regions, and explores channels behind (potential) persistence of spatial differences, particularly spatial sorting after the removal of the migration barrier.

3 Empirical Strategy

3.1 Data

The analysis is based on historical German full census data. Pre-treatment information is based on census waves from 1925 and 1939 (Statistik des Deutschen Reichs, various volumes). This allows calculating population growth before the migration barrier became effective in 1945. It also allows for a formal test of the common trend assumption (Autor, 2003). The treatment effect can be analyzed by utilizing information from the census waves in 1946, 1950, 1961, and 1970 (Statistisches Bundesamt, various volumes). Information for population from 1980 onwards comes from reports of the German Federal Statistical Office.

The data from 1980 onwards is available in accordance with the current regional classification of counties. In order to work with consistent spatial units, it was necessary to overlay digitized maps of counties in the respective pre-1980 census data with a map including the boundaries of the current counties using Geographical Information Systems software (ArcGIS). The historical counties are split into parts along the border lines of the current counties. This procedure works well if economic activity is homogenously distributed in an area but would be problematic if economic activity in counties is highly concentrated. Since such agglomerated places form so-called district-free cities (*kreisfreie Staedte*) this problem is negligible. Measurement errors may also arise if cities are separated from a district over the period analyzed or if substantial suburbanization processes take place with economic activity concentrated around district-free cities. To err on the side of caution, district-free cities are merged with surrounding counties resulting in a total number of 229 West German regions that are utilized in the analysis.⁷

⁷ A list of these regions can be obtained upon request.

3.2 Method

The assessment of the treatment effect of a migration barrier in the French occupation zone on regional development is based on a Difference-in-Difference (DiD) approach of the following equation:

$$1) \quad Dev_{ry} = \alpha + \beta_1 OCC_FR + \beta_2 YearPost1939 + \beta_3 OCC_FR * YearPost1939 + X_{ry}' \beta_4 + \theta_r + \varepsilon_{ry}$$

In equation (1) Dev_{ry} reflects a development index for region r in year y , which is either captured by population growth or the degree of urbanization measured by population density. The assessment of population dynamics as development measures follows previous studies of long-term regional development (e.g., Acemoglu et al., 2011; Eder & Halla, 2016). They are also of high relevance given the demographic decline many places in OECD countries experience today. OCC_FR is a dummy variable indicating whether a region is located in the French Occupation Zone. $YearPost1939$ is a dummy variable assuming the value of 1 for regions r in the post-treatment period which includes years from 1946 to 2010. $OCC_FR * YearPost-1939$ captures the treatment effect with β_3 as the DiD-estimator of interest. Finally, X_{ry}' represents a vector of control variables (see 3.3. for details).

The equation includes time-invariant planning region fixed effects (θ_r). Planning regions (N=70) are defined as functionally integrated spatial units comparable to labor market areas in the US. They consist of a varying number of counties and capture labor market differences that are determined by location fundamentals (Braun et al., 2017). Including planning region fixed effects circumvents the issue that the standard assumptions underlying the estimates for confidence intervals in DiD-analyses are not appropriate if there are only one treatment and one control region (for further details, see Conley and Taber, 2011). The chapter on results reports regressions with standard errors clustered by planning region-by-time, which permits heteroskedasticity and controls for serial and spatial correlation in ε_{ry} .⁸

Despite considering various control variables, there might be some omitted regional factors that may affect regional development. Therefore, a separate set of robustness checks focuses on adjacent regions along the former border between the French

⁸ An alternative would be to use the Federal States as clustering variable. However, state-by-time clustering would provide only 20 clusters instead of 140 planning region-by-time clusters. The validity of cluster-robust inference requires that the number of clusters is large (Cameron et al., 2008).

and the other two Western occupation zones. Following this border approach has the advantage that treatment and control group have presumably relatively similar economic conditions apart from being located either in the French or the American-British occupation zone. Thus, unobserved regional heterogeneity should play a minor role.

3.3 Control variables

The vector of control variables comprises various measures to capture general regional characteristics and labor market conditions that might explain differences in regional development over time (Table A1 for summary statistics).⁹

One obvious factor that should be considered is war-time destruction. If areas of the French occupation zone were systematically differently affected by allied bombings and warfare, then this may explain regional differences in post-war development. Furthermore, it was shown in previous research that the degree of war-time destruction is negatively related to the population share of expellees after WWII since the availability of housing was a main driver of resettlement of expellees (Burchardi & Hassan, 2013). Information on war-time destruction comes from the housing census as of 1950 (*Gebäude- und Wohnungszaehlung*) (Statistisches Bundesamt, 1956) which was conducted on the same day as the population and occupation census that are utilized in the analysis. The housing census includes information on the stock of housing build before 1945 and the share of this stock that was significantly demolished in war times.¹⁰ It is also controlled for the minimum distance to the Soviet occupation zone and Czechoslovakia which hosted a large German community before the War. Areas close to the new eastern border are expected to have higher shares of expellees (Braun & Kvasnicka, 2014).

Apart from factors that may directly influence resettlement of expellees, several natural conditions are considered. This is a dummy variable indicating whether a region is located at the coastline and indicators for characteristics of soil and their suitability for agriculture and forestry which was found to be related to interregional differences in the degree of agglomeration (Combes et al., 2010). These conditions may also determine location choice of expellees working in agriculture before their expulsion. The information on soil characteristics is based on the European Soil Data Centre.

⁹ A correlation matrix is not reported for brevity.

¹⁰ Brakman & Garretsen (2004) and Burchardi & Hassan (2013) use a different data source for war-time destruction which is less precise for the regional level of analysis used in this study.

In a series of robustness checks, it is also controlled for the role of industry structure by including the employment share in manufacturing before the restrictive migration policy became effective. The data stem from the occupation censuses in 1925 and 1939. Agglomeration effects play an important role for regional growth (e.g., Glaeser et al., 1992; Behrens et al. 2014).¹¹ Therefore, population density is employed as control variable. Note that in some specifications population density is the outcome variable of interest. Another variable that may affect regional development is the regional market potential. Redding and Sturm (2008) find that following German division in 1949, West German cities close to the inner German border saw a tremendous decline in population growth relative to other West German cities due to their loss of market potential. For considering market potential, a Harris-type market potential function is included (see Redding & Sturm, 2008; Suedekum, 2008).¹² This variable is defined as the distance-weighted sum of the total population in all other districts in 1950. Finally, the local presence of universities is considered to check for the role of the regional knowledge base not yet covered by industry structure and agglomeration.¹³

The assessment also exploits direct information on expellees to corroborate the findings of the main DiD-framework. This data stems from censuses in 1950 and 1961. Expellees are defined as Germans from the former Eastern territories which are nowadays part of Poland and Russia, Sudeten Germans who resided in Czechoslovakia before WWII and so-called *Volksdeutsche* who were spread all over Central and Eastern European territories before 1945.

4 Empirical findings

4.1 Descriptives

Figure 1 indicates that there was a common trend of development before 1939 and WWII while regions in the French occupation zone revealed a much lower growth until 1950. The population share of expellees in areas of the former French occupation zone was 7 percent in 1950 while it was 21.5 percent in other West German territories (Table

¹¹ It has to be noted that pre-war population density is highly correlated with war-time destruction ($r=0.68$).

¹² Movements of expellees into West German regions that are close to the French occupation zone are affecting the post-1945 market potential as well.

¹³ Due to data constraint, for the year 1925 the population share aged above 15 years is used to capture the workforce.

1). The few expellees in the French occupation arrived in early 1945 before the migration barrier became effective or in late 1949 or early 1950 when the barrier was removed.

As mentioned before, the inflow of expellees came along with a drastic deterioration of economic conditions. This is exemplified in Table 1 which shows that the unemployment rate in areas of the French occupation zone has been much lower than in non-French regions in December 1949. The housing conditions have been relatively similar. This shows that the official argument for the restrictive migration policy, namely above average war-related damages, is not supported by the statistics. Finally, the average price for renting a flat was not higher in areas formerly occupied by the French. In regions adjacent to the occupation zone border, the prices for flats have been even lower in areas formerly occupied by the French. Thus, lower costs of living and lower unemployment should have provided incentives to move to areas of the former French occupation zone once the migration barrier was no longer effective.

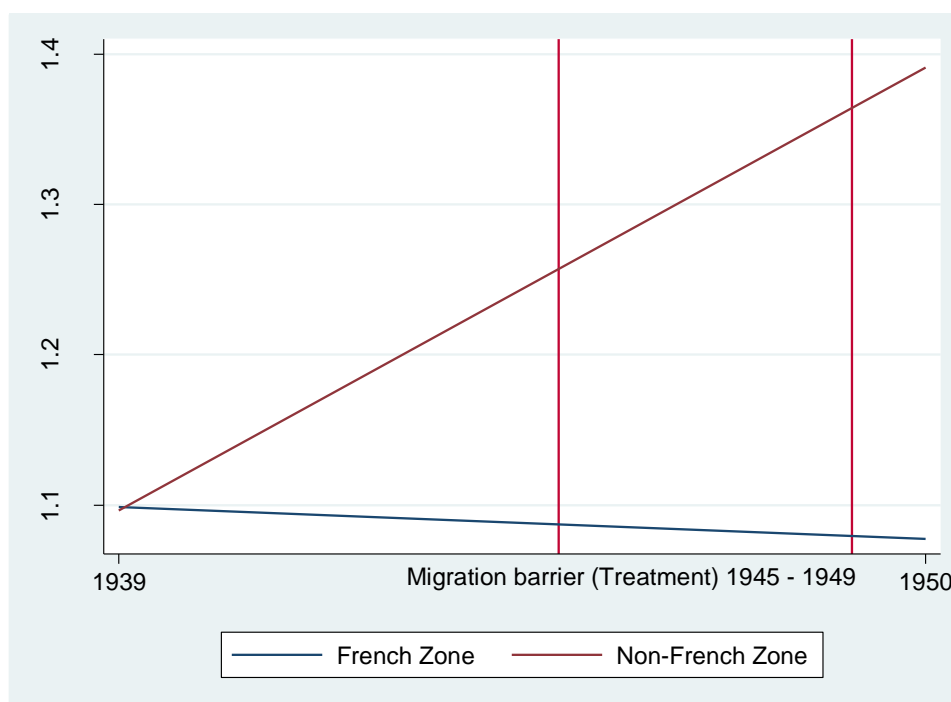


Figure 1: Population growth before and after the treatment

Table 1: Selected regional differences

	All regions			Border regions		
	French	Non-French	Diff	French	Non-French	Diff
Population share of expellees in 1950	0.069	0.215	***	0.070	0.174	***

War-time destruction in 1945	0.187	0.157	n.s.	0.203	0.204	n.s.
Average price for renting a flat in 1950 (in DM)	8.784	8.645	n.s.	8.798	9.484	**
Unemployment rate in 1949 (in %)	0.069	0.133	***	0.068	0.068	n.s.

Notes: All regions N=229 (N_French=185; N_Non-French=44); Border regions: N=55 (N_French=30; N_Non-French=25); Sig levels: *** p<0.01, ** p<0.05, * p<0.1, n.s. not significant.

4.2 Baseline results

Table 2 presents the baseline results. The different model specifications clearly demonstrate that population growth after WWII was significantly lower in areas that were exposed to restrictive migration policies in the late 1940s. The effect is significant and negative for the period 1939 to 1946. The period from 1939 to 1950 includes the first year after the removal of the barrier. The coefficient estimate for the DiD-estimator is only slightly smaller than in the 1939-46-specification. The other models suggest that the coefficient is not getting smaller for time periods including years beyond 1961.¹⁴ Rather there is even a slight increase in the gap. In the early 1960s, the public resettlement policies were fading out which suggests that there was no adjustment of population levels beyond the direct effects of this scheme. The models of Table 2 show that war-time destruction in 1945 is negatively related to long-term growth.¹⁵ Distance to GDR and Czechoslovakia play no meaningful role.

In models that are restricted to regions adjacent to the border of the French occupation zone, there is even a tendency for diverging population levels over time (Table 3). Bordering regions are likely to have similar unobserved regional characteristics apart from being either located in the French or Non-French occupation zone between 1945 and 1949.

The results for the treatment effects are confirmed in the models of Table 4 where urbanization (population density) is the outcome variable. The models on urbanization allow for a formal test of the common trend assumption. The test requires an interaction of the dummy indicating the French occupation zone with a year dummy for 1925. The interaction is not significant. This is evidence that French and Non-French areas were not different in terms of urbanization before the migration barrier treatment.

¹⁴ One can track population development over the 1950s when referring to data from respective Yearbooks of the German Federal Statistical Office. However, the definition of expellees is slightly different in these years. It also includes Germans coming from communist Eastern Germany.

¹⁵ It should be noted that there is only variation in this variable for the periods starting in 1939.

Table 2: The treatment effect of the migration barrier on population growth over time: Baseline model

<i>Dep Var: Population growth (1925-39) & (1939-X)</i>	I	II	III	IV	V	VI	VII	VIII
	1939-46	1939-50	1939-61	1939-70	1939-80	1939-90	1939-00	1939-10
Post-1939 X	-0.318***	-0.292***	-0.170***	-0.172***	-0.210***	-0.200***	-0.212***	-0.219***
French Occ Zone	(0.029)	(0.025)	(0.028)	(0.045)	(0.057)	(0.064)	(0.071)	(0.081)
French Occ Zone (Y=1)	0.003	0.006	-0.043	-0.082*	-0.102*	-0.115**	-0.125*	-0.135*
	(0.080)	(0.074)	(0.048)	(0.045)	(0.054)	(0.054)	(0.065)	(0.071)
Post-1939 (Y=1)	0.381***	0.427***	0.381***	0.515***	0.603***	0.690***	0.844***	0.852***
	(0.022)	(0.021)	(0.021)	(0.031)	(0.046)	(0.053)	(0.063)	(0.073)
War-time destruction 1945	-0.988***	-0.830***	-0.368***	-0.391***	-0.457***	-0.564***	-0.686***	-0.664***
	(0.082)	(0.070)	(0.070)	(0.102)	(0.134)	(0.147)	(0.175)	(0.187)
Distance to GDR	0.000	-0.011	-0.058*	-0.037	-0.065	-0.066	-0.075	-0.082
	(0.027)	(0.025)	(0.033)	(0.051)	(0.069)	(0.080)	(0.092)	(0.102)
Distance to CSSR	0.034	0.040	0.076**	0.083	0.139*	0.143*	0.171*	0.186*
	(0.028)	(0.025)	(0.033)	(0.053)	(0.073)	(0.081)	(0.091)	(0.101)
Population in t	-0.001***	-0.001***	-0.001*	-0.001**	-0.002**	-0.003**	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Natural conditions	Y	Y	Y	Y	Y	Y	Y	Y
Planning Region Dummies	Y	Y	Y	Y	Y	Y	Y	Y
N	458	458	458	458	458	458	458	458
R ²	0.743	0.773	0.741	0.697	0.642	0.663	0.694	0.671

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1. The controls for natural conditions comprise a dummy variable indicating location at the coastline, soil indicators (topsoil parental material, topsoil organic carbon content, mineralogy of the subsoil), and slope.

Table 3: The treatment effect of the migration barrier on population growth over time across regions adjacent to the French occupation zone border

<i>Dep Var: Population growth (1925-39) & (1939-X)</i>	I	II	III	IV	V	VI	VII	VIII
	1939-46	1939-50	1939-61	1939-70	1939-80	1939-90	1939-00	1939-10
Post-1939 X	-0.207***	-0.199***	-0.253***	-0.344***	-0.403***	-0.395***	-0.392***	-0.400***
French Occ Zone	(0.041)	(0.037)	(0.037)	(0.061)	(0.075)	(0.082)	(0.086)	(0.095)
Controls Table 2	Y	Y	Y	Y	Y	Y	Y	Y
Observations	110	110	110	110	110	110	110	110
R ²	0.730	0.774	0.859	0.815	0.794	0.810	0.826	0.807

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 4: The treatment effect of the migration barrier on urbanization over time

	I	II
<i>Dep Var: Population density (ln)</i>	All regions	Border regions
French Occ Zone (Y=1)	-0.054	0.240**
	(0.062)	(0.093)
French Occ Zone X Year 1925	0.067	0.013

	(0.118)	(0.123)
French Occ Zone X Year 1946	-0.289***	-0.192***
	(0.041)	(0.053)
French Occ Zone X Year 1950	-0.247***	-0.173***
	(0.037)	(0.046)
French Occ Zone X Year 1961	-0.133***	-0.193***
	(0.033)	(0.040)
French Occ Zone X Year 1970	-0.126***	-0.229***
	(0.036)	(0.046)
French Occ Zone X Year 1980	-0.144***	-0.251***
	(0.042)	(0.051)
French Occ Zone X Year 1990	-0.134***	-0.237***
	(0.046)	(0.054)
French Occ Zone X Year 2000	-0.129***	-0.217***
	(0.047)	(0.053)
French Occ Zone X Year 2010	-0.132**	-0.222***
	(0.053)	(0.058)
Year Dummies	Y	Y
Controls Table 2	Y	Y
R ²	0.778	0.879

Notes: Clustered SE (planning region * Year). Sig levels: ***
p<0.01, ** p<0.05, * p<0.1 N=2290 (All regions); N=550 (border
regions)

4.3 Robustness check

In a robustness check, further controls, as discussed in section 3.3, are introduced (Table 5). This exercise leaves the DiD-estimators virtually unchanged. The models show that market potential is positively related to population growth in the long-run while density has a negative relationship with growth in the first years after WWII. Population structure is not systematically related to population growth while specialization in manufacturing is positively related to growth until 1970 only. Finally, the exogenous baseline control variables are interacted with the year dummy to account for year-specific effects of these exogenous regional conditions (Table 6). The results are robust when restricting the analysis to border regions (Table A4 and A5). Altogether, the additional analyses provide confidence in the baseline estimates presented in section 4.2.

Table 5: The treatment effect of the migration barrier on population growth over time: Extended model

<i>Dep Var: Population growth (1925-39) & (1939-X)</i>	I 1939-46	II 1939-50	III 1939-61	IV 1939-70	V 1939-80	VI 1939-90	VII 1939-00	VIII 1939-10
Post-1939 X	-0.321***	-0.295***	-0.176***	-0.180***	-0.217***	-0.207***	-0.218***	-0.224***
French Occ Zone	(0.029)	(0.025)	(0.028)	(0.045)	(0.058)	(0.065)	(0.072)	(0.082)
French Occ Zone (Y=1)	0.011	0.019	-0.021	-0.045	-0.054	-0.062	-0.067	-0.079

	(0.080)	(0.075)	(0.049)	(0.047)	(0.060)	(0.060)	(0.073)	(0.081)
Post-1939 (Y=1)	0.362***	0.407***	0.355***	0.466***	0.528***	0.605***	0.743***	0.751***
	(0.025)	(0.024)	(0.024)	(0.035)	(0.048)	(0.052)	(0.062)	(0.069)
War-time destruction 1945	-0.960***	-0.811***	-0.357***	-0.375***	-0.455***	-0.555***	-0.675***	-0.671***
	(0.081)	(0.069)	(0.066)	(0.097)	(0.130)	(0.143)	(0.171)	(0.187)
Distance to GDR	0.018	0.012	-0.022	0.035	0.055	0.068	0.086	0.089
	(0.033)	(0.030)	(0.041)	(0.066)	(0.089)	(0.098)	(0.115)	(0.127)
Distance to CSSR	0.034	0.037	0.070**	0.069	0.110	0.111	0.130	0.140
	(0.029)	(0.026)	(0.034)	(0.054)	(0.071)	(0.079)	(0.091)	(0.101)
Population in t	-0.000	-0.000	-0.001	-0.001	-0.002*	-0.002	-0.003*	-0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Population density (ln)	-0.056*	-0.039	-0.024	-0.038	-0.012	-0.027	-0.034	0.004
	(0.029)	(0.028)	(0.028)	(0.040)	(0.054)	(0.058)	(0.069)	(0.074)
Market Potential (ln)	0.149	0.170	0.215	0.441*	0.735*	0.835**	1.026**	1.062**
	(0.134)	(0.134)	(0.166)	(0.263)	(0.386)	(0.419)	(0.471)	(0.500)
University (Y=1)	0.032	0.034	0.067***	0.112***	0.177***	0.189***	0.205***	0.230***
	(0.036)	(0.031)	(0.023)	(0.035)	(0.056)	(0.061)	(0.073)	(0.085)
Employment share in manufacturing	0.159	0.184*	0.326***	0.437***	0.365*	0.376*	0.297	0.168
	(0.111)	(0.105)	(0.101)	(0.143)	(0.195)	(0.222)	(0.264)	(0.288)
Natural conditions	Y	Y	Y	Y	Y	Y	Y	Y
Planning Region Dummies	Y	Y	Y	Y	Y	Y	Y	Y
N	458	458	458	458	458	458	458	458
R ²	0.747	0.776	0.750	0.708	0.653	0.674	0.703	0.679

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1. The controls for natural conditions comprise a dummy variable indicating location at the coastline, soil indicators (topsoil parental material, topsoil organic carbon content, mineralogy of the subsoil), and slope.

Table 6: The treatment effect of the migration barrier on population growth over time: Extended model with year interactions

<i>Dep Var: Population growth (1925-39) & (1939-X)</i>	I	II	III	IV	V	VI	VII	VIII
	1939-46	1939-50	1939-61	1939-70	1939-80	1939-90	1939-00	1939-10
Post-1939 X French Occ Zone	-0.263*** (0.030)	-0.245*** (0.028)	-0.230*** (0.036)	-0.300*** (0.056)	-0.408*** (0.068)	-0.433*** (0.073)	-0.480*** (0.080)	-0.500*** (0.085)
Controls Table 5	Y	Y	Y	Y	Y	Y	Y	Y
Post-1939 X Baseline con- trols (Table 2)	Y	Y	Y	Y	Y	Y	Y	Y
Observations	458	458	458	458	458	458	458	458
R ²	0.796	0.828	0.786	0.735	0.692	0.718	0.754	0.739

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1.

4.4 Population growth after removing the migration barrier

This section devotes attention to potential channels that may explain the striking long-term persistence in spatial differences in population levels demonstrated so far. To this end, the empirical strategy is slightly adapted. So far, the pre-treatment period from 1925 to 1939 has been included along with a post-treatment period from 1939 spanning

to various years after 1945. Now, the period between 1939 and 1950 and the period from 1950 and later years are separated.

Growth in the post-1950 period measure migration patterns after the removal of the migration barrier. The first period (1925-39) measures pre-treatment growth. In the second period, the migration barrier became effective before being finally removed in 1949.¹⁶ In the DiD-terminology, there is a second treatment in this setting, namely the removal of the migration barrier before the third period (1950-61). The respective equation looks as follows:

$$(2) \quad Dev_{ry} = \alpha + \beta_1 OCC_FR + \beta_2 YearPost1939 + \beta_3 OCC_FR * YearPost1939 + \beta_4 YearPost1950 + \beta_5 OCC_FR * YearPost1950 + X'_{ry} \beta_6 + \theta_r + \varepsilon_{ry}$$

The reference period is 1925-39. Equation (2) is then informative about whether treated regions returned to their pre-treatment growth trajectory after the removal of the migration barrier.

Model I of Table 7 includes the same control variables like in Table 2. The model shows a clear negative growth effect for the period 1939-50 while there is a positive growth effect for the period 1950-61. The DiD-coefficient for the second 11-year period is only one third in absolute size of the negative growth in the period when the migration barrier was effective. In model II, the post-1950 growth period is extended to the year 2010. The gap in the DiD-coefficients hardly narrowed suggesting that there was no meaningful convergence.

As previously mentioned, there was a public relocation scheme for expellees to regions with low initial population shares of expellees. The available data do not allow disentangling the migration flow of expellees that was due to quotas and those that were voluntary. An implicit control for the extent of public relocation schemes is the population share of expellees in 1950. It was strongly correlated with bad housing conditions

¹⁶ The results of Table 2 showed that the treatment effect for the period 1939 to 1946 is almost similar to the DiD-estimator for the 1939-1950-specification. Thus, there have been no huge population movements into the French occupation zone taking place between 1946 and 1950.

and unemployment.¹⁷ For 1939, the variable assumes the value of zero while it has positive values for 1950.

Including the control shows whether the small catch-up in population growth after 1950 was driven by state-organized relocations. This is the case when the DiD-coefficient turns to insignificance. If there is still a positive DiD-coefficient after controlling for the extent of public relocation schemes, this suggests that regions could attract further internal migrants due to favorable economic conditions. If the effect even gets negative this could be explained by a negative selection into the public relocation scheme. To be precise, people that were already economically and socially integrated and contributing to the (long-run) development of regions where they initially arrived may have been less likely to participate in the program.

In fact, introducing the population share of expellees in 1950 implies a negative DiD-coefficient for the post-1950 period that is almost equal in size as the respective coefficient for the period when the migration barrier was effective (model III and IV). This pattern is robust when introducing endogenous variables like in Table 5 (model V and VI). Model VII and VIII include characteristics of the regional expellee population (for details, see notes of Table 7).

Table 7: Population growth before and after removing the migration barrier

<i>Dep Va: Population growth (1925-39); (1939-1950) & (1950-X)</i>	I	II	III	IV	V	VI	VII	VIII
	1950-61	1950-10	1950-61	1950-10	1950-61	1950-10	1950-61	1950-10
Post-1939 X	-0.310***	-0.310***	-0.299***	-0.298***	-0.303***	-0.304***	-0.303***	-0.304***
French Occ Zone	(0.029)	(0.048)	(0.026)	(0.048)	(0.026)	(0.046)	(0.025)	(0.047)
Post-1950 X	0.119***	0.143**	-0.269***	-0.268***	-0.271***	-0.268***	-0.258***	-0.373***
French Occ Zone	(0.025)	(0.066)	(0.033)	(0.075)	(0.033)	(0.074)	(0.042)	(0.084)
Controls Table 2	Y	Y	Y	Y	Y	Y	Y	Y
Population share of expellees 1950	N	N	-2.721*** (0.193)	-2.883*** (0.349)	-2.592*** (0.186)	-2.413*** (0.354)	-2.563*** (0.177)	-2.442*** (0.371)
Controls Table 5	N	N	N	N	Y	Y	Y	Y
Expellee characteristics 1950	N	N	N	N	N	N	Y	Y
Observations	687	687	687	687	687	687	687	687
R ²	0.564	0.422	0.738	0.525	0.744	0.568	0.764	0.597

¹⁷ The correlation between the population share of expellees and the share of expellees living in emergency accommodation (*Notunterkuenfte*) was $r=0.78$ while it is also highly correlated with local unemployment rates ($r=0.56$).

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1. Expellee characteristics comprises the share of expellees from the former eastern German territories, the share of expellees from Czechoslovakia, the share of Protestants among expellees, the share of expellees in non-agricultural private sector self-employment, and the share of expellees that are active in agriculture in 1950 or have been active in agriculture in their region of origin.

In Table 8, the exogenous baseline controls are interacted with the year dummies for 1939 and 1950. The results of this exercise yield a lower negative treatment effect for the period from 1950 and 1961 but a negative long-run treatment effect that exceeds even the negative effect of the period when the barrier was enforced.

Table 8: Population growth before and after removing the migration barrier: Accounting for year interactions

<i>Dep Var: Population growth (1925-39); (1939-1950) & (1950-X)</i>	I 1950-61	II 1950-10	III 1950-61	IV 1950-10
Post-1939 X French Occ Zone	-0.249*** (0.032)	-0.231*** (0.049)	-0.234*** (0.033)	-0.229*** (0.046)
Post-1950 X French Occ Zone	-0.126*** (0.042)	-0.249** (0.101)	-0.112** (0.044)	-0.288*** (0.100)
Controls Table 7 model VII/VIII	Y	Y	Y	Y
Post-1939 X Baseline controls (Table 2)	Y	Y	Y	Y
Post-1950 X Baseline controls (Table 2)	N	N	Y	Y
Post-1939 X War-time destruction	-0.860*** (0.123)	-0.768*** (0.223)	-0.905*** (0.098)	-0.879*** (0.118)
Post-1950 X War-time destruction	N	N	-0.062 (0.078)	-0.208 (0.180)
Observations	687	687	687	687
R ²	0.818	0.635	0.824	0.671

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1.

The interaction between war-time destruction and the year dummies is highlighted in this table because it reveals an interesting pattern that is informative about migration behavior after 1950. The interaction between the post-1950 dummy and destruction is insignificant. This implies that places with a lot of war-time destruction in the early 1940s were back on the same growth trend as before 1939. This, in turn, implies that there was a massive migration into reconstructed cities in the 1950s. This pattern is separately addressed in Table 9.

In section 3.3, it was already explained that war-time destruction impeded settlement of expellees due to housing shortages. The reconstruction of cities in the 1950s

made it possible to relocate there. There might have been a spatial sorting (of particularly productive individuals, [Behrens et al., 2014]) into cities after 1950 that came with a delay due to war-time destructions.

Table 9: Population growth after the removal of the migration barrier

	I	II	III	IV	V	VI	VII	VIII
<i>Dep Var: Growth</i>	<i>Expellees (50-61)</i>				<i>Population (excl. Expellees) (50-61)</i>			
French Occ Zone	0.559 (0.431)	0.591 (0.391)	0.622 (0.428)	0.565 (0.424)	-0.012 (0.031)	-0.004 (0.028)	-0.034 (0.044)	-0.033 (0.052)
War-Time Destruction 1945	1.458*** (0.261)	0.901*** (0.212)	0.873*** (0.222)	0.765*** (0.234)	0.215*** (0.062)	0.178*** (0.065)	0.161** (0.079)	0.162* (0.086)
War-Time Destruction 1945 X French Occ Zone	N	N	N	0.320 (0.756)	N	N	N	-0.006 (0.112)
Controls Table 2	Y	Y	Y	Y	Y	Y	Y	Y
Controls Table 5	N	Y	Y	Y	N	Y	Y	Y
Expellee characteristics 1950	N	N	Y	N	N	N	Y	N
N	229	229	229	229	229	229	229	229
R ²	0.900	0.928	0.930	0.930	0.810	0.822	0.826	0.826

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1; Instead of the size of population in 1950 it is controlled for the number of expellees in model I to IV and for the number of non-expellees in model V to VIII

The models of Table 9 show that it was particularly expellees that moved to cities. Comparing growth in expellee population with that of natives reveals that the effect is six to seven times stronger for the former group. This suggests that there was a huge spatial sorting of expellees into cities that came with a delay due to housing shortages in damaged areas at the time of their initial arrival in West Germany. An interaction between war-time destruction and the marker for the French occupation zone is insignificant (Table 9, model VIII). Thus, demolished cities in this area did not attract particularly many refugees. Altogether, agglomerations appear to have been attracting refugees in large numbers as compared to areas that were exposed to an explicit migration barrier.

5 Conclusions

This paper analyzes the long-term effect of temporary but restrictive migration barriers on regional development in the wake of a refugee crisis by exploiting the large-scale expulsions of Germans after WWII. This empirical setting has several “appealing” features that avoid methodological concerns (forced) migration research typically has to deal with. There were no selective migration and cohort effects influencing migrating decisions. The same applies to return migration as well as language and skill transfer. The

paper exploits the fact that some German regions did not accept the hostage of refugees. This was a political decision by French authorities responsible for administering a part of Germany after WWII. In contrast to the French occupation zone, refugees could resettle without political restrictions in the other two West German occupation zones (US, UK), and in the Soviet occupation zone.

The results reveal that regions that were exposed to the migration barrier in the first years after WWII have significantly lower levels of population growth until today. These areas also have a persistently lower degree of urbanization. At the same time, areas that became part of the French occupation zone had the same level of urbanization as other West German regions before the introduction of the migration barrier. The results are robust to controlling for an array of other factors that determined expellee resettlement and long-run development. There appears to be no convergence of population growth over time. Focusing on regions adjacent to the French occupation zone border even reveals that development prospects of areas formerly occupied by the French decrease long after the migration barrier was removed again. The results of this border approach are particularly interesting because it is likely that areas have similar (unobserved) pre-treatment characteristics and differ only by the fact that some regions were exposed to the treatment in the first years after WWII.

Assessing the dynamics of development after the removal of the migration barrier reveals spatial sorting patterns. There is a slight catch-up in population levels in areas of the former French occupation zone in the first years after removing the barrier. However, this effect seems to be explained almost entirely by public resettlement schemes of expellees. Apparently, the former French occupation zone has not been attractive for internal migration beyond this public program. One can speculate that expellees were negatively selected into this program, namely that only people that were not yet economically and socially integrated into the regions where they initially arrived, participated in the scheme. The assessment also reveals a massive internal migration after 1950 into cities which were heavily bombed in WWII. Migration to the reconstructed cities was particularly driven by expellees. This migration pattern suggests that there was a delayed spatial sorting that could not take place earlier due to war-time destruction. Theory predicts that particularly highly productive people select into cities (e.g., Behrens et al., 2014).

The findings of this study have important implications for the current European refugee crisis which is marked by uncoordinated approaches to resettlement issues (e.g., Huertas-Moraga & Rapoport, 2015a; b). The setting of the present paper resembles a situation where country A is not accepting refugees while there is no such restriction in country B. Both countries have similar pre-barrier development and similar economic conditions at the time of introducing the barrier in B. Refugees can settle in country A and B after the barrier is removed. Furthermore, country A follows a quasi-random spatial dispersal policy combined with compulsory residence. This resembles the resettlement approach in post-War West Germany which was determined by war-time destruction and availability of housing. Allocating refugees randomly all over the country combined with compulsory residence is also a typical approach in many European countries (e.g., Edin et al., 2003; Damm, 2009; Glitz, 2012). Devastated housing conditions in cities bombed during WWII implied a “quasi-dispersal policy” in the first years of post-War Germany.

Based on the results of this study, one should expect persistently different population levels as well as a lower long-run degree of urbanization after the removal of the migration barrier in country B. This pattern could be problematic if the country is struggling with demographic change which is negatively impacting on social security systems. Public resettlement schemes after removing the temporary barrier may circumvent this pattern but as the case of Germany after WWII shows, this does not spur further migration beyond potentially costly relocation programs. Rather it can be expected that refugees sort into places where they perceive themselves to be more productive after “rules” regarding compulsory residence in country A are fading out. The theory on spatial sorting (e.g., Behrens et al., 2014) would predict a surge into cities which, in the current refugee crisis, maybe even spurred if there are already enclaves of people with similar ethnic origin (Edin et al., 2003).

The limitation of the study is that there is not much information on socio-demographic characteristics of expellees relocating after 1950. It would be helpful to understand who was selecting into migration to areas exposed to the treatment. This notwithstanding, the analysis demonstrates that temporary place-based migration barriers in the wake of a refugee crisis can have long-run negative implications for regional development.

6 References

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7 Appendix

Table A 1: Summary Statistics: All regions

	Areas of French occupation zone				Areas of non-French occupation zone			
	Mean	S.D.	Min	Max	Mean	S.D.	Min	Max
Population Growth 1925-39	1.1	0.08	0.98	1.32	1.1	0.1	0.79	1.55
Population Growth 1939-46	0.98	0.08	0.76	1.13	1.32	0.24	0.75	2.04
Population Growth 1939-50	1.08	0.09	0.85	1.26	1.39	0.21	0.89	2.03
Population Growth 1939-2010	1.6	0.42	0.93	2.55	1.84	0.55	1.02	4.69
War-Time Destruction 1945	0.19	0.16	0.01	0.72	0.16	0.16	0.01	0.9
Population Share Expellees 1950	0.07	0.02	0.03	0.14	0.22	0.08	0.05	0.39
Distance to GDR	267.65	64.96	165.23	422.58	157.32	95.24	0	363.81
Distance to CSSR	377.23	48.52	290.42	487	284.47	155.81	0	612.29
Topsoil organic carbon content	3.09	0.93	2	4	3.38	0.73	1	4
Coastline (Y=1)	0	0	0	0	0.07	0.26	0	1
Mineralogy of the Subsoil	2.2	0.66	2	5	2.52	1.12	1	5
Topsoil parent material	3.73	1.6	1	7	4.33	1.85	1	8
Slope	664.77	227.77	350	1350	545.69	280.72	3	1440
Population density (ln)	4.8	0.43	3.98	6.36	4.74	0.77	3.49	7.27
Market Potential (ln)	12.44	0.18	12.02	12.8	12.51	0.19	11.91	12.96
University (Y=1)	0.02	0.15	0	1	0.04	0.19	0	1
Employment share manufacturing	0.34	0.11	0.12	0.58	0.34	0.13	0.13	0.7

Table A 2: Summary Statistics: Border regions

	Areas of French occupation zone				Areas of non-French occupation zone			
	Mean	S.D.	Min	Max				
Population Growth 1925-39	1.1	0.09	0.98	1.32	1.11	0.08	0.98	1.31
Population Growth 1939-46	0.99	0.07	0.83	1.13	1.21	0.18	0.84	1.54
Population Growth 1939-50	1.09	0.09	0.89	1.26	1.3	0.16	1.01	1.59
Population Growth 1939-2010	1.64	0.38	0.93	2.55	2.05	0.49	1.41	3.13
War-Time Destruction 1945	0.2	0.17	0.01	0.72	0.2	0.16	0.01	0.55
Population Share Expellees 1950	0.07	0.03	0.03	0.14	0.17	0.06	0.09	0.32
Distance to GDR	242.71	54.58	165.23	345.33	198.31	60.55	108.95	342.24
Distance to CSSR	355.35	45.11	290.42	487	306.07	55.15	231.29	464.43
Topsoil organic carbon content	3.36	0.85	2	4	3.5	0.85	2	4
Coastline (Y=1)	0	0	0	0	0	0	0	0
Mineralogy of the Subsoil	2.2	0.64	2	5	2.07	0.25	2	3
Topsoil parent material	4.16	1.58	1	7	4.43	1.51	2	7
Slope	620.8	192.04	380	940	661.67	225.57	200	1440
Population density (ln)	4.85	0.49	3.98	6.36	5.17	0.7	3.98	7.04
Market Potential (ln)	12.5	0.17	12.1	12.8	12.59	0.18	12.11	12.9
University (Y=1)	0.04	0.2	0	1	0	0	0	0
Employment share manufacturing	0.34	0.1	0.12	0.56	0.43	0.11	0.22	0.66

Table A 3: Definition of variables

<i>Variable</i>	<i>Definition</i>	<i>Source</i>
Population Growth (t+n/t)	Population in t+n over population in t	Population census 1925, 39, 46, 50, 61, 70; Federal Statistical Office for data from 1980 to 2010
Population Share Expellees 1950	Share of expellees among the total population	Population census 1950
War-Time Destruction 1945	Share of significantly demolished houses over total housing stock in 1945	Housing census 1950
Distance to GDR	Minimum distance of a district to borderline with the German Democratic Republic (GDR)	Own calculations
Distance to CSSR	Minimum distance of a district to borderline with Czechoslovakia	Own calculations
Coastline (Y=1)	Dummy variable that equals one if a region shares a common border with a coastline	Own calculations
Topsoil parent material	This variable represents the dominant parent material in the soil. This variable is a scale of eight characteristics.	European Soil Database
Topsoil organic carbon content	This variable represents the carbon content of the topsoil material. This variable is a scale of four characteristics	
Mineralogy of the Subsoil	This variable represents the minerals in the subsoil, i.e., the intermediate layer between the topsoil and the bedrock. This variable is a scale of eight characteristics	
Slope	Slope is measured as the difference between the maximum and minimum elevations in meters.	Own calculations
Population density (ln)	Population per skm2 (ln)	Population census 1925, 39, 46, 50, 61, 70; Federal Statistical Office for data from 1980 to 2010.
Market Potential (ln)	Distance-weighted sum of total population in all other districts in 1950 (ln)	
University (Y=1)	Dummy variable that equals one if a region has a university in t	Own calculations
Employment share manufacturing	The share of employees in manufacturing industries of total employment (in %)	Employment census 1925, 39, 50

Table A 4: The treatment effect of the migration barrier on population growth over time:
Extended model for border regions

<i>Dep Var: Population growth (1925-39) & (1939-X)</i>	I	II	III	IV	V	VI	VII	VIII
	1939-46	1939-50	1939-61	1939-70	1939-80	1939-90	1939-00	1939-10
Post-1939 X French Occ Zone	-0.214*** (0.045)	-0.206*** (0.041)	-0.266*** (0.037)	-0.370*** (0.056)	-0.432*** (0.070)	-0.427*** (0.072)	-0.426*** (0.077)	-0.436*** (0.083)
Controls Table 5	Y	Y	Y	Y	Y	Y	Y	Y
Observations	110	110	110	110	110	110	110	110
R ²	0.741	0.787	0.868	0.828	0.806	0.821	0.836	0.818

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A 5: The treatment effect of the migration barrier on population growth over time:
Extended model with year interactions

<i>Dep Var: Population growth (1925-39) & (1939-X)</i>	I	II	III	IV	V	VI	VII	VIII
	1939-46	1939-50	1939-61	1939-70	1939-80	1939-90	1939-00	1939-10
Post-1939 X French Occ Zone	-0.206*** (0.045)	-0.180*** (0.045)	-0.204*** (0.054)	-0.244*** (0.080)	-0.310*** (0.096)	-0.321*** (0.102)	-0.331*** (0.112)	-0.336*** (0.119)
Controls Table 5	Y	Y	Y	Y	Y	Y	Y	Y
Post-1939 X Baseline controls (Table 2)	Y	Y	Y	Y	Y	Y	Y	Y
Observations	110	110	110	110	110	110	110	110
R ²	0.741	0.787	0.868	0.828	0.806	0.821	0.836	0.818

Notes: Clustered SE (planning region * Year). Sig levels: *** p<0.01, ** p<0.05, * p<0.1.