LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN
VOLKSWIRTSCHAFTLICHE FAKULTÄT

Alexandra Semrad:

Immigration and educational spillovers: evidence from Sudeten German expellees in post-war Bavaria

Munich Discussion Paper No. 2015-7

Department of Economics
University of Munich

Volkswirtschaftliche Fakultät
Ludwig-Maximilians-Universität München

Online at http://epub.ub.uni-muenchen.de/24851/

Immigration and educational spillovers: evidence from Sudeten German expellees in post-war Bavaria

Alexandra Semrad[§]

May 2015

Abstract

This paper analyses long-term effects of forced WWII migration on educational outcomes. Specifically Sudeten German expellees in post-war Bavaria coming from highly industrialized Sudetenland (Czechoslovakia) had strong preferences for higher secondary schooling, especially in form of a practical, business-related, and general education school. As a result they became actively engaged in the development of post-war middle track education (Realschule, Fachschule). Employing county-level data on student numbers and graduates of secondary education, empirical analysis including ordinary least squares, instrumental variable, and differences-in-differences models reveals that counties housing a higher share of Sudeten Germans after the war are significantly associated with higher educational development some 20 years later. An increase in the share of Sudeten Germans by 1 percentage point increases the share of children (graduates) in middle track education by at least 0.8 (0.1) percentage points, respectively. Calculations suggest that these effects are not mechanically caused by Sudeten Germans and their children demanding education, but are the actual result of educational spillovers to the local population.

[§] Munich Graduate School of Economics, University of Munich, Ludwigstr. 33, 80539 Munich, Germany. Email: alexandra.semrad@econ.lmu.de

This paper has benefitted substantially from comments and suggestions by Davide Cantoni. Further helpful comments by Ludger Wößmann, seminar participants at the University of Munich and ifo Munich, and collaboration with Sebastian Wichert for data collection are gratefully acknowledged.

1 Introduction

Research repeatedly emphasises the role of human capital for economic development.[1] In this context, it has been shown that external impulses from (high-) skilled immigrants can have various beneficial effects on the receiving economy.[2] Instead of focusing on economic outcomes of immigration directly, this paper explores the impact of skilled immigrants and – more importantly – their specific preferences toward education on the level of human capital in the native population. The mass exodus of ethnic Germans in the aftermath of World War II provides a unique natural experiment setting to study the impact of educational spillover effects.

The final months of WWII saw a tremendous movement of ethnic Germans from eastern to western territories of the German Reich fleeing from the advancing Red Army. By the time the Potsdam Agreement was signed on August 2nd 1945, roughly 4 million ethnic Germans from eastern territories had fled to areas which would form West Germany (Jaenicke 1950, p. 6). In 1949, the number of displaced ethnic Germans – so-called *Vertriebene*[3] – in West Germany who had fled or had been expelled from east and central Europe amounted to approximately 8 million people – i.e. 17 percent of the total West German population (Nellner 1959, p. 97). While most refugees doubted in the beginning that their displacement would be permanent, by 1950 at the latest, it was clear that return was impossible (Jaenicke 1950, pp. 5-7).[4] Therefore, integration of these expellees became one of the highest and most urgent objectives in post-war Germany.

The southern German state of Bavaria received a great share of these displaced Germans: in 1950, about 2 million expellees had come to Bavaria, thereby accounting for more than 20 percent of the Bavarian population. The majority of expellees in Bavaria came from territories in Czechoslovakia known as the Sudetenland. Pre-war Sudetenland had been highly industrialized, demanding a profound level of education. In addition, Sudeten Germans assigned a high value to education since it also

[1] The literature on the importance of human capital for economic development is vast. See for example, Barro (2001), Easterlin (1981), and Krueger and Lindhal (2001). These studies suggest that economic growth is positively associated with secondary and higher educational attainment (Barro 2001), schooling expansion (Easterlin 1981), and influenced through education policies (Krueger and Lindahl, 2001).

[2] See for example Borjas (1999) and Kerr and Kerr (2011) for surveys.

[3] The Federal Expellee Law (BVFG, *Bundesvertriebenengesetz*) distinguishes between 'refugees' (*Flüchtlinge*) who fled from the Soviet occupation zone (SOZ)/German Democratic Republic (GDR) and 'displaced people' (*Vertriebene*) as German citizens or ethnic Germans who lived in former eastern German territories (lost during or after the war) or beyond the borders of the German Reich in 1937 and were displaced during or after the war. The latter are further differentiated into 'expellees' (*Heimatvertriebene*) who lived in former eastern German territories (inside 1914-37 borders) or former Austro-Hungarian territories in 31.12.1937, and into common 'displaced persons' (*Vertriebene*) who lived in would-be eastern territories or outside the German Reich on 31.12.1937. Children born to these displaced Germans inherit the displacement status of their parents (BVFG §§1-4). This suggests that 'natives' are people who had their place of residency in territories which later formed the Federal Republic of Germany (BRD) prior to the war. Sudeten Germans belong to the category *Heimatvertriebene* since Bohemia, Austrian/Moravian Silesia, and Moravia were part of the Austro-Hungarian Empire. In this paper, however, the terms expellees and displaced Germans will be used synonymously to refer to expelled or displaced ethnic Germans.

[4] These hopes of a fast return were fueled in the immediate post-war years by various politicians such as Bavarian Prime Minister Högner (Oct. 1945), US Secretary of State Byrnes (Sept. 1946) and his successor Marshall (Apr. 1947) (Habel 2002, p. 106).

enabled them to preserve their cultural identity in Czechoslovakia (Lemberg 1959, pp. 370-2). Hence, displaced Sudeten Germans brought along specific preferences toward education, or more precisely, secondary education of a practical, business-oriented, and general type. Once arrived in Bavaria, Sudeten Germans successfully lobbied for the reintroduction of Realschulen which met all their educational demands but had been abolished in Nazi Germany. By increasing the provision of middle track education (i.e. Realschule and Fachschule) particularly in the Bavarian countryside, as well as by expressing their value for this kind of secondary education, Sudeten Germans might have enhanced educational participation of native Bavarians through educational spillover effects.

Thus, this paper analyses the role of Sudeten Germans in Bavarian (higher) secondary education and studies their impact on educational development of post-war Bavaria. The latter is done by exploring county-level differences in student numbers and people with certain secondary school degrees through variation in the share of Sudeten Germans present after the war. Results indicate that a higher share of Sudeten Germans in 1950 is associated with higher educational participation – that is, a higher share of children in higher secondary education – as well as with higher educational attainment – that is, a higher share of the population holding secondary school degrees some 20 years after displacement. According to the results of a back-of-the-envelope-calculation, the increase in the stock of people with secondary school degrees can be traced back not only to more Sudeten Germans holding these degrees upon arrival in Bavaria but also to a higher number of native Bavarians with these degrees. Hence, Sudeten Germans induced a positive spillover effect on the Bavarian population. Results are especially pronounced for applied education, i.e. middle track institutions. Several robustness checks are employed and support the results.

By focusing on the impact of ethnic German expellees on the educational development of post-war Bavaria, this paper contributes to the economic literature on the impact of both forced and high-skilled migration.

The economic integration of ethnic German expellees has recently started to receive attention by economists. These studies can be sorted into two categories: (1) effects on displaced Germans as forced migrants and (2) effects on post-war Germany as the receiving country and its communities.[5] Research belonging to the first category focuses on the economic impact on displaced ethnic Germans after WWII. For example, Bauer et al. (2013) find that the long-term effects on economic outcomes of displaced Germans were significantly negative compared to native Germans: expellees experienced lower incomes and higher unemployment risks even 25 years after resettlement. This economic disadvantage seems to have been inherited by their children who as second-generation migrants[6], were also economically worse off than their native peers. However, migrants who had worked in agriculture before the war profited economically from displacement since their long-term incomes exceeded those of non-displaced peers. The authors explain this finding as a result of faster tranisition of expellees

[5] See Ruiz and Vargas-Silva (2013) for an extensive literature overview on the economics of forced migration.
[6] Bauer et al. (2013, p. 20) define second-generation migrants as children born to displaced Germans between 1944 and 1949.

into other – potentially better paid – sectors of the economy. Falck et al. (2012) study the integration of displaced Germans into the labor market and thereby evaluate the 1953 Federal Expellee Law (*Bundesvertriebenengesetz*) which intended to improve the econmomic situation of expellees.[7] Although expellees experienced a considerable increase in their economic well-being during the post-war years, Falck et al. argue that this improvement cannot be attributed to the law but rather to the general economic boom of the 1950s and 60s. Studies belonging to the second category focus on economic effects induced by immigration of displaced Germans. For example, Braun and Mahmoud (2014) find that expellees considerably reduced native employment rates in the short-run[8] since both groups were considered close substitutes by employers. Braun and Kvasnicka (2014) find that the inflow of displaced ethnic Germans substantially contributed to structural change by speeding up the transition from low-productivity agriculture to high-productivity sectors. One reason is that displaced farmers had to find work in other sectors due to the non-availability of free arable land.

Forced migration after WWII affected other European countries as well. For example, Sarvimäki, et al. (2009) focus on the displacement of Finns which resulted after Finland had to cede part of their territory to the Soviet Union after WWII. Their results suggest positive long-term economic outcomes for displaced men. The authors ascribe this finding to the increased regional mobility of displaced.

All studies discussed so far focus on the economic effects of forced migration by exploiting the fact that there are no large differences between natives and displaced persons according to their labor market opportunities. This may have been the case for the average expellee[9] in Germany, but in Bavaria this was certainly not. The overwhelming majority of expellees in Bavaria came from Czechoslovakia and was known as Sudeten Germans.[10] Sudeten Germans, differed in several aspects from the receiving Bavarian population. While pre-war Bavaria was predominantly characterized by agriculture, the Sudetenland had a highly developed industrial sector employing most of the population.[11] The industrial orientation of the Sudetenland clearly demanded a profound level of education. Furthermore, being an ethnic minority might itself have influenced educational outcomes.

[7] The Federal Expellee Law (BVFG, *Bundesvertriebenengesetz*) was introduced in 1953 and defined who was to be considered as an expellee. The aim of the BVFG was to improve the economic well-being of expellees who had to struggle not only with the loss of their homes, belongings, occupations, farms, etc. but also with other consequences of flight such as emotional distress, health problems, or the loss of loved ones. According to contemporary newspaper reports, only about a quarter of them were working in positions similar to their pre-displacement status in 1952 (Strobel, 1953; see also Stein, 1952). The BVFG contained several mechanisms/instruments including official legitimation of occupational certificates, preferred placement of expellees into vacant positions by public employment services, integration of former farmers into the agricultural sector, and provision of subsidized credits to self-employed and entrepreneurs.

[8] Braun and Mahmoud (2014) use 1950 census data.

[9] In 1950, 57 percent of all displaced Germans in West Germany (incl. West Berlin) came from former eastern provinces (e.g. Pomerania, East-Prussia, etc.) and 24 percent from Czechoslovakia (SBBRD: 1953).

[10] The term 'Sudetendeutsch' emerged during the 1920s after formation of Czechoslovakia and refers to those territories inside Czechoslovakia that were mainly populated by ethnic Germans (Preissler 1967, p. 134).

[11] The difference in the share of people employed in industry and crafts is especially pronounced between the Sudetenland and Bavaria: while only 17 percent of the pre-war Bavarian population worked in the industrial sector, the share in the Sudetenland exceeded 43 percent. Section 3.1 provides a more detailed discussion of socio-economic differences between Bavarians and Sudeten Germans.

According to Lemberg (1959, pp. 370-2), Sudeten Germans saw education as a means to preserve their linguistic identity and to dissociate themselves from the Czechoslovakian population. In addition, Keil (1967b, p. 13) maintains that Sudeten Germans were especially enthusiastic about education. This is in line with Handl and Herrmann (1994, p. 40) who conclude that the presence of Sudeten Germans led to huge educational gaps between natives and immigrants in the affected counties.

Migration of (high-) skilled individuals has been shown to have various effects on the receiving economy. For example, Hornung (2014) studies the expulsion of Huguenots from France to Prussia at the end of the 17th century. The Huguenots were a Protestant group characterized by a high level of human capital and self-selection into skilled occupations. Hornung finds that Huguenots substantially increased productivity in the textile sector in the long-run by transferring their superior knowledge to the native population. Focusing on immigration of German-Jewish scientists from Nazi-Germany to the U.S., Moser, et al. (2014) find that these high-skilled immigrants increased patenting by U.S. inventors by a third. However, this is not a result of higher productivity of incumbents but rather of the entrance of new U.S. researchers into immigrants' research fields. Hunt and Gauthier-Loiselle (2010) also look at patenting in the U.S. and show that skilled immigrants led to a boost in patenting activity. According to the authors, this increase is due to immigrants patenting at higher rates than natives as well as to positive spillovers from immigrants on incumbent scientists.

Hence, this paper combines two strands of the literature by complementing to research on forced as well as skilled migration. First, it shifts the focus from economic outcomes to educational impacts induced by forced migrants. Second, it exploits the difference in educational behavior between natives and displaced to study the effect on educational outcomes.

Bavaria is an interesting case to study the impact of skilled immigration on educational development: as a predominantly agrarian state it received an enormous number of expellees coming from highly industrialized Sudetenland. This stark contrast between host and sending region in economic terms combined with the fact that Sudeten Germans bore specific preferences concerning education provides a unique opportunity to study educational spillover effects.

The remainder of the paper is structured as follows. Section 2 provides a brief background on the history of the Sudetenland and post-war migratory movements of Germans. Section 3 discusses the role of Sudeten Germans in post-war Bavaria. Section 4 describes the data. Section 5 introduces the empirical strategies to identify Sudeten German influence on the educational development of Bavaria and presents regression results. Section 6 discusses potential channels of Sudeten German influence on educational development. Finally, section 7 concludes.

2 Historical background

2.1 A brief history of the Sudetenland

Earliest ethnic German settlements in Bohemia and Moravia are documented for the 11th and 12th century (Schieder, et al. 1984a, p. 3). In the following 800 years, ethnic Germans and Czechs lived more or less peacefully side by side. With the upcoming idea of the national state during the 19th century, tensions started rising between the Czech and German population (Aschenbrenner 1959, pp. 127-9). After the downfall of the Habsburg monarchy in 1918, the first Czechoslovakian Republic was founded. Although this republic was initially conceptualized as a federal state[12], the Czech population pursued the ideal of a Czech national state. As a result, the ethnic German population – henceforth called Sudeten Germans – became a tolerated minority instead of an equal partner. In the following years, Sudeten Germans first fought for recognition inside the Czechoslovakian state, then for a transformation of Czechoslovakia into a multinational state, and – as both failed – demanded full autonomy of the Sudetenland or, alternatively, integration into the German Reich (Habel 2002, pp. 20-4.; Schieder et al. 1984a, pp. 3-4). This conflict culminated in the so-called 'Sudeten crisis' of 1938, provoked by Nazi Germany by demanding the annexation of those parts of Czechoslovakia inhabited predominantly by ethnic Germans, known as the Sudetenland. Czechoslovakia finally yielded to the pressure imposed also by the Great European Powers (i.e. England, France, and Italy) and ceded the Sudetenland to the German Reich at the Munich Agreement in September 1938 (Aschenbrenner 1959, pp. 98-9; Gebel 2000, pp. 1-2).[13] The main part of the Sudetenland was then transformed into the *Reichsgau Sudetenland* with capital Reichenberg and incorporated into the German Reich. Smaller Sudeten German settlements in the south went to Bavaria and Austria – since March 1938 also part of the German Reich. Although most German settlements were now part of the German Reich, several cities with German minorities – including for example Prague and Brünn – remained Czechoslovakian. This changed in spring 1939, when Hitler's forces marched into the Czech parts of Czechoslovakia resulting in the establishment of the Protectorate of Bohemia and Moravia. This breach of the Munich agreement, as well as the injustices against the Czechoslovakian population perpetrated in the following period, ultimately contributed to the Beneš[14] decrees leading to the disempowerment, expropriation, and expulsion of ethnic Germans after the war (Aschenbrenner 1959, pp. 100-6).

The Sudetenland was characterized by a highly developed industrial sector – especially in comparison to predominantly agrarian Bavaria. It was rich in natural and mineral resources like coal,

[12] Example was the Swiss model as a multinational federal state (Habel 2002, pp. 35-6).

[13] In fact, the cession of the Sudetenland to the German Reich was supposed to sustain peace in Europe and hence greatly welcomed – especially by the British Prime Minister Chamberlain and the British public (Gebel 2000, p. 1; Slapnicka 1970a, p. 96).

[14] Eduard Beneš was president of Czechoslovakia from 1935 to 1938, head of the Czechoslovakian exile government from 1940 to 1945, and afterwards president of the re-founded Czechoslovakian Republic (until 1948) (Slapnicka 1970a, pp. 134-9). Decrees concerning the expulsion of ethnic Germans were issued between May and October 1945 (Bohmann 1959, pp. 198-9).

fossil oil, iron ore, graphite, and timber, which formed the basis for light and heavy industry. Furthermore, trade, commerce, and industry flourished in Sudeten cities. The Sudetenland was famous for its sophisticated textile, porcelain, glazing, and food industries (Aschenbrenner 1959, pp. 120-6.; Maier and Tullio 1996, pp. 28-9).

This high level of industrialization was complemented by the educational system of the Sudetenland: while an industrial society requires a sort of education meeting economic and industrial demands, it is also this kind of education which contributes to the development of this specific economic environment. In comparison to the rest of the German Reich, modern secondary education in form of the Realschule and Realgymnasium enjoyed high popularity. Especially the latter school type was very popular since it was conceived as the industrial response to the humanist Gymnasium. Furthermore, Fachschulen and Gewerbeschulen provided relevant education for industrial, commercial, and trade-related occupations, and entitled to university studies (Prinz 1970).[15]

2.2 Flight and expulsion 1945-1950

Approximately 3,000,000 people lived in the Sudetenland in 1939 (RSG). Until 1945, the Sudetenland had been mainly unaffected by the war, with only few bombings of industrial locations. This changed in early 1945 when Soviet forces entered the Sudetenland and the Protectorate, thereby triggering mass evacuation and flight of the German population (Schieder, et al. 1984a, pp. 19-32). To deal with the mass exodus of ethnic Germans not only from Czechoslovakia but from all eastern provinces of the collapsed German Reich, official redistribution policies were initiated by the Allied Control Council. Reference to the problem of displaced Germans was also made in the Potsdam Agreement.[16] One point concerned the 'Orderly Transfer of German Populations': remaining ethnic Germans in Poland, Czechoslovakia, Hungary, and Austria were to be transferred into post-war German territories (Jaenicke 1950, pp. 6-7). The Potsdam Agreement determined that the transfer should be undertaken in "*an orderly and humane manner*".[17] Although several contemporary testimonies report injustices or in some instances atrocities against expellees by the Czechoslovakian public and official personnel[18], Schechtman (1953) concludes that all in all the operation met the standards stipulated by the Potsdam Agreement.

The majority of Sudeten Germans fled to Germany: ca. 1,900,000 to West and ca. 900,000 to East Germany (Nellner 1959, p. 120; Pietsch and Pleticha 2012, p. 83). The remainder went to Austria (ca. 140,000), Scandinavia (ca. 4,300), Italy (ca. 3,000), and Switzerland (ca. 2,000). Small numbers

[15] In fact, Bavaria had introduced modern secondary education in form of the Gewerbeschule in 1829 which was later replaced by the Bavarian Realschule. The Realschule was also extremely popular as an alternative to the humanist Gymnasium (Semrad 2015).

[16] The Potsdam Agreement was signed on August 2nd 1945 by the leaders of the Allies of World War II – Soviet General Secretary Stalin, US President Truman, and British Prime Minister Attlee – and laid the foundation for the allied occupation and reconstruction of post-war Germany (Jaenicke 1950, p. 6).

[17] Paragraph XII of the Potsdam Agreement regulates the 'Orderly Transfer of German Populations'. The Potsdam Agreement is available online: http://usa.usembassy.de/etexts/ga4-450801.pdf.

[18] See Schieder et al. (1984b) and Harasko (1995) for a compilation of Sudeten German expellees' testimonies.

of Sudeten German refugees are also documented for almost all European countries as well as for Israel, South and North America, New Zealand, and Australia (Bohmann 1959, pp. 231-6). The number of Sudeten Germans deceased on the run or in prisons and detention camps associated with post-war expulsion is estimated at ca. 240,000 (Schieder, et al. 1984a, p. 134; Slapnicka 1970b, p. 320), while the number of Sudeten Germans remaining in Czechoslovakia amounts to ca. 150.000 to 250.000 people (Aschenbrenner 1959, p. 105).[19]

As a result of geographical proximity, most Sudeten Germans fled to nearby Bavaria. More than half of the roughly 2 million Sudeten Germans in West Germany had settled in Bavaria by 1950.[20] In Bavaria, Sudeten Germans also formed the biggest expellee group. With a total of 1,986,195 people, Bavaria had one of the highest shares of expellees in total population (20 percent) in post-war Germany, surpassed only by Schleswig-Holstein (33 percent) and Lower Saxony (27 percent) (Müller and Simon 1959, p. 360).[21] Table 1 provides information about the country of origin of displaced Germans in Bavaria in 1950.

Table 1 – Displaced people in Bavaria in 1950 according to pre-war place of residence

Place of residence in 1939	Total number 1950	% of total population 1950	% of all displaced people 1950
Sudetenland	1,031,468	11.23	51.93
Silesia	461,158	5.02	23.22
Other former German territories in 1937[a]	137,264	1.49	6.91
Yugoslavia	71,073	0.77	3.58
Poland	67,115	0.73	3.38
Hungary	57,511	0.63	2.90
Romania	48,024	0.52	2.42
Other foreign countries[b]	44,812	0.49	2.26
Austria	42,952	0.47	2.16
Former Baltic States	13,378	0.15	0.67
Danzig	11,440	0.12	0.58
Total	**1,986,195**	**21.63**	**100**

[a] Territories east of Oder/Neisse line (East Prussia, East Pomerania, East Brandenburg).

[b] Including people without information on place of residence in 1939.

Source: BSB 171

[19] Ethnic Germans were allowed to stay as full-fledged citizens in post-war Czechoslovakia if they had been involved in resistance or opposition to German National Socialism (this mostly applied to members of the Social Democrats and/or Communists). However, these Germans did not enjoy any minority rights which might explain why the majority of them, i.e. 86,176, opted for voluntary transfer to East and West Germany in the following years while 55,017 remained in Czechoslovakia. Furthermore, certain skilled workers were also excluded from expulsion (Schechtmann 1953, pp. 156-7.; Slapnicka 1970b, pp. 321-2).

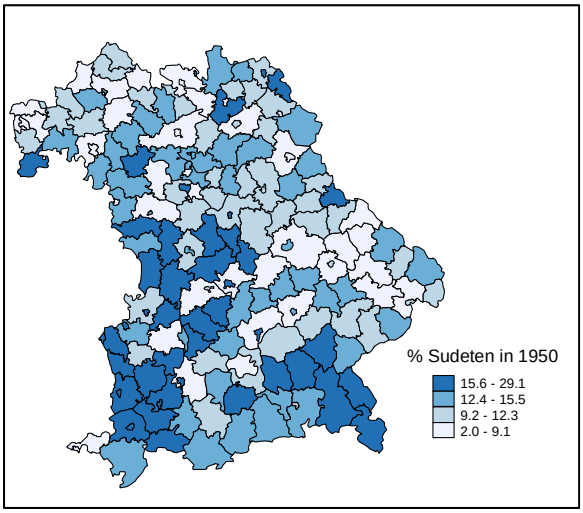
[20] The distribution of Sudeten German expellees across other states of West Germany (in 1950) is as follows: 394,51 in Hesse, 322,681 in Baden-Wuerttemberg, 74,607 in North Rhine-Westphalia, 57,790 in Lower Saxony, 29,645 in West Berlin, 15,771 Rhineland-Palatinate, 12,684 in Schleswig-Holstein, 5,818 in Hamburg, and 2,289 in Bremen (Bohmann 1959, p. 226).

[21] In absolute terms, Bavaria received the highest numbers of expellees across all German states, followed by Lower Saxony (ca. 1,850,000), and Schleswig-Holstein (ca. 857,000) (Bauer 1995, p. 201).

According to Table 1, Sudeten Germans in Bavaria amounted to 1,031,468 people in 1950 – i.e. 11 percent of the total Bavarian population. Silesians were the second largest group, followed by people from territories east of the Oder/Neisse line. Thus, Sudeten Germans constituted a large part of the Bavarian post-war population and it can therefore be supposed that they played a significant role in the formation of post-war Bavaria.

The first flow of refugees into Bavaria started in early 1945 when Germans living in the eastern territories had to flee from the advancing Red Army. Once arrived in Bavaria, they – i.e. people from Silesia, East Prussia, East Pomerania, and East Brandenburg – settled in areas most closely to the border for obvious reasons: first, these were the first accessible safe regions and second, in case of return – which many refugees were in the beginning quite sure of – these regions were closest to their homes (Maier and Tullio 1996, pp. 131-2). Hence, when Sudeten Germans arrived during 1946, the Bavarian refugee offices (*Flüchtlingsämter*) placed them in the southern and western areas of Bavaria which had been largely unaffected by the inflow of previous expellee groups. The aim was to equalize the distribution of displaced people in Bavaria and thereby lower the average financial burden in counties (Jaenicke 1950, pp. 8-10). As a result, Sudeten Germans were primarily sent to Swabia and Upper Bavaria. In Swabia, they accounted for 68 percent of all displaced Germans and constituted 17 percent of the total Swabian population in 1950 – the highest share of all Bavarian administrative regions. In several Swabian counties, more than every fourth inhabitant was from the Sudetenland.[22] Figures 1 and 2 present the distribution of Sudeten Germans across Bavarian counties and administrative regions in 1950, respectively.

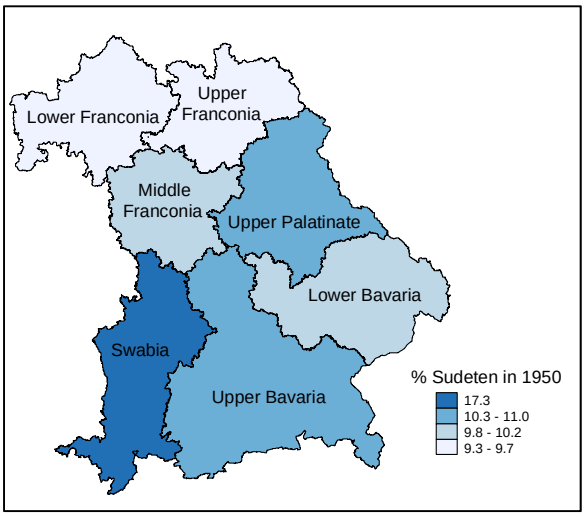
Figure 1 – Sudeten Germans across Bavarian counties 1950



Notes: Figure depicts county-level population shares of Sudeten Germans across Bavarian urban and rural counties in 1950. See References and Appendix for data sources.

[22] Out of the 15 Bavarian counties with population shares of Sudeten Germans exceeding 20 percent, 12 were located in Swabia. In five of them (i.e. the Swabian rural counties of Wertingen, Illertissen, Marktoberdorf, Neu-Ulm and the urban county of Kaufbeuren), Sudeten Germans accounted for more than a fourth of the total population in 1950.

Figure 2 – Sudeten Germans across Bavarian administrative regions 1950



Notes: Figure depicts population shares of Sudeten Germans across Bavarian administrative regions in 1950. See References and Appendix for data sources.

In general, expellees were placed in small municipalities with less than 5,000 inhabitants.[23] This is especially true for Sudeten Germans: 54 percent of them lived in municipalities with less than 2,000 inhabitants, whereas this was only the case for every third non-Sudeten German displaced person (BSB 151, p. 8). The placement in small villages is a direct consequence of the war: while in most of the larger German cities the housing stock had been substantially destroyed, smaller counties had mainly been spared from the Allies' bombs (BSB 142, p. 7). Therefore, Bavarian – and especially Swabian – counties might have benefitted the most from potential spillover effects by Sudeten Germans.

Hence, expulsion and resettlement taking place in this particular historical setting ensures that this study does not suffer from selection problems commonly encountered in migration analyses. First, Sudeten Germans were not able to self-select into migration. This would be problematic if only those Sudeten Germans migrated to Bavaria that were especially keen on education and inference is to be drawn on all Sudeten Germans (migrated and not migrated). Since expulsion affected all Sudeten Germans (with only very few exceptions) this study does not suffer from self-selection of migrants. Second, the specific historical conditions provide that placement of Sudeten Germans across Bavarian counties is relatively random[24] and, more importantly, not associated with provision of secondary schools or other education-related factors in the placement county: a simple linear regression of the share of Sudeten Germans in 1950 on the existence of applied secondary schools in 1938 (i.e. Realschule, Realgymnasium, and Oberrealschule) – the last year before the school reform – reveals a

[23] 75 percent of all displaced Germans lived in small municipalities with less than 5,000 inhabitants in 1950 (BSB 151, p. 8).

[24] Placement was arguably random since it occurred irrespective of considerations regarding the economic receptiveness or development potential of the county (Bauer 1995, pp. 200-1). However, since war bombings affected in most cases economic centers there might exist a negative relationship between economic development before or during the war and post-war expellee placement in counties.

significant negative relationship.[25] Hence, post-war placement of Sudeten Germans across Bavarian counties was not positively associated with pre-war provision of applied secondary schools. In addition, expellees (and also Bavarians) were not free to move to other counties until 1949 (Ziemer 1973, pp. 130-3). Since the empirical analysis employs 1950 data on Sudeten Germans, one remaining threat concerns migration of Sudeten Germans after 1950 which might occur due to educational purposes. The robustness section will address this problem.

3 Sudeten Germans in post-war Bavaria

3.1 Descriptive statistics

To assess the role Sudeten Germans played in the formation and development of post-war Bavaria, precise information about the socio-economic background of Sudeten German immigrants is necessary. In absence of this information, descriptive statistics on the Sudetenland before the war are employed and compared to respective Bavarian numbers. Since expulsion affected the whole population of the Sudetenland – with only very few exceptions – available pre-war information provides a reliable source on the characteristics of the average Sudeten German expellee.

As outlined in section 2.2, most Sudeten Germans settled in the Bavarian countryside – mainly in Swabia – and not in cities. Therefore, any spillover effects Sudeten Germans might induce should be more pronounced in Bavarian rural counties. Taking this historical settlement pattern into account, Table 2 compares Bavarian urban with rural counties.

Table 2 – Pre- and post-war differences between Bavarian urban and rural counties

Variables	Urban county		Rural county		Difference in means
	Mean	Std. Dev.	Mean	Std. Dev.	
	(1)	(2)	(3)	(4)	(5)
Students in secondary education 1939					
% of total population	3.69	1.83	0.27	0.44	3.43***
% of respective age cohort[a]	23.52	10.03	1.56	2.59	21.96***
Secondary schools per school-aged[a] child	0.04	0.03	0.01	0.01	0.03***
Sudeten Germans (% of total population)					
1950	8.93	5.14	13.68	4.66	-4.75***
Observations	48		143		

*Notes:*Table depicts sample means and differences in sample means of pre-war (1939) variables. Difference in means is statistically significant at *** 1%, **5% and *10% level.

[a] 10-20 year olds.

[25] The coefficient of an applied school dummy in 1938 on the share of Sudeten Germans in 1950 is -2.57, with a p-value of 0.001. This correlation becomes insignificant once a dummy for rural county is added. Table A1 in the Appendix reports regression results. Moreover, according to the results of a two-sided t-test, counties without applied secondary schools in 1938 had on average 2.5 percentage points higher shares of Sudeten Germans in 1950 than counties with an applied school before the war.

According to Table 2 there are substantial differences between rural and urban counties. First, educational participation is significantly lower in the countryside: while less than 2 percent of school-aged children continued to secondary education, the corresponding rate was more than 10 times higher in urban counties. In cities, almost 24 percent of children between 10 and 20 years were enrolled in secondary education in 1939. Thus, before the war, urban counties had a strikingly higher share of children in secondary education. Clearly, this might have also been the result of a lower provision of secondary schools in rural counties, as indicated by the table. The aforementioned concentration of Sudeten Germans in small and rural municipalities is confirmed: whereas urban counties housed on average 9 percent of Sudeten Germans in 1950, rural counties had shares of 14 percent.

Hence, Bavarian rural counties can be supposed to have been more affected by potential spillovers of Sudeten Germans since they were more ‘treated’ than Bavarian cities. Table 3 acknowledges this supposedly stronger spillover effect by reporting pre-war characteristics of the Sudetenland and Bavaria, thereby differentiating between Bavaria as a whole and Bavarian rural counties only.

Table 3 – Pre-war characteristics of Bavarians and Sudeten Germans

Pre-war variables	Bavaria, all		Bavaria, rural counties		Sudetenland		Difference in means (5)-(1)	Difference in means (5)-(3)
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population 1939	36,405	65,783	31,057	10,609	50,328	20,682	-13,922	-19,271***
Age structure (% of total population)								
> 6 years	11.39	1.69	12.05	1.25	8.08	1.42	3.31***	3.97***
6 - 14 years	13.77	2.23	14.62	1.74	12.62	1.98	1.16***	2.00***
65 years <	7.52	1.01	7.46	0.94	9.20	1.40	-1.68***	-1.74***
Children in secondary school age[a]	18.82	1.74	19.42	1.34	17.39	1.28	1.43***	2.03***
Religion (% of total population)								
Catholics	74.03	30.78	77.80	30.07	89.73	9.58	-15.70***	-11.94***
Protestants	24.85	30.46	21.49	29.99	5.12	7.49	19.73***	16.37***
Students in secondary education								
% of total population	1.13	1.79	0.27	0.44	0.78	0.68	0.35	-0.51***
% of respective age cohort[a]	7.08	11.01	1.56	2.59	4.90	4.27	2.18	-3.34***
Secondary schools per school-aged[a] child	0.01	0.02	0.01	0.01	0.02	0.02	-0.01	-0.01***
Employment								
I. Status (% of total population)								
Self-employed	10.44	3.37	11.88	2.51	17.06	5.32	-6.62***	-5.17***
Civil servants & white collar workers	6.75	4.81	4.27	1.91	12.48	5.83	-5.73***	-8.21***
Blue collar workers	21.23	5.49	19.96	5.15	46.57	7.82	-25.33***	-26.60***
Helping family member	16.27	9.06	20.72	5.47	9.69	5.26	6.59***	11.04***
Living of rents[b]	8.31	2.98	7.14	1.47	14.25	2.30	-5.94***	-7.11***
II. Sector (% of total population)								
Agriculture	25.26	15.31	32.81	9.16	22.29	14.36	2.97	10.52***
Industry & crafts	17.10	7.03	15.40	6.05	43.31	11.83	-26.22***	-27.91***
Trade & Transport	6.10	4.05	4.30	1.87	11.98	5.39	-5.88***	-7.68***
Public & private services	4.66	3.48	3.16	1.81	6.93	3.44	-2.27***	-3.77***
Observations	191		143		58			

*Notes:*Table depicts sample means and differences in sample means of pre-war (1939) variables, rounded to two decimal places. Difference in means is statistically significant at *** 1%, **5% and *10% level.

[a] 10-20 year olds.

[b] Including unemployed, pensioners, and students living outside family.

Columns 1, 3, and 5 of Table 3 report means of pre-war characteristics, columns 2, 4, and 6 respective standard deviations, and columns 7 and 8 the difference in means between Sudetenland and Bavaria as a whole and Bavarian rural counties, respectively. As both columns 7 and 8 indicate, Sudeten Germans and Bavarians differ significantly in almost all variables. Differences are especially pronounced for religious affiliations, blue collar workers, and industry and crafts. Hence, the Sudetenland had a higher share of Catholics, blue collar workers, and people employed in industry and crafts than Bavaria. Further, it is important to note that Sudeten Germans and Bavarians do not differ significantly in the population shares of students in higher education shown in column 7. This changes once Bavarian urban counties are excluded in column 8: Sudeten German counties exhibit a

significantly higher share of students in secondary education than the Bavarian countryside. Student shares – referring either to total population or respective age cohort – are more than twice the value of the Bavarian ones. Consequently, Bavarian rural counties as being the main receiver of Sudeten Germans – who sent proportionally more of their children to secondary education – should therefore also be the main profiteers from potential spillover effects.[26]

3.2 Sudeten German influence on Bavarian secondary education

Indeed, historical evidence suggests that Sudeten Germans played a decisive role in the development of the Bavarian education sector. According to Keil (1967a, p. 481), Sudeten Germans in post-war Bavaria actively sought a form of school which they would have preferred for their children in the Sudetenland. So when former Sudeten German teachers arrived in post-war Bavaria, these teachers started to become actively engaged in the founding of new schools, partly due to economic self-interest, but also due to their inherent educational spirit and beliefs (Arnold 1967; Keil 1967a, pp. 485-7). One prime representative of the Sudeten German teachers was Viktor Karell, also named "Father of the Bavarian Realschule" (Schmitzer 2002, p. 215). Karell, who had been teacher at several commercial schools and academies in the Sudetenland, became a prominent advocate for the establishment of a Bavarian school focusing on practical, commercial as well as general education. He and his pedagogical colleagues teamed up with forces from business, industry, commerce, and crafts, which were also demanding this kind of education, and successfully lobbied for the reintroduction of the Realschule in post-war Bavaria. In 1949 the first Realschule in post-war Bavaria was opened in Landau a.d.Isar and Karell became its principal (Schmitzer 2002). The importance of former Sudeten German teachers for the Bavarian Realschule is also stressed by Trapp (2003). According to his figures, the overwhelming majority of teachers at the newly established Realschulen in post-war Bavaria were Sudeten German expellees. This overrepresentation of Sudeten Germans among Realschulen teachers is a result of the former Sudeten German school system which focused more on practical education compared to other regions of the German Reich. Hence, displaced Sudeten Germans which were additionally also in need of new jobs, constituted the optimal choice for the Realschulen teaching staff (Trapp 2003, p. 13).

As a school providing general secondary education combined with practical knowledge, the post-war Bavarian Realschule was especially popular among Sudeten Germans. One reason for this preference might be the highly developed industrial sector of former Sudetenland (see Table 3). This strong technical as well as business-oriented background brought up several kinds of artisanal and trade schools. These sorts of professional schools were especially scarce or even nonexistent in Bavaria. Therefore, Sudeten Germans started to set up schools meeting their specific demands in their new hometowns. For instance, Sudeten German expellees founded a professional school for glass and

[26] The difference in student numbers (percentage of respective age cohort) remains substantial if Bavarian rural counties are compared with rural counties in the Sudetenland: 1.56 percent (Bavaria) vs. 3.93 percent (Sudetenland) (significantly different from 0 at the 1 percent level).

jewelry making in Kaufbeuren[27] and a school for violin production in Erlangen (Keil 1967a, p. 483). Furthermore, Sudeten Germans set up commercial schools such Handelsschulen, Wirschaftsrealschulen, and Wirtschaftsgymnasien (Arnold 1967). These newly founded institutions were also highly valued by Bavarians who started to demand more of these modern school types as well (Keil 1967a, p. 484). Another example of a school opening initiated by Sudeten Germans is the Realschule Waldkraiburg.[28] Being provided with only primary schooling, the Sudeten Germans of Waldkraiburg actively lobbied for secondary education in form of a Realschule and even founded their own association to support their demands. In their opinion, only the Realschule resembled the type of secondary school they had in the Sudetenland for the education of future entrepreneurs and skilled workers. In 1955 they succeeded and the Realschule Waldkraiburg was established. However, students of this Realschule were not exclusively children of Sudeten Germans or other displaced people although the majority of inhabitants in Waldkraiburg were; as the years passed, more and more Bavarian students joined this school. In 1967, students' backgrounds were equally divided between displaced and native (Palme 1967).[29]

Hence, Sudeten Germans played an important role in the development of the post-war Bavarian school system. Sudeten Germans founded several professional and commercial schools, and were especially active in the formation of the Bavarian Realschule. Since these institutions became also increasingly popular among native Bavarians, it can be supposed that Sudeten Germans had a positive impact on the educational participation of Bavarians.

4 Data

To analyse whether the inflow of Sudeten Germans into Bavarian counties generated educational spillovers on the Bavarian population, data on 191 Bavarian counties are employed. The empirical estimation thereby considers three points in time: pre-war (1939), immediate post-war (1950), and outcome period (1970). Since several administrative and territorial reforms occurred between 1939 and 1970, this paper chooses 1950 as the main reference year; therefore, counties of 1939 and 1970 are

[27] The school was set up in the district Neugablonz, which was itself founded by expellees from Gablonz in the Sudetenland (Keil 1967a, p. 483). Gablonz had been famous for its glass and jewelry industry and so became Neugablonz in the post-war years.

[28] Waldkraiburg in Upper Bavaria had been a displacement camp for displaced Germans – most of them Sudeten Germans – immediately after the war and emerged into a town during the late 1940s (Maier and Tullio 1996, pp. 160-3).

[29] The Realgymnasium in Rohr in Lower Bavaria provides an additional example of a school founding motivated by Sudeten Germans. In this case, however, it was Benedictine monks who had run a Gymnasium in the Sudetenland. In 1947, these teachers were able to re-establish their old institution as a boarding school in their new hometown Roth. By 1961, the Realgymnasium had well over 300 students coming from all over Bavaria (Menzel 1967).

converted into 1950 territorial and administrative units.[30] Description and sources of the data used are given in Table A2 in the Appendix.

Pre-war characteristics of Bavarian counties stem from publications of the Bavarian statistical office in *Beiträge zur Statistik Bayerns* (BSB). The last census before the war was conducted in 1939 and published between 1942 and 1943 (BSB: 132). Besides general information on the population structure, this census also reports sector and status of employment on a county basis. After the annexation of the Sudetenland by the German Reich, analogous information was gathered for the Sudetenland in 1939 and published in 1941 (RSG). Number of students in secondary education before the war comes from the Ministry of Science, Education, and National Culture in Berlin (RS) which reported information on schools and student numbers for all German states and Reich districts (*Reichsgaue*) on an annual basis.

Post-war census data on the number of Sudeten Germans and other displaced ethnic Germans in Bavarian counties is available for 1946 (BSB: 142) and 1950 (BSB: 171).[31] The mass arrival of Sudeten Germans started immediately after the war and surged during 1946 with official redistribution of expellees (Slapnicka 1970b, pp. 320-2). This official redistribution lasted until the end of 1946, and was followed by voluntary and illegal migration until early 1950 (Schechtman 1953, pp. 156-7). After 1950, only a few hundred Sudeten Germans arrived in Bavaria. Therefore, the empirical specification focuses on data on Sudeten Germans in 1950 (September) rather than 1946.[32] 1950 marks also the last year Sudeten Germans were explicitly reported on a county basis in censuses (afterwards only the total number of expellees per county was documented).[33] Hence, the main part of the empirical estimation will use Sudeten Germans in 1950; however, several robustness checks will be employed to deal with potential migration issues.

Information on self-employed expellees in 1950 is provided by data on displaced Germans in West Germany gathered in 1950 (SBBRD).[34]

---

[30] Volkert (1983) provides extensive information on the administrative organization of Bavaria during the 19th and most of the 20th century. In combination with data on municipalities, it is possible to also account for territorial losses due to the war and hence construct a database on the administrative and territorial basis of 1950.

[31] These publications only report German expellees from Czechoslovakian territories according to 1937 borders. Besides Sudeten Germans, another ethnic German group – i.e. Carpathian Germans – had lived in Czechoslovakia before the war. Hence, the employed measure of Sudeten Germans actually also includes Carpathian Germans. However, the latter were a very small group consisting of only 200,000 people in 1939 – compared to 3,000,000 Sudeten Germans (SBBRD: 1953). The majority of Carpathians was also expelled after the war; although ca. 12,000 to 15,000 of them remained in post war Czechoslovakia (Bohmann 1959, p. 120). Hence, taking also the loss of lives during the war into account, approximately far less than 200,000 Carpathians were affected by expulsion. Considering in addition the fact that not all of these expellees ended up in Bavaria, the role of Carpathians in post-war Bavaria is most likely negligible – at least compared to that of Sudeten Germans. Thus, in this paper, the term 'Sudeten Germans' is be used for all ethnic Germans expelled from Czechoslovakia.

[32] Sudeten Germans amounted to 871,863 people in 1946; their number rose steadily to 1,031,468 people in 1950. During 1946 alone, ca. 786,000 Sudeten Germans arrived in Bavaria (SFW, p. 7).

[33] Data on the arrival of Sudeten Germans after 1950 is only available for Bavaria as a whole (500 in 1951 and 596 in 1952) and for total West Germany (123 in 1953) (Bohmann 1959, p. 209).

[34] Note that this data relates to all expellees, not only Sudeten Germans.

Since educational spillover effects can be supposed to take some amount of time to build a noticeable impact on overall educational development, an outcome period several years after the mass arrival of *Heimatvertriebene* is chosen. This paper focuses thereby on the impact of Sudeten Germans on educational attainment at the (higher) secondary school level.[35] Bavarian secondary schools in 1971 are the *Realschule, Gymnasium,* and *Fachschule*. Gymnasien and Realschulen take children in after four years (or also six years in case of the Realschule) of elementary schooling (around age 11). Fachschulen are professional schools accepting students either after elementary school (e.g. Handels- and Wirtschaftschulen) or after completed vocational training (i.e. apprenticeship). Therefore, students at this institution are on average older than in the Realschule/Gymnasium. Data on student numbers of the Realschule and Gymnasium in 1971 originate from school registers published by the Ministry of Education (SBSUK). Data on students in the Fachschule stem from the 1970 census. Additional information on the number of people with degrees of secondary education per county is provided by 1970 census data. Hence, educational attainment is captured by students in secondary schools in 1971 as well as by people with secondary education degrees in 1970. The 1970 census provides a wide range of socio-economic variables (BSB: 253, 327a, 328a). These censuses include occupational, demographic, and religious data. However, it does not include the number of unemployed at the county level. Therefore, county level data on unemployment in 1968 are used (KSLB).

This rich set of data does not only allow to run cross-sectional OLS regressions but also to compile a panel dataset spanning two points of time: 1939 as the "pre-treatment" period and 1970/71 as the "post-treatment" period. This dataset includes pre- and post-war population shares of students in higher education (i.e. students in *Realschule* and *Gymnasium* for 1939 and 1971, as well as *Oberschule* and *Aufbauschule* for 1939) and population shares of employees in industry and crafts, public and private services, and civil servants and white collar workers. The variable of interest is the share of Sudeten Germans in total population 1950 interacted with a 1970 dummy. Hence, the share of Sudeten Germans in Bavaria is set to zero in 1939.

Except in case of the Fachschule[36], employed student numbers originate from school registries implying that students are counted at the school instead of county level. This is due to the 1939 data which only reports school-based student numbers, while the 1970 census also reports county-based numbers. Using school-based student numbers suggests that students might have lived outside the school county, which might impose problems for the estimation of spillover effects if intensity of exposure to Sudeten Germans differed between school and home county. However, since most

[35] The German school system of 1970 is divided into three secondary school tracks. The highest is the Gymnasium, followed by the Realschule and Fachschule, and finally the Hauptschule. This paper focuses on the highest and middle track schools.

[36] Due to data availability, employed student numbers of the Fachschule are county-based.

counties had secondary schools by 1970 (96 of 191 in 1939 and 179 of 191 in 1971) and it can be supposed that children visit schools close to their homes, this problem should be negligible.[37]

5 Empirical strategy

This section introduces empirical models to assess whether the influx of Sudeten Germans into Bavarian counties increased educational development. The main hypothesis is that a higher share of Sudeten Germans in 1950 is associated with higher educational attainment reflected by student numbers, i.e. a flow variable, and people with secondary school degrees, i.e. a stock variable, some 20 years later. Since Sudeten Germans were especially enthusiastic about applied secondary education in form of the Realschule and Fachschule, the empirical analysis will acknowledge this fact by differentiating between an extensive and intensive margin. While the extensive margin focuses on all students and graduates of secondary education, the intensive margin concentrates on that fraction of secondary students and graduates who are enrolled in or graduated from applied schools. Hence, the hypothesis of the extensive margin is that Sudeten Germans increased overall educational development captured by students and people with degrees of all secondary schools (i.e. Gymnasium, Realschule, and Fachschule). In contrast, the hypothesis of the intensive margin is that Sudeten Germans increased applied educational outcomes measured by students and the share of people with degrees from the Realschule and Fachschule (conditional on having a secondary school degree).

As outlined in section 2.2 and 3.1, it can be supposed that any Sudeten German effect should be more pronounced in rural counties since these received higher expellee shares and additionally had lower pre-war educational development than urban Bavarian counties. Therefore, the following regressions are based on rural counties (the Appendix includes results based on all – urban and rural – Bavarian counties for each of the empirical specifications).

A potential threat to identification stems from migration: if a large fraction of Sudeten Germans moved to other counties between 1950 and 1970, identification of any Sudeten German spillover effect would clearly be hampered. Due to the lack of available data there is no possibility to account for specific movements of Sudeten Germans or expellees in general. However, Falck, et al. (2012, p. 5) show that for West Germany as a whole, overall mobility of expellees was rather low. In Bavaria, the correlation coefficient of the share of displaced Germans across counties between 1950 and 1970 is 0.39 and highly significant. Hence, it seems that also in Bavaria, mobility of expellees was rather limited.[38] However, two methods are applied in the robustness section to deal with migration.

[37] An exception is of course boarding schools. In fact, in 1971, 29 of 144 Realschulen and 55 of 139 Gymnasien were boarding schools, although in most cases not exclusively since they were also open to community children living outside the school building (SB: 283, 293, 203). The available data does, however, not differentiate between boarders and community children. The 1939 data does not provide explicit information on boarding schools.

[38] Falck et al. (2012, p. 5) obtain a correlation coefficient of 0.82 for the share of expellees between 1950 and 1961 in all West-Germany. In comparison to 0.82, the computed value of 0.39 for Bavaria might seem rather

5.1 Basic model

To test whether the share of Sudeten Germans in a county in 1950 is positively associated with higher educational outcomes of the respective county in 1970/71, the following relationship is estimated using OLS regression analysis:

$$EDU_{i,1970/71} = \alpha_1 + \beta_1 * Sudeten_{i,1950} + \gamma_1 X_{i,1970,\,1950,1939} + u_i \qquad (1)$$

where EDU is a measure of educational outcomes in county i in 1970/71 and X is a set of control variables including a dummy for rural county, shares of Protestants, employment structure, and educational factors, measured in 1970, 1950, and 1939. Educational outcomes in 1970/71 refer either to the share of school-aged children in all higher secondary education (Gymnasium, Realschule, and Fachschule) or applied schools (Realschule and Fachschule) and to the share of population with secondary school degree in general (Gymnasium, Realschule, Fachschule) or of applied schools.

The variable of interest is $Sudeten_{i,1950}$, i.e. the share of Sudeten Germans in county population in 1950. Hence, β_1 captures the increase in educational outcomes in 1970/71 that can be ascribed to the presence of Sudeten Germans in 1950. If Sudeten Germans imposed any educational spillover effects, $\hat{\beta}_1$ should be positive and significantly different from zero.

Did the arrival of Sudeten Germans increase long-term educational participation and attainment? The following two tables address this question by presenting results obtained by the basic model (1). Tables 4 and 5 thereby focus on the extensive and intensive margin, respectively. The structure of these tables is as follows: columns 1 and 5 control for the share of Protestants in 1970 and include a dummy for the existence of the respective school type in the county; columns 2 and 6 add employment structure in 1970 (i.e. population shares of unemployed, people working in industry, crafts, public and private services, as self-employed or civil-servants and white collar workers); columns 3 and 7 add the share of self-employed expellees in 1950; and finally, columns 4 and 8 further account for students in higher secondary education and employment structure in 1939 (equivalent to 1970).[39]

Results in Table 4 indicate that a higher share of Sudeten Germans is positively and significantly associated with both the share of children in secondary education and people with secondary school degrees, even when accounting for the widest set of control variables. Hence, an increase in the share of Sudeten Germans in 1950 of 1 percentage point is associated with an around 0.4 percentage point higher share of school-aged children in secondary schools and with a 0.1 percentage point higher share of the population holding secondary school degrees (above 20 years). According to the estimates presented by Table 5 for the intensive margin, i.e. the share of secondary school students enrolled in applied schools, the specific relationship between Sudeten Germans and

low. However, taking the extended time period (i.e. 1950 and 1970) into account, 0.39 is still a relatively high value.

[39] Tables A3 and A4 in the Appendix report full regression results.

applied schools is confirmed: counties with higher shares of Sudeten Germans in 1950 have significantly higher shares of students and graduates of the Realschule and Fachschule. Corresponding estimates suggest that a 1 percentage point higher share of Sudeten Germans is associated with an at least 0.9 percentage point higher share of applied students in all secondary students. Since the average share of children in the Realschule across all counties is 36.75 percent, counties with a 1 percentage point higher share of Sudeten Germans would be associated with 37.65 percent of their secondary school children in applied schools. This is in line in line with historical evidence as outlined in section 3 (that is, the opening of Realschulen and professional schools initiated by Sudeten Germans). Furthermore, an increase in the share of Sudeten Germany by 1 percentage point is associated with around 0.1 percentage point higher share of people with applied school degrees in all secondary school graduates. Whether this finding constitutes a spillover effect or might rather be the result of an increase in the number of Sudeten Germans holding these degrees upon arrival in Bavaria, will be discussed in the subsequent chapter.

Tables A5 and A6 present results based on all – rural and urban – Bavarian counties. Except for the results on student flows in the extensive margin, estimates based on all counties confirm the finding that Sudeten Germans are in general positively and significantly correlated with higher secondary student shares and people with secondary school degrees.

Table 4 – Sudeten Germans and long-term educational attainment, extensive margin

Dependent variable	Flow: Share of secondary school students in school-aged[a] population 1971 (in %)				Stock: Share of people with secondary school degree in population>20 years 1970 (in %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Sudeten Germans 1950	0.441***	0.425**	0.330*	0.338**	0.204***	0.108***	0.130***	0.131***
	[0.144]	[0.170]	[0.180]	[0.158]	[0.058]	[0.031]	[0.030]	[0.030]
Mean dependent variable	18.65				14.36			
Additional controls								
Protestants (1970), school dummy[b]	yes	yes	yes	yes	yes	yes	yes	yes
Employment structure 1970	no	yes	yes	yes	no	yes	yes	yes
Self-employed expellees 1950	no	no	yes	yes	no	no	yes	yes
Secondary students and employment structure 1939	no	no	no	yes	no	no	no	yes
Observations	143	143	143	143	143	143	143	143

Notes: Table reports OLS estimates based on 143 rural Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[a] Relevant school age is 10-20.

[b] Columns 5-8 include a dummy for the existence of a secondary school in 1970.

Table 5 – Sudeten Germans and long-term educational attainment, intensive margin

Dependent variable	Flow: Share of students in applied schools in all secondary school students 1971 (in %)				Stock: Share of people with applied school degree in population with sec. school degree 1970 (in %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Sudeten Germans 1950	1.136***	0.848**	0.912*	0.871*	0.082**	0.100***	0.097***	0.108***
	[0.380]	[0.428]	[0.473]	[0.481]	[0.032]	[0.022]	[0.023]	[0.022]
Mean dependent variable	36.75				93.94			
Additional controls								
Protestants (1970), school dummy[b]	yes	yes	yes	yes	yes	yes	yes	yes
Employment structure 1970	no	yes	yes	yes	no	yes	yes	yes
Self-employed expellees 1950	no	no	yes	yes	no	no	yes	yes
Secondary students and employment structure 1939	no	no	no	yes	no	no	no	yes
Observations	143	143	143	143	143	143	143	143

Notes: Table reports OLS estimates based on 143 rural Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[a] Relevant school age is 10-20.

[b] Columns 5-8 include a dummy for the existence of an applied school in 1970.

Hence, results obtained by this basic model provide first support for the hypothesis that Sudeten Germans are associated with higher educational development in post-war Bavaria.

5.2 Quantifying the spillover effect

As above results illustrate, a higher share of Sudeten Germans in 1950 is positively and significantly correlated both with the flow of students and stock of people holding degrees. The latter, however, might just reflect a mechanical effect: if expellees from the Sudetenland had already obtained their secondary degrees before displacement, an increase in the share of Sudeten Germans would mechanically lead to a larger stock of people with degrees. As outlined in section 3.1, a higher fraction of Sudeten German children visited secondary schools compared to their Bavarian peers. Hence, also the share of people with secondary school degrees obtained before 1945 should be larger in the Sudetenland than in Bavaria. Consequently, an increase in the stock of people with secondary school degrees induced by Sudeten German expellees could just be the result of a mechanical and not of a spillover effect on native Bavarians.

To disentangle mechanical from potential spillover effects, precise information about the scholastic achievement of Sudeten German immigrants at the moment of their exodus would be required. However, to the best of my knowledge there exists neither county nor aggregate data on school-leaving degrees of Sudeten Germans before or after displacement. Given available data on educational attainment of all expellees in Germany (not just Sudeten Germans) provided by the MZU-71[40] and analysed by Handl and Herrmann (1994), it is possible to conduct a back-of-the-envelope-calculation, presented in the following.

[40] The *Mikrozensus-Zusatzerhebung* (MZU-71) is a supplement to the 1971 census based on individual level data. By providing retrospective data on the occupational history and educational attainment of natives and

According to Handl and Herrmann (1994, pp. 28-36.) about 30 percent of all displaced Germans born between 1890-99 and 1910-19 held secondary school degrees, whereof ca. 5 percent from the Gymnasium and ca. 22 percent from an applied school (Realschule and Fachschule). Taking into account that Sudeten Germans were not only more enthusiastic about higher education compared to native Bavarians but also to other displaced groups (Lemberg 1959, pp. 370-2), I will assume that the respective degree shares are 35 percent for all secondary schools, 5 percent for Gymnasium, and 30 percent for applied schools. The implied magnitude of the educational spillover will not only depend on the level of education of migrating Sudeten Germans, but also on the characteristics of the receiving economy. In what follows, a back-of-the-envelope-calculation based on observed county averages is conducted.

In 1970, the average rural county has a population of 47,893. The average share of Sudeten Germans in 1950 across counties is 13.7 percent. So if this share increases by 1 percentage point, then the total number of Sudeten Germans in 1950 per county increases by 446 people.[41] However, only Sudeten Germans above age 45 in 1970 are relevant for the analysis since these are old enough to have received their entire education in the Sudetenland before 1945. The average fraction of people aged 45 and older across counties in 1970 is 34.5 percent. Under the condition that this age distribution also holds for Sudeten Germans, 154 of the 446 additional Sudeten Germans are older than 45. Of these 154 Sudeten Germans, 35 percent are supposed to hold secondary school degrees, i.e. 54 people, whereof 85.7 percent hold applied degrees, i.e. 46 people. Hence, the contribution of Sudeten Germans to secondary schooling degrees in 1970 amounts to 54 in case of all secondary degrees and to 46 in case of applied degrees. This is a purely mechanical effect induced by a higher share of Sudeten Germans.

But did this also lead to educational spillovers on Bavarians? First, the average population size increases by 446 Sudeten Germans to 48,339 in 1970 (provided that these Sudeten Germans are still in the county in 1970). However, only people older than 20 years are relevant since these should have completed any secondary education by 1970. Based on the share of the population above 20 in 1970, i.e. 66 percent, this translates into 31,904 people. According to the estimates in Table 4, an increase in the share of Sudeten Germans by 1 percentage point is associated with an increase in the stock of people with secondary school degrees by around 0.13 percentage points. Thus, the average share of the relevant population with secondary school degree increases to 14.49 percent, i.e. 4,623 people. Prior to inflow of additional 446 Sudeten Germans, this number had been 4,539 (14.36 percent of 31,609 people older than 20 years). This suggests a surplus of 84 people with secondary school degrees in the

displaced Germans it was supposed to provide insights into the economic and social integration of expellees (Handl and Herrmann 1994, pp. 19-20).

[41] The calculation is as follows: the average county population in 1950 is 44,627. While a share of Sudeten German of 13.7 percent translates into a total number of 6,114 Sudeten Germans, an increase of 1 percentage point in this share leads to a total number of 6,560 Sudeten Germans. Hence, the group of Sudeten Germans increases by 446 people in 1950.

relevant age cohort, whereof 54 are Sudeten Germans. Hence, 30 more native Bavarians hold secondary schooling degrees (in the relevant age cohort).

Given the estimates in Table 5, that is, a Sudeten German effect of 0.1 percentage points more applied graduates in all secondary school graduates, the corresponding share increases to 94.04 percent. Hence, 94.04 percent of 4,623 people, i.e. 4,347, hold applied secondary school degrees after an increase in the share of Sudeten Germans – a plus of 83 people.[42] Subtracting the number of Sudeten German applied degree holders, i.e. 42, yields a final number of 37 people. These 37 (Bavarian) people constitute the spillover effect. Thus, an increase in the share of Sudeten Germans in 1950 is on average associated with 37 more Bavarians holding applied secondary school degrees (conditional on having a secondary school degree).

5.3 Differences-in-differences estimation

A potential drawback of model (1) is that it is unable to deal with the influence of unobservables that might be correlated with model regressors. For example, it could well be that Sudeten Germans settled in counties in which the population was also enthusiastic about education. Educational performance in these counties in the 70s might then be higher irrespective of the presence of Sudeten Germans. Panel data models provide a possible solution: rather than comparing outcomes across counties, these models enable comparisons in the change in outcomes between a pre-treatment and a post-treatment period. Any observed and unobserved time-invariant heterogeneity between receiving counties is then irrelevant and will no longer bias the estimates. This paper thereby adopts a differences-in-differences approach. Note that due to data availability it is only possible to implement this approach in case of student numbers. To the best of my knowledge, there exists no pre-war county level data on people with secondary school degrees.

Hence, a difference-in-differences model is constructed of the following form:

$$EDU_{it} = \alpha_i + \partial_1 d1970_t + \beta_2 * Sudeten_{i,1950} * d1970_t + \gamma_2 X_{it} + u_{it} \qquad (2)$$

where EDU_{it} is a measure of educational outcomes in county i in year t, X_{it} is a set of control variables reflecting the employment structure of county i in year t, α_i reflects county fixed effects, and $d1970_t$ a dummy that takes the value 1 in 1970, i.e. post treatment. The inclusion of county fixed effects enables controlling for unobserved heterogeneity between counties that is constant over time and related to explanatory variables, whereas the introduction of $d1970_t$, i.e. a time fixed effect, captures the influence of changes over time affecting all counties homogenously. Once again, 1950 marks the latest point in time Sudeten Germans were reported on a county basis in the census data. Therefore, the interaction term between $d1970_t$ and the share of Sudeten Germans per county in 1950

[42] Prior to the increase in Sudeten Germans by 1 percentage point, 93.94 percent of 4,539 people (i.e. population older than 20 with secondary school degree) held applied school degrees. This amounts to 4,264 people.

constitutes the variable of interest.[43] The coefficient $\hat{\beta}_2$ then captures the difference in educational participation per county between 1939 and 1970 associated with the presence of Sudeten Germans in 1950.

Table 6 provides estimates on the share of secondary school students in school-aged population. Columns 1 reports estimates of the pooled model, column 2 and 3 add county fixed effects.

Table 6 – Differences-in-differences estimation, extensive margin

Dependent variable	Flow: Share of students in secondary education[a] in school-aged[b] population (in %)		
	Pooled	County fixed effects	
	(1)	(2)	(3)
% Sudeten Germans 1950 *x d*1970	0.420***	0.374**	0.415***
	[0.146]	[0.145]	[0.153]
% Industry and crafts			-0.323
			[0.288]
% Services			0.457
			[0.442]
% Self-employed			-0.655
			[0.534]
% Civil servants & white collar workers			-0.45
			[0.420]
*d*1970	7.971***	8.600***	7.324**
	[2.189]	[2.061]	[3.615]
Constant	1.558***	1.558***	14.8
	[0.217]	[0.329]	[11.02]
County fixed effects	no	yes	yes
Observations	286	286	286
Number of counties		143	143
R-squared	0.534	0.757	0.766

*Notes:*Table reports regression DID estimates based on panel data for 143 rural Bavarian counties for two time periods (1939 and 1970/1). Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level.

[a] Secondary schools are Gymnasium, Oberschule, and Realschule in 1939 and Gymnasium and Realschule in 1971.
[b] Relevant school-aged population is 10-20.

According to the estimates, a higher share of Sudeten Germans in 1950 is positively and highly significantly associated with a higher share of students in secondary education. Results obtained for all Bavarian counties in Table A7 show a quite reversed picture: estimates suggest a negative or insignificant impact of Sudeten Germans on educational participation. This once again highlights the educational impact of Sudeten Germans particularly in the Bavarian countryside.

Once again, the underlying assumption is that the share of Sudeten Germans remains constant between 1950 and 1970 – an arguably strong assumption. The next section will try to approach the problem of Sudeten German migration.

[43] Note that use of this interaction term implicitly sets the share of Sudeten Germans in 1939 to zero and in 1970 equal to 1950 numbers.

5.4 Accounting for Sudeten German migration between 1950 and 1970

The implicit assumption underlying model (1) is that the share of Sudeten Germans in the county population remains constant (or at least relatively constant) over time. If, however, Sudeten Germans decided to move to other counties between 1950 and 1970, model (1) would not be able to capture any Sudeten German spillover effect. Migration is especially harmful if it occurred due to educational purposes. Suppose, for example, that Sudeten Germans found the availability or quality of schools in their county insufficient and therefore moved to other – presumably better equipped – counties. In this case, model (1) would suffer from an endogeneity problem resulting from reverse causality.

Unfortunately, as outlined above, 1950 marks the last point in time Sudeten Germans were reported on a county basis. However, the total number of displaced people (*Vertriebene*) per county is available for later years. Since more than every second displaced person in 1950 was of Sudeten German origin (see Table 1), Sudeten Germans should also account for most of the expellees in 1970 – provided that Sudeten German fertility was at least as high as fertility of the other expellee groups.[44] Hence, the number of *Vertriebene* is quite a good – albeit not perfect – proxy for Sudeten Germans in 1970. To further improve this proxy variable, an instrumental variable approach is adopted to deal with potential measurement error in the explanatory variable.

First, the share of expellees in 1970 is regressed on the share of Sudeten Germans in 1950 and control variables:

$$Expellees_{i,1970} = \alpha_3 + \beta_3 * Sudeten_{i,1950} + \gamma_3 X_{i,1970,1950,1939} + u_i \quad (3)$$

where the variable $Expellees_{i,1970}$ captures that part of the variation in the share of displaced people that can be explained by variation in the share of Sudeten Germans in 1950. Hence, $\widehat{Expellees}_{i,1970}$ predicts the share of Sudeten Germans in 1970, based on their share in 1950.[45] This predicted share of Sudeten Germans is then used in the second stage:

$$EDU_{i,1970/71} = \alpha_4 + \beta_4 * \widehat{Expellees}_{i,1970} + \gamma_4 X_{i,1970,1950,1939} + u_i \quad (4)$$

Thus, this specification might be better able to measure a Sudeten German spillover effect in case of Sudeten German migration between 1950 and 1970. An additional approach to deal with migration is to account for the overall level of mobility in counties by running model (1) weighted by the share of the population which is not a net immigrant (BSB 253).[46] According to the results

[44] Children of displaced people were also considered as expellees still in the 1970 census (BSB 327b, p. xii).

[45] In theory, it is also possible that the presence of Sudeten Germans in 1950 attracted other expellee groups. If this was the case, then $\widehat{Expellees}_{1970}$ would not exclusively predict Sudeten Germans in 1970. To the best of my knowledge there exists no historical account supporting this Sudeten German induced migratory pattern.

[46] Using these weights ensures that counties with positive net migration (that is, the difference between immigrants and emigrants) receive lower weights in the estimation of a Sudeten German effect. An obvious shortcoming of this data is that it is unable to provide thorough information on the mobility pattern of a county. For example, zero net immigration does not necessarily imply zero mobility as it could well be that immigrants

provided by Table A8 in the Appendix, the positive Sudeten German effect on educational performance found in section 5.1 is confirmed even when accounting for overall migration.

Table 7 provides second-stage instrumental variable estimates and first-stage *F*-statistics for the extensive and intensive margin. In all cases, the *F*-statistics exceed the critical value of 10 indicating that the share of Sudeten Germans in 1950 is sufficiently correlated with the share of displaced people in 1970. Second-stage estimates confirm previous results obtained by the basic model in section 5.1: expellees, instrumented by the share of Sudeten Germans in 1950, are correlated positively and significantly with students and graduate both in the extensive and intensive margin. In comparison to the estimates in columns 3 and 7 of Tables 4 and 5 (same set of control variables), instrumental-variables estimates are larger in size suggesting that previous estimates might have been biased downwards as a result of Sudeten German migration. Results for all Bavarian counties presented by Table 8 are also positive and significant for most outcomes in the extensive and intensive margin.

Table 7 – Instrumenting the share of expellees with the share of Sudeten Germans, 2nd stage results

Dependent variable	Extensive margin		Intensive margin	
	Flow: Students	Stock: Degrees	Flow: Students	Stock: Degrees
	(1)	(2)	(3)	(4)
% Sudeten Germans 1950	0.506*	0.200***	1.398*	0.149***
	[0.290]	[0.0505]	[0.742]	[0.039]
Mean dependent variable	18.65	14.36	36.75	93.94
1st stage *F*-statistic[b]	88.84	87.21	88.84	88.47
Additional controls				
Protestants (1970), school dummy[c], employment structure 1970, self-employed expellees 1950				
Observations	143	143	143	143

Notes: Table reports 2nd stage instrumental-variable estimates for rural and urban Bavarian counties. The share of Sudeten Germans in 1950 serves as an instrument of the share of displaced people in 1970. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. The extensive margin refers to % secondary school students or graduates in school-aged population and population older than 20 years, respectively. The intensive margin refers to % applied students or graduates in all secondary school students and population with secondary school degree, respectively. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[b] 1st stage *F*-statistics in columns 2 and 3 include dummies for existing secondary and applied schools in 1970, respectively.

[c] Columns 5-8 include a dummy for the existence of a secondary school in 1970.

Thus, the instrumental variable approach applied to improve the measurement of Sudeten Germans actually present in 1970 further strengthens the role of Sudeten Germans in secondary education.

6 Discussion of channels

According to the empirical results of sections 5.1-5.4, a higher share of Sudeten Germans after the war is associated with higher educational development in the 1970s. However, it is not clear what causes

counterbalance emigrants. In absence of more reliable data, data on net immigration is used in an additional robustness check.

this Sudeten German effect. Three channels seem possible: (1) lobbying, (2) skilled labor demand, and (3) preferences.

As outlined in section 3.2, Sudeten German expellees actively lobbied for the reintroduction of Bavarian Realschulen. In addition, several applied school foundings can be traced back to Sudeten German involvement. This historical evidence is confirmed by Table 8: the share of Sudeten Germans is positively and significantly associated with the number of Realschulen per 1,000 people in 1971.

Table 8 – Sudeten Germans and the provision of Realschulen in 1971

Dependent variable	No. of Realschulen per 1,000 people 1971	
	Rural counties	All counties
	(1)	(2)
Share of Sudeten Germans 1950	0.076*	0.071*
	[0.043]	[0.042]
Mean dependent variable	2.88	3.57
Additional controls		
Protestants (1970), rural county dummy[a], employment structure 1970, self-employed expellees 1950		
Observations	143	191

Notes: Table reports OLS estimates based on Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level.

[a] In column 2.

Hence, it seems plausible that a higher provision of applied schools led to higher secondary school participation in Bavaria.

Prior to expulsion, at least every second Sudeten German had worked in industry- or trade-related sectors – incl. crafts and transportation, and almost every fifth had been self-employed (see Table 3). Once they had been resettled in Bavaria, many Sudeten Germans used their expertise and re-established their former businesses. Between 1945 and 1950 alone, Sudeten Germans opened 10,347 businesses (Bohmann 1959, p. 215).[47] This might have increased the demand for skilled labor – especially in form of applied education – as well. Furthermore, since many re-founded Sudeten businesses involved crafts which had been rather rare in pre-war Bavaria or underdeveloped in comparison to the Sudetenland (e.g. glass-processing or small musical instrument production), specific occupational knowledge or education was in need. Thus, Sudeten Germans might have increased Bavarian student numbers in middle track education through their skilled labor demand.

Finally, it is also possible that Sudeten German preferences for higher secondary education in form of applied schools spread in the Bavarian population (as outlined in section 3.2). Given the pronounced differences in secondary school participation between Sudeten Germans and the rural Bavarian population prior to the war, it could also be that higher educational attainment in form of people with secondary school degrees in 1970 is only a result of Sudeten German migrants holding

[47] These were set up as surrogate businesses (*Ersatzarbeitsstätten*) founded to replace businesses lost as a result of war destruction or expulsion (Bohmann 1959, p. 215).

respective degrees. However, the results of a back-of-the-envelope-calculation in section 5.2 suggest that there were indeed positive spillover effects at work: secondary school degrees increased with the share of Sudeten Germans present in the county not only because Sudeten Germans brought along these degrees but also due to an increase in the number of Bavarians holding these degrees.

7 Conclusion

This paper analyses long-term educational effects of the mass inflow of displaced Germans into Bavaria after WWII, thereby focusing on expellees from the Sudetenland. Sudeten Germans formed the biggest expellee group in Bavaria and constituted a large part of its post-war population: in 1950, 1 out of 10 people in Bavaria was of Sudeten German descent. In contrast to other studies on displaced Germans after WWII focusing on similarity and thus substitutability of natives and displaced, this paper exploits differences existing between these groups. Coming from highly industrialized Sudetenland, Sudeten Germans found themselves in war-ridden Bavaria, which was still mainly an agrarian state. The majority of these migrants were placed in small municipalities in the Bavarian countryside. Compared to their new neighbors, Sudeten Germans were more likely to have worked as civil servants, white or blue collar workers or as self-employed before displacement. Moreover, Sudeten Germans who had been of school-age in 1939 were also more likely to have visited a secondary school than their Bavarian peers. Historical evidence reveals that Sudeten Germans were enthusiastic about education (Keil 1967b, p. 13), perceived it as part of their cultural identity (Lemberg 1959, pp. 370-2), and were especially fond of the Bavarian Realschule. Correspondingly, empirical results show that counties with a higher share of Sudeten Germans in 1950 are associated with a higher share of children in secondary schools as well as with a higher share of the population holding a degree of these schools. The latter is not only due to a mechanical effect (i.e. more Sudeten Germans with secondary school degrees upon arrival in Bavaria) but also to a spillover effect on (native) Bavarians. The connection between Sudeten Germans and higher secondary education remains robust across several alternative specifications (incl. differences-in-differences and instrumental variable estimations). Even though there is no possibility to determine the exact channel through which Sudeten Germans increased educational outcomes given the available data, empirical results indicate that there is a strong association between educational development and the presence of Sudeten Germans. Since human capital has been shown to be an important determinant of economic growth, it can be supposed that Sudeten Germans indirectly contributed to the economic development of post-war Bavaria as well.

In the beginning, fast integration of Sudeten Germans into the Bavarian population seemed rather unlikely since both Sudeten Germans and Bavarians did not believe in the definitive nature of their displacement. In addition, discrimination against Sudeten Germans and other expellee groups by

the Bavarian population was not uncommon (Habel 2002, p. 116).[48] However, these obstacles to integration started to fade in the following years manifesting itself through a higher rate of marriages between expellees and natives (Handl and Herrmann 1994, pp. 105-30) as well as through disappearance of expellees' political parties (Weiß 1995, pp. 249-53).[49] This is in line with Handl and Herrmann (1994, pp. 138-9) who conclude that by 1970 full integration of expellees has more or less been achieved. This suggests that Sudeten Germans became an integral part of the Bavarian society and with them also their perceptions towards secondary education. Hence, the 1.03 million Sudeten Germans might have permanently altered overall educational behavior in Bavaria.

[48] Social rejection of Sudeten Germans or other expellees might in most cases be explained by the austerities of the post-war years since arriving expellees implied sharing already scarce resources with a higher number of people.

[49] Displaced Germans founded the political party BHE (*Bund der Heimatvertriebenen und Entrechteten*) which later merged with the DP (*Deutsche Partei*) into the GDP (*Gesamtdeutsche Partei*). Although quite successful in the beginning (for example, they achieved election results well over 40 percent in some Bavarian counties), they diminished into political insignificance during the early 1960s (Gutjahr-Löser and Singbartl 1975, pp. 86-7; Slapnicka 1970b, pp. 330-1.; Weiß 1995, pp. 249-53).

References

Arnold, F. 'Gründung kommerzieller Lehranstalten nach Sudetendeutschem Muster auf bayerischem Boden', in T. Keil ed., *Die deutsche Schule in den Sudetenländern*, (Munich, 1967), pp. 488-490.

Aschenbrenner, V., *Sudetenland. Ein Überblick über seine Geschichte* (Bad Reichenhall, 1959).

Barro, R. J. 'Human capital and growth', *American Economic Review* 91, no. 2 (2001), pp. 12-17.

Bauer, F. J. 'Aufnahme und Eingliederung der Flüchtlinge und Vertriebenen', in W. Benz ed., *Die Vertreibung der Deutschen aus dem Osten*, (Frankfurt am Main, 1995), pp. 199-217.

Bohmann, A., *Das Sudetendeutschtum in Zahlen* (Munich, 1959).

Borjas, G. J. 'The economic analysis of immigration', in O. Ashenfelter and D. Card eds., *Handbook of Labor Economics*, (Amsterdam, 1999), pp. 1697-1760.

Braun, S. and Kvasnicka, M. 'Immigration and structural change: evidence from post-war Germany', *Journal of International Economics* 93 (2014), pp. 253-269.

Braun, S. and Mahmoud, O. T. 'The employment effects of immigration: evidence from the mass arrival of German expellees in postwar Germany', *The Journal of Economic History* 74, no. 01 (2014), pp. 69-108.

Easterlin, R. A. 'Why isn't the whole world developed?', *Journal of Economic History* 41, no. 1 (1981), pp. 1-19.

Falck, O., Heblich, S. and Link, S. 'Forced migration and the effects of an integration policy in post-WWII Germany', *The B.E. Journal of Economic Analysis & Policy* 12, no. 1 (2012), pp. 1-29.

Gebel, R., *"Heim ins Reich!" Konrad Henlein und der Reichsgau Sudetenland (1938-1945)* (Munich, 2000).

Gutjahr-Löser, P. and Singbartl, H. 'Vertriebenenpolitik heute', in, *Hanns-Seidel-Stiftung, Akademie für Politik und Zeitgeschehen, Schriftenreihe Heft 12*, (Munich, 1975).

Habel, F. P., *Die Sudetendeutschen* (Munich, 2002).

Handl, J. and Herrmann, C., *Soziale und berufliche Umschichtung der Bevölkerung in Bayern nach 1945: eine Sekundäranalyse der Mikrozensus-Zusatzerhebung von 1971*. Edited by H.-J. Busley, R. Endres, O. Kimminich, J. Mayer and K.-D. Wolff, *Die Entwicklung Bayerns durch die Integration der Vertriebenen und Flüchtlinge* (Munich, 1994).

Harasko, A. 'Die Vertreibung der Sudetendeutschen. Sechs Erlebnisberichte', in W. Benz ed., *Die Vertreibung der Deutschen aus dem Osten*, (Frankfurt am Main, 1995), pp. 132-147.

Hornung, E. 'Immigration and the diffusion of technology: The Huguenot diaspora in Prussia', *The American Economic Review* 104, no. 1 (2014), pp. 84-122.

Hunt, J. and Gauthier-Loiselle, M. 'How much does immigration boost innovation?', *American Economic Journal: Macroeconomics* 2, no. 2 (2010), pp. 31-56.

Jaenicke, W., *4 Jahre Vertriebenenbetreuung in Bayern 1945-1949* (Munich, 1950).

Keil, T. 'Die Sudetendeutschen Erzieher nach 1945', in T. Keil ed., *Die deutsche Schule in den Sudetenländern*, (Munich, 1967a), pp. 481-487.

———. 'Vorwort', in T. Keil ed., *Die deutsche Schule in den Sudetenländern*, (Munich, 1967b).

Kerr, S. P. and Kerr, W. R. 'Economic impacts of immigration: a survey', *Finnish Economic Papers* 24, no. 1 (2011), pp. 1-32.

Krueger, A. B. and Lindahl, M. 'Education for growth: why and for whom?', *Journal of Economic Literature* 39, no. 4 (2001), pp. 1101-1136.

Lemberg, E. 'Das Bildungswesen vor neuen Aufgaben', in E. Lemberg and F. Edding eds., *Die Vertriebenen in Westdeutschland*, (Kiel, 1959), pp. 366-401.

Maier, J. and Tullio, G., *Die soziale und wirtschaftliche Eingliederung von Flüchtlingen und Heimatvertriebenen in Bayern*. Edited by H.-J. Busley, R. Endres, O. Kimminich, J. Mayer and K.-D. Wolff, *Die Entwicklung Bayerns durch die Integration der Vertriebenen und Flüchtlinge* (Munich, 1996).

Menzel, P. B. 'Das Gymnasium St. Nepomuk der Benediktiner in Braunau, jetzt in Rohr/Niederbayern', in T. Keil ed., *Die deutsche Schule in den Sudetenländern*, (Munich, 1967), pp. 494-496.

Moser, P., Voena, A. and Waldinger, F. 'German-Jewish emigrés and US invention', *NBER Working Paper No. 19962* (2014).
Müller, G. and Simon, H. 'Aufnahme und Unterbringung', in E. Lemberg and F. Edding eds., *Die Vertriebenen in Westdeutschland: Ihre Eingliederung und ihr Einfluss auf Gesellschaft, Wirtschaft, Politik und Geistesleben*, (Kiel, 1959), pp. 300-446.
Nellner, W. 'Grundlagen und Hauptergebnisse der Statistik', in E. Lemberg and F. Edding eds., *Die Vertriebenen in Westdeutschland: Ihre Eingliederung und ihr Einfluss auf Gesellschaft, Wirtschaft, Politik und Geistesleben*, (Kiel, 1959), pp. 61-144.
Palme, R. 'Staatliche Realschule Waldkraiburg', in T. Keil ed., *Die deutsche Schule in den Sudetenländern*, (Munich, 1967), pp. 497-500.
Pietsch, R. and Pleticha, H., *Sudetendeutscher Heimatatlas* (Augsburg, 2012).
Preissler, G. 'Die Sudetendeutsche Höhere Schule', in T. Keil ed., *Die deutsche Schule in den Sudetenländern*, (Munich, 1967), pp. 133-156.
Prinz, F. 'Das kulturelle Leben (1867-1939) vom österreichisch-ungarischen Ausgleich bis zum Ende der Ersten Tschechoslowakischen Republik', in K. Bosl ed., *Handbuch der Geschichte der Böhmischen Länder IV*, (Stuttgart, 1970), pp. 152-301.
Ruiz, I. and Vargas-Silva, C. 'The economics of forced migration', *The Journal of Development Studies* 49, no. 6 (2013), pp. 772-784.
Sarvimäki, M., Uusitalo, R. and Jäntti, M. 'Long-term effects of forced migration', *Discussion Paper, No. 4003, IZA* (2009).
Schechtman, J. B. 'Postwar population transfers in Europe: a survey', *The Review of Politics* 15, no. 2 (1953), pp. 151-178.
Schieder, T., Knoll, V. and Smikalla, H., *Dokumentation der Vetreibung der Deutschen aus Ost-Mitteleuropa IV: Die Vertreibung der deutschen Bevölkerung aus der Tschechoslowakei, Bd. 1*. Edited by T. Schieder. 2 vols. Vol. 1, *Dokumentation der Vetreibung der Deutschen aus Ost-Mitteleuropa IV* (Munich, 1984a).
———, *Dokumentation der Vetreibung der Deutschen aus Ost-Mitteleuropa IV: Die Vertreibung der deutschen Bevölkerung aus der Tschechoslowakei, Bd. 2*. Edited by T. Schieder, *Dokumentation der Vetreibung der Deutschen aus Ost-Mitteleuropa IV* (Munich, 1984b).
Schmitzer, H. 'Dr. Viktor Karell zum Gedenken', in E. Korn, R. Gill and H. Mirtes eds., *Erzieherbrief 48*, (Frontenhausen, 2002), pp. 215-218.
Semrad, A. 'Modern secondary education and economic performance: the introduction of the Gewerbeschule and Realschule in nineteenth-century Bavaria', *The Economic History Review* doi: 10.1111/ehr.12101 (2015).
Slapnicka, H. 'Die böhmischen Länder und die Slowakei 1919-1945', in K. Bosl ed., *Handbuch der Geschichte der böhmischen Länder IV*, (Stuttgart, 1970a), pp. 2-150.
———. 'Die Tschechoslowakei 1945-1965', in K. Bosl ed., *Handbuch der Geschichte der böhmischen Länder IV*, (Stuttgart, 1970b), pp. 302-348.
Stein, G. 'Bisher fast eine Million neuer Arbeitsplätze für Vertriebene', in *Die Zeit*, retrieved from http://www.zeit.de (1952).
Strobel, R. 'Das Vertriebenengesetz', in *Die Zeit*, retrieved from http://www.zeit.de (1953).
Trapp, W. 'Das Lehrerpersonal für die Mittelschulen', in E. Korn, R. Gill and H. Mirtes eds., *Erzieherbrief 50*, (Frontenhausen, 2003).
Volkert, W., *Handbuch der bayerischen Ämter, Gemeinden und Gerichte 1799-1980* (Munich, 1983).
Weiß, H. 'Die Organisationen der Vetriebenen und ihre Presse', in W. Benz ed., *Die Vertreibung der Deutschen aus dem Osten*, (Frankfurt am Main, 1995), pp. 244-262.
Ziemer, G., *Deutscher Exodus: Vertreibung und Eingliederung von 15 Millionen Ostdeutschen* (Stuttgart, 1973).

Official publications

Bundesvertriebenengesetz (BVFG), 19. Mai 1953.

Statistisches Bundesamt der Bundesrepublik Deutschland (SBBRD):

Statistisches Taschenbuch über die Heimatvertriebenen in der Bundesrepublik Deutschland und in West-Berlin. (1953)

Beiträge zur Statistik Bayerns (BSB):

Bayerische Gemeinde- und Kreisstatistik. (1942-3): 132
Die Flüchtlinge in Bayern: Ergebnisse einer Sonderauszählung aus der Volks- und Berufszählung vom 29. Oktober 1946. (1948): 142
Die Volks- und Berufszählung am 29. Oktober 1946 in Bayern. Teil I: Volkszählung. (1948): 145
Volks- und Berufszählung am 13. September 1950 in Bayern. Volkszählung. I. Teil: Gliederung der Wohnbevölkerung. (1952): 171
Volks- und Berufszählung am 06. Juni 1961 in Bayern. Ergebnisse der Volkszählung. (1964): 253
Stand und Gliederung der Bevölkerung in Bayern: Volkszählung am 27. Mai 1970. Teil 1: Ergebnisse aus dem Totalteil der Zählung. (1972): 327a
Stand und Gliederung der Bevölkerung in Bayern: Volkszählung am 27. Mai 1970. Teil 2: Ergebnisse aus dem Repräsentativteil der Zählung. (1974): 327b
Unterhalt und Erwerbstätigkeit der Bevölkerung in Bayern: Volkszählung am 27. Mai 1970. Teil 1: Ergebnisse aus dem Totalteil der Zählung. (1973): 328a

Die kreisfreien Städte und Landkreise Bayerns in Zahlen (KSLB):

Die kreisfreien Städte und Landkreise Bayerns in Zahlen. Ausgabe 1969. (1969)

Statistische Berichte (SB):

Die allgemeinbildenden Schulen in Bayern. Schuljahr 1970/71. Realschulen. (1970): 283
Die allgemeinbildenden Schulen in Bayern. Schuljahr 1970/71. Gymnasien. (1971): 293
Die allgemeinbildenden Schulen in Bayern. Schuljahr 1971/72. Gymnasien. (1972): 303
Verzeichnis der Fachschulen in Bayern. Stand 15. November 1969. (1969)

Schriften des Bayerischen Staatsministeriums für Unterricht und Kultus (SBSUK):

Schulverzeichnis 71/72. (1972): B/2

Reichsstatthalter im Sudetengau (RSG):

Die Gemeinden des Reichsgaues Sudetenland. Ausführliche amtliche Ergebnisse der Volks-, Berufs- und Betriebszählung vom 17. Mai 1939 für jede einzelne Gemeinde. Nach dem Gebietsstand vom 1. Juli 1941. (1941)

Reichstelle für das Schulwesen (RS):

Erziehung und Unterricht in der Höheren Schule. (1938)
Wegweiser durch das höhere Schulwesen des Deutschen Reiches. Schuljahr 1939. (1940): 5

GIS shapefiles

MPIDR [Max Planck Institute for Demographic Research] and CGG [Chair for Geodesy and Geoinformatics, University of Rostock] 2011: MPIDR Population History GIS Collection (partly based on Bundesamt für Kartographie und Geodäsie 2011) – Rostock.

Bundesamt für Kartographie und Geodäsie 2011: VG 2500 Verwaltungsgebiete (Ebenen) 1:2.500.000. Stand 01.01.2009 – Frankfurt am Main.

Bayerische Vermessungsverwaltung 2015, www.geodaten.bayern.de.

Appendix: Supplementary figures and tables

Table A1 – Provision of applied schools in 1938 and placement of Sudeten Germans

Dependent variable	Share of Sudeten Germans in 1950 in total population (in %)		
	(1)	(2)	(2)
Applied school in 1938[a]	-2.576***	0.002	-0.466
	[0.763]	[0.848]	[0.907]
Rural county dummy		4.750***	2.720*
		[1.005]	[1.381]
Additional controls			
Employment structure 1939	no	no	yes
Observations	191	191	191

Notes: Table reports OLS estimates based on 191 rural and urban Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level.

[a] Applied schools in 1938 are Oberrealschule, Realschule, Realgymnasium, and Realprogymnasium.

Table A2 – Data description and source

Variable	Description	Source
County	Binary, 1 if unit of observation is a rural county; 0 if urban (basis: 1950)	Census 1950 (BSB: 171)
Pre-war characteristics Bavaria		
Share of students in secondary education 1939	Students in secondary schools divided by total population	Guide to higher education 1939 (RS), Census 1939 (BSB: 132)
Share of secondary school students in school-aged population 1939	Students in secondary schools divided by total population (aged 10-20)	Guide to higher education 1939 (RS), Census 1939 (BSB: 132)
Secondary schools per school-aged child 1939	Number of secondary schools divided by total population (age 10-20)	Guide to higher education 1939 (RS), Census 1939 (BSB: 132)
Applied secondary school in 1938	Binary, 1 if county has a Oberrealschule, Realschule, Realgymnasium, and/or Realprogymnasium	Guide to higher education 1939 (RS)
Share of self-employed 1939	Self-employed divided by total population	Census 1939 (BSB: 132)
Share of civil servants and white collar workers 1939	Civil servants and white collar workers divided by total population	Census 1939 (BSB: 132)
Share of blue collar workers 1939	Blue collar workers divided by total population	Census 1939 (BSB: 132)
Share of helping family members 1939	Family helpers divided by total population	Census 1939 (BSB: 132)
Share of population living of rents 1939	People living of rents (incl. unemployed, pensioners, and students outside family) divided by total population	Census 1939 (BSB: 132)
Share of poplation employed in agriculture 1939	Employees in agriculture divided by total population	Census 1939 (BSB: 132)
Share of people employed in industry and crafts 1939	Employees in industry and crafts divided by total population	Census 1939 (BSB: 132)
Share of people employed trade and transport 1939	Employees in trade and transport divided by total population	Census 1939 (BSB: 132)
Share of people employed in public and private services 1939	Employees in public and private services divided by total population	Census 1939 (BSB: 132)
Pre-war characteristics Sudetenland		
Share of students in secondary education 1939	Students in secondary schools divided by total population	Guide to higher education 1939 (RS), Census 1939 (RSG)
Share of self-employed 1939	Self-employed divided by total population	Census 1939 (RSG)
Share of civil servants and white collar workers 1939	Civil servants and white collar workers divided by total population	Census 1939 (RSG)
Share of blue collar workers 1939	Blue collar workers divided by total population	Census 1939 (RSG)
Share of helping family members 1939	Family helpers divided by total population	Census 1939 (RSG)
Share of population living of rents 1939	People living of rents (incl. unemployed, pensioners, and students outside family) divided by total population	Census 1939 (RSG)
Share of poplation employed in agriculture 1939	Employees in agriculture divided by total population	Census 1939 (RSG)
Share of people employed in industry and crafts 1939	Employees in industry and crafts divided by total population	Census 1939 (RSG)
Share of people employed trade and transport 1939	Employees in trade and transport divided by total population	Census 1939 (RSG)
Share of people employed in public and private services 1939	Employees in public and private services divided by total population	Census 1939 (RSG)
Post-war characteristics Bavaria		
Share of Sudeten Germans 1946	Number of Sudeten Germans divided by total population	Census supplement 1946 (BSB: 142), Census 1946 (BSB: 145)
Share of Sudeten Germans 1950	Number of Sudeten Germans divided by total population	Census 1950 (BSB 171)
Share of self-employed expellees 1950	Number of self-employed expellees divided by total number of expellees	SBBRD
Share of non net immigrants (1950-1961)	Number of immigrants minus emigrants divided by total population 1950	Census 1961 (BSB 253)
Share of secondary school students in school-aged population 1971	Students in Gymnasium, Realschule, and Fachschule divided by total population (aged 10-20)	School register (SBSUK: B/2), Census 1970 (BSB: 327a)
Share of students in applied schools in all secondary school students 1971	Students in Realschule and Fachschule divided by all secondary school students (Gymnasium, Realschule, Fachschule)	School register (SBSUK: B/2), Census 1970 (BSB: 327a)
Share of population with secondary school degreee in population > 20 years 1970	People with highest school-leaving degree from Gymnasium, Realschule, or Fachschule divided by total population	Census 1970 (BSB: 327a)
Share of population with applied school degreee in population with secondary school degree 1970	People with applied school-leaving degree from Realschule or Fachschule divided by population with secondary school degree	Census 1970 (BSB: 327a)
Gymnasium 1970	Binary, 1 if city/county has a Gymnasium	General education in Bavaria (SB: 293, 303)
Realschule 1970	Binary, 1 if city/county has a Realschule	General education in Bavaria (SB: 283)
Fachschule 1969	Binary, 1 if city/county has a Fachschule	Register of Fachschulen (SB)
Realschulen 1971 per 1,000 people	Number of Realschulen divided by total population (in 1,000)	School register (SBSUK: B/2)
Share of self-employed 1970	Self-employed divided by total population	Census 1970 (BSB: 328a)
Share of civil servants and white collar workers 1970	Civil servants and white collar workers divided by total population	Census 1970 (BSB: 328a)
Share of people employed in industry and crafts 1970	Employees in industry and crafts divided by total population	Census 1970 (BSB: 328a)
Share of people employed in public and private services 1970	Employees in public and private services divided by total population	Census 1970 (BSB: 328a)
Share of unemployed 1968	Unemployed divided by total population	City and county data 1969 (KSLB)
Share of Protestants 1970	Protestants divided by total population	Census 1970 (BSB: 327a)

Table A3 – Sudeten Germans and educational attainment, full regression results, extensive margin

Dependent variable	Flow: Share of secondary school students in school-aged[a] population 1971 (in %)				Stock: Share of people with secondary school degree in population>20 years 1970 (in %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Sudeten Germans 1950	0.441***	0.425**	0.330*	0.338**	0.204***	0.108***	0.130***	0.131***
	[0.144]	[0.170]	[0.180]	[0.158]	[0.058]	[0.031]	[0.030]	[0.030]
School dummy[b]					1.055	0.852**	0.903**	0.828
					[1.381]	[0.344]	[0.379]	[0.508]
% Protestants 1970	-0.013	0.004	0.011	-0.000	-0.003	-0.012*	-0.013**	-0.011*
	[0.034]	[0.035]	[0.035]	[0.032]	[0.010]	[0.006]	[0.006]	[0.006]
% Industry and crafts 1970		-0.083	-0.046	0.172		-0.143***	-0.152***	-0.114*
		[0.358]	[0.357]	[0.435]		[0.048]	[0.049]	[0.068]
% Services 1970		0.974*	0.918*	0.677		0.157*	0.169**	0.137
		[0.532]	[0.526]	[0.554]		[0.081]	[0.080]	[0.098]
% Self-employed 1970		0.109	0.0143	-1.339		0.292*	0.314**	0.517***
		[0.796]	[0.800]	[0.860]		[0.153]	[0.152]	[0.176]
% Civil servants & white collar workers 1970		0.441	0.751	-0.270		1.181***	1.110***	1.030***
		[0.466]	[0.482]	[0.516]		[0.092]	[0.094]	[0.116]
% Unemployed 1968		0.188	0.281	2.476		-0.971**	-0.990**	-1.601***
		[2.210]	[2.164]	[1.894]		[0.438]	[0.442]	[0.477]
% Self-employed expellees 1950			0.683	-0.0902			-0.160**	-0.109
			[0.442]	[0.462]			[0.077]	[0.078]
% Industry and crafts 1939				-0.329				-0.077
				[0.309]				[0.053]
% Services 1939				-3.088***				-0.086
				[1.031]				[0.208]
% Self-employed 1939				1.399**				-0.389***
				[0.586]				[0.129]
% Civil servants & white collar workers 1939				4.855***				0.116
				[1.208]				[0.242]
% Secondary students 1939				7.523***				0.390
				[1.860]				[0.380]
Constant	12.90***	0.945	-12.58	-7.782	10.64***	0.195	3.307	7.212**
	[2.265]	[14.01]	[17.13]	[14.92]	[1.447]	[2.429]	[2.724]	[2.941]
Observations	143	143	143	143	143	143	143	143

Notes: Table reports OLS estimates based on 143 rural Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[a] Relevant school age is 10-20.

[b] Columns 5-8 include a dummy for the existence of a secondary school in 1970.

Table A4 – Sudeten Germans and educational attainment, full regression results, intensive margin

Dependent Variable	Flow: Share of students in applied schools in all secondary school students 1971 (in %)				Stock: Share of people with applied school degree in population with sec. school degree 1970 (in %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Sudeten Germans 1950	1.136***	0.848**	0.912*	0.871*	0.082**	0.100***	0.097***	0.108***
	[0.380]	[0.428]	[0.473]	[0.481]	[0.032]	[0.022]	[0.023]	[0.022]
School dummy[b]					-0.219	0.007	-0.007	-0.074
					[0.666]	[0.446]	[0.442]	[0.401]
% Protestants 1970	-0.079	-0.140	-0.144	-0.090	0.002	0.002	0.002	-0.001
	[0.090]	[0.099]	[0.100]	[0.098]	[0.005]	[0.003]	[0.003]	[0.004]
% Industry and crafts 1970		0.248	0.223	1.806		0.107**	0.108**	-0.043
		[0.863]	[0.863]	[1.237]		[0.046]	[0.046]	[0.074]
% Services 1970		-0.415	-0.377	1.447		-0.066	-0.067	-0.259***
		[1.102]	[1.110]	[1.444]		[0.085]	[0.084]	[0.093]
% Self-employed 1970		-1.915	-1.850	-4.894**		-0.022	-0.026	-0.135
		[2.110]	[2.134]	[2.243]		[0.116]	[0.116]	[0.122]
% Civil servants & white collar workers 1970		-2.827***	-3.039***	-5.659***		-0.533***	-0.522***	-0.593***
		[1.057]	[1.147]	[1.438]		[0.083]	[0.085]	[0.089]
% Unemployed 1968		-15.11**	-15.17**	-10.49		0.017	0.018	0.0181
		[5.888]	[5.898]	[6.772]		[0.270]	[0.271]	[0.264]
% Self-employed expellees 1950			-0.466	-1.430			0.026	0.054
			[1.247]	[1.314]			[0.073]	[0.078]
% Industry and crafts 1939				-1.851*				0.141***
				[0.948]				[0.050]
% Services 1939				-7.889***				0.230
				[2.619]				[0.150]
% Self-employed 1939				2.462				0.128
				[1.725]				[0.100]
% Civil servants & white collar workers 1939				11.89***				0.164
				[3.134]				[0.181]
% Secondary students 1939				-3.436				-0.125
				[5.049]				[0.274]
Constant	23.05***	78.19**	87.42**	73.51*	92.96***	96.53***	96.04***	96.85***
	[6.582]	[32.94]	[38.37]	[40.02]	[0.657]	[2.128]	[2.664]	[2.268]
Observations	143	143	143	143	143	143	143	143

Notes: Table reports OLS estimates based on 143 rural Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[a] Relevant school age is 10-20.
[b] Columns 5-8 include a dummy for the existence of an applied school in 1970.

Table A5 – Sudeten Germans and educational attainment, rural and urban counties, extensive margin

Dependent variable	Flow: Share of secondary school students in school-aged[a] population 1971 (in %)				Stock: Share of people with secondary school degree in population>20 years 1970 (in %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Sudeten Germans 1950	0.400**	0.241	0.226	0.263	0.140***	0.102***	0.106***	0.105***
	[0.173]	[0.207]	[0.215]	[0.203]	[0.052]	[0.032]	[0.036]	[0.035]
Mean dependent variable	32.17				16.75			
Additional controls								
Protestants (1970), rural county dummy, school dummy[b]	yes	yes	yes	yes	yes	yes	yes	yes
Employment structure 1970	no	yes	yes	yes	no	yes	yes	yes
Self-employed expellees 1950	no	no	yes	yes	no	no	yes	yes
Secondary students and employment structure 1939	no	no	no	yes	no	no	no	yes
Observations	191	191	191	191	191	191	191	191

Notes: Table reports OLS estimates based on 191 rural and urban Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[a] Relevant school age is 10-20.
[b] Columns 5-8 include a dummy for the existence of a secondary school in 1970.

Table A6 – Sudeten Germans and educational attainment, rural and urban counties, intensive margin

Dependent variable	Flow: Share of students in applied schools in all secondary school students 1971 (in %)				Stock: Share of people with applied school degree in population with sec. school degree 1970 (in %)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% Sudeten Germans 1950	0.937***	0.680**	0.778**	0.590*	0.135***	0.154***	0.211***	0.205***
	[0.283]	[0.310]	[0.341]	[0.344]	[0.037]	[0.034]	[0.049]	[0.046]
Mean dependent variable	34.39				92.91			
Additional controls								
Protestants (1970), rural county dummy, school dummy[b]	yes	yes	yes	yes	yes	yes	yes	yes
Employment structure 1970	no	yes	yes	yes	no	yes	yes	yes
Self-employed expellees 1950	no	no	yes	yes	no	no	yes	yes
Secondary students and employment structure 1939	no	no	no	yes	no	no	no	yes
Observations	191	191	191	191	191	191	191	191

Notes: Table reports OLS estimates based on 191 rural and urban Bavarian counties. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[a] Relevant school age is 10-20.
[b] Columns 5-8 include a dummy for the existence of an applied school in 1970.

Table A7 – Differences-in-differences estimation, rural and urban counties, extensive margin

Dependent variable	Flow: Share of students in secondary education[a] in school-aged[b] population (in %)		
	Pooled	County fixed effects	
	(1)	(2)	(3)
% Sudeten Germans 1950 *x d*1970	-1.319***	-0.757***	0.0781
	[0.348]	[0.238]	[0.228]
% Industry and crafts			-1.933***
			[0.429]
% Services			-0.0879
			[0.845]
% Self-employed			-0.0752
			[0.788]
% Civil servants & white collar workers			-1.041*
			[0.626]
*d*1970	37.31***	30.29***	35.11***
	[5.236]	[3.645]	[4.728]
Constant	7.078***	7.078***	48.34***
	[0.797]	[0.625]	[15.81]
County fixed effects	no	yes	yes
Observations	382	382	382
Number of counties		191	191
R-squared	0.265	0.603	0.708

*Notes:*Table reports regression DID estimates based on panel data for 191 rural and urban Bavarian counties for two time periods (1939 and 1970/1). Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level.

[a] Secondary schools are Gymnasium, Oberschule, and Realschule in 1939 and Gymnasium and Realschule in 1971.
[b] Relevant school-aged population is 10-20.

Table A8 – Accounting for net immigration (1950-1961)

Dependent variable	Extensive margin		Intensive margin	
	Flow: Students	Stock: Degrees	Flow: Students	Stock: Degrees
	(3)	(7)	(3)	(7)
% Sudeten Germans 1950	0.329*	0.131***	0.891*	0.097***
	[0.180]	[0.029]	[0.484]	[0.023]
Mean dependent variable	18.65	14.36	36.75	93.94
Additional controls				
Protestants (1970), school dummy[b], employment structure 1970, self-employed expellees 1950				
Observations	143	143	143	143

Notes: Table reports OLS estimates based on 143 rural Bavarian counties, weighted by the share of non net immigrants. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule. The extensive margin refers to % secondary school students or graduates in school-aged population and population older than 20 years, respectively. The intensive margin refers to % applied students or graduates in all secondary school students and population with secondary school degree, respectively. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[b] Columns 5-8 include a dummy for the existence of a secondary school in 1970.

Table A9 – 2nd stage results, rural and urban counties

Dependent variable	Extensive margin		Intensive margin	
	Flow: Students	Stock: Degrees	Flow: Students	Stock: Degrees
	(1)	(2)	(3)	(4)
% Sudeten Germans 1950	0.273	0.129***	0.939**	0.255***
	[0.273]	[0.042]	[0.457]	[0.066]
Mean dependent variable	32.17	16.75	34.39	92.91
1st stage *F*-statistic[b]	48.16	47.68	48.16	47.63
Additional controls				
Protestants (1970), rural county dummy, school dummy[c], employment structure 1970, self-employed expellees 1950				
Observations	191	191	191	191

*Notes:*Table reports 2nd stage instrumental-variable estimates for rural and urban Bavarian counties. The share of Sudeten Germans in 1950 serves as an instrument of the share of displaced people in 1970. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, **5% and *10% level. The extensive margin refers to % secondary school students or graduates in school-aged population and population older than 20 years, respectively. The intensive margin refers to % applied students or graduates in all secondary school students and population with secondary school degree, respectively. Secondary schools are Fachschule, Gymnasium, and Realschule, applied schools are Fachschule and Realschule.

[b] 1st stage *F*-statistics in columns 2 and 3 include dummies for existing secondary and applied schools in 1970, respectively.

[c] Columns 5-8 include a dummy for the existence of a secondary school in 1970.