

# Enemies within the Gates\*

## Evidence from Stalin's Ethnic Cleansing Campaigns

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I examine the deportation of 2.8 million Soviet citizens from the border areas of the Soviet Union to its Central Asian hinterland between 1937 and 1944. They belonged to nine ethnic groups, who were deported in their entirety, deprived of their political and administrative rights, and forced to engage in socially useful labor. In 1953 five were rehabilitated and returned to their former homeland, while the other four remained marginalized in internal exile until Soviet Union broke up. Exploiting this quasi-experimental framework, I use the rehabilitation decree as an instrument for the randomness of the rehabilitation decision to examine differences in the local labor market, educational, and political decisions. Locals in host regions, while not benefiting from upstream complementarities in the labor market, had significantly higher levels of education two generations later. These findings are neither caused by an institutional inertia nor a skill-mismatch between Russian and non-Russian. Similarly, a strong positive effect on higher education is found among returnees to origin regions, suggesting that these ethnic groups hedged against further negative shocks. Moreover, descendants of deportees show a significantly higher approval of Soviet rule in the 1991 referendum and a quite complex protest behavior in the late 1980s.

JEL Classification: D74, E65, I25, N34, O11, P16, R12

## 1. Introduction

The Russian attack on Ukraine on February 24, 2022, demonstrated the importance of understanding historical developments in the post-Soviet space. The main argument, Russian President Vladimir Putin keeps playing with is that many of today's post-Soviet states – apart from being historical zones of Russian settlement – were artificial entities created by the Soviet administration and then gained their independence, often at great cost to Russian territory. This was true for Abkhazia, Crimea, and the Donbass region, and it is also true for northern Kazakhstan. Kazakhstan in particular and Central Asia in general have always been a forced laboratory of imperial and Soviet nation-building: Russian peasants who immigrated during the tsarist era were later joined by millions of forced deportees. The latter still link the biographies in the space between the Baltic and Ukraine, between the Caucasus and Central Asia to this day. Nevertheless, there is a lack of evidence on the long-term economic and demographic consequences of these large-scale deportations in both the origin and host regions.

I address this research gap and examine the forced deportation of some 2.8 million Soviet citizens from the Soviet borderlands to the Central Asian and Siberian hinterlands between 1937 and 1944. They

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belonged to nine different ethnic groups, each deported in its entirety, either as a punishment for the treason they had (allegedly) committed against the Soviet Union or to prevent them from being tempted to commit such acts in the future. Seven of them – Germans from predominantly European Russia or Ukraine, Karachays, Kalmyks, Ingush, Chechens, Balkars from the Caucasus, and Crimean Tatars from Crimea – lost their national autonomy. Two more groups, Koreans from the Far East and Meskhetian Turks, likewise from the Caucasus but with no national territory of their own, were deported as well. In the hinterlands, they were placed under a “special settler regime,” which meant that they lost their residency status and freedom of movement, while the NKVD was instructed to organize their labor relations and place them in “meaningful [low-skilled] work.” Continuous escapes resulted in their permanent banishment from 1945 onward, which brought these ethnic groups closer to the common prison population than to common Soviet citizens. The fate of the Caucasian peoples would change after Stalin’s death, when in 1956 Khrushchev restored their civil rights as well as their former state-administrative and territorial status. By far the largest group was condemned to second-class citizenship and internal exile until the Soviet Union’s collapse.

I exploit the exogenous allocation of “special settlers” to Central Asia and Siberia, using the 1956 rehabilitation decree as an instrument for the randomness of the rehabilitation decision. The very different distribution of skills between locals, defined as the non-settler resp. non-Slavic population, and deportees suggests transitional and long-term effects on potentially complementary local groups. I argue, first, that the persistent understratification by permanently exiled ethnic groups increased employment and educational opportunities for the local population via upstream complementarities. Second, I argue that rehabilitated settlers, who returned to their former homelands, benefited significantly from their rehabilitation, as their educational attainment and occupational status improved. To prove this, I divide aggregate employment and education reported in the Soviet censuses from 1939 to 1989 into three submarkets and use spatial variations in the inflow of permanently exiled and rehabilitated groups into (or out of) these sub markets as a means of identification. Third and finally, since deportations were primarily politically motivated, I investigate whether ethnic violence among the descendants of “special settlers” manifested itself in a stronger secessionist vote in the referendum on preserving the Soviet Union and in an increased number of protests and riots.

In recent years, a growing body of economic and political science research has shown that the disruption of social structures caused by forced mass migration does significantly affect political attitudes, institutional, economic, and educational factors (Acemoglu, Hassan, and Robinson 2011; Grosfeld, Rodnyansky, and Zhuravskaya 2013; Akbulut-Yuksel and Yuksel 2015; Akbulut-Yuksel, Okoye, and Yuksel 2020; Pascali 2014; Testa 2021; Bharadwaj and Mirza 2019), school performance in affected regions (Waldinger 2010; Becker, Lindenthal, et al. 2020), and on the forced migrants themselves and their descendants (Becker, Grosfeld, et al. 2020; Braun and Mahmoud 2014; Braun and Kvasnicka 2014; Braun and Dwenger 2020). Braun and Mahmoud (2014), for instance, examines the situation of West German workers after the postwar influx of displaced persons from the former Nazi territories. The authors confirm a substantial decline in employment of locals, that is more pronounced in regions with greater immigration. Similarly, Becker, Grosfeld, et al. (2020) examine the compensatory migration from the Polish Kresy areas to the cleared former German areas. They find that Poles with a history of migration are more likely to complete secondary education and ultimately have higher overall incomes.<sup>1</sup> The previous evidence suggests that the human capital and employment effects are much more long-term and comprehensive than those found in the related literature on physical capital destruction (Brakman, Garretsen, and Schramm 2004; Miguel and Roland 2011; Davis and Weinstein 2002; Redding, Sturm, and Wolf 2011).<sup>2</sup>

But despite economic equality of all nationalities being an explicit goal of early Soviet economic policy, its interaction with economic development has received little attention: while the Soviet Union – like other countries – suffered heavily from the immediate aftermath of World War II, whether through the destruction of capital and infrastructure or the immense loss of life, its reconstruction took place in Central Asia through the massive redistribution of production facilities and people (Mikhailova 2012). However, the Central Asian vector, except for the magnificent research of Jarotschkin, Miho, and Zhuravskaya (2019), Zhuravskaya, Guriev, and Markevich (2021), and Suesse (2018), is only slowly getting traction in the scholarly debate! This paper fills this gap by analyzing the role national considerations played during and after World War II and shows how the “special settler regime” influenced local production and shaped national narratives and identities in Central Asia. It is the first analysis to show cross-connections based on observational data unencumbered by assumptions about aggregate production technologies. Since

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<sup>1</sup> For the long-term demographic effects of the post-World War II relocation of the Sudetenland on internal migration, see Testa (2021) and also Guzi, Huber, and Mikula (2021).

<sup>2</sup> See Becker and Ferrara (2019) for an excellent literature review on the forced migration studies.

the population transfer was so widespread, the deportation of these enemy ethnicities so extraordinarily rapid, and the relocation in Central Asia so swift, the focus is particularly well suited to the analysis of long-term effects. The deportations are likewise a peculiarity of World War II compared to World War I, when only “enemy nationals” were deported, i.e., nationals of the hostile states of the opposing power. This time, it was also the country’s own citizens who merely shared the same ethnic background as the nationals of the enemy states (Ther and Kreutzmüller 2014).

I find that the local non-Slavic population in the host regions did not benefit from upstream complementarities or opportunities arising from the “special settler regime” that would have enabled them to improve their professional status or obtain higher education. These results are not due to institutional inertia in the five-year plans or to a mismatch between the technical and cultural skills of Russian and non-Russian locals in the highest skill category. For the rehabilitated ethnicities, I find a strong positive effect of their presence on higher education in the host regions as well as on higher education and white-collar employment in the origin regions, suggesting that these have hedged against future negative shocks by investing in education! More generally, a deportation background predicts a significantly higher approval of the Soviet Union in the 1991 referendum. For the origin regions, they suggest that the deportation of these ethnic groups and their subsequent rehabilitation may have fostered an ethnic self-confidence among their descendants that, combined with a dramatic opening of political space during the Gorbachev administration, aimed to preserve the autonomy they had gained. Moreover, while rehabilitated ethnicities are associated with a reduced protest behavior, permanently exiled ethnic groups, who escaped deportation in their origin regions, predict a significant increase of 3%<sup>1</sup> in protests and unrest in the late 1980s and early 1990s. This effect reverses for host regions at the same level. Taken together, my estimates are robust to contemporary and historical indicators of educational attainment and employment, as well as to historical episodes of violence.

With this project, I make several contributions: First, I advance the literature on the transitory and long-term effects of forced migration by contrasting a complete population collapse in the origin regions with an artificial change in the social fabric of the host regions, which were reversed for some ethnicities by the 1956 rehabilitation decree. Moreover, the hypothesis of an occupational and educational upgrading is tested for the rehabilitated ethnicities (Botticini and Eckstein 2005; Becker, Grosfeld, et al. 2020; Sarvimäki 2011), who were able to return to the origin regions and for the local population, that was understratified by the permanently exiled (Peri and Yasenov 2019; Borjas 2017). Second, I bring forward the literature on the inter-generational effects of indiscriminate violence on nationality and identity following Lupu and Peisakhin (2017), Walden and Zhukov (2020), and Lupu and Peisakhin (2017). Closest to this study is Jarotschkin, Miho, and Zhuravskaya (2019), who study gender norm diffusion by comparing regions that absorbed more Protestant Volga Germans with regions that absorbed more Muslim deportees. They find, that gender norms spread more among the local Russian population in regions, that predominantly absorbed ethnic Germans. Related is also Suesse (2018), who shows that income inequality, not ethnicity, was among the drivers of secession movements in the late Soviet Union. In contrast to Suesse (2018), my results show that ethnicities with a history of forced deportation consistently exhibit lower levels of secession and a much more complex protest behavior in the late Soviet Union. Third, I make a methodological contribution in the experimental design and measurement of indiscriminate violence in economic history by explicitly modeling the spatial extent of the Soviet Union within a spatial autoregressive model Kelly (2019). While many previous studies consider only one type of spatial lag, I advance this research by testing different model specifications with different types of spatial lags against each other using a battery of tests incl. Bayesian posterior probabilities testing.

The paper unfolds as follows: Section 2 will shed light on the timing and execution of the forced deportation campaigns as well as the different treatment of the nine ethnic groups. While section 4 describes and discusses in detail the available data, section 5 illuminates on the methodology. Both culminate in section 3, where I explain the hypotheses and channels. Results are discussed the host region section 6.1 and for origin regions in section 6.2. The paper concludes in section 7.

## 2. Historical background

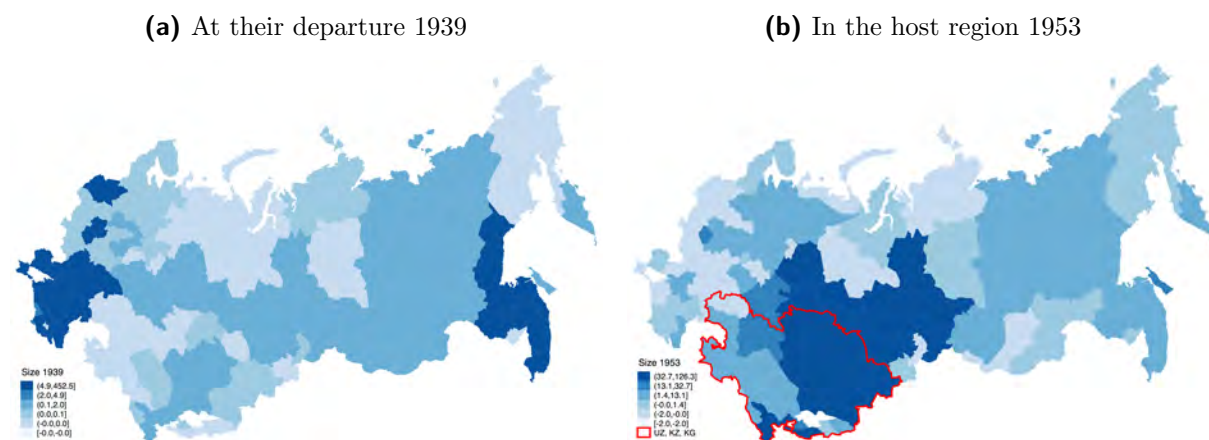
This section discusses the socioeconomic structure of the deportees in the host and origin regions as well as the deportation process itself. The focus is two-fold: first, attention will be given to the unprecedented professionalization and breathtaking execution of the campaigns making the Soviet Union the world leader in deportation technology (Lyll and Wilson 2009) and second, on the socioeconomic structure of the deportees before and after their deportation. The section concludes by shedding light on compensatory migration to the deserted origin regions.

## 2.1. Enemies within the gates

The course for the deportation of the nine ethnicities had been set by the Soviet Union's need to respond to threats on both borders: While in the West the racial doctrine in Nazi Germany challenged the Soviet ideology of overcoming nature through education, in the East the imperial ambitions of the Japanese Empire manifested themselves in the occupation of Manchuria. Both developments seemed to confirm the Soviets' long-held fear of being encircled by "imperial" and "capitalist" forces (Hirsch 2014, pp. 273). Trying to affirm the correctness of their historical process, it was questioned whether members of "diaspora nations" could ever become true Soviet citizens who did not evoke the danger of "homeland" terrorism of which they were suspected of (Hirsch 2014, p. 274).<sup>3</sup> As a result, from the mid-1930s onward, carefully managed campaigns can be identified that aimed to (ethnically) "cleanse" major cities, borders, and frontier regions of "socially dangerous" elements (Polian 2004, p. 93). Koreans fell first victim in 1937, when 172 thousands were deported from the border areas in the Far East to Central Asia. The outbreak of World War II, moreover, set in motion the preemptive total deportation of further ethnicities from the border areas in European Russia to Central Asia and Siberia. Immediately with the German advance into the Soviet Union and on the charge of collective treason, 1.4 million ethnic Germans were deported from the Volga German ASSR to Siberia, Kazakhstan, Uzbekistan, and Kyrgyzstan. After the withdrawal in 1943 and 1944, the Soviet state extended the accusation of enemy collaboration to 75 thousand Karachays, 135 thousand Kalmyks, 480 thousand Chechens and Ingush, 43 thousand Kabardians and Balkars, 191 thousand Crimean Tatars, and finally 116 thousand Meskhetian Turks (Martin 1998, p. 820).

Figure 1 very catchily shows the distribution of the targeted ethnicities on the eve of their deportation and in the host regions; these had become absolutely absent from all oblasts to the west of Moscow, in a number of border zones such as Murmansk oblast', Kamchatka oblast' and Primorskiy kray as well as in the North Caucasus and the Lower Volga Region.<sup>4</sup> On the other hand, while the borderlands suffered severe population collapses, the Central Asian and Siberian regions experienced a massive alteration of its social structure in response to their influx.

**Figure 1:** Pre- and post-deportation spatial distribution of targeted ethnicities (in thousands)



### Koreans [1937]

Koreans were considered a threat based on the Japanese empire's political involvement on the Korean peninsula and even more so, when it occupied Manchuria (Polian 2004, p. 98-9). A *Pravda* newspaper article "exposed" Koreans and Chinese as key agents of the Japanese empire and initiated on August 21st, 1937 a resolution of the Council of People's Commissars and Communist Party Central Committee "On the banishment of the Korean population from the frontier zone of the Far East kray", stipulating their deportation to be completed by January 1st, 1938. In total, 172 thousand Soviet citizens and

<sup>3</sup> Yet, the Soviet Union did employ considerable resources to promote national self-awareness among the non-Russian populations in the so-called *korenizatsiya* or indigenization policies in the late 1920s and early 1930s (Martin 1998, p. 816). By 1939 titular nations were proportionally (over)represented in party and cultural leadership positions, but remained underrepresented in white-collar positions such as engineering or medicine, still dominated by Russians (Martin 2001, p. 385). See Table 23 for a list of "backward cultures" and figure 11 for newly established national territories in the appendix.

<sup>4</sup> All choropleth maps show the boxplot distribution of the respective variable attribute divided into six classes:  $[\min, p25 - 1.5 \times iqr]$ ,  $(p25 - 1.5 \times iqr, p25]$ ,  $(p25, p50]$ ,  $(p50, p75]$ ,  $(p75, p75 + 1.5 \times iqr]$ , and finally,  $(p75 + 1.5 \times iqr, \max]$ , where  $iqr$  = interquartile range.

Japanese subjects were removed from the Far East leaving entire districts deserted (Martin 1998, p. 851). The majority of Koreans arrived by train into North Kazakhstan (around 95 thousand) while the rest (77 thousand) settled in Uzbekistan and other Central Asian republics. Faced with continental frosts, negligence and lacking support by local authorities (lack of housing, water, and medicines), their situation was close to starvation. However, different from later waves, Koreans were compensated for travel expenses, left behind crops, buildings and equipment and given real estate loans (Gelb 1995, p. 400). Yet their status is ambiguous: although in correspondences between NKVD and the Council of People's Commissars Koreans were referred to "special settlers", they were not regarded as such in the strict legal sense. Moreover, their deportation was less motivated by repression, but rather the result of a "forced cleansing" of territories adjacent to the border with the Japanese empire.<sup>5</sup>

### **Ethnic Germans [1941]**

Although ethnic Germans were regarded as potential "collaborators" with the begin of World War II, they were deported only during the war, probably related to their high economic status and the Volga German ASSR being a well-developed agrarian republic (Polian 2004, p. 126).<sup>6</sup> The quick advance of the German army, however, triggered Stalin's order to Beria to "*smash them [the ethnic Germans] into oblivion*" (Kriger 1997). In the first wave, 439 thousand were deported including 366 thousand from the Volga German ASSR, 47 thousand from the Saratov and 26.2 thousand from the Stalingrad (now Volgograd) oblasts (Polian 2004, p. 134). The autonomous Volga German ASSR was dissolved and integrated into Stalingrad and Saratov oblast'. On August, 28, 1941 the NKVD was set up as responsible organ for receiving and organizing the German "special settlers" (later also the other deported ethnicities).<sup>7</sup> In the beginning of 1942, a total of 1,031,300 Germans were registered at special settlements, of them 800 thousand had been banished from the European Russia and distributed between Kazakhstan and Siberia in almost equal numbers. Additional 231.3 thousand "local" Germans in Central Asia, who were not subject to a physical deportation, were transferred into the "special settler" regime. They were resettled in predominantly rural host regions regardless of their urbanization and additionally were mobilized in so-called labor armies to overcome wartime needs (Chebykina 1999, p. 120-1). These were organized in battalions with a camp-like structure and resembled more of a military lifestyle and constituted yet another deportation within a short period of time.

### **Karachays [1943]**

With the German occupation of the Karachay autonomous oblast' from August 1942 through January 1943, the Soviet leadership deported the Karachays as they behaved "*... traitorously, joined units organized by Germans for fighting the Soviet authorities, handed over honest Soviet citizens to Germans, accompanied and provided terrain guidance to the German troops advancing over the mountain passes in the Caucasus; and after withdrawal of the enemy they resist measures carried out by the Soviet authorities, hide bandits and secret German agents from the authorities, thus providing them with active support*" (quoted in Polian 2004, p. 140). In September 1943, their total deportation (69 thousand) was put into action, of which Kazakhstan received 12 thousand families (45,501 ind. half of them resettled into South Kazakhstan and Dzhambul oblast'), another 23 thousand ind. were resettled into Kyrgyzstan (Bugai 1995, p. 61). Additional 2,543 ind. were demobilized from the Red Army. On October 14, 1943 a decree regulated the dissolution of the Karachay autonomous oblast' and its administrative structures, which was to be distributed between the krais of Stavropol and Krasnodar and the Georgian SSR. On November 6, 1944 a Council of People's Commissars ordered the name change of all Karachay places. "The banishment of citizens of the Karachay nationality was grounded on the opposition manifest by a part of the population toward the party fundamentals, and their refusal to accept collectivization, along their partial support of the fascist occupation regime" Polian (2004, citing Bugai and Gonov (1998), p. 130).

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<sup>5</sup> Even an order by Beria on July 2nd, 1945 with the NKVD by which Koreans were to be registered as "special settlers" for a term of 5 years with a special stamp in their passport was not backed by a corresponding resolution of the Council of People's Commissars or a Supreme Soviet Presidium decree (Polian 2004, p. 102).

<sup>6</sup> As the deportation for 1941 was planned already on June 27, but not put into action until August 26 to 27, it is very likely, that Soviet leadership planned with the grain deliveries from the Volga German ASSR.

<sup>7</sup> On the same day, the "On the resettlement of the Volga Germans" was issued by the USSR Supreme Soviet Presidium formalizing the actions already carried out by the Soviet authority.



## Kalmyks [1943]

Another group, the Kalmyks, who were largely nomads and pastoralists, resided primarily in the Kalmyk ASSR, but also in the krays of Stalingrad and Stavropol. By early 1942, most of the Kalmyk ASSR, including Elista, was occupied by German troops, triggering an exodus of Kalmyks to the unoccupied areas behind the Volga River. Nonetheless, after the liberation of the ASSR in early 1943, they were deported in order to settle “an interethnic conflict” (Polian 2004, p. 144). On December 28, 1943 a Supreme Soviet Presidium decree “On the disbandment of the Kalmyk ASSR and establishment of the Astrakhan oblast’ as part of the RSFSR” stipulated their deportation to the krays of Altay and Krasnoyarsk as well as to the oblasts of Omsk and Novosibirsk, while simultaneously reorganizing the larger part of the territory into the newly-founded Astrakhan oblast’. The deportation itself was carried out in two waves by 2975 NKVD officers and the 3rd NKVD Vehicle Regiment (also involved in the Karachay campaign) on December 28-29, 1943. While in the first wave, 92 thousand ind. were almost equally distributed in host regions,<sup>8</sup> in the second (March 1944) several thousands Kalmyks were added from the oblasts of Rostov and Stalingrad.<sup>9</sup> Human losses due to epidemics as a result of the first wave taking place in the winter were extremely high (Bugai 1995, p. 79 – 80). Now “special settlers”, they engaged in agriculture, timber harvesting and industrial fishery rendering their centuries-old experience in animal husbandry worthless.

## Chechens and Ingushs [1944]

The Chechen-Ingush ASSR has literally avoided occupation, complicating the accusation of treason (Bugai 1995, p. 108). Charges brought against them now included “... *active and almost universal involvement in terrorist activities directed against the Soviets and Red Army*” (Polian 2004, p. 146). On January 31st, 1944, the State Defense Committee issued two decrees without referring to Chechens and Ingush people directly, which stipulated that Highlanders were henceforth to be considered as “special settlers” and resettled in the (mostly flat) areas of Kazakhstan and Kyrgyzstan.<sup>10</sup> Their resettlement campaign involved 19 thousand NKVD, NKGB and SMERSH executive staff members and some 100 thousand NKVD troops, drawn from all over the country for this “highland exercise” (Bugai 1995, p. 107).<sup>11</sup> Between February 23rd and March 1st, 1944, 479 thousand ind. were dispatched by train and a new Grozny okrug (later Grozny oblast’) within Stavropol kray was established on March 7, 1944 in place of the now abolished ASSR, which contained two third of the former republic’s territory.<sup>12</sup> While the remaining western and southern districts were absorbed into the Georgian SSR and North Ossetia, the eastern and southeastern districts were merged into Dagestan (Polian 2004, p. 146). Vacated Ingush territories were subsequently settled by Ossetians from Georgia, after which all Ingush toponyms were russified. While originally employed in the oil sector, Chechens and Ingush were now sent to work in the host regions at deposits in Gurev’ oblast’.<sup>13</sup>

## Karbardians and Balkars [1944]

The Karbadian-Balkar ASSR and its southern part – the Elbrus region, where Balkars resided – was only shortly occupied by German forces in August 1942 and liberated already on January 11, 1943. On February 24, 1944 Beria ordered the banishment of the Karbardians and the Balkars to be carried out with the NKVD order “On the measures for evicting of the Balkars population from the Kabardian-Balkar ASSR”. It involved 4,000 NKVD leaders and 17,000 NKVD soldiers, indicating additional professionalization already acquired in the course of the five earlier operations. As early as March 11, 37 thousand Balkars had been evicted and sent to Kyrgyzstan (60%) and Kazakhstan (40%) in Kazakhstan. Moreover, as per a Supreme Soviet Presidium order dated April 8, 1944 the Karbadian-Balkar ASSR was to be renamed into Karbadian ASSR. As per May and June 1944, the banishment to Kazakhstan should now also include the Karbardians. Also, 2,492 Balkars, Russians and to a lesser extent Russian families of “*active German accessories, traitors and betrayers*” were deported (Polian 2004, p. 151).

<sup>8</sup> Another 1,014 ind. joined in January 1944. 24,352 persons were placed in the Omsk oblast’, 21,164 ind. in Krasnoyarsk kray, 20,858 ind. in Altay kray and 18,333 ind. in the Novosibirsk oblast’. In the Omsk oblast’, Kalmyks were settled in its northern okrugs, i.e. the Yamal-Nenets, Khanty-Mansiysk and Tobolsk okrugs.

<sup>9</sup> This included 2,535 ind. that were sent to Omsk oblast’ on March 25 and 1,178 from Stalingrad to Sverdlovsk oblast’ on June 2 and 4, 1944.

<sup>10</sup> Decree 1: “On measures for the placement of special settlers on the territory of the Kazakh and Kyrgyz S.S.R.”, decree 2: “On the order of taking over cattle and agricultural products in the North Caucasus”.

<sup>11</sup> NKGB: People’s Commissariat for State Security; SMERSH: Main Directorate of Counter-Intelligence.

<sup>12</sup> Kazakhstan: 239,768 Chechens and 78,470 Ingush; Kyrgyzstan: 70,097 Chechens and 2,278 Ingush.

<sup>13</sup> Later additional target groups, such as prisoners transferred from the North Ossetian ASSR, demobilized army servicemen that had resided in the European part of the USSR, as well as individuals located in the Caucasus, “dodgers”, repatriates and others joined (Bugai 1995, p. 109 – 11).

## Crimean Tatars [1944]

The German Wehrmacht advanced during autumn 1941 into all of Ukraine and occupied Crimea. During the occupation, collaboration and resistance of considerable scale occurred of which the annihilation of 92 thousand individuals respectively 10% of the peninsula's population followed. Only two months (!) after its liberation in April-May 1944, NKVD and NKGB launched the entire banishment of the remaining Crimean Tatar population as per decrees adopted on April 2, 11, and 21 in 1944. On May 10, 1944 Beria addressed Stalin with a written proposal that should take "*into account the treacherous activities on the part of Crimean Tatars and [...] the undesirability of Crimean Tatars further residing in the border zone of the Soviet Union*" (Bugai 1991, p. 107). Their deportation was thoroughly prepared and within three days a total of 191 thousand individuals (47 thousand families) were transferred from Crimea to Uzbekistan.<sup>14</sup> Although their deportation took place in a more favorable season, Crimean Tatars still faced high incidences of diseases and deaths: 16 thousand in 1944 and 13 thousands in 1945 (Bugai 1995, p. 156 & 159). On October 20th, 1944 a decree stipulated the russification of all settlement, mountain or river names of Tatar or German origin and the demotion of the Crimean Autonomous Republic into a Crimean oblast' within Soviet Russia (Polian 2004, p. 153).

## Meskhethian Turks [1944]

Although Meskhethian Turks share with Georgians the same cultural background by both descending from Meskhi tribes, they have been under Turkish influence since the 16th century.<sup>15</sup> As Turkey was increasingly perceived as potential aggressor, permanently keeping 30 military divisions along the common border, the handling the "Muslim people" grew in importance. In a note to Stalin, Molotov and Malenkov, Beria described the Meskhethian minority as individuals, who "... *had relatives among Turkey's residents, were engaging in smuggling, manifested emigrant sentiments and served Turkish intelligence agencies as a contact medium for recruiting spy elements and implanting bandit groups*" (Bugai 1991, p. 110). Subsequent deportations were put into action on November 15, 1944 and went on for three days with some 90 to 116 thousand individuals being deported. According to a report from Beria to Stalin on November 28, 1944, 91,095 thousand persons are cited while summaries sent to Beria referred to 92,307 settlers, who were distributed to Uzbekistan (53,133 ind.), Kazakhstan (28,598 ind.) and to Kyrgyzstan (10,546 ind.) where they were employed primarily in agriculture (Bugai 1995, p. 178). Due to their winter deportation and detrimental conditions (bad water quality and sanitary equipment) in the host regions, which fostered the outbreak of typhoid fever, their mortality rates skyrocketed between 11.8% (official sources) and one third (unofficial sources) as of June 1948 (Polian 2004, p. 156).

## 2.2. Deserted origin regions

The resettlement of vacated regions became critical in the context of the relocation of Koreans from the Far East in 1937 and the deportation of the Volga Germans in July 1941. The Soviet government "arranged" for the remaining "legal" population to be resettled in the now cleared areas by evacuation or relocation within the district, but with a rather unsatisfactory outcome (Polian 2004, pp. 157).

### Autonomous Volga-German ASSR

Their deportation in the middle of harvest season led to a considerable decline in grain production. As early as September 1941, the Central Committee of the Communist Party drew up a plan for dividing the evacuated areas among the residents of neighboring districts and the evacuees from frontline areas. Initially, 17.4 thousand Russians from neighboring villages were resettled to take care of the deportees' livestock and property. Another 52,000 were resettled from frontline areas, and in March 1942 another 6,000 families were added from the Tambov, Voronezh, Orel, and Penza oblasts. Although by summer of 1942 about 4/5 of the required labor force had been resettled, the 1942 harvest did not even reach 1/3 of the planned amount, and the winter of 1942/43 passed without food. With the withdrawal of the German army, frontline settlers returned to their own homelands making this compensatory migration rather short-lived. In March 1944, another 19,600 families were to be resettled in the former Volga German ASSR, but only 4,200 of them stayed. Between September 1941 to May 1945, only 37% of these households settled permanently (Polian 2004, p. 156).

<sup>14</sup> Around 65 thousand were evicted to Tashkent oblast', 32 thousand to Samarkand oblast', 19 thousand to Andizhan oblast' and further 16 thousands to Fergana oblast'.

<sup>15</sup> They already had been subject to repression between 1928 and 1937, when forced to change their nationality to Georgian and adopt Georgian surnames.

## Caucasus

This assessment is shared for the territories of the Karachays, Chechens and other Caucasus peoples. In the former Chechen-Ingush ASSR, it was the neighboring population, mainly Ossetians, Dagestanians and Russians, who were resettled in the cleared territories. Yet, the management of infrastructure did not proceed efficiently, and abandoned houses and buildings continued to fall into disrepair, such that no fewer than 42 villages remained empty (in whole or in part). It is estimated that the number of new settlers accounted to only 40% of the displaced population. In the territory of the former Chechen-Ingush ASSR, this percentage was even lower: by May 1945, about 10,200 households had been resettled there, compared to 28,375 households before the expulsion. As a result, agriculture, especially cattle breeding in the long-distance pastures and terraced agriculture in the highlands, suffered great damage. The cattle left behind were later deported as well, but with great losses, but this time to the collective farms of the Ukrainian SSR, Stavropol Kray, Voronezh, Kursk and Orel Oblasts (Polian 2004, p. 158).

## Crimea

The deportation of the Crimean Tatars gave way to an economic urgency for a compensatory migration, such that as early as September and October 1944, more than 17 thousand collective farm workers arrived, mostly from other parts of Ukraine. Yet, cattle raising, wine and tobacco growing, and other economic activities that had flourished during the Crimean Tatar period required special skills which the compensatory migrants lacked. As a result, in the spring of 1945, the welfare of the 65,000 new Crimean residents was seriously threatened, triggering a massive outflow. By April 1946, some 11,381 families had left Crimea, while the number of incoming families was reduced to one thousand families, despite generous government incentives to stay. By July 1, 1948, 52.5% of the families who had been brought there since 1944 had left again. Similar cases of this economic vacuum occurred also elsewhere, making Saratov and Crimea the places with the largest outflow of compensatory migrants in the 1950s (Polian 2004, p. 162).

## 2.3. Khrushchev's Thaw

### The "forever" settlement

Effective January 8, 1945, the Soviet leadership restricted residence and freedom of movement of the deportees in the host regions. Further, Soviet citizens of German origin from the territories formerly occupied by the German Wehrmacht were forcibly repatriated to the Soviet Union under the assistance of the U.S. military. Following NKVD Directive No. 181 of October 11, 1945, any repatriated ethnic Germans was now automatically given the legal status of a "special settler" (Pohl 2016). It was extended to all ethnic groups through additional operatives and included the following provisions (Zemskov 2005; Pohl 2016):

1. "Special settlers" were mandated to perform socially useful work, whereby the NKVD was instructed to organize their labor arrangements in so-called special commands ("komendanturas"). One command was responsible for the supervision of over 700 families; in April 1949, the number of the special commands amounted to 2 679 (Polian 2004, p. 181).
2. The heads of all settler families were required to report to their special command within three days all births, deaths, escapes, and other changes affecting the immediate settler family.
3. They were forbidden to leave assigned settlements without permission from the NKVD. The special command was given the authority to punish any violations, which were now equated with escapes.

By 1945, 967,085 families or 2,342,506 individuals had been registered as "special settlers", which equaled 1.47% of the country's total population in 1959. Between 1945 and 1953, the number of special settlers grew 1.39 times in Western Siberia, to 1.59 times in Eastern Siberia, and to 3.28 times in the Far East. With a regional share of 49.7% in 1945 and 52.9% in 1954 in Kazakhstan, the share of "special settlers" in the total population becomes even more impressive (Polian 2004, pp. 185). Ethnic Germans, the largest single ethnicity, were placed in Kazakhstan (52.4% in the oblasts of Karaganda and Akmolinsk) and in the krays and oblasts of Siberia (groups between 50 to 100 thousand ind. in Novosibirsk and Altay) (Polian 2004, p. 163). While Kazakhstan was also the main destination for Chechens (77.2%), Ingush (96.8%), Karachay (65.4%), and Balkars (50.6%); Crimean Tatars, Koreans, and Meskhetian Turks formed the majority in Uzbekistan and Chechens, Germans, Karachays, and Meskhetian Turks ranked accordingly in Kyrgyzstan (Polian 2004, p. 193).



Motivated by recurring escapes from the settlements, the Soviet government decreed on November 26, 1948 their resettlement to be forever (*navechno*) and that any unauthorized departure is to be punished by twenty years of forced labor (as opposed to an earlier sentence of eight years).<sup>16</sup> It specifically mentioned Chechens, Karachays, Ingush, Balkars, Kalmyks, Germans, and Crimean Tatars to be subject to these measures. Moreover, any free citizen helping fleeing “special settlers” would face a five-year prison sentence (Pohl 1999; Pohl 2016). It is these residence and movement restrictions, coupled with the NKVD’s role in monitoring and managing deportees, relegated both deportees and their descendants to second-class citizenship and internal exile until the dissolution of the Soviet Union (Pohl 2016).

### The 1956 Rehabilitation Decree

The fate of some ethnicities should change only after Stalin’s death, when in 1956 Khrushchev initiated a process of reinstating civil and political rights as well as the state-administrative and territorial status (Khrushchev’s Thaw).<sup>17</sup> In a secret speech at the 20th Communist Party Congress on February 24 to 25, 1956, he referred to the deportations as “mass repression” and recognized that “*this deportation action was not dictated by any military consideration*” (Conquest 1960, p. 133). Ethnic Germans were the first to be released from “supervision” following a Council of Ministers decree titled “On striking particular categories of special settlers off the register” dated November 24, 1955 and of December 13, 1955, acquitted of the indiscriminate accusations of collective treason. Yet, this acquittal neither lifted their punishment nor were they able to seek restitution for the property confiscated during the deportation itself. It also did not annul their charges of collective treason until 1964 (Pohl 2008, p. 411 – 2), suggesting that the acquittal was intended to legitimize their place of banishment (Polian 2004, p. 202). Following a Supreme Court rehabilitation decree passed on April 18, 1956, five deported ethnic groups had their statehood restored and their autonomy regained including (an implied) return assistance. These included the Chechens, Ingush, Balkars, Karachays and Kalmyks, but excluded Crimean Tatars, Meskhetian Turks, Koreans and Germans, which were by far the largest group, such that their exile was arbitrarily maintained (Polian 2004, p. 195). Yet, on October 31, 1957 an ambiguous decree gave Meskhetian Turks as well as the Kurds and Hemshinli (Armenian Muslims), who were deported alongside them, the right to emigrate to the Caucasian Republic of Azerbaijan and become citizens of it. Up to “40,000 of them opted for integration into a country that was culturally close to their Muslim identity and geographically close to their Georgian homeland”, that was now in Georgia (Tournon 2009). Nevertheless, in the early 2000s, around 2 thousand of the majority of about 290 thousand Meskhetian Turks, about 80 to 100 thousand continue to live in Kazakhstan, followed by Russia (50 – 70 thousand), Azerbaijan (40 – 60 thousand), and ultimately Kyrgyzstan (25 – 30 thousand) and Uzbekistan (15 – 20 thousand) (Polian 2004, p. 220). Following I differentiate the deported ethnicities in two groups along their their freedom of movement as stipulated in the 1956 resp. 1957 rehabilitation decree:

**Rehabilitated** – *Karachays and Balkars*, who were fully or at least satisfactory rehabilitated; *Chechens, Ingush Kalmyks*, who were only partially or inadequately rehabilitated (fully rehabilitated with regard to their civil rights).

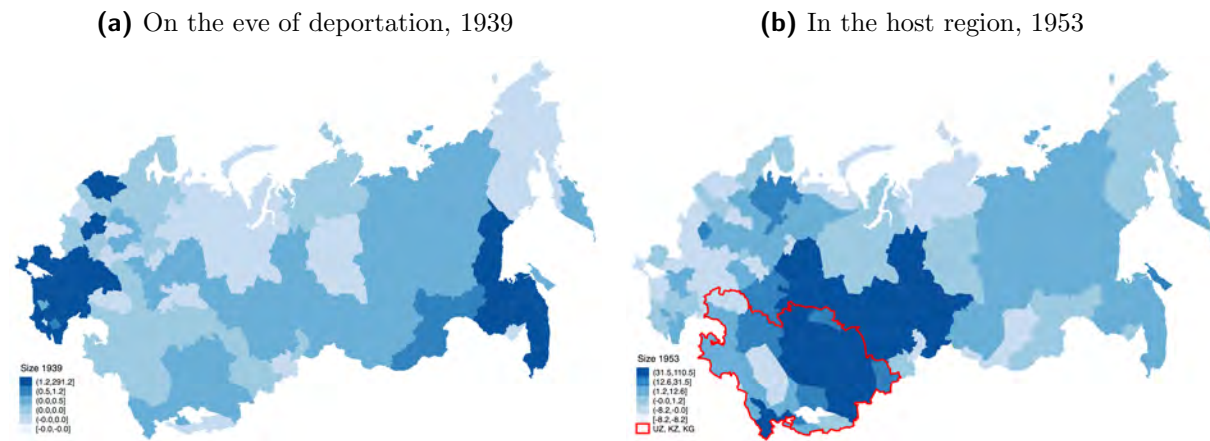
**Permanently exiled** – *Germans, Crimean and Tatars*, whose rehabilitation only included the restoration of their civil and political rights. It involved neither a renewal of their state-administrative and territorial status, a return to their former homelands. It also includes *Koreans*, whose “special settler” status was of de facto nature and the Meskhetian Turks, who albeit their given exit strategy of becoming citizens of Azerbaijan, largely remained in exile.

The discriminatory nature of the 1959 rehabilitation decree as well as its timing of only eight years after the banishment of targeted ethnicities was declared forever, supports the non-randomness of my argument. Yet, Chechens, Ingush, Kalmyks, Karachays and Balkars and finally the Meskhetian Turks, might have been of rather limited strategic importance given their former homelands were located within the Soviet administrative borders, while the homelands of the permanently exiled ethnicities were not. Figures 2 and 3 show the geographical dispersion of permanently exiled and rehabilitated ethnicities on the eve of their deportation in 1939 and in the host region as per January, 1953 – when the “special settler” regime reached its zenith. While rehabilitated ethnicities were deported to all Central Asian republics, but not Siberia, permanently exiled were resettled mainly in northern Kazakhstan and Siberia.

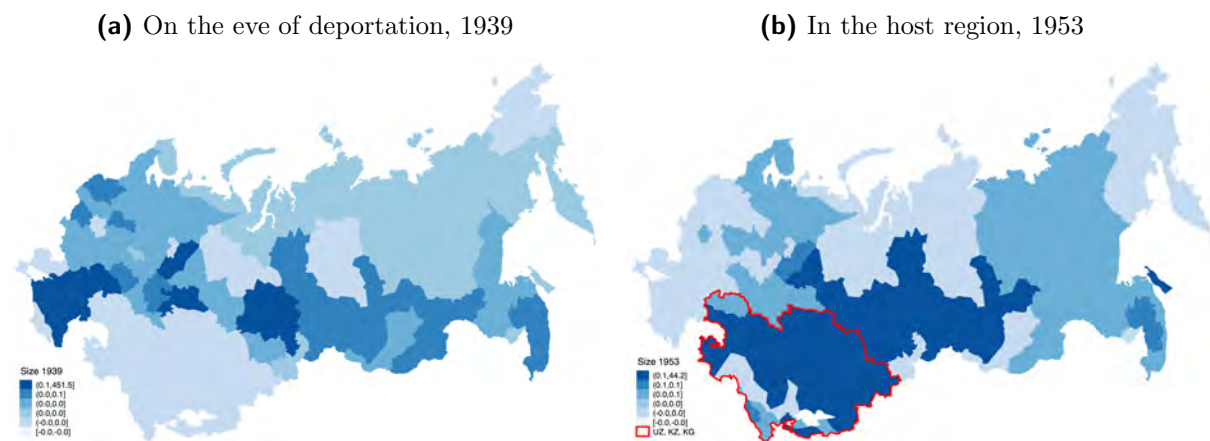
<sup>16</sup> As of October 1st, 1948, of the total 2,104,751 registered special settlers, 77,451 escaped and 20,955 of them remained in hiding. Germans were the largest group among the fugitives with 22,235 , but comprised of only 2.2% of the entire ethnic group Polian (2004, p. 181 – 2).

<sup>17</sup> Although repressive episodes later re-emerged under Brezhnev, this period generally favored milder sentences or exile as punishment for dissent (Zhukov and Talibova 2018, 2p. 270).

**Figure 2:** Pre- and post-deportation spatial distribution of permanently exiled ethnicities (in thousands)



**Figure 3:** Pre- and post-deportation spatial distribution of rehabilitated ethnicities (in thousands)



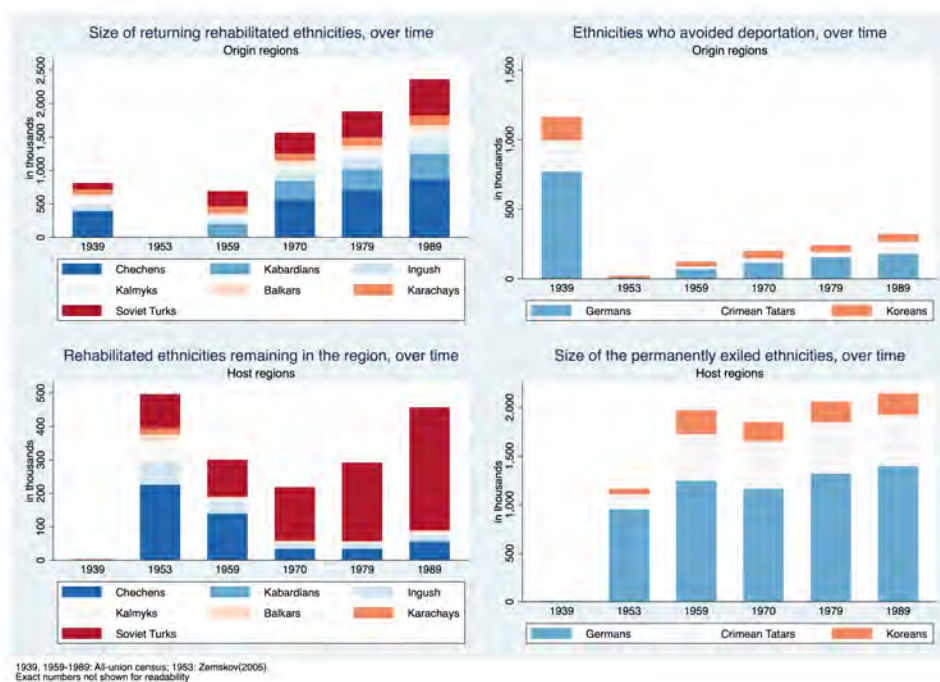
### Post-rehabilitation

Starting in the late 1950s, most of the fully or partially rehabilitated ethnicities returned to their former homeland. Figure 4 shows the population size of rehabilitated and permanently exiled in the origin respectively host regions over time: while Karachays and Balkars led the way with a return rate of over 80% as early as 1959, the return migration of the Kalmyks (61.2%), Chechens (58.2%) and Ingush (45.3%) was slower due to a delayed process of territorial restoration. In contrast, between 1953 to 1989 the number of ethnic Germans in Central Asia grew significantly in the thousands: in Kazakhstan alone from 587.8 to 957.5 making this ethnicity the fourth largest group in 1959 and the third in 1989 (Polian 2004, p. 192).<sup>18</sup> At the same time 17 thousand remained in Saratov oblast' and 14 thousand in the Volgograd oblast' (formerly Stalingrad) (Polian 2004, p. 192). Although Germans (and Crimean Tatars) seemed to have rooted down better than other ethnicities, in reality the “authorities were extremely wary of any disturbances to the status quo that may have developed with the absence of these peoples” (Polian 2004, p. 201). Due to their continued importance for development purposes, an even more intensive assimilation of these groups through both cultural and linguistic assimilation and selective exclusion from higher education, became the Soviet goal (Pohl 1999, pp. 58; Pohl 2008, pp. 411). Ethnic Germans were prohibited German-language publication and education during the special settlement regime itself, which was only halfheartedly relaxed afterwards resulting in a decline of reported German native language from 67% in 1970 to only 57% in 1979 and 51% in 1989 (Polian 2004, p. 193).<sup>19</sup> Moreover, only 4.3% of ethnic Germans had a university degree compared to 11.7% of the total republics population. Individuals over the age of fifteen with post-secondary education amounted to only 5.7%, while 22.4% had completed secondary and 8.4% had not finished grammar school.

<sup>18</sup> Kyrgyzstan (15.8 to 101.3) and Uzbekistan (8.4 to 39.4) (Polian 2004, p. 192).

<sup>19</sup> Compared to 2% of Chechens, who spoke Russian as their native language (Polian 2004, p. 193).

**Figure 4:** Consequences of the 1956 rehabilitation decree over time, both regions



While in 1972, the residence restriction was lifted for the permanently exiled, they were still neither allowed to return to their former regions, nor was their administrative nationality restored. They were faced with the choice of submitting to the decision of the Soviet government or fighting for their rights in “delegations” and “congresses” of Soviet Germans, the “congresses” of Meskhetian Turks, and the “*kurultays*” of Crimean Tatars (Polian 2004, p. 202). Yet, the aspired key right of a return was continuously denied, i.e. for the ethnic Germans “under the pretexts of unsuitability, inappropriateness of timing, unavailability of necessary vast funds and impossibility for agriculture to be successful developed in the virgin lands without the German settlers’ contribution” (Polian 2004, pp. 203). Soviet leadership recognized the criminal nature of the deportations as early as 1989, the now Russian parliament had not fully restored these ethnic groups’ personal and administrative rights until 1991. Following, between 1991 and 2012, around 2.5 million ethnic Germans from the countries of the former Soviet Union immigrated to Germany, highlighting the infeasibility of this too-late decision at least for this ethnicity (Worbs et al. 2013). Figure 5 proofs the lateness of this decision and shows the official rehabilitation confirmation of then 78-year old Olga Vasilevna Klauser, who was born in 1918 and deported in 1941 from the former Stalingrad oblast’.

The situation of these ethnic groups proved to be particularly consequential after the disintegration of the USSR and the establishment of the new borders of the RSFSR. For example, a significant part of their former territory has not yet been returned to the Ingush. For the Balkars, Chechens and Kalmyks, neither the administrative territorial order nor the toponyms have been fully restored, and, above all, the autonomous administrative units of the Crimean Tatars and Volga Germans have not been restored. Moreover, the repatriation of the Crimean Tatars and Meskhetai Turks became an international affair involving a number of now sovereign states, most notably Uzbekistan, Ukraine, Georgia, and Russia. Although the legal successor to (and perpetrator of) the USSR, Russia immediately distanced itself from a repatriation process. While Russia ceased its assistance in repatriation in 1993, Uzbekistan, for its part, decided to place border tariffs and other obstacles in the way of emigrants. In addition, financial assistance to the Crimean Tatars for relocation was often used inefficiently. The Crimean Tatar population in Russia has remained relatively small, and Crimean Tatars living in Krasnodar Kray, for example, actively settled in Crimea in the 1990s and early 2000s. At the same time, a significant portion of Crimean Tatars continue to live outside Crimea (Polian 2004).



**Figure 5:** Rehabilitation confirmation of Olga Vasilevna Klauser (b. 1918) issued in 1996

**СПРАВКА О РЕАБИЛИТАЦИИ**

19 96г. гор. Волгоград

ГР. КЛАУСЕР ОЛЬГА ВАСИЛЬЕВНА (фамилия, имя, отчество)

Год и место рождения 1918

Место жительства до применения репрессий р-н Сталинградской обл

Когда и каким органом репрессирован в 1941 г по Указу ПВС СССР от 28 08 41 г

Основание применения репрессии по политическим мотивам в административном порядке  
 ПРИЗНАНА СОЦИАЛЬНО ОПАСНОЮ ПО НАЦИОНАЛЬНОМУ ПРИЗНАКУ

На основании пункта «в» ст. 3 Закона России от 18 октября 1991 года «О реабилитации жертв политических репрессий» гр-н (ка)

КЛАУСЕР ОЛЬГА ВАСИЛЬЕВНА (фамилия, имя, отчество)

реабилитирован (а)

М. П. А. Шевелев.

Зак. 322

Начальник УВД  
Волгоградской области

Source: Courtesy of the Kosior family archive in Berlin.

### 3. Hypotheses

I exploit the quasi-natural experimental setting under which the deportations took place; in waves closely following one another and with unparalleled speed, professionalism and technical sophistication, each ethnic group was deported almost in its entirety from their origin regions and injected into the host regions. The exogenous allocation of “special settlers” to the host regions and the use of the rehabilitation decree as an instrument for the randomness of the rehabilitation decision rules out three general problems related to the study of indiscriminate violence: the first is, that violence may affect some ethnicities in one and the same place and at one and the same time more directly than others; second, the effect of the deportations may not be proportional to the population share exposed and finally, the exposure may not be random (Zhukov, Davenport, and Kostyuk 2019). It also excludes the endogeneity problem present in many migration studies, whereby migrants tend to settle where they find the best employment opportunities, or where other migrants from their group have previously settled – a process commonly referred to as chain migration.

#### 3.1. Relative distributional effects

Inspired by Steinhardt (2011), I examine the impact of the “special settler” regime in Soviet regions using educational and occupational groups as classification criteria. My arguments rest on the fact, that local employment Central Asia is strongly influenced by the settlers’ and their descendants’ severe downgrading in qualifications. “Downgrading” occurs when the position of migrants in the host labor market, usually measured by wages or employment, is systematically lower than the position of locals with the same observed level of education and experience; it is most severe in the years after their arrival, as immigrants proceed to upgrade their skills and acquire complementary ones in the host county (Dustmann, Schönberg, and Stuhler 2016, pp. 45).<sup>20</sup> While the general downgrading for the rehabilitated ethnicities ended, it remains constantly negative for Koreans, ethnic Germans, Meskhetian Turks and Crimean Tatars. In contrast to empirical studies that advocate less downgrading of earlier cohorts relative to later arrivals<sup>21</sup>, the historical accounts suggest no such differential treatment in the present context.

<sup>20</sup> See Eckstein and Weiss (2004) on the immigration of Jews from Russia to Israel in the 1990s, where the returns immigrants receive for their schooling and experience are initially zero or even negative, but rise with time spent in the host country.

<sup>21</sup> See Dustmann, Schönberg, and Stuhler (2016, p. 57).

This rules out any endogenization of qualifications, i.e., the acquisition of higher qualifications over time by themselves or their descendants. Hence, permanently exiled and locals find themselves in very different employment and education profiles, that neither converge nor become more similar the longer the permanently exiled deportees stays in the host regions. This very different skill distributions of locals and of permanently exiled “special settlers” suggest significant distributional effects in host region’s labor markets and is ideally suited to determine the effects of supply shocks on complementary local groups, i.e., locals and rehabilitated settler. Complementarities must therefore be an important part of any assessment of how migration shocks change employment opportunities for local workers, in particular, because this positive demand shock may have led enterprising locals to establish various commercial enterprises or to realize economies of scale, which is likely in the Soviet context (Alix-Garcia and Saah 2010). As “special settlers” perform socially meaningful jobs at usually low cost, the local non-settler workforce may respond, for instance, by specializing in communication-intensive occupations in which they have a comparative advantage due to language and cultural proficiency (Peri 2014, p. 8). The de-facto low-skilled “special settlers” may therefore have increased the employment of the local non-settler population by inducing an occupational upgrading of low- resp. medium skilled locals into high-skilled positions, which would involve the acquisition of “culture-specific” knowledge and communication skills via tertiary education:

**H 1:** *Upstream complementarities in the host region will lead to an increase in white-collar employment due an occupational upgrading of locals in response to their understratification by permanently exiled.*

Despite labor and education outcomes being generally in sync, an individual approach allows assessing whether and to what extent educational investments actually do translate into specific labor market decisions. If their development over time is entirely far from being synchronized, i.e. higher educational attainment without corresponding developments in the white-collar employment, locals would invest in education for purposes other than increasing their material well-being. The previous lines of thought are to be reflected in the following hypothesis:

**H 2:** *Upstream complementarities in the host region’s local labor market will lead tertiary education to follow due to the acquisition of “culture-specific” skills necessary for the advancement.*

As episodes of violence may also have lasting impacts on educational biographies<sup>22</sup>, it may affect the inter-generational transmission of agricultural and non-agricultural human capital. Becker, Grosfeld, et al. (2020) and Botticini and Eckstein (2005), for instance, link episodes of mass violence and deportation to increases in higher education. Both argue, that families with a history of forced migration would insulate themselves from further negative shocks: this might be the result of a reevaluation of their educational preferences – either through becoming less myopic and more willing to invest in education or because they value their descendants education more highly than their own – or to that fact, that they associate a higher subjective probability of being at the mercy of fate.<sup>23</sup> The presumed shift in preferences towards higher education shall be captured for the rehabilitated ethnicities in the following hypothesis:

**H 3:** *A capital flight into “portable” assets by rehabilitated settlers will increase tertiary and primary education in both regions after their rehabilitation.*

Moreover, the extreme concentration of “special settlers” in the least-skilled category, further suggests distributional effects also for the low-skilled locals due to an oversupply of labor throughout the host region’s labor market in this category. Following, the influx of special settlers may have pushed competing low-skilled locals out of the labor market or made it more challenging for those who remained in the market to find work (Steinhardt 2011, p. 4). Since “special settlers” as a combined group were relatively evenly distributed across Central Asia and Siberia, it must be assumed that very low-skilled local workers in a few regions were indeed affected by this supply shock. Yet, the influx of downgraded settlers may have negatively affected precisely this underlying elasticity of substitution between special settlers and low-skilled locals, which would explain positive employment effects for low-skilled locals. Although the positive cross-effects for low-skilled locals are often not statistically significant<sup>24</sup>, their employment outcomes may nevertheless have improved at the next higher level of the skill distribution as a result of the settler influx (Dustmann, Schönberg, and Stuhler 2016). It also relates to the disproportionate number of special settlers with intermediate or higher skills, especially Crimean Tatars and ethnic Germans, who may have raised both the employment rate and the skill profile of locals with at most primary education due to downstream complementarities (Borjas and Doran 2012; Friedberg 2001). The following hypothesis capture the aforesaid:

<sup>22</sup> See Shemyakina (2011) for war-exposure on the schooling of Tajik girls.

<sup>23</sup> See Blattman (2009), Bellows and Miguel (2009), and Bauer et al. (2016).

<sup>24</sup> See Peri (2014).



**H 4:** *Downstream complementarities in the host regions will lead to a gradual increase in collective farm employment, that is not associated with a corresponding increase in primary education.*

I test these hypotheses by examining the impact of the group-specific immigration shock on both aggregate employment and education and integrate the share of permanent and rehabilitated ethnic groups as my main explanatory variable of interest. My approach is estimated at the so-called meso-level and decomposes the labor and education markets into distinct sub-markets based on their occupation-skill gradient. Variations in the flow of settlers into (or out of) these sub-markets are then used as a means of identification (Steinhardt 2011, p. 6). I assume that the allocation of specific settlers to these sub-markets is (conditionally) independent of shocks to local employment and that some (but not other) sub-markets are subject to an inflow of “special settlers”. The latter avoids possible biases in the composition of employment and education categories due to gender and ethnicity trends and a misclassification of ethnicities into education and wage groups due to “downgrading”. My theoretical argument assumes heterogeneous treatment effects; that is, one would expect stronger effects in a particular skill/occupation group in the region that had to absorb a larger share of settlers. For this to be empirically credible, strict exogeneity must be assumed. This means first, that the decomposed categories do not change as a result of the shock and over time; that is, “special settlers” do not move up to the next higher category (which they do not); and second, that deported ethnic groups might have differed in other dimensions before their deportation, i.e., they were more (un)educated or politically (less) active than the non-deportees (Borjas and Monras 2017, pp. 409). Finally, my estimates might be subject to a post-treatment bias; that is a mixture of the original exposure (the deportation) and the experience gained in the meantime (being a “special settler”), which in turn could be a consequence of the exposure itself.

I use logarithmic changes in both the white-collar resp. collective farm employment and tertiary resp. primary education of the local non-settler population in the host and origin regions and relate them to the region-specific immigration shock defined as the ratio of all rehabilitated or permanently displaced special settlers immigrating to the region and all locals in that region. Given the nature of the exercise (using publicly available aggregate data over longer time periods), I control for pre-shock determinants (e.g., 1939 education and occupational levels) as a first-best solution to the pre-trend problem and apply my analysis to four different census periods to capture unobserved relaxations in the “special settler” provisions over time (Borjas and Monras 2017, pp. 409). This avoids any negative associations due to pre-existing preferences and would also uncover unintended correlations between the change in settler population and outcomes decades later (Walden and Zhukov 2020). From an identification point of view, I also rule out any issue related to upward mobility, as occupation and educational restrictions for the permanently exiled “special settlers” and their descendants have not been lifted. Since potentially endogenous regressors are used as outcomes rather than controls, my derived estimates are informative and test whether they are affected by the “special settler” shock (Borjas and Monras 2017, p. 410). They are of direct policy relevance and easy to interpret even if labor supply elasticities differ between low-skilled and high-skilled local workers, whose data I unfortunately do not observe.

Moreover, I do rule out other explanations related to the institutional inertia of the Soviet command economy, as both the severity and the frequency with which 5-year plans were enforced declined steadily from the mid-1960s onward, reaching its lowest point in the last Brezhnev years (Suesse 2018, citing Rutland (1993)). This is related to the virtual standstill in the turnover of the Soviet elite at both top and lower levels at the beginning of the 1980s, producing long tenures of officials and emerging informal networks, often oriented along ethnic or clan lines (Hale 2015; Siegelbaum and Suny 1993). Especially in the Soviet periphery, they developed into a powerful competitor to the central authorities in Moscow in the allocation and distribution of resources (Suesse 2018, p. 2938; Hale 2015). Georgia in particular was regarded as hotspot for bureaucratic corruption and kinship networks, whereby the first secretaries benefited greatly from their titular group’s identification with Christianity (Hale 2015, p. 54). In Uzbekistan, a cartel of republican leaders successfully manipulated the cotton trade for decades (Suesse 2018, p. 2938).<sup>25</sup> Local discretion became a deeply rooted feature of the late Soviet economy, exacerbated by the inter-republic conflicts and the rapid retreat of central control under Gorbachev (Hanson 2014).

### 3.2. Political behavior

Since deportations were primarily politically motivated, the effect of the rehabilitation decree on the political participation of the settlers’ descendants is of great interest. Early studies of the civil wars in Sierra Leone (Bellows and Miguel 2009) and Uganda (Blattman 2009) show, that experiences of

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<sup>25</sup> Leningrad, Riga and Odessa were major funnels of the second economy (Suesse 2018, citing Grossmann (1997), p. 34).

violence may increase voter registration and turnout. In this context, Zhukov and Talibova (2018) show, that communities exposed to Stalinist repression have lower turnout in today’s Putin Russia, which the authors attribute to the credibility of renewed retribution.<sup>26</sup> Similarly, Lupu and Peisakhin (2017) find, that Crimean Tatars’ family experiences of Soviet violence did influence their political attitudes three generations later. Similar to Nikolova, Popova, and Otrachshenko (2022), the following assumptions shall guide my analysis:

1. Deportations not only affected the deportees directly, but also indirectly their descendants and the witnesses of the uprooting.
2. The exposure to community-level indiscriminate violence over time produces a perception of a collective threat, thereby shaping the collective identity of all affected groups involved.<sup>27</sup>

In particular, for first- and second-generation people living permanently in exile, political engagement was almost certainly irrelevant for fear of future victimization, thereby suppressing any expression of political dissent. For their descendants the argumentation is not as clear-cut: on the one hand, they may have identified more strongly with their ethnic group, such that their inherited ethnic identity translated into higher political participation, possibly as a defense mechanism to protect their ethnic group (Lupu and Peisakhin 2017, p. 83). On the other, individuals may have lost confidence in politics as a whole, quite independently of ideological and family experiences of violence. The fact that a secessionist alternative could be voted on in the 1991 referendum makes this analysis highly interesting, because it has been shown that both the strength and the capacity of a central government to act collectively have proven crucial to the stability of a political system in the face of strong distributive pressures (Keefer 2009; Castañeda Dower, Markevich, and Weber 2021). Given the historical link between repression and unrest and the likelihood that both grievances (and fighting repertoires) survived the deportation experience, the difference in living standards between permanent exiled and locals might have required more revolutionary actions, which secessionist movements readily provided (Bugge and Nafziger 2021). A general shift to the nationalistic and thus secessionist political preferences or to a radicalization of the electorate in the late Soviet Union would therefore explain a rejection of Soviet domination (positive effect). Likewise, an affirmation of the status quo (negative effect) would be consistent with an inclination of the electorate toward communism, possibly to not lose out economically (Castañeda Dower, Markevich, and Weber 2021). This shall be captured as follows:

**H 5:** *Host regions with a larger share of permanently exiled settler ethnicities in 1989, tend to against the Soviet supremacy and protest more.*

Yet, the succession of violent political upheavals such as uprisings, assassinations, invasions, general strikes, and revolutions in Russian and Soviet history marked not only domestic caesuras, but were often associated with a change in political leadership. However, unrest and instability in general contribute to an increased uncertainty about the future (Grosfeld, Sakalli, and Zhuravskaya 2020). And while the Great Terror made ethnic networks fragile and highly dependent on Stalin himself, and Khrushchev’s institutional restructuring made them difficult to function, they flourished under Brezhnev’s policy of “stability of cadres” (Hale 2015, p. 53). Under Gorbachev in particular, a series of major reforms he pushed unhinged the Moscow-centered system of self-fulfilling expectations that underpinned Soviet rule (Suesse 2018, p. 2938).<sup>28</sup> The political space in the Soviet Union gave new autonomy and authority to leaders of the Union republics, who held the most power formally and informally but had previously been subordinate to the central leadership (Hale 2015, pp. 54 & 55). Thus, the return migration of rehabilitated ethnicities, their higher fertility compared to ethnic Russians and the accelerated emigration of Russians in the late 1970s, produced a considerable layer of intelligentsia of former “special settlers, who integrated themselves to varying degrees into Russian society or became part of it. Hence, any change to the status quo might reverse the trend of an increasing ethnic assertiveness and produce to a series of economic dislocations, which in turn would explain a higher approval of the Soviet supremacy in the origin regions as captured by the following hypothesis:

**H 6:** *Origin regions with a larger share of returning settlers tend to vote in favor of the Soviet supremacy and protest less.*

<sup>26</sup> See also Balcells (2011) and Rozenas, Schutte, and Zhukov (2017).

<sup>27</sup> Insofar as the major locus of transmission is within the family, these are expected to persist across generations (Boyd and Richerson 1985; Lupu and Peisakhin 2017). Where family socialization competes with other sources, i.e. formal education or social groups, an increasing effect would emanate from the excessive violence (Bisin and Verdier 2001).

<sup>28</sup> The republics’ parliamentary elections and his proclamation of non-coercion to impose Communist Party supremacy shattered hitherto stable political expectations in the society.

To capture the extent of the deportation experience, I use the share of votes against the preservation of the Soviet Union in the 1991 referendum and the log number of protests and riots in the late Soviet Union, whereby I incorporate the share of permanent and rehabilitated ethnicities in 1989 as my main explanatory variable. My theoretical argument is once again based on heterogeneous treatment effects along the two social conflict dimensions; that is, one would expect stronger effects in host region that in 1989 had a larger proportion of permanent exiled respectively in origin regions, where a larger share rehabilitated “special settlers” returned to. My main channel of identification assumes that the special settler regime affected turnout and protests only through the actual rehabilitation decision and not through any other channel after controls are included. These include the educational and occupational levels of the 1989 non-settler population, the extent of inter-group interactions as well as the known historical dimensions of violence, which would uncover unintended correlations between the size of the respective settler ethnicities in 1989 and the occupation-skill gradient of locals, possibly due to unobservant patronage networks (Walden and Zhukov 2020; Borjas and Monras 2017, p. 409). As I collect provincial data from individuals who actually did vote or protest, my results allows assessing the impact of Stalin’s ethnic terror on political preferences in the late Soviet Union, while ignoring the Soviet command economy as a confounding factor. As potentially endogenous explanatory variables are on the left-hand side of the equation, my derived estimates test whether these are affected by the rehabilitation decision (Borjas and Monras 2017, p. 410).

## 4. Data

### Historical Censuses

The bulk of my data aggregate data (at the regional level) from six historical census enumeration, that I obtain from physical Soviet censuses enumerations of 1926, 1939, 1959, 1970, 1979, and 1989 (Gosstatizdat 1962a; Gosstatizdat 1963c; Gosstatizdat 1962b; Gosstatizdat 1963a; Gosstatizdat 1963b; Statistika 1972b; Statistika 1973; Statistika 1972a; Isupov 1989b; Isupov 1989a; Publications 2011).<sup>29</sup> I collect data on 134 administrative units within six autonomous republics, that existed between 1922 and 1989 and either hosted or sent “special settlers”. These are oblasts (regions) and okrugs (special status regions) – which may also be autonomous – and finally larger krays (territories). Since some smaller regions are often included in larger ones, I factor these out in order to avoid double-counting, i.e., oblasts excluding semi-autonomous okrugs. In addition, the inconsistent reporting of regions associated with larger metropolitan areas or city-states, such as Tashkent or Tbilisi, make it challenging to distinguish between a city and an oblast and prompted me to use its oblast-level data. For consistency, I restrict my sample to the Soviet territory in its pre-war boundaries, i.e., in its smallest historical extent. While this excludes annexed Finnish territories following the “winter war”, it includes all administrative units established before December 31, 1939 and which are recorded in most censuses. This arbitrary cut-off date is intended to reflect the time between the beginning of World War II, marked by the German attack on Poland, and the moment these developments filtered up to the higher levels of the Soviet government. This leaves me with 98 administrative units.

Data on the ethnic composition in these territorial units is gathered from [www.demoscope.ru](http://www.demoscope.ru), a research project at the Higher School of Economics in Moscow whose goal is to provide the public with economically meaningful information from the Soviet Union and its successor states. The census information allow me to track the regional composition of ethnic groups, social classes, and educational levels over several different points in time. In order to classify the Soviet population along ethnic lines, two questions were asked about an individual’s nationality and native language affiliation. Although the two categories overlap almost completely, differences are due less to absolute numbers than to (1) how the questions on nationality and language are phrased, (2) the meaning of the answers, and (3) the use of census data in conjunction with other sources on ethnic composition (Silver 1986).<sup>30</sup> To avoid any misclassification of deported ethnicities as ethnic Russians following a forced or even voluntary cultural and linguistic assimilation, I capture the ethnic designation (not citizenship) between 1926 and 1989 using the Soviet citizens’ self-reported nationality, respectively the mother’s nationality for children born to bi-ethnic parents. In particular, when inferring population sizes for Central Asia, the use of Census data appears to be superior to vital statistics due to the severe under-registration of births in that region.

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<sup>29</sup> The 1989 Census data are additionally obtained as digital files from the GESIS archives.

<sup>30</sup> The set of “nationalities” is necessarily given by the number of ethnonyms provided to respondents (1939: 97 vs. 1959: 109). In other cases, the native language is used to determine nationality, accelerating the linguistic Russification and administrative decline of certain ethnic groups between 1926 and later censuses (Silver 1986, pp. 71& 85).

## Special Settlers

Data on the deportees, their regional and ethnic composition as well as the timing of their deportation are obtained from Zemskov (2005), a historian who authored many of the very early articles on the “special settlers” under the auspices of the Institute of Russian History at the Russian Academy of Sciences. His 2005 book “Spetsposelentsy” or “special settlers” provides the scientific basis for my deportation data. Its figures are drawn from NKVD reports in the State Archives of the Russian Federation (GARF) and other Soviet archives and report annual data on the numbers of various deportees, their locations, and work assignments and demographic changes in the targeted regions of Russia, Kazakhstan, Kyrgyzstan, and Uzbekistan. I use his data per January 1, 1953, the year the “special settler” regime reached its zenith with 2,753,356 individuals being registered as such (Polian 2004, p. 185).<sup>31</sup> This yields a cross-sectional sample of nearly 98 oblasts, split evenly between those that hosted and sent “special settlers”. For the origin regions, I rely on supplement #1 from Polian (2004) who provides information on the timing of the operations, the number of people of each ethnic group subjected to the deportations, and their regions of origin.<sup>32</sup> As ethnicities are grouped, an ethnicity-based breakdown by administrative region is achieved by comparing their distribution with the 1939 census and data from Lorimer (1946, Table 23 and 55) on their regional concentrations.

Koreans, defined as Soviet citizens and Japanese subjects, are obviously missing in the 1939 census data as they had already been deported in 1937. I reconstruct their 1939 regional concentration (as if they had not been deported) using their 1926 numbers in districts, that would later transition into the 1939 regions, while assuming their spatial concentration in 1926 to be constant in 1939. Their geographical distribution share is then multiplied with the total number of Koreans in 1937 (172 thousand) and adjusted for their population increase from 1937 to 1939. As Zemskov (2005) does not report the number of Koreans as “special settlers” in the host regions, most likely due to their legal ambiguous status, I calculate the total number of Koreans in 1953 as a weighted average. This is done by taking their 1959 actual values less their simulated 1939 census values and multiplying it with 14 out of 20 years. Furthermore, the Soviet statistical offices changed its procedure in labeling certain ethnic groups, such as the Crimean Tatars and Meskhetian Turks. No separate number of Crimean Tatars was listed in the 1959, 1970 or 1979 Census reports, and this group appears to have been grouped along Volga Tatars into “Tatars” (*tatary*, in particular for the Central Asian and the Caucasus republics (Anderson and Silver 1989)). The historical context yet supports the view that (Volga) Tatars listed in the census publications for Central Asia and the Caucasus do in fact represent Crimean Tatars as Volga Tatars from the Tatar ASSR were not deported on ethnic grounds. I subsequently code the number of Tatars recorded for Uzbekistan, Georgia, Kazakhstan and Kyrgyzstan as Crimean Tatars. Likewise, “Turks” living primarily in Uzbekistan and Kazakhstan are coded as Meskhetian Turks (Anderson and Silver 1989, p. 652).

**Population collapse and migration shock** From this data, I construct three variables designed to capture the effects of a change in the proportion of “special settlers”. The overall effect shall be captured by the following variable:

$$\Delta Set_{i,39 \rightarrow 59} = \left( \frac{Set_{i,39}}{Pop_{i,39}} - \frac{Set_{i,53}}{Pop_{i,59}} \right) * 100\% \quad (1)$$

where  $\Delta Set_{i,39 \rightarrow 59}$  is the overall change in the percentage of all resettled ethnic minorities and  $\frac{Set_{i,39}}{Pop_{i,39}}$  is the share of settlers in the regions of origin on the eve of their deportation. It is calculated from the total number of ethnicities in 1939 ( $Set_{i,39}$ ) who are to be deported over the total 1939 population ( $Pop_{i,39}$ ) as per the 1939 census. Conversely,  $\frac{Set_{i,53}}{Pop_{i,59}}$  is the share in the percentage of deported ethnicities, that are now categorized as “special settlers” ( $Set_{i,53}$ ) in the host region and which is calculated from the total number of deported ethnicities as per January 1953 as reported in Zemskov (2005). It is thus the change in ethnic Germans from European Russia and Central Asia, Kalmyks, Chechens, Ingush, Balkars, Karachays and Meskhetian Turks from Transcaucasia and finally, the Crimean Tatars from the Crimean peninsula in Ukraine in their respective population numbers.

<sup>31</sup> Large parts of the Baltic peoples and Belorussians, who were also deported in the early and mid-1930s, are not included in this study as they were deported on the basis of their social class.

<sup>32</sup> The data are provided in table 24 of the appendix.

**Rehabilitation and permanent exile** The rehabilitation decree divided the deportees in two groups. Equation 2 shall capture the share of ethnicities, who were restored respectively not restored in their political, administrative and civil rights.

$$\Delta E_{i,39 \rightarrow 53} = \left( \frac{E_{i,39}}{Pop_{i,39}} - \frac{E_{i,53}}{Pop_{i,59}} \right) * 100\% \quad \text{and} \quad \Delta R_{i,39 \rightarrow 53} = \left( \frac{R_{i,39}}{Pop_{i,39}} - \frac{R_{i,53}}{Pop_{i,59}} \right) * 100\% \quad (2)$$

where  $\Delta E_{i,39 \rightarrow 53}$  is the change in the share of ethnic minorities in permanent exiled and  $\Delta R_{i,39 \rightarrow 53}$  the share of ethnic minorities, who were restored in the political, administrative and territorial sovereignty. They are on the one hand calculated from their respective ethnicity-based fraction on the eve of their deportation over the region's total 1939 population as reported in the 1939 census;  $\frac{E_{i,39}}{Pop_{i,39}}$  and  $\frac{R_{i,39}}{Pop_{i,39}}$ . On the other from, their respective ethnicity-based shares in region  $i$  post-deportation on Zemskov (2005); i.e.  $\frac{R_{i,53}}{Pop_{i,59}}$  and  $\frac{E_{i,53}}{Pop_{i,59}}$ . My indicators thus represent the share of Germans, Meskhetian Turks, Koreans and Crimean Tatars respectively Kalmyks, Kabardians and Balkars, Chechens and Ingush deported to Central Asia and Siberia in their 1959 total population numbers. Both indicators is positive only for regions that either hosted permanently exiled or rehabilitated ethnicities.

**Post-deportation ethnic composition** To capture the number of deported ethnicities from 1959 until the dissolution of the Soviet Union, I use the self-reported nationality of (these) ethnicities in the subsequent Census enumerations. As the latter did not ask whether individuals or their parent previously identified with another nationality, nationality obviously might serve as a source of potential self-selection arising from a relative attractiveness of an "ethnic re-identification", which may be more prevalent among small and medium-sized non-Russian (Anderson and Silver 1989, p. 611).<sup>33</sup> Despite problems with the use of nationality as key indicators of ethnic group membership, it generated little scholarly controversy (or even debate). While its use is certainly an issue in the earlier censuses, it should be a rather scarce phenomenon in the last one as the deportations (and subsequent discrimination) demonstrated to the deportees that a Russian cultural façade was not enough to protect them (from future reprisals). In addition, under Gorbachev the climate for claiming such affiliation was much more favorable than in earlier times. This shows in the non-natural population increase from 1979 to 1989 in the Crimean Tatar population (doubling) and Turks (more than doubled) (Anderson and Silver 1989, p. 652). With this in mind, I use the 1959-89 numbers of deported ethnic groups, ethnic Russians, Ukrainians and Belorussians and logarithmically transform them in order to eliminate outliers by Winsorizing the data.<sup>34</sup> I further make use of a more favorite climate in the late Soviet Union to claim their identity to create several measures intended to capture the ethnic fabric overall as well as the minority status of permanently exiled and rehabilitated ethnicities in host and origin regions. I follow Hipp and Wickes (2016) and compute the proportion of expected between-group ties ( $outgroup_i$ ) of permanently exiled on the basis of the probability of interaction with other ethnicities in region  $j$ :

$$neighbor_{i-i,j} = \frac{2[n_i * (n_{-i})]}{totint_j} \quad \text{where} \quad totint_j = \frac{N_j}{(N_j - 1)} \quad (3)$$

where  $n_i$  is the number of people in permanent exile, that is the number of Meskhetian Turks, Crimean Tatars, ethnic Germans and Koreans. Consequently,  $n_{-i}$  is the number of all other people residing in the respective region, not deported at all or rehabilitated. The between-group interaction is calculated based on the total number of interactions ( $totint_j$ ) in a region  $j$ , that is calculated from  $N_j$  as the total population in the region  $j$ .

### Labor and education outcomes

I proxy income levels by the main occupation according to which Soviet citizens were classified in the censuses. These are blue-collar workers (*rabochie*), white-collar workers (*sluzhashie*), and collective farmers (*kolkhozniki*), whose information are consistently tracked between 1939 to 1989. For consistency, I omit an additional category of unclassified or unclassifiable persons listed in the 1959 and 1989 censuses. Although

<sup>33</sup> This is different for internal passports that for most Soviet citizens aged 16 and over lists their self-ascribed nationality, which could not be changed. I am not aware of any studies that examine the empirical relationship between subjective nationality as asked in census questions and official nationality as mandated in the passports.

<sup>34</sup> The purpose of Winsorization is to "robustify" statistics by reducing the influence of extreme observations and is most appropriate after a log transformation. Specifically, all logarithmically transformed values below or above the mean plus three standard deviations is replaced by exactly this value.



1939 values were published in 1992 in a separate *ocnovie itogi* edition for Soviet Russia, they require the reconstruction of the 1939 social classes based on 1959 tabulations for the remaining union republics. This is done using the reported number of workers with completed tertiary or secondary education or incomplete secondary education in both urban and rural regions and the reported nationwide labor force, i.e., persons with occupations or employed in part-time agriculture. As the censuses capture self-reported primary occupations, work patterns of farm workers who performed some of their non-farm work in seasonal manufacturing jobs in the city or as self-employed workers might overestimate actual employment in agriculture while at the same time underestimating employment in blue-collar occupations (Cheremukhin et al. 2013, p. 16).

Moreover, I collect data on six categories of educational attainment, which are likewise consistently reported in the censuses from 1959 to 1989. These are (1) completed higher education (*vysshim*), (2) incomplete higher education (*nezakonchennym vysshim*), (3) special secondary education (*srednim spetsial'nyim*), (4) general secondary education (*srednim obshchim*), and (5) incomplete secondary education (*nepolnym srednim*), and (6) primary education (*nachal'nyim*). I summarize them in a three-tiered educational structure, coding higher education as completed and not completed higher education, secondary education as special, general, and incomplete secondary education, and finally primary education as just primary education. As above, the 1959 censuses allow the reconstruction of the 1939 tertiary and secondary education levels, but not for the primary education. To approximate the number of persons with primary education in 1939, I use the proportion of individuals in each region with primary education during 1959 and multiply it with the total number of individuals who were actually living in rural areas in 1939. This shortcut implicitly assumes that primary-educated individuals resided predominantly in rural areas and that within twenty years, their share does not change.

To make use of a more accurate ethnic self-identification in the late Soviet Union, I proxy the share of the local non-settler population using the 1989 digital Census from the GESIS research archive. The 1989 data contains totals and ethnic-based shares by education and labor forced participation, the latter of which is split by their respective levels of education for the largest minorities. These are similarly tabulated as in previous enumerations and allows once again condensation into a three-tier structure; that is higher education, secondary education and primary education. I assume that a certain level of education is obtained necessary to fill occupation where this qualification is needed, meaning that employed ethnicities with complete and incomplete higher education would find themselves in white-collar positions and so forth. The 1989 tabulates the numbers for all rehabilitated ethnicities, Russians, Ukrainians as well as Belorussians in the RSFSR tabulation, but rather inconsistently in the remaining Soviet republics. The numbers of the Meskhetian Turks and ethnic Germans, for instance, are available only for the Georgian SSR and the Kazakh SSR, respectively. By rule, missing numbers in the respective union republics are first filled with RSFSR numbers, second with Kazakh SSR and third, with Georgian SSR numbers.<sup>35</sup> From the combined data, I calculate the share of the Slavic, rehabilitated and permanently exiled among the overall three-tier labor force and define two levels of local non-settler population, that either includes or excludes ethnic Russians, Ukrainians and Belorussians.<sup>36</sup> As per the 1956 rehabilitation decree, Karachays, Balkars, Chechen, Ingush, Kabardians and Balkars by construction belong to each definition of “locals”. As a handful of ethnic-based employment and education shares do not pass the sanity check, cases with shares of locals (excluding and including Slavs) below 0.25 or above 1 are set to missing and subsequently replaced by their mean levels. The local employment and education structure is then approximated by multiplying the overall employment and education categories with the local’s share.

### A note on the accuracy of Soviet data

This complex data gathering requires a brief comment on the accuracy of Soviet data, that are commonly reported to the very last digit and suggest that data collectors have been very meticulous. Yet, they regularly conflict for the same categories in different census volumes due to counting, omission, or copying errors (Pohl 2016, p. 287; Getty, Rittersporn, and Zemskov 1993; Naimark 2010). The most pressing problems are likely of temporal, definitional, and geographic comparability, which complicate any cohort analysis (Clem 1986, pp. 18). Yet, their accuracy seems valid when reported with only little contradictions and improves over time (Clem 1986). Another problem constitutes the tendency of statisticians and survey officers toward a certain “plan constructivism”. This might take on the form of censorship, such as withholding entire categories of information or using confusing formats (Clem 1986, p. 24). The latter is

<sup>35</sup> This is similar to the approach of Acemoglu, Hassan, and Robinson (2011), who use republic-level numbers on the Jewish middle class in 1926 to estimate the region- and city-level effects of the population collapse due to the Shoah.

<sup>36</sup> Subsequent tabulations and estimation focus on the narrow definition, which excludes the Slavic population. Results for the broader definition of locals including Slavs can be obtained from the author upon request.

most strongly observable in the ethnic-based employment and education categories overall, which tabulate inconsistent ethnicity numbers in the 1959 and 1970' s census publication in particular, where Soviet statisticians tabulated their share without their base levels and which prevents me from a more accurate calculation of ethnicity-based employment and education levels.

This obviously should exaggerate Soviet achievements or conceal socioeconomic or demographic trends not consistent with the official account of Soviet life (Wheatcroft 2019).<sup>37</sup> The most prominent example of this “plan constructivism” is with absolute certainty the controversial 1939 census, given the previous was only conducted two years earlier and subsequently declared invalid after showing a population loss in the millions due to Stalin’s forced collectivization policies in Ukraine (Naumenko 2021) and Kazakhstan (Cameron 2018; Kindler 2018). The first peacetime census was conducted fifteen years after the war, likewise to hide the enormous loss of life caused by the war. Yet, the timely distance implicitly takes into account several developments equally relevant to this project: first, the gradual discharge of soldiers from the Red Army between 1945 and 1948 and their reintegration into civilian life; second, the mass amnesties and releases from the Gulag following the Red Army’s victory over Hitler’s Germany; and third, for the rehabilitated “special settlers”, the return of rehabilitated ethnicities from the mid-1950s onward (Naumenko 2021; Clem 1986). Overall, the Soviet censuses met most international recommendations regarding census preparation and implementation, but fail in providing comprehensive census results and tabulation (Schwartz 1986, p. 65 – 8).

#### 4.1. World War II-related violence

While conflict is associated with a temporary decline in economic growth (Davis and Weinstein 2002; Miguel and Roland 2011), there is disagreement on its long-term effects (Besley and Reynal-Querol 2014). To capture these narratives, I control for several dimensions of violence that afflicted the Soviet population.

##### The Shoah

There may be potential adverse economic effects for the highest skill-education gradient in response to the Shoah. These effects exist, if oblasts with a large Jewish community were systematically different from others, e.g. if they were on average more open-minded, entrepreneurial or better educated as a result of a longer history of persecution as emphasized by Botticini and Eckstein (2005), Shtakser (2014), and Akhiezer (2013). If indeed different, this would translate into different paths of economic and political development as documented by Grosfeld, Rodnyansky, and Zhuravskaya (2013) and Acemoglu, Hassan, and Robinson (2011). I therefore capture the share of missing Jews between 1939 and 1959 in the respective oblasts using census data, which are supplemented with data from Altshuler (1993).

From 1959 onward the census enumerations record several Jewish subgroups separately, that were previously combined in a composite Jewish group. Among them are Mountain Jews (*yevrey gorскиye*), the Georgian Jews (*yevrey gruzinskiye*), the Asian Jews (*yevrey sredneaziatskiye*), and ultimately the Krymchaks (*krymchaki*). Mountain Jews describe the Jewish population in Dagestan and northern Azerbaijan, Kabardino-Balkaria, Chechnya, the Stavropol region, Karachay-Cherkessia and the Krasnodar region. Moreover, Krymchaks are the Jewish ethno-religious communities of Crimea derived from Turkic-speaking adherents of Rabbinic Judaism. The Asiatic and Georgian Jews, respectively, describe Jews who were either native to Central Asia or native to Georgia.<sup>38</sup> By rule, I count all Jewish subgroups listed in the censuses to the total number of Jews. The variable to capture the share of missing Jews is constructed as:

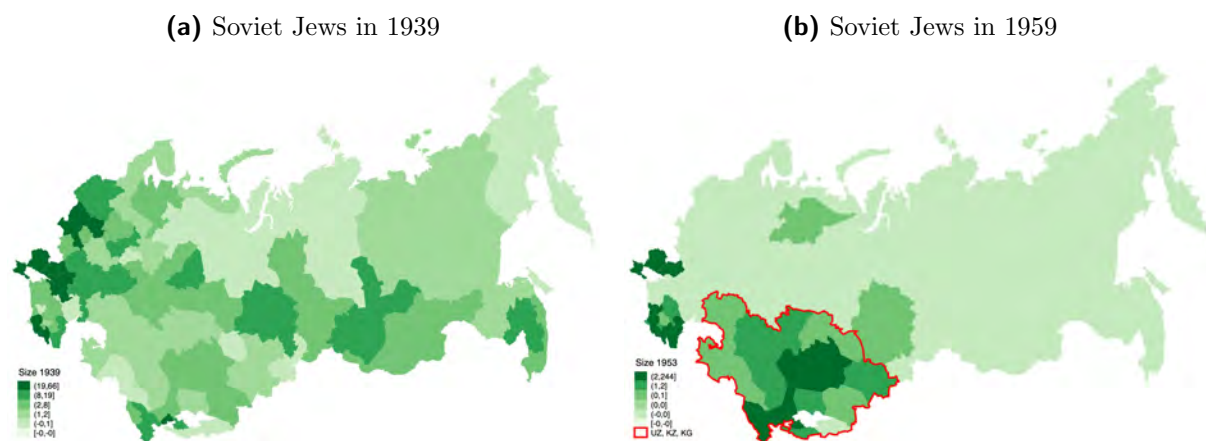
$$\Delta Jews_{i,39 \rightarrow 59} = \left( \frac{Jews_{i,39}}{Pop_{i,39}} - \frac{Jews_{i,59}}{Pop_{i,59}} \right) * 100\% \quad (4)$$

where  $\Delta Jews_{i,39 \rightarrow 59}$  is the change in the percentage of Soviet Jewry in region  $i$ , that is calculated from  $\frac{Jews_{i,39}}{Pop_{i,39}}$  which is their size in its total 1939 regional population and  $\frac{Jews_{i,59}}{Pop_{i,59}}$ , which is their size in its 1959 regional population. Figure 6 compares the size of the Soviet Jewry at the eve of the Shoah with its 1959 size. While Jews became virtually absent along the Western borders and Soviet Russia in the wake of their mass murder and repression, they appear to have been deported alongside the Caucasus peoples and the Crimean Tatars into Central Asia.

<sup>37</sup> This may not have been intentional, the horrific fate of the census takers of 1937 after noting “wrong numbers” might certainly have played a role (Wheatcroft 2019).

<sup>38</sup> A non-natural population increase from 1979 to 1989 is likewise present in the number of the Mountain Jews (more than doubled) and the number of Georgian Jews (91% increase) (Anderson and Silver 1989, p. 652).

**Figure 6:** Pre- and post-Shoah spatial distribution of Soviet Jews (in thousands)



### Nazi Occupation

Between June 1941 and November 1942, the German Wehrmacht advanced into all of Ukraine, the Caucasus, and most of European Russia. Population centers such as Belgorod, Stalingrad, Tula, Kalinin, and finally Leningrad were directly on the German-Soviet front. It was accompanied by heavy human losses and massive destruction of infrastructure and capital.<sup>39</sup> To my knowledge, neither data on the war-related destruction by city or region nor any information on reconstruction efforts exist (and probably never will). To capture the war-related violence of World War II, I track the geographic location of occupied cities and the duration of their occupation using data from Dudarenko, Perechnev, and Eliseev (1985), probably the most comprehensive collection on occupation and counter-occupation during World War II and after.<sup>40</sup> It contains extensive city-level information about the beginning and end of the German occupation and the events leading up to the city's liberation.<sup>41</sup> My final occupation dataset consists of 670 cities, of which 198 are found in present-day Russia. From this, I construct a dummy variable and classify a region as occupied if at least one city in a region  $i$  was occupied by the German Wehrmacht for at least six months.

### Military preparedness

The German advance initiated a series of countermeasures affecting the economic geography in occupied regions. To reflect these, I collect data from Dexter and Rodionov (2020) on the number of defense factories and research facilities between 1922 and 2018. I use version 21, which lists 32,995 records of factories that had used for military production during World War II and after, including ID, name, address, country, subordinate, superior, and specific enterprise, such as construction, branch, or branch (*otdelenie*). To avoid double counting, facilities that had been evacuated between 1941 and 1942 and redeployed after the war are excluded based on matching description, administrative personnel, and location. From this I calculate the variable  $gDef_{i,39 \rightarrow 59}$ , which shall capture the degree of the military preparedness of the pre- vs. postwar Soviet Union.

$$gDef_{i,39 \rightarrow 59} = \frac{Def_{i,59} - Def_{i,39}}{Def_{i,39}} \quad (5)$$

where  $gDef_{i,39 \rightarrow 59}$  is the growth of the defense industry in region  $i$  that is calculated from the difference of total number of defense facilities in 1959 less its 1939 numbers over its 1939 values. I further set  $gDef_{i,39 \rightarrow 59} = 0$  if  $Def_{i,59}$  or  $Def_{i,39} = 0$ .

### USSR penal system

Another likely mechanism for altered political preferences might result from the Gulag, which affected millions of people directly and firsthand, and even more indirectly through the disappearance of friends

<sup>39</sup> See figure 12 in the appendix for a map of the World War II frontline.

<sup>40</sup> The data from Dudarenko, Perechnev, and Eliseev (1985) are available online at [www.soldat.ru](http://www.soldat.ru).

<sup>41</sup> A transliteration from Cyrillic to Latin alphabet was required for geocoding this data. The scheme used is GOST 7.79 System B, which is the standard transliteration to Latin.

and neighbors.<sup>42</sup> Evidence comes from Zhukov and Talibova (2018), who match detention records with contemporary survey data and find more repressed communities are less likely to vote today. Similarly, Nikolova, Popova, and Otrachshenko (2022) show that present-day regional differences in the social capital of the descendants of former Gulag inmates can be attributed to the forced labor camps. Alexopoulos (2005) further highlights its “revolving door”, intimately connecting the Gulag and non-Gulag world.

I rely on data from Smirnov (1998), that had been made publicly available from the now dissolved human rights organization and 2022 Nobel peace price winner Memorial via [www.memo.ru](http://www.memo.ru). Since 1988, this organization has been dedicated to preserving the historical memory of the USSR penal system and cataloging the victims of Stalinist terror. I extracted detailed information from their database “Sistema Ispravitel’no-Trudovoykh Lagerey v SSSR” [System of Penal Labor Camps in the USSR],<sup>43</sup> providing information on the production, the number of inmates over time, the date of their establishment, and the date of their dissolution. I am very grateful to Zhukov and Talibova (2018), whose replication data on Soviet Russia served as a starting point for the extension to the Central Asian vector. All facilities have been geocoded by location in order to match the administrative units in each Soviet region; camps with missing locations or existence information are intentionally excluded. This results in a dataset of 400 camps, mostly located in Russia and Kazakhstan, from which I construct a gulag growth variable reflecting the increase in the number of labor camps in a region  $i$  between 1939 and 1959.

$$gGulag_{i,39 \rightarrow 59} = \frac{Gulag_{i,59} - Gulag_{i,39}}{Gulag_{i,39}} \quad (6)$$

where  $gGulag_{i,39 \rightarrow 59}$  is the growth of the Soviet penal camp system in region  $i$  that is calculated from the difference of total number of Gulag camps active in 1959 less than its number active in 1939 over its 1939 values. I set  $gGulag_{i,39 \rightarrow 59} = 0$  if  $Gulag_{i,59}$  or  $Gulag_{i,39} = 0$ . As a result,  $gGulag_{i,39 \rightarrow 59}$  thus captures the every-day experience of ordinary citizens due to the interconnectedness of Gulag and non-Gulag world.

## 4.2. Social conflict

### Voting

Differences in political behavior are measured using the results of the March 1991 referendum on the preservation of the Soviet Union, which shall capture dissent with the incumbent government. This referendum took place on March 17, 1991, and probably serves as the first direct measure of political behavior throughout the Soviet Union (Austin 1996, p. 3).<sup>44</sup> The main question was:

*Do you consider it necessary to preserve the USSR as a renewed federation of equal sovereign republics, in which human rights and the freedom of all nationalities will be fully guaranteed?*

Although campaigns for and against were not equal, independent international observers considered the vote itself to be fair and not rigged (Commission 1991, p. 15). 76% of ballots were cast “yes,” representing 58% of eligible voters. Regional results are obtained from Kireev and Sidorenko (2007), who maintain the Russian website <https://www.electoralgeography.com/new/en/> devoted to mapping electoral behavior, and from [www.gorby.ru](http://www.gorby.ru) for the Central Asian republics. As data for Central Asian republics is only available at the republic level, I impute regional data with its predictive mean, which is a straightforward and versatile method based on observed and thus realistic values. I invert the votes cast, such that  $(1 - \text{votes})$  represents votes cast against the preservation of the Soviet supranational supremacy. Because of a common “communist” treatment, I use the term “anti-government” interchangeably with “anti-communist” and “secessionist” in the discussion.

### Protesting

Yet, the ballot box does not adequately capture how distrustful the public was of the electoral system in general and whether citizens may have been prevented from voting in particular. I rely on Mark Beissinger’s extensive collection of data on unrest and protests in the late Soviet Union, which is to my knowledge the most comprehensive list of mobilization episodes in the Soviet Union between the late 1980s and early 1990s (Beissinger 2002). The data includes marches, demonstrations, protests, strikes,

<sup>42</sup> It is an acronym for the “Main Directorate of Punitive Labor Camps and Settlements”. Its dozen camp complexes consisted of regular and special prisons, filtration camps, penal labor colonies and special settlements, and scientific prisons.

<sup>43</sup> See <http://old.memo.ru/history/nkvd/gulag/index.htm>, which was last accessed on July 25, 2020.

<sup>44</sup> Of the regions studied, only the Georgian SSR refused to set up its own polling station; the Soviet central government then did so for Georgia. Consequently, voter turnout was much lower in these republics.

riots, pogroms, and civil wars based on events reported in more than 150 Western and local newspapers and other periodicals. He identifies 6,663 demonstrations and 2,177 incidents of mass violence in the years leading up to perestroika (from January 1987 to December 1992) (King 2004, p. 441). As a proxy for the frequency and average magnitude of violence between 1987 and 1992, I elicit the number of recorded demonstrations and riots to proxy active political dissent.

Tables 2 and 1<sup>45</sup> provide descriptive statistics and correlates for my dependent variables of interest, sorted by employment, education and political behavior locals. From 1939 to 1959, the strength in the correlation decreases in magnitude and is coupled with a loss in statistical significance, suggesting deportation and rehabilitation decree may have played a significant role in socioeconomic variables decades later.

**Table 1:** Correlates of main dependent variables with my settler variables

	Exiled '39	Rehabilitated '39	Exiled '59	Rehabilitated '59
White-collar locals ex. Slavs '59	0.208**	-0.0762	0.0492	0.123
White-collar locals ex. Slavs '70	0.221**	-0.0651	0.0705	0.147
White-collar locals ex. Slavs '79	0.223**	-0.0684	0.0686	0.152
White-collar locals ex. Slavs '89	0.226**	-0.0754	0.0788	0.144
Kolkhozniki locals ex. Slavs '59	0.108	-0.0840	0.0985	-0.0133
Kolkhozniki locals ex. Slavs '70	0.157	-0.0402	0.0523	-0.0155
Kolkhozniki locals ex. Slavs '79	0.254**	-0.0447	0.0693	-0.0191
Kolkhozniki locals ex. Slavs '89	0.165	-0.0510	0.146	-0.0234
Tertiary educ. locals ex. Slavs '59	0.258**	-0.0613	0.0209	0.159
Tertiary educ. locals ex. Slavs '70	0.270***	-0.0598	0.0112	0.170*
Tertiary educ. locals ex. Slavs '79	0.255**	-0.0641	0.0266	0.166
Tertiary educ. locals ex. Slavs '89	0.122	-0.0537	0.0746	0.0910
Primary educ. locals ex. Slavs '59	0.129	-0.0916	0.0410	0.0974
Primary educ. locals ex. Slavs '70	0.172*	-0.0648	0.0777	0.105
Primary educ. locals ex. Slavs '79	0.193*	-0.0423	0.109	0.113
Primary educ. locals ex. Slavs '89	0.113	-0.0348	0.0729	0.0253
npres	0.0181	-0.00308	-0.263***	0.0225
No. Protests'87-92	0.230**	0.0736	0.246**	0.113

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 5. Identification Strategy

### 5.1. Spatial relationship

The overall change in the deported ethnicities from 1939 to 1959 is used to classify origin regions as regions, that exhibited a collapse in their overall settler population and host regions as those, that experienced a settler influx. This leaves me with a final sample of 98 spatial units, of which 48 experienced a migration shock of “special settlers” (host regions) and another 50, that experienced a population collapse (origin regions). My overall sample size corresponds to Stock and Watson (2019)’s rule of thumb and exceeds the number of oblasts in Acemoglu, Hassan, and Robinson (2011) after sub-sampling. I follow Kelly (2019), who notes that most highly published economic history studies suffer from spatially autocorrelated data, inflating the significance levels of estimates and violating several Gauss-Markov assumptions. As a result, one would observe biased and inconsistent estimates, if the spatial dependence was present in the dependent variable and unbiased but inefficient estimates if present in the error term. However, the biggest challenge in explaining regional outcomes is to figure out which regions influence others and how exactly they do so (geographic, economic, or political distances between different countries).

In order to parameterize the spatial relationship among my sample units, I polygonized the Soviet administrative units from the first comprehensive Soviet World Atlas in 1937, that I obtained from David Rumsey’s historical map collection, and specified a contiguity weighting matrix based where the polygon centroids define the  $(x, y)$  coordinates. Boundary changes between 1937 and December 31, 1939 are accounted for using the similar map from the second Soviet World Atlas in 1967. From the overall

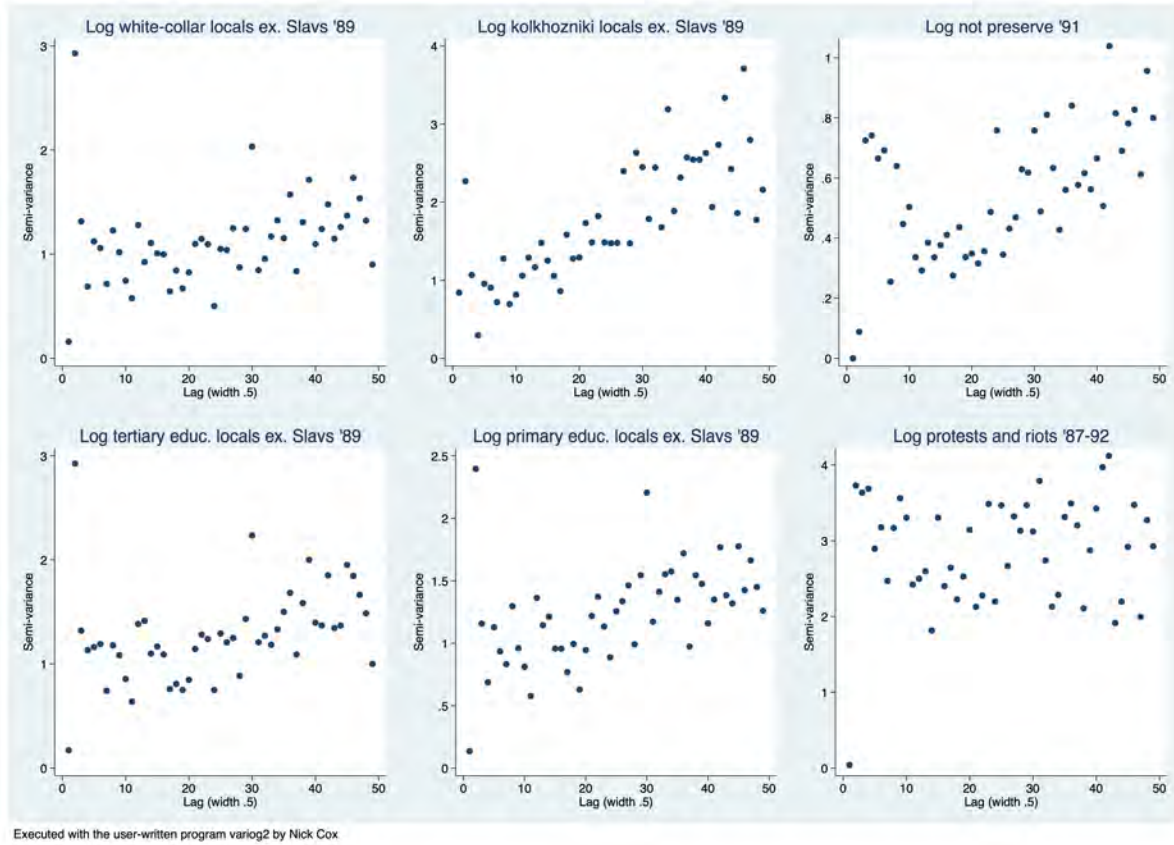
<sup>45</sup> See table 1 in the appendix for correlations including Slavs.



**Table 2:** Descriptive statistics

Variable	Mean	SD	Minin	Max
<b>Panel A: Ethnic controls</b>				
Exiled '39	13,036.16	44,414.9	0	291,206
Rehabilitated '39	7,302.30	47,062.3	0	451,547
Exiled '59	24,792.27	43,531.3	35	258,225
Rehabilitated '59	9,906.29	25,298.7	0	227,985
Jews '39	7,472.98	12,716.3	0	65,556
Jews '59	5,493.84	26,261.3	0	243,974
Polarization index '89	0.58	0.2	0	1
within-group IA '89, exiled	0.00	0.0	0	0
between-group IA '89, exiled	0.04	0.1	0	0
within-group IA '89, rehabilitated	0.01	0.1	0	1
between-group IA '89, rehabilitated	0.05	0.2	0	1
<b>Panel B: Violent and geographic controls</b>				
Urban population '39	371,704.81	460,792.5	0	2,421,432
No. gulags '23-39	0.71	1.8	0	9
No. gulags '40-59	2.74	5.2	0	27
Defense inst'39	44.22	75.0	0	575
Defense inst'59	97.23	168.4	0	1,338
Nazi	0.21	0.4	0	1
npres	0.22	0.2	0	1
No. Protests'87-92	35.95	92.4	0	655
Latitude	52.02	7.1	40	69
Longitude	65.31	32.3	29	178
<b>Panel C: Dependent variables: ex. Slavs</b>				
White-collar locals ex. Slavs '59	182,012.44	165,746.0	2,265	950,679
White-collar locals ex. Slavs '70	226,800.19	204,684.3	2,917	1,297,471
White-collar locals ex. Slavs '79	267,756.13	240,177.7	3,495	1,606,289
White-collar locals ex. Slavs '89	344,878.31	305,168.0	3,495	1,982,934
Kolkhozniki locals ex. Slavs '59	236,769.68	220,538.5	2,348	973,322
Kolkhozniki locals ex. Slavs '70	163,020.45	178,522.9	114	860,633
Kolkhozniki locals ex. Slavs '79	131,350.78	146,061.1	53	678,222
Kolkhozniki locals ex. Slavs '89	111,327.63	122,639.0	53	604,289
Tertiary educ. locals ex. Slavs '59	13,302.33	14,586.5	130	94,852
Tertiary educ. locals ex. Slavs '70	29,514.58	32,202.8	266	227,424
Tertiary educ. locals ex. Slavs '79	66,201.88	67,356.7	753	469,149
Tertiary educ. locals ex. Slavs '89	108,118.69	144,093.7	753	1,167,242
Primary educ. locals ex. Slavs '59	216,438.23	201,498.1	1,838	1,006,618
Primary educ. locals ex. Slavs '70	250,646.65	214,582.1	2,283	1,039,710
Primary educ. locals ex. Slavs '79	227,871.19	186,017.9	2,317	898,869
Primary educ. locals ex. Slavs '89	203,049.90	265,588.7	2,317	2,282,848

**Figure 7:** Semi-variograms for spatial correlation, local population excluding Slavs



sample  $s$ , I created two symmetric weighting matrices, i.e. for the origin and host region,  $W^s = \{S, R\}$ , that I spectral standardized for its largest eigenvalue to equal one. Spectral standardization ensures the non-singularity of each matrix and improves the estimateability of models. This technically means, that it is not possible for regions to have only islands or zones that are not neighbors and for each region to be the neighbor of another region. These are consistent with patterns of contiguity. I further assume that  $|\rho| < 1$  and  $|\lambda| < 1$ , which can be intuitively compared to the stationarity conditions for autoregressive-moving-average (*ARMA*) type models. The extent of the underlying spatial variability is characterized through a first graphical inspection of the semi-variograms of the dependent variable (Cox 2005). Figure 7 clearly confirms the presence of spatial trends, which is recognizable by the fluctuating vertical direction of the points; they persist over the entire areal extent and result in positive correlation even with large horizontal lags (except for political behavior).

Misleading t-statistics due to spatial autocorrelation would further be observable by assessing Moran's  $I$ . It assumes the geographic location to be exogenous and measures how similar a spatial unit is to its surrounding others. It has been calculated with the user-written Stata program `spatwmat` from Pisati (2001). To ensure that technical requirements of the neighborhood matrices are met, I define a band of 1,900 for  $R$  and  $S$  respectively. Under the null of no global spatial autocorrelation, a Moran's  $I$  of  $I > E(I)$  would indicate positive spatial autocorrelation (near regions tend to show similar values of  $Y$ ), while  $I < E(I)$  would indicate negative spatial autocorrelation (near regions tend to show dissimilar values of  $Y$ ). Hence, values closer to the lower bound  $-1$  indicate spatially dispersed data, those closer to the upper bound  $+1$  indicate spatially correlated data. Following, values around 0 indicate no spillovers and support an *i.i.d.* assumption. With respect to my data (see tables 28 and 29 in the appendix), the null of spatial independence in both the origin and host regions is rejected. Moreover, the magnitude of the z-scores and the p-values indicate, that spatial dependence seems to be more pronounced in the host regions than in origin regions. In sum, the distribution of high and/or low scores in my data appear to be more spatially clustered than one would expect if the spatial process was random. Although Moran's

It establishes the presence of a global spatial dependence, it does not provide any indication about the correct model specification, which could go beyond the standard model (Elhorst 2014):

$$Y = \rho \times WY + \beta X + \theta \times WX + u \text{ and } u = \lambda \times Wu + \epsilon \quad (7)$$

where  $\beta$  describes the exogenous variables,  $\rho$  the endogenous interaction effects often referred to as spatial autoregressive term,  $\theta$  the exogenous interaction effects (of dimension equal to the number of exogenous variables  $K$ ) and finally,  $\lambda$  the spatial correlation effect of errors known as spatial autocorrelation. Finally,  $W$  represents the general expression for the neighborhood respectively weighting matrix, that in the present case is spectral standardized contiguity matrix. Depending on the research question, the type of spatial delay is crucial, of which there are three main types:

1. An endogenous spatial lag measures whether an outcome in region  $i$  depends on the outcome of other regions  $j(j \neq i)$ , or vice versa. These spatial autoregressive (SAR) models are used in several studies on defense burdens (Flores 2011; Goldsmith 2007).
2. A spatial lag in the error terms (SEM) measures if regions share similar unobserved characteristics or face a similar unobserved environment. Yet, they remain rather unpopular as space does not matter in the substantive portion of a model (Beck, Gleditsch, and Beardsley 2006, p. 30). The plausibility of SEM and SAR models is assessed only a “first-cut of the topic” (Goldsmith 2007, p. 422).
3. An exogenous spatial lag (SLX) measures whether an outcome of region  $i$  depends on the explanatory variables in other regions  $j(j \neq i)$ . If the number of explanatory variables is  $K$ , the maximum number of lags is also  $K$ .

As alternative models combine two or even three types of spatial lags, the biggest challenge is to choose the correct model among different model and matrix specifications (Yesilyurt and Elhorst 2017, p. 778). A General Nested Spatial Model (GNS), for instance, that would combine all spatial processes is, however, only weakly identifiable (if at all) (Cook, Hays, and Franzese 2015). Due to its over-parameterization, it also does not provide additional information over the SDM or SDEM (Burrige et al. 2016). Table 3 provides an overview of the most commonly used models in the spatial econometrics literature including their ability to identify regional spillovers.

**Table 3:** Spatial models with different lags and flexibility for region spillover effects

Model	Spatial lag(s)	Restriction(s)	Flexibility, spillovers
SAR, Spatial autoregr. model	$WY$	$\theta = 0, \lambda = 0$	Constant ratios, global
SEM, Spatial error model	$Wu$	$\theta = 0, \rho = 0$	Zero by construction
SLX, Spatial lag of $X$ model	$WX$	$\rho = \lambda = 0$	Fully flexible, local
SAC, Spatial autoregr. combined model	$WY, Wu$	$\theta = 0$	Constant ratios, global
SDM, Spatial Durbin model	$WY, WX$	$\lambda = 0$	Fully flexible, global
SDEM, Spatial Durbin error model	$WX, Wu$	$\rho = 0$	Fully flexible, local

Source: Yesilyurt and Elhorst (2017) p. 782

As the SEM imposes restrictions on the parameters ( $\theta = 0, \rho = 0$ ), reducing regional spillovers effects to zero, they are not effectively measured (Beck, Gleditsch, and Beardsley 2006). Similarly, SAR and SAC produce a proportional relationship between direct and indirect effects, which is the same for each variable and empirically rather unlikely. I therefore consider only models with an exogenous spatial lag (SDM or SDEM) as suitable candidates, since they are able to assume different values for spillovers relative to the direct effect between variables. Another crucial point is whether spillovers are local or global. *Local spillovers* occur when regions are connected and a change in the explanatory variable in region  $i$  affects the dependent variable in region  $j$  and vice versa. In contrast, *global spillovers* occur regardless of whether regions are connected. Hence, a change to the explanatory variable of region  $i$  gets transmitted to all other regions, even if there is no direct connection.

Two considerations would support a superiority of an SDM over an SDEM model in a occupation-skill gradient model: First, its robustness in the presence of doubts towards the reliability of the data at hand and second, its ability to capture global spillovers. They seem eminently plausible given the global

scale of World War II, which connected Soviet regions in European Russia with those in Central Asia (Yesilyurt and Elhorst 2017, p. 782). Likewise, the ethnic assertiveness non-Russians in the non-Russian union republics coupled with the prevalence of local ethnic networks suggests the use of an SDEM model to measure the legacy of ethnic violence on the political behavior.

## 5.2. Model specifications

To determine the correct model, I follow a specific-to-general test regiment, which starts with the most basic non-spatial model and tests for possible misspecifications due to omitted autocorrelation in the error term or the dependent variable (Elhorst 2010; Rüttenauer 2022). *First*, to an initial non-spatial baseline model I apply a robust Lagrange multiplier test (LM-Test), which calculates the slope of the likelihood function at observed values of the model variables. This slope is used to estimate a potential model improvement by adding variables currently omitted. *Second*, a robust Likelihood Ratio Test (LR-Test) is applied to test the SEM or SLM specification against one with an exogenous spatial lag. This is done by comparing the log-likelihoods of the two models (or the plausibility of  $\theta$  values in the null with those in the alternative). *Third*, a Bayesian Markov Chain Monte Carlo (MCMC) simulation is performed to test between global and local spillover models. This approach calculates Bayesian posterior model probabilities of both models given a particular neighborhood relations. Whereas, the LR- or LM-statistics compare the performance of one model against another based on specific parameter estimates on the parameter space, the Bayesian approach compares them on their entire parameter space. Inferences drawn on the log marginal likelihood function values for the SDM and SDEM model are further justified because they have the same set of explanatory variables,  $X$  and  $WX$ , and are based on the same uniform prior for  $\rho$  and  $\lambda$ . Thus, if the log marginal likelihood value of one model is higher than that of another model, the Bayesian posterior model probability is also higher (Elhorst 2019; Elhorst, Gross, and Tereanu 2020). My selection process is summarized in table 4 and was implemented using the user-written command `spatdiag` from Pisati (2001):

**Table 4:** Diagnostic Dependency Tests

Test	$H_0$	$H_1$	Procedures
LM-error test	$\lambda = 0$ , given $\rho = 0$	$\lambda \neq 0$	If $H_0$ is rejected, $\rightarrow$ Spatial Error Model (SEM)
LM-lag test	$\rho = 0$ , given $\lambda = 0$	$\rho \neq 0$	If $H_0$ is rejected, $\rightarrow$ Spatial Lag Model (SLM)
$\downarrow$			
$\Rightarrow$ If both null hypothesis of the LM-tests are rejected ( $\lambda \neq 0$ & $\rho \neq 0$ ), perform the robust test			
$\downarrow$			
LR-spatial error	$\theta + \rho\beta = 0$	$\theta + \rho\beta \neq 0$	If $H_0$ is rejected $\rightarrow$ Spatial Durbin model (SDM)
LR-spatial lag	$\theta = 0$	$\theta \neq 0$	If $H_0$ is rejected $\rightarrow$ Spatial Durbin model (SDM)
$\downarrow$			
$\Rightarrow$ Test SDM over SDEM: Bayesian posterior model probabilities			

Adapted from Seilers (2019).

### Baseline specification: SDM and SDEM

Let the non-spatial OLS specification be defined similar to the one of Acemoglu, Hassan, and Robinson (2011), which is  $\log Y_{i,t} = \alpha_0 + \beta_1 Set_{i,39 \rightarrow 59} + \gamma_3 X' + \epsilon$ . It regresses the outcome variables on the respective settler variables, a set of controls and a constant. In the estimation, I account for heteroscedastic standard errors and apply analytical weights from the total population in 1939. Applying the above test regiment to the aforementioned model, I find that the nulls of spatial independence are rejected by the LM-test, so the model fit would increase significantly after an error or dependent spatial lag is added. The robust likelihood ratio (LR)-test that tests SEM or SLM models against specifications with exogenous spatial lags, finds that SEM and SLX models are rejected in favor of the SDM confirming my theoretical preconceptions about the occupation-skill gradient. Finally, the Bayesian Markov Chain Monte Carlo (MCMC) simulation for choosing between SDM and SDEM, and thus between a global or local spillover model, confirm the superiority of an SDEM model for measuring political behavior effects, as spillovers in the social conflict dimensions tend to be rather local as expected.<sup>46</sup> Accordingly, I specify a spatial Durbin model (SDM)

<sup>46</sup> Results for the Bayesian Markov Chain Monte Carlo simulation are available from the author upon request.



for the employment and education specification that includes a spatial lag of both the endogenous and exogenous variables and a Spatial Durbin Error Model( SDEM) for the political behavior:

$$\text{SDM: } \ln Y_{i,t} = \alpha_0 + \beta_1 \text{Set}_{i,39 \rightarrow 59} + \gamma_3 X' + \lambda \mathbf{W}^s \ln Y_{i,t} + \theta \mathbf{W}^s \text{Set}_{i,39 \rightarrow 59} + \epsilon_i \quad (8)$$

$$\text{SDEM: } \ln Y_{i,t} = \alpha_0 + \beta_1 \text{Set}_{i,39 \rightarrow 59} + \gamma_3 X' + \lambda \mathbf{W}^s \ln Y_{i,t} + [\dots] + \rho \mathbf{W}^s e \quad (9)$$

where  $\ln Y_{i,t}$  is the  $N \times 1$  vector of observations on the dependent variable at time  $t$  in region  $i$ , from which I take the logarithm. It is the decomposed markets at the occupation-skill gradient for the local non-Slavic and non-Setter population and the two dimensions of social conflict.  $\text{Set}_{i,39 \rightarrow 59}$  is the  $N \times 1$  vector of my settler variables at time  $t$  in locality  $i$ , it is thus the change in the share of ([un-]rehabilitated) deported people in locality  $i$  between 1939 and 1959.  $X'$  is the  $N \times k - 1$  matrix of observations on the control variables (e.g. war-related loss, the USSR penal system, pre-war controls of the dependent variables, the share of ethnic Russians);  $\epsilon_i$  is the error and  $\alpha_0$  is the constant. While I add the spatial lags of the endogenous and exogenous regressors,  $\mathbf{W}^s \ln Y_{i,t}$  and  $\mathbf{W}^s \text{Set}_{i,39 \rightarrow 59}$ , into the employment specification, I do so with the spatial lags of the exogenous and the error term,  $\lambda \mathbf{W}^s \ln Y_{i,t} + \rho \mathbf{W}^s e$ . Finally, I refrain from including other interaction terms since my regional data preclude identifying any wage effects within skill groups over time.

### Rehabilitation decree specification: SDM-IV and SDEM-IV

To account for the endogeneity in the migration decision of the rehabilitated ethnic groups that arises as a consequence of the lifted restrictions, I instrument the logarithm of the rehabilitated settler ethnic groups in region  $i$  at time  $t$  with the total change in rehabilitated settler ethnic groups from 1959 to 1939. As rehabilitated ethnicities may now prefer to settle near other members of their ethnic group, the non-presence of older communities is used to predict supply changes among rehabilitated settlers (Peri 2014, p. 3). The instrumented variable thus isolates the part of the return migration by which the supply decisions of the rehabilitated ethnic groups are determined. As argued above, it represents a truly exogenous source of variation arising from the deportation experience and has significant effects on both my endogenous variable and the outcome of interest as confirmed in table 5. The stable treatment value assumption (SUTVA) is also satisfied, which states that individuals within a given ethnic group must be equally exposed to treatment, i.e., deportation and subsequent rehabilitation. For the host regions, this instrumented variable now represents the effect of rehabilitated settlers, who have not yet returned to their ancestral lands at the time  $i$ . Conversely, for the origin regions, it is the share returnees. The following shall illustrate this relationship for the employment-education specification:

$$\text{SDM-IV: } \ln Y_{i,t} = \alpha_0 + \beta_1 \ln(\hat{R}_{i,t}) + \beta_2 \text{Set}_{i,39 \rightarrow 59} + \gamma_3 X' + \lambda \mathbf{W}^s \ln Y_{i,t} + \theta \mathbf{W}^s \text{Set}_{i,39 \rightarrow 59} + \epsilon_i \quad (10)$$

where  $\ln Y_{i,t}$  is once again the  $N \times 1$  vector of observations on the dependent variable respectively its pre-war control at time  $t$  in region  $i$ , from which I take the logarithm. It reflects the level of white-collar and collective farm employment as well as tertiary and primary education.  $\ln \hat{R}_{i,t}$  is the  $N \times 1$  vector of rehabilitated settler ethnicities  $i$  at time  $t$ , which I instrument with the change in the rehabilitated settler ethnicities, i.e.,  $\Delta R_{i,39 \rightarrow 53}$  the change in the permanently exiled “special settlers” in locality  $i$  between 1939 and 1959. Further,  $X'$  is the  $N \times k - 1$  matrix of observations on the control variables.  $\text{Set}_{i,39 \rightarrow 59}$  than is the placeholder the change in the permanently exiled ethnicities for the host regions, i.e.,  $\Delta E_{i,39 \rightarrow 53}$  and the overall population collapse, i.e.,  $\Delta \text{Set}_{i,39 \rightarrow 53}$  for the origin regions. The latter approach shall reflect the fact, that the rehabilitation decree is more relevant to the host regions than to the origin regions. Further,  $\mathbf{W}^s \ln Y_{i,t}$  and  $\mathbf{W}^s \text{Set}_{i,t}$  are the spatial lags of the endogenous and exogenous variable, and  $\epsilon_i$  is the error and  $\alpha_0$  is the constant term.

In both specifications, the main variables are to a great extent logarithmic, softening potential measurement errors from less reliable urban-rural estimates and allowing for more flexibility in the interpretation. For the non-instrumented spatial models (SDM, SDEM), I use two estimators, the generalized method-of-moments estimator (*gs2sls*) as proposed by Kelejian and Prucha (1998), and the maximum likelihood estimator (*ml*) as proposed by Anselin (1988). While the *gs2sls* estimator assumes error terms to be *i.i.d.*, it does not require their normality. In contrast, the (*ml*) assumes errors to be normal and *i.i.d.* Although both estimators should produce similar results, the *ml*-estimator would yield smaller standard errors if normal, such that I consider it due to consistency. For the spatial-IV models, I use the generalized spatial two-stage least squares estimator.

**Table 5:** Correlates of main dependent variables with my settler variables, by region

	Host regions			Origin regions		
	All	Exiled	Rehab.	All	Exiled	Rehab.
<b>All deportees:</b>						
Log all deportees '59	-0.371***	-0.179	-0.322**	0.576***	0.575***	0.446***
Log all deportees '70	-0.606***	-0.228	-0.548***	0.618***	0.604***	0.495***
Log all deportees '79	-0.612***	-0.264*	-0.541***	0.635***	0.620***	0.510***
Log all deportees '89	-0.598***	-0.319**	-0.507***	0.629***	0.614***	0.505***
<b>Exiled:</b>						
Log exiled 59	-0.132	-0.289**	-0.0351	0.603***	0.615***	0.449***
Log exiled 70	-0.184	-0.344**	-0.0699	0.611***	0.600***	0.485***
Log exiled 79	-0.167	-0.390***	-0.0355	0.631***	0.618***	0.504***
Log exiled 89	-0.127	-0.453***	0.0276	0.628***	0.615***	0.502***
<b>Rehabilitated:</b>						
Log rehabilitated '59	-0.300**	0.0449	-0.327**	0.228	0.111	0.335**
Log rehabilitated '70	-0.678***	-0.127	-0.659***	0.646***	0.493***	0.705***
Log rehabilitated '79	-0.657***	-0.127	-0.636***	0.631***	0.481***	0.688***
Log rehabilitated '89	-0.612***	-0.104	-0.598***	0.536***	0.419***	0.571***

Correlates with the change in respective settler variable from 1939 to 1959. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 6. Results

This section presents the distributional and overall effects of the deportations on the local population's occupation-skill gradient and on the political spectrum. The variable I am interested with is the percentage of rehabilitated ethnic groups included in each census that I have instrumented with its collapse between 1939 and 59. In order to capture the effects of the rehabilitation decree as best as possible, I also control for four indicators that capture the regional presence of permanently exiled ethnic groups (which may have escaped deportation in the origin regions), their breakdown by educational dimensions in 1926 (Crimean Tatars and ethnic Germans) and by historical settlement areas to which they were able to return (all except Koreans), and second, their population decline before and after deportation. I apply a narrow local labor market definition encompassing all ethnic groups, other than the Slavic population (Belorussians, Russians, and Ukrainians) and settler populations.<sup>47</sup>

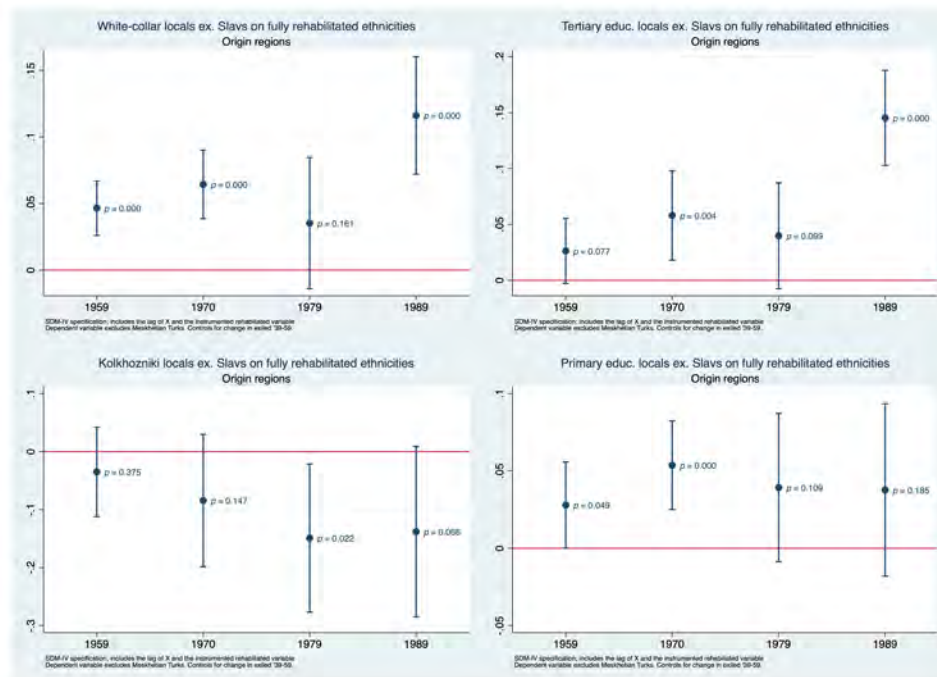
### 6.1. Distributional Effects

**Origin Regions** That returning populations at deportation left behind all their physical capital, which at best was underutilized and replaced by compensating migrants, indicates that post-return cultural differences, differences in administrative rules, and the effects of physical capital destruction may inadequately explain long-term differences in regional development. With the help of an instrumented spatial Durbin model, I test the plausibility of the capital-flight hypothesis, since rehabilitated ethnicities were most likely among the more mobile populations, who might have passed deportation-related values down through generations. Consequently, these regions would be inhabited by populations with altered preferences, e.g., with respect to acquiring more education, as already shown for the Polish Kresy areas in (Becker, Grosfeld, et al. 2020). Increased educational preferences introduce yet another causal chain, that between social capital and migration and a potential long-term increase in the attachment of the returning population to their origin regions. This argument follows the social capital literature, which suggests that higher levels of education both contribute more to and depend on social capital (Glaeser, Laibson, and Sacerdote 2002; Putnam, Leonardi, and Nanetti 1994).

Figure 8 now shows the coefficients for the rehabilitated ethnic groups in predicting white-collar and kolkhoz employment and tertiary and primary education. The patterns show nicely that these ethnic groups appear to have participated in both white-collar employment and tertiary education after their rehabilitation and subsequent return in the late 1950s, while at the same time leaving the collective farm sector. The highest employment gradient indicates a fairly even increase in local high-skilled employment and education, which was led by the returning ethnic groups. These numbers are notable and are not

<sup>47</sup> Additional results, that include the Slavic population can be obtained from the author upon request.

**Figure 8:** Rehabilitated ethnicities (by overall change in exiled), origin regions and excl. Slavs



matched by a similar trend in the lowest skill category. And as the impact on return migration rates leveled off in the 1980s, local white-collar and higher education sectors expanded on the back of increased interest in higher education and to the further detriment of collective farm employment. Given a period in which the original deportees in the host regions reached nearly full adulthood—a Chechen returnee born at the beginning of his deportation would have been about 30 years old in the 1970s—it is likely that his descendants reached much higher levels of education. Moreover, provinces where the massive population decline of the 1940s was reversed were distinguished as having lower average levels of kolkhoz employment. Data suggest a marked collapse in collective farm employment which became significant during the 1970s, when most rehabilitated ethnic groups eventually returned, in contrast to the pattern found for white-collar employment. This U-shaped pattern points to a massive migration out of collective agricultural employment relative to white-collar employment, in response to the returns of the Karachays, Kabardians and Balkars, Chechens and Ingush, and Kalmyks.

Table 6 shows now the census-year estimates for the parameter of interest for the highest levels of employment. From my results, I document a substantial inflow of white-collar workers: a higher regional presence of returning ethnic groups predicts an increase in local white-collar employment of about 0.05% in 1959, increasing to an astounding 0.12% over the census periods. One very interesting feature are the insignificant pre-deportation coefficients on white-collar employment and the drop in Crimean Tatars, Meskhetian Turks, ethnic Germans, and Koreans. Neither regressor is significant in predicting local employment, suggesting a rather ethnicity-driven development. A similar, though ultimately stronger, trend emerges for tertiary education, as shown in table 7. Whereas it was only 0.03% at the beginning of the return migration, it increased by five to 0.15% just before the dissolution of the Soviet Union in 1989. The latter includes later returners and early returners, together with their descendants. Narrow confidence intervals and a significant economic impact emphasize the reliability of my estimates and corroborate the capital flight hypothesis for rehabilitated ethnic groups as demonstrated by Botticini and Eckstein (2005) and Becker, Grosfeld, et al. (2020). The stability of my estimates implies they are not affected by the multiple political and institutional changes in the Soviet Union, by a change in Soviet leadership during the period in question, or by the rapidly changing macroeconomic environment, especially under Gorbachev. Rather, I ascribe the effects largely to the fact that those who returned to the origin regions had indeed passed on migration-related values to their offspring, which in the present case would argue for changing preferences with respect to higher education. Accordingly, the Karachays, Kalmyks, Kabardians, Balkars, and Chechens, including their descendants, benefited greatly from their rehabilitation in 1956 and probably changed their fate for the better.

**Table 6:** Results: White-collar locals ex. Slavs on change in exiled '39-59, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.046*** (0.010)	0.064*** (0.013)	0.035 (0.025)	0.116*** (0.023)
Change in exiled '39-59	-0.006 (0.006)	-0.012** (0.006)	0.003 (0.010)	-0.004 (0.008)
Log Russians	0.081* (0.041)	0.066* (0.037)	0.264*** (0.052)	0.127*** (0.044)
Log white-collar empl. '39	-0.028 (0.052)	-0.113** (0.046)	-0.110 (0.089)	0.061 (0.059)
Spatial Lag: Change in exiled '39-59'	-0.048** (0.022)	-0.034 (0.021)	-0.013 (0.036)	-0.045 (0.029)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.99	0.97	0.98
Chi-squared	4169.221	4392.740	1423.233	2366.944
Wald Test	0.001	0.002	0.714	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 7:** Results: Tertiary educ. locals ex. Slavs on change in exiled '39-59, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.026* (0.015)	0.058*** (0.020)	0.040* (0.024)	0.145*** (0.022)
Change in exiled '39-59	0.003 (0.010)	-0.011 (0.010)	0.001 (0.011)	0.007 (0.009)
Log Russians	0.086 (0.061)	0.073 (0.057)	0.247*** (0.055)	0.050 (0.047)
Log tertiary educ '39	0.448*** (0.090)	0.244*** (0.091)	0.165* (0.094)	0.282*** (0.066)
Spatial Lag: Change in exiled '39-59'	-0.032 (0.033)	-0.027 (0.033)	-0.023 (0.037)	-0.059* (0.031)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.98	0.97	0.98
Chi-squared	2043.582	2009.880	1406.019	2408.776
Wald Test	0.579	0.473	0.820	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.



Tables 8 and 9 provide a more complete picture of the dynamics in the lowest education and employment categories as a result of the rehabilitation decree. My estimates show very clearly a particularly pronounced decline in collective farm employment of the same magnitude as the increase in white-collar employment. A 1% increase in the regional presence of rehabilitated ethnic groups predicts a significant 0.14% decline in collective farm employment in 1989, relative to a 0.12% increase in white-collar employment. In the absence of a similar trend in the primary sector, these estimates suggest an increasing professionalization of the local labor force, largely driven by returning ethnic groups. Taken together, my results suggest a strong positive medium- to long-term causal impact of the rehabilitation decree on higher education and white-collar employment in origin regions. Perhaps more importantly, however, my data suggest the long-lasting effect of the 1956 rehabilitation decree on labor market outcomes to have operated through altered preferences for postsecondary education. They also hint at a persistent higher (lower) attachment of rehabilitated settlers to their former homeland (the host regions) persisting for almost five decades after deportation. Nonetheless, given that the rehabilitated ethnic groups were almost by definition among the more mobile populations in the former host region, it is possible that any causal estimates could be biased upward. Limited data mean that the plausibility of self-selection can only be assessed on the basis of anecdotal evidence. Any such quantitative data, however, would also shed light on differences in ethnic self-assertion among returnees and their activities related to local social capital (e.g., participation in local elections, extent of ethnically based networks), as well as forms of social capital that are not tied to a particular province. Nevertheless, the estimates obtained suggest that the rehabilitation process has primarily led to increased return migration of the population and thus to stronger ties between the population and the affected regions.

**Table 8:** Results: Kolkhozniki locals ex. Slavs on change in exiled '39-59, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	-0.035 (0.039)	-0.084 (0.058)	-0.149** (0.065)	-0.138* (0.075)
Change in exiled '39-59	0.013 (0.020)	0.030 (0.027)	0.024 (0.031)	0.048 (0.031)
Log Russians	-0.163 (0.149)	0.108 (0.186)	0.462** (0.198)	0.354* (0.210)
Log kolkhozniki empl. '39	0.121 (0.099)	0.033 (0.107)	0.137 (0.122)	0.104 (0.122)
Spatial Lag: Change in exiled '39-59'	-0.033 (0.072)	-0.067 (0.094)	-0.094 (0.110)	-0.086 (0.111)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.90	0.88	0.87	0.86
Chi-squared	422.012	364.693	337.401	307.409
Wald Test	0.187	0.548	0.654	0.696

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Host Regions** Compared to the origin regions, the host regions now faced a substantial influx of “special settlers,” which placed a burden on local institutions, but at the same time offered tremendous opportunities for occupational upgrading of the local population due to understratification. However, the local population now includes the rehabilitated ethnic groups, whose return migration was rather slow for some ethnic groups, such as the Chechens. Figure 9 shows the situation of the rehabilitated ethnic groups that remained in the host regions after their rehabilitation for certain reasons. A look at the

**Table 9:** Results: Primary educ. locals ex. Slavs on change in exiled '39-59, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.028** (0.014)	0.054*** (0.015)	0.039 (0.024)	0.038 (0.028)
Change in exiled '39-59	0.001 (0.009)	0.007 (0.007)	0.019* (0.011)	0.016 (0.011)
Log Russians	0.244*** (0.057)	0.195*** (0.042)	0.279*** (0.062)	0.290*** (0.065)
Log primary educ '39	0.122* (0.063)	0.134*** (0.042)	0.222*** (0.067)	0.276*** (0.063)
Spatial Lag: Change in exiled '39-59'	-0.073** (0.031)	-0.004 (0.024)	0.015 (0.039)	0.032 (0.039)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.99	0.96	0.97
Chi-squared	2190.755	3580.220	1271.757	1358.029
Wald Test	0.005	0.015	0.409	0.317

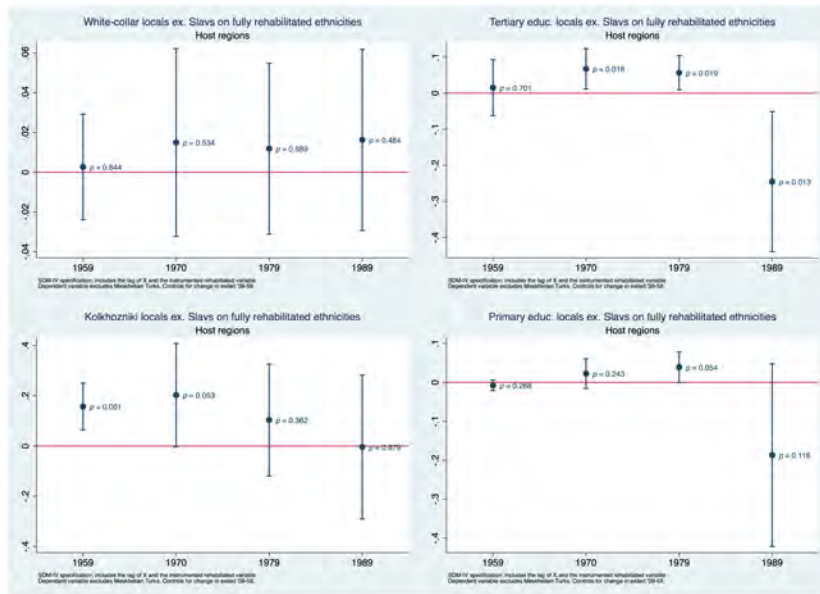
Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

coefficient graphs shows similar trends as in the origin regions. There is some evidence that white-collar employment is increasing in the post-deportation period due to the presence of rehabilitated ethnicities, yet the overall effect remains statistically indistinguishable from zero. For higher education, however, the picture is different as rehabilitated ethnic groups in host regions also seem to promote non-Slavic higher education, especially in the 1970s and consistent with my capital flight hypothesis. In provinces with a stronger presence of these ethnic groups, the number of college graduates is also significantly higher (0.06% more). This effect is statistically different from zero at the 5% level. It is reasonable to conclude that the positive effects of the rehabilitation decree are not tied to a specific region, but are positively reinforced by residence in the origin region. However, the same logic does not hold for the permanently exiled ethnic groups, as shown in figure 10. A stronger regional presence of their ethnic groups in host regions does not contribute to either higher white-collar employment rates or higher numbers of college graduates-no statistically significant effect is measured in any post-deportation census survey. The time trend suggests that local populations were unable to benefit from their understratification in terms of occupational or educational upgrading.

Table 10 and table 11 report the point estimates for the highest occupational and educational levels, taking into account the main control variables, i.e., the prewar trends in white-collar employment and higher education, and the share of ethnic Russians in the host regions in each reference year. The results confirm the absence of any statistical impact on white-collar employment for both the rehabilitated and permanently displaced groups. Given the massive changes in the social fabric of the host regions in the decades following deportation, this absence is extremely surprising. While the impact of rehabilitation on white-collar employment is statistically insignificant and very close to zero for the entire observation periods, higher education rates are higher in the most affected provinces than in the less affected ones; they are driven by the rehabilitated ethnic groups (table 11). The results again suggest that higher education in the host provinces increased particularly strongly (0.07% in 1970 and 0.057% in 1979) among the rehabilitated ethnic groups in the 1970s and 1980s, before dropping three-fold in 1989 (0.245%). The descendants of the rehabilitated ethnic groups who remained in the host regions appear to have benefited from their rehabilitation by reaching higher levels of education, suggesting a change in preference for higher education as a hedge against future shocks. Yet, the absence of employment effects of similar

**Figure 9:** Rehabilitated ethnicities (by overall change in exiled), origin regions and excl. Slavs

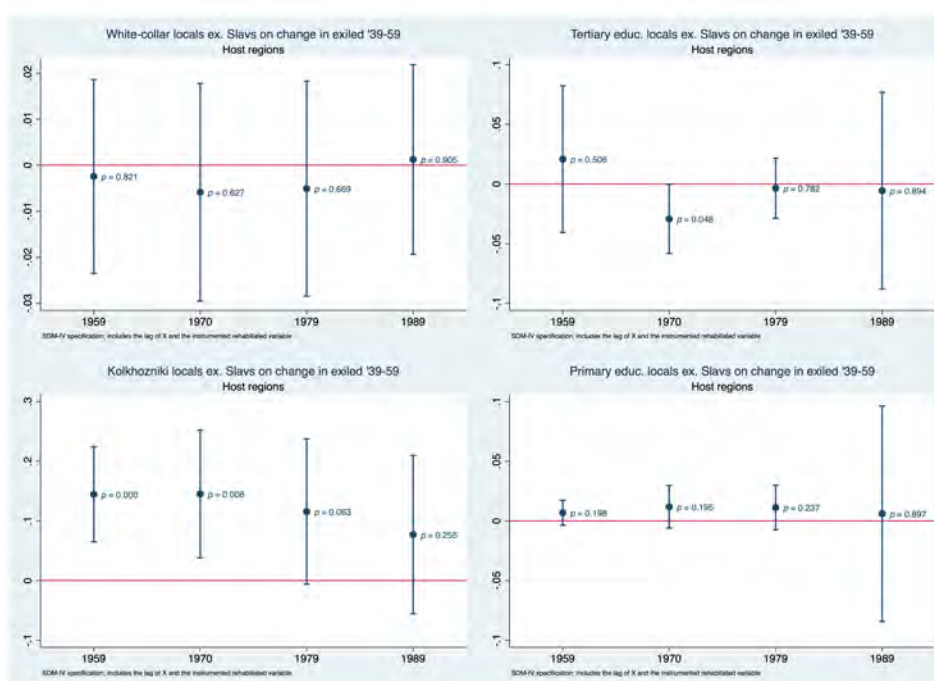


magnitude as seen in the origin regions also indicates that the acquisition of higher education did not lead to material well-being among the rehabilitated ethnic groups.

Results for the group with the lowest occupational skills are presented in 12 and 13. It can be seen that host regions with a larger share of permanently displaced (and rehabilitated) groups are characterized by higher levels of agricultural employment between 1959 and 1989. In 1970, host regions with a 1% higher proportion of permanently displaced persons had about 0.15% higher employment in agriculture or the agricultural sector. Combined with the share of rehabilitated special settlers, the agricultural sector is 0.35% higher in 1970 (0.15% plus 0.2%). Although calculated with very robust statistical significance, these results are far from surprising, however, since both ethnic groups – rehabilitated and permanently displaced – were employed in the low-wage sector at the beginning of their Special Settlement years. It is also striking that the behavior of the coefficient in the employment category is not generalizable to the primary education sector. This is true for both permanently displaced and rehabilitated ethnic groups and suggests that the observed increase is not due to a putative expansion of primary education.

In sum, although distributional effects associated with upstream complementarities cannot be found in the host region. However, "special settlers" are not only workers but also consumers, and as such they increase the demand for goods and services and eventually for (white-collar) labor (Peri 2014). The absence of average effects in the highest occupational qualification category is therefore more than surprising. Yet, the stability of estimates further suggests that they were not affected by the numerous political and institutional changes that occurred as a result of the change in Soviet leadership during this period, nor by the rapidly changing macroeconomic environment in the late Soviet Union. They cannot be attributed to the institutional inertia of the Soviet command system either, since any positive effects would have been expected at the latest from the 1970s (3 to 4 plans). They seem to call for other, non-orthodox, possibly behavioral mechanisms: for example, the absence of employment effects could be due to the way vacancies are allocated in host regions, or to emigration of highly skilled locals in response to this very change in the social fabric. There may also be underlying behavioral barriers, such as a poverty mindset that leads to trade-offs over more pressing needs, or different assessments of whether intelligence can be developed or is fixed (growth mindset vs. fixed mindset) may have influenced the take-up of additional educational opportunities (Dweck 2015). In addition, social class thinking that perceives social advancement as "elitist" and bounded rationalities such as personal inertia, individual switching costs (Heiss et al. 2021), limited attention spans (Abaluck and Adams-Prassl 2021), or unobserved constraints (Gaynor, Propper, and Seiler 2016) are conceivable. For rehabilitated ethnicities, a lack of attachment to host regions and the prospect of returning soon may also have prevented the translation of higher education into white-collar employment. In this case, we can also speak of a kind of educational capital flight of the rehabilitated population.

**Figure 10:** Permanently exiled ethnicities, origin regions and excl. Slavs



**Table 10:** Results: White-collar locals ex. Slavs on change in exiled '39-59, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.003 (0.014)	0.015 (0.024)	0.012 (0.022)	0.016 (0.023)
Change in exiled '39-59	-0.002 (0.011)	-0.006 (0.012)	-0.005 (0.012)	0.001 (0.011)
Log Russians	0.103** (0.048)	0.180*** (0.040)	0.069* (0.041)	0.040 (0.036)
Log white-collar empl. '39	0.168*** (0.050)	0.200*** (0.065)	0.178*** (0.060)	0.043 (0.053)
Spatial Lag: Change in exiled '39-59'	-0.025 (0.019)	-0.055** (0.023)	-0.043** (0.021)	-0.017 (0.019)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.98	0.98	0.99
Chi-squared	4389.382	2589.734	2727.352	3952.526
Wald Test	0.298	0.005	0.008	0.647

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.



**Table 11:** Results: Tertiary educ. locals ex. Slavs on change in exiled '39-59, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.015 (0.040)	0.068** (0.029)	0.057** (0.024)	-0.245** (0.099)
Change in exiled '39-59	0.021 (0.031)	-0.029** (0.015)	-0.004 (0.013)	-0.006 (0.042)
Log Russians	0.125 (0.143)	0.245*** (0.047)	0.119*** (0.045)	0.192 (0.150)
Log tertiary educ '39	0.327*** (0.123)	0.451*** (0.069)	0.378*** (0.058)	0.137 (0.192)
Spatial Lag: Change in exiled '39-59'	-0.006 (0.056)	-0.054* (0.028)	-0.050** (0.023)	0.207*** (0.077)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.93	0.98	0.98	0.85
Chi-squared	616.120	1968.864	2689.987	274.791
Wald Test	0.976	0.131	0.096	0.022

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 12:** Results: Kolkhozniki locals ex. Slavs on change in exiled '39-59, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.157*** (0.048)	0.203* (0.105)	0.104 (0.114)	-0.004 (0.146)
Change in exiled '39-59	0.145*** (0.041)	0.145*** (0.055)	0.116* (0.062)	0.077 (0.068)
Log Russians	-0.964*** (0.183)	-0.601*** (0.191)	-0.294 (0.224)	-0.225 (0.252)
Log kolkhozniki empl. '39	0.295*** (0.074)	0.619*** (0.113)	0.436*** (0.124)	0.406*** (0.131)
Spatial Lag: Change in exiled '39-59'	-0.110* (0.066)	-0.229** (0.092)	-0.184* (0.101)	-0.068 (0.112)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.91	0.86	0.83	0.80
Chi-squared	518.857	295.283	242.604	190.842
Wald Test	0.244	0.044	0.140	0.658

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 13:** Results: Primary educ. locals ex. Slavs on change in exiled '39-59, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	-0.008 (0.007)	0.023 (0.019)	0.039* (0.020)	-0.187 (0.120)
Change in exiled '39-59	0.007 (0.005)	0.012 (0.009)	0.011 (0.010)	0.006 (0.046)
Log Russians	0.236*** (0.023)	0.235*** (0.030)	0.068** (0.033)	0.250 (0.158)
Log primary educ '39	-0.023 (0.032)	0.272*** (0.044)	0.226*** (0.051)	0.110 (0.248)
Spatial Lag: Change in exiled '39-59'	-0.010 (0.010)	-0.034* (0.017)	-0.020 (0.017)	0.191** (0.086)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	1.00	0.99	0.99	0.80
Chi-squared	$2.4e + 04$	5185.297	4628.896	199.423
Wald Test	0.122	0.031	0.094	0.073

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

## 6.2. Social Conflict

**Origin Regions** With respect to the voting decision, I follow the social capital literature (Knack and Keefer 1997; Hotchkiss and Rupasingha 2021) and use the provincial outcomes in the 1991 referendum and the intensity of protests and riots as my main dependent variables. One concern about the estimation strategy is that financial flows to the periphery may to a large degree depend on the distance from the center. This would affect my causal interpretation of the results if provinces farther away from Moscow were generally more attractive for financial support and thus, voted pro-Soviet. To address these concerns, I conducted a series of robustness checks to examine the potential impact of spatially autocorrelated error terms on the results, the choice of the estimation method and other methodological challenges in estimating the baseline specification (see Kelly (2019)). I account for endogeneity in the size of rehabilitated ethnic groups and analyze their return migration using an SDEM-IV approach in which I instrument the proportion of rehabilitated ethnic groups in 1989 with their respective change from 1939 to 1959. I further I control for the known violence and geographic confounders and for rehabilitated ethnicities employed in the three tier of employment, i.e., white collar, blue collar, and collective farm workers. Each table tabulates the results for the SDEM-IV model specification (columns [1] through [4]) and compares its results to its non-instrumented version in column (6).

Table 14 now shows the results of the 1991 referendum election. The main variables of interest are the size of those ethnic groups that for some reason escaped deportation five decades earlier and the size (and labor market outcomes) of the rehabilitated ethnic groups that were allowed to return. My estimates yield a significantly positive voting behavior in the late Soviet Union emanating from ethnic groups that escaped deportation: Column (4) and, for model comparison, column (5) show that a 1% increase in their size is associated with a statistically significantly stronger endorsement of the Soviet Union in the 1991 referendum by the same magnitude. The effect builds across specifications and proves robust even after including different controls, suggesting that ethnic Germans, Meskhetian Turks, Crimean Tatars, and Koreans, with their collective experiences of violence, identify with the Soviet Union as a supranational entity. However, an electoral decision per se may well depend on the number of interethnic contacts maintained by those ethnic groups that were able to escape the deportations, and which may have influenced their electoral decision sooner or later. Measured by both the between-group interaction variable and a simultaneously insignificant polarization index, my estimations very clearly corroborate

**Table 14:** Secessionist voting in the 1991 referendum, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation '89'	0.013 (0.123)	-0.087 (0.127)	-0.654* (0.344)	-0.943** (0.460)	-1.041** (0.483)
Log returnees '89'	-0.083 (0.057)	-0.008 (0.058)	-0.029 (0.057)	-0.023 (0.078)	0.023 (0.123)
Log Russians '89		-0.233 (0.146)	-0.275* (0.145)	-0.150 (0.147)	-0.150 (0.146)
Polarization index '89		-0.139 (0.483)	-0.313 (0.475)	-0.131 (0.503)	-0.177 (0.504)
Log between-group IA, avoided dep. '89'			0.578* (0.328)	0.869* (0.449)	0.942** (0.442)
<b>By employment:</b>					
Log white-collar returnees '89				1.003* (0.564)	0.870 (0.581)
Log blue-collar returnees '89				-0.612 (0.635)	-0.435 (0.682)
Log kolkhozniki returnees '89				-0.178 (0.126)	-0.168 (0.125)
Spatial Lag: Log not preserve '91	-0.490** (0.209)	-0.471** (0.198)	-0.459** (0.196)	-0.463** (0.196)	-0.333 (0.257)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.16	0.21	0.26	0.34	0.32
Chi-squared	12.482	13.929	18.649	29.728	29.986

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

this. Consequently, ethnic groups that managed to escape deportation and remained in their origin regions tend to secede more the more contact they have with other ethnic groups. This effect even offsets the pure ethnicity effect in its magnitude. So ethnicity-based outcomes do not appear to be driven by the ethnic identity of these groups alone, as interactions between groups contribute to a reversal of the outcome. In line with my set of hypotheses, rehabilitated ethnic group size becomes a significant factor, for rehabilitated groups evidently voted in favor of secession from the Soviet Union (columns [4] and [5]). Their voting magnitude doubles, such that a 1% increase in the size of rehabilitated ethnic groups can be associated with an approximately 1% jump in voting for secession amongst the highly educated returnees, as compared to 0.9% as in the case of the non-deported groups. That order of magnitude is statistically different from zero with an uncertainty of 10%, but is not observed in any other employment category.

**Table 15:** Secessionist voting in the 1991 referendum, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation '89, advanced '26'	-0.133 (0.095)	-0.159* (0.091)	-0.248** (0.115)	-0.241** (0.105)	-0.252** (0.104)
Log returnees '89'	-0.033 (0.054)	0.017 (0.053)	-0.014 (0.056)	-0.092 (0.067)	-0.073 (0.083)
Log Russians '89		-0.235* (0.132)	-0.175 (0.137)	-0.101 (0.147)	-0.096 (0.147)
Polarization index '89		-0.016 (0.470)	-0.081 (0.464)	0.115 (0.475)	0.080 (0.475)
Log between-group IA, avoided dep. '89'			0.192 (0.147)	0.166 (0.138)	0.177 (0.143)
<b>By employment:</b>					
Log white-collar returnees '89				1.076* (0.551)	0.986* (0.555)
Log blue-collar returnees '89				-0.840 (0.603)	-0.739 (0.610)
Log kolkhozniki returnees '89				-0.292*** (0.112)	-0.284** (0.112)
Spatial Lag: Log not preserve '91	-0.478** (0.189)	-0.387** (0.181)	-0.311 (0.193)	-0.463** (0.192)	-0.377* (0.199)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.19	0.22	0.26	0.36	0.35
Chi-squared	13.448	15.882	18.325	31.295	29.975

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

My results also prove robust when controlling for the size of Ukrainians and Germans (table 15), who were considered “culturally advanced” in 1926 because of their comparatively higher literacy rates and whose descendants also voted by a majority to preserve the Soviet Union. Their effect, while only one-third as large, is measured solidly at the 5% significance level and is also highly surprising; after all, it suggests nothing less than that the formerly highly educated minorities – a prerequisite for democratic change, according to (Acemoglu, Hassan, and Robinson 2011) – were refraining from such change. In general, explanatory approaches that link the causes of this particular group’s voting behavior to possible minority status after the upheaval appear unconvincing, both because these groups still resided in their former homelands and because there is no evidence of significant interactions between the groups that could have moderated voting decisions. Also, the extent to which individuals in a population are distributed among different ethnic groups, as measured by the 1989 polarization index, does not affect my results in any way.

However, as table 14 also shows, ethnic Russians affirm the original Soviet polity to a much higher degree. Their voting patterns are less likely to be explained by a rehabilitation experience and more likely by their threatened minority status within republics that are increasingly feeling independent.

Continuing, table 16 compiles the results on protest and riot behavior in the late Soviet Union. The highly significant affirmation of the Soviet Union previously found among ethnic groups that escaped deportation contrasts sharply with their protest behavior. An increase in their regional presence of about 1% is accompanied by an increase in protest and violent behavior of about 2%. I interpret this contrast as the divergence of belief and reality in socialist electoral systems. My estimates support my hypothesis that descendants of the targeted ethnic groups became increasingly active in protecting its ethnic cohort. Turning to returnees in origin regions, they are also strongly associated with a lower level of protest and riot behavior, as a 1% increase in their regional representation is associated with about a 0.4% decrease in protests and riots. Both estimators – for the groups that escaped deportation and for those that were allowed to return – are economically meaningful and computed at a 1\$ level of significance. When one further controls for their socioeconomic success, it becomes clear that returnees in white-collar positions are a dominant factor in the outward expression of discontent. An increase in their size is preceded by increased protest behavior of about 4% – an economic magnitude ten times larger than that of returnees in general (0.4% vs. 4%) – also calculated at the 1% significance level. While the size of the coefficient for the highly skilled returnees is rather impressive, it is counterbalanced by the overall effect of protests and unrest among the blue-collar and collective farm workers. Moreover, the overall effect is most likely driven by the numerically larger workers (2.9%) and kolkhoz workers (0.8%).

**Table 16:** Protesting and rioting 1987-92, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation '89'	0.346 (0.271)	0.223 (0.276)	1.515* (0.785)	2.004** (0.816)	1.946** (0.794)
Log returnees '89'	-0.255* (0.140)	-0.173 (0.140)	-0.141 (0.138)	-0.441*** (0.154)	-0.388*** (0.143)
Log Russians '89		-0.605* (0.328)	-0.487 (0.325)	0.023 (0.269)	0.085 (0.272)
Polarization index '89		1.531 (1.079)	1.897* (1.063)	2.763*** (0.877)	2.849*** (0.870)
Log between-group IA, avoided dep. '89'			-1.281* (0.737)	-1.502* (0.776)	-1.404* (0.739)
<b>By employment:</b>					
Log white-collar returnees '89				3.688*** (0.921)	3.628*** (0.877)
Log blue-collar returnees '89				-2.856*** (1.075)	-2.703*** (1.027)
Log kolkhozniki returnees '89				-0.838*** (0.220)	-0.809*** (0.210)
Spatial Lag: Log protests and riots '87-92	0.440* (0.260)	0.451* (0.246)	0.447* (0.238)	0.680*** (0.204)	0.576*** (0.182)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.41	0.48	0.52	0.72	0.72
Chi-squared	40.266	52.516	60.423	212.023	252.406

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).



Furthermore, significant spillover effects from neighboring protests and riots can be detected, which can be read off in the coefficient of the spatial lag of the dependent variable. This is calculated as 0.7 and is significantly different from zero. table 17 now lists the direct, indirect, and total effects and is thus able to determine the magnitude of neighboring protest and riot behavior. It shows, on the one hand, a doubling of the direct coefficients due to indirect neighborhood effects and, on the other hand, an increase in direct covariates with consistent significance levels in the majority of them. Still, only the overall effect of returnees in white-collar positions culminates in a combined effect of about 7.2% more protest activity associated with their presence. The point remains, then, unchanged: regions with a higher proportion of returnees have significantly lower levels of protest behavior three generations after the deportation of their ancestors. An even stronger notion is that in the decades after the deportation and after being directly or indirectly exposed to the ethnic cleansing campaigns, they were more likely to affirm Soviet domination than to reject it. These results contrast with the positive relationship between ethnicity and secessionist movements found in Suesse (2018). Indeed, there could be no greater contrast in my findings, highlighting the impact of the deportation experience as a mechanism for inhibiting secessionist movements among the middle- and low-skilled.

**Table 17:** SDEM-IV spillovers for Protesting and rioting 1987-92, origin regions

	(1)	(2)	(3)
	Direct Effect	Indirect Effect	Total Effect
Log returnees '89'	-0.475*	-0.383	-0.858
	(0.189)	(0.422)	(0.597)
Log avoided deportation '89'	2.159*	1.740	3.900
	(0.933)	(1.803)	(2.571)
Log Russians '89	0.025	0.020	0.045
	(0.290)	(0.234)	(0.523)
Polarization index '89	2.978**	2.400	5.378
	(0.982)	(2.212)	(2.904)
Log white-collar returnees '89	3.975***	3.203	7.178*
	(1.056)	(2.891)	(3.625)
Log blue-collar returnees '89	-3.078*	-2.481	-5.558
	(1.222)	(2.470)	(3.436)
Log kolkhozniki returnees '89	-0.903***	-0.728	-1.631
	(0.253)	(0.666)	(0.846)
Log between-group IA, avoided dep. '89'	-1.619	-1.305	-2.924
	(0.874)	(1.440)	(2.182)

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

As for the changes in culture and administration and the physical destruction caused by World War II, they seem to explain very inadequately the observed long-term effects (Grosfeld, Rodnyansky, and Zhuravskaya 2013; Becker and Woessmann 2009; Dell 2010). This includes the later effects of the fall of the Iron Curtain (1989), the dissolution of the Soviet Union, and the deep (so-called transitional) recession of the early 1990s. At these moments in history, rehabilitated ethnic groups from the understratification in particular would have found a safer environment in which to voice their displeasure. My estimates even suggest that returnees' attachment to their origin region may have increased in the long run. Because of self-selection among the more mobile returnees, deportation-related values of any stripe may have been passed down through generations by stories. Following directly from the predictions of theoretical models of the effects of social capital on migration decisions (David, Janiak, and Wasmer 2010; Bräuninger and Tolciu 2011), I assume that the destruction of local social capital and the subsequent reconstruction of it among rehabilitated ethnic groups may have brought these ethnic groups into a balance of high social capital - overinvesting in interethnic networks and thereby retaining their few freedoms in the late Soviet Union - and low mobility. This would be consistent with previous studies of the former GDR and the overinvestment in male interpersonal relationships found in (Boenisch and Schneider 2013) or with Charnysh (2019), which shows that districts resettled by more heterogeneous migrant groups during Poland's westward shift after World War II also had lower social capital in 1989, albeit in the opposite direction. This approach could also be used to explain my results for returnees in the highest occupational skill category, to which most of the social capital literature (Glaeser, Laibson, and Sacerdote 2002; Putnam, Leonardi, and Nanetti 1994) both contributes more and depends on social capital.

**Host Regions** While the proportion of ethnic groups living permanently in exile in the origin region is surprisingly related to the pro-Soviet vote in the 1991 referendum, the impact of the rehabilitation decree on ethnic groups living in internal exile in the host regions is now of greatest interest. Significant return migration of rehabilitated Karachays, Balkars, Kabardians, Chechens and Ingush, and Kalmyks began as early as the late 1950s, thus endogenizing their share in the host region. Although the return to their former homeland was part of an aspired constitutional right, the relocation involved considerable costs, caused by the duplicated resettlement: first from their origin region in the Caucasus to Central Asia and later in the reverse direction. To account for “remainders”, I control for their regional presence in 1989. I further control in all specifications for the three-tier settler labor force as well as several episodes of violence. To simplify the analysis, I have again log transformed my main dependent and explanatory variables to facilitate interpretation, and I have reduced the total number of controls for clarity. Table 18 and table 20 report results for the 1991 referendum and for participation in protests in the late Soviet Union, respectively. In both cases, columns (1) through (4) once more show the instrumented SDEM-IV least squares model, which is compared to its non-instrumented counterpart in column (5).

**Table 18:** Secessionist voting in the 1991 referendum, host regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log exiled '89'	-0.121*	-0.113**	-0.448	-0.071	-0.080
	(0.062)	(0.057)	(0.282)	(0.362)	(0.372)
Log rehabilitated '89'	0.021	-0.071	-0.065	-0.024	-0.024
	(0.076)	(0.065)	(0.065)	(0.065)	(0.065)
Log Russians '89		0.357***	0.293***	0.204*	0.200
		(0.105)	(0.113)	(0.112)	(0.122)
Polarization index '89		-0.565*	-0.525*	-0.483*	-0.463
		(0.303)	(0.297)	(0.284)	(0.315)
Log between-group IA, exiled '89'			0.357	0.027	0.034
			(0.297)	(0.367)	(0.378)
<b>By employment:</b>					
Log white-collar settler '89				0.399	0.399
				(0.420)	(0.423)
Log blue-collar settler '89				-0.715*	-0.719*
				(0.378)	(0.382)
Log kolkhozniki settler '89				-0.008	-0.007
				(0.056)	(0.056)
Spatial Lag: Log not preserve '91	0.226***	0.130**	0.142**	0.150**	0.147**
	(0.070)	(0.063)	(0.063)	(0.060)	(0.059)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.79	0.86	0.87	0.88	0.88
Chi-squared	333.037	276.953	315.573	397.814	423.087

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

Table 18 shows that the presence of Korean, Crimean Tatar, Meskhetian, and German populations is considered a significant predictor of Soviet preservation. However, the coefficient loses statistical significance when controlling for their integration into the host region. In particular, columns (1) and (2) show that a one percent increase in their size is associated with a 0.1% increase in their affirmation of the Soviet Union, a magnitude that is also far from that of their peers in the origin regions who escaped deportation. Even taking into account the labor market outcomes of those permanently in exile, it is striking that voting decisions in the 1991 referendum are significantly influenced by the working class.

Their 1% increase is associated with a lower secession vote by about 0.7%. Thus, this positive vote for the Soviet Union is in similar coefficient ranges as in the origin regions. The application of additional explanatory variables, i.e., the proportion of permanent exiles with historical home regions to which they could return (Germans, Koreans, and Meskhetian Turks) and the proportion of ethnic groups considered culturally advanced in 1926 (ethnic Germans and Crimean Tatars), does not change the results and speaks to the robustness of my results (see Appendix). In all models, the absence of interethnic interactions is likewise striking, indicating that the local social fabric is a minor factor in the secession decision, as an increased number of interethnic interactions (with a negative polarization index) is not associated with a decrease in the secession decision. Similarly, table ?? identifies the presence of global spillovers in the election specification. The investigation into the extent by which spillovers might affect the results yields inconclusive results, as previously found results lose their significance.

**Table 19:** SDEM-IV spillovers for Secessionist voting in the 1991 referendum, host regions

	(1)	(2)	(3)
	Direct Effect	Indirect Effect	Total Effect
Log rehabilitated '89'	-0.024 (0.065)	-0.003 (0.008)	-0.027 (0.073)
Log exiled '89'	-0.071 (0.363)	-0.008 (0.044)	-0.080 (0.406)
Log Russians '89	0.205 (0.112)	0.024 (0.013)	0.229 (0.122)
Polarization index '89	-0.484 (0.285)	-0.057 (0.044)	-0.542 (0.323)
Log white-collar settler '89	0.400 (0.422)	0.047 (0.057)	0.447 (0.475)
Log blue-collar settler '89	-0.718 (0.379)	-0.085 (0.062)	-0.803 (0.431)
Log kolkhozniki settler '89	-0.008 (0.056)	-0.001 (0.007)	-0.009 (0.062)
Log between-group IA, exiled '89'	0.027 (0.368)	0.003 (0.044)	0.030 (0.412)

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Surprisingly, the interpretation for protest and riot behavior is divergent, as table 20 shows. Ethnic groups living in permanent exile are found to have significantly lower protest and riot behavior: A 1% increase in their regional presence is accompanied by a highly significant and simultaneously massive decrease in protest activity of about 3%. While this is extremely surprising, an opposite effect had been expected in advance. As in the origin regions, increased contact with other ethnic groups counteracts the findings. Voting behavior tends to be more secessionist in regions where these ethnic groups have been able to come into contact with far more other ethnic groups. It is also very telling that blue-collar workers also show a very similar and, equivalently, statistically meaningful effect. Taken together, they yield an approximately 5.5% increased incidence of protest and rioting. These coefficient magnitudes lend support - in a significant way - to the hypothesis of heightened political activism among the descendants of the permanently displaced. Once more, spillover effects emerge, but when decomposed into direct, indirect, and total effects as done in table 21, these only further expose the coefficient strengths.

In summary, although ethnic groups living in permanent exile, especially their children and grandchildren, voted to preserve the Soviet Union, they protested far more actively. My preliminary conclusions suggest the possibility of equating the impact of deportation on voting behavior with the preservation of the Soviet Union as a continuation of a republic-wide transfer system. The presence of ethnically based protest behavior in host regions may at first seem surprising in light of previous findings. For while the impact on local higher education and white-collar employment in the host regions leveled off in the 1980s, the impact of the "special settler regime" on political activity persisted over a period in which settlers living permanently in exile lived through almost their entire adult lives; the regime thus affected a person born in 1937 at the beginning of the resettlement process who would have been about 50 years old in the late Soviet Union. The major macroeconomic upheavals of the late 1980s, particularly the fall of the Iron Curtain, the onset of economic transition or recession, and the prospect of an independent country, also appear to have had little effect on election outcomes. Nevertheless, it can be seen from

**Table 20:** Protesting and rioting 1987-92, host regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log exiled '89'	0.014 (0.186)	0.044 (0.180)	-0.538 (0.901)	-2.863*** (1.078)	-2.658** (1.091)
Log rehabilitated '89'	0.136 (0.201)	0.139 (0.201)	0.151 (0.201)	-0.088 (0.187)	-0.083 (0.190)
Log Russians '89		-0.009 (0.324)	-0.087 (0.346)	0.334 (0.311)	0.368 (0.320)
Polarization index '89		-1.231 (0.990)	-1.221 (0.979)	-1.080 (0.867)	-0.775 (0.970)
Log between-group IA, exiled '89'			0.622 (0.947)	2.728** (1.094)	2.492** (1.092)
<b>By employment:</b>					
Log white-collar settler '89				-0.484 (1.246)	-0.118 (1.404)
Log blue-collar settler '89				2.580** (1.122)	2.233* (1.326)
Log kolkhozniki settler '89				-0.190 (0.179)	-0.264 (0.181)
Spatial Lag: Log protests and riots '87-92	-0.646*** (0.238)	-0.703*** (0.236)	-0.746*** (0.244)	-0.697*** (0.247)	-0.494** (0.214)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.63	0.64	0.64	0.70	0.72
Chi-squared	79.867	85.572	87.382	134.486	115.966

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 21:** SDEM-IV spillovers for Protesting and rioting 1987-92, host regions

	(1)	(2)	(3)
	Direct Effect	Indirect Effect	Total Effect
Log rehabilitated '89'	-0.094 (0.198)	0.032 (0.069)	-0.062 (0.131)
Log exiled '89'	-3.044** (1.176)	1.042 (0.546)	-2.002** (0.745)
Log Russians '89	0.355 (0.328)	-0.121 (0.113)	0.233 (0.222)
Polarization index '89	-1.148 (0.936)	0.393 (0.365)	-0.755 (0.593)
Log white-collar settler '89	-0.515 (1.329)	0.176 (0.465)	-0.338 (0.867)
Log blue-collar settler '89	2.743* (1.215)	-0.939 (0.532)	1.804* (0.778)
Log kolkhozniki settler '89	-0.202 (0.186)	0.069 (0.060)	-0.133 (0.130)
Log between-group IA, exiled '89'	2.900* (1.198)	-0.992 (0.552)	1.908* (0.747)

Standard errors in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

protest and riot behavior that there was a much more congenial climate for open protest at the beginning of the shock therapy or the end of the Soviet Union. In particular, the protest behavior of permanent exiles, to which the majority of ethnic Germans belonged, can be seen as a harbinger of the emigration of this group from the countries of Central Asia to Germany by the millions. My findings are extremely interesting in light of earlier findings by Lupu and Peisakhin (2017) and Suesse (2018) on the negative long-term effects of Soviet violence and ethnicity and require further research on the relationship between ethnicity, violence, and trauma experiences and how it affects economic and political variables.

## 7. Conclusion

This paper examines the macroeconomic scale of Stalin's ethnic deportations, which ripped millions of economically productive families out of the productive cycle, entailed the loss of labor skills and traditions among the population, resulted in a dramatic decline in agricultural and industrial production, and led to the devastation and neglect of large tracts of land and numerous settlements (Polian 2004, p. 320).

I use the regional distribution of "special settlers" before and after their deportation to examine the impact of migration shock on the education and skill gap and on two dimensions of social conflict. Adequate space is devoted to deriving the theory-based specifications and identifying assumptions that underscore the plausibility of this empirical investigation. Because my generated settler variables are correlated with the dependent variables, I can correctly attribute post-shock changes to the influx of settlers rather than to important secular trends. Similarly, potential shortcomings of a "one-size-fits-all" approach are detailed with respect to the importance of local labor market institutions, the degree of labor market competition, and the resulting government actions in explaining the results (Borjas and Monras 2017, p. 409). In all analyses, the data used are collapsed at the region-occupation/education or region-election/protest level, which is the most desirable and least problematic in terms of possible conclusions. This is in part because my sample of origin and host regions is balanced and numerous. Similarly, my long period of observation from 1926 to 1989 should reveal any institutional inertia; for instance due to the 5-year plans. Consequently, my results show both the relative distributional effects of forced deportation among educational and employment groups and the absolute effects of Stalin's ethnic terror on the political behavior of subsequent generations of settlers. By using different time horizons, my results relate to both transitional and long-term equilibrium outcomes, i.e., the generation of children, grandchildren, and great-grandchildren of those who were either deported or may have benefited from deportation. I find positive effects for locals that are numerically significant (Dustmann, Schönberg, and Stuhler 2016).

For the origin regions, my estimates show a very rapid increase along the highest gradient of occupation and skill, accompanied by an outflow of labor from the agricultural sector. This is driven by the return of the rehabilitated ethnic groups from the host regions together. In the host regions themselves, an increase in the highest education category is also visible, driven by the rehabilitated ethnic groups, but not accompanied by an increase in white-collar employment of the same magnitude. Both findings support my capital flight hypothesis in the sense of Botticini and Eckstein (2005) and Becker, Grosfeld, et al. (2020), according to which the rehabilitated ethnic groups have invested more mobile capital. Taken together, it can be said that these populations have been able to turn their fortunes around. While the origin regions seem to have developed economically with the rehabilitation, the situation in the host regions can be described as very bleak. The qualitative expansion of the local non-Slavic employment profiles through their understratification by permanently displaced persons did not take place. My findings demonstrate once again how discriminatory and inflexible economic policies can contribute to a host society remaining permanently below its full potential. Considering that immigration should increase the productivity of businesses and the local workforce in the long run by stimulating business growth and bringing in a range of skills and ideas (Peri 2014, p. 8), it simply seems tragic that this potential remained untapped in host regions at a time of enormous growth potential (Sarvimäki 2011). The practical inadequacy of the economic arguments for using deportees as forced laborers was further exacerbated by the sheer size of the Soviet Union. Notwithstanding the discriminatory nature of the special settler regime, whose concrete socioeconomic consequences for the affected ethnic groups could not be analyzed due to data problems, the conflict-related analyses nevertheless give an indication of their mindset. While a greater presence of special settlers and rehabilitated ethnic groups in both regions is associated with pro-communist voting behavior, it is also associated with much more protest activity. This contrast needs to be further explored, especially in light of nationality policies that involved an upgrading of "titular nations" and that can both resolve and fuel interethnic conflicts.



Yet, my *longue durée* argument prevents me from explicitly testing the quality respectively, success of cultural assimilation. This would be the case if former “special settlers” or their descendants, who in the late Soviet Union identify as Russians, also perform better in the labor market than permanently displaced persons, who do not but who identify as such. It is also unclear whether and when rehabilitated, but especially permanently exiled “special settlers”, identified themselves more closely with the culture, values and beliefs of the host region or in what degree they continued to identify with the beliefs and values of their origin region. This is particularly relevant for factors that shape cultural assimilation patterns, for example, the role of inter-ethnic marriages, which in the end I can only speculate about (Facchini, Patacchini, and Steinhardt 2015, p. 620; Steinhardt 2018). Additionally, I measure macroeconomic rather than gender effects, so differentiating along gender dimensions could potentially solve the problem of non-monotonic past trends in host regions due to national policy (Borjas and Monras 2017, p. 410). Ultimately, the Soviet Union was a strong autocratic regime that held onto power for a full seven decades before finally losing its repressive grip in the early 1990s. Violence was thus an integral part of daily life from the very beginning. This makes it challenging to accurately separate the effects of state coercion on daily life from the effects of ethnic cleansing campaigns. This study will therefore gain by analyzing the exact mechanisms involved, which I can only speculate about at this time.

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## A. Inadequate strategies

To isolate a causal effect of deportations, researchers employ a variety of methods. Of note is the *difference-in-difference* (DiD) technique, which requires data on two groups-exposed and unexposed-at two time points-before and after exposure. The basis of DiD is a stable treatment unit that is decomposed into three main components (Rubin 1980; Lechner 2011):

1. *One treatment*: Treatment and control group must be stable in a repeated cross-sectional design, ruling out differential treatment.
2. *No spillovers*: The treatment of one unit does not affect outcomes of other units.
3. *Parallel trends*: Outcomes in the exposed and unexposed groups must trend similarly, as if they had not been exposed.

The first assumption implies that every ethnic group was subjected to the same deportation technique and that deportations were the only political intervention. But, deportation techniques professionalized over the waves and different means of coercion were used on different ethnicities. Moreover, Soviet citizens were exposed to multiple and repeated episodes of violence between 1939 and 1953, not sustaining any implicit stability assumption.<sup>48</sup> The second assumption seems equally implausible given the financial and economic interconnectedness of the regions within a web of institutions and plans within the Soviet command system, let alone the global scale of World War II.<sup>49</sup> The third can also be rejected, as differences in pre-World War II trends between more advanced European Russia and backward Central Asia imply a non-monotonic growth relationship (Martin 2001). Most importantly, though, my data do not allow to reproduce meaningful control group, since origin and host regions were treated alike.

Similar arguments apply to any pre-processing techniques like matching, which aim at equalizing the distribution of covariates in the treated and control group. After successful matching, both groups would share equal treatment probability, thereby reducing model reliance. Yet, my data preclude any distributional inequality that could have been reduced by using a matching method. However, assuming the available data would allow the reproduction of a meaningful treatment and control group, a successful matching would prune inappropriate observations from the sample. Hence, matching methods which improve the robustness of the model by down-sampling is intrinsically useful only for large data sets with thousands of observations (Sekhon 2008, cited in Rosenbaum(2005)). Because regional Soviet data are limited in total sample size to no more than 150 observations, any further downsampling would violate standard statistical assumptions. Overall, the performance of matching methods using a relatively small proposition of “convenient predictors,” such as demographic data only, must generally be considered rather poor (Shadish, Clark, and Steiner 2008).

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<sup>48</sup> This also relates to the Regression Discontinuity Design (RDD) as well, that uses the exogenous variation in the exposure to state-sponsored violence with the help of a “forcing” variable. It would not measure a specific policy intervention, the deportation, but also other war-related episodes.

<sup>49</sup> The presence of spatially clustered data is supported by the results of several statistical tests.

## B. Additional tables

**Table 22:** Literacy rates in percent by nationality, 1926

Western nationalities		Eastern nationalities			
Latvians	78.1	<b>Tatars *</b>	33.6	<b>Ingush</b>	9.1
Estonians	72.4	Chuvash	32.2	<b>Azerbaijani **</b>	8.1
Jews	72.3	Mari	26.6	Ajars	7.8
Lithuanians	70.5	Udmurts	25.6	Kazakhs	7.1
<b>Germans</b>	61.2	Bashkirs	24.3	<b>Kabardians</b>	6.8
Poles	53.8	Buriats	23.2	<b>Balkars</b>	5.3
Russians	45.0	Mordvinians	22.9	Kirgiz	4.6
Ukrainians	41.3	Ossetians	21.2	Uzbeks	3.8
Georgians	39.5	Cherkess	16.9	<b>Chechens</b>	2.9
Belorussians	37.3	Abkhazy	11.3	Turkmen	2.3
Armenians	34.0	<b>Kalmyks</b>	10.9	Tajik	2.2
-	-	<b>Karachays</b>	9.2	Kara-Kalpaks	1.3

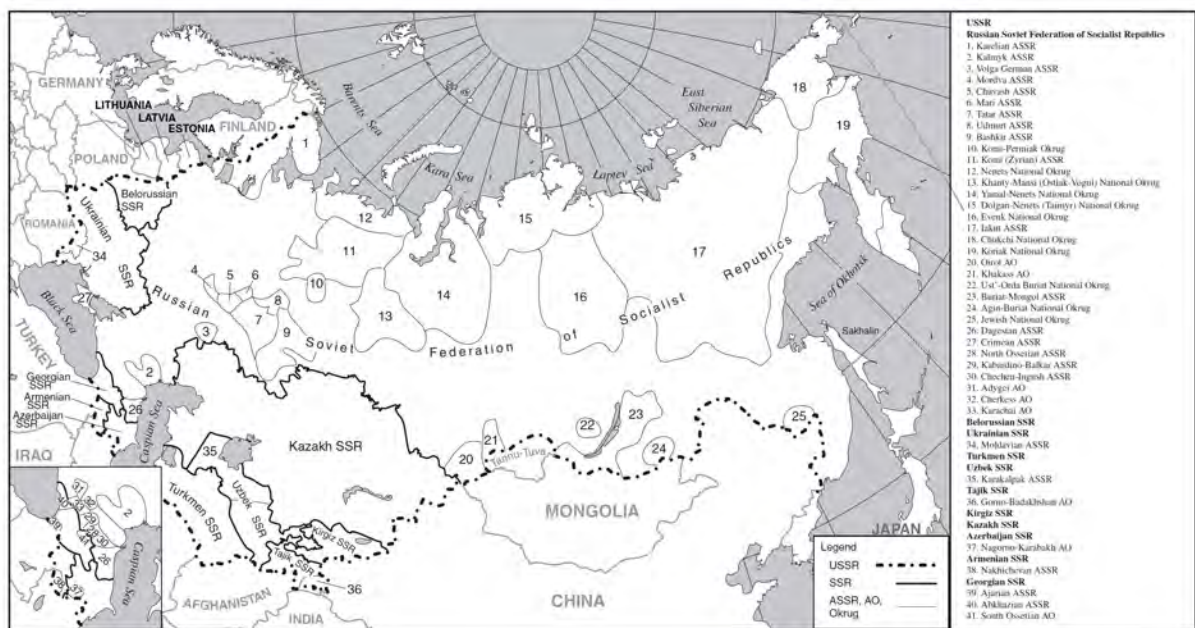
Source: Martin (2001), p. 127, table 13. \* Includes Volga and Crimean Tatars. \*\* Meskhetian Turks.

**Table 23:** Official list of “culturally backward” nationalities [extract], 1932\*

Rank	Nationality	Rank	Nationality	Rank	Nationality
8.	Balkars	30.	Koreans	74.	Azerbaijani**
22.	Ingush	36.	Kabardians	75.	Tatars (outside ASSR)* * *
24.	Kalmyks	37.	Karachays	84.	Chechens

\* Based on the “Uniform Guideline for Assignment to Culturally Advanced and Backward Ethnic Groups” of 1932.  
Source: Martin (2001), p. 167, table 21. \*\* Meskhetian Turks. \*\*\* Crimean Tatars.

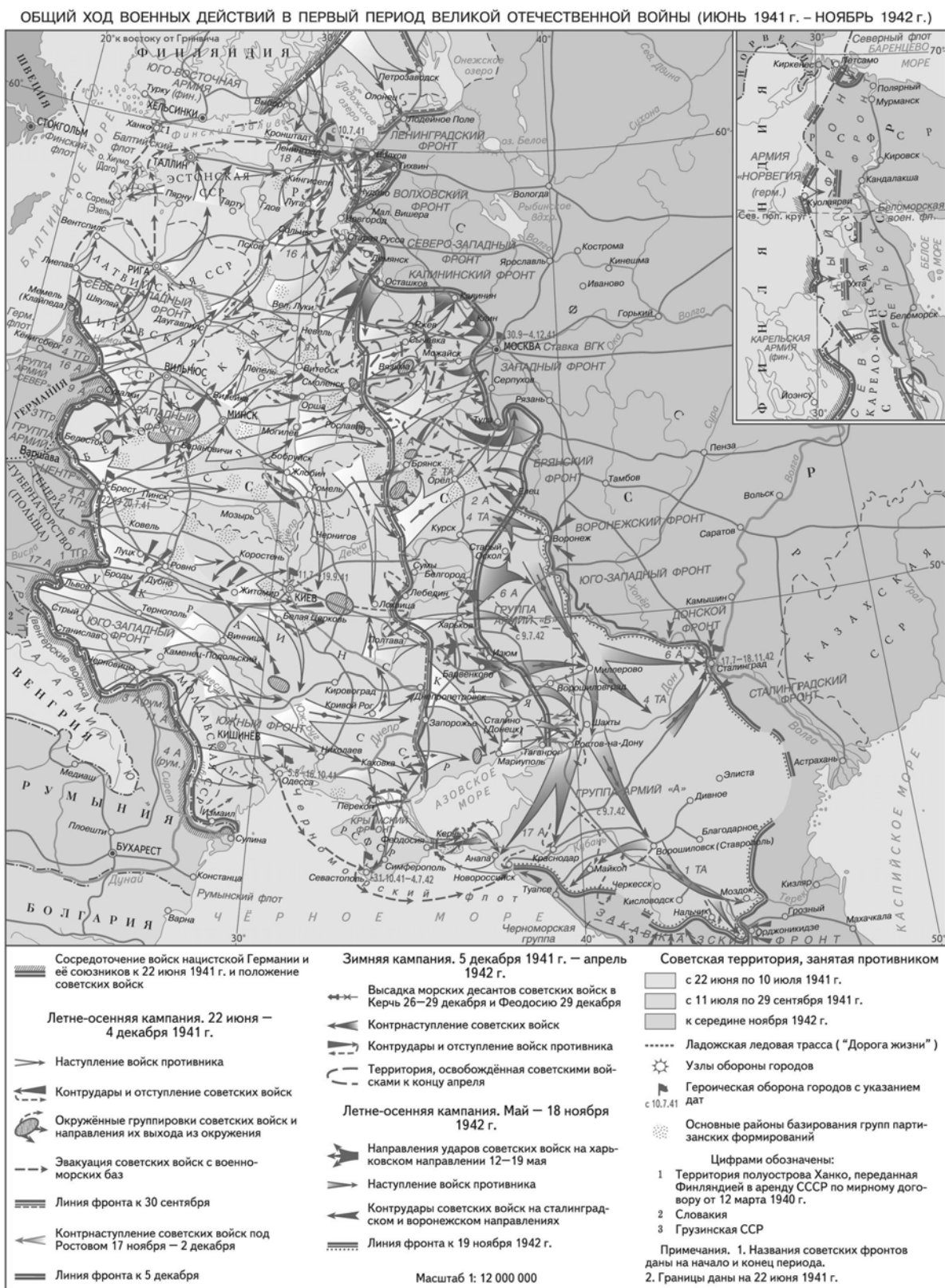
**Figure 11:** Union of the Socialist Soviet Republics



Source: Hirsch (2014), p. 303, map 7.1



Figure 12: The German front in the Soviet Union



Source: "The Battle of Stalingrad. Combining fronts". Artists M. I. Samsonov and A. M. Samsonov, in "Orlov A. S. THE GREAT PATRIOTIC WAR 1941–45" in Great Russian Encyclopedia. Electronic version (2018); [https://bigenc.ru/military\\_science/text/3795693](https://bigenc.ru/military_science/text/3795693), Date of access: 12/16/2020

**Table 24:** Repressive forced migrations in the USSR\*

Year	M	D	Ethnicity	'1000	Origin region	Host region
1937	09-10	–	Koreans	172	Spassk, Posyet, Grodekovo, Birobidzhan, Vladivostok, Buryat–Mongol ASSR, Chita Obl.	Kazakh SSR (towns and settlements of the northern part), Uzbek SSR
1941	08 09	end 03-20	Germans Germans	53 439	Crimean ASSR Volga German ASSR, Saratov and Stal-ingrad Obl. Leningrad Obl.	Ordzhonikidze Kray and Rostov Obl. Kazakh SSR, Krasnoyarsk Kray, Altay Kray, Novosibirsk and Omsk Obls. Krasnoyarsk Kray, the Novosibirsk and Omsk Obls., Kazakh SSR, Altay Kray Kazakh SSR Krasnoyarsk Kray, Irkutsk Obl., Kazakh SSR
	09-10	15-20 25-10	Germans Germans	36 ca. 138	Moscow, the Moscow and Rostov Obls. Krasnodar Kray, Ordzhonikidze Kray, Tula Obl., Kabardian-Balkar ASSR and North-Ossetian ASSR (incl. Crimean residents that had been evacuated to Krasnodar Kray earlier)	
	10	15-22 15-30	Germans Germans	5 46	Voronezh Obl. Georgian, Azerbaijani, and Armenian SSR	Novosibirsk, Omsk Obls. Kazakh SSR, Novosibirsk Obl.
1942	03	25-30 11 –	Germans Germans Germans	6 no data no data	Daghestan and Chechen–Ingush ASSR Kalnyk ASSR Kharkov, Crimea, Dnepropetrovsk, Odessa, Kalinin Obls. Krasnodar Kray	Kazakh SSR no data no data no data
	06	–	Germans, Romanians, Crimean Tatars, foreign nationals (Greeks)	no data		
1943	08	09	Karachays (“gang leaders” and “active bandits”)	0.5	Karachai–Circassian AO	Beyond the Obl. boundaries
	11	02	Karachays	ca. 70	Karachai–Circassian AO	Kazakh SSR (the South-Kazakhstan and Dzhambul Obls.), Kyrgyz SSR
	12	28-31	Kalmyks	ca. 93	Kalmyk ASSR	Altay and Krasnoyarsk Kr., Novosibirsk, Omsk Obls.
1944	02	23-29	Chechens (first trains)	393	Chechen-Ingush ASSR and Daghestan ASSR	Kazakh SSR, Kyrgyz SSR

continued on next page ...

Table 24 – continued from previous page

Year	M	D	Ethnicity	'1000	Origin region	Host region
		23-29	Ingushetians (first trains)	91	The Chechen-Ingush ASSR, Vladikavkaz	Kazakh SSR, Kyrgyz SSR
	03	08	Balkars (first trains)	38	Kabardian-Balkar ASSR	Kazakh SSR, Kyrgyz SSR
	05	25	Kalmyks	3	Rostov Obl.	Novosibirsk, Omsk Obl.
		05-10	Balkars	0.1	Klukhori district, Georgian USSR	Kazakh SSR, Kyrgyz SSR
		18	Crimean Tatars	182	The Crimean ASSR	The Uzbek SSR
	05-07		Kalmyks	26	Northern and eastern regions	European part of the RSFSR ( Saratov, Voronezh Obls., Krasnodar Kray), Ukrainian SSR
	06	04	Kalmyks	1	Stalingrad Obl	Sverdlovsk Obl.
		20	Kabardians – family members of collaborators that left with Germans	2	Kabardian ASSR	Dzhambul and South-Kazakhstan Obl.
	11	15-18	Meskhetian Turks, Kurds and Khemshins	ca. 92	Georgian SSR	Uzbek, Kazakh and Kyrgyz SSR

\* Data are rounded. Source: Polian (2004, p. 327)

**Table 25:** Sample of origin regions

ID	Country	Unit	Status
1	GE	Adzharskaia ASSR	Autonomous republic
2	GE	Iugo-Osetinskaia avtonomnaia oblast'	Autonomous oblast
3	GE	Abkhazskaia ASSR	Autonomous republic
4	GE	Gruzinskaia SSR	Union republic
5	KZ	Ural'skaia oblast'	Oblast
6	RU	Chukotskii avtonomnyi okrug	Autonomous okrug
7	RU	Stavropol'skii krai	Krai
8	RU	Taimyrskii (Dolgano-Nenetskii) avtonomnyi okrug	Autonomous okrug
9	RU	Saratovskaia oblast'	Oblast
10	RU	Kabardino-Balkarskaia ASSR	Autonomous republic
11	RU	Khabarovskii krai	Krai
12	RU	Kalmytskaia ASSR	Autonomous republic
13	RU	Severo-Osetinskaia ASSR	Autonomous republic
14	RU	Amurskaia oblast'	Oblast
15	RU	Dagestanskaia ASSR	Autonomous republic
16	RU	Komi-Permiatskii avtonomnyi okrug	Autonomous okrug
17	RU	Volgogradskaia oblast'	Oblast
18	RU	Buriatskaia ASSR	Autonomous republic
19	RU	Penzenskaia oblast'	Oblast
20	RU	Checheno-Ingushskaia ASSR	Autonomous republic
21	RU	Gorno-Altayskaia avtonomnaia oblast'	Autonomous oblast
22	RU	Kurskaia oblast'	Oblast
23	RU	Nenetskii avtonomnyi okrug	Autonomous okrug
24	RU	Tambovskaia oblast'	Oblast
25	RU	Chitinskaia oblast'	Oblast
26	RU	Krasnodarskii krai	Krai
27	RU	Mordovskaia ASSR	Autonomous republic
28	RU	Primorskii krai	Krai
29	RU	Rostovskaia oblast'	Oblast
30	RU	Smolenskaia oblast'	Oblast
31	RU	Evenkiiskii avtonomnyi okrug	Autonomous okrug
32	RU	Iamalo-Nenetskii avtonomnyi okrug	Autonomous okrug
33	RU	Khakasskaia avtonomnaia oblast'	Autonomous oblast
34	RU	Murmanskaia oblast'	Oblast
35	RU	Kalininskaia oblast'	Oblast
36	RU	Khanty-Mansiiskii avtonomnyi okrug	Autonomous okrug
37	RU	Adygeiskaia avtonomnaia oblast'	Autonomous oblast
38	RU	Leningradskaia oblast'	Oblast
39	RU	Orlovskaia oblast'	Oblast
40	RU	Karachaevo-Cherkesskaia avtonomnaia oblast'	Autonomous oblast
41	RU	Voronezhskaia oblast'	Oblast
42	RU	Ust'-Ordynskii Buriatskii avtonomnyi okrug	Autonomous okrug
43	RU	Tatarskaia ASSR	Autonomous republic
44	RU	Iaroslavskaia oblast'	Oblast
45	UK	Krymskaia oblast'	Oblast
46	UK	Donetskaia oblast'	Oblast
47	UK	Zaporozhskaia oblast'	Oblast
48	UK	Voroshilovgradskaia oblast'	Oblast
49	UZ	Khorezmskaia oblast'	Oblast

**Table 26:** Sample of host regions

ID	Country	Unit	Status
1	KZ	Gur'evskaia oblast'	Oblast
2	KZ	Aktiubinskaia oblast'	Oblast
3	KZ	Alma-Atinskaia oblast'	Oblast
4	KZ	Kzyl-Ordinskaia oblast'	Oblast
5	KZ	Severo-Kazakhstanskaia oblast'	Oblast
6	KZ	Kustanaiskaia oblast'	Oblast
7	KZ	Pavlodarskaia oblast'	Oblast
8	KZ	Karagandinskaia oblast'	Oblast
9	KZ	Semipalatinskaia oblast'	Oblast
10	KZ	Vostochno-Kazakhstanskaia oblast'	Oblast
11	KZ	Chimkentskaia oblast'	Oblast
12	KZ	Tselinogradskaia oblast'	Oblast
13	KZ	Dzhambulskaia oblast'	Oblast
14	KG	Oshskaia oblast'	Oblast
15	RU	Iakutskaia ASSR	Autonomous republic
16	RU	Gor'kovskaia oblast'	Oblast
17	RU	Ivanovskaia oblast'	Oblast
18	RU	Altaiskii krai	Krai
19	RU	Tul'skaia oblast'	Oblast
20	RU	Sakhalinskaia oblast'	Oblast
21	RU	Arkhangel'skaia oblast'	Oblast
22	RU	Kuibyshevskaja oblast'	Oblast
23	RU	Riazanskaia oblast'	Oblast
24	RU	Bashkirskaja ASSR	Autonomous republic
25	RU	Sverdlovskaja oblast'	Oblast
26	RU	Kamchatskaia oblast'	Oblast
27	RU	Moskovskaia oblast'	Oblast
28	RU	Udmurtskaia ASSR	Autonomous republic
29	RU	Chuvashskaja ASSR	Autonomous republic
30	RU	Irkutskaja oblast'	Oblast
31	RU	Novosibirskaja oblast'	Oblast
32	RU	Permskaia oblast'	Oblast
33	RU	Cheliabinskaia oblast'	Oblast
34	RU	Evreiskaia avtonomnaia oblast'	Autonomous oblast
35	RU	Aginskii Buriatskii avtonomnyi okrug	Autonomous okrug
36	RU	Kirovskaja oblast'	Oblast
37	RU	Mariiskaia ASSR	Autonomous republic
38	RU	Komi ASSR	Autonomous republic
39	RU	Koriakskii avtonomnyi okrug	Autonomous okrug
40	RU	Vologodskaja oblast'	Oblast
41	RU	Orenburgskaja oblast'	Oblast
42	RU	Krasnoiarskii krai	Krai
43	RU	Omskaia oblast'	Oblast
44	RU	Karel'skaia ASSR	Autonomous republic
45	UZ	Ferganskaia oblast'	Oblast
46	UZ	Samarkandskaia oblast'	Oblast
47	UZ	Karakalpakskaja ASSR	Autonomous republic
48	UZ	Tashkentskaia oblast'	Oblast
49	UZ	Bukharskaia oblast'	Oblast



**Table 27:** Data Description and Sources

Variable	Description	Source
lnSlu39	This is the Log of the population classified as “white collar workers” (sluzhashie) in the 1939 census. The remaining categories are “workers” (rabochie) and a residual category including individuals working in the agricultural sector (kolkhozniki). As the census information in the physical census publication for 1939 are put in comparison to its 1959 values, I reconstruct the total number of white collar workers based on the reported number of laborers with completed higher education in urban and rural regions and the reported country-wide labor force, which represents those individuals with occupations or who are employed in subsidiary farming and take the logarithm.	Census volumes for the respective republics 1959, table 31 & 37
lnSlu59, lnSlu70, lnSlu79, lnSlu89	This is the Log of the population classified as “white collar workers” (sluzhashie) in the 1959 to 1989 census publications. The remaining categories are “workers” (rabochie) and a residual category including individuals working in the agricultural sector (kolkhozniki). It is constructed by taking the log of the total population employed in white collar positions.	Census 1959 for the respective republics, table 29; Census 1979, book 5, table 3; Census 1989, table 9:3
lnRab39	This is the Log of the population classified as “blue collar workers” (rabochie) in the 1939 census. The remaining categories are “white collar workers” (sluzhashie) and a residual category including individuals working in the agricultural sector (kolkhozniki). As the census information in the physical census publication for 1939 are put in comparison to its 1959 values, I reconstruct the total number of white collar workers based on the reported number of laborers with completed and incompletd secondary education in urban and rural regions and the reported country-wide labor force, which represents those individuals with occupations or who are employed in subsidiary farming and take the logarithm.	Census 1959 for the respective republics, table 31 & 37
lnRab59, lnRab70, lnRab79, lnRab89	This is the Log of the population classified as “blue collar workers” (rabochie) in the 1959 to 1989 census publications. The remaining categories are “white collar workers” (sluzhashie) and a residual category including individuals working in the agricultural sector (kolkhozniki). It is constructed by taking the log of the total population employed in blue collar positions.	Census volumes 1959 for the respective republics, table 29; Census 1970, vol. 5, table 3; Census 1979, vol. 7, tab 3; Census 1989, table 9:3

continued ...

Continuation of table 27

Variable	Description	Source
lnKolkh39	This is the Log of the population classified as “collective farmers” (kolkhozniki) in the 1939 census. The remaining categories are “white collar workers” (sluzhashie) and a residual category including individuals working blue collar professions (rabochie). As the census information in the physical census publication for 1939 are put in comparison to its 1959 values, I reconstruct the total number of collective farmers based on the reported number of individuals with completed and incomplete secondary education in urban and rural regions and the reported country-wide labor force, which represents those individuals with occupations or who are employed in subsidiary farming and take the logarithm.	Census 1959 for the respective republics, table 31 & 37
lnKolkh59, lnKolkh70, lnKolkh79, lnKolkh89	This is the Log of the population classified as “collective farmers” (kolkhozniki) in the 1959 to 1989 census publications. The remaining categories are “white collar workers” (sluzhashie) and individuals working in blue collar professions (rabochie). It is constructed by taking the log of the total population employed in blue collar positions.	Census volumes 1959 for the respective republics, table 29; Census 1970, vol. 5, table 3; Census 1979, vol. 7, tab 3; Census 1989, table 9:3
lnTer39	This is the log of the total population who acquired tertiary education in the regions that existed before December 31st, 1939 and which were consistently reported through 1989. It constructed by multiplying the share of tertiary educated citizens in urban and rural dwellings as tabulated in the census of 1959 with the overall population in the region an taking the logarithm.	Census 1959 for the respective republics, table 23
lnTer59, lnTer70, lnTer79, lnTer89	This is the log of the population, that has obtained tertiary education. It is constructed by taking the logarithm of total number citizens with completed higher ( <i>vysshim</i> ) and incomplete higher ( <i>nezakonchennym vysshim</i> ).	Census 1959 for the respective republics, table 22; Census 1970, vol. 3, table 2; Census 1979, vol. 3, table 4; Census 1989, table 6:2
lnSec39	This is the log of the total population who acquired secondary education in the regions that existed before December 31st, 1939 and which were consistently reported through 1989. It is constructed by multiplying the share of secondary educated citizens in urban and rural dwellings as tabulated in the census of 1959 with the overall population in the region an taking the logarithm.	Census 1959 for the respective republics, table 23
lnSec59, lnSec70, lnSec79, lnSec89	This is the log of the population, that has obtained secondary education. It is constructed by taking the logarithm of the citizens with special secondary ( <i>srednim spetsial'nyim</i> ), general secondary ( <i>srednim obshchim</i> ) and incomplete secondary ( <i>nepolnym srednim</i> ).	Census 1959 for the respective republics, table 22; Census 1970, vol. 3, table 2; Census 1979, vol. 3, table 4; Census 1989, table 6:2

continued ...

Continuation of table 27

Variable	Description	Source
lnPrim39	This is the log of the total population who acquired primary education in the regions that existed before December 31st, 1939 and which were consistently reported through 1989. It is constructed by calculating the regional share of primary educated individuals over all educated individuals as per the 1959 census and multiplying it with the number of individuals living in rural regions and taking the logarithm.	Census 1959 for the respective republics, table 23, <a href="http://www.demoscope.ru">www.demoscope.ru</a>
lnPrim59, lnPrim70, lnPrim79, lnPrim89	This is the log of the population, that has obtained primary education. It is constructed by taking the logarithm of total number citizens with primary education ( <i>nachal'nyy</i> ).	Census 1959 for the respective republics, table 22; Census 1970, vol. 3, table 2; Census 1979, vol. 3, table 4; Census 1989, table 6:2
npres	Percentage of voters who voted 'no' to the question "Do you consider it necessary to preserve the USSR as a renewed federation of equal sovereign republics, in which human rights and the freedoms of all nationalities will be fully guaranteed?" in the 1991 USSR referendum. It is constructed as $1 - votes$ in favor of the preservation.	<a href="https://www.electoralgeography.com">https://www.electoralgeography.com</a> ; <a href="http://www.gorby.ru">www.gorby.ru</a>
lnProts	Total number of protests and riots between 1987 and 1992 taken from Beissinger (2002).	xSub cross national data on subnational violence
MeskhTurks39, CrimeanTat39, Germans39, Kabardians39, Balkars39, Kalmyks39, Chechens39, Koreans39, Ingush39	This is the pre-war population of the ethnicities that are to be deported. <i>MeskhTurks39</i> includes not only Meskhetian Turks, but also Kurds, Turks and Kemshului Turks. <i>CrimeanTat39</i> are in Soviet Ukraine and Soviet Russia the "татары крымское" (Crimean Tatars) and in Georgia, Uzbekistan, Kazakhstan and Kyrgyzstan as "татары" (Tatars).	Polian (2004, supplement # 1) Lorimer (1946), <a href="http://www.demoscope.ru">http://www.demoscope.ru</a>
MeskhTurks53, CrimeanTat53, Germans53, Kabardians53, Balkars53, Kalmyks53, Chechens53, Koreans53, Ingush53	This is the postwar population of the ethnicities that were to be deported. <i>MeskhTurks53</i> includes not only Meskhetian Turks, but also Kurds, Turks and Kemshului Turks. <i>CrimeanTat53</i> are in Soviet Ukraine and Soviet Russia the "татары крымское" (Crimean Tatars) and in Georgia, Uzbekistan, Kazakhstan and Kyrgyzstan as "татары" (Tatars). Zero or missing values are replaced by their 1959 values	Zemskov (2005) Lorimer (1946), <a href="http://www.demoscope.ru">http://www.demoscope.ru</a>

continued ...

## Continuation of table 27

Variable	Description	Source
MeskhTurks59[-89], CrimeanTat59[-89], Germans59[-89], Kabardians59[-89], Balkars59[-89], Kalmyks59[-89], Chechens59[-89], Koreans59[-89], Ingush59[-89]	This is the postwar population of the ethnicities that are to be deported. MeskhTurks59[-89] includes not only Meskhetian Turks, but also Kurds, Turks and Kemshului Turks. CrimeanTat59[-89] are in Soviet Ukraine and Soviet Russia the “татары крымское” (Crimean Tatars) and in Georgia, Uzbekistan, Kazakhstan and Kyrgyzstan as “татары” (Tatars).	Zemskov (2005), Lorimer (1946), Urban and rural population of the USSR republics (except RSFSR) by sex and nationality [Городское и сельское население областей республик СССР (кроме РСФСР) по полу и национальности] from <a href="http://www.demoscope.ru">http://www.demoscope.ru</a>
Jews39[-89], JewsGorsk39[-89], JewsCrim39[-89], JewsAsia39[-89], Jews39[-89]	This is the pre- and postwar Jewish population as recorded in the all-union census and Altshuler (1993). It is a composite indicator collecting the number of Jews from European Russia, from the Caucasus, Central Asian republics and from Crimea.	Urban and rural population of the USSR republics (except RSFSR) by sex and nationality [Городское и сельское население областей республик СССР (кроме РСФСР) по полу и национальности] from <a href="http://www.demoscope.ru">http://www.demoscope.ru</a>
dpSet3959	Is the change in the percentage of rehabilitated and permanently exiled “special settlers” between 1939 and 1959. It is calculated based on the total number of Chechen, Ingush, Kalmyks, Balkars, Kabardians, Meskhetian Turks (Azeri), Germans, Crimean Tatars, Koreans at the moment of their departure in the origin region $i$ , that I reconstructed from supplement #1 in Polian (2004) and cross-referenced it with Lorimer (1946) and the 1939 All-Union census in order to obtain the total stock of settler in 1939. As the Korean population was already deported in 1937, I reconstructed its share based on the total number of Koreans as per the 1926 All-Union census, who resided in regions that belonged to the Soviet Union in 1939. The total number of citizens that will be later permanently and temporarily exiled is then divided over the total population in 1939 in region $i$ . The post-deportation share is calculated from the total number of rehabilitated and non-rehabilitated settler in their host regions as per January 1st, 1953 over the total population in region $i$ as per the All-Union Census. It is constructed as $\Delta Set_{i,39 \rightarrow 53} = \left( \frac{Set_{i,39}}{Pop_{i,39}} - \frac{Set_{i,53}}{Pop_{i,53}} \right) * 100\%$ .	Zemskov (2005), Lorimer (1946), <a href="http://www.demoscope.ru">www.demoscope.ru</a> ; Census 1959 for the respective republics

continued ...

Continuation of table 27

Variable	Description	Source
dpURSet3959	It is the change in the share of permanently exiled ethnicities between 1939 and 1959. It is constructed similar to the general settler variable but applied only to the four ethnicities that have not been restored in their administrative and political rights. It thus the overall change in the share of Germans, Crimean Tatars, Koreans and Meskhetian Turks. It is constructed as $\Delta E_{i,39 \rightarrow 59} = \left( \frac{E_{i,39}}{Pop_{i,39}} - \frac{E_{i,59}}{Pop_{i,59}} \right) * 100\%$ .	Zemskov (2005), Lorimer (1946), <a href="http://www.demoscope.ru/weekly/pril.php">http://www.demoscope.ru/weekly/pril.php</a> ; Census 1959 for the respective republics
dpRSet3959	It is the change in the share of rehabilitated settler between 1939 and 1959. It is constructed similar to the general settler variable but applied only to the four ethnicities that have not been restored in their administrative and political rights. It thus the overall change in the share of Chechens, Ingush, Kalmyks, Kabardians, Balkars. It is constructed as $\Delta R_{i,39 \rightarrow 59} = \left( \frac{R_{i,39}}{Pop_{i,39}} - \frac{R_{i,59}}{Pop_{i,59}} \right) * 100\%$ .	Zemskov (2005), Polian (2004, supplement # 1) Lorimer (1946), <a href="http://www.demoscope.ru">http://www.demoscope.ru</a> ; Census 1959 for the respective republics
dpJews3959	This is the change in the share of the Jewish population as a percentage of total region population in 1939 versus its 1959 values. It is constructed as $\Delta Jews_{i,39 \rightarrow 59} = \left( \frac{Jews_{i,39}}{Pop_{i,39}} - \frac{Jews_{i,59}}{Pop_{i,59}} \right) * 100\%$	<a href="http://www.demoscope.ru">http://www.demoscope.ru</a> , Altshuler (1993)
Nazi	An oblast' is classified as occupied if at least one city in the region has been occupied by the German Wehrmacht for at least six months. A city has been occupied if it is listed in Dudarenko, Perechnev, and Eliseev (1985). Cities that were only partially occupied according to this source are classified as occupied.	Dudarenko, Perechnev, and Eliseev (1985), <a href="https://www.soldat.ru/spravka/freedom/1-ssr-1.html">https://www.soldat.ru/spravka/freedom/1-ssr-1.html</a>
Gulag	The growth of labor camps within the Gulag system operating between 1917 to 1939 (pre-treatment) and 1940 to 1959 (post-treatment) in region $i$ . This variable matches all installations listed in Smirnov (1998) to the names of regions in the respective Soviet republics that existed before December 31st, 1939 and which are consistently reported through 1989. It is constructed $gGulag_{i,39 \rightarrow 59} = \frac{Gulag_{i,59} - Gulag_{i,39}}{Gulag_{i,39}}$ .	Smirnov (1998)
gdefInd	The growth of defense facilities, research, and design establishments operating in a given region between 1917 to 1939 (pre-treatment) and 1940 to 1959 (post-treatment). The growth variable is constructed by matching all 32,995 listed in Dexter and Rodionov (2020) database (version 21) to the names of the 1939 regions. I used the count of the number of operating establishments from 1917 to 1939 and 1940 to 1960 in each oblast'. This number excludes all facilities that were reported to have relocated from one location to another in 1941 to 1942 during the advancement of the German Wehrmacht. They have been identified by matching name, address and leadership personnel. The variable Growth Defense Industry is defined as $gDef_{i,39 \rightarrow 59} = \frac{Def_{i,59} - Def_{i,39}}{Def_{i,39}}$ , where I set $gDef_{i,39 \rightarrow 59} = 0$ if $Def_{i,59} = Def_{i,39} = 0$ and $Def_{i,t}$ is the count of facilities in oblast' $i$ .	Dexter and Rodionov (2020), version 21

continued ...

Continuation of table 27

Variable	Description	Source
lnPopT39, lnPopT59, lnPopT70, lnPopT79, lnPopT89	This is the log of the total population in 1939, 1959, 1970, 1979 and 1989. I adjust for changes in the administrative boundaries by accounting for neighborhood relations in 1939 for regions that existed before December 31st, 1939 and are continuously tracked through 1989.	<a href="http://www.demoscope.ru">www.demoscope.ru</a> ; Census 1959 for the respective republics, table 4; Census 1970, vol. 1, table 2; Census 1979, vol. 7, tab 3; Census 1989, table 1:3
lnPopU39	Log of the population dwelling in urban areas as per the 1939 All-union Census.	<a href="http://www.demoscope.ru">www.demoscope.ru</a>
lnPopR39	Log of the population dwelling in rural areas as per the 1939 All-union Census.	<a href="http://www.demoscope.ru">www.demoscope.ru</a>
dlogpop3959	This is the log of the total loss in population in region <i>i</i> between 1939 and 1959. It is constructed by deducting the total population in region <i>i</i> in 1959 from its total population in 1939 and taking the logarithm.	<a href="http://www.demoscope.ru">www.demoscope.ru</a> ; Census 1959 for the respective republics, table 4
dlogpop3959	This is the log of the total loss in population in region <i>i</i> between 1939 and 1959. It is constructed by deducting the total population in region <i>i</i> in 1959 from its total population in 1939 and taking the logarithm.	<a href="http://www.demoscope.ru">www.demoscope.ru</a> ; Census 1959 for the respective republics, table 4
sh_Slu_settlers, sh_Kolkh_settlers, sh_Prim_settlers, sh_Ter_settlers	This is the share of permanently exiled ethnicities; i.e. Meskhetian Turks, ethnic Germans, Crimean Tatars and Koreans, in white-collar and kolkhoz employment respectively primary and tertiary education. It is constructed using the 1989 numbers of employed ethnicities, split by the respective level of education. The latter is condensed into a three-tier structure, where the highest educational level, that is complete and incomplete tertiary education, corresponds to white-collar employment and so forth. Numbers smaller 0.25 and larger than 1 are dropped and subsequently replaced by their mean.	Census 1989 (GESIS archiv), table V9T2, V6T2A, V7T61_76, V7T93108
sh_Slu_rehab, sh_Kolkh_rehab, sh_Prim_rehab, sh_Ter_rehab	This is the share of rehabilitated ethnicities; i.e. Balkars, Kabardians, Ingush, Chechens, Kalmyks, Karachays, in white-collar and kolkhoz employment respectively primary and tertiary education. It is constructed using the 1989 numbers of employed ethnicities, split by the respective level of education. The latter is condensed into a three-tier structure, where the highest educational level, that is complete and incomplete tertiary education, corresponds to white-collar employment and so forth. Numbers smaller 0.25 and larger than 1 are dropped and subsequently replaced by their mean.	Census 1989 (GESIS archiv), table V9T2, V6T2A, V7T61_76, V7T9310
sh_Slu_Slavs, sh_Kolkh_Slavs, sh_Prim_Slavs, sh_Ter_Slavs	This is the share of the Slavic population; i.e. ethnic Russians, Belorussians and Ukrainians, in white-collar and kolkhoz employment respectively primary and tertiary education. It is constructed using the 1989 numbers of employed ethnicities, split by the respective level of education. The latter is condensed into a three-tier structure, where the highest educational level, that is complete and incomplete tertiary education, corresponds to white-collar employment and so forth.	Census 1989 (GESIS archiv), table V9T2, V6T2A, V7T61_76, V7T931

continued ...



Continuation of table 27

Variable	Description	Source
lnSlu_localexSlav59[-89], lnKolkh_localexSlav59[-89], lnPrim_localexSlav59[-89], lnTer_localexSlav59[-89]	This is the log-transformed total local population in white-collar and collective farm employment respectively primary and tertiary education. The local white-collar and collective farm employment respectively primary and tertiary education is constructed by subtracting (1-sh_Slu_Slavs -sh_Slu_settlers), (1-sh_Ter_Slavs -sh_Ter_settlers) respectively, (1-sh_Kolkh_Slavs -sh_Kolkh_settlers) and (1-sh_Prim_Slavs -sh_Prim_settlers). Each resulting local share is then multiplied by the overall totals and subsequently logarithmically transformed. Outliers are accounted for by Winsorizing the log-transformed data, which means that values smaller or larger three times its standard deviation, are replaced precisely this cut-off value.	Census 1989 (GESIS archiv), table V9T2, V6T2A, V7T61_76, V7T931, see above for Censuses 1959-89
outgroupUR89	It is the proportion of expected between-group ties ( $outgroup_i$ ) of permanently exiled on the basis of the probability of interaction with other ethnicities in region $j$ : $neighbor_{i-i,j} = \frac{2[n_i*(n-i)]}{totint_j}$ , where $n_i$ is the number of people in permanent exile, that is the number of Meskhetian Turks, Crimean Tatars, ethnic Germans and Koreans. Consequently, $n_{-i}$ is the number of all other people residing in the respective region, not deported at all or rehabilitated. The between-group interaction is calculated based on the total number of interactions ( $totint_j$ ) in a region $j$ , that is calculated as follows: $totint_j = \frac{N_j}{(N_j-1)}$ , where $N_j$ is the total population in the region $j$ .	<a href="http://www.demoscope.ru">http://www.demoscope.ru</a>
POL89	The ethnic polarization of the region calculated according Montalvo and Reynal-Querol (2005) as $POL89 = 1 - (\sum_{i=1}^k (\frac{0.5-p_i}{0.5})^2) * p_i$ . It involves a weighted sum of population shares, where the weights capture the squared deviation of each group from the maximum polarization share 1/2 as a proportion of 1/2.	<a href="http://www.demoscope.ru">http://www.demoscope.ru</a>

**Table 28:** Moran's I for the host regions

Variable	Stat	Mean	Std. Dev.	z-Score	p-value
Weights matrix: R					
Type: Distance-based (binary)					
Distance band: $0.0 < d \leq 1900.0$					
Row-standardized: Yes					
White-collar empl. '59	0.049	-0.021	0.031	2.260	0.024
White-collar empl. '70	0.043	-0.021	0.030	2.148	0.032
White-collar empl. '79	0.034	-0.021	0.029	1.883	0.060
White-collar empl. '89	0.030	-0.021	0.029	1.723	0.085
Blue-collar empl. '59	0.052	-0.021	0.032	2.318	0.020
Blue-collar empl. '70	0.068	-0.021	0.032	2.816	0.005
Blue-collar empl. '79	0.050	-0.021	0.031	2.258	0.024
Blue-collar empl. '89	0.060	-0.021	0.032	2.542	0.011
Kolkhozniki '59	0.084	-0.021	0.032	3.279	0.001
Kolkhozniki '70	0.079	-0.021	0.031	3.251	0.001
Kolkhozniki '79	0.093	-0.021	0.031	3.661	0.000
Kolkhozniki '89	0.112	-0.021	0.032	4.140	0.000
Tertiary educ. '59	0.026	-0.021	0.029	1.631	0.103
Tertiary educ. '70	0.026	-0.021	0.027	1.780	0.075
Tertiary educ. '79	0.022	-0.021	0.027	1.558	0.119
Tertiary educ. '89	0.015	-0.021	0.027	1.349	0.177
Secondary educ. '59	0.061	-0.021	0.031	2.608	0.009
Secondary educ. '70	0.058	-0.021	0.031	2.546	0.011
Secondary educ. '79	0.059	-0.021	0.031	2.567	0.010
Secondary educ. '89	0.051	-0.021	0.031	2.288	0.022
Primary educ. '59	0.071	-0.021	0.032	2.856	0.004
Primary educ. '70	0.077	-0.021	0.032	3.055	0.002
Primary educ. '79	0.088	-0.021	0.032	3.384	0.001
Primary educ. '89	0.076	-0.021	0.032	2.988	0.003
No. Jews '39	-0.021	-0.021	0.007	0.035	0.972
No. Jews '59	0.072	-0.021	0.028	3.354	0.001
npres	0.033	-0.021	0.029	1.835	0.066
No. Protests'87-92	-0.024	-0.021	0.015	-0.223	0.823
No. Jews '59	0.072	-0.021	0.028	3.354	0.001
No. Jews '39	-0.021	-0.021	0.007	0.035	0.972
Nazi	0.053	-0.021	0.031	2.390	0.017
No. gulags '40-59	0.014	-0.021	0.031	1.099	0.272
No. gulags '23-39	0.039	-0.021	0.031	1.953	0.051
Defense inst'39	0.040	-0.021	0.026	2.373	0.018
Defense inst'59	0.023	-0.021	0.025	1.716	0.086
Latitude	0.139	-0.021	0.033	4.882	0.000
Longitude	0.746	-0.021	0.032	23.893	0.000
Exiled '39	-0.004	-0.021	0.024	0.718	0.473
Rehabilitated '39	-0.020	-0.021	0.029	0.036	0.971
Exiled '59	0.110	-0.021	0.031	4.273	0.000
Rehabilitated '59	-0.009	-0.021	0.030	0.384	0.701

**Table 29:** Moran's I for the origin regions

Variable	Stat	Mean	Std. Dev.	z-Score	p-value
Weights matrix: S					
Type: Distance-based (binary)					
Distance band: $0.0 < d \leq 1900.0$					
Row-standardized: Yes					
White-collar empl. '59	0.049	-0.021	0.031	2.260	0.024
White-collar empl. '70	0.043	-0.021	0.030	2.148	0.032
White-collar empl. '79	0.034	-0.021	0.029	1.883	0.060
White-collar empl. '89	0.030	-0.021	0.029	1.723	0.085
Blue-collar empl. '59	0.052	-0.021	0.032	2.318	0.020
Blue-collar empl. '70	0.068	-0.021	0.032	2.816	0.005
Blue-collar empl. '79	0.050	-0.021	0.031	2.258	0.024
Blue-collar empl. '89	0.060	-0.021	0.032	2.542	0.011
Kolkhozniki '59	0.084	-0.021	0.032	3.279	0.001
Kolkhozniki '70	0.079	-0.021	0.031	3.251	0.001
Kolkhozniki '79	0.093	-0.021	0.031	3.661	0.000
Kolkhozniki '89	0.112	-0.021	0.032	4.140	0.000
Tertiary educ. '59	0.026	-0.021	0.029	1.631	0.103
Tertiary educ. '70	0.026	-0.021	0.027	1.780	0.075
Tertiary educ. '79	0.022	-0.021	0.027	1.558	0.119
Tertiary educ. '89	0.015	-0.021	0.027	1.349	0.177
Secondary educ. '59	0.061	-0.021	0.031	2.608	0.009
Secondary educ. '70	0.058	-0.021	0.031	2.546	0.011
Secondary educ. '79	0.059	-0.021	0.031	2.567	0.010
Secondary educ. '89	0.051	-0.021	0.031	2.288	0.022
Primary educ. '59	0.071	-0.021	0.032	2.856	0.004
Primary educ. '70	0.077	-0.021	0.032	3.055	0.002
Primary educ. '79	0.088	-0.021	0.032	3.384	0.001
Primary educ. '89	0.076	-0.021	0.032	2.988	0.003
No. Jews '39	-0.021	-0.021	0.007	0.035	0.972
No. Jews '59	0.072	-0.021	0.028	3.354	0.001
npres	0.033	-0.021	0.029	1.835	0.066
No. Protests'87-92	-0.024	-0.021	0.015	-0.223	0.823
No. Jews '59	0.072	-0.021	0.028	3.354	0.001
No. Jews '39	-0.021	-0.021	0.007	0.035	0.972
Nazi	0.053	-0.021	0.031	2.390	0.017
No. gulags '40-59	0.014	-0.021	0.031	1.099	0.272
No. gulags '23-39	0.039	-0.021	0.031	1.953	0.051
Defense inst'39	0.040	-0.021	0.026	2.373	0.018
Defense inst'59	0.023	-0.021	0.025	1.716	0.086
Latitude	0.139	-0.021	0.033	4.882	0.000
Longitude	0.746	-0.021	0.032	23.893	0.000
Exiled '39	-0.004	-0.021	0.024	0.718	0.473
Rehabilitated '39	-0.020	-0.021	0.029	0.036	0.971
Exiled '59	0.110	-0.021	0.031	4.273	0.000
Rehabilitated '59	-0.009	-0.021	0.030	0.384	0.701

**Table 30: LM-test results for spatial terms in the host regions**

**(a) Highest occupation-skill level**

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Slu89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Slu39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: R  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	-9.298	1	2.000
Lagrange multiplier	18.977	1	0.000
Robust Lagrange multiplier	420.914	1	0.000
Spatial lag:			
Lagrange multiplier	7080.091	1	0.000
Robust Lagrange multiplier	7482.027	1	0.000

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Ter89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Ter39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: R  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	-2.808	1	1.995
Lagrange multiplier	3.639	1	0.056
Robust Lagrange multiplier	1842.532	1	0.000
Spatial lag:			
Lagrange multiplier	2.0e+04	1	0.000
Robust Lagrange multiplier	2.1e+04	1	0.000

**(b) Lowest occupation-skill level**

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Kolkh89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Kolkh39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: R  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	5.466	1	0.000
Lagrange multiplier	1.494	1	0.222
Robust Lagrange multiplier	3580.811	1	0.000
Spatial lag:			
Lagrange multiplier	5949.407	1	0.000
Robust Lagrange multiplier	9528.723	1	0.000

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Prim89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Prim39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: R  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	-25.856	1	2.000
Lagrange multiplier	108.070	1	0.000
Robust Lagrange multiplier	579.291	1	0.000
Spatial lag:			
Lagrange multiplier	5264.748	1	0.000
Robust Lagrange multiplier	5735.969	1	0.000

**(c) Social conflict**

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{otpres} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Slu39} + \ln\text{Ter39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: R  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	13.359	1	0.000
Lagrange multiplier	17.673	1	0.000
Robust Lagrange multiplier	852.111	1	0.000
Spatial lag:			
Lagrange multiplier	224.121	1	0.000
Robust Lagrange multiplier	1058.559	1	0.000

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Prots} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Slu39} + \ln\text{Ter39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: R  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	-9.241	1	2.000
Lagrange multiplier	18.914	1	0.000
Robust Lagrange multiplier	5.567	1	0.018
Spatial lag:			
Lagrange multiplier	51.207	1	0.000
Robust Lagrange multiplier	37.860	1	0.000

**Table 31:** LM-test results for spatial terms in the origin regions

**(a) Highest occupation-skill level**

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Slu89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Slu39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: S  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	2.837	1	0.005
Lagrange multiplier	0.245	1	0.621
Robust Lagrange multiplier	0.197	1	0.657
Spatial lag:			
Lagrange multiplier	0.310	1	0.577
Robust Lagrange multiplier	0.262	1	0.609

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Ter89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Ter39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: S  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	-8.967	1	2.000
Lagrange multiplier	27.844	1	0.000
Robust Lagrange multiplier	146.222	1	0.000
Spatial lag:			
Lagrange multiplier	3365.692	1	0.000
Robust Lagrange multiplier	3484.070	1	0.000

**(b) Lowest occupation-skill level**

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Kolkh89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Kolkh39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: S  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	-1.502	1	1.867
Lagrange multiplier	2.741	1	0.098
Robust Lagrange multiplier	0.928	1	0.335
Spatial lag:			
Lagrange multiplier	52.120	1	0.000
Robust Lagrange multiplier	50.307	1	0.000

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Prim89} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Prim39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: S  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	9.620	1	0.000
Lagrange multiplier	14.571	1	0.000
Robust Lagrange multiplier	405.621	1	0.000
Spatial lag:			
Lagrange multiplier	1.2e+04	1	0.000
Robust Lagrange multiplier	1.3e+04	1	0.000

**(c) Social conflict**

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{otpres} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Slu39} + \ln\text{Ter39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: S  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	5.149	1	0.000
Lagrange multiplier	2.575	1	0.109
Robust Lagrange multiplier	1623.133	1	0.000
Spatial lag:			
Lagrange multiplier	481.086	1	0.000
Robust Lagrange multiplier	2101.643	1	0.000

Diagnostic tests for spatial dependence in OLS regression

Fitted model

$$\ln\text{Prots} = \text{dpSet3959} + \text{Nazi} + \text{dpJews3959} + \ln\text{Slu39} + \ln\text{Ter39} + \ln\text{PopU39} + \ln\text{PopT89} + \text{Gulag} + \text{Lat} + \text{Long} + \text{gdefInd} + \text{dlogpop3959}$$


---

Weights matrix

Name: S  
 Type: Distance-based (binary)  
 Distance band: 0.0 < d ≤ 1900.0  
 Row-standardized: Yes

---

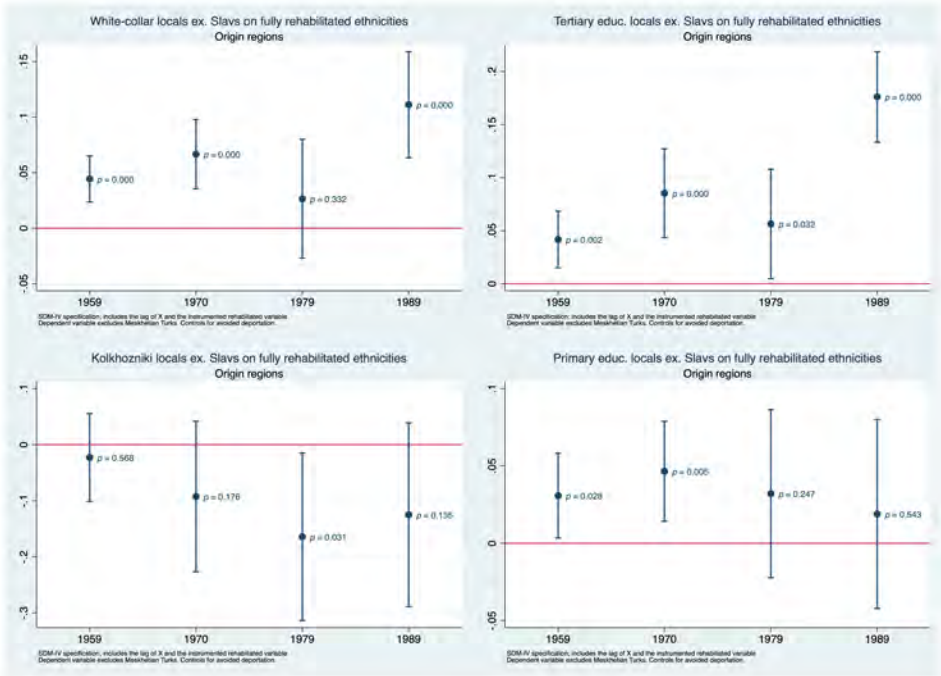
Diagnostics

Test	Statistic	df	p-value
Spatial error:			
Moran 's I	7.926	1	0.000
Lagrange multiplier	8.825	1	0.003
Robust Lagrange multiplier	2.086	1	0.149
Spatial lag:			
Lagrange multiplier	51.652	1	0.000
Robust Lagrange multiplier	44.912	1	0.000

# C. Robustness Checks

## C.1. Distributional Effects

**Figure 13:** Robustness: Rehabilitated ethnicities (by exiled who avoided deportation), origin regions and excl. Slavs





**Table 32:** Results: White-collar locals ex. Slavs on avoided deportation, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.044*** (0.011)	0.067*** (0.016)	0.026 (0.027)	0.111*** (0.024)
Log avoided deportation	0.020 (0.019)	-0.004 (0.024)	0.027 (0.048)	0.012 (0.040)
Log Russians	0.094** (0.041)	0.078* (0.040)	0.279*** (0.058)	0.136*** (0.047)
Log white-collar empl. '39	-0.036 (0.052)	-0.109** (0.048)	-0.111 (0.089)	0.057 (0.059)
Spatial Lag: Change in exiled '39-59'	-0.046** (0.021)	-0.026 (0.021)	-0.018 (0.035)	-0.043 (0.029)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.99	0.97	0.98
Chi-squared	4195.305	4023.913	1424.971	2361.929
Wald Test	0.001	0.002	0.664	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 33:** Results: Tertiary educ. locals ex. Slavs on avoided deportation, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.042*** (0.014)	0.085*** (0.021)	0.056** (0.026)	0.176*** (0.022)
Log avoided deportation	-0.083*** (0.027)	-0.099*** (0.035)	-0.036 (0.050)	-0.126*** (0.038)
Log Russians	0.036 (0.056)	0.036 (0.056)	0.222*** (0.061)	-0.013 (0.046)
Log tertiary educ '39	0.469*** (0.078)	0.300*** (0.080)	0.176* (0.090)	0.293*** (0.059)
Spatial Lag: Change in exiled '39-59'	-0.027 (0.030)	-0.016 (0.030)	-0.020 (0.037)	-0.055** (0.027)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.98	0.97	0.98
Chi-squared	2467.969	2334.578	1450.803	2959.254
Wald Test	0.644	0.593	0.865	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 34:** Results: Kolkhozniki locals ex. Slavs on avoided deportation, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	-0.023 (0.040)	-0.092 (0.068)	-0.164** (0.076)	-0.125 (0.084)
Log avoided deportation	0.030 (0.066)	0.004 (0.110)	0.078 (0.151)	-0.002 (0.156)
Log Russians	-0.166 (0.149)	0.075 (0.189)	0.473** (0.206)	0.296 (0.219)
Log kolkhozniki empl. '39	0.109 (0.102)	0.042 (0.112)	0.153 (0.124)	0.116 (0.124)
Spatial Lag: Change in exiled '39-59'	-0.045 (0.071)	-0.084 (0.094)	-0.114 (0.110)	-0.113 (0.112)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.90	0.88	0.87	0.86
Chi-squared	420.928	354.218	334.113	290.334
Wald Test	0.240	0.408	0.559	0.558

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

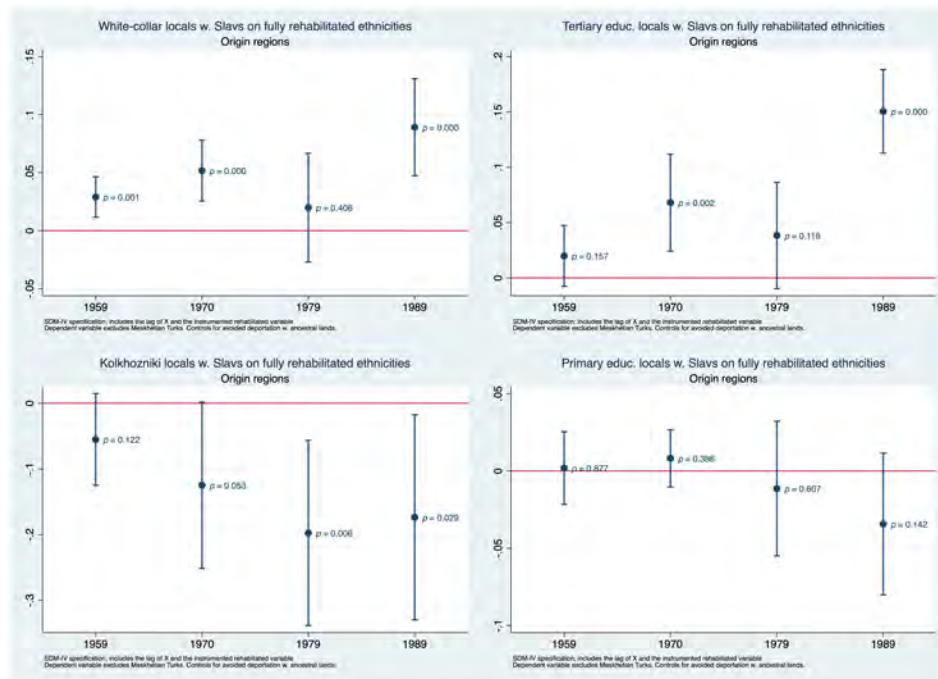
**Table 35:** Results: Primary educ. locals ex. Slavs on avoided deportation, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.031** (0.014)	0.046*** (0.016)	0.032 (0.028)	0.019 (0.031)
Log avoided deportation	0.013 (0.028)	0.027 (0.027)	0.058 (0.053)	0.059 (0.054)
Log Russians	0.244*** (0.058)	0.202*** (0.044)	0.291*** (0.069)	0.306*** (0.070)
Log primary educ '39	0.127** (0.063)	0.136*** (0.042)	0.237*** (0.068)	0.275*** (0.063)
Spatial Lag: Change in exiled '39-59'	-0.074** (0.031)	-0.009 (0.023)	-0.002 (0.039)	0.018 (0.039)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.99	0.96	0.96
Chi-squared	2207.092	3583.429	1226.562	1343.509
Wald Test	0.003	0.013	0.307	0.438

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Figure 14:** Robustness: Rehabilitated ethnicities (by exiled with ancestral lands), origin regions and excl. Slavs



**Table 36:** Results: White-collar locals ex. Slavs on avoided deportation w. ancestral lands, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.045*** (0.011)	0.064*** (0.016)	0.033 (0.027)	0.110*** (0.025)
Log avoided deportation w. ancestral lands	0.016 (0.020)	-0.003 (0.025)	0.019 (0.045)	0.005 (0.042)
Log Russians	0.090** (0.041)	0.079** (0.040)	0.269*** (0.054)	0.134*** (0.046)
Log white-collar empl. '39	-0.034 (0.053)	-0.113** (0.048)	-0.100 (0.089)	0.052 (0.059)
Spatial Lag: Change in exiled '39-59'	-0.047** (0.022)	-0.026 (0.021)	-0.018 (0.036)	-0.043 (0.030)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.99	0.97	0.98
Chi-squared	4158.129	4024.968	1426.168	2358.064
Wald Test	0.001	0.004	0.634	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 37:** Results: Tertiary educ. locals ex. Slavs on avoided deportation w. ancestral lands, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.043*** (0.014)	0.089*** (0.022)	0.064** (0.026)	0.182*** (0.021)
Log avoided deportation w. ancestral lands	-0.081*** (0.027)	-0.098*** (0.036)	-0.044 (0.047)	-0.141*** (0.038)
Log Russians	0.049 (0.055)	0.041 (0.055)	0.224*** (0.056)	0.002 (0.043)
Log tertiary educ '39	0.464*** (0.079)	0.289*** (0.080)	0.180** (0.090)	0.282*** (0.058)
Spatial Lag: Change in exiled '39-59'	-0.022 (0.030)	-0.010 (0.031)	-0.016 (0.037)	-0.044 (0.027)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.98	0.97	0.98
Chi-squared	2431.055	2299.669	1465.357	3114.578
Wald Test	0.756	0.717	0.911	0.002

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 38:** Results: Kolkhozniki locals ex. Slavs on avoided deportation w. ancestral lands, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	-0.023 (0.040)	-0.092 (0.070)	-0.166** (0.077)	-0.139 (0.085)
Log avoided deportation w. ancestral lands	0.024 (0.066)	0.001 (0.113)	0.096 (0.142)	0.075 (0.158)
Log Russians	-0.170 (0.148)	0.074 (0.189)	0.460** (0.199)	0.316 (0.215)
Log kolkhozniki empl. '39	0.107 (0.101)	0.041 (0.111)	0.154 (0.124)	0.118 (0.124)
Spatial Lag: Change in exiled '39-59'	-0.046 (0.071)	-0.084 (0.094)	-0.122 (0.111)	-0.122 (0.113)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.90	0.88	0.87	0.86
Chi-squared	420.110	354.276	335.782	291.747
Wald Test	0.232	0.405	0.533	0.541

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

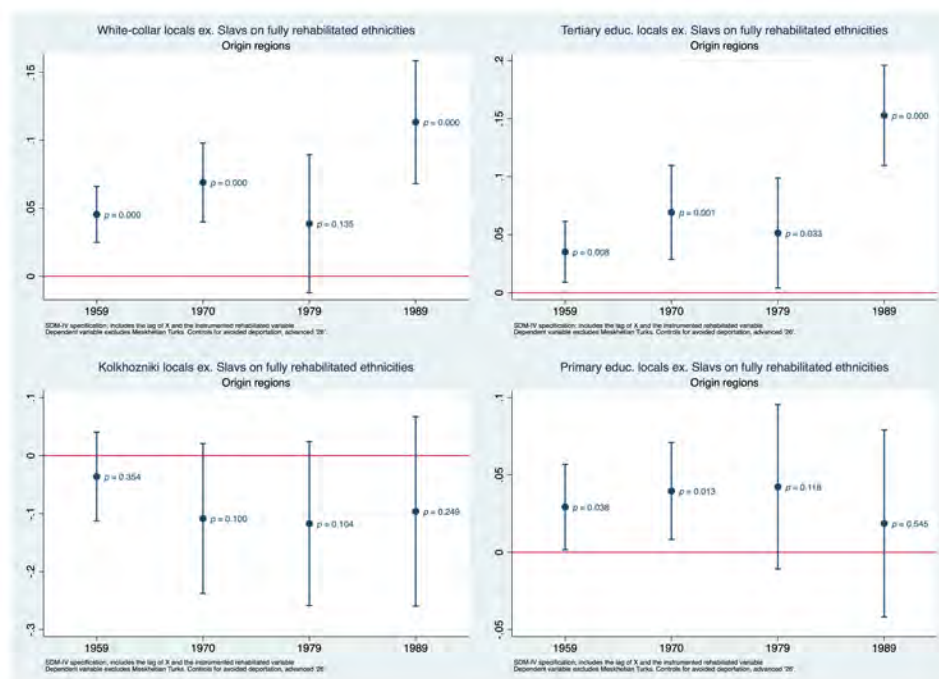
**Table 39:** Results: Primary educ. locals ex. Slavs on avoided deportation w. ancestral lands, origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.031** (0.014)	0.047*** (0.016)	0.032 (0.027)	0.011 (0.029)
Log avoided deportation w. ancestral lands	0.019 (0.028)	0.036 (0.028)	0.069 (0.049)	0.109** (0.053)
Log Russians	0.243*** (0.057)	0.200*** (0.043)	0.278*** (0.064)	0.308*** (0.064)
Log primary educ '39	0.131** (0.063)	0.143*** (0.042)	0.247*** (0.068)	0.281*** (0.060)
Spatial Lag: Change in exiled '39-59'	-0.076** (0.031)	-0.012 (0.023)	-0.007 (0.039)	0.008 (0.038)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.99	0.96	0.97
Chi-squared	2220.196	3656.745	1252.968	1444.361
Wald Test	0.002	0.006	0.210	0.222

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Figure 15:** Robustness: Rehabilitated ethnicities (by exiled, culturally advanced in 1926), origin regions and excl. Slavs



**Table 40:** Results: White-collar locals ex. Slavs on avoided deportation, advanced '26', origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.045*** (0.011)	0.069*** (0.015)	0.039 (0.026)	0.113*** (0.023)
Log avoided deportation, advanced '26'	0.014 (0.017)	-0.010 (0.022)	-0.008 (0.039)	-0.007 (0.032)
Log Russians	0.084** (0.041)	0.079** (0.038)	0.261*** (0.052)	0.131*** (0.044)
Log white-collar empl. '39	-0.031 (0.052)	-0.108** (0.048)	-0.107 (0.091)	0.051 (0.060)
Spatial Lag: Change in exiled '39-59'	-0.044** (0.022)	-0.027 (0.021)	-0.015 (0.035)	-0.042 (0.029)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.99	0.97	0.98
Chi-squared	4142.152	4032.705	1423.263	2357.737
Wald Test	0.001	0.002	0.691	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-59.

**Table 41:** Results: Tertiary educ. locals ex. Slavs on avoided deportation, advanced '26', origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.035*** (0.013)	0.069*** (0.021)	0.051** (0.024)	0.153*** (0.022)
Log avoided deportation, advanced '26'	-0.077*** (0.024)	-0.067** (0.033)	-0.017 (0.042)	-0.048 (0.033)
Log Russians	0.086 (0.054)	0.090* (0.054)	0.239*** (0.055)	0.044 (0.046)
Log tertiary educ '39	0.424*** (0.077)	0.250*** (0.083)	0.167* (0.095)	0.250*** (0.066)
Spatial Lag: Change in exiled '39-59'	-0.035 (0.030)	-0.021 (0.032)	-0.024 (0.037)	-0.062** (0.030)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.98	0.97	0.98
Chi-squared	2513.054	2149.240	1432.118	2497.850
Wald Test	0.456	0.467	0.791	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-59.



**Table 42:** Results: Kolkhozniki locals ex. Slavs on avoided deportation, advanced '26', origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	-0.036 (0.039)	-0.108* (0.066)	-0.117 (0.072)	-0.096 (0.083)
Log avoided deportation, advanced '26'	0.087 (0.058)	0.067 (0.101)	-0.045 (0.123)	-0.059 (0.123)
Log Russians	-0.220 (0.149)	0.054 (0.187)	0.440** (0.198)	0.303 (0.211)
Log kolkhozniki empl. '39	0.149 (0.101)	0.062 (0.113)	0.125 (0.125)	0.098 (0.127)
Spatial Lag: Change in exiled '39-59'	-0.037 (0.070)	-0.081 (0.094)	-0.108 (0.110)	-0.111 (0.112)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.90	0.88	0.87	0.86
Chi-squared	439.605	357.132	331.883	290.720
Wald Test	0.174	0.401	0.594	0.603

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

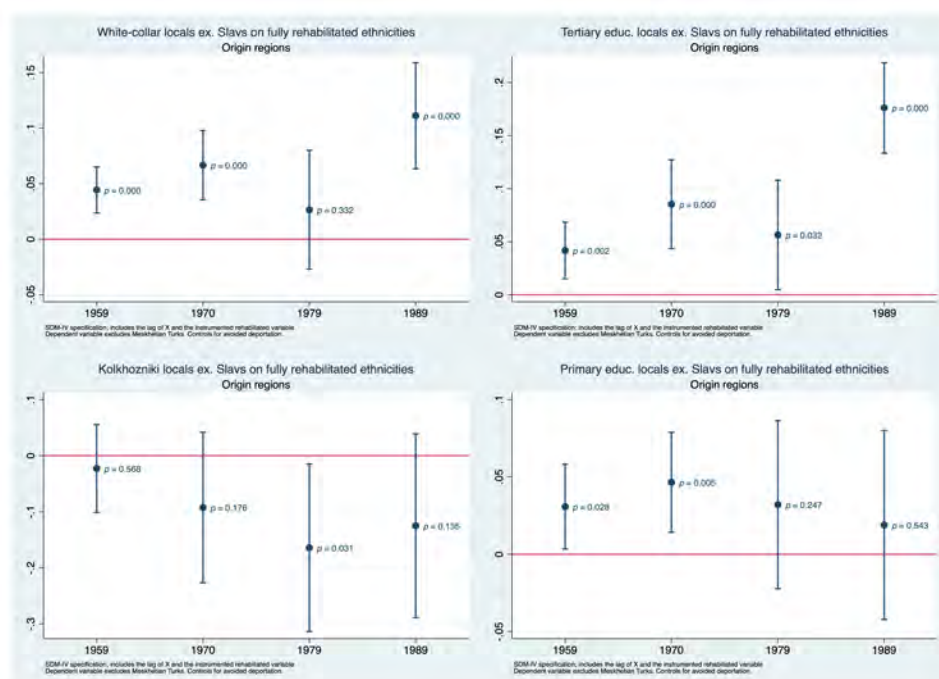
**Table 43:** Results: Primary educ. locals ex. Slavs on avoided deportation, advanced '26', origin regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log returnees	0.029** (0.014)	0.040** (0.016)	0.042 (0.027)	0.019 (0.031)
Log avoided deportation, advanced '26'	-0.002 (0.025)	0.042* (0.024)	0.013 (0.043)	0.016 (0.042)
Log Russians	0.242*** (0.057)	0.193*** (0.041)	0.264*** (0.064)	0.289*** (0.066)
Log primary educ '39	0.123* (0.063)	0.120*** (0.042)	0.234*** (0.069)	0.269*** (0.064)
Spatial Lag: Change in exiled '39-59'	-0.073** (0.031)	-0.008 (0.023)	0.004 (0.039)	0.020 (0.039)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.98	0.99	0.96	0.96
Chi-squared	2194.269	3686.148	1201.374	1307.680
Wald Test	0.005	0.033	0.453	0.655

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Figure 16:** Rehabilitated ethnicities (by exiled who avoided deportation), host regions and excl. Slavs



**Table 44:** Results: White-collar locals ex. Slavs on exiled, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.008 (0.012)	0.014 (0.024)	0.018 (0.025)	0.010 (0.025)
Log exiled	0.017 (0.016)	0.013 (0.021)	-0.011 (0.029)	-0.004 (0.027)
Log Russians	0.096** (0.044)	0.176*** (0.039)	0.062 (0.039)	0.043 (0.034)
Log white-collar empl. '39	0.163*** (0.050)	0.202*** (0.064)	0.179*** (0.060)	0.044 (0.052)
Spatial Lag: Change in exiled '39-59'	-0.039** (0.017)	-0.068*** (0.021)	-0.043* (0.022)	-0.012 (0.020)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.98	0.98	0.99
Chi-squared	4504.922	2597.538	2721.632	3970.109
Wald Test	0.062	0.001	0.011	0.813

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 45:** Results: Tertiary educ. locals ex. Slavs on exiled, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.001 (0.037)	0.081*** (0.029)	0.072*** (0.025)	-0.237** (0.101)
Log exiled	-0.025 (0.047)	-0.028 (0.027)	-0.051* (0.030)	0.118 (0.106)
Log Russians	0.163 (0.132)	0.226*** (0.048)	0.110** (0.043)	0.174 (0.141)
Log tertiary educ '39	0.310** (0.127)	0.434*** (0.072)	0.371*** (0.056)	0.186 (0.188)
Spatial Lag: Change in exiled '39-59'	0.035 (0.051)	-0.073*** (0.026)	-0.026 (0.024)	0.127 (0.082)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.93	0.97	0.98	0.85
Chi-squared	609.398	1852.459	2839.028	282.624
Wald Test	0.643	0.022	0.417	0.275

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 46:** Results: Kolkhozniki locals ex. Slavs on exiled, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.073 (0.046)	0.058 (0.102)	0.018 (0.120)	-0.135 (0.146)
Log exiled	0.073 (0.064)	0.199** (0.091)	0.064 (0.145)	0.119 (0.166)
Log Russians	-0.637*** (0.177)	-0.406** (0.178)	-0.115 (0.210)	-0.085 (0.227)
Log kolkhozniki empl. '39	0.226*** (0.079)	0.529*** (0.107)	0.358*** (0.120)	0.362*** (0.124)
Spatial Lag: Change in exiled '39-59'	-0.005 (0.067)	-0.181** (0.088)	-0.116 (0.110)	-0.049 (0.122)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.90	0.85	0.82	0.80
Chi-squared	418.756	282.939	225.012	188.237
Wald Test	0.672	0.118	0.266	0.517

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

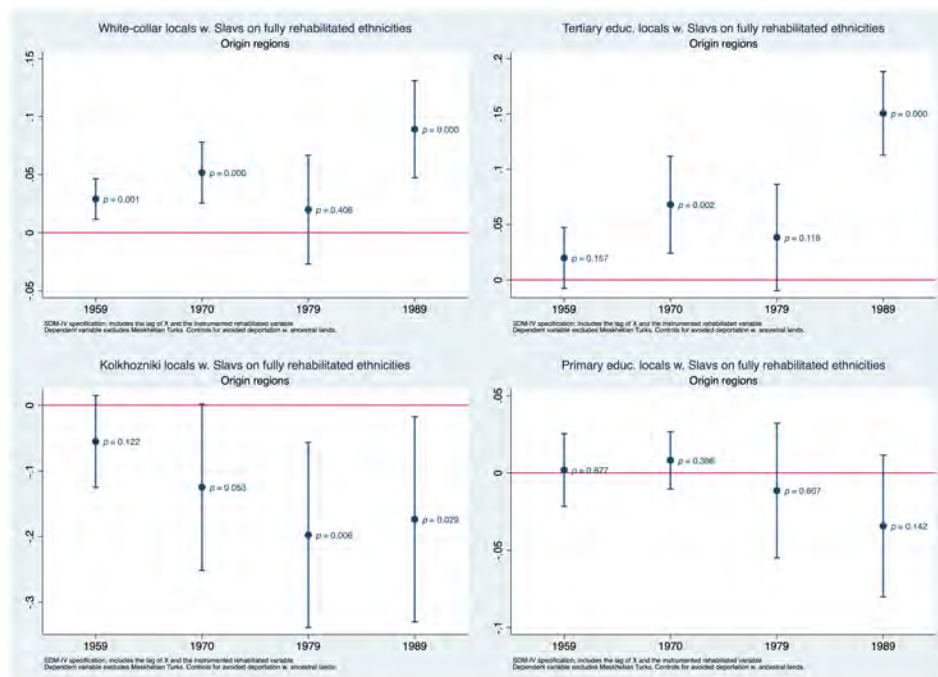
**Table 47:** Results: Primary educ. locals ex. Slavs on exiled, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	-0.012** (0.006)	0.022 (0.020)	0.041* (0.022)	-0.230* (0.125)
Log exiled	-0.003 (0.008)	-0.005 (0.016)	-0.011 (0.023)	0.118 (0.117)
Log Russians	0.247*** (0.021)	0.243*** (0.029)	0.076** (0.032)	0.270* (0.148)
Log primary educ '39	-0.037 (0.031)	0.270*** (0.046)	0.224*** (0.051)	0.094 (0.241)
Spatial Lag: Change in exiled '39-59'	0.000 (0.008)	-0.020 (0.016)	-0.004 (0.018)	0.133 (0.090)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	1.00	0.99	0.99	0.80
Chi-squared	2.3e + 04	5018.110	4506.711	203.378
Wald Test	0.067	0.060	0.076	0.242

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Figure 17:** Robustness: Rehabilitated ethnicities (by exiled with ancestral lands), host regions and excl. Slavs



**Table 48:** Results: White-collar locals ex. Slavs on exiled w. ancestral lands, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.007 (0.012)	0.015 (0.024)	0.015 (0.025)	0.002 (0.025)
Log exiled w. ancestral lands	0.027* (0.016)	0.004 (0.017)	-0.004 (0.029)	0.012 (0.028)
Log Russians	0.091** (0.043)	0.175*** (0.039)	0.064* (0.039)	0.042 (0.034)
Log white-collar empl. '39	0.164*** (0.049)	0.203*** (0.064)	0.180*** (0.060)	0.047 (0.052)
Spatial Lag: Change in exiled '39-59'	-0.043*** (0.016)	-0.063*** (0.020)	-0.047** (0.022)	-0.018 (0.019)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.98	0.98	0.99
Chi-squared	4663.586	2579.845	2716.603	3987.916
Wald Test	0.025	0.002	0.008	0.632

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 49:** Results: Tertiary educ. locals ex. Slavs on exiled w. ancestral lands, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.001 (0.037)	0.088*** (0.029)	0.073*** (0.026)	-0.226** (0.106)
Log exiled w. ancestral lands	-0.024 (0.048)	-0.034 (0.022)	-0.051* (0.031)	0.107 (0.112)
Log Russians	0.171 (0.133)	0.232*** (0.047)	0.120*** (0.042)	0.143 (0.141)
Log tertiary educ '39	0.312** (0.126)	0.427*** (0.072)	0.375*** (0.056)	0.180 (0.187)
Spatial Lag: Change in exiled '39-59'	0.033 (0.049)	-0.076*** (0.024)	-0.027 (0.023)	0.135* (0.079)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.93	0.97	0.98	0.85
Chi-squared	609.019	1897.932	2834.354	281.325
Wald Test	0.654	0.007	0.358	0.222

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 50:** Results: Kolkhozniki locals ex. Slavs on exiled w. ancestral lands, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.071 (0.046)	0.037 (0.099)	0.027 (0.123)	-0.123 (0.154)
Log exiled w. ancestral lands	0.041 (0.065)	0.202*** (0.071)	0.032 (0.146)	0.065 (0.170)
Log Russians	-0.648*** (0.179)	-0.407** (0.173)	-0.121 (0.210)	-0.094 (0.229)
Log kolkhozniki empl. '39	0.209*** (0.077)	0.500*** (0.103)	0.347*** (0.118)	0.343*** (0.121)
Spatial Lag: Change in exiled '39-59'	0.011 (0.067)	-0.170** (0.081)	-0.102 (0.111)	-0.023 (0.121)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.89	0.86	0.82	0.79
Chi-squared	410.487	303.071	224.157	186.495
Wald Test	0.626	0.099	0.283	0.532

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 51:** Results: Primary educ. locals ex. Slavs on exiled w. ancestral lands, host regions

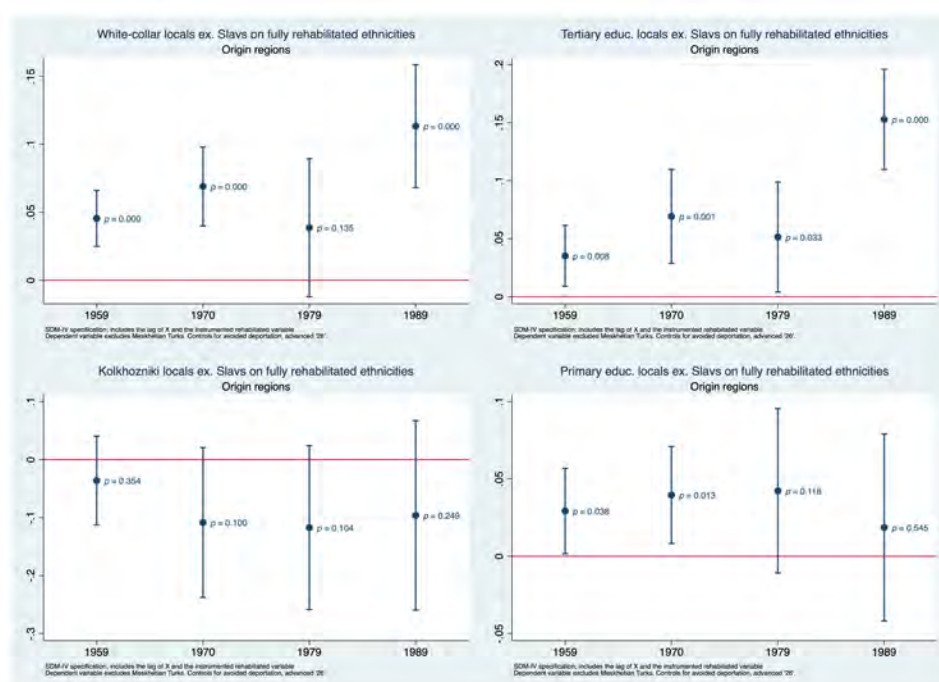
	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	-0.012* (0.006)	0.019 (0.021)	0.040* (0.023)	-0.209 (0.128)
Log exiled w. ancestral lands	0.001 (0.008)	-0.001 (0.014)	-0.012 (0.024)	0.123 (0.122)
Log Russians	0.248*** (0.021)	0.245*** (0.029)	0.079** (0.031)	0.227 (0.146)
Log primary educ '39	-0.035 (0.031)	0.266*** (0.046)	0.222*** (0.051)	0.128 (0.240)
Spatial Lag: Change in exiled '39-59'	-0.002 (0.008)	-0.021 (0.015)	-0.003 (0.018)	0.130 (0.086)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	1.00	0.99	0.99	0.81
Chi-squared	2.3e + 04	5019.106	4515.540	203.948
Wald Test	0.110	0.060	0.071	0.274

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.



**Figure 18:** Robustness: Rehabilitated ethnicities (by exiled, culturally advanced in 1926), host regions and excl. Slavs



**Table 52:** Results: White-collar locals ex. Slavs on exiled, advanced '26, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.007 (0.012)	0.009 (0.025)	0.029 (0.025)	0.026 (0.025)
Log exiled, advanced '26	-0.001 (0.014)	0.010 (0.019)	-0.027 (0.024)	-0.017 (0.021)
Log Russians	0.092** (0.045)	0.176*** (0.039)	0.055 (0.039)	0.037 (0.034)
Log white-collar empl. '39	0.166*** (0.050)	0.209*** (0.064)	0.168*** (0.060)	0.035 (0.052)
Spatial Lag: Change in exiled '39-59'	-0.028 (0.018)	-0.066*** (0.022)	-0.031 (0.023)	-0.004 (0.022)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.99	0.98	0.98	0.99
Chi-squared	4394.831	2593.168	2778.986	3966.783
Wald Test	0.246	0.002	0.017	0.938

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 53:** Results: Tertiary educ. locals ex. Slavs on exiled, advanced '26, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.007 (0.036)	0.079*** (0.030)	0.062** (0.025)	-0.243** (0.101)
Log exiled, advanced '26	-0.052 (0.043)	-0.026 (0.025)	-0.031 (0.026)	0.058 (0.086)
Log Russians	0.129 (0.132)	0.227*** (0.048)	0.112** (0.043)	0.186 (0.143)
Log tertiary educ '39	0.270** (0.131)	0.422*** (0.074)	0.359*** (0.058)	0.180 (0.193)
Spatial Lag: Change in exiled '39-59'	0.062 (0.055)	-0.068** (0.028)	-0.029 (0.025)	0.152* (0.089)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.93	0.97	0.98	0.85
Chi-squared	627.185	1856.248	2774.063	277.172
Wald Test	0.384	0.046	0.392	0.212

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 54:** Results: Kolkhozniki locals ex. Slavs on exiled, advanced '26, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	0.077* (0.044)	0.024 (0.102)	0.003 (0.123)	-0.142 (0.148)
Log exiled, advanced '26	0.131** (0.052)	0.202** (0.079)	0.075 (0.119)	0.110 (0.128)
Log Russians	-0.580*** (0.172)	-0.351** (0.176)	-0.091 (0.214)	-0.056 (0.229)
Log kolkhozniki empl. '39	0.216*** (0.073)	0.493*** (0.104)	0.351*** (0.118)	0.352*** (0.121)
Spatial Lag: Change in exiled '39-59'	-0.081 (0.071)	-0.221** (0.092)	-0.134 (0.117)	-0.073 (0.132)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	0.90	0.86	0.82	0.80
Chi-squared	465.362	293.461	226.128	189.327
Wald Test	0.414	0.055	0.241	0.488

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

**Table 55:** Results: Primary educ. locals ex. Slavs on exiled, advanced '26, host regions

	Dependent variable in the Soviet censuses			
	1959	1970	1979	1989
Log rehabilitated	-0.014** (0.006)	0.016 (0.021)	0.036 (0.022)	-0.223* (0.124)
Log exiled, advanced '26	-0.010 (0.006)	0.009 (0.015)	-0.000 (0.019)	0.077 (0.092)
Log Russians	0.245*** (0.021)	0.247*** (0.029)	0.079** (0.033)	0.278* (0.150)
Log primary educ '39	-0.039 (0.030)	0.261*** (0.046)	0.220*** (0.051)	0.107 (0.241)
Spatial Lag: Change in exiled '39-59'	0.008 (0.009)	-0.028 (0.017)	-0.008 (0.019)	0.137 (0.097)
Controls	✓	✓	✓	✓
Observations	49	49	49	49
Pseudo $R^2$	1.00	0.99	0.99	0.80
Chi-squared	2.5e + 04	5067.429	4502.178	201.769
Wald Test	0.014	0.041	0.084	0.272

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Spatial Durbin IV Model (SDM-IV) with robust standard errors in parentheses is reported. The SDM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59.

## C.2. Social Conflict

**Table 56:** Secessionist voting in the 1991 referendum, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation w. ancestral lands '89'	-0.041 (0.028)	-0.068*** (0.026)	-0.107** (0.049)	-0.057 (0.054)	-0.058 (0.053)
Log returnees '89'	0.006 (0.013)	0.023* (0.012)	0.031** (0.015)	0.006 (0.018)	0.009 (0.017)
Log Russians '89		-0.073** (0.028)	-0.068** (0.028)	-0.047 (0.031)	-0.044 (0.032)
Polarization index '89		-0.130 (0.095)	-0.165 (0.102)	-0.131 (0.107)	-0.127 (0.108)
Between-group IA, exiled '89'			1.776 (1.921)	-0.208 (2.042)	-0.095 (1.950)
<b>By employment:</b>					
Log white-collar returnees '89				0.153 (0.117)	0.144 (0.114)
Log blue-collar returnees '89				-0.096 (0.126)	-0.087 (0.124)
Log kolkhozniki returnees '89				-0.063*** (0.024)	-0.060** (0.024)
Spatial Lag: Not preserve '91	0.135 (0.263)	0.029 (0.237)	-0.083 (0.267)	0.148 (0.261)	0.155 (0.247)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.14	0.29	0.28	0.39	0.37
Chi-squared	7.688	20.182	21.480	32.877	35.428

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 57:** Secessionist voting in the 1991 referendum, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation '89, advanced '26'	-0.035*	-0.040**	-0.034*	-0.033*	-0.032*
	(0.020)	(0.019)	(0.020)	(0.018)	(0.017)
Log returnees '89'	0.008	0.016	0.016	-0.000	0.003
	(0.012)	(0.012)	(0.012)	(0.014)	(0.013)
Log Russians '89		-0.057**	-0.067**	-0.041	-0.036
		(0.028)	(0.029)	(0.029)	(0.030)
Polarization index '89		-0.132	-0.106	-0.110	-0.102
		(0.098)	(0.098)	(0.096)	(0.094)
Between-group IA, exiled '89'			-1.255	-1.684*	-1.630
			(1.083)	(1.008)	(1.001)
<b>By employment:</b>					
Log white-collar returnees '89				0.166	0.157
				(0.109)	(0.102)
Log blue-collar returnees '89				-0.094	-0.086
				(0.122)	(0.117)
Log kolkhozniki returnees '89				-0.072***	-0.068***
				(0.023)	(0.023)
Spatial Lag: Not preserve '91	-0.076	-0.231	-0.053	0.115	0.157
	(0.250)	(0.234)	(0.271)	(0.248)	(0.234)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.12	0.23	0.27	0.42	0.39
Chi-squared	8.603	17.128	19.044	36.198	40.730

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 58:** Protesting and rioting 1987-92, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation w. ancestral lands '89'	-0.037 (0.289)	-0.113 (0.281)	-0.925 (0.702)	0.545 (0.674)	0.879 (0.739)
Log returnees '89'	-0.162 (0.146)	-0.103 (0.144)	-0.110 (0.142)	-0.298* (0.164)	-0.323* (0.171)
Log Russians '89		-0.725** (0.319)	-0.698** (0.315)	0.003 (0.289)	0.104 (0.296)
Polarization index '89		1.490 (1.087)	1.375 (1.073)	2.262** (0.931)	2.505*** (0.931)
Log between-group IA, avoided dep. '89'			0.830 (0.651)	-0.135 (0.589)	-0.335 (0.595)
<b>By employment:</b>					
Log white-collar returnees '89				3.855*** (1.144)	4.167*** (1.165)
Log blue-collar returnees '89				-2.591** (1.247)	-2.838** (1.269)
Log kolkhozniki returnees '89				-0.723*** (0.238)	-0.743*** (0.226)
Spatial Lag: Log protests and riots '87-92	0.457* (0.274)	0.495* (0.255)	0.591** (0.258)	0.472** (0.210)	0.417** (0.185)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.33	0.45	0.45	0.69	0.68
Chi-squared	34.651	49.090	53.886	161.514	208.570

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).



**Table 59:** Protesting and rioting 1987-92, origin regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log avoided deportation '89, advanced '26'	0.037 (0.228)	-0.011 (0.217)	-0.053 (0.290)	-0.030 (0.224)	-0.029 (0.226)
Log returnees '89'	-0.219 (0.144)	-0.125 (0.143)	-0.132 (0.145)	-0.222 (0.149)	-0.188 (0.136)
Log Russians '89		-0.695** (0.311)	-0.678** (0.321)	-0.028 (0.296)	0.027 (0.296)
Polarization index '89		1.497 (1.092)	1.503 (1.090)	2.048** (0.917)	2.094** (0.897)
Log between-group IA, avoided dep. '89'			0.081 (0.350)	0.320 (0.282)	0.356 (0.272)
<b>By employment:</b>					
Log white-collar returnees '89				3.374*** (1.018)	3.342*** (0.978)
Log blue-collar returnees '89				-2.119* (1.146)	-2.015* (1.104)
Log kolkhozniki returnees '89				-0.649*** (0.223)	-0.641*** (0.219)
Spatial Lag: Log protests and riots '87-92	0.508* (0.261)	0.467* (0.249)	0.448* (0.272)	0.476** (0.234)	0.408* (0.209)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.33	0.46	0.47	0.69	0.69
Chi-squared	36.403	49.303	49.922	149.008	172.724

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 60:** Robustness: Secessionist voting in the 1991 referendum, origin regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log avoided deportation '89'	-0.102** (0.042)	-0.101** (0.042)	-0.115*** (0.043)	-0.107*** (0.041)	-0.100*** (0.036)
Log returnees '89'	0.015 (0.016)	0.013 (0.014)	0.011 (0.016)	0.008 (0.015)	0.013 (0.013)
Log Russians '89	-0.053* (0.031)	-0.053* (0.031)	-0.060** (0.030)	-0.060** (0.030)	-0.052* (0.030)
Polarization index '89	-0.173* (0.100)	-0.175* (0.100)	-0.184* (0.100)	-0.174* (0.099)	-0.173* (0.095)
Between-group IA, exiled '89'	1.528 (1.771)	1.412 (1.695)	1.919 (1.775)	1.483 (1.602)	1.355 (1.406)
<b>By employment:</b>					
Log white-collar returnees '89	0.172* (0.102)	0.173* (0.102)	0.181 (0.111)	0.188* (0.110)	0.173* (0.102)
Log blue-collar returnees '89	-0.107 (0.115)	-0.107 (0.116)	-0.117 (0.122)	-0.124 (0.122)	-0.108 (0.115)
Log kolkhozniki returnees '89	-0.062*** (0.023)	-0.063*** (0.022)	-0.065*** (0.023)	-0.067*** (0.023)	-0.063*** (0.022)
Spatial Lag: Not preserve '91	-0.002 (0.259)	-0.016 (0.255)	-0.133 (0.237)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.43	0.43	0.45	0.45	0.43
Chi-squared	42.699	42.352	41.216	40.569	42.561
Overall model significance	0.001	0.001	0.002	0.002	0.001

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 61:** Robustness: Secessionist voting in the 1991 referendum, origin regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log avoided deportation w. ancestral lands '89'	-0.058 (0.053)	-0.058 (0.053)	-0.063 (0.053)	-0.063 (0.052)	-0.069 (0.050)
Log returnees '89'	0.009 (0.019)	0.009 (0.017)	0.003 (0.018)	0.003 (0.017)	0.013 (0.017)
Log Russians '89	-0.044 (0.033)	-0.044 (0.032)	-0.051 (0.032)	-0.051 (0.032)	-0.048 (0.031)
Polarization index '89	-0.127 (0.108)	-0.127 (0.108)	-0.145 (0.106)	-0.146 (0.105)	-0.147 (0.103)
Between-group IA, exiled '89'	-0.093 (2.049)	-0.095 (1.950)	0.076 (2.032)	0.090 (1.906)	0.419 (1.788)
<b>By employment:</b>					
Log white-collar returnees '89	0.144 (0.114)	0.144 (0.114)	0.161 (0.122)	0.161 (0.121)	0.134 (0.116)
Log blue-collar returnees '89	-0.087 (0.124)	-0.087 (0.124)	-0.107 (0.131)	-0.107 (0.129)	-0.079 (0.126)
Log kolkhozniki returnees '89	-0.060** (0.024)	-0.060** (0.024)	-0.064*** (0.025)	-0.064*** (0.024)	-0.059** (0.024)
Spatial Lag: Not preserve '91	0.156 (0.251)	0.155 (0.247)	0.005 (0.238)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.37	0.37	0.40	0.40	0.38
Chi-squared	35.427	35.427	32.053	32.052	32.784
Overall model significance	0.012	0.008	0.031	0.022	0.012

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 62:** Robustness: Secessionist voting in the 1991 referendum, origin regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log avoided deportation '89, advanced '26'	−0.034* (0.018)	−0.032* (0.017)	−0.036* (0.019)	−0.037* (0.019)	−0.035** (0.017)
Log returnees '89'	0.007 (0.015)	0.003 (0.013)	−0.000 (0.016)	−0.000 (0.015)	0.005 (0.014)
Log Russians '89	−0.038 (0.031)	−0.036 (0.030)	−0.046 (0.030)	−0.045 (0.030)	−0.039 (0.030)
Polarization index '89	−0.100 (0.094)	−0.102 (0.094)	−0.116 (0.099)	−0.117 (0.098)	−0.116 (0.093)
Between-group IA, exiled '89'	−1.405 (1.136)	−1.630 (1.001)	−1.369 (1.075)	−1.341 (1.012)	−1.452 (0.923)
<b>By employment:</b>					
Log white-collar returnees '89	0.155 (0.102)	0.157 (0.102)	0.169 (0.115)	0.168 (0.115)	0.152 (0.106)
Log blue-collar returnees '89	−0.086 (0.117)	−0.086 (0.117)	−0.098 (0.127)	−0.097 (0.126)	−0.080 (0.120)
Log kolkhozniki returnees '89	−0.068*** (0.023)	−0.068*** (0.023)	−0.074*** (0.024)	−0.073*** (0.023)	−0.069*** (0.023)
Spatial Lag: Not preserve '91	0.170 (0.230)	0.157 (0.234)	0.018 (0.230)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.40	0.39	0.42	0.42	0.40
Chi-squared	40.861	40.731	35.700	35.688	37.074
Overall model significance	0.003	0.002	0.011	0.008	0.003

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 63:** Robustness: Protesting and rioting 1987-92, origin regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log avoided deportation '89'	1.856** (0.826)	1.946** (0.794)	1.314 (0.882)	1.223 (0.853)	1.187 (0.881)
Log returnees '89'	-0.473*** (0.156)	-0.388*** (0.143)	-0.359** (0.160)	-0.335** (0.148)	-0.102 (0.132)
Log Russians '89	0.222 (0.285)	0.085 (0.272)	0.016 (0.283)	0.032 (0.280)	0.034 (0.309)
Polarization index '89	2.516*** (0.861)	2.849*** (0.870)	2.213** (0.925)	2.186** (0.924)	2.478** (0.993)
Log between-group IA, avoided dep. '89'	-1.498** (0.748)	-1.404* (0.739)	-1.149 (0.847)	-1.064 (0.821)	-0.753 (0.842)
<b>By employment:</b>					
Log white-collar returnees '89	3.777*** (0.857)	3.628*** (0.877)	3.796*** (1.032)	3.773*** (1.032)	3.308*** (1.042)
Log blue-collar returnees '89	-2.733*** (1.001)	-2.703*** (1.027)	-2.756** (1.158)	-2.685** (1.146)	-2.027* (1.177)
Log kolkhozniki returnees '89	-0.844*** (0.205)	-0.809*** (0.210)	-0.842*** (0.237)	-0.827*** (0.234)	-0.724*** (0.246)
Spatial Lag: Log protests and riots '87-92	0.319 (0.241)	0.576*** (0.182)	0.090 (0.227)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.72	0.72	0.72	0.72	0.65
Chi-squared	267.641	252.400	126.149	125.484	137.094
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 64:** Robustness: Protesting and rioting 1987-92, origin regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log avoided deportation w. ancestral lands '89'	0.482 (0.736)	0.879 (0.739)	-0.013 (0.643)	-0.013 (0.639)	0.914 (0.743)
Log returnees '89'	-0.347** (0.169)	-0.323* (0.171)	-0.250 (0.159)	-0.250 (0.155)	-0.155 (0.159)
Log Russians '89	0.177 (0.301)	0.104 (0.296)	0.017 (0.290)	0.018 (0.286)	0.081 (0.314)
Polarization index '89	2.033** (0.909)	2.505*** (0.931)	1.869** (0.932)	1.869** (0.932)	2.466** (0.993)
Log between-group IA, avoided dep. '89'	-0.239 (0.591)	-0.335 (0.596)	0.081 (0.583)	0.081 (0.580)	-0.400 (0.635)
<b>By employment:</b>					
Log white-collar returnees '89	3.992*** (1.117)	4.167*** (1.165)	3.627*** (1.144)	3.627*** (1.144)	4.012*** (1.248)
Log blue-collar returnees '89	-2.569** (1.209)	-2.838** (1.269)	-2.318* (1.227)	-2.318* (1.226)	-2.508* (1.338)
Log kolkhozniki returnees '89	-0.753*** (0.225)	-0.743*** (0.226)	-0.694*** (0.241)	-0.694*** (0.241)	-0.739*** (0.249)
Spatial Lag: Log protests and riots '87-92	0.121 (0.234)	0.417** (0.185)	0.002 (0.226)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.70	0.68	0.71	0.71	0.64
Chi-squared	197.566	208.570	118.466	118.465	149.842
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).



**Table 65:** Robustness: Protesting and rioting 1987-92, origin regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log avoided deportation '89, advanced '26'	0.155 (0.240)	-0.029 (0.226)	-0.024 (0.232)	-0.023 (0.225)	-0.254 (0.218)
Log returnees '89'	-0.318** (0.145)	-0.188 (0.136)	-0.248 (0.151)	-0.249* (0.141)	-0.034 (0.123)
Log Russians '89	0.147 (0.295)	0.027 (0.296)	0.021 (0.292)	0.020 (0.287)	0.035 (0.312)
Polarization index '89	1.865** (0.854)	2.094** (0.897)	1.874** (0.916)	1.874** (0.916)	2.005** (0.965)
Log between-group IA, avoided dep. '89'	-0.001 (0.299)	0.356 (0.272)	0.091 (0.301)	0.090 (0.297)	0.527* (0.275)
<b>By employment:</b>					
Log white-collar returnees '89	3.669*** (0.939)	3.342*** (0.978)	3.623*** (1.058)	3.624*** (1.056)	3.065*** (1.067)
Log blue-collar returnees '89	-2.255** (1.057)	-2.015* (1.104)	-2.308** (1.161)	-2.312** (1.151)	-1.608 (1.173)
Log kolkhozniki returnees '89	-0.701*** (0.209)	-0.641*** (0.219)	-0.695*** (0.220)	-0.695*** (0.220)	-0.605*** (0.233)
Spatial Lag: Log protests and riots '87-92	0.154 (0.238)	0.408* (0.209)	-0.005 (0.231)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.70	0.69	0.71	0.71	0.66
Chi-squared	196.660	172.723	118.501	118.500	118.927
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 66:** Secessionist voting in the 1991 referendum, host regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log exiled w. ancestral lands '89'	-0.027 (0.018)	-0.027 (0.017)	0.006 (0.025)	0.009 (0.024)	0.011 (0.025)
Log rehabilitated '89'	-0.006 (0.022)	-0.013 (0.019)	-0.013 (0.018)	-0.006 (0.019)	-0.007 (0.020)
Log Russians '89		0.069** (0.029)	0.075*** (0.029)	0.056* (0.032)	0.058* (0.033)
Polarization index '89		-0.155* (0.088)	-0.150* (0.086)	-0.134 (0.085)	-0.146 (0.105)
Between-group IA, exiled '89'			-0.863* (0.493)	-0.780 (0.483)	-0.827* (0.497)
<b>By employment:</b>					
Log white-collar settler '89				0.068 (0.116)	0.068 (0.116)
Log blue-collar settler '89				-0.105 (0.108)	-0.096 (0.108)
Log kolkhozniki settler '89				0.001 (0.017)	-0.002 (0.016)
Spatial Lag: Not preserve '91	-0.299 (0.248)	-0.521** (0.214)	-0.458** (0.211)	-0.453** (0.221)	-0.376* (0.224)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.54	0.67	0.69	0.70	0.70
Chi-squared	72.747	77.020	84.398	92.936	78.376

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 67:** Secessionist voting in the 1991 referendum, host regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log exiled '89, advanced '26	-0.029** (0.012)	-0.024** (0.012)	-0.010 (0.015)	-0.004 (0.016)	-0.004 (0.017)
Log rehabilitated '89'	-0.001 (0.020)	-0.011 (0.018)	-0.007 (0.018)	-0.002 (0.018)	-0.003 (0.019)
Log Russians '89		0.067** (0.029)	0.074*** (0.029)	0.058* (0.032)	0.061* (0.033)
Polarization index '89		-0.115 (0.091)	-0.125 (0.089)	-0.121 (0.089)	-0.138 (0.111)
Between-group IA, exiled '89'			-0.610 (0.408)	-0.592 (0.404)	-0.615 (0.413)
<b>By employment:</b>					
Log white-collar settler '89				0.061 (0.117)	0.060 (0.115)
Log blue-collar settler '89				-0.094 (0.111)	-0.083 (0.111)
Log kolkhozniki settler '89				-0.000 (0.017)	-0.003 (0.016)
Spatial Lag: Not preserve '91	-0.332 (0.238)	-0.525** (0.211)	-0.468** (0.209)	-0.456** (0.221)	-0.389* (0.235)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.58	0.68	0.69	0.70	0.70
Chi-squared	82.951	80.679	87.257	93.901	76.179

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 68:** Protesting and rioting 1987-92, host regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log exiled w. ancestral lands '89'	-0.017 (0.196)	-0.009 (0.193)	-1.967** (0.884)	-1.841** (0.891)	-1.798* (0.935)
Log rehabilitated '89'	0.156 (0.209)	0.173 (0.207)	0.333 (0.209)	0.209 (0.220)	0.187 (0.240)
Log Russians '89		-0.002 (0.332)	0.195 (0.314)	0.550* (0.321)	0.560 (0.342)
Polarization index '89		-1.176 (0.993)	-1.127 (0.923)	-1.065 (0.893)	-0.850 (0.930)
Log between-group IA, exiled '89'			1.948** (0.867)	1.647* (0.884)	1.581* (0.904)
<b>By employment:</b>					
Log white-collar settler '89				-0.975 (1.256)	-0.669 (1.404)
Log blue-collar settler '89				1.770 (1.152)	1.564 (1.258)
Log kolkhozniki settler '89				-0.243 (0.183)	-0.302 (0.186)
Spatial Lag: Log protests and riots '87-92	-0.638*** (0.240)	-0.688*** (0.240)	-0.691*** (0.228)	-0.560** (0.250)	-0.394* (0.216)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.63	0.64	0.65	0.70	0.71
Chi-squared	79.849	85.291	101.751	125.440	113.822

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 69:** Protesting and rioting 1987-92, host regions

	Spatial Durbin Error Model (SDEM-IV)				SDEM
	(1)	(2)	(3)	(4)	(5)
Log exiled '89, advanced '26	-0.080 (0.143)	-0.065 (0.144)	-0.523* (0.301)	-1.015*** (0.291)	-1.034*** (0.295)
Log rehabilitated '89'	0.142 (0.204)	0.219 (0.199)	0.181 (0.194)	-0.028 (0.177)	-0.034 (0.181)
Log Russians '89		0.016 (0.326)	-0.010 (0.311)	0.655** (0.299)	0.677** (0.306)
Polarization index '89		-1.018 (1.045)	-0.409 (1.071)	0.494 (0.980)	0.667 (0.986)
Log between-group IA, exiled '89'			0.680* (0.398)	1.001*** (0.369)	0.995*** (0.371)
<b>By employment:</b>					
Log white-collar settler '89				-0.730 (1.181)	-0.559 (1.252)
Log blue-collar settler '89				2.541** (1.067)	2.435** (1.198)
Log kolkhozniki settler '89				-0.232 (0.172)	-0.274 (0.179)
Spatial Lag: Log protests and riots '87-92	-0.606** (0.238)	-0.660*** (0.241)	-0.667*** (0.233)	-0.460* (0.237)	-0.335 (0.210)
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.63	0.64	0.66	0.74	0.74
Chi-squared	80.086	85.921	95.229	153.777	128.355

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (4), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (5) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 70:** Robustness: Secessionist voting in the 1991 referendum, host regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log exiled '89'	0.004 (0.025)	0.003 (0.024)	0.005 (0.023)	0.008 (0.023)	0.006 (0.024)
Log rehabilitated '89'	-0.004 (0.019)	-0.004 (0.019)	-0.001 (0.019)	-0.001 (0.019)	-0.003 (0.019)
Log Russians '89	0.058* (0.033)	0.059* (0.033)	0.055* (0.031)	0.057* (0.032)	0.059* (0.033)
Polarization index '89	-0.141 (0.114)	-0.143 (0.107)	-0.086 (0.084)	-0.074 (0.085)	-0.082 (0.097)
Between-group IA, exiled '89'	-0.608 (0.531)	-0.712 (0.485)	-0.576 (0.517)	-0.539 (0.526)	-0.789* (0.476)
<b>By employment:</b>					
Log white-collar settler '89	0.065 (0.115)	0.063 (0.115)	0.067 (0.120)	0.065 (0.122)	0.052 (0.123)
Log blue-collar settler '89	-0.090 (0.111)	-0.092 (0.110)	-0.108 (0.112)	-0.096 (0.113)	-0.090 (0.116)
Log kolkhozniki settler '89	-0.004 (0.016)	-0.003 (0.016)	-0.004 (0.017)	-0.011 (0.017)	-0.010 (0.017)
Spatial Lag: Not preserve '91	-0.347 (0.250)	-0.377 (0.231)	-0.248 (0.210)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.70	0.70	0.69	0.68	0.68
Chi-squared	72.899	78.162	111.199	105.895	100.980
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.



**Table 71:** Robustness: Secessionist voting in the 1991 referendum, host regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log exiled w. ancestral lands '89'	0.012 (0.025)	0.011 (0.025)	0.011 (0.024)	0.014 (0.024)	0.009 (0.025)
Log rehabilitated '89'	-0.007 (0.020)	-0.007 (0.020)	-0.003 (0.019)	-0.003 (0.020)	-0.005 (0.020)
Log Russians '89	0.057* (0.033)	0.058* (0.033)	0.054* (0.031)	0.055* (0.032)	0.059* (0.033)
Polarization index '89	-0.143 (0.111)	-0.146 (0.105)	-0.088 (0.084)	-0.076 (0.085)	-0.085 (0.097)
Between-group IA, exiled '89'	-0.720 (0.539)	-0.827* (0.497)	-0.641 (0.514)	-0.597 (0.522)	-0.845* (0.493)
<b>By employment:</b>					
Log white-collar settler '89	0.070 (0.115)	0.068 (0.116)	0.070 (0.120)	0.069 (0.122)	0.055 (0.123)
Log blue-collar settler '89	-0.093 (0.109)	-0.096 (0.108)	-0.109 (0.110)	-0.096 (0.112)	-0.089 (0.114)
Log kolkhozniki settler '89	-0.004 (0.016)	-0.002 (0.016)	-0.003 (0.017)	-0.010 (0.017)	-0.010 (0.017)
Spatial Lag: Not preserve '91	-0.342 (0.242)	-0.376* (0.224)	-0.244 (0.209)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.70	0.70	0.70	0.68	0.68
Chi-squared	72.956	78.376	111.698	106.496	99.039
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 72:** Robustness: Secessionist voting in the 1991 referendum, host regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log exiled '89, advanced '26	-0.002 (0.017)	-0.004 (0.017)	-0.001 (0.016)	0.002 (0.016)	-0.003 (0.016)
Log rehabilitated '89'	-0.003 (0.019)	-0.003 (0.019)	0.000 (0.019)	0.000 (0.019)	-0.001 (0.019)
Log Russians '89	0.059* (0.034)	0.061* (0.033)	0.055* (0.032)	0.056* (0.032)	0.060* (0.033)
Polarization index '89	-0.140 (0.117)	-0.138 (0.111)	-0.082 (0.089)	-0.074 (0.091)	-0.070 (0.104)
Between-group IA, exiled '89'	-0.536 (0.455)	-0.615 (0.413)	-0.506 (0.455)	-0.449 (0.461)	-0.664 (0.405)
<b>By employment:</b>					
Log white-collar settler '89	0.062 (0.115)	0.060 (0.115)	0.065 (0.120)	0.064 (0.123)	0.050 (0.123)
Log blue-collar settler '89	-0.082 (0.112)	-0.083 (0.111)	-0.102 (0.113)	-0.091 (0.114)	-0.082 (0.117)
Log kolkhozniki settler '89	-0.004 (0.016)	-0.003 (0.016)	-0.004 (0.017)	-0.012 (0.017)	-0.011 (0.017)
Spatial Lag: Not preserve '91	-0.364 (0.254)	-0.389* (0.235)	-0.255 (0.210)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.70	0.70	0.69	0.68	0.68
Chi-squared	71.164	76.179	111.098	105.531	103.546
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Spatial Durbin Error Model with robust standard errors in parentheses is reported in column (1) to (5), while a Spatial Durbin IV Model (SDEM-IV) is reported in column (6) for robustness. The SDEM-IV instruments the log total population of rehabilitated ethnicities in the indicated year with its change from 1939-59. All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the inverted (!) log percentage of votes in favor of preserving the Soviet Union in 1991, that is the secessionist voting behavior.

**Table 73:** Robustness: Protesting and rioting 1987-92, host regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log exiled '89'	-2.761** (1.083)	-2.658** (1.091)	-2.659** (1.060)	-2.434** (1.080)	-2.152** (1.058)
Log rehabilitated '89'	-0.036 (0.185)	-0.083 (0.190)	-0.043 (0.187)	-0.026 (0.192)	-0.056 (0.202)
Log Russians '89	0.439 (0.303)	0.368 (0.320)	0.410 (0.307)	0.483 (0.312)	0.409 (0.368)
Polarization index '89	-0.741 (0.923)	-0.775 (0.970)	-0.597 (0.871)	-0.240 (0.860)	-0.068 (0.941)
Log between-group IA, exiled '89'	2.735** (1.104)	2.492** (1.092)	2.626** (1.074)	2.393** (1.093)	2.078* (1.072)
<b>By employment:</b>					
Log white-collar settler '89	-0.211 (1.312)	-0.118 (1.404)	-0.027 (1.237)	0.313 (1.250)	1.087 (1.265)
Log blue-collar settler '89	2.582** (1.231)	2.233* (1.326)	2.321** (1.107)	2.098* (1.128)	1.189 (1.171)
Log kolkhozniki settler '89	-0.259 (0.192)	-0.264 (0.181)	-0.291* (0.174)	-0.388** (0.166)	-0.447*** (0.161)
Spatial Lag: Log protests and riots '87-92	-0.330 (0.235)	-0.494** (0.214)	-0.339 (0.233)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.72	0.72	0.73	0.72	0.64
Chi-squared	147.301	115.971	137.464	127.819	106.034
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 74:** Robustness: Protesting and rioting 1987-92, host regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log exiled w. ancestral lands '89'	-1.631*	-1.798*	-1.592*	-1.520*	-1.741*
	(0.953)	(0.935)	(0.909)	(0.924)	(1.009)
Log rehabilitated '89'	0.226	0.187	0.207	0.208	0.155
	(0.243)	(0.240)	(0.218)	(0.222)	(0.258)
Log Russians '89	0.612*	0.560	0.589*	0.639**	0.606
	(0.340)	(0.342)	(0.319)	(0.322)	(0.374)
Polarization index '89	-0.730	-0.850	-0.696	-0.389	-0.386
	(0.914)	(0.930)	(0.896)	(0.873)	(0.949)
Log between-group IA, exiled '89'	1.517*	1.581*	1.485*	1.410	1.477
	(0.919)	(0.904)	(0.884)	(0.899)	(0.923)
<b>By employment:</b>					
Log white-collar settler '89	-0.672	-0.669	-0.584	-0.261	0.011
	(1.346)	(1.404)	(1.251)	(1.244)	(1.567)
Log blue-collar settler '89	1.712	1.564	1.630	1.486	1.133
	(1.231)	(1.259)	(1.142)	(1.157)	(1.363)
Log kolkhozniki settler '89	-0.309	-0.302	-0.321*	-0.400**	-0.429**
	(0.194)	(0.186)	(0.179)	(0.170)	(0.176)
Spatial Lag: Log protests and riots '87-92	-0.276	-0.394*	-0.277		
	(0.237)	(0.216)	(0.236)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.71	0.71	0.71	0.71	0.68
Chi-squared	128.681	113.826	126.045	120.050	101.856
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).

**Table 75:** Robustness: Protesting and rioting 1987-92, host regions

	Robustness checks				
	(1) GNS	(2) SDEM	(3) SDM	(4) SLX	(5) SEM
Log exiled '89, advanced '26	-1.011*** (0.292)	-1.034*** (0.295)	-0.975*** (0.292)	-0.991*** (0.295)	-1.086*** (0.302)
Log rehabilitated '89'	0.049 (0.188)	-0.034 (0.181)	-0.003 (0.178)	0.004 (0.180)	-0.049 (0.187)
Log Russians '89	0.755*** (0.291)	0.677** (0.306)	0.689** (0.299)	0.735** (0.299)	0.736** (0.323)
Polarization index '89	0.734 (0.972)	0.667 (0.986)	0.797 (0.966)	1.070 (0.936)	1.129 (0.966)
Log between-group IA, exiled '89'	1.100*** (0.380)	0.995*** (0.371)	1.036*** (0.366)	1.049*** (0.371)	0.989*** (0.378)
<b>By employment:</b>					
Log white-collar settler '89	-0.483 (1.201)	-0.559 (1.252)	-0.351 (1.170)	-0.090 (1.153)	-0.043 (1.268)
Log blue-collar settler '89	2.609** (1.106)	2.435** (1.198)	2.315** (1.060)	2.199** (1.067)	2.100* (1.232)
Log kolkhozniki settler '89	-0.242 (0.202)	-0.274 (0.179)	-0.307* (0.168)	-0.369** (0.157)	-0.384** (0.163)
Spatial Lag: Log protests and riots '87-92	-0.220 (0.226)	-0.335 (0.210)	-0.217 (0.224)		
Geogr. and violence controls	✓	✓	✓	✓	✓
Observations	49	49	49	49	49
Pseudo $R^2$	0.74	0.74	0.75	0.75	0.73
Chi-squared	169.666	128.359	152.891	148.170	122.254
Overall model significance	0.000	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . All specifications contain a constant term, the German Occupation Dummy, Change in Percent of Jewish Pop. '39 to '59, Log Perc. of the Russian population in 1989, as well as controls for log urban population 1939, log total population in the indicated year, the longitude and latitude of the oblast capital, controls for growth in both the defense industry (Growth Defense Industry '39 to '59 less relocated defense facilities) and penal labor camps (Gulags). It further includes to the log of the total population loss '39-'59. Dependent variable is the log number of protests and riots between 1987 and 1992 based on Beissinger (2002).