Habit Formation and the Misallocation of Labor: Evidence from Forced Migrations

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Abstract

We use a research design created by forced migrations to examine the costs and benefits of leaving agriculture in mid-20th century Finland. After World War II, 11% of the Finnish population were resettled from areas ceded to the Soviet Union. Entire rural communities were moved to locations that resembled the origin areas, and displaced farmers were given land and assistance to establish new farms. Despite this policy of reconstructing the pre-war situation, forced migration increased the likelihood of switching to non-agricultural jobs and moving to urban areas. Consequently, forced migration also increased the long-term income of the displaced rural population. By contrast, forced migration decreased the income of the resettled urban population. We examine the extent to which these effects can be explained by the quality of the new farms, human capital investments, networks and discrimination but do not find evidence supporting these mechanisms. Instead, we argue that habit formation towards residential locations provides the most compelling rationalization for our results. (JEL: J61, J62, O15, N34)

Keywords: migration, habit formation, agriculture, population displacement.

1. Introduction

In a typical country, a quarter of the labor force works in agriculture, where their productivity is only half of the productivity of comparable workers in other sectors (Gollin et al., 2014). At face value, this observation suggests that a reallocation of workers from agriculture to the modern sector would substantially increase aggregate
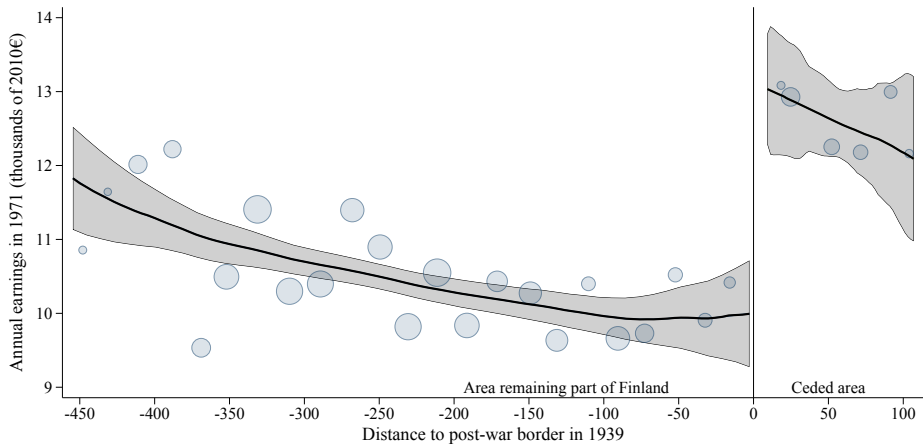
productivity. Yet, the agricultural productivity gap also poses a puzzle: if people could earn much more in the modern sector, why do they stay in agriculture.

This paper examines transitions from agriculture to non-agriculture in mid-20th century Finland—a poor, predominantly agrarian society at the time. Our research design is based on a large-scale population resettlement following the cession of Finland's eastern parts to the Soviet Union during and after World War II. In total 430,000 persons, 11% of the population, were forced to migrate and resettled into the remaining parts of Finland. For those working in agriculture—roughly one-half of the population—the government attempted to reconstruct the pre-war conditions as closely as possible. Displaced farmers were allocated land and assistance to establish new farms in areas with similar soil and climate as the origin regions. Former neighbors were resettled close to each other to preserve social networks. Once the resettlement was completed in 1948, the displaced farmers were not subject to specific policies. In particular, they received no further subsidies and, like everyone else, were free to sell and buy land and to move across locations and sectors.
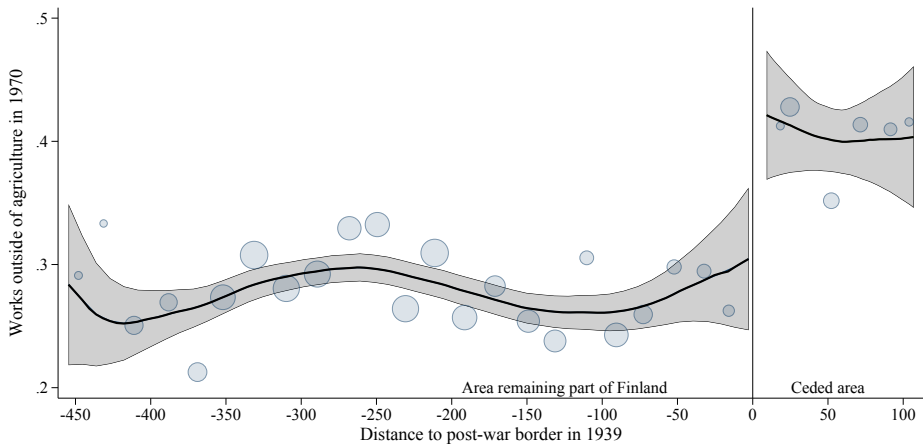
We start our analysis by estimating the impact of forced migration on long-term income and mobility. Figure 1 illustrates our identification strategy and presents our first results. We construct this figure using longitudinal data that combines information from two population censuses and the income tax register. These data allow us to follow a representative sample of a tenth of the Finnish population from 1939 onwards. In Figure 1, we focus on men who worked in agriculture just before the war. The horizontal axis shows the distance from their pre-war municipality of residence to the post-war border. Specifically, everyone living on the right side of the vertical line at zero lived in the ceded area before the war and were thus resettled to in the remaining parts of Finland. In the top panel, the vertical axis presents the average annual income in 1971 for these men. It shows that a quarter-century after being forced to migrate, displaced farmers earned more than other men who worked in agriculture before the war.

The post-war difference between displaced and non-displaced farmers suggests that forced migration increased long-term income. This interpretation is supported by the fact that the entire population living in the ceded area was evacuated and resettled in an orderly manner. Thus, the post-war differences do not arise from self-selection into migration or survival bias. Furthermore, there are few differences in the pre-war observable characteristics of the displaced and non-displaced farmers. Combining estimates from alternative approaches to get plausible bounds, we find that being displaced increased long-term income by 16%–30% among men working in agriculture before the war.

The bottom panel of Figure 1 presents our second result. It shows that displaced farmers were more likely to switch from agriculture to other sectors between 1939 and 1970. Estimates from alternative specifications suggest that forced migration increased the likelihood of leaving agriculture by 12–17 percentage points from a baseline of 28%. Importantly, this effect reflects voluntary transitions because the displaced farmers had an opportunity to continue farming in the resettlement areas.

(A) Annual Income in 1971 (including zeros)

(B) Non-Agricultural Employment in 1970

FIGURE 1. Pre-war location and post-war outcomes. The top panel plots average annual income in 1971 in thousands of 2010 euros (including zeros) by the distance of the 1939 residence municipality to the post-war border (in kilometers). Positive numbers on the horizontal axis refer to areas that were ceded to the Soviet Union in 1940 and 1944. The sample used in this analysis consists of 14,317 men born between 1907 and 1925 who worked in agriculture in 1939. They were 14–32 years old in 1939 and 46–64 years old in 1971. The bottom panel presents a similar analysis for an indicator for the person working outside of agriculture in 1970. The lines represent local linear estimates using a triangular kernel and the optimal bandwidth of Imbens and Kalyanaraman (2012). The dots correspond to the sample means by 20km bins. On average, each dot represents 477 individuals.

Our further analysis shows that forced migration also increased the likelihood of moving to a city and completing secondary education among the displaced farmers and that the impacts on income and mobility closely mirror each other when we extend the

analysis to other groups. Specifically, being displaced decreased income and increased the likelihood of moving to rural locations among the urban population. In addition, the average 1971 income of displaced persons was similar to that of similarly educated non-displaced persons working in the same industries and living in the same locations in 1970. Taken together, our results suggest that forced migration increased farmers' income because it increased the likelihood of leaving agriculture. Furthermore, the results imply that the returns to leaving agriculture were large in post-WWII Finland.

These findings beg the question of why most farmers stayed in agriculture when they could have earned substantially more in the modern sector. We use three complementary approaches to shed light on the likely explanations: (i) we interpret our results through the lens of a simple Roy model where farmers switch to the modern sector based on their comparative advantage if returns to leaving agriculture exceed switching costs, (ii) we use a variety of data and the details of the resettlement policy to assess the importance of alternative mechanisms and (iii) we draw from Waris et al. (1952) who conducted large surveys and in-depth interviews in 1949 and 1951. With these approaches, we examine the extent to which our results can be explained by the quality of the new farms, human capital investments, networks and discrimination.[1] We fail to find strong evidence supporting any of these channels. However, we stress that some of our empirical tests have relatively low statistical power, and thus we cannot fully rule out these possible mechanisms. Nevertheless, while some of these channels may have played a role, we argue that they are likely to leave an important part of the story untold.

Thus, we also consider the possibility that one reason why people do not switch to more productive sectors may be that they grow attached to their industries or residential locations. This hypothesis is inspired by qualitative and survey-based evidence, where displaced persons typically describe having lost their *homes* rather than just jobs and productive assets. Consequently, Waris et al. (1952) found that the displaced persons tended to express a strong desire to return to their old homes. Importantly, their revealed preferences are in line with their survey responses. The first evacuation took place in 1939, and the first version of the resettlement policy was executed in 1940. In 1941, Finland reoccupied the ceded areas. Despite the destruction in the reoccupied areas and the genuine opportunity to remain on their new farms, the vast majority of the displaced farmers returned. This was a costly and risky decision, given that their old farms had often been destroyed and that the outcome of the war was anything but certain. Indeed, their investments in repairing their old farms were lost in 1944, when the same areas were again ceded to the Soviet Union and the return migrants were evacuated and resettled again.

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1.   Earlier work on rural-urban earnings gap has also considered the riskiness of urban labor markets (Harris and Todaro, 1970; Bryan et al., 2014), local prices and amenities (Rosen, 1979; Roback, 1982), and sectoral differences in human capital and returns to skills (Caselli and Coleman, 2001; Lucas, 2004; Lagakos and Waugh, 2013; Young, 2013). However, these mechanisms are unlikely to explain our results because the displaced and non-displaced persons did not significantly differ from each other along these dimensions.

We rationalize the survey responses and return migration behavior by augmenting the Roy model with habit formation for residential locations. The key ingredient of this model is the assumption that people derive utility both from income and from their residential location—and that utility from a location increases with the time the person has already lived there. We call the latter property habit formation in the spirit of Pollak (1970) and follow Becker and Murphy (1988) by modeling it as an accumulation of "location capital" directly affecting contemporaneous utility. This accumulation process starts in childhood and affects the choice of location in adulthood. Specifically, a person who has grown up on a farm may choose to remain in agriculture to enjoy his location capital even if he could earn more elsewhere. However, if he is forced to move, he loses the location capital tied to his old home and hence chooses the location providing him with the highest income after the displacement. While we do not claim that other mechanisms are irrelevant, we argue that an explanation including habit formation is substantially more compelling than one based purely on other mechanisms. We also discuss how this formulation of the Roy model yields more nuanced welfare implications than a model without habit formation.

This paper is part of the recent literature evaluating the long-term effects of forced migrations. The work closest to us has examined population displacements created by territorial changes of Germany and Poland after WWII (Bauer et al., 2013; Becker et al., 2020), the internment of Japanese Americans during WWII (Arellano-Bover, 2021), a volcanic eruption in Iceland in 1973 (Nakamura et al., 2021), the demolition of public housing in Chicago in the 1990s (Chyn, 2018), and Hurricane Katrina in 2005 (Deryugina et al., 2018).[2] Despite vast differences in the contexts these papers study, all find positive effects on long-term income among agricultural workers and/or individuals who were relatively young or not yet born at the time of displacement.

In comparison to the other forced migration episodes examined thus far, the Finnish experience is unique in combining three features. First, the resettlement policy was designed to keep rural communities together and give displaced farmers land and assistance to establish farms comparable to the ones they had lost. Thus, we study decisions to voluntarily leave agriculture in a situation where the pre- and post-migration circumstances are largely similar, apart from the loss of the original farm. Second, we can examine alternative mechanisms behind the overall effect using variation created by the details of the evacuation and resettlement policies and high-quality contemporary survey-based research. The displaced farmers were also given the opportunity to reveal their location preferences when Finland temporarily reoccupied the ceded areas. Third, we conduct our analysis using longitudinal data that follows a large number of individuals over several decades and is unlikely to suffer

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2. The broader literature on the impacts of forced migration is reviewed in Ruiz and Vargas-Silva (2013) and Becker and Ferrara (2019). Other quantitative work examining the post-WWII population displacement in Finland include Waris et al. (1952) (which we discuss in detail in Section 5.4); Saarela and Finnäs (2009) and Haukka et al. (2017), who focus on mortality; Sarvimäki (2011), who examines the impact on the industrial structure of the receiving areas; and Lynch et al. (2019), who examine the associations between intermarriage, fertility and socioeconomic outcomes within the displaced population.

from non-random attrition or recall bias. Together, these aspects give rise to plausible identification of the impact of forced migration and allow us to paint a more complete picture of the underlying mechanisms than have been feasible in other contexts.

More broadly, our findings add to the large literature examining the possibility that misallocation of labor across sectors and locations constitutes a major obstacle to development. This hypothesis goes back to at least Lewis (1955) and remains an active area of research.[3] Our results, together with the work cited above, suggest that switching costs are an important factor affecting the allocation of labor. Large switching costs, particularly when changing sectors requires leaving one's place of birth, also show up in quantitative structural models of migration (e.g. Kennan and Walker, 2011; Diamond, 2016; Bryan and Morten, 2019; Lagakos et al., 2018). Thus, policies reducing these costs could have large effects. However, the effectiveness and welfare implications of alternative policies crucially depend on the reasons behind the switching costs.

We contribute to this broader literature by suggesting that attachment to a place may be important. Earlier work closest to us in this regard has examined habit formation towards locally abundant food (Atkin, 2013, 2016). This form of habit formation is unlikely to be important in our context because displaced farmers were resettled into locations that had similar soil and agricultural product mix as their origin areas. More importantly, while alternative sources of habit formation provide partly similar insights, there are also significant differences. The key similarity is that people may be stopped from pursuing their comparative advantage if they have accumulated location or consumption capital before choosing their sector of employment. However, unlike food or other consumption goods, living in a specific location is fundamentally nontradable. Hence, attachment to a place may be less affected by technological and institutional changes than switching costs arising from other forms of habit formation.[4]

We proceed as follows. The next two sections introduce the historical episode we study and our data. We report our main results in Section 4 and discuss possible interpretations in Section 5. The final section concludes.

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3.   In addition to the papers cited above, examples include Gollin et al. (2002), Caselli (2005), Munshi and Wilson (2011), Adamopoulos and Restuccia (2014), and Fernando (2019). See Hopenhayn (2014), Restuccia and Rogerson (2017), and Lagakos (2020) for reviews.

4.   For example, Atkin (2013) examines the welfare implications of a reduction in trade costs in the presence of habit formation for food varieties. In this context, regional price differences create switching costs that vanish if prices converge. By contrast, trade costs do not affect switching costs due to habit formation towards a specific location.

2. The Resettlement

2.1. Historical Context

At the start of World War II, Finland was a poor country that had won independence just two decades earlier, gone through a short but brutal civil war in 1918 and then evolved into a fairly well-functioning democracy. In 1938, Finland's GDP per capita was roughly $4,000 (in 2011 USD, see Bolt et al., 2018) and more than half of the population was working in agriculture, typically owning small farms and working as hired labor in forestry during the winter. Finland modernized and grew rapidly after World War II. In 1970, GDP per capita was about $14,000 (in 2011 USD), and less than one-fifth of the population worked in the primary sector.

The Soviet Union attacked Finland in November 1939 after negotiations on moving the Finnish-Soviet border westward had collapsed. The civilian population living in the conflict areas was evacuated and transported to designated evacuation areas in the middle and western parts of the country, where the local population was obliged to shelter them. In the peace treaty ending the hostilities in March 1940, Finland ceded roughly a tenth of its territory to the Soviet Union. Part of this area had remained under Finnish control during the war, and the civilian population living in these areas was evacuated as part of the peace treaty.

In July 1940, the Finnish Parliament enacted an Emergency Settlement Act (*Pika-asutuslaki*) guiding the resettlement policy. However, the 1940 resettlement policy turned out to have limited long-term effects because Finland joined Germany in its attack on the Soviet Union in June 1941 and reoccupied almost all of the ceded areas. As we discuss in more detail in Section 5.4, roughly two-thirds of all displaced persons—and almost all of the displaced farmers—returned to their pre-war homes (Pihkala, 1952; Waris et al., 1952).

After almost three years of trench warfare, the Soviet Union launched a massive attack in June 1944. The Finnish forces rapidly withdrew from the areas they had occupied in 1941. The armistice signed in September 1944, and later ratified in the Paris Peace Treaty, restored the 1940 border with some additional areas in Northern Finland ceded to the Soviet Union.[5] The entire population residing in the ceded area was again evacuated and resettled. Finland's eastern border has been unchanged and undisputed ever since.

Figure 2 shows the pre-war and the post-war borders and the 1945 resettlement plan discussed in detail below. The new border split the historical province of Karelia in half. Areas on both sides of the post-WWII border had been part of the same country since 1809, belonging first to the Russian Empire as part of the autonomous Grand

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5.   In addition to ceding the southeastern part of the country and the sparsely populated Salla and Petsamo areas in the North, Finland leased the Porkkala Peninsula near Helsinki for a Soviet naval base for fifty years. Improvements in international relations and changes in military technology that reduced the importance of coastal artillery led the Soviet Union to return Porkkala to Finland ahead of schedule in 1956. We exclude persons who lived in the Porkkala area before the war from our analysis.
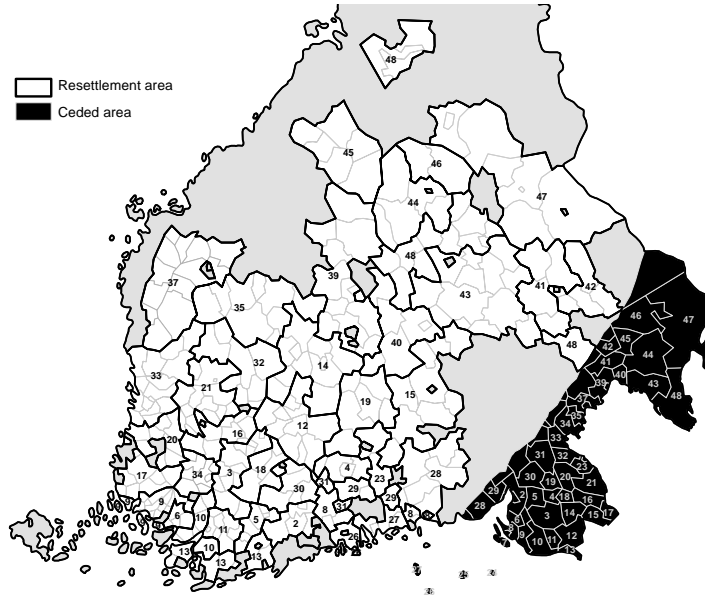
FIGURE 2. Ceded areas and the 1945 Resettlement Plan. This map represents the ceded area and the resettlement areas. The numbers refer to the ceded municipalities in the ceded area and their corresponding 1945 resettlement areas in the remaining parts of Finland.

Duchy of Finland and, from 1917 onwards, to independent Finland. Below we will also show that average pre-war characteristics were largely similar before the war on both sides of the post-war border.

In the peace negotiations between Finland and the Soviet Union, historical borders were used as a reference point. Importantly, there were many historical borders to choose from. Finland was part of Sweden until 1809 and the Swedish-Russian border had been moved several times. The post-WWII border closely follows the border set in the treaty of Nystad in 1721. Rentola (2001) discusses archive material indicating that when the Soviet Union offered peace talks in March 1944, it was preparing to negotiate based on the 1743 borders (roughly sixty kilometers west of the current border). However, when the peace talks began in August 1944, the unexpected success of the Finnish troops, together with the need to reallocate Soviet troops to the Baltic front, had improved Finland's position in the negotiations and thus moderated the Soviet demands.

2.2. The Resettlement Policy

Resettling the 430,000 displaced persons was a major challenge. The war had left Finland with approximately 95,000 dead and 228,000 injured out of a total population of four million. Much of the country's industrial production capacity was destroyed in the war, and further limits on capacity was caused by the war reparations that

amounted to roughly a sixth of the government budget between 1945 and 1949 (Mitrunen, 2021).

Despite the grave economic situation, the Parliament approved a series of laws, first in 1940 and again in 1945, that offered compensation for the property lost due to displacement (Pihkala, 1952). The compensation rate varied from full reimbursement for small losses to only 10% for very large ones. Those who had owned or leased agricultural land in the ceded areas could use their compensation to purchase agricultural and forest land from designated settlement areas. The agricultural land consisted of either pre-existing fields or land that was cleared and ready to be cultivated. Typically, the new farms did not have pre-existing buildings, but the displaced farmers were entitled to reconstruction loans that had very favorable terms.[6] In addition, all displaced persons received compensation for other kinds of lost property in the form of inflation-indexed government bonds for which a liquid secondary market quickly emerged.

The resettlement was financed by levying a massive tax on wealth. Land for the settlers was first taken from the state, local authorities (municipalities) and the church. However, roughly two-thirds of the cultivated fields, one-half of the land that could be cleared for cultivation and a third of forest land were seized from private owners using an explicit progressive expropriation schedule.[7] In addition, the government made a significant investment in land clearing by establishing a joint-stock company, *Pellonraivaus Oy,* to ensure access to modern equipment for this purpose. The abundance of forest land that can be cleared into fields makes our context similar to the case of Poland examined by Becker et al. (2020), i.e., congestion was unlikely to play an important role in the very sparsely populated Finnish countryside.

The resettlement policy aimed to match the pre-war conditions as closely as possible. In order to preserve social connections, farmers from each ceded village were settled together to a designated target area. Furthermore, the soil quality and average temperatures of the source and destination areas were matched to the extent possible. As illustrated by Figure 2, those from Western Karelia were settled along the southern coast, those from Eastern Karelia north of the first group and those from Northern

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6. The State Settlement Fund provided funds to co-operative credit societies and savings banks earmarked for granting loans to displaced farmers. In addition to construction and buying machinery, these loans could be used for buying or clearing additional land. The government partially guaranteed the loans, and the nominal interest rate was set at 3%. In comparison, Statistics Finland's cost-of-living index rose by 35% between 1947 and 1948. While inflation eventually slowed down, overall prices increased 1.7-fold and dwelling prices 6.7-fold between 1948 and 1957. On many occasions, the displaced farmers were also able to transport machinery and cattle from their old farms, but we were not able to find exact information on the extent of these transportations.

7. The schedule for farmland required private landowners to cede up to 80% of their landholdings, depending on the size of their farms. No land was expropriated from farms smaller than 25 hectares. Landowners were compensated with government bonds yielding a nominal interest of 4%. Inflation eventually wiped out about four-fifths of their value. However, the bonds could be used for paying the Property Expatriation Tax, which was collected from all forms of wealth. Pihkala (1952) discusses the land acquisition policy in detail and argues that landowners did not suffer more than other property owners.

Karelia even further north. None were placed in Northern Finland, and very few were allocated to the Swedish-speaking municipalities on the western and southern coasts.

The non-agrarian population was free to settle wherever they could find accommodation.[8] This could be a challenging task, however, because the war and the population displacement exacerbated urban housing shortages. The situation was particularly difficult in the capital city, Helsinki, which initially required prospective migrants to apply for migration permission from the local housing board. Housing shortages, together with social and professional ties, may also explain the fact that rural residents whose families did not receive land often moved to the same resettlement areas as their former neighbors who were entitled to land (Waris et al., 1952).

The resettlement was completed in 1948, after which no further policies targeted to the displaced population were introduced, and the displaced and non-displaced population had equal legal status. In particular, everyone could sell and buy land and migrate to anywhere in the country.

3. Data

Statistics Finland constructed our data by linking a 10% sample of the 1950 population census to the 1970 census and the 1971 tax records. The information for the pre-war municipality of residence, occupational status and industry codes comes from the 1950 census, which included retrospective questions referring to September 1st, 1939—two months before the war began. We augment these individual-level data with municipality-level information on the pre-war income distribution and industry structure. We discuss the details of the data and variable definitions in the Online Appendix.

Table 1 reports the average pre-war characteristics included in our data for individuals born between 1907 and 1925. We focus on these 78,549 individuals—of whom 7,805 were displaced—because they remain working-age throughout the study period. (They were 14–32 years old when the war started in 1939 and 46–64 years old in 1971.) Overall, the displaced and non-displaced populations have quite similar pre-war characteristics, although there are also some notable differences. The largest differences are in the share of people speaking Swedish as their mother tongue (a relatively prosperous group heavily concentrated on the southern and western coasts of Finland) and in the share of the population who are members of the Orthodox church (a group concentrated in the eastern parts of the country). Furthermore, the displaced rural population was less likely to work in blue-collar occupations and in manufacturing and more likely to be entrepreneurs in 1939.

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8.   This option was also available for the displaced farmers, but relatively few seem to have used it. According to Waris et al. (1952, Appendix Table 29), 46,000 displaced families received land and only 3,700 chose not to take it, while 3,800 lost their right to it for one reason or another.

TABLE 1. Pre-War Characteristics

	Men						Women					
	Agricultural		Other rural		Urban		Agricultural		Other rural		Urban	
	Non-disp. (1)	Dis-placed (2)	Non-disp. (3)	Dis-placed (4)	Non-disp. (5)	Dis-placed (6)	Non-disp. (7)	Dis-placed (8)	Non-disp. (9)	Dis-placed (10)	Non-disp. (11)	Non-disp. (12)
A: Demographics												
Age	22.8	22.8	22.9	22.8	24.0	23.4	24.2	24.7	22.7	22.5	24.0	24.1
Swedish-speaker	0.07	0.00	0.08	0.00	0.16	0.01	0.07	0.00	0.07	0.00	0.13	0.01
Migrated prior to 1939	0.17	0.15	0.38	0.36	0.61	0.55	0.28	0.24	0.39	0.35	0.70	0.62
Orthodox	0.00	0.12	0.00	0.11	0.01	0.04	0.00	0.13	0.00	0.12	0.01	0.04
B: Socioeconomic status												
Entrepeneur	0.30	0.42	0.08	0.06	0.05	0.05	0.04	0.03	0.02	0.02	0.02	0.03
White-collar	0.02	0.02	0.10	0.13	0.20	0.25	0.00	0.00	0.10	0.10	0.23	0.23
Blue-collar	0.36	0.16	0.56	0.53	0.59	0.52	0.23	0.13	0.16	0.13	0.31	0.25
Out of labor force	0.32	0.41	0.26	0.28	0.16	0.19	0.73	0.84	0.72	0.75	0.45	0.50
C: Sector of employment												
Manufacturing	0.00	0.00	0.28	0.20	0.33	0.25	0.00	0.00	0.08	0.06	0.18	0.14
Construction	0.00	0.00	0.14	0.14	0.11	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Services	0.00	0.00	0.24	0.32	0.33	0.38	0.00	0.00	0.18	0.18	0.33	0.33
D: Characteristics of the municipality of residence												
Average taxable income	1.41	1.38	1.95	1.65	6.75	5.61	1.45	1.38	1.81	1.58	6.80	5.62
Agricultural LFS	0.83	0.81	0.74	0.76	0.14	0.01	0.83	0.80	0.76	0.78	0.13	0.01
Latitude	69.4	67.7	68.9	67.7	67.9	67.5	69.3	67.7	69.0	67.8	67.9	67.5
Observations	12,940	1,377	11,142	1,258	8,079	889	7,366	831	19,633	2,259	11,584	1,191

Notes. Panels A–C report individual-level information referring to 1939 as measured by the retrospective questions in the 1950 census. Pre-war migration is defined as living outside of municipality of birth in 1939. Out of labor force includes assisting family members. Panel D reports municipality-level information from Statistics Finland (1942, 1979) that is linked to the individual-level data using information on the 1939 residence municipality. See Online Appendix Tables A2–A6 for t-statistics and for comparisons between the displaced population and alternative control groups.

The earliest available information on individual-level income comes from the 1971 tax register. Tax records are likely to provide a comparable measures of income across agricultural and non-agricultural households because the Finnish tax authorities treated agricultural income similarly to wages, and the extent of home production was modest in the 1970s. Indeed, taxable earned income predicts consumption in a very similar way for farmers and non-farmers in the 1971 Household Budget Survey (Online Appendix Figure A1 and Online Appendix Table A1).

Other outcome variables come from the 1950 and 1970 censuses. We use industry codes to construct an indicator for working outside of agriculture, and municipality codes and Statistics Finland's pre-war definition of cities for an indicator for living in an urban area. We also construct an imputed income measure for 1950 using mean taxable income in 38 industry-occupation-socioeconomic status groups for 1950 as reported in Statistics Finland (1953, Table 2). Our measure of education is an indicator for holding at least a secondary degree in 1970.

We also observe the education and income of the children of individuals present in our sample. We focus on children born after 1948, i.e., those who did not experience the evacuation or the implementation of the resettlement policy themselves. A limitation of these data is that we observe only one parent for 42% of the children. As we discuss in more detail in Section 4.2.3 and the Online Appendix, this gives rise to a somewhat complex measurement error in parents' displacement status.

4. Impact of Forced Migration

This section reports our main results. We start with a discussion of our empirical strategies and then report the estimates on the impact of forced migration. We also report estimates for income conditional on industry and location and discuss what our results imply on returns to leaving agriculture during this period.

4.1. Empirical Strategies

We evaluate the impact of forced migration by comparing the outcomes of displaced persons to control groups of persons who were not displaced. As we discuss below, each of these comparisons may yield biased estimates for the effect of displacement. However, alternative approaches are likely to suffer from biases of opposite signs and thus provide plausible bounds for the impact of being forced to migrate.

In practice, we estimate variants of the regression equation

$$y_{it} = \alpha + \beta D_i + X_{i0}\gamma + \varepsilon_{it} \tag{1}$$

where y_{it} is the outcome of interest for individual i at time t, D_i is an indicator for the person living in the ceded area just before the war, X_{i0} is a vector of observed pre-war characteristics, and ε_{it} captures unobserved factors. We implement the various comparisons by estimating (1) for different subsamples and by varying the content of X_{i0}.

We recognize that the resettlement was likely to affect the entire population of post-war Finland. Hence, we aim to estimate a causal relationship in the sense of a thought experiment in which the displacement status of a single individual was manipulated, while 11% of the population were still forced to migrate.

4.1.1. Baseline Estimates and Oster Bounds.   Our baseline estimates come from comparisons between all displaced and non-displaced individuals. A limitation of this approach is that the displaced and non-displaced populations differ somewhat in their pre-war characteristics (Table 1) and may thus also differ in their unobservable characteristics. However, the observed differences are relatively small, and our data allow us to condition on a rich set of pre-war observables. We thus report estimates with and without controlling for pre-war differences as a baseline. We then use the difference between the unconditional and conditional estimates to bound the likely remaining omitted-variables bias (Altonji et al., 2005; Oster, 2019). Specifically, we report bounds under the assumption that selection-on-unobservables is as important as selection-on-observables and that the hypothetical maximum R^2 from a regression including all relevant background characteristics is $1.3\tilde{R}$, where $\tilde{R}$ is the R^2 from the regression including the control variables observed in our data; see Oster (2019) for discussion.

4.1.2. Spatial Regression Discontinuity Design.   Our second comparison is between individuals who lived just east of the post-war border (and were thus displaced) and people who lived slightly more to the west (and were thus not displaced). We implement this comparison using standard local linear estimators. That is, we add pre-war distance to the post-war border and its interaction with the displacement status to X_{i0}, restrict the estimation sample to persons who lived close to the post-war border before the war (using the Imbens and Kalyanaraman (2012) algorithm to choose the optimal bandwidth) and weight the observations close to the border more than those further away using a triangular kernel.[9]

This spatial regression-discontinuity (RD) design builds on the plausibility of locally random assignment into forced migration (see Section 2). However, its limitation is that those living in the control areas may have been affected by the shift of the border more than those living further away. For example, Redding and Sturm (2008) find that the division of Germany led to a decline of West German cities close to the East-West German border. If the Finnish municipalities close to the new border suffered from similar adverse effects, the spatial RD estimates would be biased upwards. Thus, we interpret these estimates as upper bounds on the treatment effect. In the Online Appendix, we also report estimates from "donut hole" specifications

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9. In specifications controlling for pre-war observable characteristics, we also include latitude of the 1939 residence municipality. Given that in the more densely populated areas in Southern Finland, the post-war border is a relatively straight line running from South West to North East (see Figure 2), adding latitude to the specification is close to the two-dimensional RDD specification used in Dell (2010).

that omit non-displaced persons who lived within 50 kilometers from the new border before the war.

4.1.3. Within-Resettlement-Area Comparisons.   Our third comparison is between displaced persons and the local population of their resettlement areas. We implement this comparison by including resettlement area fixed-effects in X_{i0} and dropping the non-displaced persons living outside of the resettlement area from the sample. These fixed-effects are constructed using the 1939 residence municipality information and, for the displaced persons, refer to the areas the displaced persons would have been living in after the war if they had followed their resettlement plan (regardless of where they actually lived after the war). The displaced persons were not able to choose their resettlement areas, and thus these regressions do not suffer from the "bad control" problem.

The main advantage of these within-resettlement-area comparisons is that the destination areas were far away from the post-war border, but were designed to match the origin areas by soil quality and average temperature. That is, the resettlement areas were designed to provide as similar an environment as possible to what the displaced farmers would have had if they had not been forced to migrate. However, the caveat is that the destination areas tended to be slightly richer and more industrialized before the war (Online Appendix Tables A2–A5), and the resettlement shock itself may have pushed rural municipalities to industrialize faster and thus increased local wages (Sarvimäki, 2011; Murard and Sakalli, 2018; Peters, 2021). Thus, we interpret estimates from these comparisons as lower bounds of the treatment effect.

4.2. Long-Term Effects

Tables 2–5 present estimates for the differences between displaced and non-displaced persons and their children. Each entry comes from a separate regression that differs in the population examined (rows) and specification (columns). To assess the magnitudes of the estimates, we also report the mean outcomes among the non-displaced persons. We cluster standard errors at the level of the 1939 residence municipality.

4.2.1. Income.   The first row of Table 2 reports results for men working in agriculture before the war. In 1971, displaced farmers earned €2,080 more annually than non-displaced farmers. In comparison to the €10,500 average earnings among non-displaced farmers, this difference corresponds to 20% higher income. Controlling for the observable pre-war characteristics reduces the point estimate very slightly to €2,050. Assuming that selection-on-unobservables is as important as selection-on-observables, the difference in the point estimates—together with an increase in the R^2 from 0.005 to 0.123—suggests a lower bound of €2,040 or 19%. The spatial RD estimates show that farmers' income jumps by €3,120 or 30% in comparison to comparable non-displaced farmers at the post-war border. On the other hand, displaced farmers had about €1,670 or 16% higher long-term income than non-displaced farmers with similar pre-war characteristics living in the resettlement areas

TABLE 2. Impact of Forced Migration on Annual Income in 1971

	Control Mean	Baseline		Oster's Bound	Spatial RD		Resettlement Area FEs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		A: Men by 1939 status						
Agri-cultural	10.5	2.08	2.05	2.04	3.12	3.06	1.26	1.67
		(0.37)	(0.36)	(0.37)	(0.86)	(0.73)	(0.33)	(0.47)
Other rural	16.2	1.14	1.83	2.18	1.00	0.38	0.81	2.06
		(0.59)	(0.70)	(0.57)	(2.54)	(2.80)	(0.78)	(1.15)
Urban	23.7	-2.48	-4.65	-5.40	.	.	.	.
		(1.95)	(1.42)	(0.89)				
		B: Women by 1939 status						
Agri-cultural	1.9	0.57	0.66	0.71	0.48	0.38	0.45	0.64
		(0.16)	(0.19)	(0.23)	(0.50)	(0.45)	(0.15)	(0.25)
Other rural	4.8	1.10	1.46	1.65	1.51	2.11	0.84	1.53
		(0.19)	(0.22)	(0.24)	(0.69)	(0.58)	(0.20)	(0.28)
Urban	8.8	-0.65	-1.30	-1.53	.	.	.	.
		(0.73)	(0.64)	(0.35)				
Controlling for:								
Pre-war char.		no	yes	.	no	yes	no	yes
Resettlement area		no	no	.	no	no	yes	yes

Notes. Point estimates and standard errors (in parentheses) from regressing annual income in 1971 in thousands of 2010€ (including zeros) on an indicator for displacement status and, in some specifications, observable characteristics measured before the war (year of birth dummies, indicators for speaking Swedish as one's mother tongue, belonging to the Orthodox church, living outside of one's municipality of birth, sector of employment, socioeconomic status, quintile dummies for residence municipality's taxable income per capita, labor force share in agriculture and latitude). See Section 4.1.1 for details of the Oster's bounds (column 4), Section 4.1.2 for the spatial RD estimates (columns 5–6) and Section 4.1.3 for the resettlement-area fixed-effects estimates (columns 7–8).

already before the war. As we discussed in the previous subsection, we interpret the within-resettlement-area comparisons as lower bounds and the spatial RD estimates as upper bounds. Thus, we conclude that forced migration increased the long-term income of the displaced male farmers by 16%–30%.

The remainder of Table 2 shows the same estimates for other groups. The baseline estimates and the Oster bounds for men living in rural areas but working outside of agriculture before the war correspond to a 7%–11% increase in income. The spatial RD and within-resettlement-area comparisons yield smaller, positive but statistically insignificant estimates for this group. We also find strong positive effects for rural women. The baseline estimates and Oster bounds correspond to 30%–37% higher income among women working in agriculture before the war and 23%–34% higher income for rural women working outside of agriculture before the war. The spatial RD and within-resettlement-area estimates for rural women are similar to the baseline estimates.

By comparison, the impact of forced migration on the urban population is very different. While the unconditional differences are not statistically significant, estimates from regressions controlling for pre-war characteristics are significant and suggest 19% (men) or 15% (women) decreases in long-term income. We do not report spatial RD estimates for the urban population because only two cities were located in the ceded area, and few cities were located close to the post-war border in the non-ceded area. Furthermore, as the urban population was not resettled into specific locations, the within-resettlement-area research design is unsuitable for them.

We examine the heterogeneity and robustness of these estimates in the Online Appendix. Online Appendix Table A7 shows that the estimates are similar, though slightly smaller than those reported in Table 2, when we take into account local prices. Online Appendix Table A8 shows that the effects are larger for individuals who were displaced at a younger age. Finally, Online Appendix Figure A6 shows that estimates from "donut hole" specifications are similar to the baseline RD estimates with the exception of other rural women for whom the estimates become statistically insignificant with larger "donut holes".

4.2.2. Industry, urbanization and education.   We next show that the patterns found for income are closely mirrored for industry, urban status and education. Table 3 reports estimates for the key outcomes measured in the 1970 census. For brevity, we report only baseline and within-resettlement-area estimates conditioning on pre-war characteristics. Online Appendix Figure A2 presents the results from all specifications used for income above.

The results show that displaced male farmers were 15 percentage points or 53% more likely to work in a non-agricultural job—most prominently in manufacturing and construction (Online Appendix Table A9)—than comparable non-displaced farmers. This increase is matched by a slightly larger decrease in the likelihood of working in agriculture and hence the estimates suggest that forced migration reduces employment by 1–4 percentage points, although only the estimate from the specification including resettlement-area fixed-effects is statistically significant. Interestingly, the estimates for urbanization are very similar to those for working outside of agriculture. This similarity follows from the fact that taking a non-agricultural job was typically accompanied with migration into a city. More precisely, three-quarters of displaced farmers working outside of agriculture lived in urban areas in 1970. Finally, we find that forced migration increased displaced farmers' likelihood of holding a secondary degree by 2–3 percentage points from a baseline of only 9%.

The estimates for women who worked in agriculture before the war are similar but smaller than those for men. Furthermore, the results for those who lived in rural areas but worked outside of agriculture before the war are largely similar to the estimates for farmers. The largest difference is in men's likelihood of working outside of agriculture, which is not surprising given that transitions from non-agriculture to agriculture are rare. For other outcomes, particularly for the likelihood of holding a secondary degree, the estimates tend to be more positive and larger among rural non-agricultural than agricultural workers.

TABLE 3. Impact of forced migration on industry, employment, urbanization and education in 1970

	Works outside of agriculture			Employed			Lives in a city			Holds a secondary degree		
	Control Mean	Esti-mates		Control Mean	Esti-mates		Control Mean	Esti-mates		Control Mean	Esti-mates	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	A: Men by 1939 status											
Agri-cultural	28.2	15.0 (2.1)	17.0 (2.2)	72.2	-1.4 (1.5)	-4.1 (2.1)	11.5	13.3 (1.5)	15.1 (2.2)	8.9	3.2 (1.0)	2.1 (1.2)
Other rural	63.4	2.5 (2.0)	1.7 (2.4)	75.9	0.0 (1.6)	-2.7 (2.0)	27.7	16.9 (2.1)	20.2 (2.6)	17.5	5.9 (1.4)	7.9 (1.4)
Urban	76.1	-4.8 (1.0)	.	78.5	-4.7 (1.0)	.	84.2	-16.0 (1.9)	.	31.9	0.7 (1.9)	.
	B: Women by 1939 status											
Agri-cultural	14.7	5.1 (1.9)	5.2 (2.4)	40.8	-1.8 (2.6)	-2.9 (3.1)	10.9	10.6 (2.3)	11.1 (3.0)	9.4	0.5 (1.7)	-1.0 (2.0)
Other rural	34.0	9.5 (1.4)	8.2 (1.8)	44.7	4.2 (1.3)	3.9 (1.6)	23.7	18.9 (2.2)	23.7 (2.3)	13.9	2.8 (1.1)	4.3 (1.1)
Urban	54.7	-5.1 (1.5)	.	55.8	-4.4 (1.3)	.	83.3	-14.9 (2.8)	.	22.1	-0.2 (1.5)	.
Controlling for:												
Pre-war char.		yes	yes		yes	yes		yes	yes		yes	yes
Resettlement area		no	yes		no	yes		no	yes		no	yes

Notes. Point estimates and standard errors (in parentheses) from regressing indicators for working outside of agriculture (columns 1–3), being employed (columns 4–6), living in a city (columns 7–9) or holding a secondary degree (columns 10–12) in 1970 on an indicator for displacement status and observable characteristics measured before the war. See the note to Table 2 for details and Online Appendix Figure A2 for alternative specifications.

Similar to the results for income, the effects for those living in urban areas before the war are very different. For them, forced migration decreased employment and urbanization while it does not seem to have affected education. The effect is particularly large for the likelihood of living in a city: a 15–16 percentage points reduction from a baseline of 83–84%.

This pattern of results is consistent with the hypothesis that the displacement affected long-term income primarily through affecting displaced persons' industry and location. Among displaced farmers, forced migration pushed them from agriculture to the higher-income modern sector, which typically also included migration to urban areas. The rural, non-agricultural population also became more likely to move to cities, but the effect on income was smaller than for farmers—likely because they already worked in the non-agricultural sector. Among the urban population, the effect was the opposite as many of them ended up living in rural areas that offered worse labor market prospects than the cities they left behind. We return to this interpretation in Section 5, where we also examine various alternative possible mechanisms.

4.2.3. Intergenerational effects. Table 4 examines even longer-term effects by reporting estimates for the children of the individuals included in our sample. The dependent variable is now children's average income when they are 30–40 years old (columns 1–3) or an indicator for having completed a secondary degree by 2011 (columns 4–6). The treatment status is based on the father (panel A) or mother (panel B), regardless of the status of the other parent.

The estimates are qualitatively similar to those for the first generation. Among the non-displaced population, children of farmers have lower average income and educational attainment than children of urban parents, while the children of rural parents working outside of agriculture before the war fall in between. The same pattern is also present for education. More importantly, children of displaced farmers have higher incomes than children of comparable non-displaced farmers, while the opposite is true for children of urban parents. Furthermore, the estimates suggest that forced migration increased the educational attainment of rural parents' children, while we find no impact for the urban population.

In terms of magnitudes, the intergenerational effects are substantially smaller than those for the first generation. This finding is consistent with the impact of forced migration fading away over generations. However, these estimates also contain more measurement error than our main estimates because some of the non-displaced persons in our data have a displaced spouse who we do not observe.

4.3. Medium-Term Effects

A limitation of the long-term effects discussed above is that they could lead to misleading conclusions about lifetime outcomes. For example, Lucas (1997) proposes a rationalization for rural-urban wage gaps based on the assumption that leaving agriculture reduces short-term income but leads to faster human capital accumulation. As a consequence, the incomes of migrants eventually overtake the incomes of farmers. However, examining only the long-term outcomes would miss the initial investment phase and thus lead to an overstatement of the impact of forced migration on lifetime income.

A challenge for examining income dynamics in our context is that we observe individual-level income only from 1971 onwards. However, the 1950 census includes information on occupation, industry and socio-economic status that we can use to construct a measure of imputed income (see Section 3). Using this measure as an outcome variable, the first columns of Table 5 show that displaced male farmers had jobs associated with 15% higher income than comparable non-displaced farmers already in 1950. Furthermore, the estimates for other groups are also quite similar to our estimates for long-term income. While we cannot rule out the possibility that the displaced farmers could have had below-average earnings in these jobs, these results suggest that the displacement had a positive (negative) effect on the income of the rural (urban) population already by 1950.

The rest of Table 5 presents a similar analysis for sector, employment, urban status and education in 1950. Again, the results are very similar to those for 1970 outcomes.

TABLE 4. Intergenerational Impact of Forced Migration

	Income			Secondary degree		
	Control Mean	Estimates		Control Mean	Estimates	
	(1)	(2)	(3)	(4)	(5)	(6)
	A: Father's 1939 status					
Agricultural	21.6	1.16	0.78	73.9	4.64	4.88
		(0.46)	(0.53)		(1.63)	(2.20)
Other rural	23.4	0.69	0.78	76.2	1.31	6.32
		(0.52)	(0.61)		(1.64)	(2.31)
Urban	26.4	-2.13	.	77.7	-0.44	.
		(0.34)			(1.78)	
	B: Mother's 1939 status					
Agricultural	21.2	0.18	0.03	71.2	2.25	3.59
		(0.79)	(0.97)		(2.80)	(3.50)
Other rural	22.2	0.81	0.78	72.5	3.83	4.85
		(0.39)	(0.52)		(1.53)	(2.03)
Urban	25.9	-2.92	.	75.7	1.20	.
		(0.48)			(1.39)	
Controlling for:						
Pre-war characteristics		yes	yes		yes	yes
Resettlement Area FE		no	yes		no	yes

Notes. Point estimates and standard errors (in parentheses) from regressing children's average annual income at age 30–40 in thousands of 2010€ (columns 1–3) or an indicator for the child holding a secondary degree in 2011 (columns 4–6) on an indicator for parent's displacement status and characteristics measured before the war. Standard errors are two-way clustered at parent and parent's 1939 municipality level.

In fact, the impact of working outside of agriculture is larger in 1950 than in 1970. This pattern arises from the non-displaced rural population partially catching up with the displaced persons over time. For example, 20% of non-displaced male farmers had switched from agriculture to the modern sector by 1950, while the number for displaced farmers was 40%. By 1970, the share had increased to 28% among non-displaced farmers, while it was 43% among displaced farmers. Thus, forced migration appears to have both increased the share of the population switching to the modern sector as well as pushed them to make the transition earlier than the non-displaced population. On the other hand, we do not find a positive effect on education by 1950, suggesting that the investments in human capital induced by forced migration took place sometime between 1950 and 1970. This timing of the educational investments

TABLE 5. Impact of forced migration on imputed income, industry, employment, urbanization and education in 1950

	Imputed income			Works outside of agriculture			Employed			Lives in a city			Holds a secondary degree		
	Cont. Means	Esti-mates	Esti-mates	Cont. Means	Esti-mates	Esti-mates	Cont. Means	Esti-mates	Esti-mates	Cont. Means	Esti-mates	Esti-mates	Cont. Means	Esti-mates	Esti-mates
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
							A: Men by 1939 status								
Agri-cultural	4.9	0.72 (0.09)	0.69 (0.12)	19.9	20.4 (2.1)	19.6 (2.4)	79.9	4.4 (1.7)	3.5 (2.3)	4.3	7.7 (1.4)	7.4 (1.3)	0.9	-0.3 (0.3)	-0.5 (0.4)
Other rural	7.0	0.25 (0.15)	0.29 (0.15)	74.4	6.2 (1.8)	7.0 (2.1)	90.0	0.4 (1.1)	0.6 (1.4)	15.3	16.6 (2.0)	16.0 (2.5)	8.3	2.4 (1.1)	2.1 (1.4)
Urban	7.9	-0.21 (0.08)	.	90.7	-3.1 (0.7)	.	94.1	-1.2 (0.5)	.	85.4	-25.0 (2.7)	.	22.8	-6.3 (2.4)	.
							B: Women by 1939 status								
Agri-cultural	5.5	0.56 (0.21)	0.66 (0.21)	15.2	13.0 (2.1)	13.1 (2.8)	31.4	11.8 (2.0)	12.9 (2.6)	3.5	3.8 (1.4)	2.1 (1.6)	1.3	0.1 (0.5)	0.5 (0.7)
Other rural	6.9	0.39 (0.10)	0.45 (0.14)	57.1	16.4 (2.0)	18.4 (2.7)	69.9	10.8 (1.7)	9.9 (2.2)	12.9	17.6 (1.6)	19.0 (1.8)	8.2	2.6 (0.9)	3.8 (1.3)
Urban	7.7	-0.08 (0.08)	.	89.8	-2.6 (0.7)	.	92.1	-2.5 (0.6)	.	82.8	-20.9 (3.5)	.	23.3	-3.3 (2.8)	.
Controlling for:															
Pre-war char.		yes	yes		yes	yes		yes	yes		yes	yes		yes	yes
Resettlement area		no	yes		no	yes		no	yes		no	yes		no	yes

Notes. Point estimates and standard errors (in parentheses) from regressing indicators for imputed income (columns 1–3), working outside of agriculture (columns 4–6), being employed (columns 7–9), living in a city (columns 10–12) or holding a secondary degree (columns 13–15) in 1950 on an indicator for displacement status and observable characteristics measured before the war. See the note to Table 2 for details and Online Appendix Figure A3 for alternative specifications.

may reflect the partial lifting of supply-side constraints over time as adult vocational education gradually expanded in post-war Finland.[10]

4.4. Conditioning on Post-War Sector, Education and Location

The results discussed thus far are consistent with increased sectoral mobility, typically accompanied by urbanization and investments in education, leading to higher earnings among the displaced farmers. Table 6 presents complementary evidence supporting this hypothesis by comparing the annual income of displaced to the annual income of non-displaced persons who worked in the same industries, lived in the same locations and had similar education after the war. For reference, columns 1 and 5 report estimates controlling only for pre-war characteristics. We then gradually condition on working outside of agriculture (columns 2 and 6), education in 1970 (columns 3 and 7) and fixed-effects for the 1970 residence municipality and 2-digit industry (columns 4 and 8). Among the rural population and urban women, the point estimates for displacement status approach zero and become statistically insignificant as we add further post-war control variables. However, the estimates for urban men remain negative and significant in all specifications.

We emphasize that the estimates reported in Table 6 do not have a causal interpretation because we condition on post-war outcomes that were themselves affected by forced migration. Nevertheless, the estimates can be interpreted as informative descriptive statistics showing that the long-term income of displaced rural persons did not differ from the income of non-displaced rural persons who had similar education levels and worked in the same industries and locations after the war. We return to the interpretation of these estimates in the context of a simple Roy model in Section 5.2.

4.5. Instrumental Variables Estimates

The results discussed above suggest that leaving agriculture had high returns. Table 7 attempts to quantify these returns using data on pre-war farmers. For reference, column 1 shows that men who still worked in agriculture had average earnings of roughly €10,000 in 1970, while women who had remained in agriculture earned only €700, on average. The OLS estimates show that men who had left agriculture by 1970 had about €7,400 or 74% higher annual earnings than observationally identical farmers who had remained in agriculture. For women, the earnings difference is €8,100, corresponding to more than a tenfold increase in income. These estimates

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10.   Between 1919 and 1939, only eight new vocational schools were established in Finland. By contrast, 6, 11 and 17 new schools opened in the 1940s, 1950s and 1960s, respectively (Tuomisto, 1982). The 1950s also saw an institutionalization of the vocational schooling system in the establishment of a national network of central vocational schools. The impetus to this expansion was a perceived need for an up- and re-skilling of the workforce, which started with the (re-)training of war veterans in the 1940s (Tuomisto, 1999).

TABLE 6. Differences in Annual Income in 1971 between Displaced and Non-Displaced Persons Conditional on Post-War Sector, Education and Location

	Men				Women			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agricultural	2.05	0.93	0.67	0.34	0.66	0.25	0.29	0.01
	(0.36)	(0.32)	(0.31)	(0.32)	(0.19)	(0.13)	(0.12)	(0.21)
Other rural population	1.83	1.53	0.73	-0.46	1.46	0.50	0.46	0.10
	(0.70)	(0.63)	(0.52)	(0.52)	(0.22)	(0.16)	(0.14)	(0.18)
Urban population	-4.65	-3.87	-2.90	-2.43	-1.30	-0.73	-0.51	-0.35
	(1.42)	(1.39)	(1.21)	(0.54)	(0.64)	(0.50)	(0.40)	(0.20)
Controlling for:								
Works outside of agriculture in 1970	no	yes	yes	yes	no	yes	yes	yes
Education in 1970	no	no	yes	yes	no	no	yes	yes
2-digit industry and municipality in 1970	no	no	no	yes	no	no	no	yes

Notes. Estimates from regressing annual income in 1971 on an indicator for displacement status and background characteristics (see the notes to Table 2). In columns 2–4 and 6–8, we gradually control for an indicator for working outside of agriculture in 1970, indicators for the level of education in 1970 and indicators for 2-digit industry and municipality of residence in 1970. Standard errors (in parentheses) are clustered at the 1939 municipality of residence level.

would measure the true returns to leaving agriculture if selection into the modern sector was as good as random (once we condition on observable characteristics). This assumption seems unlikely to hold because people are likely to self-select across sectors based on their unobservable characteristics.

In order to complement the OLS estimates, we report 2SLS estimates in columns (4) and (5) of Table 7, where we use displacement status as an instrument for working outside of agriculture in 1970. The resulting estimates are even larger than the corresponding OLS estimates.[11] However, we stress that the 2SLS estimates measure the returns to leaving agriculture only if the impact of forced migration on long-term income was mediated *entirely* through its effect on the likelihood of switching to the modern sector. Clearly, other possible mechanisms exist. For example, as we discuss in more detail in the next Section, being displaced may have affected human capital investments, farm quality or economically valuable social networks. Thus, we emphasize that the IV approach is based on stronger, and less plausible, identifying assumptions than the results on the overall impact of forced migration. Nevertheless, the 2SLS estimates provide a potentially informative summary of the impacts of forced migration on income and sectoral mobility.

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11.   Note that the 2SLS estimates directly follow from those reported in columns (3) and (8) of Table 2 and columns (2) and (3) of Table 3 for those working in agriculture before the war. That is, the impact of forced migration on income is the "reduced form" estimate and the impact of forced migration on leaving agriculture is the first-stage estimate in this IV interpretation.

TABLE 7. Returns to Leaving Agriculture

	Average income in	Returns to leaving agriculture			
		OLS		2SLS	
Status in 1939	agriculture				
	(1)	(2)	(3)	(4)	(5)
Men	9.9	7.6	7.4	13.7	9.8
		(0.2)	(0.2)	(2.3)	(2.5)
Women	0.7	8.1	8.1	12.9	12.4
		(0.2)	(0.2)	(3.3)	(3.8)
Controlling for:					
Pre-war char.		yes	yes	yes	yes
Resettlement area		no	yes	no	yes

Notes. Column 1 shows the annual earnings in 1971 in thousands of 2010 euros for those working in agriculture. Columns 2–3 report OLS estimates for an indicator variable taking the value one if the person works outside of agriculture in 1970 and zero otherwise. Columns 4–5 report 2SLS estimates where we use displacement status as an instrument for working outside of agriculture in 1970. Standard errors (in parentheses) are clustered at the 1939 residence municipality level. See the notes to Table 2 for details of the pre-war characteristics.

4.6. Comparison to Bauer et al. (2013) and Nakamura et al. (2021)

We end this section with a detailed comparison of our results to two papers based on closely related research designs. Bauer et al. (2013) examine the displacement of Germans from Eastern Europe after World War II. Like us, they find that forced migration increased 1971 income among those who worked in agriculture before the war and attribute this effect to a higher likelihood of working outside of agriculture in the post-war period. In addition, they find that forced migration negatively affected the income of the non-agricultural population. While qualitatively similar, the effects of forced migration were substantially more positive for displaced farmers and less detrimental on non-agricultural workers in Finland than in Germany.[12]

These similarities in the impacts of forced migration in post-WWII Finland and Germany are intriguing given that the evacuations and resettlement policies differed markedly between the two countries. In Finland, evacuations were organized

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12.   In comparison to our Table 2, the most comparable estimates in Bauer et al. (2013) are reported in their Table 2, first rows of panels (c) and (d). In their main specifications, Bauer et al. (2013) regress log income in 1971 on displacement status and pre-war characteristics and find that displaced men who worked in agriculture before the war had 0.104 (s.e. 0.011) log points higher earnings than comparable non-displaced men. For women, the corresponding estimate is 0.129 (s.e. 0.028). Using a similar specification and our data yields estimates of 0.217 (s.e. 0.030) for men and 0.254 (s.e 0.086) for women. For those working outside of agriculture before the war, Bauer et al. (2013) report estimates of -0.038 (s.e 0.005) for men and -0.017 (s.e. 0.010) for women. The corresponding estimates using our data are 0.020 (s.e. 0.024) for men and 0.11 (s.e. 0.030) for women. Note that unlike our main results, this analysis pools together individuals who worked outside of agriculture before the war regardless of whether they lived in rural or urban areas.

almost entirely by the Finnish military and mostly conducted in an orderly fashion. By contrast, the German population living in the eastern parts of the German Reich and in the areas Germany had occupied during the war fled the Red Army and retaliation of the non-German population in often chaotic circumstances. In Finland, the resettlement policy was generous, provided all displaced farmers land and kept the pre-war agricultural communities together. Although displaced persons were compensated for their lost property also in Germany (including tax incentives for leasing or purchasing farms), remaining in agriculture was much harder for displaced German farmers than for the Finnish ones. In addition, return migration was possible in Finland in 1941–44 (before the second and final displacement) while the German displacement happened only once. Consequently, the Finnish context provides opportunities for examining mechanisms holding back voluntary transitions from agriculture to non-agriculture that are not present in the German case. We examine these mechanisms in detail in the next section.

Another closely related paper is Nakamura et al. (2021), who examine long-term income and education of residents of a small Icelandic town in Westman Island that lost a third of its housing stock in a volcanic eruption in 1973. The owners of the destroyed houses were fully compensated for their losses. They were also 15-16 percentage points more likely to leave the Westman Island permanently in comparison to the baseline of 27% for the families whose houses survived. This difference is very similar to our estimates for displaced farmers, who were 15–17 percentage points more likely to leave agriculture in post-WWII Finland in comparison to the baseline of 28% among non-displaced farmers. The effects on long-term income are also relatively similar: Nakamura et al. (2021) find that having one's house destroyed at the age of 25 or younger increased earnings by 9-10% during their prime working-age (up to 41 years after the eruption), while we found that displaced farmers who were 14–32 years old at the start of the war had 16%–30% higher incomes than comparable non-displaced farmers two and half decades after the end of the war. Similarly to us and Bauer et al. (2013), Nakamura et al. (2021) attribute these effects to a higher likelihood of leaving the fishing industry—which in their case also implies a higher likelihood of graduating from college. However, an important difference between our context and theirs is that fishing was a relatively high-income industry in Iceland whereas average earnings in agriculture in Finland were relatively low.

5. Interpretation

The results reported thus far suggest that returns to leaving agriculture were substantial in mid-20th century Finland. This leaves us with the question of why most farmers chose to forgo these opportunities and why forced migration pushed many of them into the modern sector. In this section, we address this question through the lens of a simple Roy model and examine which of its variants are the most consistent with our data. We also suggest an extension incorporating habit formation for residential locations, which we believe to provide the most compelling rationalization for our

results. Throughout, we contrast our results to those from an early study by Waris et al. (1952), who collected survey data and conducted in-depth interviews among the displaced and non-displaced populations.[13]

5.1. An Illustrative Roy Model

In order to organize thoughts, we consider a simple Roy model with heterogeneous comparative advantage and switching costs. Our aim is to present the simplest possible framework for structuring the discussion and thus we keep the model as bare-bones as possible. More elaborate models starting from similar building blocks include Borjas (1987), Chiquiar and Hanson (2005), Lagakos and Waugh (2013), Young (2013), Bryan and Morten (2019), Lagakos et al. (2018) and Nakamura et al. (2021). We discuss our own extension in Section 5.4.

Consider an economy consisting of many locations and two sectors: agriculture denoted by a and non-agriculture denoted by n. There are only two types of locations, rural and urban, and everyone living in rural areas works in agriculture while everyone living in urban areas works in non-agriculture. Individuals, denoted by i, inelastically supply one unit of labor and maximize utility by choosing their sector of employment (and hence their location type). They differ in their industry-specific efficiency units of labor, $z_a(i)$ and $z_n(i)$, and the cost of switching sectors, $C(i)$. Those working in non-agriculture earn $z_n(i)$ and those in agriculture $A(i) z_a(i)$, where $A(i)$ summarizes the quality of their farms. That is, we assume that labor markets are competitive and normalize non-agricultural wages per efficiency unit to one. Given these assumptions, a person starting in agriculture will switch to non-agriculture if

$$\underbrace{z_n(i) - A(i) z_a(i)}_{\text{Returns to leaving agriculture}} > \underbrace{C(i)}_{\text{Switching cost}} \tag{2}$$

While simple, this model illustrates the potential complexity in who selects into making the transition to the modern sector. Those with a stronger comparative advantage in non-agriculture or lower quality land are more likely to leave agriculture. On the other hand, those with larger switching costs are willing to forgo larger monetary returns to leaving agriculture. The resulting selection pattern depends on the joint distribution of comparative advantages, farm qualities and switching costs.

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13.   The research project "The Adaptation of Displaced People: A Study on the Social Adaptation of Finnish Karelian Displaced People" was led by Heikki Waris, an eminent professor of social policy at the University of Helsinki. It was launched in 1948 with funding from the Rockefeller Foundation. The research group conducted surveys in 1949 and 1951. The final survey data include 1,982 displaced and 1,150 non-displaced persons living in the resettlement areas (see Online Appendix Figure A4 for the geographical distribution of the survey). The sample was constructed by first stratifying municipalities into groups based on the population shares of displaced persons and then using quota sampling to ensure representativeness in terms of gender and age within each location. In addition to the baseline survey, the research group conducted in-depth interviews in two rural municipalities and one industrial town in 1949. The results were published (in Finnish) in Waris et al. (1952).

For our analysis, the value of organizing thoughts with the help of equation (2) is threefold. First, it provides structure for our discussion by listing factors through which the displacement may affect income and transitions between sectors. Specifically, it illustrates that an increase in the fraction of farmers leaving the agricultural sector can be due to (i) an increase in earnings prospects in the modern sector, (ii) a decrease in earnings prospects in agriculture, or (iii) a decrease in the cost of changing sectors.

Second, the model highlights that the positive effect of forced migration on farmers' average income may mask important treatment effect heterogeneity. To examine this heterogeneity, it is informative to split the farmer population into three groups: (i) "always-takers" who switch to the modern sector regardless of their displacement status, (ii) "compliers" who leave agriculture only if they are displaced and (iii) "never-takers" who will stay in agriculture irrespective of whether they are displaced or not.[14] In the simplest case where forced migration only lowers the switching costs, forced migration increases compliers' income while it has no effect on the income of always-takers and never-takers. In this case, the instrumental variables estimates reported in Table 7 correspond to compliers' average returns to leaving agriculture. However, the IV estimates may not be informative about the average returns among all farmers. In particular, it is entirely possible that never-takers stay in agriculture because leaving agriculture would reduce their income.

The cases where forced migration affects returns to leaving agriculture are more complex. Suppose the displacement improves earnings prospects in the modern sector. In that case, forced migration increases the earnings of both the always-takers (who switch to the modern sector in any case) and the compliers (who now leave agriculture because of higher wages available in non-agriculture). However, it does not affect never-takers' income because they never work outside of agriculture. Similarly, if forced migration reduces the income available in agriculture, it reduces the income of never-takers and has no impact on always-takers. For compliers, the effect depends on whether their earnings prospects are better or worse in the modern sector than what they would have been in their old farms. Furthermore, in both cases, the exclusion restriction underlying our instrumental variables estimates would be violated and the estimates reported in Table 7 would not identify average returns to leaving agriculture for any group.

Finally, the Roy model generates predictions that may allow us to distinguish between alternative mechanisms. In particular, as we discuss in the next subsection and in Online Appendix C, contrasting the predictions of the model with our empirical results that condition on post-war sector suggests that it is unlikely that deterioration of farm quality alone explains our main results.

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14.   Empirically, the results reported in Table 3, the top row of columns 1–3, suggest that about a fifth of the farmers were always-takers, about one in six were compliers and more than half were never-takers. For brevity, we have omitted the discussion on the fourth possible group, the "defiers", i.e., farmers who leave their farms if they are not forced to migrate but stay in agriculture if they are displaced.

5.2. Returns to Leaving Agriculture

We first discuss whether we can rationalize our empirical findings solely by the displacement increasing returns to leaving agriculture while having no impact on switching costs. As we noted above, if forced migration either reduced income available from agriculture or increased earnings potential in the modern sector, it would push some displaced farmers to switch to the non-agricultural sector. Here, we discuss two possible mechanisms that could lead to such effects: deterioration of farm quality and a direct impact of the displacement on education.

5.2.1. Farm Quality.   The most direct way the resettlement may have affected returns to leaving agriculture is through permanent changes in quantity or quality of agricultural land.[15] In terms of quantity, the changes were mechanical as the size of the new farms was limited to 6–15 hectares of cultivable land. Hence, those who had derived their primary income from a farm smaller than 6 hectares of land were given more land than they had lost while those who had owned more than 15 hectares experienced a reduction in their farm size.

We use municipality-level information from the 1930 Agricultural Census to assess the likely importance of the resettlement policy on farm size. These data show that among farmers who were likely to get a new farm as part of the resettlement policy, less than a tenth had more than 15 hectares while a third had 3–5 hectares of agricultural land in 1930 (Online Appendix Table A10). The rest fell in between and thus received agricultural land whose area roughly equaled that they had in the ceded area before the war. Hence, the resettlement seems to have affected primarily the variability rather than the average of the farm size distribution. Nevertheless, even if average farm size was not affected, our results could be driven by the farmers who owned large farms in the ceded areas and hence had to settle with smaller farms after the resettlement. We examine this possibility by examining whether displaced farmers coming from municipalities with a higher share of large farms were more likely to leave agriculture than those from municipalities with smaller farms (Online Appendix Table A11). We find no evidence for this being the case, but our estimates are quite imprecise (see the Online Appendix for more detailed discussion). Thus, while the results suggest that changes in farm size are unlikely to be the main mechanism behind our results, we are not able to rule out economically meaningful variation in the impact of displacement by source municipalities' farm size distribution.

Of course, the resettlement may have affected opportunities in agriculture also through land quality. This could occur in two ways. First, the average land quality in the resettlement areas may have been lower than in the ceded areas. We investigate this possibility using regional-level information on yields per hectare of various crops as reported in the 1930 Agricultural Census. These data suggest that yields of

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15.   It is unlikely that the type of imperfect skill-transferability examined by Bazzi et al. (2016) in the context of Indonesian resettlement program would be relevant in our case because the resettlement policy we examine was designed to allocate farmers to areas with similar soil quality and average temperature.

common crops in the ceded areas were, on average, around 2% higher than in the resettlement areas (Online Appendix Table A12). This difference appears too small to plausibly rationalize our main results. However, even if the average land quality was roughly similar in the resettlement and ceded areas, displaced farmers could have been given worse land within the resettlement areas. Importantly, the resettlement policy was designed to mitigate this possibility. Specifically, redistribution of land was implemented through a highly regulated process, where the displaced farmers had strong representation and local landowners faced severe constraints on choosing which plots of land to give up for expropriation.[16]

Taken together, the available evidence suggests that the average decline in the quantity and quality of land was likely to be relatively modest for most of the displaced farmers. However, displaced farmers typically received only land and had to build the farm buildings themselves (with the help of government subsidies, see Section 2.2). Thus, the resettlement policy is best characterized as providing opportunities to build farms that were roughly similar to those that most farmers had lost. Still, there is no direct evidence that the new farms became as productive as those left to the ceded area. Thus, it is possible that the displacement reduced the opportunity costs of leaving agriculture and therefore pushed displaced farmers to the modern sector.

Importantly, lower farm quality is an unlikely explanation for what happened to the farmers who remained in agriculture. Intuitively, if displaced farmers received worse farms than their old ones, we would expect displacement to decrease the income of those who stayed in their new farms. Empirically, we found that conditional on the post-war sector displaced farmers had, if anything, higher average income in 1971 than non-displaced farmers (Table 6). This finding appears to contradict the hypothesis that major deterioration of farm quality took place.

However, as we noted in Section 4.4, the estimates reported in Table 6 do not have a causal interpretation because they condition on factors that were themselves outcomes affected by the displacement. The Roy model allows us to make this point more precisely. In the model, a deterioration of farm quality would influence average income in agriculture directly through farm quality and through selection in who decides to switch sectors. In the language of the previous subsection, we observe agricultural income only for never-takers among displaced farmers, and for never-takers *and* compliers among non-displaced farmers. Similarly, we observe non-agricultural income for compliers and always-takers among displaced farmers,

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16.   The Department of Land Settlement at the Ministry of Agriculture was in charge of the resettlement policy. It was led by one of the most influential politicians of post-war Finland, Veikko Vennamo, who became known for defending the interests of the displaced population. The expropriation of land was entrusted to 147 Land Redemption Boards, each consisting of a surveyor engineer acting as chairman, two expert members (a graduate in agricultural sciences and a forester), a lay member representing the local landowners and a lay member representing the displaced farmers. The distribution of the land among the displaced farmers were conducted by another 147 Settlement Boards, consisting of a graduate in agricultural sciences as a chairman, one representative of the local landowners and two representatives of the displaced farmers. In addition, eight Supervisory Bureaus and eight Courts of Appeals were set up to ensure the fairness of the process. (Pihkala, 1952)

and only for always-takers among non-displaced farmers. If (i) compliers' earnings prospects in agriculture were sufficiently lower than those of never-takers' and (ii) compliers earnings prospects in non-agriculture were not too much lower than those of always-takers, a positive selection effect could mask or even dominate a negative direct effect of worse farms. We examine this possibility formally in Online Appendix C using results of Heckman and Honore (1990). The key finding of this analysis is that while we cannot rule out the possibility that the selection effect would dominate the direct effect, such an outcome would require a very particular (and arguably implausible) joint distribution of sectoral productivities.[17]

We recognize that a simple Roy model abstracts away from many potentially important factors affecting 1971 income. For example, displaced farmers who remained in agriculture may have invested more in their farms during the post-war period than non-displaced farmers. Similarly, as we discuss in detail next, forced migration could have affected investments in human capital. Nevertheless, while deterioration of farm quality may have pushed some farmers to leave agriculture, it does not seem to provide a compelling explanation for how forced migration affected long-term income. Thus, we next examine several other possible mechanisms.

5.2.2. Human Capital.   We now turn to the possibility that resettlement would have affected returns to migration through an impact on human capital. This channel would be in line with Becker et al. (2020), who show that the offspring of individuals forced to move from the areas Poland ceded to the Soviet Union at the end of World War II were substantially more educated than the offspring of the non-displaced population living in the same locations. They interpret this difference as evidence for forced migration shifting preferences towards investing in portable assets, such as education, and present compelling complementary evidence supporting this interpretation.

In the Roy model, increased education would correspond to increased productivity in both sectors. However, if returns to formal education were higher outside of agriculture, additional education would increase z_n more than z_a and hence improve returns to leaving agriculture. Thus some displaced farmers would switch to the modern sector, and their income would increase. In addition, improvements in z_a and z_n would also increase the income of the always-takers and the never-takers, i.e., those whose sector of employment was not affected by the displacement.

However, it is important to note that the causal chain could also run in the opposite direction. If the displacement affected the likelihood of leaving agriculture through other mechanisms, higher returns to education in the modern sector would create incentives to acquire more education. Our data appear to be more consistent with

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17.   In the Roy model, the selection effect dominates the direct effect only in the case where z_a and z_n are strongly correlated and the variance of z_a is substantially larger than the variance of z_n. In the language of Heckman and Honore (1990), non-agriculture would then be a "non-standard" sector because those with the lowest productivity in non-agriculture would choose to work in that sector. In all other cases, a deterioration of farm quality would lead to displaced farmers having lower earnings than non-displaced farmers conditional on their post-war sector.

transitions to the modern sector driving education than the other way around. That is, we find a positive impact of displacement on education for those living in rural areas before the war and no effect on the urban population (Table 3). Furthermore, consistent with migration preceding educational investments, the effect of forced migration on moving to non-agriculture and cities are present already in 1950, while the impact on education appears to occur sometime between 1950 and 1970 (Tables 3 and 5). We stress that these observations do not rule out the possibility that forced migration affected preferences for education. Furthermore, the timing of educational investments could also reflect changes in the supply side constraints as the vocational school network expanded gradually over time (see Section 4.3). Nevertheless, as we discuss in Section 5.4, a direct effect of forced migration on education would not explain why almost all displaced farmers returned to their home farms when return migration became temporarily possible in the period 1941–44.

5.3. Swiching Costs I: Networks, Culture, Discrimination and Learning

The analysis above suggests that changes in returns to migration alone are unlikely to explain our main results. Thus, we believe that an important part of the story lies on the other side of condition (2), i.e., forced migration reducing switching costs. We next discuss how the expansion of dispersed networks, the destruction of local networks, cultural differences, discrimination and learning could lead to such effects. We leave our final candidate, attachment to a place (habit formation), for the last subsection.

5.3.1. Expansion of Dispersed Networks.   One way the displacement could have reduced switching costs is that it may have created valuable social networks. In particular, the initial evacuations could have created geographically dispersed networks that could have facilitated the flow of information about job and business opportunities. In the evacuation phase, the displaced population of each ceded municipality was transported to a designated evacuation area, and the local population was obliged to shelter them. Consequently, most displaced persons were hosted by a local family during the winters of 1940–41 and 1944–45. During the summer of 1945, the displaced farmers received land from locations that were, on average, roughly 150 kilometers away from their 1944–45 evacuation areas. According to Waris et al. (1952, p. 240), at least some of the displaced persons maintained contacts with their former host families also after moving to their final resettlement areas.

The key challenge in explaining our results with evacuation networks is that the evacuation areas were rural, and the families hosting the displaced population were primarily farmers (who had space to accommodate the evacuees). Thus, these networks were not particularly well-suited for conveying information about non-agricultural job opportunities. On the other hand, some rural municipalities became local manufacturing centers in the post-war period (Sarvimäki, 2011; Mitrunen, 2021) and being evacuated to such a municipality could have been valuable. Furthermore, some of the locals living in the evacuation areas in the 1940s migrated to cities later on and could thus expand the network available for the displaced population.

We examine the role of the evacuation networks by comparing displaced persons exposed to different kinds of evacuation areas. This approach builds on the assumption that if the evacuation networks facilitated information flows, they were more valuable to displaced persons who had been evacuated into more prosperous or faster-growing locations. However, Table 8 shows that displaced persons evacuated into more economically viable areas did not seem to earn more than those evacuated into other places. In Panel A, we measure the quality of the evacuation area using the 1971 average income of individuals living in these locations in 1939 (regardless of where they lived in 1971). The estimates using data on all displaced persons suggest that a one-euro increase in the 1971 earnings of locals living in the 1940 and 1944 evacuation areas, respectively, predicts 0.010 and 0.012 euros lower 1971 income among the displaced (the 95% confidence intervals for both estimates are -0.14–0.12 euros). Breaking down the displaced population by gender and pre-war status yields both positive and negative point estimates of comparable magnitude that are all statistically insignificant.[18] Panel B reports similar estimates using pre-war taxable income per capita as an alternative measure of evacuation area quality. Again, we find precisely estimated zeros. The only exception is the estimate for rural men working outside of agriculture in 1939, for whom the estimates suggest that a standard deviation increase in the pre-war per capita income of the 1944 evacuation area would *decrease* 1971 income by 1,210 euros. However, as we report 28 estimates in Table 8, giving weight to one statistically significant estimate is unlikely to be appropriate. Thus, we interpret these results as suggesting that the quality of the evacuation areas did not have important economic effects on the displaced.

5.3.2. Destruction of Local Networks.   In addition to creating new social networks, forced migration may have destroyed old ones. In particular, it may have disrupted close-knit local networks that allow informal credit and insurance arrangements to persist (Banerjee and Newman, 1998; Karlan et al., 2009; Munshi and Rosenzweig, 2016). Losing access to such informal arrangements would reduce the opportunity cost of migration and could thus account for our results. Furthermore, the displacement could have affected access to farmers' co-operatives and therefore pushed displaced farmers away from agriculture.

The importance of local networks was not lost on Finnish policymakers, who made every effort to resettle displaced villagers close to each other. However, the extent to which this principle could be implemented in practice varied across locations. As Figure 2 illustrates, even neighboring municipalities ended up being resettled into areas that differed vastly in size. This variation is driven by differences in the presence of large farms and government-owned land, which determined the amount of land that could be distributed to displaced farmers. Thus comparable displaced farmers were resettled to areas of different sizes. Specifically, we hypothesize that being resettled

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18.   We do not report estimates for the urban population here because there were only three cities in the ceded areas, and thus, standard errors clustered at the 1939 residence municipality level are unlikely to yield valid inference.

TABLE 8. Evacuation Area Quality and Long-Term Income

		Men			Women		
	All	All	Agri-cultural	Other rural	All	Agri-cultural	Other rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A: Average income of "locals" in 1971							
1940 evacuation area	-0.010	-0.116	0.163	-0.380	0.076	-0.088	0.079
	(0.066)	(0.116)	(0.157)	(0.299)	(0.049)	(0.048)	(0.089)
1944 evacuation area	-0.012	-0.011	-0.172	0.171	-0.030	-0.102	0.028
	(0.067)	(0.133)	(0.091)	(0.248)	(0.059)	(0.052)	(0.063)
B: Taxable income per capita in 1939 (standardized)							
1940 evacuation area	0.027	-0.059	0.205	-0.624	0.151	0.038	-0.239
	(0.208)	(0.290)	(0.290)	(0.676)	(0.177)	(0.150)	(0.217)
1944 evacuation area	0.142	0.380	-0.497	1.214	-0.084	-0.031	-0.041
	(0.163)	(0.285)	(0.265)	(0.460)	(0.106)	(0.127)	(0.131)
Observations	7,506	3,382	1,337	1,156	4,124	831	2,122

Notes. Estimates for β from a regression $y_i = \alpha + EA_i\beta + X_{io}\delta + \varepsilon_{ijt}$, where y_{ij} is annual income in 1971, EA_i is the average 1971 income of individuals living in the evacuation area already in 1939 (panel A) or standardized taxable income per capita in 1939 (panel B) and X_{i0} is a vector of observable pre-war characteristics (see the notes to Table 2). Each column reports estimates from a separate regression. Standard errors (in parentheses) are clustered at the 1939 residence municipality level. The number of observations deviates slightly from those reported in Table 1 because we have not been able to find information on the evacuation area of a few municipalities. We do not report estimates separately for the urban population due to the small number of ceded urban municipalities.

into a larger resettlement area led to longer geographical distances between members of pre-war local networks and thus weakened these networks. If local networks were an important force holding back migration, displaced farmers resettled further away from their old network members would be more likely to move to the modern sector and thus earn more than those resettled into more compact areas.

Columns (1) and (5) of Table 9 report results from regressing annual income in 1971 (panel A) and an indicator for working outside of agriculture in 1970 (panel B) on the size of the resettlement area and observable pre-war characteristics. We focus on displaced farmers because those working outside of agriculture were not directly affected by the resettlement plan. The treatment variable is the size of the resettlement area scaled with the size of the origin municipality, where the scaling is due to accounting for pre-war differences in population density. The estimates suggest that moving from the 25th percentile to the 75th percentile of the resettlement area size distribution would increase the income of men by 130 euros (95% confidence interval -810–1,070 euros) and decrease income of women by 110 euros (CI -370–120 euros). The corresponding estimates for the likelihood of working outside of agriculture are a decline of 0.42 percentage points for men (CI -3.8–2.9 percentage points) and 0.77 percentage points for women (CI -4.0–2.4 percentage points). That is, we find no evidence on the size of the resettlement area affecting later outcomes.

TABLE 9. Resettlement Area Characteristics and Long-Term Outcomes

	Men				Women			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A: Annual income in 1971								
Size relative to origin area	0.08 (0.30)		.	0.14 (0.30)	-0.09 (0.09)	.	.	-0.08 (0.10)
Distance to origin area	.	0.06 (0.33)	.	-0.12 (0.38)	.	0.05 (0.12)	.	0.02 (0.14)
Exproriated private land	.		2.60 (1.94)	3.34 (2.18)	.		0.38 (0.73)	0.10 (0.84)
B: Works outside of agriculture in 1970								
Size relative to origin area	-0.26 (1.06)		.	-0.20 (1.14)	-0.55 (1.16)		.	-1.29 (1.12)
Distance to origin area	.	-0.10 (1.36)	.	-0.55 (1.47)	.	-1.13 (1.27)	.	0.01 (1.24)
Exproriated private land	.		4.37 (8.80)	5.34 (9.75)	.		-18.6 (7.3)	-22.2 (6.9)
Observations	1,376				831			

Notes. Estimates for β from a regression $y_{ij} = \alpha + \beta RA_j + X_{io}\delta + \varepsilon_{ijt}$, where y_{ij} is either annual income in 1971 in thousands of 2010€, including zeros (panel A) or an indicator for working outside of agriculture in 1970 (panel B), RA_j is a measure of resettlement area characteristics and X_{i0} is a vector of observable pre-war characteristics. All regressions are run using data including only displaced farmers. Standard errors (in parentheses) are clustered at the 1939 residence municipality level. Size is measured as the total area of the resettlement area divided by the area of the origin municipality (standard deviation (SD) 1.53, interquartile range (IQR) 1.42), distance to origin area in 100 of kilometers (SD 0.85, IQR 1.52) and expropriated land as the share of all redistributed agricultural land expropriated from private landowners (SD 0.18, IQR 0.26).

We stress that this result does not necessarily imply that local networks were irrelevant. Indeed, they could be so valuable that the displaced persons maintained them despite the increased distance between the network members. Nevertheless, we do not find support for the hypothesis that the destruction of local networks explains why forced migration affected income and mobility. This conclusion is also in line with Waris et al. (1952, p. 229), who found that displaced persons had no difficulties in joining local farmers' cooperatives. As we discuss in more detail next, the displaced persons seem to have integrated well also into other kinds of local networks.

5.3.3. Cultural Differences and Discrimination.   Our third candidate for why many displaced farmers decided to leave agriculture is that they may have felt out of place in their resettlement areas. Finland has a wide variety of local dialects and customs, and cultural differences between displaced and local populations may have been relatively large, particularly in the resettlement areas further away from the ceded areas. On the other hand, the displaced population could have faced discrimination, particularly, if the locals held a grudge for having had their land expropriated.

A large fraction of Waris et al. (1952) is devoted to this question. They conclude that while many respondents recalled tensions during the evacuation phase (when the local population suddenly had to share their homes with the evacuees), the displaced population seemed to have quickly integrated into their resettlement areas' social life. Three-quarters of the displaced persons reported having visited at least one local during the past month, and the same share of locals reported visiting at least one displaced family. About half of the displaced persons participating in the in-depth interviews included a local in their list of five best friends. Another sign of integration is the high rate of intermarriage and the fact that the displaced population actively entered local politics as part of the established parties rather than forming their own parties. However, later qualitative work has argued that Waris et al. (1952) paints an overly harmonious picture of the interactions between the displaced and local populations. In particular, more recent work emphasizes prejudices towards displaced persons who were members of the Orthodox Church (Alasuutari and Alasuutari, 2009; Kananen, 2018; Tepora, 2018).

Table 9 adds to this evidence by examining whether displaced farmers resettled into a culturally more different or more hostile location were more likely to leave agriculture and to have higher income. We use geographical distance from the source area as a proxy for cultural distance and the share of the redistributed land coming from private landowners (instead of government-owned land) as a proxy for the hostility of the locals. All point estimates are small and the only statistically significant one suggests that women resettled to areas where a larger share of redistributed land came from private landowners were *less* likely to leave agriculture.[19] In a complementary analysis, we show that the impacts of being displaced were very similar for members of the (majority) Lutheran and (minority) Orthodox churches even though the latter group was likely to experience substantially more discrimination than the former (Online Appendix Table A13). Thus we conclude that while the displaced population was likely to face at least some cultural differences and discrimination, these factors are unlikely to drive our main results.

5.4. Swiching Costs II: Habit Formation

We end by examining whether our results can be rationalized by people growing attached to the place where they live. This explanation is motivated by Waris et al. (1952), who surveyed displaced persons about their future migration intentions and inquired why they were planning to move (or to stay). Waris et al. (1952, p. 314)

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19.   Specifically, the estimates suggest that being resettled 100 kilometers further to the west increased annual income by 60 euros (CI -600–710 euros) for men and by 50 euros (CI -190–290 euros) for women and decreased the likelihood of leaving agriculture by 0.1 percentage points (CI -2.8–2.6 percentage points) for men and by 1.1 percentage points (CI -3.6–1.4 percentage points) for women. Similarly, a ten percentage points increase in the share of private land increased annual income in 1971 by 260 euros (CI -120–640 euros) for men and by €38 (CI -€100–€180) for women, while increasing the likelihood of leaving agriculture by 0.4 percentage points (CI -1.3–2.2 percentage points) for men and decreasing it by 1.9 percentage points (CI -3.2–0.4 percentage points) for women.

concluded that most of the displaced persons expected to settle down in their current locations and summarize their results as follows:

> *"The explanations for why it was time to settle down varied widely, [but our] overall conclusion is that the displaced Karelians started to feel part of their new communities. The only reservation that came up again and again was: "but if only one could move back to Karelia...!". The lost area, and everything related to it, gave rise to overwhelming emotions. Just saying the word, Karelia, seemed to put everything that belonged to the past, and that was now lost, into a bright, admiring light. In comparison to that, everything else was gray, dull, inferior." (translation from Finnish by the authors)*

According to Waris et al. (1952), a typical sentiment is captured by a displaced farmer saying: "*Since I cannot go back to my old land, it does not matter where I live. Besides, the locals here are nice people.*" The perception that the displaced persons held a high opinion of the ceded areas is also supported from another direction: when locals were asked to name an annoying trait among the displaced persons, the most frequently mentioned ones were categorized as "exaggeration, praising the past too much".

5.4.1. A Roy Model with Habit Formation.   In order to rationalize our empirical results in a manner that is also consistent with Waris et al. (1952), we augment the Roy model sketched in Section 5.1 with habit formation for living in a location. That is, instead of assuming an exogenous switching cost as above, we now focus on the origins of the switching costs and suggest a source of these costs that has not been discussed in the earlier versions of the Roy model. As before, we assume that individuals differ from each other in terms of their productivities across sectors and in their switching costs. Now, we also explicitly define the source of the switching costs. Specifically, we assume that in addition to consumption, people derive utility from their residential location and that this utility increases with the time the person has already lived in the location. Following Becker and Murphy (1988), we call the latter property habit formation and model it as "location capital" that affects contemporaneous utility and is accumulated by "consuming" more of a location, i.e., living there. We assume that people are heterogeneous in their taste for location capital and that they maximize their lifetime utility by choosing a sequence of locations while taking into account their lifetime budget constraint, the accumulation process of location capital and their initial location capital accumulated during childhood.[20]

Figure **??** illustrates the key tradeoffs in this model. It corresponds to individuals who have grown up on a farm and are choosing whether to remain or to move to the modern sector at the beginning of their adult life. As in section 5.1, we assume that one can leave agriculture only by moving to another location. The choice is determined by the strength of comparative advantage (vertical axes) relative to the taste for location

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20.   For illustration, we present one version of such model in Online Appendix D, but we believe that the basic intuition is general to any model including the following ingredients: (a) people differ in their comparative advantages, (b) people derive utility from consumption and location, (c) utility from living in a location increases with location capital, and (d) people choose their locations only after having first accumulated some initial location capital.
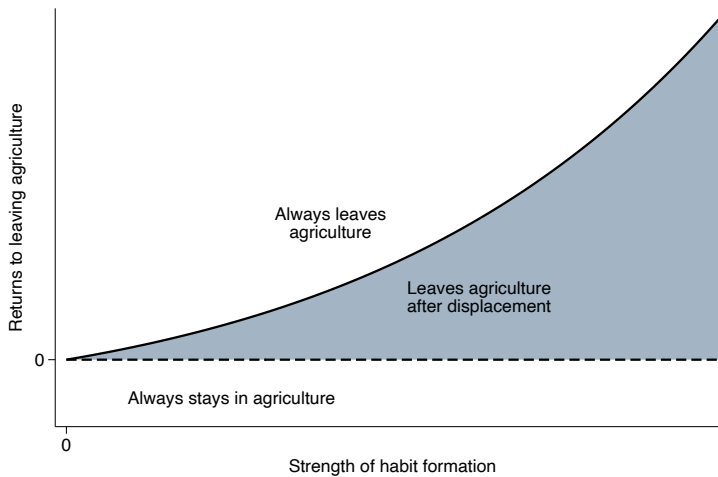
FIGURE 3. Sectoral choice in an illustrative Roy model with habit formation. This figure illustrates the basic insights of a Roy model with habit formation for a residential location for individuals who have grown up on a farm. The shaded area shows the combinations of comparative advantages (vertical axis) and taste for location capital (horizontal axis) for individuals who stay in agriculture only if they can stay in their home farms. See the text and Online Appendix D for details.

capital (horizontal axis). The solid line plots the indifference curve between moving and staying. It slopes upwards because the extra income required for making a person indifferent between moving and staying increases with the extent to which he values staying at home. Thus, those who have a combination of sufficiently high returns to leaving agriculture or sufficiently low taste for location capital move, while the rest stay on their farms.

Suppose that at a later stage, some people are forced to migrate. They now lose the location capital accumulated before the displacement and hence their indifference curves become flat. Thus they will choose their locations based on available income alone. Those who had chosen to leave agriculture already before the displacement remain in the modern sector. Similarly, those who maximize their income in agriculture will remain in agriculture. However, farmers who previously chose to stay on their farms due to their taste for location capital now move to the modern sector. As a consequence, forced migration increases their income.

This version of the Roy model provides a simple rationalization for our key empirical results. Similar to all Roy models, it predicts that forced migration pushed some (but not all) displaced farmers to leave agriculture. Like all versions where forced migration affects switching costs, ours is consistent with displaced farmers having similar long-term income as non-displaced farmers conditional on their post-war sector, location and education (see Online Appendix C for discussion). However, other versions of the Roy model can not rationalize one important fact that we have thus far discussed only in passing: when the opportunity arose, almost all displaced

farmers returned to their old farms. As we discuss next, this is precisely what our version of the Roy model predicts.

5.4.2. Return Migration.   In our model, a displaced person starts to accumulate a new stock of consumption capital in their new locations after resettlement. In the words of Waris et al. (1952), they start "to feel part of their new communities" (see the quote above). However, the new location capital accrues slowly, while the location capital tied to their old homes slowly depreciates. Thus, there is a period during which displaced persons would be willing to give up part of their income in order to return to their previous homes.

As we already discussed, in the data collected by Waris et al. (1952), displaced persons expressed a strong desire to return to the ceded areas. The limitation of this observation is that the respondents may have been tempted to exaggerate their desire to move back to Karelia in low-stake surveys and interviews. However, an informative feature of the Finnish resettlement experience is that the displaced persons were allowed to reveal their preferences when Finland reoccupied the lost areas during the summer of 1941 and held them for three years (see Section 2). In December 1941, the ownership rights in the ceded area were formally restored and displaced persons could apply for a permit to return. If they were granted the permit, they could give up the farm they had received as part of the resettlement policy and move back to what was left of their old farms.

Notably, there was a genuine opportunity to stay in the resettlement areas and, in many ways, staying would have been a sensible choice. Much of the housing stock of the reoccupied area had been destroyed and conditions were often harsh. For example, roughly 22,000 farm buildings needed to be rebuilt (Pihkala, 1952) and some return migrants endured food shortages (Waris et al., 1952). Return migration proved extremely popular despite the high cost and risk, particularly among the farmers. Indeed, almost all land allocated as part of the 1940 Emergency Settlement Act (*Pika-asutuslaki*) was returned in exchange for the old farms (Pihkala, 1952). In total, 70% of the displaced population returned, even though not everyone was granted a permit to return due to housing shortages, proximity to the frontline or being considered politically unreliable. Remarkably, almost half of the population returned even to the municipalities where more than 85% of the housing stock had been destroyed (Online Appendix Figure A5).

This behavior is consistent with the habit formation model. However, it would also be consistent with land located in the ceded area being sufficiently better than land provided by the resettlement policy, i.e., the displaced farmers moving back to maximize their income. In Section 5.2, we argued that the quality difference between the old and the new farmland was likely small. The large-scale destruction of the housing stock in the ceded area further reduced income available from the old farms. Nevertheless, in some cases, the quality difference between the new and old land might have been sufficiently large to justify returning purely for financial reasons. Yet, it seems unlikely that this alone would explain why almost all displaced farmers returned to their old farms. Furthermore, as we discussed in Section 5.2, a deterioration of farm

quality would imply that displaced farmers remaining in agriculture would experience a negative effect on their income. This negative effect would be further magnified by their investments in rebuilding their old farms during the return migration period.

The return migration is also helpful for distinguishing between habit formation and two closely related alternatives: learning and inertia. Specifically, the shock of being displaced could have helped people update their beliefs about their ability to settle in a new environment or overcome inertia. If return migration had not been possible, these mechanisms would be indistinguishable from habit formation as they all would reduce switching costs in fundamentally unobservable ways. However, if forced migration had made the displaced persons just more open or willing to migrate to a new location, they could have chosen any place that would have provided them with the best economic opportunities. Instead, they overwhelmingly returned to their old homes.

Finally, it is worth noting that research based on interviews and surveys strongly supports the view that return migration was driven by an emotional bond to the ceded areas. When Waris et al. (1952) asked their interviewees to describe their return migration experience and how they felt about it afterward, 84% of those who had returned argued that they did not regret doing so. Instead, they described at length the joy of returning home. Waris et al. (1952, p. 170) summarize this sentiment by quoting one displaced person saying: *"It was better to spend those years [in Karelia]. Maybe it was a financial loss, but that is not the most important thing"*. These observations suggest that the impact of being forced to migrate was not limited to farm quality, human capital, networks, cultural distance, discrimination, or learning. In fact, these factors play a relatively minor role in qualitative research and popular writings about the displaced Karelians (see e.g. Alasuutari and Alasuutari, 2009). Instead, a major theme in this work is the displaced persons' intense longing for their *homes* that goes far beyond the economic opportunities available in the ceded area.

5.4.3. Welfare.   In addition to providing a simple rationalization for our results, we believe that our version of the Roy model is valuable in providing insight into the intergenerational welfare effects of migration. Like all Roy models, our variant suggests that while forced migration increased the average income of the first-generation displaced persons, it is likely to have reduced their welfare. After all, if the sector and location they ended up in after the war provided them with higher welfare than their home farms, they could have moved there even if they were not displaced. Importantly, however, in a model including habit formation, forced migration increases the welfare of their children. The reason is that these children, particularly those born after the displacement, will now accumulate their initial location capital in economically more viable places. Thus, they will be able to reap the benefits of better labor market opportunities without having to pay the price of leaving home.

6. Conclusions

This paper examines the long-term effects of resettling 11% of the Finnish population during World War II. Our key finding is that forced migration increased the likelihood of leaving agriculture and long-term income among the rural population. We examine the extent to which these effects arise from forced migration affecting farm quality, education, networks, learning, cultural differences and discrimination and find limited or no evidence supporting these mechanisms. While we do not have sufficient statistical power to rule out all of these alternative mechanisms, we argue that an important part of the story is that people are willing to forgo even large monetary gains to stay at home. When this opportunity is removed from their choice set, they become more responsive to economic incentives and hence more mobile. We formalize this argument with a Roy model extended with habit formation for residential location.

At some level, the conclusion that people value their homes is hardly surprising. Stories of someone choosing a humble life in her home town instead of a lucrative career elsewhere are familiar to most readers. Yet, while anecdotes are abundant, systematic evidence remains scarce—most likely because any empirical investigation of habit formation faces the challenge that people who differ in their personal histories are likely to also differ along other, unobservable dimensions. Thus, it is hard to distinguish between alternative mechanisms using observational data, but experimental manipulation of personal histories is typically infeasible. Forced migrations can create research designs for studying habit formation, but they usually come with the limitation of affecting people in multiple ways. In this regard, Finland's attempt to reconstruct the pre-war situation for displaced farmers as closely as possible provides a rare opportunity for gaining insight into this question.

Our results are consistent with the hypothesis that habit formation for residential locations is a quantitatively important factor affecting the allocation of labor across sectors and areas. However, we emphasize that it alone is unlikely to explain the persistence of rural-urban income differences. We do not advocate a view that other mechanisms are irrelevant but merely suggest that habit formation matters and that models including it provide additional insight. In particular, such models illustrate that even if labor is misallocated in terms of lost production, this need not entail lost welfare. In the language of Becker and Murphy (1988), farmers may be "addicted" to their farms, but it may be "rational addiction" in the sense that given their initial location capital, they maximize their lifetime utility by staying in the low productivity traditional sector.

Such preferences are unlikely to be limited to farmers and may thus explain more broadly why people choose to stay in declining areas or industries. Indeed, we see no reason to think that Finns would have been more attached to their homes than anyone else. Furthermore, economic development may ease other forms of migration costs and thus increase the relative role of habit formation. For example, better availability of formal insurance reduces the importance of risk and informal insurance in migration decisions. Similarly, improvements in information technology are likely to make dispersed networks less important for learning about job and business

opportunities. By contrast, migration costs due to habit formation are not affected by such institutional or technological changes. If anything, people may become more likely to decide that they can afford to stay at home, even if it is costly, when they become richer.

Finally, we note that analyzing location choices through the lens of a habit formation model reveals a potential intergenerational conflict because children do not choose where to accumulate their initial location capital. Thus, if people could choose their locations at birth, they might choose differently than what they end up choosing later in life. In the context of post-war Finland, it is possible that while the displacement was a tragedy for those who had to leave their homes, it may have liberated their offspring to enjoy the benefits of growing up in locations that provide better economic opportunities. In other contexts, creating (preferably softer) incentives for people to move to higher productivity areas could also give rise to similar intergenerational effects

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