

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

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Abstract

We examine the resettlement of 11% of the Finnish population after World War II. Farmers were resettled to areas resembling the origin regions and given land and assistance to continue farming. A quarter of a century later, they were more likely to hold a non-agricultural job and earned more than comparable non-displaced farmers. These results suggest that returns to leaving farming were large in mid-20th century Finland. Nevertheless, almost three quarters of the non-displaced farmers chose to remain in agriculture. We rationalize these findings as habit formation, i.e. people growing attached to the places where they live.

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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 us with a puzzle: if workers could earn much more in the modern sector, why do they stay in agriculture?

This paper examines transitions from agriculture to nonagriculture in the mid-20th century Finland—a poor, agrarian society at the time. We present empirical evidence suggesting that many farmers could have substantially increased their income by leaving agriculture, but chose to forgo these opportunities. We argue that part of this behavior can be rationalized as habit formation in the sense that utility of living in a location increases with the time already lived in that location. Our results suggest that such habit formation is a quantitatively important factor affecting the allocation of labor across sectors and locations.

Any empirical investigation of habit formation faces the challenge that people who differ in their personal histories are likely to also differ along other (unobserved) dimensions. In our context, farmers may choose to remain in agriculture because they love their farms, because their comparative advantage is in agriculture, because they lack networks or formal insurance, or because of a number of other plausible reasons. It is hard to distinguish between these possibilities using observational data. However, experimental manipulation of personal histories is typically infeasible.

We make progress by examining the long-term impacts of a large-scale population resettlement. World War II led Finland to cede its eastern parts to the Soviet Union and to evacuate and resettle the entire population living in those areas to the remaining parts of the country. In total, 11% of the population were forced to migrate. For those working in agriculture—roughly one half of the population—the government attempted to reconstruct the pre-

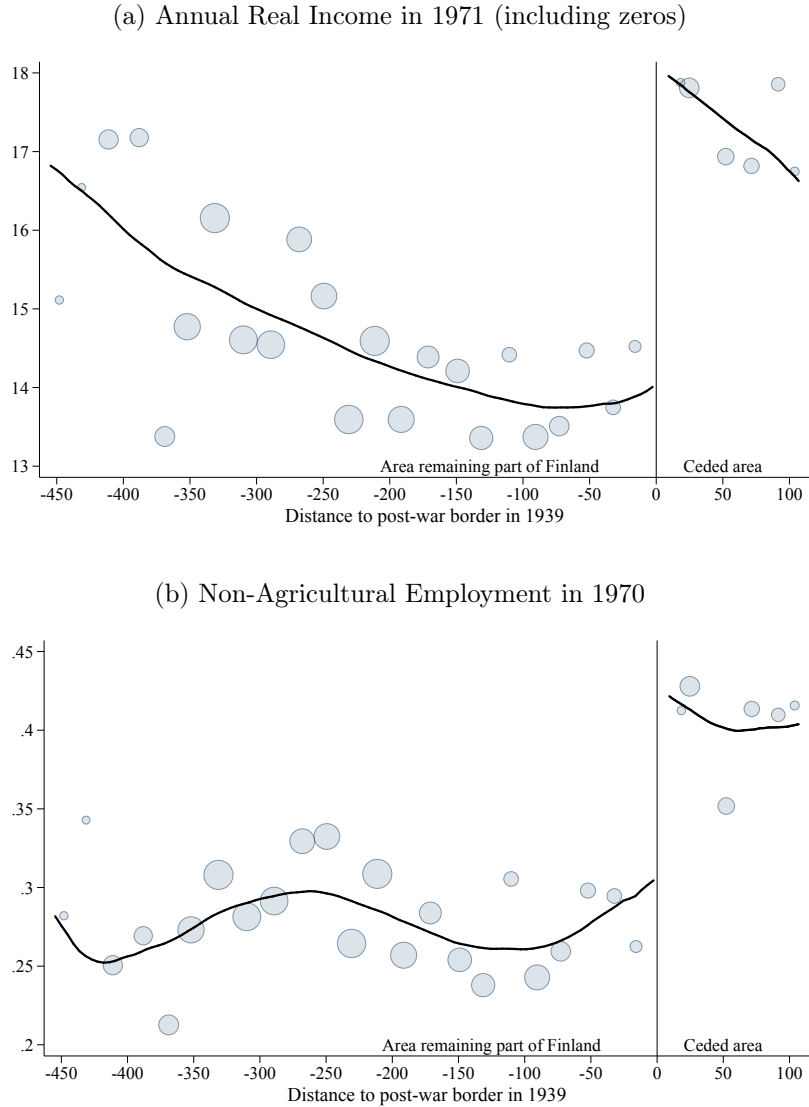
war conditions as closely as possible. Displaced farmers were given land and assistance to establish new farms in areas that had similar soil and climate as the origin regions. Former neighbors were resettled close to each other in order to preserve social networks. Once the resettlement was completed in 1948, however, the displaced farmers were not subject to any special 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 by estimating the impact of forced migration on long-term earnings and mobility. The top panel of Figure 1 presents our first result using a sample of men who were working in agriculture just before the war in 1939. The horizontal axis shows the distance from their pre-war municipality of residence to the post-war border. The vertical axis presents their average annual income in 1971. The figure shows that a quarter of a century after being forced to migrate, displaced farmers earned substantially 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 and thus the post-war differences do not arise from self-selection into migration. Furthermore, there are no important 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 earnings by 10–29% among men working in agriculture before the war.

We next examine potential mechanisms behind the positive effect on income. The bottom panel of Figure 1 shows that displaced farmers were more likely to leave move from agriculture to other sectors between 1939 and 1970. Estimates from alternative specifications suggest that forced migration increased the likelihood of leaving agriculture by 10–16 percentage points from a baseline of 28%. Importantly, this effect reflects voluntary transitions, because the displaced farmers were given new farms in the resettlement areas.

Figure 1: Pre-War Location and Post-War Outcomes



Note: The top panel plots annual earnings in 1971 (including zeros) by distance of the 1939 residence municipality to the post-war border (in kilometers). Positive numbers on the x-axis refer to areas that were ceded to the Soviet Union in 1940/45. The sample used in this analysis consists of 13,987 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 similar analysis for an indicator for the person working outside of agriculture in 1970. The lines represent local linear estimates using the edge kernel and the optimal bandwidth of Imbens and Kalyanaraman (2012). The dots correspond to the sample means by 20km bins. On average, each dot represent 478 individuals.

We also find that forced migration increased the likelihood of moving to a city and that the impacts for income and mobility closely mirror each other when we extend the analysis to other groups. Being displaced had little or no impact on income or industry of rural men who worked outside of agriculture before the war, but decreased income and increased the likelihood of moving to rural locations among the urban population. Furthermore, the average income of displaced persons was similar in the 1970s as that of the non-displaced persons working in the same industries and living in the same locations.

Taken together, our results suggest that the impact of forced migration on income can be attributed to increased likelihood of leaving agriculture. Under the assumption that being displaced affected income only through this channel, our estimates imply that farmers could have increased their income by roughly 70% by moving to the modern sector. We recognize that such an instrumental-variables interpretation may be too strong, because forced migration may have affected income also through other channels. Nevertheless, we argue that a reasonable interpretation of our results is that returns to leaving agriculture were likely to be high in the context we study.

If farmers could substantially increase their income by leaving agriculture, why did most of them decide to stay on their farms? Previous work suggesting answers to this question has focused on the riskiness of urban labor markets (Harris and Todaro, 1970; Bryan et al., 2014), local prices and amenities (Rosen, 1979; Roback, 1982), sectoral differences in human capital and returns to skills (Caselli and Coleman, 2001; Lucas, 2004; Lagakos and Waugh, 2013; Young, 2013) and social networks (Banerjee and Newman, 1998; Munshi and Rosenzweig, 2016). However, these models are unlikely to explain our results, because the displaced and non-displaced persons did not significantly differ from each other along the dimensions they examine.

We argue that models of habit formation in the spirit of Pollak (1970) and Becker and Murphy (1988) provide a compelling framework for interpreting our results. In these models, contemporaneous utility derived from the consumption of a good depends on the past consumption of this good. In our version of the same idea, people derive more utility from living in a certain

location, if they have lived longer in this location. When farmers are forced to move to an otherwise similar farm, they lose the “location capital” tied to their former homes and thus require a smaller monetary compensation for leaving agriculture.

Habit formation provides a simple rationalization for our empirical results. It is also consistent with the findings of large surveys conducted at the turn of 1950s, where the vast majority of the displaced persons expressed a strong desire to return to their former homes (Waris et al., 1952). Importantly, their revealed preferences are in line with their survey responses. In 1941, a year after the displaced farmers had received their new farms, Finland reoccupied the ceded areas. Despite much destruction in the reoccupied areas and the genuine opportunity to remain on their new farms, 97% of the displaced farmers returned. This was a costly and risky decision given that their old farms had in many cases 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 ceded to the Soviet Union for the second time.

We end by considering alternative mechanisms. One possibility is that forced migration created new, or destroyed old, social networks in a way that facilitated transition to the modern sector. We examine this network hypothesis using variation created by the initial evacuations and the characteristics of the resettlement areas, but fail to find evidence supporting it. We also discuss how discrimination, cultural differences, differences between the old and new farms, learning about one’s capacity to migrate and changes in human capital investments are consistent with some of our results, but inconsistent with others. While we do not claim that these mechanisms are necessarily irrelevant, we argue that an explanation including habit formation is substantially more compelling than one based purely on other mechanisms.

Our findings add to the large literature examining the possibility that the misallocation of labor across sectors constitutes a major obstacle for development. This hypothesis goes back to at least Lewis (1955) and remains an

active area of research.¹ Our paper is part of the recent work using experimental or quasi-experimental research designs to show large positive effects of migration on income and education of rural populations (Bauer et al., 2013; Bryan et al., 2014; Nakamura et al., 2016; Becker et al., 2018). These findings suggest that for many people migration involves substantial costs that outweigh these monetary gains. Large migration costs—particularly for leaving one’s place of birth—also show up in quantitative structural models of migration (Kennan and Walker, 2011; Diamond, 2016). However, our understanding of the nature of these costs remains limited.

Our contribution is twofold. First, we complement other work examining different contexts by presenting evidence on large returns to leaving agriculture in mid-20th century Finland. Second, we seem to be the first to formally examine the possibility that habit formation may prevent mobility and, more importantly, present empirical evidence supporting this hypothesis. The Finnish evacuation and resettlement policy create particularly suitable research designs for examining this type of habit formation as it minimized many factors typically associated with forced migration by keeping rural communities together and providing displaced farmers comparable farms to their old ones. On the other hand, displaced persons were able to reveal their location preferences after Finland temporary reconquest of the ceded areas. Finally, the initial evacuations and features of the resettlement policy create variation that can be used to examine the role of alternative mechanisms.

¹In addition to the papers cited above, examples include Gollin et al. (2002), Caselli (2005), Restuccia et al. (2008), Vollrath (2009), Munshi and Wilson (2011), Adamopoulos and Restuccia (2014), Bazzi et al. (2016) and Fernando (2016). Hopenhayn (2014) and Restuccia and Rogerson (2017) review the broader literature on misallocation and Ruiz and Vargas-Silva (2013) the literature on forced migration. Other work examining the post-WWII population displacement in Finland include Waris et al. (1952)—which we discuss in detail in Section 5.2—Saarela and Finnäs (2009) and Haukka et al. (2017), who focus on mortality and Sarvimäki (2011), who examines the impact on the industrial structure of the receiving areas.

2 The Resettlement

2.1 Historical Context

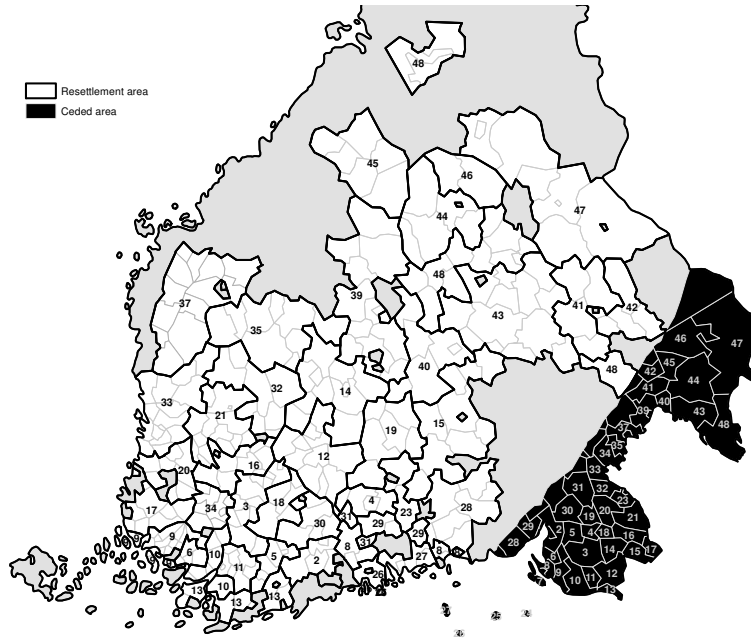
At the beginning of World War II, Finland was a poor country that had won independence just two decades earlier, gone through a short but brutal civil war in 1918 and then evolved into a fairly well functioning democracy. One half of the population was working in agriculture, typically owning small farms and working as hired labor in forest work during the winter. According to Maddison (2010), GDP per capita in 1938 was comparable to that in North Africa in 2008.

In November 1939, the Red Army crossed the Finnish-USSR border, starting the Winter War. 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 provide them shelter. In the peace treaty ending the hostilities in March 1940, Finland ceded roughly a tenth of its territory to the Soviet Union and evacuated the remaining population from the ceded areas that had stayed under Finnish control during the war.

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 5.3, roughly two thirds of all displaced persons—and almost all 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 of 1944. The Finnish troops were pushed towards the west, but managed to stop the Red Army in early July. The armistice signed in September, and later ratified in the Paris Peace Treaty, restored the 1940 border with some additional areas ceded to the Soviet Union. The entire population living in the ceded area was again evacuated and resettled. The border has been unchanged and undisputed ever since.

Figure 2: The 1945 Resettlement Plan



Note: This map represents the ceded area and the resettlement areas. The numbers refer to the ceded municipalities in the ceded area and to their corresponding resettlement areas in the remaining parts of Finland.

Figure 2 presents the pre-war and the post-war borders and the 1945 resettlement plan. It seems reasonable to consider the 1944 border as good as randomly assigned from the viewpoint of the population living in Eastern Finland in 1939. The new border split the historical province of Karelia in half. Areas close to 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 Duchy of Finland and, from 1917 onwards, to independent Finland. Below we will also show that average pre-war characteristics were similar before the war on both sides of the post-war border.

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 production capacity

was destroyed in the war and further cuts in capacity were caused by the war reparations that amounted to roughly a sixth of the government budget between 1945 and 1949 (Tarkka, 1988).

Despite the grave economic situation, the Parliament approved a series of laws in 1940 and 1945 that offered compensation for the property lost due to the displacement. The rate of compensation varied from full reimbursement for small losses to compensations of only ten percent for very large ones. Those who had owned or rented land in the ceded areas were given agricultural and forest land. Those who had lost other kinds of property received their compensations primarily 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 capital. Land for the settlers was first taken from the state, the local authorities (municipalities) and the church, but these institutions did not own a sufficient amount of land. Thus, 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. Land was seized using an explicit progressive expropriation schedule. Similarly, a heavy progressive tax was set on other forms of property.²

The implementation of the resettlement was entrusted to the Department of Land Settlement in the Ministry of Agriculture. The aim was 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 as closely as possible. As illustrated by Figure 2, those from the western parts of the Karelian peninsula were settled along the southern coast, those from the eastern part of the Karelian peninsula north of the first group and those from Northern Karelia even further north. None were

²The schedule for farm land required private land owners to cede up to 80 percent of their land holdings depending on the size of their farms. No land was expropriated from farms smaller than 25 hectares. Landowners were compensated with government bonds yielding four percent nominal interest. 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 capital owners. Pihkala (1952) discusses the land acquisition policy in detail and argues that landowners did not suffer more than other property owners.

placed in Northern Finland, where conditions for agriculture are unfavorable 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. Cities in Eastern Finland received flows of displaced persons that constituted almost ten percent of the population, while cities further west and cities with the most severe housing problems received much less. While those who had not owned or rented land were not explicitly allocated, the settlement plan appears to have influenced also their migration, probably due to family ties and employment opportunities with former employers. In June 1949, 53 percent of the displaced persons lived in their designated placement areas (Waris et al., 1952).

The resettlement was completed in 1948 and no further policies targetting the displaced population were introduced. That is, the displaced and non-displaced population had equal legal status from 1948 onwards. In particular, everyone could sell and buy land and migrate 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, see the Appendix for details. Importantly, the 1950 census also included retrospective questions referring to September 1st, 1939—two months before the war began. This allows us to observe individual-level pre-war municipality of residence, occupational status and industry codes. We augment these individual-level data with municipality-level information on the pre-war income distribution and industry structure collected from publicly available statistical publications.

Table 1 reports the average pre-war characteristics available in our data for individuals born between 1907 and 1925. We focus on these 85,836 individuals—of whom 8,528 were displaced—because they remain of working age throughout the period we study.³ Overall, the displaced and non-displaced

³These birth cohorts were 14–32 years old when the war started in 1939 and 46–64 years

Table 1: Pre-War Characteristics

	Men						Women					
	Agricultural		Other rural		Urban		Agricultural		Other rural		Urban	
	Dis- placed (1)	Non- disp. (2)	Dis- placed (3)	Non- disp. (4)	Dis- placed (5)	Non- disp. (6)	Dis- placed (7)	Non- disp. (8)	Dis- placed (9)	Non- disp. (10)	Dis- placed (11)	Non- disp. (12)
<i>A: Demographics</i>												
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	0.18	0.15	0.40	0.36	0.61	0.55	0.29	0.24	0.41	0.35	0.70	0.62
<i>B: Socioeconomic status</i>												
Entrepreneur	0.30	0.42	0.07	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
Assisting family member	0.32	0.41	0.27	0.28	0.00	0.01	0.73	0.84	0.72	0.75	0.00	0.01
Out of labor force	0.00	0.00	0.35	0.34	0.20	0.23	0.00	0.00	0.74	0.76	0.48	0.52
<i>C: Sector of employment</i>												
Manufacturing	0.00	0.00	0.27	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
Other	0.00	0.00	0.00	0.00	0.16	0.18	0.00	0.00	0.00	0.00	0.44	0.49
<i>D: Characteristics of the municipality of residence</i>												
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	12,610	1,377	10,239	1,258	7,940	889	7,165	831	18,223	2,259	11,393	1,191

Note: Average observable characteristics in 1939. Information for mother tongue from the 1950 census. Pre-war migration is defined as living outside of municipality of birth in 1939.

Table 2: Average Outcomes for the Non-Displaced Population

	Men			Women		
	Agri-cultural (1)	Other rural (2)	Urban (3)	Agri-cultural (4)	Other rural (5)	Urban (6)
<i>A: Income in 1971 (in 1,000 markka)</i>						
Nominal	14.2	22.0	32.1	2.6	6.6	12.0
Adjusted for local prices	14.7	22.3	31.5	2.7	6.7	11.7
<i>B: Works outside of agriculture</i>						
1950	0.20	0.74	0.91	0.15	0.58	0.90
1970	0.28	0.63	0.76	0.15	0.34	0.55
<i>C: Lives in an urban area</i>						
1950	0.04	0.17	0.85	0.03	0.14	0.83
1970	0.17	0.32	0.84	0.17	0.28	0.83
<i>D: Education</i>						
Above mandatory, 1950	0.01	0.08	0.23	0.01	0.08	0.23
Secondary degree, 1970	0.07	0.13	0.23	0.08	0.12	0.20

populations have quite similar pre-war characteristics. 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. Furthermore the displaced rural population was less likely to work as blue-collar workers and in manufacturing and tended to live in somewhat poorer municipalities in 1939.

Table 2 presents the average outcomes for the non-displaced population. The earliest available individual-level income data comes from the 1971 tax register. As we discuss in more detail in the Appendix, the tax records provide us with an accurate measure of annual earnings. that is likely to be comparable across agricultural and non-agricultural households. The reason for the comparability is that the Finnish tax authorities treated agricultural income old when we observe their income in 1971. We present results also for other birth cohorts in the Appendix.

similarly to wages and the extent of home production was modest by the early 1970s. As a consequence, taxable earned income predicts consumption in a very similar way for farmers and non-farmers in the 1971 Household Budget Survey (Appendix Figure A1 and Appendix Table A1). In order to take into account local price differences, the second row presents our measure of real income, which we have scaled using municipality-level local price index measured in 1971 (Statistics Finland, 1972).

Our 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 of residence for an indicator for living in a city (using Statistics Finland’s pre-war definition of cities). Measures for education differ across the two censuses. We measure education in 1950 with an indicator for having completed more than the six years of mandatory education (*kansakoulu*) and in 1970 with an indicator for holding at least a secondary degree.

4 Main Results

4.1 Impact on Long-Term Income

Table 3 presents regression coefficients measuring the difference in real annual income of the displaced and non-displaced persons. Each entry comes from separate regression that differ in the population examined (rows) and specification (columns). In order to assess the magnitudes of the estimates, we also report the mean income among the non-displaced persons. We cluster standard errors at the 1939 residence municipality level and present the details of the estimation methods in the note for the table.

The first row presents results for men working in agriculture before the war. In comparison to all non-displaced farmers, displaced farmers earned 2,690 *markka* more in 1971 corresponding to 18% higher earnings. Controlling for the observable pre-war characteristics reduces the point estimate to 2,190 *markka*, or by 15%. This difference between the unconditional and conditional estimates can be used to bound the likely remaining omitted variables

Table 3: Impact on Real Annual Income in 1971

	Cont. Means	Baseline		Oster's Bound	Spatial RD		Resettlement Area FEs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>A: Men</i>								
Agricultural	14.7	2.69 (0.52)	2.19 (0.51)	1.96 (0.49)	4.15 (1.22)	4.26 (1.06)	1.50 (0.46)	1.81 (0.65)
Other rural	22.3	1.32 (0.79)	1.97 (0.94)	2.32 (0.74)	1.26 (3.36)	0.22 (3.83)	0.71 (1.07)	2.28 (1.55)
Urban	31.5	-3.00 (2.28)	-5.65 (1.42)	-6.56 (1.15)
<i>B: Women</i>								
Agricultural	2.7	0.72 (0.22)	0.71 (0.25)	0.70 (0.29)	0.64 (0.67)	0.59 (0.60)	0.57 (0.20)	0.72 (0.33)
Other rural	6.7	1.32 (0.26)	1.88 (0.27)	2.11 (0.30)	1.84 (0.92)	2.68 (0.77)	1.03 (0.27)	1.88 (0.38)
Urban	11.7	-0.82 (0.85)	-1.59 (0.72)	-1.86 (0.48)
Controlling for:								
Pre-war characteristics		no	yes	.	no	yes	no	yes
Resettlement Area FE		no	no	.	no	no	yes	yes

Note: Point estimates and standard errors (in parentheses) for regressing annual income in 1971 in thousands of *markka* (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, 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). For Oster's bounds, we set the hypothetical R^2 as $1.3\tilde{R}$, where \tilde{R} is the R^2 from the regression including the control variables observed in our data; see Oster (2018) for discussion. RD estimates come from local linear regression allowing different slopes for the distance to the post-war border by displacement status, using triangle-shaped kernel around the border and optimal bandwidths of Imbens and Kalyanaraman (2012). Estimates reported in the last columns control for resettlement area fixed-effects constructed using the 1939 residence municipality information for locals and the 1945 Resettlement Plan for displaced population (regardless of where they actually lived after the war). These estimates exclude non-displaced persons living outside of the resettlement area from the sample.

bias (Altonji et al., 2005; Oster, 2018). Specifically, under the assumption 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 0.004 to 0.140—suggests a lower bound of 1,960 *markka*, or 13%.

We next compare the long-term income of farmers who lived just east of the post-war border (and were thus displaced) to that of farmers who lived slightly more to west (and where thus not displaced). This spatial regression-discontinuity design exploits the plausibility of locally random assignment into forced migration. Everyone who happened to live east of the new border had to move, and the historical borders used as reference points were unlikely to be correlated with unobserved characteristics of the population living in these areas. In line with this hypothesis, Appendix Tables A2–A5 show that the observable pre-war characteristics evolve smoothly over the post-war border.

The spatial regression-discontinuity estimates are substantially larger than the baseline estimates. Column 5 shows that farmers living just east to the post-war border before the war earned 4,150 *markka* or 28% more than farmers living slightly further west. Controlling for pre-war observable characteristics increases the point estimate to 4,260 *markka* or 29%. A possible reason for these larger estimates is that the comparison group may have been affected by the shift of the border. 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.

Our third approach is to compare displaced persons to the local population of their resettlement areas. 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 along soil quality and average temperature. We find that the displaced farmers ended up earning about 1,500 *markka* or 10% more than their assigned neighbours. We interpret this estimate as a lower bound for the impact of forced migration, because the resettlement areas tended to be somewhat richer and more industrialized before

Table 4: Effect Heterogeneity

	Men			Women		
	Agri-cultural (1)	Other rural (2)	Urban (3)	Agri-cultural (5)	Other rural (6)	Urban (7)
<i>A: By Age</i>						
Displaced	3.33 (0.81)	2.68 (1.37)	-7.06 (1.61)	1.98 (0.58)	2.62 (0.39)	-1.76 (0.75)
Displaced × Age	-0.15 (0.06)	-0.09 (0.10)	0.17 (0.11)	-0.13 (0.05)	-0.10 (0.04)	0.02 (0.05)
<i>B: By Pre-War Migration History</i>						
Displaced	2.66 (0.56)	2.06 (0.93)	-6.08 (1.81)	0.48 (0.26)	1.96 (0.30)	-0.83 (0.89)
Migrated before 1939	0.83 (0.27)	3.38 (0.53)	-0.41 (0.70)	0.14 (0.16)	1.91 (0.17)	-0.58 (0.25)
Displaced × Migrated before 1939	-2.90 (0.92)	-0.24 (1.31)	0.77 (1.84)	0.90 (0.54)	-0.22 (0.61)	-1.22 (0.38)

Note: Estimates from regressing 1971 real annual income in thousands of *markka* (including zeros) on displacement status, age (Panel A) or an indicator for living outside of one's municipality of birth in 1989 (Panel B), their interaction and other control variables measured before the war (see the note for Table 3 for a list of control variables). Age is scaled to zero for the youngest cohort and its the main effect is absorbed by year of birth fixed-effects. Pre-war migration is measured by an indicator variable for the person living outside of her municipality of birth in 1939.

the war (Appendix Tables A2–A5). Furthermore, the resettlement shock itself may have pushed rural municipalities to industrialize faster and thus increased local wages (Sarvimäki, 2011).

The remaining of Table 3 present the same estimates for other groups. The estimates for men living in rural areas but working outside of agriculture before the war are smaller than those for farmers and the some of the estimates are statistically insignificant. However, the estimates for rural women—regardless of their pre-war sector of employment—suggest that forced migration increased their income by 17%–30%.

Importantly, urban population is affected very differently. While the unconditional differences are not statistically significant, estimates from regressions controlling for pre-war characteristics are statistically significant and suggest 13% (men) or 12% (women) decrease in long-term income. We return to the interpretation of this effect heterogeneity below.

Table 4 reports estimates from two specifications examining effect heterogeneity. Panel A shows that the income differential between displaced and non-displaced rural population is substantially larger for those who were displaced at a younger age. The estimates reported in column (1), for example, show a 3,300 *markka* or 17% difference for farmers born in 1925 and 850 *markka* or 9% difference for farmers born in 1907.⁴ The pattern is similar for rural women, while the interaction between age and displacement status is not significant for rural men working outside of agriculture or the urban population. We present a more throughout discussion of the effect heterogeneity by year of birth in the Appendix.

Panel B of Table 4 reports estimates by pre-war migration history (defined as living outside one’s municipality of birth in 1939). The estimates show that farmers who had been mobile already before the war earned more in 1971 than those living in their home municipalities, but forced migration had no impact on income among them. For the other groups, we find no significant differences by pre-war migration history apart from the negative estimate for urban women.

4.2 Impact on Industry, Urbanization and Education

Figure 3 reports baseline results for the impact of forced migration on industry, urbanization and education. The pattern for the likelihood of working outside of agriculture closely mirrors our results for income. In 1970, displaced male farmers were 14 percentage points more likely to work in a non-agricultural job—most prominently in manufacturing and construction, see Appendix Ta-

⁴We have scaled the age variable to take value zero for the youngest cohort born in our data (born in 1925) and calculated the relative effects in comparison to the average income of the same-age control group.

Figure 3: Impact on migration, industry and education



Note: Point estimates and 95% confidence intervals from regressing an indicator for working outside of agriculture (panel A), for living in a city (Panel B) or holding a secondary degree (Panel C) on displacement status and pre-war characteristics. The specification is identical to that used for column (3) of Table 3. Results from the other specifications are reported in Appendix Tables A6–A11.

ble A12—than comparable non-displaced farmers. This difference is mirrored by a similar decrease in the likelihood of working in agriculture, while we find no differences in employment (Appendix Tables A13–A16). Similar to the income results, there is no a statistically significant effect for rural men who did not work in agriculture, while the estimates for all rural women are positive and statistically significant and negative and significant for the urban population. The patterns are very similar in 1950 and 1970 suggesting that displaced famers left agriculture fast after the resettlement.

Panel B of Figure 3 presents similar estimates for the likelihood of living in a city. Again, we find that displaced person were substantially more likely to move to a city than comparable non-displaced persons among the rural

population, while the opposite is true for the urban population. These gaps had opened already by 1950. For male farmers, the estimates for working outside of agriculture are somewhat larger than the estimates for living in a city suggesting that part of the transitions away from agriculture took place in rural areas. Interestingly, the gaps are very large for the urban population showing a 25 and 14 percentage points higher likelihood of living outside of cities in 1950 and 1970, respectively.

The last panel of Figure 3 examines education. We find no difference between displaced and non-displaced farmers in having more than mandatory education in 1950, while other displaced rural population is slightly more likely and urban population substantially less likely to have further education than comparable non-displaced persons. In 1970, displaced male farmers are 3 percentage points more likely to hold a secondary degree than non-displaced farmers and there are no statistically significant differences among the urban population. In the Appendix we show that these differences are driven by the younger cohorts included in our baseline data and that the educational gaps extend to the cohorts born in 1926–1950. Thus we conclude that forced migration had a positive impact also on education.

4.3 Conditioning on Post-War Sector and Location

The results discussed thus far are consistent with the hypothesis that the increased sectoral mobility, often accompanied with geographical mobility, led to higher earnings among the displaced farmers. Table 5 presents complementary evidence supporting this hypothesis by comparing the real annual earnings between displaced and non-displaced persons who worked in the same industries and lived in the same locations in 1970. For reference, columns 1 and 5 report estimates controlling only for pre-war characteristics. We then gradually condition for working outside of agriculture (columns 2 and 6), fixed effects for 1970 residence municipality and 2-digit industry (columns 3 and 7) and fixed effects for 1950 residence municipality (columns 4 and 8). Among rural population and urban women, the point estimates for displacement status

Table 5: Annual Income in 1971 Conditional on Post-War Sector and Location

	Men				Women			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Agricultural	2.19 (0.51)	0.74 (0.46)	0.48 (0.45)	0.18 (0.42)	0.71 (0.25)	0.21 (0.17)	0.29 (0.16)	-0.08 (0.29)
Other rural population	1.97 (0.94)	1.68 (0.83)	0.81 (0.71)	-0.27 (0.71)	1.88 (0.27)	0.55 (0.19)	0.50 (0.16)	0.14 (0.24)
Urban population	-5.65 (1.42)	-4.69 (1.45)	-3.37 (1.47)	-3.09 (0.95)	-1.59 (0.72)	-0.86 (0.55)	-0.49 (0.47)	-0.44 (0.25)
Controlling for:								
1970 non-agri- cultural job	no	yes	yes	yes	no	yes	yes	yes
1970 education	no	no	yes	yes	no	no	yes	yes
Full industry and location FEs	no	no	no	yes	no	no	no	yes

Note: Estimates for an indicator variable taking value of one if the person was displaced after WWII and zero otherwise. Standard errors (in parentheses) are clustered at the 1939 municipality of residence level. Each estimate stems from a separate regression. Pre-war characteristics: see the notes for Table 3.

approach zero as we add further post-war control variables and become statistically insignificant. However, the estimates for urban men remain negative and significant in all specifications.

We emphasize that the estimates reported in Table 5 do not have a causal interpretation as we are now conditioning 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 persons who worked in the same industries and locations in 1970.

4.4 Returns to Leaving Agriculture

Taken together, our results suggest that moving to the modern sector had a high pecuniary returns in the mid-20th century Finland. Table 6 attempts to further quantify these returns using data on pre-war farmers. For reference,

Table 6: Returns to Leaving Agriculture

	OLS			2SLS			
	Average income in agriculture	Returns to nonagri- culture		Compliers' agricultural income		Returns to nonagri- culture	
Status in 1939	(1)	(2)	(3)	(5)	(6)	(7)	(8)
Men	14.0	8.3 (0.3)	7.9 (0.4)	17.2 (2.6)	16.1 (2.2)	12.7 (3.6)	10.6 (2.9)
Women	1.0	11.4 (0.3)	11.2 (0.3)	1.2 (1.4)	0.0 (1.8)	16.5 (3.1)	16.5 (3.8)
Controlling for pre- war characteristics		no	yes	no	yes	no	yes

Note: Column 1 shows the real annual earnings in 1971 for those working in agriculture. Columns 2–3 report OLS estimates for an indicator variable taking value one if the person works outside of agriculture in 1970 and zero otherwise. Standard errors (in parentheses) are clusterer at the 1939 residence municipality level. All regressions control for resettlement area fixed-effects. Pre-war characteristics: see the notes for Table 3.

column 1 shows that men who still worked in agriculture in 1970 earned roughly 14,000 *markka*, while women who had remained in agriculture earned only 1,000 *markka*. The OLS estimates reported in columns 2–3 show that men who had left agriculture by 1970 had about 8,000 *markka*—or 57%—higher annual earnings than those who did not. For women, the earnings difference is roughly 11,000 *markka* corresponding to a 11-fold increase in their income.

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

In order to complement the OLS estimates, we report 2SLS estimates, where we use displacement status as an instrument for working outside of agriculture in 1970. These estimates would measure returns to leaving agriculture if the impact of forced migration on long-term income was mediated *entirely* through the transition to the modern sector. Clearly, other potential

mechanisms exist. For example, the trauma of being displaced may have had a direct effect on the labor market prospects of some farmers. On the other hand, some may have responded to their partial loss of wealth by increasing their labor supply. 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, they provide a potentially informative summarization of our results on the impact of forced migration on income and sectoral mobility.

The IV estimates paint a very similar picture as the OLS estimates. Since IV approaches are informative only about a subpopulation of “compliers”—those who left agriculture because they were displaced and would have stayed in agriculture otherwise—we first report estimates of what the compliers’ would have earned if they had stayed in agriculture (columns 5–6) based on the approach of Imbens and Rubin (1997). In comparison to this baseline, the 2SLS estimates suggest that leaving agriculture increased the income of men by 66–74% (columns 7–8). Again, the estimates for women are similar in levels, but much larger in comparison to the baseline income in agriculture.

5 Interpretation

The results reported thus far suggest that returns to leaving agriculture were substantial in the 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 farmers into the modern sector. As we discussed in the introduction, models explaining rural-urban (or agricultural-nonagricultural) income differences have mostly focused on mechanisms which are unlikely to explain our results. Of course, our findings do not falsify these models, but merely suggest that they abstract away from mechanisms that are quantitatively important. In this section, we introduce an explanation based on habit formation and discuss further empirical observations supporting this interpretation. We discuss alternative mechanisms in the next Section.

5.1 Habit Formation and Location Choice

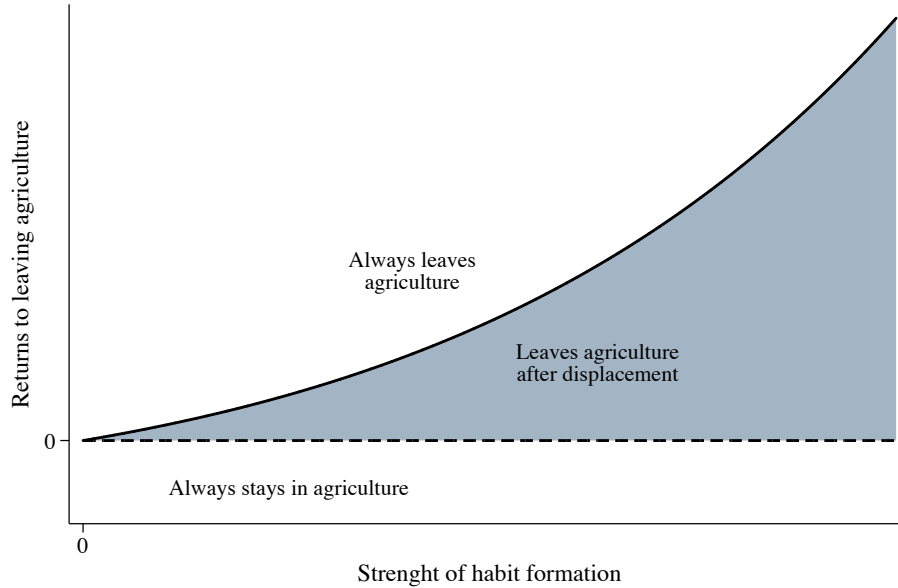
Narrative history and popular culture typically depict the population displacement we examine as a tragedy of breaking the bond the displaced persons had to their land and homes. These sentiments can be formalized as habit formation, where people grow attached to places over time. For illustration, we present a highly simplified version in the Appendix, but the basic take-away is general to any model including the following ingredients: (a) people derive utility from, among other things, living in a certain location, (b) utility from living in a location increases with “location capital”, i.e. the time a person has already lived there, and (c) individuals start choosing their locations only after accumulating initial location capital during their childhood.

Figure 4 illustrates the implications of these assumptions. We consider the choices of an individual, who has grown up in a farm and is choosing whether to remain there or to move to the modern sector as a young adult. There is heterogeneity along two dimensions. The vertical axis corresponds to the person’s comparative advantage, i.e. monetary returns he would obtain by leaving agriculture. The horizontal axis corresponds to the strength of his habit formation in the sense that those further to the right derive more utility from staying at their home farms. The solid line plots the indifference curve between moving and staying. It slopes upwards, because the compensating differential required for migrating increases with the value the individual places for staying at home.

In this framework, being forced to migrate means that the displaced farmers can no longer stay at their home farms. Those above the solid line (who had chosen to leave agriculture already before the war) and those below the dashed line (whose comparative advantage is in agriculture) remain in their original industries. However, those in the shaded area now leave agriculture and increase their income.

Interpreting our empirical results through the lens of a habit formation model provides two key insights. First, while forced migration increased the income of those farmers, who chose to move to the modern sector after being displaced, it is likely to have reduced their welfare. After all, if the sector

Figure 4: Migration Decisions in an Illustrative Model of Habit Formation



and location they end up to after the war provided them higher welfare than their home farms, they could have moved there already before being displaced. However, forced migration may have increased the welfare of their children, who will now accumulate their initial location capital in economically more viable places. Second, the model illustrates that the “compliers”—those who were pushed away from agriculture due to the displacement—are likely to differ from those who left farming even without being displaced as well as from those who remained in agriculture even after being displaced. Specifically, the compliers are individuals who either have particularly strong preferences for staying at their home farms or relatively small returns to leaving agriculture.

5.2 Survey Evidence

The habit formation explanation discussed above provides one rationalization of our empirical results. It is also consistent with the work of Waris et al. (1952), who surveyed 1,982 displaced and 1,150 non-displaced persons in 1949 and 1951. Among other things, the surveys included questions on the future

migration intentions and why they were planning to move (or to stay). Two thirds of the displaced persons stated that they expected to remain in their current location. Waris et al. (1952, p. 314) 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.” (our translation)

A typical sentiment appears to be captured by a displaced farmer saying: *“Since I cannot go back to my old land, it does not matter where I live”*. The perception that the displaced persons held a high opinion of the ceded areas is supported also 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”.

These survey answers are well in line with habit formation models discussed above. In these models, the displaced persons will start to accumulate a new stock of consumption capital in their new locations. However, this process is slow and there can be a long period during which they would be willing to give up part of their income in order to return to their previous homes.

5.3 Return Migration

An important limitation of the survey results discussed above is that they are based on stated preferences expressed in low-stake interviews. A unique feature of this historical episode, however, is that the displaced persons were given an opportunity to reveal their preferences. As we discussed in Section 2, Finland reconquered the lost areas during the summer of 1941 and held them for three years. Once a reconquered municipality was sufficiently secured, the

displaced persons could apply for a permit to return. If they were granted the permit, they could give up the land they had received as part of the resettlement policy and move back to what was left of their old farms.

Importantly, there was a genuine opportunity to stay in their resettlement areas and, in many ways, staying would have been a sensible choice. Much of the housing stock of the reconquered area was destroyed and the areas were closer to the frontline. The conditions were often harsh. For example, many of those returning in 1941 endured food shortages (Waris et al., 1952).

Despite all the cost and risk, return migration proved extremely popular—particularly among the farmers. Out of the 38,872 farms allocated to the displaced persons as part of the 1940 resettlement policy, 97% were returned in an exchange for the remainings of the old farms (Waris et al., 1952). In total, 70% of the displaced population returned, even though not everyone were granted a permit to return due to housing shortage, proximity of the frontline or being considered a politically unreliable person.

Figure 5 plots the share of 1939 population living in the rural reconquered municipalities in 1944 against the share of housing that had survived the battles. Remarkably, almost half of the population returned even to the municipalities where more than 85% of the housing stock had been destroyed.

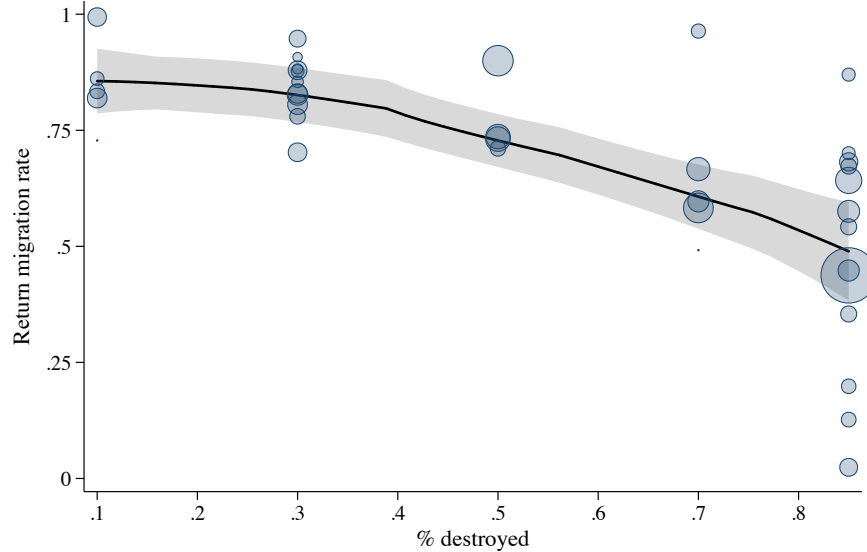
6 Alternative Mechanisms

Above, we have shown that our results are in line with the predictions of a habit formation model. However, they could also be consistent with alternative explanations such as forced migration affecting social networks, income available from agriculture, discrimination or learning. We next discuss the extent to which these alternative mechanisms may explain our results.

6.1 Expansion of Dispersed Networks

We start with the hypothesis that forced migration affected income through creating valuable social networks. For example, the initial evacuations could

Figure 5: Return Migration and the Destruction of the Housing Stock



Y-axis: Share of the pre-war population who had returned by January 1st, 1944. Drafted men are included in the denominator, but not in the numerator. X-axis: The share of existing housing stock destroyed by December 31st, 1941. Source: Waris et al. (1952, Appendix Tables 7 and 9)

have created geographically dispersed networks that would have facilitated the flow of information about job and business opportunities. In the evacuation phase, the displaced population of each ceded municipality were transported into a designated evacuation area and the local population was obliged to provide them shelter. As a consequence, most displaced persons were hosted by a local family for the winters of 1940–41 and 1944–45. During the summer of 1945, the displaced farmers received their new farms from locations that were, on average, roughly 150 kilometers away from their evacuation areas.

We examine the role of the evacuation networks by comparing displaced persons exposed to different kind of evacuation areas. This approach builds on the assumption that if the evacuation networks facilitated information flows, they were more valuable for displaced workers who had been evacuated into more prosperous or faster growing locations. Estimates reported in Table 7 show that displaced persons evacuated into more economically viable areas—as

Table 7: Evacuation Area Quality on Long-Term Income

	Men			Women		
	Agri-cultural (1)	Other rural (2)	Urban (3)	Agri-cultural (4)	Other rural (5)	Urban (6)
Locals' income in the 1940 evacuation area	0.21 (0.16)	-0.41 (0.29)	-1.99 (0.39)	-0.07 (0.04)	0.08 (0.08)	-1.91 (0.23)
Locals' income in the 1944 evacuation area	-0.11 (0.10)	0.18 (0.23)	-3.47 (0.72)	-0.07 (0.05)	0.04 (0.06)	-3.98 (0.39)
Observations	1,337	1,156	889	811	2,122	1,191

Note: Estimates for β from a regression $y_i = \alpha + EA_i\beta + X_{i0}\delta + \epsilon_{ijt}$ where y_{ij} is the annual real income of i in 1971, EA_i is the average 1971 income of individuals living in her evacuation area already in 1939, and X_{i0} is a vector of observable pre-war characteristics (see the notes for Table 3). Each column reports estimates from a separate regression. Standard errors (in parentheses) are clustered at the 1939 municipality of residence. 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.

measured by the 1971 average income of individuals living in these locations already in 1939—do not earn significantly more than those evacuated into other places. Results for the rural population are all insignificant and there are both positive and negative points estimates. Results for the urban population suggest that those evacuated into more prosperous evacuation areas have lower income in 1971. The results are qualitatively similar when using alternative measures of evacuation area quality (Appendix Table A17).

We recognize that the research design based on the evacuation areas has relatively low power and examines only one kind of networks. Thus we cannot definitely rule out the possibility that expansion of networks may have effected post-war earnings and mobility. However, this explanation is not helpful for understanding why so many displaced persons returned to their former homes in 1941–44.

6.2 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). Loosing access to such informal arrangements would reduce migration costs and could thus explain our results.

The importance of local networks was not lost by the Finnish policy makers, 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 villages. As Figure 3 illustrates, even neighboring municipalities ended up to be settled to areas that differed vastly in size. This variation is likely exogeneous to the displaced farmers and thus creates a potential research design for examining the importance of local networks. Specifically, our hypothesis is that being resettled 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 distributed further away from their old network members would be more likely to move to the modern sector and thus to earn more than those resettled into more compact areas.

Table 8, Columns (1) and (5), reports results from regressing annual real 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 construct the treatment variable by first scaling the area of the resettlement area by the area of the origin municipality in order to account for pre-war differences in population and population density. This results with a very skewed distribution. In order to reduce the weight of outliers, we use percentile rank transformation as our baseline measure.

None of the estimates for resettlement area size in Table 8 are statistically significant. Furthermore, the point estimates suggest that those resettled into larger areas had lower earnings than those resettled closer to each other. We stress that this result does not necessarily imply that local networks were irrel-

Table 8: Resettlement Area Characteristics and Long-Term Outcomes

	Men				Women			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>A: Annual real income in 1971 (inc. zeros)</i>								
Size relative to origin area	-1.474 (1.018)	.	.	-1.214 (1.054)	-0.245 (0.421)	.	.	-0.205 (0.462)
Distance to origin area	.	-0.081 (0.472)	.	-0.164 (0.488)	.	0.066 (0.231)	.	-0.026 (0.231)
Expropriated private land	.	.	0.577 (0.469)	0.566 (0.433)	.	.	0.209 (0.178)	0.188 (0.182)
<i>B: Works outside of agriculture in 1970</i>								
Size relative to origin area	0.012 (0.038)	.	.	0.019 (0.038)	-0.026 (0.034)	.	.	-0.032 (0.037)
Distance to origin area	.	-0.013 (0.015)	.	-0.015 (0.018)	.	-0.017 (0.017)	.	-0.005 (0.018)
Expropriated private land	.	.	-0.007 (0.016)	-0.001 (0.019)	.	.	-0.029 (0.016)	-0.029 (0.018)
Observations	1,376				831			

Note: Estimates for β from a regression $y_{ij} = \alpha + \beta RA_j + X_{i0}\delta + \epsilon_{ijt}$ where y_{ij} is the either annual real income in 1971 (panel A) or an indicator for working outside of agriculture in 1970 (panel B), RA_j is a measure of his resettlement area characteristic, and X_{i0} is a vector of observable pre-war characteristics. Each estimate stems from a separate regression. Standard errors (in parentheses) are clustered at the 1939 municipality of residence level. Size measured in ranks, distance in 100 kilometers and expropriated land as share of all redistributed agricultural land expropriated from private landowners.

event. Indeed, they could be so valuable that the displaced persons maintained them despite the increased distance between the members of the network. Nevertheless, these findings do not support the hypothesis that destruction of local networks explains why forced migration affected income and mobility.

6.3 Cultural Differences and Discrimination

Another potential reason for why many displaced farmers decided to move to a city is that they may have felt out of place in their new homes. Finland has a rich variety of local dialects and customs and cultural differences between

displaced and local population may have been relatively large, in particular in 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 their land expropriated.

These factors alone would not explain why forced migration increased the long-term income of displaced farmers. However, if the compensating differential required to leave agriculture would result from a preference for rural life *per se*, cultural differences and discrimination could have reduced the utility displaced farmers derived from farming and thus pushed them to the modern sector. If this was the case, otherwise identical displaced farmers would be more likely to leave agriculture and thus to earn more if they were resettled into culturally more different or otherwise more hostile location.

Results reported in Table 8 do not support this hypothesis. We use geographical distance from home regions as a proxy for cultural distance and the share of the redistributed land coming from private land owners (instead of government owned land) as a proxy for hostility of the locals. None of the estimates are statistically significant. Furthermore, the point estimates suggest that, if anything, those resettled further to the west or to areas where a larger share of land came from private land owners were less likely to leave agriculture.

6.4 Quality of the New Farms

The displacement may also have increased incentives to leave farming by making it less profitable. For instance, the new farms provided to the displaced farmers may have been of lower quality than the farms left to the ceded area.⁵ In addition, owners of large farms in the ceded area were given less land than what they had lost. Thus returns to migration may have increased simply because available agricultural income decreased.

⁵However, 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 was designed to allocate farmers to areas with similar soil quality and average temperature.

The possible reduction of opportunities in agriculture could explain why forced migration increased the likelihood of leaving farming. However, it is hard to reconcile how worsening of opportunities in agriculture alone would have led to a positive impact on long-term income. Furthermore, the displaced farmers could have acquired more or better land relatively easily. They were entitled to subsidized loans from the State Settlement Fund for investing in land, buildings and machines (Pihkala, 1952). The quality of land is relatively easy to assess and Finland has an abundance of forest land, which can be cleared into fields. Thus it is unlikely that credit constraints or asymmetric information about the quality of the land would have prevented trade in this context.

6.5 Inertia, Learning and Human Capital

Finally, being forced to migrate once may have made it easier to migrate again by helping people to overcome inertia or allowed them to update their beliefs about their ability to settle in a new environment. Alternatively, experiencing forced migration and the associated loss of physical capital could have shifted preferences towards investing in human capital (Becker et al., 2018). As returns to formal education are higher outside of agriculture, such human capital investments would have increased returns to leaving agriculture.

These explanations are consistent with our findings that forced migration increased income, mobility and education. However, they cannot explain why the vast majority of the displaced persons returned to their former homes in 1941–44. Furthermore, we cannot distinguish between forced migration having a direct impact on education or these human capital investments being due to the displacement pushing people to locations and industries with higher returns to education.

7 Conclusions

In this paper, we have argued that part of the apparent misallocation of labor across sectors and locations can be attributed to people becoming attached to places where they live. At some level, this conclusion is obvious. Stories of someone choosing the humble life of her home town instead of a lucrative career elsewhere are familiar to most readers. However, while anecdotes are abundant, systematic evidence remains scarce.

The displacement and resettlement of 11% of the Finnish population provides an informative opportunity for examining the mechanisms behind rural–urban (or agricultural–nonagricultural) income gaps. Our results suggest that forced migration increased the likelihood of leaving agriculture, which in turn led to a large increase in long-term income. These results are consistent with a combination of high returns to leaving agriculture and high migration costs that were reduced by forced migration. We argue that a substantial part of these migration costs are due to farmers directly gaining utility from living in their home farms. This argument can be formalized in a model of habit formation.

To be sure, habit formation alone is unlikely to explain the persistence of agricultural–nonagricultural income differences. We do not advocate a view that other mechanisms are irrelevant, but merely suggest that models of habit formation provide additional insight. In particular, they illustrate that even if labor is misallocated in terms of lost production, this does not need to imply lost welfare. In the language of Becker and Murphy (1988), farmers may be “addicted” to their farms, but this is “rational addiction” in the sense that given their initial location capital, farmers maximize their lifetime utility by staying in the low productivity traditional sector.

However, the long-term welfare implications are subtle, because people do not choose where to accumulate their initial location capital. The choices of the parents may be particularly important in agriculture, where family traditions may be markedly important. Thus it is possible that while the forced migration we examine was a tragedy for those who had already grown attached to their

homes, it may have increased the welfare of their offspring by liberating them to enjoy the benefits of growing up in locations providing better economic opportunities.

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