

# Forced Migration and Human Capital: Evidence from post-WWII Population Transfers

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In his bestselling autobiographical novel **“A Tale of Love and Darkness”**, Amos Oz gives a testimony of his Aunt Sonia:

*“Why is she a roadsweeper? So as to keep two talented daughters at university... Food – they save on. Clothes – they save on those too. Accommodation – they all share a single room. All so that the studies and textbooks they won’t be short. It was always like that with Jewish families: they believed that education was an investment for the future, the only thing that no one can ever take away from your children, even if, Heaven forbid, there’s another war, another revolution, more discriminatory laws – your diploma you can always fold up quickly, hide it in the seams of your clothes, and run away to wherever Jews are allowed to live.” (Oz 2005: 172).*

# Can forced migration affect subsequent generations?

- Academic economists (just as Aunt Sonia) have long entertained the idea that being uprooted by force or expropriated increases the subjective value of investing in portable assets, in particular in education
  - e.g., Stigler and Becker 1977, Brenner and Kiefer 1981



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- Academic economists (just as Aunt Sonia) have long entertained the idea that being uprooted by force or expropriated increases the subjective value of investing in portable assets, in particular in education
  - e.g., Stigler and Becker 1977, Brenner and Kiefer 1981
- However, this “uprootedness” hypothesis is notoriously hard to test because of confounding factors

## Challenges in identifying effect of forced migration

- Migrants differ from native population along other dimensions: ethnicity, language, religion
  - Religious motives for education (the requirement to read Torah) among Jews (Botticini and Eckstein 2012)

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  - Displaced German farmers after WWII moved into other sectors (Bauer et al, EJ 2013)

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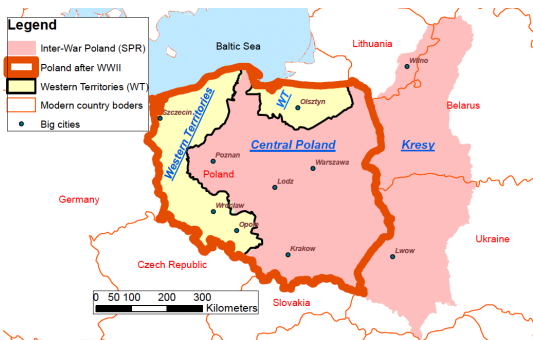
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- Migrants often lack access to local productive assets such as land
  - Displaced German farmers after WWII moved into other sectors (Bauer et al, EJ 2013)
- Ongoing discrimination of migrants at destinations may affect accumulation of physical and human capital

# This paper

- Large-scale forced migration in a unique historical experiment
  - Allows to single out the effect of forced migration per se from other factors

## Natural experiment: After WWII

- Poland lost **Kresy** territories (Eastern Borderlands): East of “Curzon line”
- Poland gained **Western Territories (WT)**: East of Oder-Neisse



Poles were expelled from Kresy and moved (mostly) to WT and (partly) to Central Poland (CP)

► Detail

# This paper

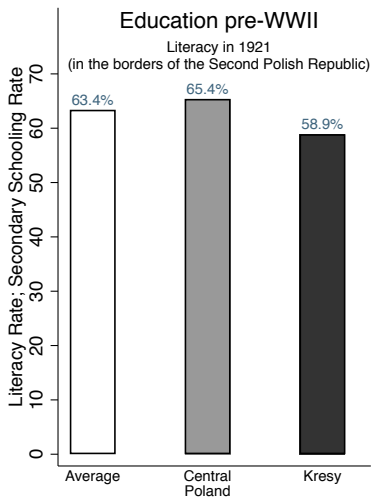
- One-time expulsion of a group that was:
  - not discriminated at either origin or destination
  - had same ethnicity, language, and religion as those at destination
  - for which abundant capital was available at destinations

# This paper

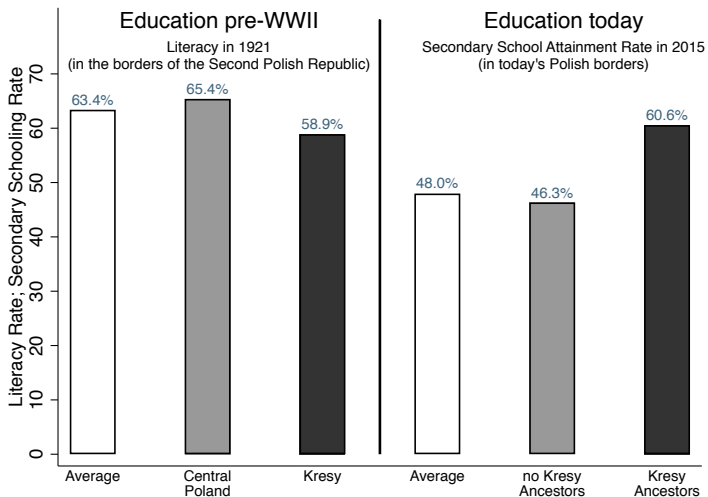
- One-time expulsion of a group that was:
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  - had same ethnicity, language, and religion as those at destination
  - for which abundant capital was available at destinations
- Empirical approach:
  - Two large-scale surveys Poland in 2015 and 2016 with questions about ancestors from Kresy
  - Examine education advantage of people with Kresy ancestors



# Main pattern in the data

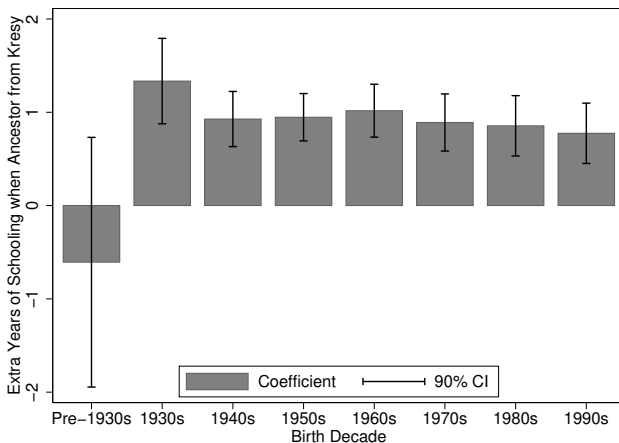


# Main pattern in the data



## Main result by cohort

People with Kresy ancestors have significantly higher education, but only starting with cohort educated after migration



## Mechanisms and self-selection concerns

What could explain this pattern?

- Pre-existing differences in education or preferences? ⊗
- Differential access to schooling or employment opportunities? ⊗
- Differential war exposure or victimization? ⊗
- Selection of Kresy migrants or voluntary migrants? ⊗

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What could explain this pattern?

- Pre-existing differences in education or preferences? ⊗
- Differential access to schooling or employment opportunities? ⊗
- Differential war exposure or victimization? ⊗
- Selection of Kresy migrants or voluntary migrants? ⊗
  
- Shift in preferences towards investing in human capital, as opposed to physical capital ✓

# Literature

Growing literatures study:

- 1 The effects of forced migration on the local economy
  - Braun and Omar Mahmood (2014), Peters (2017), Semrad (2015)
- 2 The effects of forced migration on migrants
  - The need to integrate into the local economy affects migrants' choices and outcomes (Sarvimäki, Uusitalo, Jäntti 2019, Nakamura, Sigurdsson, and Steinsson 2019, Bauer, Braun, Kvasnicka 2013)

Our paper is the first to provide empirical support for the “uprootedness” hypothesis. We show that forced migration increases educational investment in several generations by changing preferences for accumulation of physical vs. human capital

## Historical background – population movements 1945-1949

- Change of borders  $\Rightarrow$  mass population movements:
  - Germans fled the war, the rest were expelled from WT and resettled in Germany
  - 2.1m Poles were forced to move from Kresy (73% moved to WT)
  - Voluntary migrants from Central Poland moved to WT to benefit from housing, land, and infrastructure left by Germans
- Western Territories saw the biggest change:
  - In 1939: 8.8m population: 7.7m Germans and 1m Poles
    - by 1945: 3.5m Germans
  - In 1950: 5.6m, almost all Poles:
    - 30% – forced migrants from Kresy
    - 50% – voluntary migrants from CP
    - 20% – autochthons

[▶ Back to Intro](#)

# Kresy migrants were put on trains and brought to WT



*“And so it happened that ... the marshall came: ‘Leave’ — ‘But where should I go?’ — ‘To Poland.’ And I say: ‘I am in Poland.’ And he says: ‘This is not Poland anymore.’ ”*[Testimony cited by the Polish History Museum]



Kresy migrants were put on trains and brought to WT



# Kresy migrants arriving in WT



## Campaigns to attract migrants from Central Poland

- Authorities wanted to “create facts” regarding new borders, by moving population to WT quickly
- Forced migrants from Kresy and voluntary migrants from CP were treated equally in Western Territories



“THE LAND IS WAITING.

The State Repatriation Office is assigning farms in Opole and Lower Silesia. The regional inspectorates (offices) will provide all necessary information.”

Video

# Data

## ① Diagnoza Survey

- Representative sample of the Polish population
- The 2015 wave included a set of questions on whether any of the ancestors of the respondent were from Kresy, and if so where exactly
- 30,000 obs. in 2015 wave; about 11% with ancestors from Kresy

# Data

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- 30,000 obs. in 2015 wave; about 11% with ancestors from Kresy

## 2 In 2016, we conducted our own Ancestry Survey in WT

- Detailed question about the place of living of each respondent's ancestor in the generation of the young adults in 1939
- 4,069 respondents
- Respondents recalled 13,223 ancestors: we identify place of living of 11,928 ancestors

▶ [Map Ancestor Locations](#)

## Data: Historical Censuses

- 1 Post-War Polish Census 1950 with info on population movements: question which region people lived in before WWII ▶ Table
  - in WT: by county (powiat)
  - in the rest of Poland: by region (województwa)
  - **Data Quality Check:** Census population movements confirm Diagnoza and Ancestry Survey origins
- 2 Pre-War Polish Censuses: 1931, 1921
  - 1931 literacy rates
  - 1921 literacy rates by religion
- 3 Imperial Censuses Pre-SPR (= 2nd Polish Republic):
  - 1897 Russian Empire, 1900 Prussia

# Empirical Results – Roadmap

## ① Diagnoza Results

- Poland overall
- Selection of control group not an issue ('all other Poles')

## ② Ancestry Survey Results

- Western Territories only

## ③ Mechanisms

- Shift in preferences
- Pre-WWII differences
- Selection
- Differential war victimization
- Differential access at destinations (and others)

## Diagnoza Survey – Data on Poland Overall

Empirical specifications at respondent ( $i$ ) level:

$$Y_i = \beta Kresy_i + \phi' \mathbf{X}_i + \eta_{Locality(i)} + \varepsilon_i$$

- $Y_i$ : education, attitudes toward human/physical capital accumulation
- $Kresy_i$ : dummy for ancestor from Kresy
- Controls:
  - Respondent's demographics: age, gender, rural/urban
  - Local FE for destination county or municipality



Table 2: Forced Migration from Kresy and Education: Diagnoza Survey Results

Dependent variable: Individual-level education, as indicated in each panel							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample:	All	All	All	Rural	Urban	Central Poland	Western Territories
	(no controls)						
<i>Panel A. Dep. Var.: Years of education</i>							
Ancestor from Kresy	0.969 (0.080)	0.819 (0.074)	0.801 (0.080)	0.670 (0.123)	0.900 (0.094)	0.933 (0.112)	0.705 (0.100)
Mean Dep. Var.	11.91	11.91	11.91	11.13	12.70	11.94	11.83
Observations	28,341	28,176	28,158	14,111	14,065	21,121	7,055
<i>Panel B. Dep. Var.: Secondary education dummy</i>							
Ancestor from Kresy	0.145 (0.011)	0.112 (0.011)	0.110 (0.012)	0.105 (0.020)	0.118 (0.013)	0.112 (0.016)	0.109 (0.015)
Mean Dep. Var.	0.50	0.50	0.50	0.37	0.62	0.50	0.49
Observations	28,343	28,179	28,161	14,120	14,059	21,114	7,065
<i>Panel C. Dep. Var.: Higher education dummy</i>							
Ancestor from Kresy	0.106 (0.010)	0.088 (0.010)	0.090 (0.011)	0.061 (0.016)	0.101 (0.014)	0.115 (0.016)	0.063 (0.013)
Mean Dep. Var.	0.20	0.20	0.20	0.12	0.28	0.20	0.20
Observations	28,343	28,179	28,161	14,120	14,059	21,114	7,065
<i>Controls (all panels):</i>							
Baseline controls <sup>‡</sup>		✓	✓	✓	✓	✓	✓
Respondent county FE		✓		✓	✓	✓	✓
Respondent municipality FE			✓				

*Notes:* This table shows that individuals whose ancestors were expelled from the Kresy territories have significantly higher levels of education today. We ran regressions at the respondent level using data from the 2015 Diagnoza survey; standard errors are clustered at the household level.

<sup>‡</sup> Baseline controls include respondents' gender, age and age<sup>2</sup> interacted with birth-decade dummies, and indicators for rural places and urban counties.

# Empirical Results – Roadmap

## ① Diagnoza Results

- Poland overall
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## ② Ancestry Survey Results

- Western Territories only

## ③ Mechanisms

- Shift in preferences
- Pre-WWII differences
- Selection
- Differential war victimization
- Differential access at destinations (and others)

## Ancestry Survey

- Ask about origin of *every* ancestor (among youngest adults in 1939)
- Thus: Compute *shares* of ancestors from
  - Kresy (forced migrants)
  - Central Poland (voluntary migrants)
  - Western Territories (autochthons)
  - Abroad (in 1939)
- Control for urban vs. rural origin of ancestors
- Scope: Western Territories only, thus, voluntary migrants are the main comparison group
- Potential concern: selection of *voluntary* migrants to WT
- We show that such selection works against finding the results

# Education of individuals in the 2016 Ancestry Survey

1) We replicate the results from Diagnoza; 2) show that respondents with ancestors from Kresy are less educated than descendants of voluntary migrants and of autochtons

Dep. Var.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	all	all	all	all	rural	urban	all	all
	<i>Panel A: Respondent-level regressions</i>							
Ancestor from Kresy	0.769 (0.107)	0.911 (0.099)						
Share of ancestors, Kresy			0.744 (0.125)	0.721 (0.131)	0.629 (0.239)	0.760 (0.150)	0.104 (0.020)	0.053 (0.017)
Share of ancestors, WT			-0.980 (0.179)	-1.005 (0.194)	-0.588 (0.302)	-1.240 (0.241)	-0.169 (0.029)	-0.128 (0.023)
Share of ancestors, abroad			-0.608 (0.623)	-0.493 (0.596)	-1.917 (1.397)	-0.261 (0.679)	-0.004 (0.098)	-0.038 (0.090)
Share of ancestors, rural			-0.847 (0.135)	-0.849 (0.138)	-0.995 (0.330)	-0.793 (0.150)	-0.107 (0.021)	-0.072 (0.019)
Mean Dep. Var.	12.70	12.70	12.71	12.71	11.55	13.22	0.52	0.23
R <sup>2</sup>	0.01	0.27	0.28	0.36	0.32	0.25	0.20	0.20
Observations	3,716	3,716	3,668	3,668	1,110	2,558	3,668	3,668
<i>Controls (all panels):</i>								
Baseline controls <sup>a</sup>		✓	✓	✓	✓	✓	✓	✓
Respondent county FE		✓	✓		✓	✓	✓	✓
Respondent municipality FE				✓				

The comparison group in col. 3-8: the share of ancestors from Central Poland

# Education of individuals in the 2016 Ancestry Survey

We can also consider each ancestor as observation: and show that each additional ancestor from Kresy increases the years of education of respondent by 0.45 years

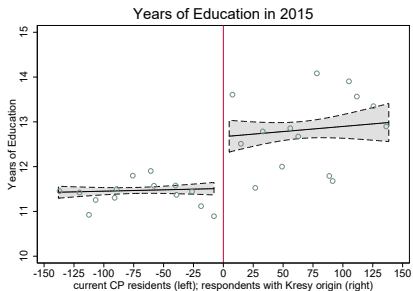
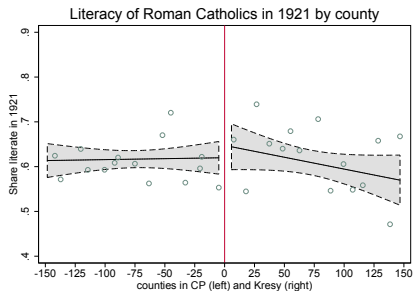
Dep. Var.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	all	all	all	all	rural	urban	Secondary all	Higher all
<i>Panel B: Ancestor-level regressions</i>								
Ancestor from Kresy	0.641 (0.096)	0.648 (0.088)	0.497 (0.092)	0.456 (0.090)	0.342 (0.174)	0.526 (0.107)	0.071 (0.015)	0.045 (0.014)
Ancestor from WT			-0.898 (0.136)	-0.857 (0.133)	-0.711 (0.228)	-0.971 (0.175)	-0.154 (0.024)	-0.126 (0.020)
Ancestor from abroad			1.017 (0.976)	1.293 (0.859)	-0.040 (0.711)	2.056 (1.182)	0.152 (0.137)	0.107 (0.179)
Ancestor from rural area			-0.505 (0.098)	-0.517 (0.093)	-0.692 (0.227)	-0.447 (0.106)	-0.071 (0.016)	-0.045 (0.015)
Grandparent	1.438 (0.119)	0.331 (0.163)	0.394 (0.162)	0.351 (0.163)	0.602 (0.284)	0.348 (0.198)	0.029 (0.026)	0.039 (0.021)
Great-grandparent	2.508 (0.159)	0.911 (0.229)	1.023 (0.229)	0.873 (0.231)	0.937 (0.401)	1.021 (0.276)	0.165 (0.038)	0.109 (0.035)
Mean Dep. Var.	13.03	13.03	13.04	13.04	11.95	13.54	0.55	0.26
R <sup>2</sup>	0.07	0.28	0.29	0.38	0.32	0.27	0.22	0.23
Observations	11,928	11,928	11,548	11,548	3,617	7,931	11,548	11,548
<i>Controls (all panels):</i>								
Baseline controls <sup>a</sup>		✓	✓	✓	✓	✓	✓	✓
Respondent county FE		✓	✓		✓	✓	✓	✓
Respondent municipality FE				✓				

The comparison group in col. 3-8: Ancestor from Central Poland

## Border sample around the Kresy-CP border: Diagnoza

The higher education of Kresy descendants could be driven by preexisting differences if attitudes toward education were different b/w Kresy and CP before WWII even though literacy rates were similar

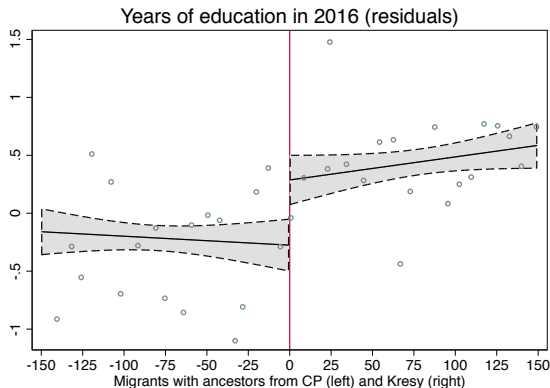
To address this, we look at discontinuity at the Kresy border, which was never a border before the end of WWII



*Note:* Dots correspond to data aggregated into 5-mile bins (for visualization), while the lines are based on all underlying observations, with the shaded area representing 90% confidence intervals.

## Kresy border sample: Ancestor Survey

- Use only ancestors within <150km Kresy border [▶ Map](#)
- Look at education of their descendants (all live in WT)
- Use municipality FE for destination location  $\Rightarrow$  compare today's neighbors within the same towns and villages



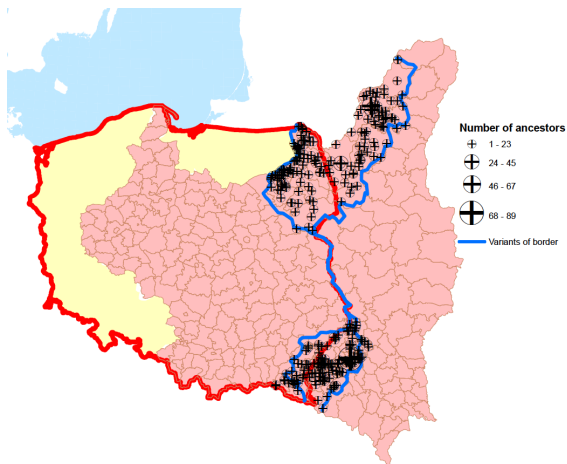
The validity of the discontinuity analysis is based on the arbitrariness of the border (coincided with Curzon line)

There were different variants of the Curzon line in places without natural boundaries:





We replicate our main result for the subsample of respondents with ancestors from these contested areas:



## Lots of anecdotal evidence about the mechanism

They come from testimonies of Kresy migrants collected by antropologists

- *“In Western Territories, there was a specific situation. People did not attach great importance to material wealth. After all, nobody had it at that time ... most of the people who came here were still living in the memories of places of their origin and of material things that had belonged to their families for generations. In a new life situation, the cult of new values emerged, i.e., values that are indestructible, that cannot be lost, and that die with the man – the cult of knowledge, of skills, which can resist cataclysms”*

Table 5: Attitudes Toward Education and Material Possessions

Dependent variable: Individual-level outcomes, as indicated in table								
Dep. Var.:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High aspiration for education of own children <sup>a</sup>		Main condition for success in life? Material goods		Freedom		% Assets not owned for nonfinancial reasons <sup>b</sup>	
Ancestor from Kresy	0.080 (0.032)	0.067 (0.032)	-0.076 (0.013)	-0.063 (0.013)	0.017 (0.006)	0.016 (0.006)	0.042 (0.009)	0.034 (0.009)
Years of education		0.047 (0.004)		-0.015 (0.001)		0.001 (0.001)		0.011 (0.001)
Baseline controls <sup>c</sup>	✓	✓	✓	✓	✓	✓	✓	✓
Respondent county FE	✓	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var.	0.59	0.59	0.56	0.56	0.05	0.05	0.69	0.69
R-squared	0.26	0.29	0.11	0.12	0.05	0.05	0.18	0.19
Observations	3,800	3,800	22,050	22,050	21,586	21,586	28,019	28,019

*Notes:* This table shows that descendants of Kresy migrants have stronger preferences for the education of their children, value material goods less, value freedom more, and chose to own fewer assets (even if they could afford them). We ran regressions at the respondent level using data from the 2015 Diagnoza survey; standard errors are clustered at the household level.

<sup>a</sup> The Diagnoza survey asks respondents to rank their aspiration for education of their children on a scale from 1 to 5. The dependent variable is an indicator for the highest category. The sample is smaller because respondents do not answer this question if their children have already finished their education.

<sup>b</sup> The Diagnoza survey asks about the possession of 20 assets (e.g., apartment, vacation home, garden land plot, e-book reader, home theatre, boat). For each asset not owned, respondents are asked whether this is for financial reasons. The dependent variable in columns 7 and 8 is the number of assets not owned for nonfinancial reasons, divided by the number of all non-owned assets.

<sup>c</sup> Baseline controls include respondents' gender, age and age<sup>2</sup> interacted with birth-decade dummies, and indicators for rural places and urban counties.

## Alternative mechanisms:

- Pre-WWII differences?
  - No, Kresy effect does not interact with any of the socio-economic or geographic characteristics of the origin locations
- Selection?
  - No, descendants of voluntary migrants from CP are more educated than descendants of stayers in CP—driven only by those who moved from rural to urban areas—suggesting that selection into voluntary migration cannot drive our ancestor-survey results
- Differential war victimization?
  - No, use LiTs survey to replicate the results and show that war experiences do not affect the results
- Differential treatment at destinations?
  - No, ...

Table 6: Other Potential Channels:  
Congestion, Returns to Schooling, Out-Migration, Differential Fertility

Dep. Var.: as indicated in table header. Data from Diagnoza.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Analysis:	Congestion?	Return to schooling?		Out-migration?			Fertility?
Dep. Var.:	Years of education	log(HH income)		Intend to go abroad			Share of children in HH
Sample:	WT	All	WT	All	All	All	# children $\geq 1$
Ancestor from Kresy	0.732 (0.089)	0.080 (0.040)	0.037 (0.047)	-0.001 (0.006)	0.007 (0.010)	-0.004 (0.005)	0.004 (0.008)
Sh autochthons (std) $\times$ Kresy	0.137 (0.092)						
Years education (std)		0.179 (0.010)	0.210 (0.021)		0.002 (0.003)		
Years edu (std) $\times$ Kresy		-0.039 (0.025)	0.003 (0.033)		-0.008 (0.008)		
Baseline controls <sup>a</sup>	✓	✓	✓	✓	✓	✓	✓
Respondent county FE	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var.	11.83	8.45	8.40	0.06	0.09	0.11	0.32
R-squared	0.27	0.22	0.21	0.06	0.07	0.19	0.23
Observations	7,055	18,262	4,422	22,090	14,026	28,122	9,184

*Notes:* This table examines four alternative mechanisms that may explain the education advantage of people with Kresy ancestors: congestion due to the presence of autochthons (column 1); differential returns to education (columns 2 and 3); differential out-migration (columns 4 and 5); and differential fertility (columns 6 and 7). None of these appear to confound the coefficient on Kresy. We ran regressions at the level of respondents in the Diagnoza survey; standard errors are clustered by county.

<sup>a</sup> Controls include respondents' gender, age and age<sup>2</sup> interacted with birth-decade dummies, and indicators for rural places and urban counties.

# Conclusions

- Evidence that forced migration increases investment in education in the long run
- Forced migration is a frequent phenomenon:
  - natural disasters, wars, ethnic persecutions
- Policy implication: Potentially high returns from access to education for people who have suffered from forced migration

# Backup

# Diagnoza

	Obs	Mean	Std. Dev.	Min	Max
Western Territories					
Educational degree	7,372	2.455	1.027	1	4
Secondary education	7,372	0.477	0.499	0	1
Higher education	7,372	0.191	0.393	0	1
Education years	7,357	11.664	3.330	0	25
Ancestor from Kresy	7,363	0.273	0.445	0	1
Central Poland					
Educational degree	21,959	2.476	1.022	1	4
Secondary education	21,959	0.481	0.500	0	1
Higher education	21,959	0.196	0.397	0	1
Education years	21,930	11.764	3.350	0	28
Ancestor from Kresy	21,927	0.060	0.237	0	1



# Our survey, respondent level, representative sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Educational degree	3,169	2.670874	1.004051	1	4
Secondary education	3,169	0.4780688	0.4995976	0	1
Higher education	3,169	0.2088987	0.406586	0	1
Ancestor from Kresy	2,846	0.3134223	0.463966	0	1
share of ancestors from Kresy	2,846	0.2358763	0.3809765	0	1
share of ancestors from WT	2,847	0.1594435	0.3409518	0	1
share of ancestors from CP	2,847	0.6044118	0.4409473	0	1
share of ancestors from rural areas	2,903	0.7592111	0.3766021	0	1
share of ancestors from abroad	2,963	0.0260588	0.1373599	0	1

## Our survey, ancestor level

	Obs	Mean	Std. Dev.	Min	Max
Ancestor from Kresy	11,928	0.3241952	0.468093	0	1
Ancestor from CP	11,933	0.5152099	0.4997895	0	1
Ancestor from WT	11,933	0.1603117	0.3669103	0	1
Ancestor from rural area	12,435	0.7507841	0.4325765	0	1
Ancestor's gender	13,223	0.4961295	0.3783	0	1
Ancestor code	13,223	6.282765	3.432361	2	15
Generational gap	13,223	2.025864	0.6741524	1	3
Parents	13,223	0.214626	0.4105782	0	1
Grandparents	13,223	0.5448839	0.4980002	0	1
Great-grandparents	13,223	0.2404901	0.4273972	0	1

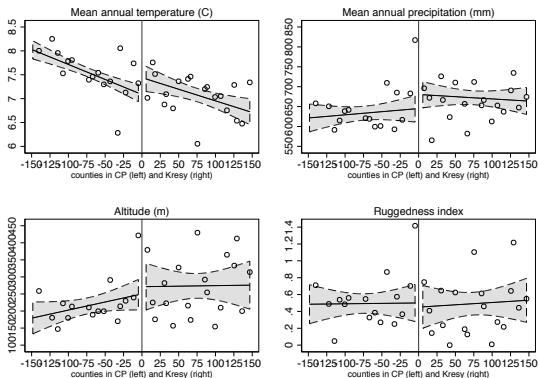
## Brief History of the Kresy-CP Border

- Kresy border established roughly along the Curzon line
- This line had been suggested as an armistice line during the 1920 Polish-Soviet conflict by British Foreign Secretary Lord Curzon
- But Curzon's suggestion was disregarded by both Poland and the Soviet Union
- The 1921 Treaty of Riga instead provided Poland with land that laid about 250 km east of the Curzon line

*"All decisions regarding the Polish frontiers were taken ad hoc (...) No attempt to trim the frontiers to the wishes of the population ever succeeded, until, at Soviet instigation, it was decided in 1944-5 to trim the population to the requirements of arbitrary frontiers."* (Davies 1981, p. 493)

# Endogeneity of Kresy border

No discontinuity in geo-climatic conditions along the Kresy-CP Border



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## Transmission of values in families

Interview by Bronisław Komorowski, former president of Poland (2010-15):

*“I was born near Wrocław [the former German Breslau], in the house of grandparents Komorowski who had come there from Vilnius [in Kresy]... At home, nobody attached any importance to the material side, because everything that was valuable had been lost” (Gazeta Wyborcza, 3 June 2017)*

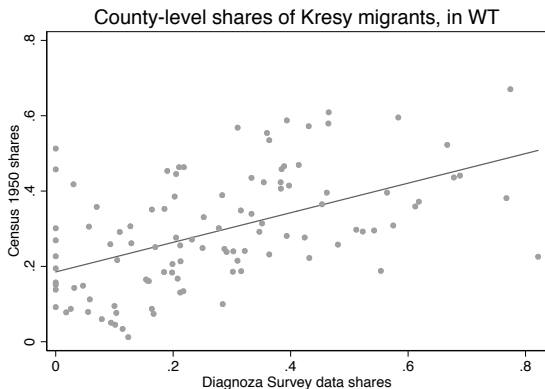
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# Data Quality Check 2 – Diagonza County Level, WT only

Share of Kresy Migrants in the Diagonza survey (2015) vs. the 1950 Census

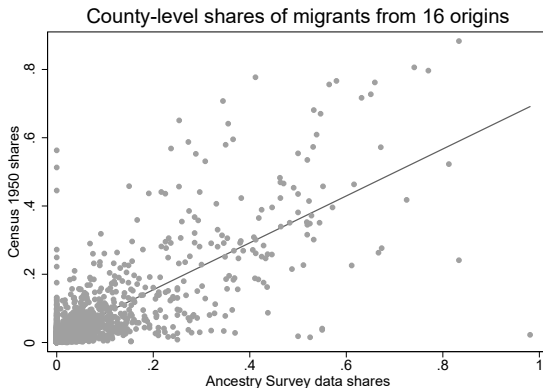


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# Data Quality Check 3: All Origin Shares from Ancestry Survey

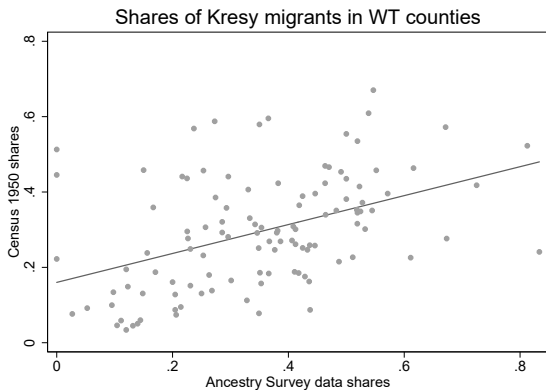
Share of Migrants in the Ancestry Survey (2016) vs. the 1950 Census. County level destinations; 16 origin territories as in 1950 census.





# Data Quality Check 4: Kresy Share in Ancestry Survey

Share of Kresy Migrants in the Ancestry Survey (2016) vs. the 1950 Census. County level destinations.



# Population in Poland in 1950 by Region of Origin and Destination, 1000s

<i>Destination Region:</i>	Western Territories (WT)	Central Poland (CP)	Share in Western Territories
Total population, 1950	5,602	19,012	22.8%
<i>Region of Origin:</i>			
Lived in Central Poland in 1939	2,785 (49.7%)	18,355 (96.5%)	13.2%
Lived in USSR (Kresy) in 1939	1,554 (27.7%)	583 (3.1%)	72.7%
Lived in Western Territories in 1939	1,112 (19.9%)	19 (0.1%)	98.3%
Lived abroad (not USSR) in 1939	152 (2.7%)	53 (0.3%)	74.0%

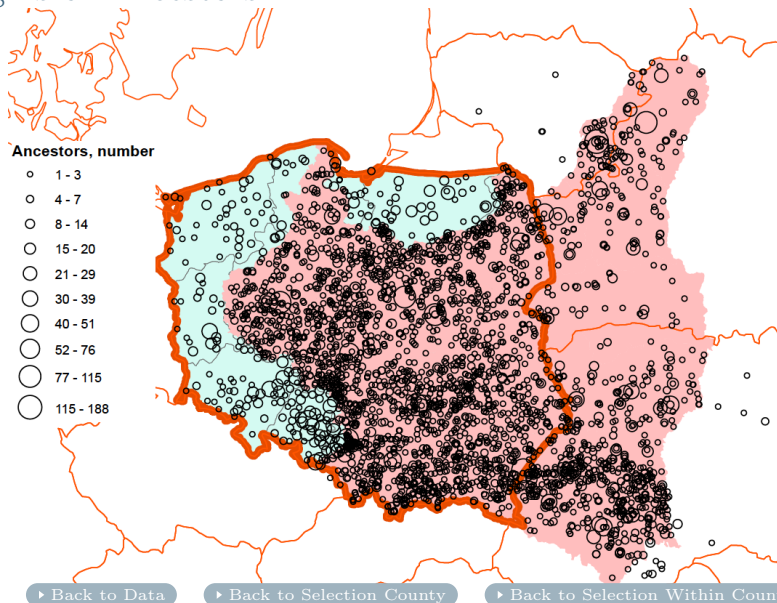
# Confirm Main Results using Ancestry Survey – Municipality FE

Dependent variable: as indicated in table header

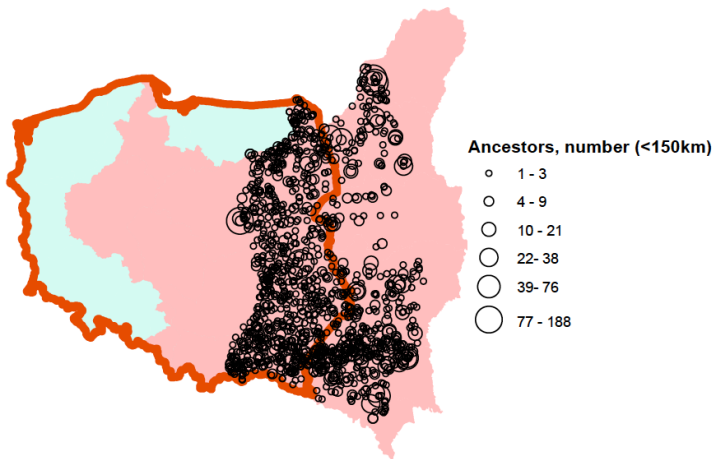
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.:		Years of Education			Secondary	Higher
Notes on sample:			rural	urban		
Share of Ancestors, Kresy	0.938*** (0.141)	0.741*** (0.147)	0.519** (0.257)	0.834*** (0.180)	0.091*** (0.023)	0.068*** (0.019)
Share of Ancestors, WT		-0.989*** (0.200)	-0.907*** (0.349)	-1.107*** (0.261)	-0.158*** (0.034)	-0.124*** (0.026)
Share of Ancestors, abroad		-0.623 (0.659)	-2.856** (1.348)	0.294 (0.738)	0.056 (0.095)	0.031 (0.100)
Share of Ancestors, rural		-0.553*** (0.161)	-0.342 (0.337)	-0.581*** (0.188)	-0.082*** (0.025)	-0.044** (0.021)
Controls <sup>†</sup>	✓	✓	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓	✓	✓
Mean Dep. Var.	12.42	12.44	11.38	12.96	0.47	0.22
R <sup>2</sup>	0.38	0.39	0.47	0.34	0.30	0.29
Observations	3,636	3,588	1,084	2,504	3,588	3,588

*Note:* Excluded category is ancestors from Central Poland. Average origin of ancestors: 48.9% from Central Poland, 36.7% from Kresy, 13.1% from Western Territories (autochthons), 2.2% from abroad.

# Origins of Ancestors



# Kresy Border Sample: Location of Ancestors



# Border Sample Regression Results

Dependent variable: as indicated in column header

	(1)	(2)	(3)	(4)	(5)
Dep. Var.:	Years of education			Secondary	Higher
Notes on sample:	< 150km	< 150km	< 100km	< 150km	< 150km
Ancestor from Kresy	0.678*	0.948**	1.344**	0.116**	0.126**
	(0.354)	(0.390)	(0.523)	(0.058)	(0.055)
Controls <sup>‡</sup>	✓	✓	✓	✓	✓
County FE	✓				
Municipality FE		✓	✓	✓	✓
Mean Dep. Var.	12.72	12.72	12.66	0.54	0.24
R <sup>2</sup>	0.30	0.43	0.53	0.41	0.36
Observations	3,291	3,291	1,949	3,291	3,291

*Notes:* Regressions are run at the ancestor level; standard errors clustered by individual respondents. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

<sup>‡</sup> Controls include respondents' gender, age, age<sup>2</sup>, dummies for six age groups, as well as indicators for rural places and urban counties, an indicator for the generation of the ancestor, rural location of the ancestor. All columns control for a quadratic polynomial in latitude and longitude of ancestors' location of origin.

# Selection of Kresy Migrants at the Origin? Probably not.

Results are similar for urban vs. rural ancestors, and for Ukraine

Dependent variable: Years of Education in 2016								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
"Ancestors from Kresy" includes:	All Kresy Ancestors					Only Kresy Ancestors from Ukraine		
Notes on sample:	all	Ancestor location:		Ancestor & descendant:		all	Ancestor location:	
		urban	rural	urban	rural		urban	rural
Ancestor from Kresy	0.503*** (0.092)	0.668*** (0.160)	0.430*** (0.110)	0.584*** (0.173)	0.312* (0.184)	0.444*** (0.111)	0.614*** (0.182)	0.347*** (0.132)
Ancestor from rural area	-0.508*** (0.099)					-0.487*** (0.106)		
Controls <sup>‡</sup>	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var.	13.04	13.64	12.84	13.87	11.83	12.98	13.52	12.80
R <sup>2</sup>	0.29	0.30	0.32	0.31	0.35	0.28	0.31	0.32
Observations	11,548	2,950	8,598	2,417	3,084	10,237	2,568	7,669

*Notes:* Regressions are run at the ancestor level; standard errors clustered by individual respondents. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

<sup>‡</sup> Controls include respondents' gender, age, age<sup>2</sup>, dummies for six age groups, indicators for respondents living in rural locations and urban counties, and indicators for ancestors from rural areas as well as from Western Territories. Excluded category is ancestors from Central Poland.

## Selection of Kresy Migrants into Western Territories?

- Restrict the Diagnoza sample to those respondents with Kresy origin
  - Years of education among Kresy descendants: In CP 13.2, vs. 12.2 in WT
  - ⇒ If anything, Kresy descendants in WT are *less* educated than those in CP
  - ⇒ Implies that Ancestor Survey results are – if anything – underestimating the true effect of Kresy origin



# Literacy Data from the 1897 Census

<b>1897 Russian Empire Census:</b>	<b>Kresy</b>	<b>Central Poland Russian Partition</b>
Share of native Polish speakers	5.2	74.0
Share of literate not in Russian among Poles	12.8	17.0

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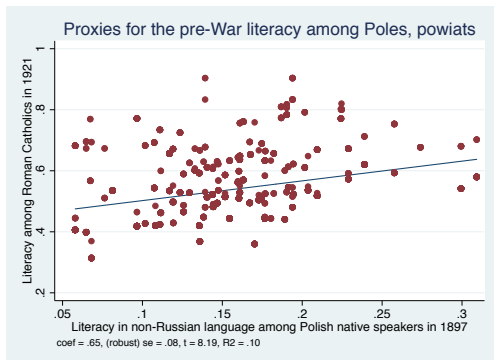
# ...same result when using Literacy from 1897 Russian Census

Dependent Variable:	(1) Secondary Edu in 2016	(2) Historical Literacy	(3) Secondary Edu in 2016	(4) Historical Literacy	(5) Secondary Edu in 2016	(6) Historical Literacy
Sample. Ancestor from:	Rural & Urban origin		Rural origin		Urban origin	
Ancestor from Kresy	0.139*** (0.030)	-0.031** (0.014)	0.135*** (0.034)	-0.031** (0.014)	0.137** (0.069)	-0.030** (0.014)
Ancestor from rural area	-0.040 (0.033)	0.003 (0.005)				
Controls <sup>‡</sup>	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓
Mean Dep. Var.	0.58	0.16	0.57	0.16	0.63	0.15
R <sup>2</sup>	0.32	0.30	0.33	0.32	0.58	0.53
Observations	2,177	2,177	1,744	1,744	433	433

*Notes:* Regressions are run at the ancestor level; standard errors clustered by individual respondents.

## Quality check for 1897 literacy data

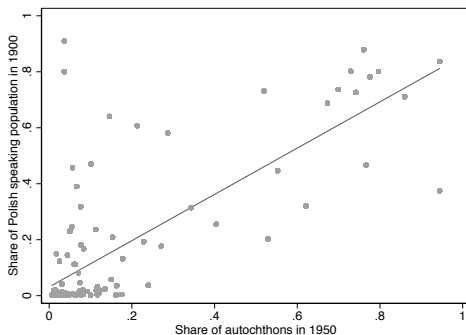
- The quality of Polish-language literacy data in 1897 is poor because of the policy of “Russification” in the Russian Empire
- Yet, they are significantly correlated with 1921 Polish Census data (county level)



# Could the presence of autochthons drive our results?

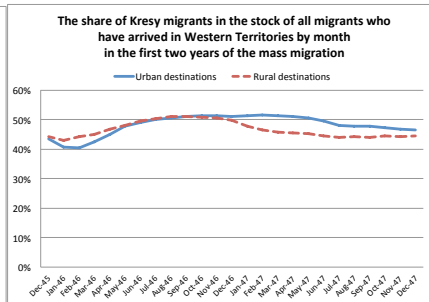
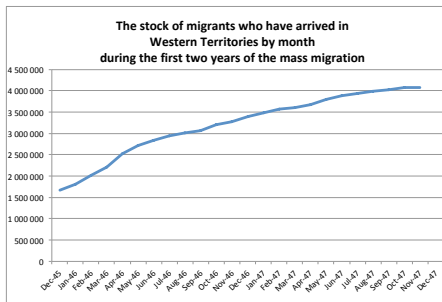
Unlikely, as the idea of the resettlement was to populate 'empty space'

- Autochthons were a minority in WT, but their share varied across localities



# Did CP migrants 'Congest' the WT before Kresy Migrants Arrived?

Unlikely. They arrived in parallel

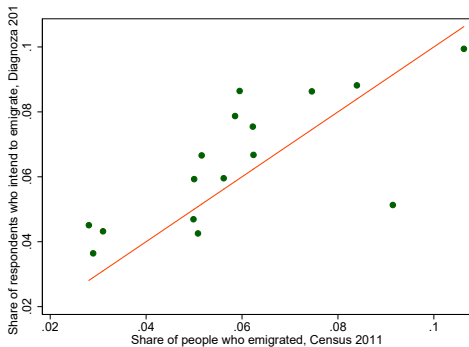


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# Are people who intend to emigrate a good approximation for those who already left?

- Emigration became an option only after the fall of communism
- Question in Diagnoza: “Do you plan to go abroad within the next two years, in order to work?”
- Question in Census 2011: “How many members of your HH have emigrated?”



## Recall Bias? Accounting for ‘Missing Ancestors’

Dependent variable: as indicated in column header

Dep. Var.:	(1) Share missing ancestor info <sup>†</sup>	(2) Years of education	(3) Years of education	(4) Secondary education	(5) Higher education
Share of Ancestors, Kresy	0.000 (0.010)		0.812*** (0.139)	0.110*** (0.021)	0.070*** (0.018)
Share of Ancestors, WT	-0.059*** (0.016)		-1.079*** (0.195)	-0.166*** (0.032)	-0.138*** (0.024)
Share of Ancestors, abroad	-0.126*** (0.038)		-1.267 (0.867)	-0.032 (0.113)	-0.015 (0.100)
Share of Ancestors, rural	0.001 (0.011)		-0.458*** (0.163)	-0.063** (0.024)	-0.034* (0.020)
Share missing ancestor info <sup>†</sup>		-0.671** (0.287)	-0.865*** (0.285)	-0.125** (0.050)	-0.122*** (0.040)
Controls <sup>‡</sup>	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓
Mean Dep. Var.	0.12	12.44	12.44	0.47	0.22
R <sup>2</sup>	0.21	0.27	0.29	0.21	0.21
Observations	3,581	3,581	3,581	3,581	3,581

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# Socio-Economic Characteristics at Ancestor Origin

Dependent variable: as indicated in table header

	Degree (4 categories)							
Ancestor from Kresy	0.542*** (0.131)	0.540*** (0.141)	0.572*** (0.105)	0.466*** (0.105)	0.508*** (0.108)	0.579*** (0.096)	0.502*** (0.104)	0.505*** (0.098)
Share Rom. Cath., 1931 (std)	0.049 (0.114)							
Rom. Cath., 1931 (std) × Kresy	-0.042 (0.141)							
Share Polish speakers, 1931 (std)		0.028 (0.136)						
Polish speakers, 1931 (std) × Kresy		-0.006 (0.167)						
Share Ukrainian speakers, 1931 (std)			-0.001 (0.124)					
Ukrainian speakers, 1931 (std) × Kresy			-0.077 (0.126)					
Share Russian speakers, 1931 (std)				0.209 (0.212)				
Russian speakers, 1931 (std) × Kresy				-0.181 (0.213)				
Literacy rate, 1931 (std)					-0.027 (0.080)			
Literacy rate, 1931 (std) × Kresy					0.045 (0.093)			
Urbanization rate, 1931 (std)						0.047 (0.060)		
Urbanization rate, 1931 (std) × Kresy						-0.087 (0.058)		
Literacy rate, 1921 (std)							0.005 (0.075)	
Literacy rate, 1921 (std) × Kresy							-0.007 (0.093)	
Literacy rate Rom. Cath., 1921 (std)								0.015 (0.066)
Literacy rate Rom. Cath., 1921 (std) × Kresy								0.002 (0.085)
Controls <sup>†</sup>	✓	✓	✓	✓	✓	✓	✓	✓
County FE								
Mean Dep. Var.	13.14	13.14	13.14	13.14	13.14	13.15	13.14	13.14
R <sup>2</sup>	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Observations	9,706	9,706	9,706	9,706	9,667	8,613	9,645	9,645



# Geographic Characteristics at Ancestor Origin

Dependent variable: Years of education				
	(1)	(2)	(3)	(4)
Ancestor from Kresy	0.589*** (0.100)	0.480*** (0.117)	0.588*** (0.103)	0.558*** (0.096)
Land suitability for wheat at origin (std)	-0.041 (0.082)			
Land suit. for wheat (std) $\times$ Kresy	0.014 (0.096)			
Annual temperature at origin (std)		0.030 (0.089)		
Annual temperature (std) $\times$ Kresy		-0.169 (0.115)		
Precip.-evatranspiration ration at origin (std)			-0.015 (0.064)	
Precip.-evatranspiration ration (std) $\times$ Kresy			-0.052 (0.099)	
Ruggedness at origin (std)				0.034 (0.048)
Ruggedness (std) $\times$ Kresy				-0.088 (0.082)
Controls <sup>†</sup>	✓	✓	✓	✓
County FE	✓	✓	✓	✓
Mean Dep. Var.	13.15	13.15	13.15	13.15
R <sup>2</sup>	0.29	0.29	0.29	0.29
Observations	8,793	8,793	8,793	8,793