# Lecture 10
Migration

Matti Sarvimäki

History of Economic Growth and Crises
10 February 2022

1. The Malthusian Era
2. Fundamental causes of growth
3. Innovation and crises
4. Unleashing talent
   1. **Migration**
   2. Social mobility
   3. Women

- Hypothesis
  - many people live in "wrong" locations in the sense that their productivity would be higher elsewhere
  - if they would move to high productivity locations, income per capita could grow substantially

- This lecture
  - stylized facts
  - a Roy model of migration
    (to illustrate empirical challenges)
  - (quasi-)experimental evidence

Fact 1: Large cross-country income differences
Clemens, Montenegro, Pritchett (2010)
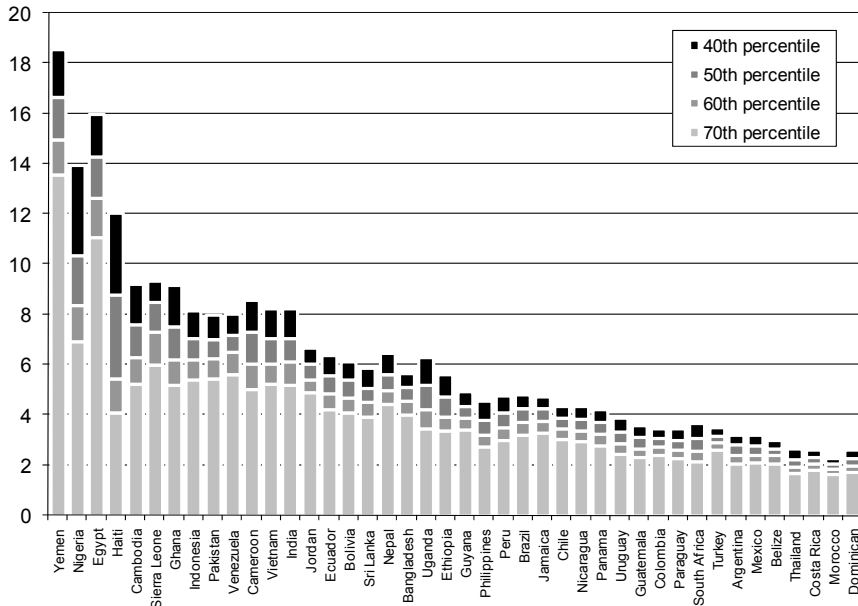
PPP adjusted wage ratios for foreign workers in the United States in comparison to observationally identical workers in the source country (some country of birth, country of education, years of education, work experience, sex, and rural or urban residence). The colors correspond to different assumption about self-selection into migration.

Fact 2: Poor countries have large agri sectors
Employment share of agriculture and GDP per capita in 1996
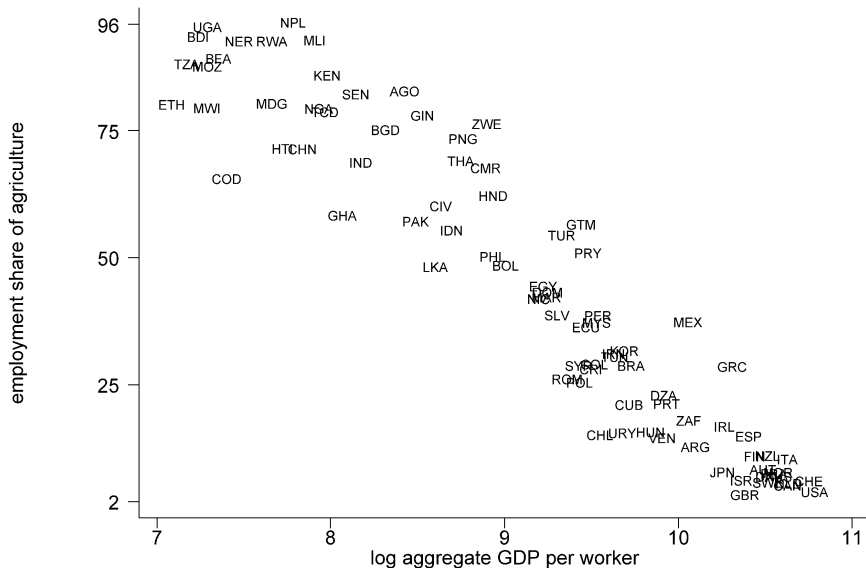
"[...] in the poorest countries of the world virtually everyone works in agriculture, and in the richest virtually nobody does. It is obvious that this is the most important source of variation in the composition of GDP around the World." (Caselli 2005)

	Raw
Median	3.1
# Countries	72

Gollin, Lagakos and Waugh (2014): In a typical country, value added per worker is 3.1 larger outside of agriculture than in agriculture.

	Raw	Adj.
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	Raw	Adj.	Adjusted APG by GDP per capita			
			Rich	Q2	Q3	Poor
Median	3.1	1.9	1.4	2	2.1	2.3
# Countries	72	72	18	16	18	20

Gollin, Lagakos and Waugh (2014): In a typical country, value added per worker is 3.1 larger outside of agriculture than in agriculture. After adjusting on years of education and hours of work value added in non-agriculture is still 1.9 larger than in agriculture. The gaps are larger, the poorer the country.

- Observationally identical individuals have very different income by country of residence
  - constraining international migration may create a large distortion to the global economy (Clemens 2011, JEP)

Stylized facts: summary

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  - constraining international migration may create a large distortion to the global economy (Clemens 2011, JEP)
- ... and by sector of employment within a country
  - getting workers to the modern sector could increase growth

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  - puzzle: most countries do not restrict internal migration, so why do people stay in agriculture?

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- ... and by sector of employment within a country
  - getting workers to the modern sector could increase growth
  - puzzle: most countries do not restrict internal migration, so why do people stay in agriculture?
- Next: why the stylized facts may give a misleading estimate for returns to migration

- Think of a world with two locations and wage equations

$$w_{ji} = \mu_j + \delta_j s_i$$

  where the (log) wage of individual i in location j is a function of location-specific base wage, μ_j, returns to skill, δ_j, and individual-specific skill, s_i.

Estimating returns to migration: the challenge
Roy (1951), Borjas (1987), Banerjee, Newman (1998), Chiqiuar, Hanson (2005)...

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- Individual born in 0 moves to 1 iff $w_{j1} - C_i > w_{j0}$
  - C_i is migration cost (direct costs, amenity differences, networks, risk...)
  - the models differ mainly in their assumptions on what drives the migration costs

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  - C_i is migration cost (direct costs, amenity differences, networks, risk...)
  - the models differ mainly in their assumptions on what drives the migration costs
- Selection into moving is determined by individual's skills, moving costs and locations' wage distributions
  - simple comparison of wages across locations unlikely to measure returns to migration
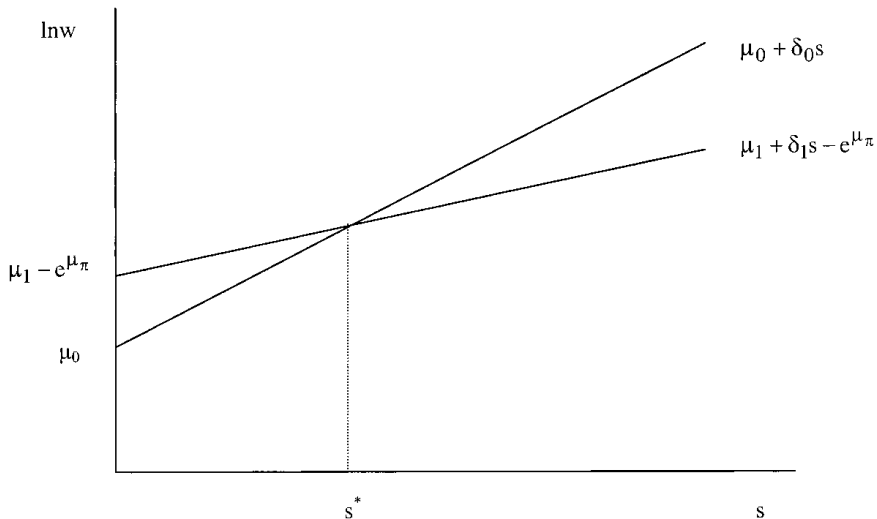
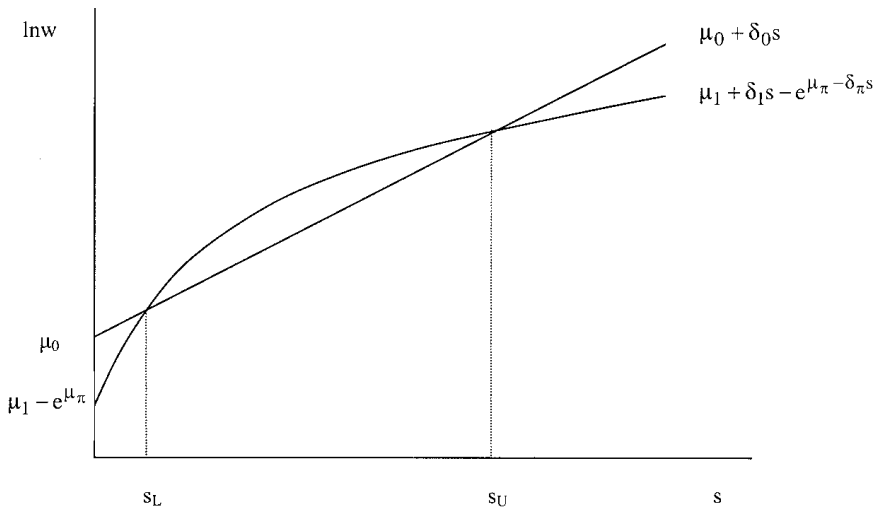Negatively selected migration. Location 1 has more equal wage distribution than location 0. As a consequence, everyone with skill levels below s* migrate from 0 to 1 when migration costs are $e^{\mu\pi}$ (note that wages are in logs, so here migration costs are assumed to be *time-equivalent* across the skill distribution).

Selection from the middle: everyone with skill levels between s_L and s_U migrate from 0 to 1. Now time-equivalent migration costs are assumed to be decreasing with skill (skilled workers have to work fewer hours to cover the migration costs than non-skilled workers). Credit constraints would yield qualitatively similar selection.

# Returns to internal migration
Bryan, Chowdhury, Mobarak (2014)

- Context
  - pre-harvest lean seasons common in Asia, Africa
- Experiment
  - randomly assign an $8.50 incentive to households in rural Bangladesh to out-migrate during the lean season
- Results
  - induces 22% of households to send a seasonal migrant
  - consumption at the origin increases significantly
  - treated households are 8-10 percentage points more likely to remigrate 1 and 3 years after the incentive is removed
- Interpretation
  - migration is risky, mitigating risk requires individual-specific learning, and some migrants are sufficiently close to subsistence so that failed migration is very costly

11% of Finns displaced during WWII and resettled to the remaining parts of the country

• 10 henkeä
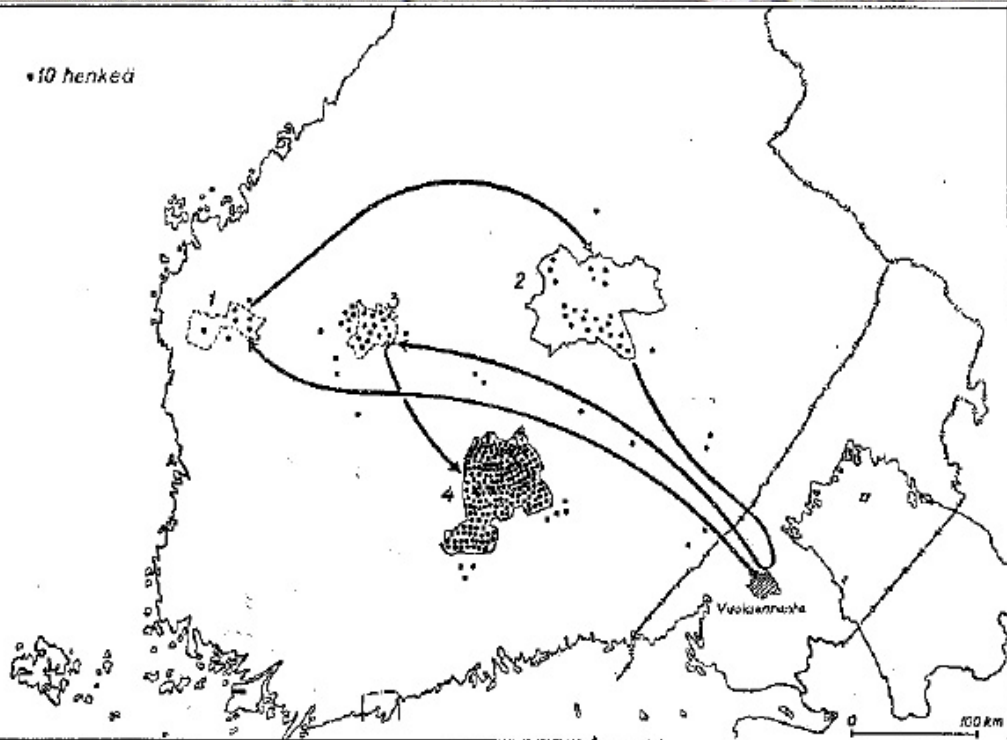
1

2

3

4

Vuoksenniska

0   100 km

- Farmers: aim to reconstruct the pre-war situation
  - provided land and assistance for setting up new farms
    - ▶ location determined by source area
    - ▶ soil and weather conditions similar to source areas
    - ▶ fields exproriated from local landowners, cleared from forest
  - villages resettled together to preserve social connections
 - farmers free to sell their land and to migrate afterwards

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- Others: compensated with government bonds
- Resettlement funded through massive and highly progressive capital taxation (up to 20% of the *level* of wealth)

- **Data**: 10% sample of the 1950 Census linked to the 1970 Census and 1971 tax records
  - focus on cohorts born between 1907–1924 (N=85,836)
- **Research design**: everyone living in the ceded area left
  - displaced and non-displaced persons similar in pre-war observables
- **Main results**: displacement increased farmers' income
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- **Broader take-away**: attachment to a place stops many from leaving farming despite large monetary returns

1971 taxable real income and 1939 location

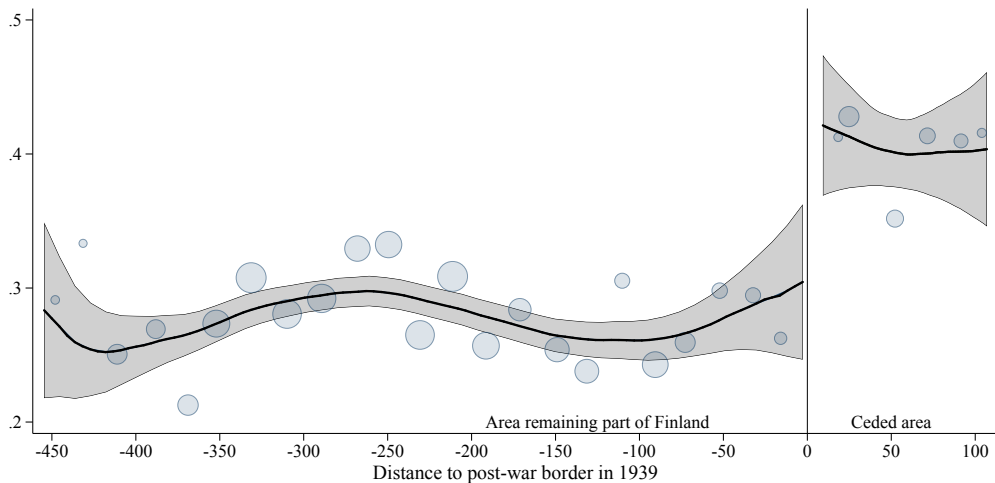Thousands of *markka* (inc. zeros), deflated by municipality level cost of living index
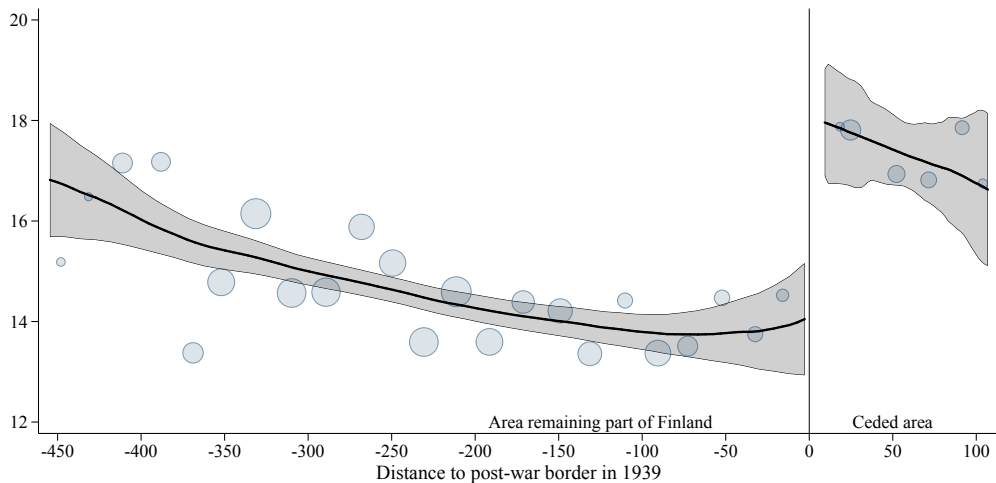
Data: 13,987 men born between 1907 and 1925, who worked in agriculture in 1939. The lines represent local linear estimates using the edge kernel and the optimal bandwidth of Imbens and Kalyanaraman (2012). The dots correspond to the sample means by 20km bins. On average, each dot represent 478 individuals.

Non-Agricultural Employment in 1970
Share of 1939 farmers working outside of agriculture in 1970

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  - impacts for income and sector move together
  - small impact on education
  - displaced and non-displaced persons living and working in same places after the war have similar income

Returns to leaving agriculture
Sarvimäki, Uusitalo, Jäntti (2022)

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- IV interpretation: return to leaving agriculture $\approx 70\%$
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- *The* Question: If returns to leaving agriculture were so high, why didn't the non-displaced farmers move?

- Our main explanation: **attachment to a place**
  - we rationalize our results with the help of a simple Roy model augmented with habit formation for residential location
  - review large surveys from the turn of the 1950s
  - return migration when Finland temporarily took back the areas

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  - return migration when Finland temporarily took back the areas
- Alternative explanations
  - networks
  - cultural distance and discrimination
  - intertia, learning and education
  - quality of the new farms
- Some consistent with some of our results, but not with others

- We examine pop. displacements in 1940s Finland and find that
  - leaving agriculture substantially increased long-term income
- We interpret this as evidence on the importance of attachment to a place
  - forced migration increased income, but reduced welfare
  - but: welfare impact on later generations may be positive
- Broader take-away
  - non-economic migrations costs can be very high and thus lead to the apparent "misallocation" of labor across sectors and locations
  - see Banerjee and Duflo (2019) for a thoughtful discussion of the policy implications on non-monetary migration costs

NEW YORK.—WELCOME TO THE LAND OF FREEDOM—AN OCEAN STEAMER PASSING THE STATUE OF LIBERTY: SCENE ON THE STEERAGE DECK.

Not like the brazen giant of Greek fame,
With conquering limbs astride from land to land;
Here at our sea-washed, sunset gates shall stand
A mighty woman with a torch, whose flame
Is the imprisoned lightning, and her name
Mother of Exiles. From her beacon-hand
Glows world-wide welcome; her mild eyes command
The air-bridged harbor that twin cities frame.
"Keep, ancient lands, your storied pomp!" cries she
With silent lips. "Give me your tired, your poor,
Your huddled masses yearning to breathe free,
The wretched refuse of your teeming shore.
Send these, the homeless, tempest-tost to me,
I lift my lamp beside the golden door!"

Emma Lazarus, America's first important Jewish poet, is posthumously famous for her 1883 sonnet "The New Colossus" (above), which is engraved on the base of the Statue of Liberty.

- This paper
  - what was the economic return to migrating?
  - were migrants positively or negatively selected?
  - ... among Norwegian immigrants in the 1880s
- Norway more unequal than the US in 1900
  - thus the Roy model discussed above suggest that Norwegian immigrants to the US should be negatively self-selected

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    - ... among Norwegian immigrants in the 1880s
- Norway more unequal than the US in 1900
    - thus the Roy model discussed above suggest that Norwegian immigrants to the US should be negatively self-selected
- Take-away
    - returns to migration: 70%
    - migrants negatively self-selected

- Why study this period?
    - nearly open borders $\rightarrow$ possible to observe the underlying economic forces
      (rather than their mixture with immigration policy)
    - given the magnitude, potentially large implications for economic growth
      in Europe and the United States

Age of Mass Migration
Abramitzky, Boustan, Eriksson (2012)

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    in Europe and the United States

- More than 40m Europeans emigrated between 1850–1913
  - one of the largest migration episodes in history
  - roughly 30m settled in the United States
  - initially from UK, Ireland, Germany
  - 1870s: Scandinavians and other northern Europeans
  - 1880s: southern and eastern Europeans
  - Norway had one of the highest out-migration rates in the 1880s
    (roughly 200,000 emigrants to the U.S. during this decade)

- Drivers of emigration
  - technology: cost of migration fell dramatically
  - rising incomes: larger share able to pay for passage

- Link data from
  - Norwegian censuses of 1865 and 1900 (available here)
  - Norwegian-born men in the U.S. in 1900 (from Ancestry.com)
- Information on occupation and earnings
  - observed: occupation when the men are in their 30s and 40s
  - assign mean (PPP-adjusted) income by occupation
- Limitations
  - within-occupation wages unobserved
  - overpresentation of those with uncommon names
  - excludes those who anglicize their names
  - temporary migrants (can handle well using 1880 census)

- ABE document occupational downgrading by imposing the same mean earnings by occupation in both countries
  - on average, urban migrants work in occupations that have 19 log points lower wages than nonmigrants
  - for rural migrants the gap is 5 log points
  - these gaps do not vanish in 20 years-since-migration
- That is, the migrants work in lower rank occupations in the U.S. than the stayers in Norway
  - BUT: this does not mean lower earnings, because average earnings by occupation are higher in the US than Norway

	Population	Match 1	Match 2	Match 3	Weighted	Match 1 Iowa data	Add penalty
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
In US	0.609	0.606	0.644	0.572	0.641	0.554	0.466
	(0.017)	(0.009)	(0.009)	(0.015)	(0.024)	(0.010)	(0.009)
N	122,620	17,501	33,641	7,596	14,647	17,352	17,501

Estimates for β_1 from regression

$$\ln\left(Earnings_i\right) = \alpha + \beta_1 Migrant_i + \beta_2 Age_i + \beta_3 Age_i^2 + \epsilon_i$$

Col 1: Norwegian-born men between the ages of 38–50 in Norwegian and US censuses. Col 2: matched sample (name, age, and country of birth). Col 3: alternative matched sample (name, age, and province of birth for nonmigrants). Col 4: yet another matched sample (matches unique within a five-year age band). Col 5: weight to reflect oversampling of urban areas (rare names more common). Col 6: US migrants assigned earnings from the 1915 Iowa census. Col 7: reduce the Cost of Living earnings by 13 log points in each occupation.

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Estimating returns to migration
Abramitzky, Boustan, Eriksson (2012)

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  - identifying assumption: within-brothers, selection to migration as good as random
- Approach 2: IV using sibling composition, birth order
  - first-stage: affect the likelihood of inheriting farmland
  - identifying assumption: being oldest son affects occupational choice
    only through the larger likelihood of inheriting the farm

	Dependent variable = ln(earnings); Coefficient on = 1 if migrant		
	Full sample, 1865	Rural, 1865	Urban, 1865
Panel A. Unweighted			
OLS	0.545	0.607	0.384
	(0.027)	(0.034)	(0.044)
Within household	0.511	0.508	0.508
	(0.035)	(0.045)	(0.057)
Chi-squared	1.49	7.47	8.31
p-value	0.2218	0.0063	0.0039
N	2,655	1,823	832
Number of migrant-stayer pairs	326	167	159

Each cell contains coefficient estimates and standard errors from regressions of ln(earnings) on a dummy variable equal to one for individuals living in the United States in 1900. Regressions also include controls for age and age squared. The first row conducts an OLS regression for the restricted sample of households that have at least two matched members in the dataset and the second row adds household fixed effects. Chi-squared tests are for the null hypothesis that the OLS and within- household coefficients are equal.

Panel A. First stage	Dependent variable = In US in 1900		
Number of brothers	0.016		0.011
	(0.006)		(0.006)
2nd brother		−0.000	—
		(0.012)	
3rd brother		0.047	0.037
		(0.019)	(0.019)
4th or higher brother		0.076	0.058
		(0.035)	(0.036)
Panel B. OLS	Dependent variable = ln(earnings in 1900)		
In US in 1900		0.642	
		(0.019)	
Panel C. IV	Dependent variable = ln(earnings in 1900)		
In US in 1900	0.669	0.696	0.668
	(0.436)	(0.381)	(0.338)
Over-ID test (p-value)			0.869
N	4031	4031	4031

Note that the IV estimates are very imprecise.

- Estimated returns to migration about 70% (0.5 log points)
- Comparison of within-brother (β_1') and OLS estimates (β_1)
  - urban sample: $\beta_1' > \beta_1$ suggesting negative selection
  - rural sample: $\beta_1' < \beta_1$ suggesting positive selection

- Hornung (2014): Immigration and the Diffusion of Technology: The Huguenot Diaspora in Prussia. *AER* 104(1): 84-122
  - In 1685, religiously persecuted French Huguenots settled in Brandenburg-Prussia and compensated for population losses due to plagues during the Thirty Years' War. This paper finds a substantial long-term effects of Huguenot settlement on the productivity of textile manufactories.
- Moser, Voena, Waldinger (2014): German Jewish Emigres and U.S. Invention. *AER* 104(10): 3222-3255
  - Examine the impact of Jewish émigrés from Nazi Germany on chemical innovation in the U.S. and find that patenting by U.S. inventors increased by 31 percent in émigré fields. Inventor-level data indicate that émigrés encouraged innovation by attracting new researchers to their fields, rather than by increasing the productivity of incumbent inventors.