Economics 210A
Spring 2015

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LECTURE 10
Labor Markets

April 1, 2015

I. Overview

Issues and Papers

- Broadly—the functioning of labor markets and the determinants and effects of human capital formation.

- Main contribution of the papers is to illustrate how the tools of modern labor economics can be applied in history (and how historical samples can inform our understanding of modern labor markets).

II. Abramitzky, Boustan, and Eriksson

"A Nation of Immigrants: Assimilation and Economic Outcomes in the Age of Mass Migration"

Issue

- 1850-1913 referred to as the Age of Mass Migration
    - 30 million Europeans immigrated to the United States.
- Question ABE focus on is: How did they fare?
    - Did they initially earn less than native workers?
    - Did their earnings catch up after they had been here for many years?

Previous Literature

- Looked at earnings of immigrants in a cross section.
    - Found that recent immigrants earned less than immigrants who had been in the US a long time.
- Possible problems:
    - Changes in immigrant skill over time.
    - Negative selection in return migration.

Types of Samples

- Cross section
- Repeated cross section
- Panel

Data Sources

- IPUMS: 5% sample of the individual census returns
    - Get sample of native-born and immigrant men in 1900, 1910, and 1920.
- Panel
    - From IPUMS get sample of men 18-35 in 1900.
    - Match by name and other information through the 1910 and 1920 censuses (on Ancestry.com).
    - For immigrants from some smaller countries, use Ancestry.com to get a full count and follow those through later censuses.

TABLE 1
SAMPLE SIZES AND MATCH RATES BY PLACE OF BIRTH

Country	1900 Number in Universe (1)	Number Matched (2)	Match Rate, Total (3)	1900 Number, Unique (4)	Match Rate, Unique (5)
	A. 1900 Source: IPUMS				
Austria	4,835	339	.070	4,677	.072
England	7,438	664	.089	6,175	.107
France	11,615	728	.063	9,139	.079
Germany	19,855	2,248	.113	16,733	.134
Ireland	9,737	861	.088	6,323	.136
Italy	7,624	811	.106	7,042	.115
Norway	3,541	425	.120	2,822	.151
Russia	5,804	644	.111	5,203	.124
Sweden	6,164	559	.091	4,070	.137
US natives	10,000	1,650	.165	8,345	.197
	B. 1900 Source: Ancestry.com				
Belgium	6,060	545	.090	5,962	.091
Denmark	34,594	1,980	.058	17,425	.114
Finland	23,843	828	.035	22,197	.037
Portugal	12,585	584	.046	8,362	.070
Scotland	53,091	4,349	.082	15,529	.280
Switzerland	22,276	3,311	.149	20,588	.161
Wales	17,767	1,342	.076	9,876	.135

NOTE.—The sample universe includes men between the ages of 18 and 35 in 1900. Immigrants must have arrived in the United States between 1880 and 1900. We exclude all

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

Outcome Measure

- Historical census does not have earnings data.
- Use occupation as a proxy.
- Researchers have linked occupations to earnings in 1950 (and also 1901).
- Possible issues?

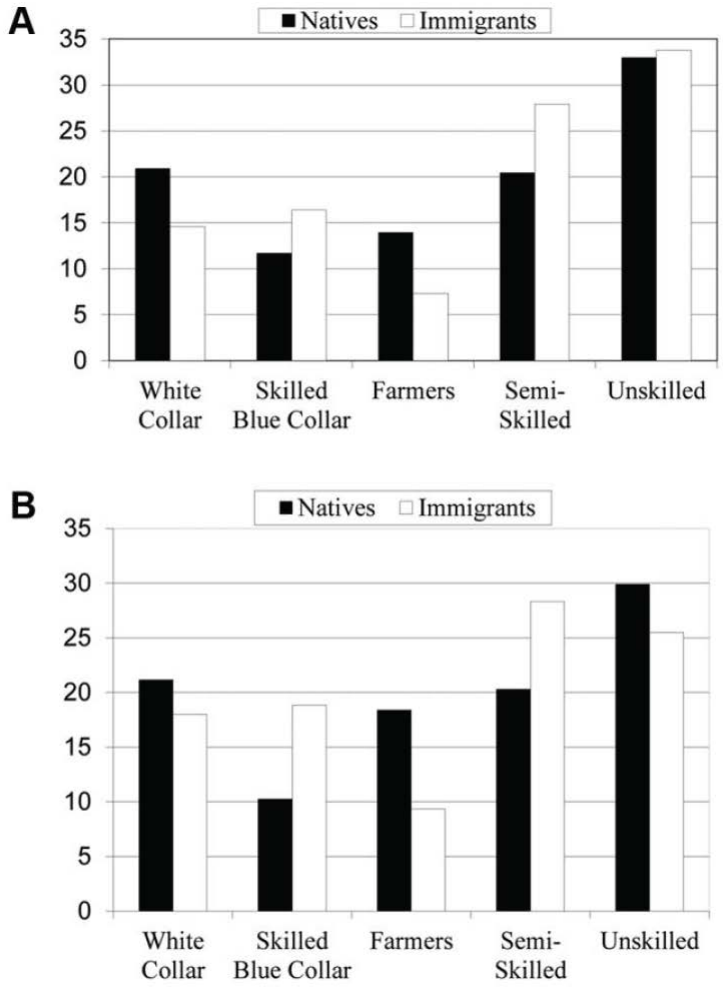

FIG. 1.—Occupational distribution of natives and immigrants in cross section and panel in 1900. *A*, Cross section, immigrants and natives. *B*, Panel, immigrants and natives.

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

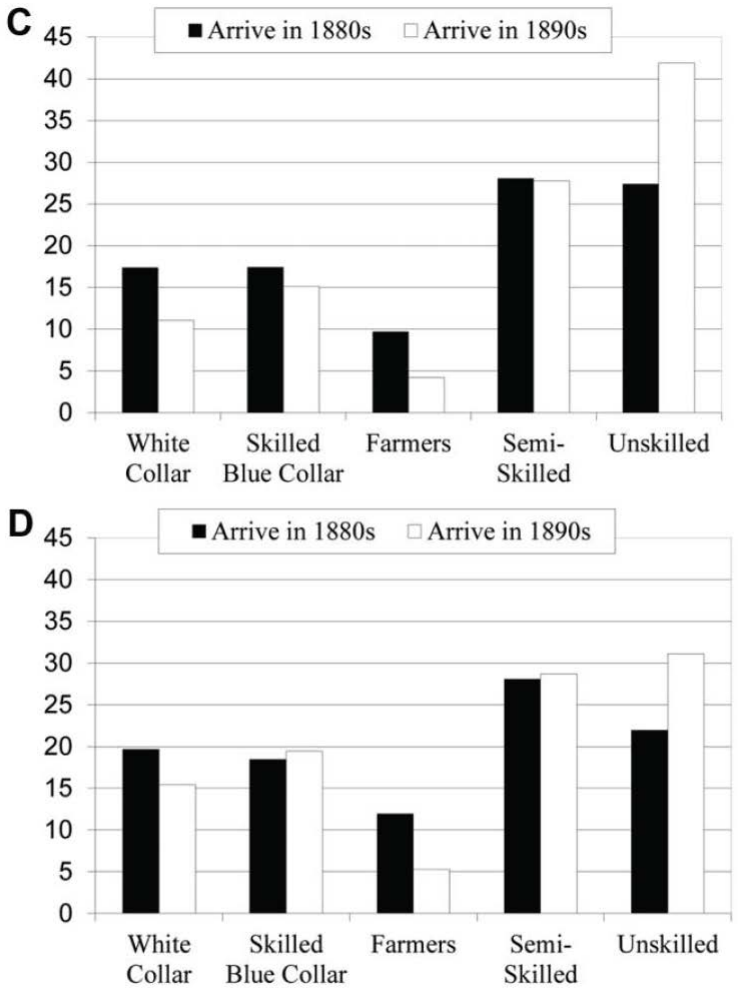

FIG. 1 (*Continued*).—Occupational distribution of natives and immigrants in cross section and panel in 1900. *C*, Cross section, immigrants in early and late arrival cohorts. *D*, Panel, immigrants in early and late arrival cohorts.

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

Estimating Equation

- Comparing occupational mobility for native-born workers and immigrants.

$$\text{Occupation\_score}_{ijmt} = \gamma_{t-m} + \mu_m + \theta_t + \alpha_j + \beta_1 \text{age}_{it} + \beta_2 \text{age}_{it}^2 + \beta_3 \text{age}_{it}^3 + \beta_4 \text{age}_{it}^4 + \varepsilon_{ijmt}, \quad (1)$$

- *i* indexes individual; *j* indexes country of origin; *m* is year of arrival; *t* is census year.
- γ_{t-m} is five indicator variables for length of time an immigrant has been in the U.S.: 0-5 yrs., 6-10, 11-20, 20-30, more than 30.
- μ_m is a dummy for if immigrant came after 1890.

What Do ABE Think They Learn from Comparing the Results of Different Samples?

- Comparing the results of the cross section and the repeated cross section (including the dummy for arrival after 1890) can show the effect of changes in immigrant skills.
- Comparing the results of the repeated cross section and the panel can show the importance of negative selectivity in return migration.

TABLE 4

ORDINARY LEAST SQUARES ESTIMATES, AGE-EARNINGS PROFILE FOR NATIVES AND FOREIGN-BORN, 1900–1920: 1950 OCCUPATION-BASED EARNINGS IN 2010 DOLLARS

		Pooled Cross Section and Panel	
Right-Hand-Side Variable	Cross Section (1)	Cross Section Coefficients (2)	Panel Coefficients (3)
0–5 years in US	−1,255.73	−384.49	293.51
	(143.44)	(187.30)	(237.96)
6–10 years in US	−734.51	−2.89	467.64
	(147.44)	(172.05)	(213.61)
11–20 years in US	−352.93	173.83	329.38
	(131.27)	(134.02)	(150.49)
21–30 years in US	−294.87	128.44	74.34
	(142.10)	(138.93)	(150.33)
30 years in US	22.41	155.77	231.90
	(184.65)	(178.49)	(186.55)
Arrive 1891+	. . .	−739.18	−232.77
		(106.99)	(160.58)
Native-born	. . .	. . .	−153.83
			(176.14)
Observations	205,458	259,093	

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

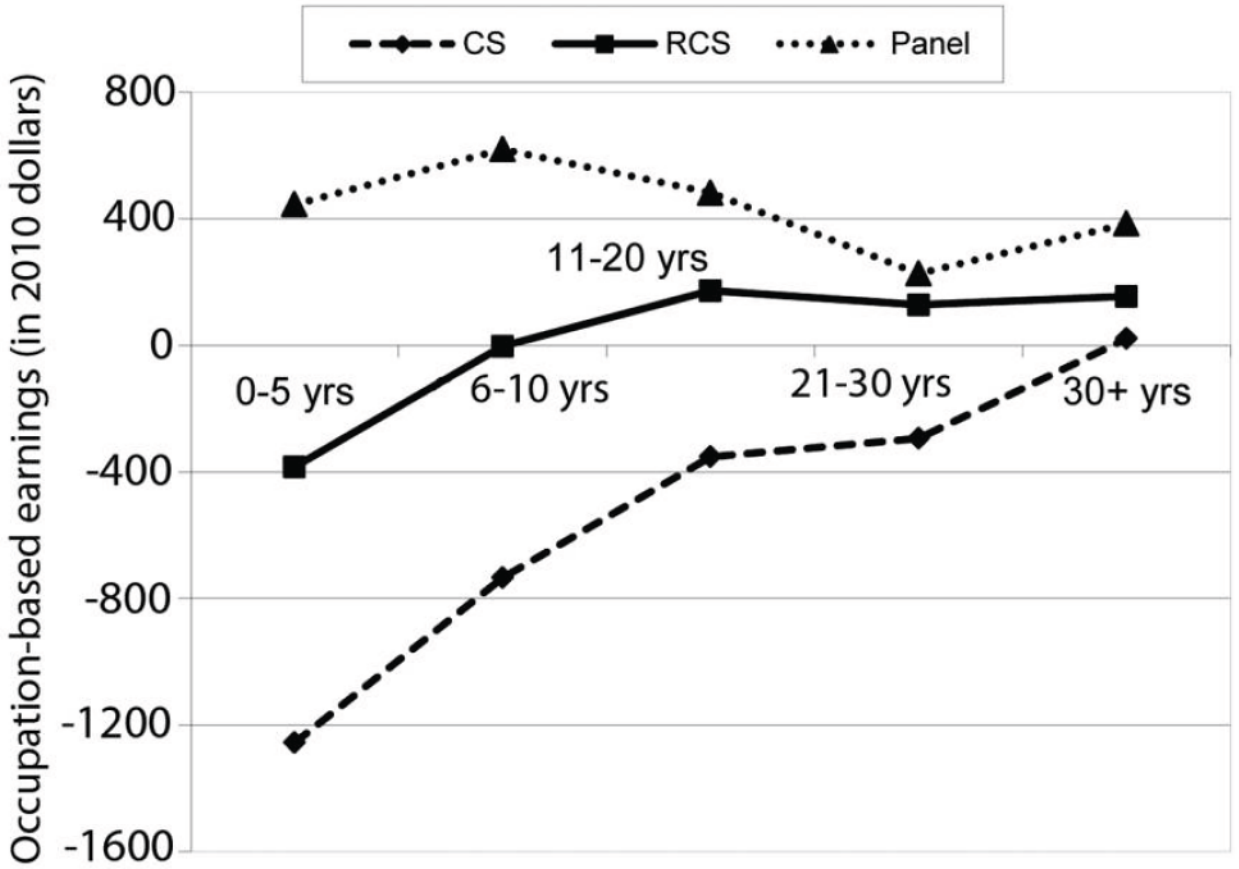

FIG. 2.—Convergence in occupation score between immigrants and native-born workers by time spent in the United States, cross-sectional and panel data, 1900–1920. The graph plots coefficients for years spent in the United States indicators in equation (1). Note that for the panel line, we subtract the native-born dummy from the years in the United States indicators (because the omitted category in that regression is natives in the panel sample).

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

TABLE 5

ORDINARY LEAST SQUARES ESTIMATES, AGE-EARNINGS PROFILE FOR NATIVES AND FOREIGN-BORN, 1900–1920: 1901 OCCUPATION-BASED EARNINGS IN 2010 DOLLARS

		Pooled Cross Section and Panel			Pooled Cross Section and Panel	
	Cross Section (1)	Repeated Cross Section (2)	Panel (3)	Cross Section (4)	Repeated Cross Section (5)	Panel (6)
	A. 1901 Income			B. 1950 Income with Adjustments		
0–5 years in US	−4,176.52	−3,286.33	−2,558.65	−3,186.66	−2,364.00	−2,354.07
	(122.47)	(150.51)	(200.05)	(138.04)	(175.45)	(240.66)
6–10 years in US	−3,433.90	−2,723.76	−1,900.42	−2,450.13	−1,797.87	−1,521.15
	(130.80)	(144.10)	(174.11)	(144.89)	(165.09)	(206.19)
11–20 years in US	−2,670.61	−2,200.14	−1,859.93	−1,783.47	−1,361.64	−1,241.91
	(117.84)	(115.74)	(124.76)	(131.08)	(131.68)	(145.40)
21–30 years in US	−2,402.06	−2,032.18	−1,896.77	−1,540.32	−1,227.39	−1,127.69
	(124.08)	(117.95)	(124.79)	(139.89)	(135.54)	(146.22)
30 years in US	−1,906.83	−1,773.97	−1,634.05	−1,146.96	−1,107.02	−814.98
	(148.13)	(139.57)	(144.52)	(175.02)	(168.41)	(177.33)
Arrive 1891+	. . .	−740.37	−284.08		−745.86	−20.58
		(82.96)	(127.89)		(97.89)	(150.86)
Native-born	. . .	. . .	580.02			28.22
			(200.05)			(145.85)
Observations	204,134	261,079		204,134	261,079	

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

Heterogeneity of Effects of Time in U.S. by Country of Origin

$$\text{Occupation\_score}_{ijmt} = \gamma_{t-m} + \mu_m + \theta_t + \alpha_j + \beta_1 \text{age}_{it} + \beta_2 \text{age}_{it}^2 + \beta_3 \text{age}_{it}^3 + \beta_4 \text{age}_{it}^4 + \varepsilon_{ijmt}, \quad (1)$$

- Interact time-in-country dummies with country-of-origin fixed effects.
- Can show if initial penalty and convergence differs by sending country.

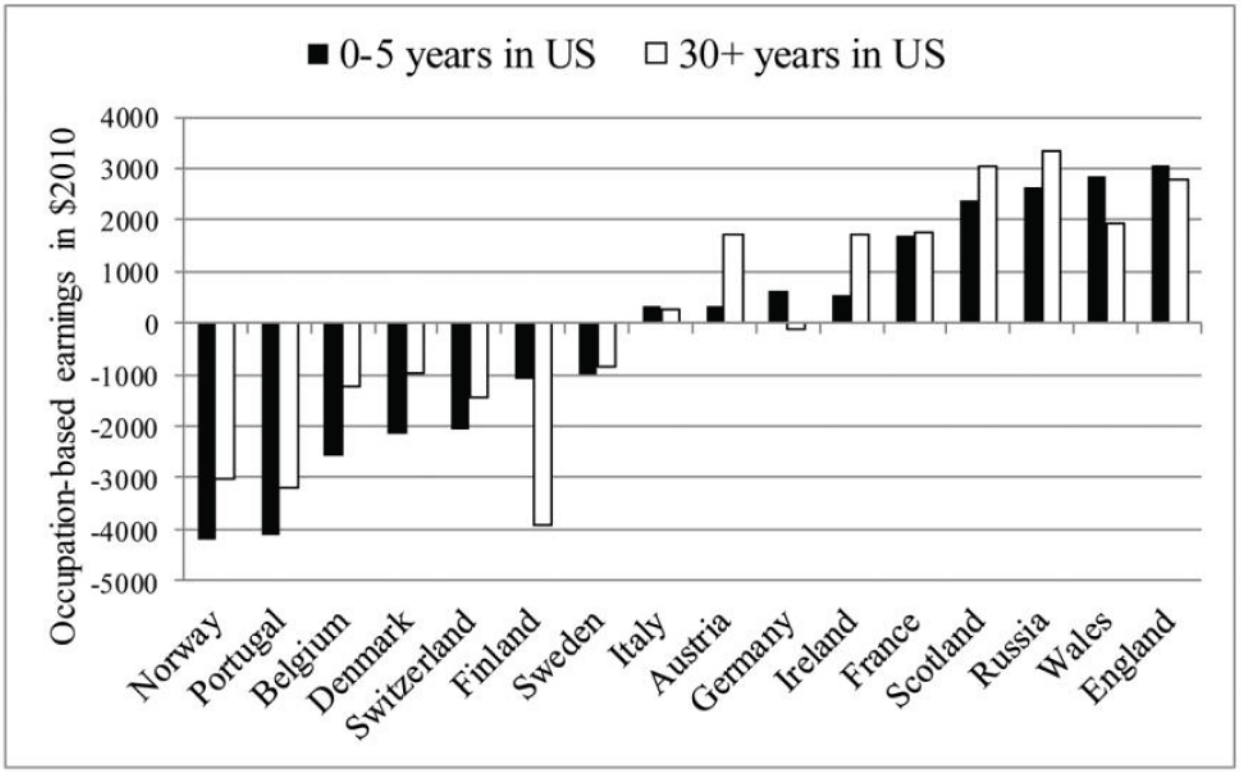

FIG. 3.—Earnings gap between the native- and foreign-born in the panel sample: natives versus immigrants upon first arrival (0–5 years in the United States) and after time in the United States (30+ years in the United States), by country of origin. The graph reports coefficients on the interaction between country-of-origin fixed effects and dummy variables for being in the United States for 0–5 years or for 30+ years from regression of equation (1) in the panel sample. All coefficients for the 0–5 year interaction are significant except those for Austria, Germany, Ireland, Italy, and Sweden. None of the differences between the 0–5 year and 30+ year coefficients are significant except for those of Finland and Ireland.

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

Change in Skill of Arrival Cohorts by Country of Origin

$$\text{Occupation\_score}_{ijmt} = \gamma_{t-m} + \mu_m + \theta_t + \alpha_j + \beta_1 \text{age}_{it} + \beta_2 \text{age}_{it}^2 + \beta_3 \text{age}_{it}^3 + \beta_4 \text{age}_{it}^4 + \varepsilon_{ijmt}, \quad (1)$$

- Break immigrants into four arrival cohorts (rather than two): 1880-85; 1886-90; 1891-95; 1896-1900.
- Estimate equation (1) interacting country fixed effect and arrival cohort.
- Picture shows difference between arriving 1880-85 and 1896-1900.

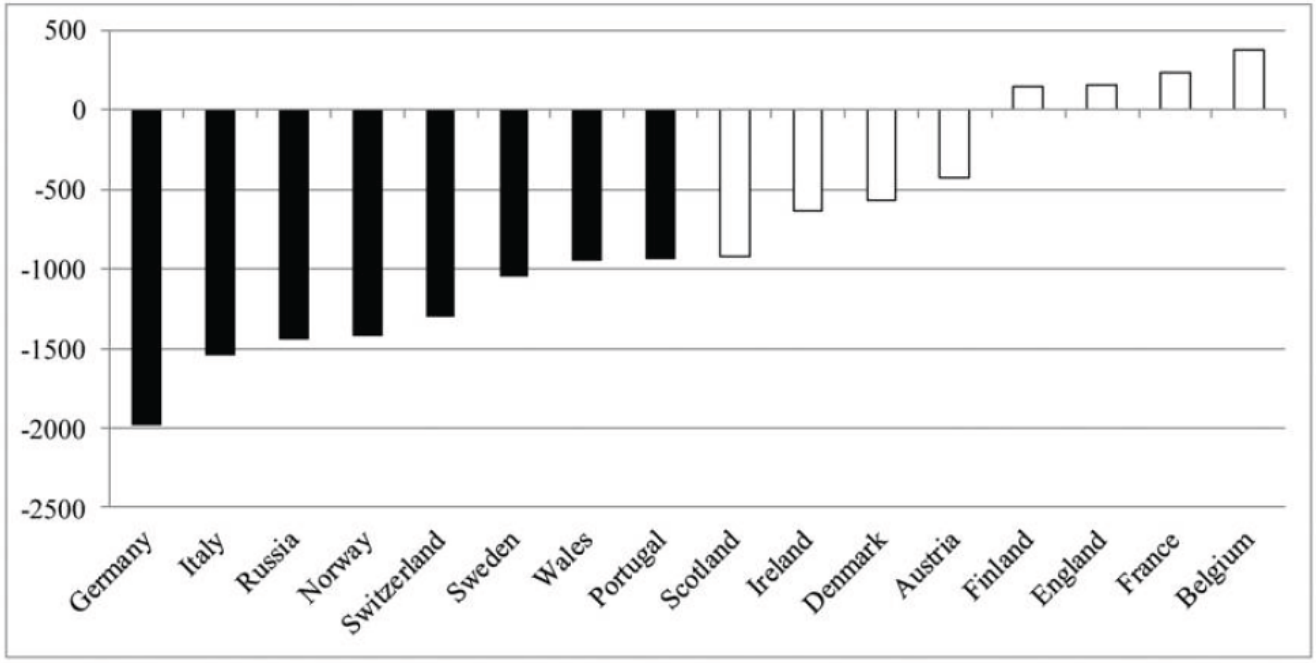

FIG. 4.—Changing quality of arrival cohorts, difference between immigrant penalty for early and late arrivals in the panel sample, by country of origin. Estimates are based on the version of equation (1) that contains country fixed effects and dummy variables for four arrival cohorts (see table 7, panel B). In addition, we interact the country fixed effects with the dummy variables for arrival cohort. The graph reports the difference between the dummy variable for arriving in the United States between 1880 and 1885 and the dummy variable for arriving in the United States between 1895 and 1900, separately by country. Differences that are significantly different from zero are in black. The sample includes observations in the panel sample.

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

Selectivity of Return Migration by Country of Origin

$$\text{Occupation\_score}_{ijmt} = \gamma_{t-m} + \mu_m + \theta_t + \alpha_j + \beta_1 \text{age}_{it} + \beta_2 \text{age}_{it}^2 + \beta_3 \text{age}_{it}^3 + \beta_4 \text{age}_{it}^4 + \varepsilon_{ijmt}, \quad (1)$$

- Look at change from 0-5 years versus 21-30 by country of origin in both the panel and the repeated cross section.
- Figure plots the difference in that change in the two samples.
- A negative number implies negative selectivity in return migration.

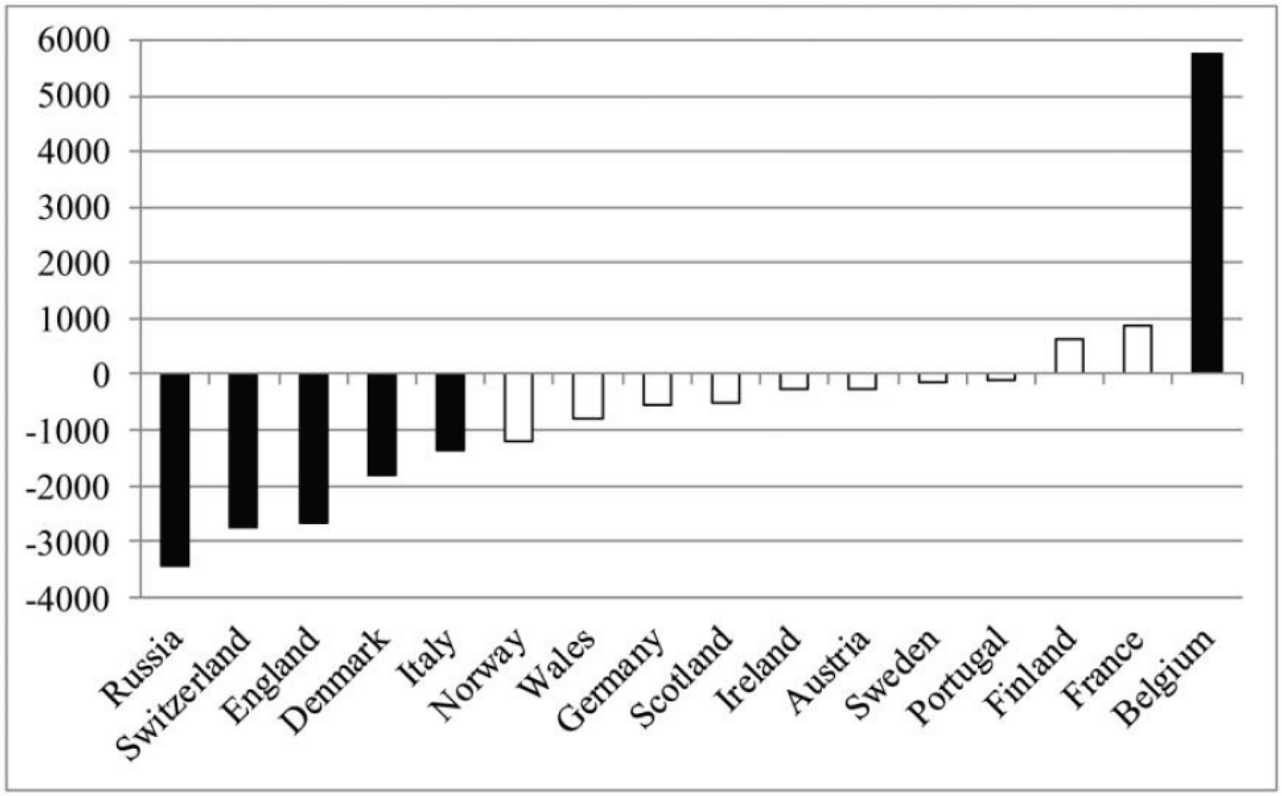

FIG. 5.—Implied selection of return migrants, difference between estimated convergence in panel and repeated cross-section data, by country of origin. The figure reports the difference between immigrants' occupational upgrading relative to natives (defined as the difference between occupation-based earnings after 21–30 years and after 0–5 years) in the panel sample versus the cross section, by sending country. Results are from a regression of equation (1) that pools the panel and cross-section samples. Coefficients that are significantly different from zero are in black.

From: Abramitzky, Boustan, and Eriksson, "A Nation of Immigrants"

Evaluation

- Paper might have benefited from fewer pieces, each done more thoroughly.
- Ultimately, very good.
    - Challenged the conventional wisdom.
    - Helpful for seeing interesting data collection and empirical tests.
- Great care is needed with big data sets.

II. Hoyt Bleakley

"Disease and Development: Evidence from Hookworm Eradication in the American South"

Issue

- Effect of a major public health intervention: Hookworm eradication in the American South
- Rockefeller Sanitary Commission
    - Surveyed counties on prevalence of hookworm.
    - Then over a short period (1910-1915) did a major treatment and prevention campaign.

Bleakley's Identification Strategy

- Intervention was effectively random.
  - Based on new medical information and philanthropic program.
- Important cross section variation.
  - Hookworm was much more prevalent in some areas than others.
  - So, areas with higher initial infection rates benefited more from eradication.

Key Variable

$$(H_j^{\text{pre}} \times \text{Post}_t)$$

- H_j^{pre} is hookworm infection rate among children in area *j* at time of initial survey.
- Post_t is a dummy for if year *t* is after the treatment campaign (1910-1915).

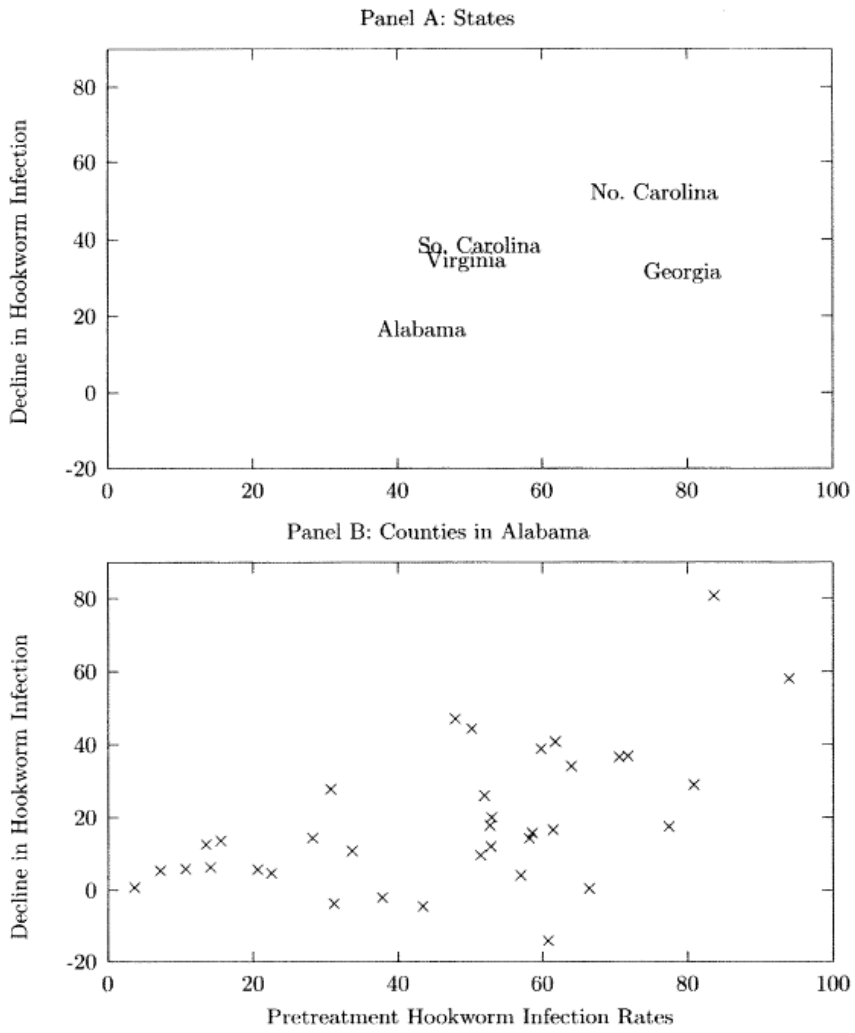

FIGURE I
Highly Infected Areas Saw Greater Declines in Hookworm

From: Bleakley, "Disease and Development"

Bleakley's Difference-in-Difference Specification

$$(1) \qquad Y_{ijt} = \beta(H_j^{\text{pre}} \times \text{Post}_t) + \delta_t + \delta_j + X_{ijt}\Gamma + \varepsilon_{ijt}$$

in which Y_{ijt} is the outcome of interest, the δ_t are time dummies, the δ_j are geographic fixed effects, and X_{ijt} is some vector of individual-level controls.[5]

Outcome (such as School Attendance)

	Pre-Treatment	Post-Treatment
No Infection Area	$\delta_1 + \delta_N$	$\delta_2 + \delta_N$
50% Infection Area	$\delta_1 + \delta_H$	$\beta(.5) + \delta_2 + \delta_H$

How much does schooling rise post-treatment for no infection area? $\delta_2 - \delta_1$

How much does schooling rise post-treatment for high (50%) infection area?
$\beta(.5) + (\delta_2 - \delta_1)$

So $\beta(.5)$ shows the effect on schooling post-treatment of a high (50%) infection area versus a no (0%) infection area.

Bleakley's Data

- Hookworm prevalence by county from RSC survey.
  - Group counties into state economic areas (SEAs).
- Outcomes and individual controls.
  - IPUMS for 1900–1950, children 8-16.
  - Binary indicators for human capital (school enrollment, full-time attendance, literacy).

TABLE I

SUMMARY STATISTICS

	Whole Sample	By Hookworm Infection		Source
		>40%	<40%	
Hookworm-Infection Rate	0.320	0.554	0.164	RSC Annual
	(0.230)	(0.137)	(0.117)	Reports
Individuals Treated At	0.206	0.342	0.109	RSC Annual
Least Once by the	(0.205)	(0.199)	(0.147)	Reports
RSC, Per School-Age				
Child				
School Enrollment, 1910	0.721	0.711	0.729	IPUMS; author's
	(0.104)	(0.099)	(0.108)	calculations
Change in School	0.089	0.103	0.078	IPUMS; author's
Enrollment, 1910–1920	(0.080)	(0.090)	(0.072)	calculations
Full-time School	0.517	0.469	0.551	IPUMS; author's
Attendance, 1910	(0.140)	(0.123)	(0.141)	calculations
Change in Full-time	0.203	0.246	0.172	IPUMS; author's
School Attendance,	(0.097)	(0.093)	(0.089)	calculations
1910–1920				
Literacy, 1910	0.853	0.824	0.875	IPUMS; author's
	(0.104)	(0.101)	(0.102)	calculations
Change in Literacy,	0.060	0.081	0.045	IPUMS; author's
1910–1920	(0.067)	(0.075)	(0.057)	calculations
Population Black, 1910	0.357	0.41	0.318	IPUMS; author's
	(0.221)	(0.208)	(0.223)	calculations
...				
Sample Size	115	48	67	n/a

From: Bleakley, "Disease and Development"

TABLE II

HOOKWORM AND HUMAN CAPITAL: BASIC RESULTS

Dependent variables:		(1) School enrollment	(2) Full-time school attendance	(3) Literacy
		Panel A: Basic results		
Census years	*Estimating equation*			
(A) 1910–1920	(1)	0.0883***	0.1591***	0.0587***
		(0.0225)	(0.0252)	(0.0186)
(B) 1900–1950	(1)	0.0608***	0.1247***	
		(0.0261)	(0.0286)	
(C) 1900–1950	(2)	0.0954***	0.1471***	
		(0.0233)	(0.0287)	
		Panel B: Effects within and between states		
Change to specification				
(D) Include state × Post dummies		0.1313***	0.2144***	0.0417**
		(0.0245)	(0.0290)	(0.0207)
(E) Allow for state-specific mean reversion		0.1148***	0.1813***	0.0408**
		(0.0265)	(0.0312)	(0.0206)
(F) Use infection from state of birth instead of SEA		0.0489	0.2057***	0.0907**
		(0.0504)	(0.0765)	(0.0451)
Census years:		1900–1950	1900–1950	1910–1920
Estimating equation:		(2)	(2)	(1)

From: Bleakley, “Disease and Development”

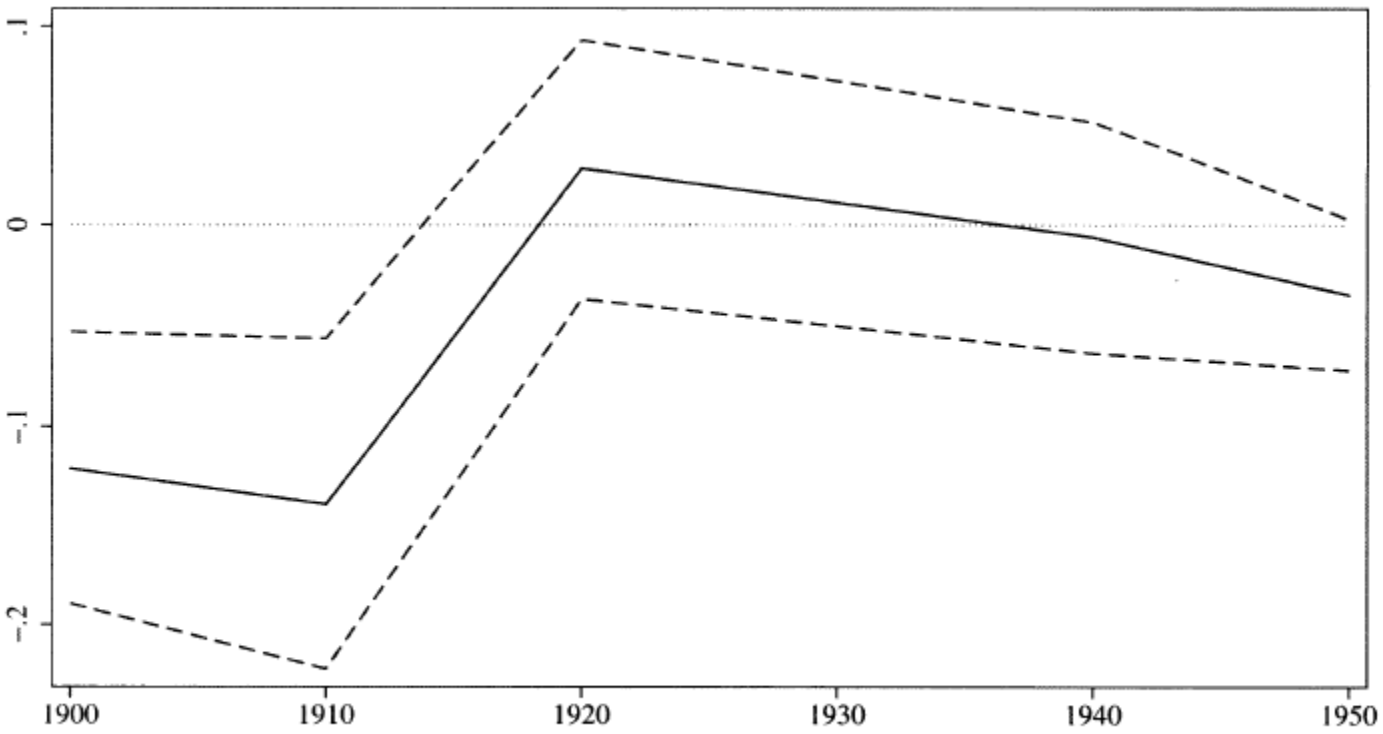

FIGURE II
Hookworm Eradication and School Attendance, 1900–1950

From: Bleakley, "Disease and Development"

Other Specifications

- Include an area-specific trend.

$$(2) \qquad Y_{ijt} = \beta(H_j^{\text{pre}} \times \text{Post}_t) + \tilde{\delta}_j \times t + \delta_t + \delta_j + X_{ijt}\Gamma + \varepsilon_{ijt}$$

- Include controls for state-level shocks and policy changes (such as compulsory attendance and child labor laws).
- Allow for mean reversion across areas.
- Use an alternative data set that has infection rate by state of birth in 1921.

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		(0.0504)	(0.0765)	(0.0451)
Census years:		1900–1950	1900–1950	1910–1920
Estimating equation:		(2)	(2)	(1)

From: Bleakley, “Disease and Development”

TABLE III

HOOKWORM AND HUMAN CAPITAL: SENSITIVITY TESTS AND RESULTS FOR SUBGROUPS

Dependent variables:	(1) School enrollment	(2) School enrollment	(3) Full-time school attendance	(4) Full-time school attendance	(5) Literate
Censuses:	1900–50	1910–20	1900–50	1910–20	1910–20
Specification or subsample:					
	Panel A: Baseline results				
Baseline	0.0954***	0.0883***	0.1471***	0.1591***	0.0587***
	(0.0233)	(0.0225)	(0.0287)	(0.0252)	(0.0186)
	Panel C: Demographic subgroups				
Preteens	0.0932***	0.0890***	0.1416***	0.1549***	0.0912***
	(0.0255)	(0.0242)	(0.0302)	(0.0266)	(0.0253)
Adolescents	0.0986***	0.0877***	0.1573***	0.1682***	0.0323*
	(0.0280)	(0.0282)	(0.0336)	(0.0295)	(0.0165)
Blacks	0.2299***	0.1838***	0.2601***	0.2205***	0.1078***
	(0.0399)	(0.0337)	(0.0399)	(0.0320)	(0.0374)
Whites	0.0378	0.0270	0.1103***	0.1169***	0.0264*
	(0.0237)	(0.0267)	(0.0294)	(0.0294)	(0.0139)

From: Bleakley, “Disease and Development”

Indirect Least Squares

- Another way to do IV.
- Regress outcome (such as enrollment) on instrument.
- Regress explanatory variable (such as decline in infection) on instrument.
- Take the ratio. (In the case of enrollment, 0.09/0.44 = 0.2).
- Implies that a child infected with hookworm was 20 p.p. less likely to be enrolled in school.

Falsification Test

- Looks at adults 25-55 in 1910 and 1920 census.
    - Literacy, labor force participation, occupational score.
- Adults were past the age of schooling and had much lower infection rates.
    - So, would not expect to see an impact of eradication campaign.

TABLE IV

CONTEMPORANEOUS EFFECT ON ADULT OUTCOMES

Samples:	(1) Whole	(2) Male	(3) Female	(4) White	(5) Black
			Parameter estimates		
Dependent variables:					
Literacy	0.0062	−0.0107	0.0203	0.0107	−0.0014
	(0.0095)	(0.0108)	(0.0127)	(0.0112)	(0.0229)
Labor-force participation	−0.0069	−0.0069	−0.0056	−0.0212	0.0036
	(0.0134)	(0.0065)	(0.0284)	(0.0124)	(0.0249)
Occupational income score	0.0526	−0.0186	0.0581	0.0855	0.0224
	(0.2836)	(0.4912)	(0.4163)	(0.3903)	(0.3861)
Lives in an urban area	0.0157	0.0030	0.0280	0.0199	0.0132
	(0.0172)	(0.0190)	(0.0177)	(0.0226)	(0.0245)

From: Bleakley, “Disease and Development”

Estimating Possible Long-Term Effects

- Exposure to the eradication campaign (Exp_{ik}) is 0 for older cohorts, rises linearly for those born in the 19 years before 1910, and then stops at 19 for younger cohorts.

$$Y_{ijk} = \beta(H_j^{\text{pre}} \times \text{Exp}_{ik}) + \delta_j + \delta_k + X_{ijk}\Gamma + \nu_{ijk} \quad (3)$$

- δ_j is an area fixed effect; δ_k is a cohort fixed effect.
- Data are by state and birth year.
- Outcome measures are literacy, earnings (from 1940 census), and years of schooling.

TABLE V

LONG-TERM FOLLOWUP BASED ON INTENSITY OF EXPOSURE TO THE TREATMENT CAMPAIGN

	(1)	(2)	(3)	(4)	(5)	(6)
Controls for mean-reversion:	No	Yes	No	Yes	No	Yes
Dependent variables:	Log earnings, 1939		Years of schooling, 1940		Literacy status, 1920	
Panel A: Main results						
Independent variables						
Hookworm infection Rate ×	0.0286***	0.0234**	−0.0243	0.0037	0.0158***	0.0115***
years of exposure	(0.0066)	(0.0093)	(0.0328)	(0.0357)	(0.0019)	(0.0020)
Panel B: Changing returns to schooling						
Independent variables						
Hookworm infection Rate ×	0.0254***	0.0219***				
Years of exposure	(0.0044)	(0.0063)	n.a.		n.a.	
Infection × Years of exposure ×	0.0023***	0.0022**				
Years of schooling	(0.0009)	(0.0009)				
Panel C: Estimates of hookworm × exposure for demographic subgroups						
Subsamples						
Males	0.0265***	0.0253***	−0.0690**	−0.0376	0.0108***	0.0083***
	(0.0056)	(0.0080)	(0.0326)	(0.0347)	(0.0018)	(0.0019)
Females	0.0322***	0.0157	0.0200	0.0444	0.0209***	0.0148***
	(0.0115)	(0.0165)	(0.0338)	(0.0385)	(0.0027)	(0.0030)
Whites	0.0293***	0.0232**	−0.0110	0.0164	0.0131***	0.0086***
	(0.0071)	(0.0103)	(0.0345)	(0.0378)	(0.0022)	(0.0020)
Blacks	0.0220***	0.0253**	0.1013***	0.0133	0.0314***	0.0262***
	(0.0072)	(0.0103)	(0.0387)	(0.0461)	(0.0065)	(0.0063)

From: Bleakley, “Disease and Development”

Evaluation

- Interesting and important question.
- Impressive data collection.
- Some very nice empirical techniques.
- Distressed by sloppiness and quickness.

IV. Suresh Naidu and Noam Yuchtman

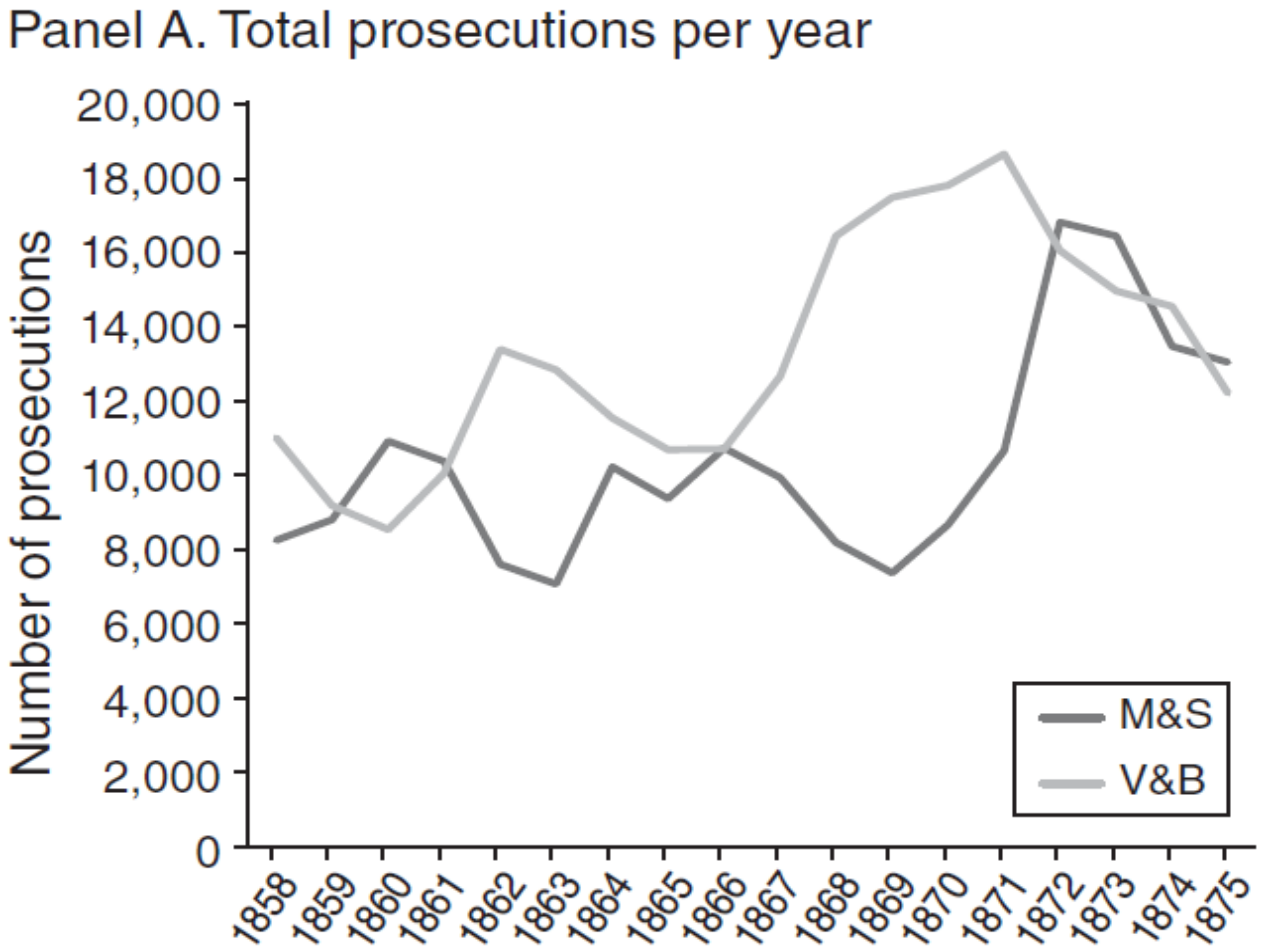
"Coercive Contract Enforcement: Law and the Labor Market in Nineteenth Century Industrial Britain"

Some Issues Raised by the Paper

- Labor market institutions intermediate between coercion and free markets.
- Potential benefits to worker of institutions that limit their choices.
- Effects of such institutions more broadly.
- If the institutions benefited workers and employers, why were they eliminated?

Master and Servant Law

- Until 1875, British workers could be criminally prosecuted for breaching their employment contracts.
- Prosecutions were common.



"Panel A … shows the total number of Master and Servant prosecutions per year, with the number of vagrancy and begging prosecutions also plotted."

From: Naidu and Yuchtman, "Coercive Contract Enforcement"

Theory – Super-Simple Version

- Assumptions:
  - Risk neutral employer and risk averse worker.
  - Uncertainty about the outside wage.
  - The efficient allocation is for the worker to always work for the firm.
- If the worker can commit, the equilibrium is for the employer to bear all risk: the worker's wage does not depend on the outside wage.
- Eliminating the worker's ability to commit destroys the full-insurance equilibrium: in every state, the worker's wage cannot be less than the outside wage.

The Theory When Prosecution Is Costly and Sometimes Unsuccessful

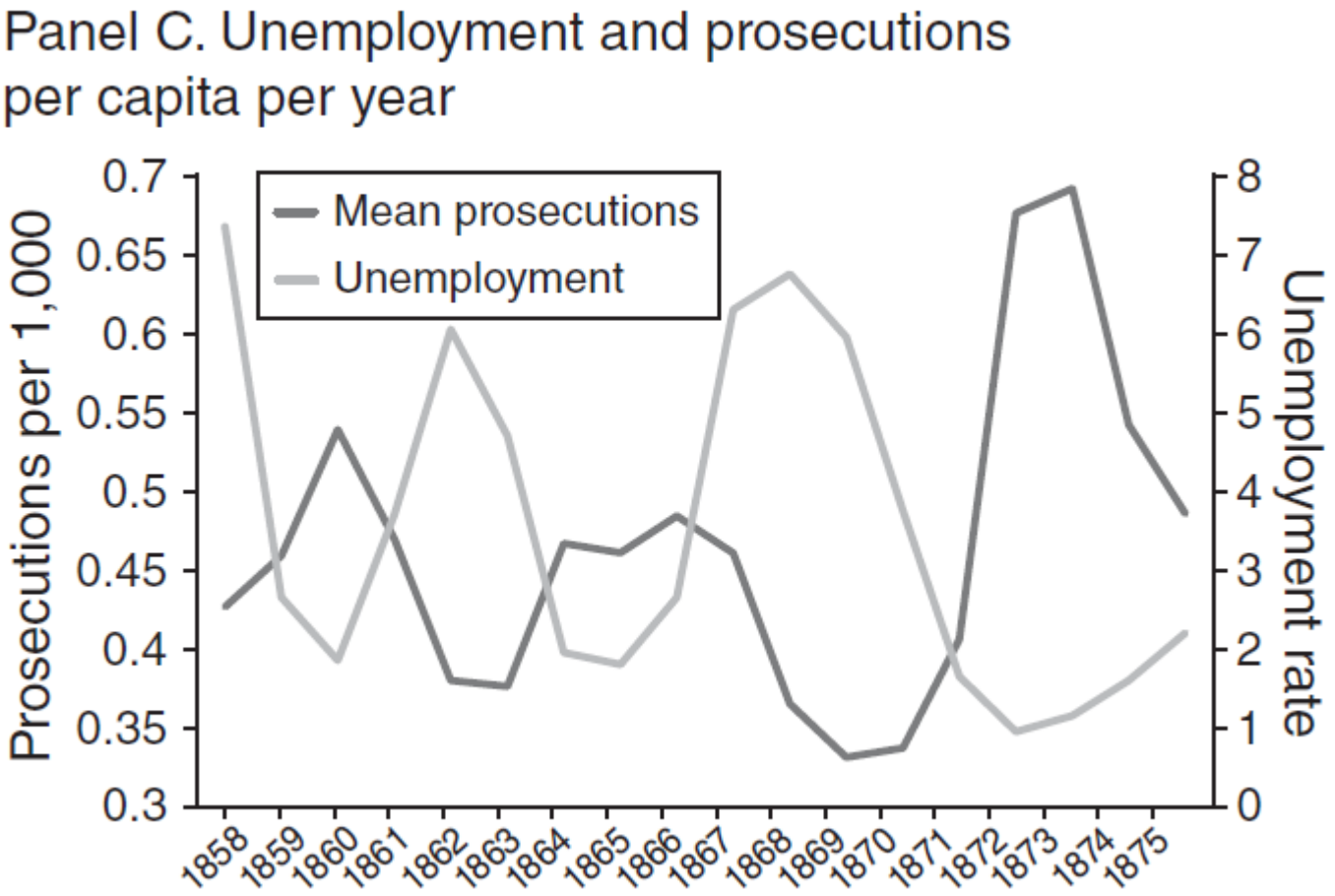
- When the outside wage ≤ the contracted wage: the worker does not breach the contract.
- When the outside wage is slightly above the contracted wage: the worker breaches the contract, and the employer does not prosecute.
- When the outside wage is moderately above the contracted wage: the worker does not breach.
- When the outside wage >> the contracted wage: the worker breaches, and the employer prosecutes.
- Robustness?

Predictions

- More prosecutions when the labor market is stronger.
- Wages respond more to labor demand shocks after repeal.
- Repeal raises average wages.

Key Prediction: More Prosecutions When the Labor Market Is Stronger

- Panel data by county or district, mainly 1858–1875.
- Focus on labor demand shocks by industry and the regional variation in industrial composition.
- Labor demand shocks: Coal price, iron price, ratio of the price of cotton textiles to the price of raw cotton.



From: Naidu and Yuchtman, "Coercive Contract Enforcement"

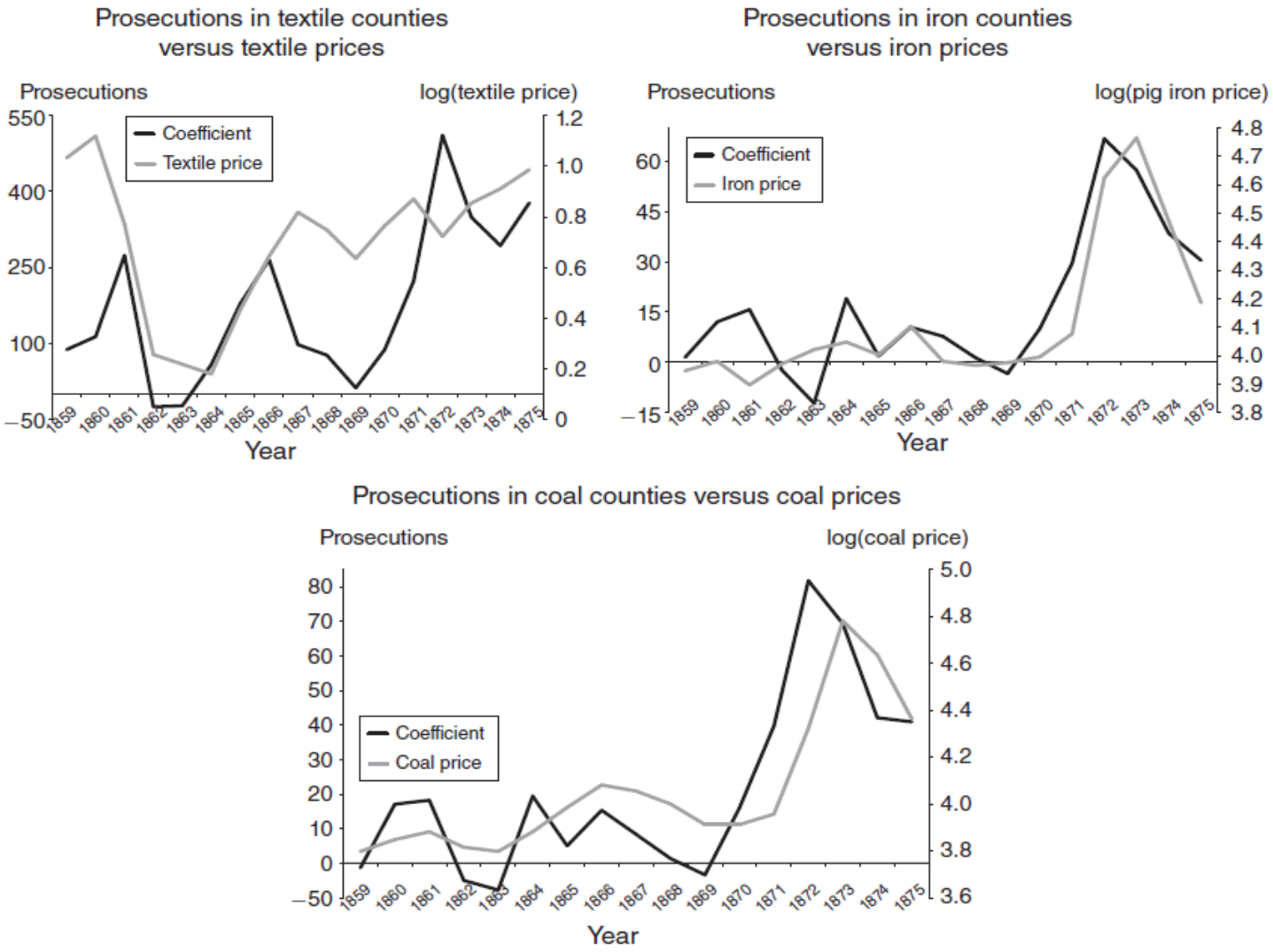
Baseline Specification

$$Prosecutions_{dct} = \beta_1 Industry_c \times \log(IndustryPrice_t) + \delta_d + \delta_t + \sum_{t=1858}^{1875} \beta_t \mathbf{X}_{c,1851} + \beta_2 \log(pop_{ct}) + \epsilon_{dct}.$$

TABLE 2—REDUCED FORM SECTORAL SHOCKS ON MASTER AND SERVANT PROSECUTIONS

	OLS						2SLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fraction textiles 1851 × log(cotton price ratio)	210.9***			159.3***	145.5***	141.2***	147.2***	127.8*
	(42.39)			(42.02)	(46.24)	(39.05)	(45.04)	(64.94)
Iron county × log(iron price)		76.03***		51.98**	64.58**	67.27**	90.64*	89.83*
		(22.90)		(19.48)	(27.84)	(33.18)	(46.71)	(49.25)
Coal county × log(coal price)			68.32***	41.25***	35.63**	27.50***	25.22*	26.82**
			(15.90)	(10.11)	(14.31)	(8.428)	(14.92)	(12.05)
log(population)	145.5***	124.8***	73.26*	79.13**	41.84	54.69	83.75**	39.21
	(50.52)	(42.20)	(36.68)	(35.09)	(36.18)	(115.2)	(36.70)	(38.10)
F-statistic *p*-value on joint significance				0.000	0.000	0.000	0.000	0.000
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying controls	No	No	No	No	Yes	Yes	No	Yes
County-specific trends	No	No	No	No	No	Yes	No	No
Observations	3,942	3,942	3,942	3,942	3,942	3,942	3,942	3,942

From: Naidu and Yuchtman, "Coercive Contract Enforcement"



From: Naidu and Yuchtman, "Coercive Contract Enforcement"

TABLE 3—COUNTY LEVEL ROBUSTNESS: REDUCED FORM SECTORAL SHOCKS ON MASTER AND SERVANT PROSECUTIONS

	Number of prosecutions		Prosecutions per capita		Log (prosecutions per capita)	
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction textiles 1851 × log(cotton price ratio)	1641.7**	1431.0*	0.780**	0.867**	1.780***	1.670**
	(711.0)	(733.6)	(0.371)	(0.391)	(0.647)	(0.755)
Iron county × log (iron price)	186.0**	404.9**	0.295**	0.318	0.360*	0.320*
	(91.73)	(198.4)	(0.121)	(0.193)	(0.184)	(0.178)
Coal county × log (coal price)	234.7***	90.16	0.286***	0.289**	0.296**	0.248
	(78.16)	(85.59)	(0.0948)	(0.120)	(0.143)	(0.164)
log (population)	417.7**	177.0				
	(171.4)	(107.6)				
F-statistic *p*-value on joint significance	0.030	0.076	0.000	0.000	0.001	0.007
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes	No	Yes
Observations	936	936	936	936	930	930

Notes: Dependent variable at the top of each column. Standard errors, clustered on county, included in parentheses. Time varying controls are year specific effects of 1851 income, 1851 population density, 1851 proportion urban, and a Wales dummy.

From: Naidu and Yuchtman, "Coercive Contract Enforcement"

Concerns?

- Drivers of all prosecutions vs. Master and Servant prosecutions.
- Union activity.
- Sensitivity to the last few years of the sample.
- Other?

A Little on the Other Predictions

- Wages respond more to labor demand shocks after repeal.
- Repeal raises average wages.

Why Repeal?

- The law could also be used to prosecute union activity.
- Naidu and Yuchtman argue that it was therefore the rise of trade unions that led to repeal.
- Could union activity have been permitted while keeping the beneficial aspects of the law?

Final Comments