Nation-Building Through Compulsory Schooling During the Age of Mass Migration

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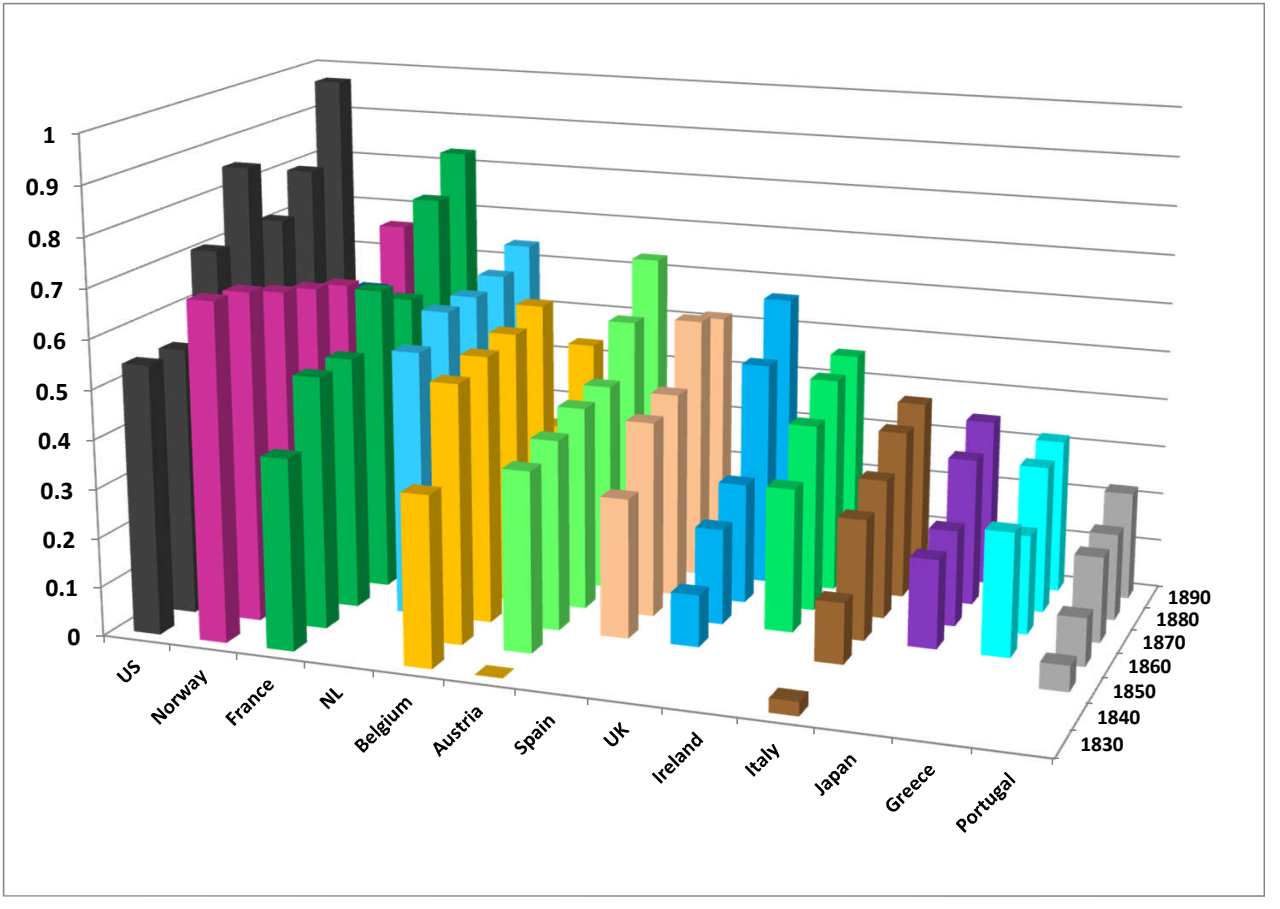
Mid Nineteenth Century: The Educated American

- by 1840 Americans were the most-educated people in the world
  [Easterlin 1981, Black and Sokoloff 2006, Goldin and Katz 2008]
- large amounts of financial investment in schooling, and significant degree of **voluntary** attendance to school
  [Landes and Solomon 1972, Goldin and Katz 1998, Go and Lindert 2010]
- [Figure 1: The Educated American]

Figure 1: The Educated American



Notes: Enrollment rates represent students enrolled in public and/or private schools for children aged 5-14. The enrollment rates are extracted from: (i) Lindert [2004] for Austria (1830-1870); Belgium (1830,1840,1860); France (1830,1840); Greece (1860); Ireland (1860); Italy (1830,1850,1860); Japan (1860); the Netherlands (1850, 1860); Norway (1830-1860,1890); Portugal (1850,1880); Spain (1850,1860,1890); the US (1830,1840) (ii) Flora et al. [1983] for Austria-Hungary (1891); Belgium (1850,1869,1881); Ireland (1890); Italy (1890); Norway (1870,1880); the UK (1850,1870-1890); Prussia (1871,1882,1891) (iii) Benavot and Riddle [1988] for Austria (1880); France (1870,1890); Greece (1870,1880); Ireland (1870,1880); Italy (1870,1880); Japan (1870-1890); the Netherlands (1870-1890); Spain (1870); the US (1870-1890). All other rates were calculated using enrollments from Banks and Wilson [2011] and the total population between 5-14 years old from Mitchell [2007a, 2007b] for France (1851,1861,1881); Greece (1889); Portugal (1864,1875,1890); Spain (1877,1887); the UK (1861); the US (1850,1860).

Research Question

- why did US states start introducing **compulsory** schooling in the 1850s?
  - enrolment rates among American-born high, and trending upwards
  - not expecting compulsion to bind on the *median* American-born
- what about the *marginal* American-born?
  - were **not** driving the educated American [Goldin and Katz 2008]
  - Americans became educated because of fiscal decentralization, public funding, public provision, separation of church and state, gender neutrality...[Goldin and Katz 2008]
- compulsory schooling laws were **not** targeting blacks [10-15% of the population]

Explanation

- passage of legislation linked to migrant inflows
  [10-15% of the population: Age of Mass Migration]
- at the time, US faced with large and **diverse** migrant inflows
  - diversity in skills, values
- societies have incentives to **compel** citizens to go through the same schooling system for **nation-building** motives

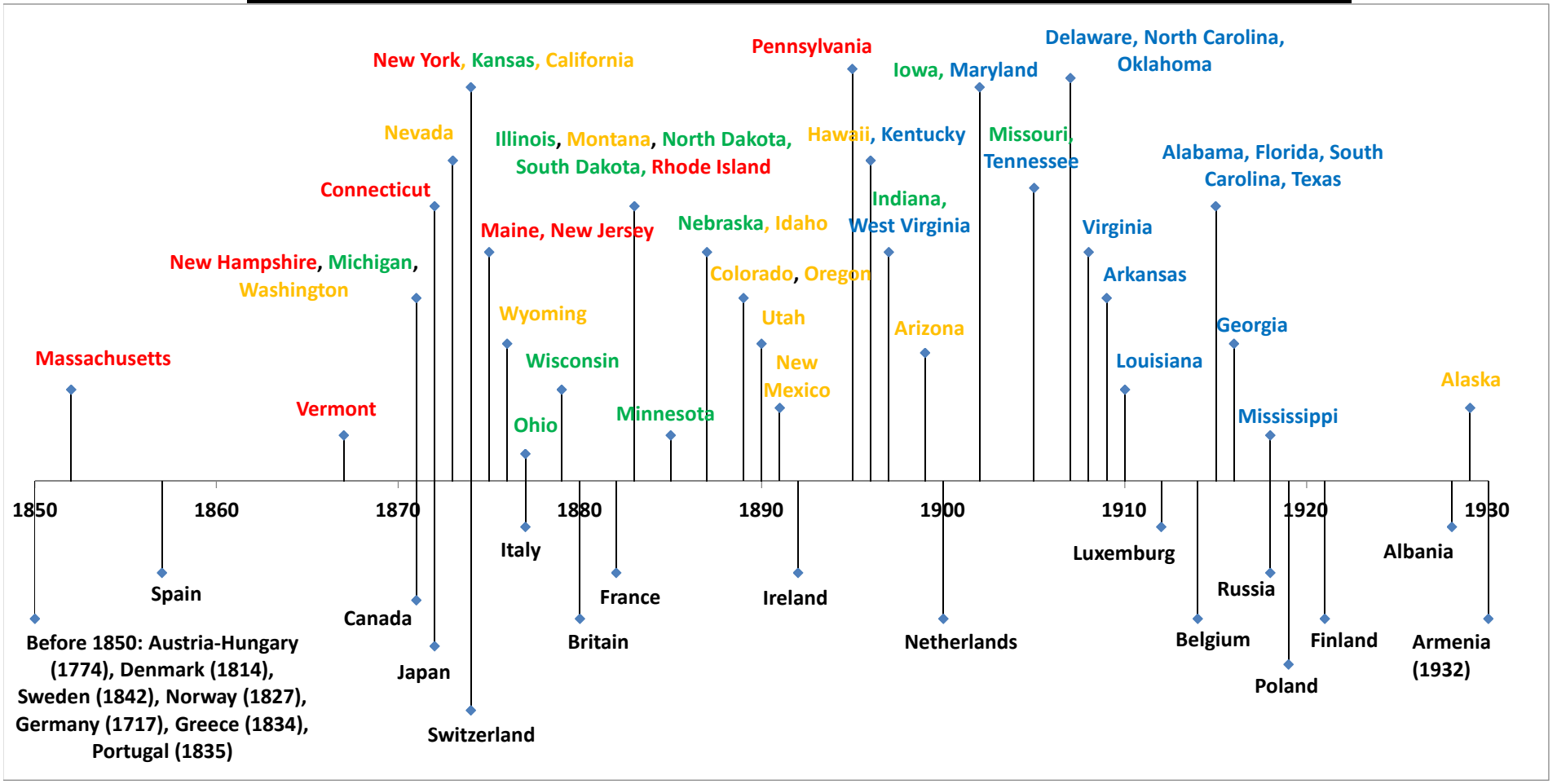
Ingredient 1: Nation-Building

- societies have incentives to **compel** citizens to go through the same schooling system for **nation-building** motives:
- common goals [Alesina and Reich 2015]
- civic participation that underpins democracy [Glaeser et al. 2007]
- shaping redistributive values [Lott 1990, 1999]
- easier to build state capacity in homogenous societies [Besley and Persson 2010]
- in face of external military conflict [Weber 1979, Aghion et al. 2012]
- historic accounts of mass state education movement in Europe along these lines [France, Prussia: Ramirez and Boli 1987]

Ingredient 2: Migration and Transmission of Values

- persistence of migrant values over locations
  [Guinnane et al. 2006, Guiso et al. 2006, Fernandez 2007, 2013, Fernandez and Fogli 2009, Luttmer and Singhal 2011, Alesina et al. 2012]
- intergenerational transmission of values
  [Bisin and Verdier 2000, Dohmen et al. 2012]
- **implication:** migrant values shaped by historic exposure to compulsory schooling in Europe
- **our empirical design:** distinguish between migrants from countries with and without historic experience of CSL
  - key source of diversity within migrants
  - compare to other sources of migrant diversity: skills, religion, propensity to out-migrate, language...
- [Figure 2: US and European Timeline]

Figure 2: Timeline for Passage of Compulsory Schooling, by US State and European Country



RED = Northeast, GREEN= Midwest, YELLOW = West, BLUE = South

Table A2A: Compulsory Schooling Laws, by Country

Country	Introduction of CSL: Preferred Year	Lower Bound	Upper Bound	Sources	Legislation Introducing Compulsory Schooling	Notes
Britain	1880	1872	1880	Soysal and Strang (1989), Flora et al. (1983), Ritter (1986), Salimova and Dodde (eds.) (2000), Anderson (1995)		Compulsory education of eight years was introduced with exceptions in England and Wales in 1880 (Flora et al. (1983), p.623). School became compulsory in 1881 and free in 1891. However, the legislation was not implemented in the same way in every community. That is, some communities continued to depend on voluntary schooling or under the control of religious groups (Salimova and Dodde (eds.) (2000), p.108). In Scotland, compulsory schooling was already introduced in 1872 (lower bound) with the "Education (Scotland) Act"
France	1882	1882	1882	Soysal and Strang (1989), Cubberley (1920), Schriewer (1985), Schneider (1982), Flora et al. (1983), Salimova and Dodde (eds.) (2000)	Lois Jules Ferry (Loi n° 11 696 du 28 Mars 1882 (Article 4))	The Jules Ferry Laws established free education (1881) and laic and compulsory education (1882) (Garnier et al. 1989, p.291)
Germany	**1717**	**1592**	1871	Ramirez and Boli (1987), Stolze (1911), Salimova and Dodde (eds.) (2000), Flora et al. (1983), Oelkers (2009)		The first German state to introduce compulsory schooling was Palatinate-Zweibrücken in 1592. In Prussia, compulsory schooling was introduced by Frederick William in 1717, and reiterated by Frederick II in 1763. The general law of the land (Allgemeines Landrecht) of 1794 makes instruction - as opposed to attendance - mandatory, a fact that had consequences for school attendance and organization. In this system the state only regulates the minimum for those parents who cannot provide for their children's attendance. [...] Elementarschulen became unavoidable but actually only for the poorer classes of the population, who could not afford a better form of education (Salimova and Dodde (eds.) (2000), pp.179-180). Upon unification of the German Empire in 1871, compulsory schooling (which existed in Prussia) was extended to all states. Eight years of compulsory education were introduced in the German Empire with the exception of Wurtemberg and Bavaria where only seven years were introduced (Flora et al. (1983), p.584). Most states already had compulsory schooling before 1871 (detailed information on all states was not available). As Prussia was the largest and dominant state at the time of unification, we use the date of its first CSL enactment (1717) as the reference date for Germany
Italy	1877	1859	1877	Cubberley (1920), Schneider (1982), Ramirez and Boli (1987)		In the Kingdom of Sardinia, compulsory education was introduced in 1859 (2 years in all communes, 4 years in communes over 4,000 population) (Flora et al. (1983), p.598). Upon unification, compulsory school attendance was extended to all Italian provinces. This process was completed in 1877. The education system was quite effective in some of the Northern regions by 1880 and in Southern regions by 1900 (Ramirez and Boli 1987, p.7)

Qualitative Analysis (Part 1)

- history of anti-immigrant views in US and assimilation concerns
- common school reformers and the *Americanization Movement*
- political debate
- Dillingham Report
- details of CSL implementation

Quantitative Analysis (Part 2)

- **Research Question:** is there a causal link between mass migration and cross-state timing in the passage of CSL?
- **Mechanism:** desire to **nation-build** among American-born voters/elites [Alesina and Reich 2015]
- **Evidence:** state-year timing of adoption as a function of migrant characteristics [survival analysis: 1850-1930]

Quantitative Analysis (Part 3)

- **Research Question:** what was the **demand** for American common schooling among migrants?
- **Evidence:** cross-county locally financed investment in common schools
- **Model:** use probabilistic voting model to infer **relative demands of** migrants/natives for common schooling [Persson and Tabellini 2000]
- **Link to Part 2:** in the counterfactual without CSL, would migrants have been less exposed to American civic values taught in common schools?

Nation-Building Through Education System in US

- described in US context by many disciplines:
  - educationalists [Cubberley 1947]
  - economic historians [Engerman and Sokoloff 2005]
  - sociologists [Meyer et al. 1979]

Nation-Building Through Education System in the 19/20th Century

- US government used schooling as a way to shape people conquered in war into the predetermined mold of republican citizenship: [Tyack p366-7, 1976]
  - Native American children sent to boarding schools
  - dispatch of American teachers to Puerto Rico and the Philippines after the Spanish-American war
  - attempts to democratize Germany and Japan after World War II
- Arlington [1991]: English required as language of instruction in Southern US states in 1980s

Qualitative Evidence

- long history of anti-immigrant sentiment from well before the Age of Mass Migration
- public debate linking mass migration and compulsory schooling during the Age of Mass Migration
  - common school reformers [Horace Mann, Henry Barnard, Calvin Stowe]
  - politicians [Higham 1988, Eisenberg 1988, Jones 1992, Provasnik 2006, Clay et al. 2012]
  - Dillingham Report
- CSL implementation details

Dillingham Report: Role of Children in Assimilating Adults

- *"The most potent influence in promoting the assimilation of the family is the children, who, through contact with American life in the schools, almost invariably act as the unconscious agents in the uplift of their parents. Moreover, as the children grow older and become wage earners, they usually enter some higher occupation than that of their fathers, and in such cases the Americanizing influence upon their parents continues until frequently the whole family is gradually led away from the old surroundings and old standards into those more nearly American. This influence of the children is potent among immigrants in the great cities, as well as in the smaller industrial centers."* [p.42, Volume 29]

- historic evidence on inter-generational transmission of HK from children to parents [Ferrie and Kuziemko 2015]

Conclusions from Qualitative Evidence

- nation-building motives first order among common school reformers and politicians
- migrants differed in civic values to median *American*
  - schooling system inculcates civic values
    [Clots-Figueras and Masella 2013, Cantoni et al. 2014]
  - transmission of values across locations and generations
- **some** European countries had CSL in place long before the first US state
- nation-building motives should respond to this **within-migrant** diversity in values

Targeting Nation-Building Effort

- on the margin, **who** does the American voter want to homogenize?
- those *without* historic experience of CSL in country of birth?
  [e.g. never been taught civic participation in a compulsory schooling system]
  [such civil values of equal worth in Europe and America]
- those *with* CSL in country of birth?
  [e.g. indoctrinated with non-American values in their compulsory schooling system]
- Mulligan *et al.* [2004]: those exposed to CSL in US are significantly more likely to be registered to vote, vote, engage in political discussion, follow political campaigns/attend political meetings, higher rate of participation in community affairs and trust in government

Nation-Building Through Compulsory Schooling: State Level Analysis

- conceptual framework
- descriptives
- state-year level survival analysis

Conceptual Framework [Alesina and Reich 2015]

- suppose all immigrants have values $j > i^m$, then a majority of Americans vote for compulsory schooling iff,

$$\int_{j \in \mathbb{R}} g(j) d_{i^m j} dj \geq T/\lambda. \tag{1}$$

- passage of CSL depends on:
  - how different the *values* of immigrants are from the median American $(d_{i^m j})$
  - the size of the immigrant group $(g(j))$
  - fiscal cost of compulsory schooling (T)
  - the effectiveness of schooling on shifting preferences (λ)

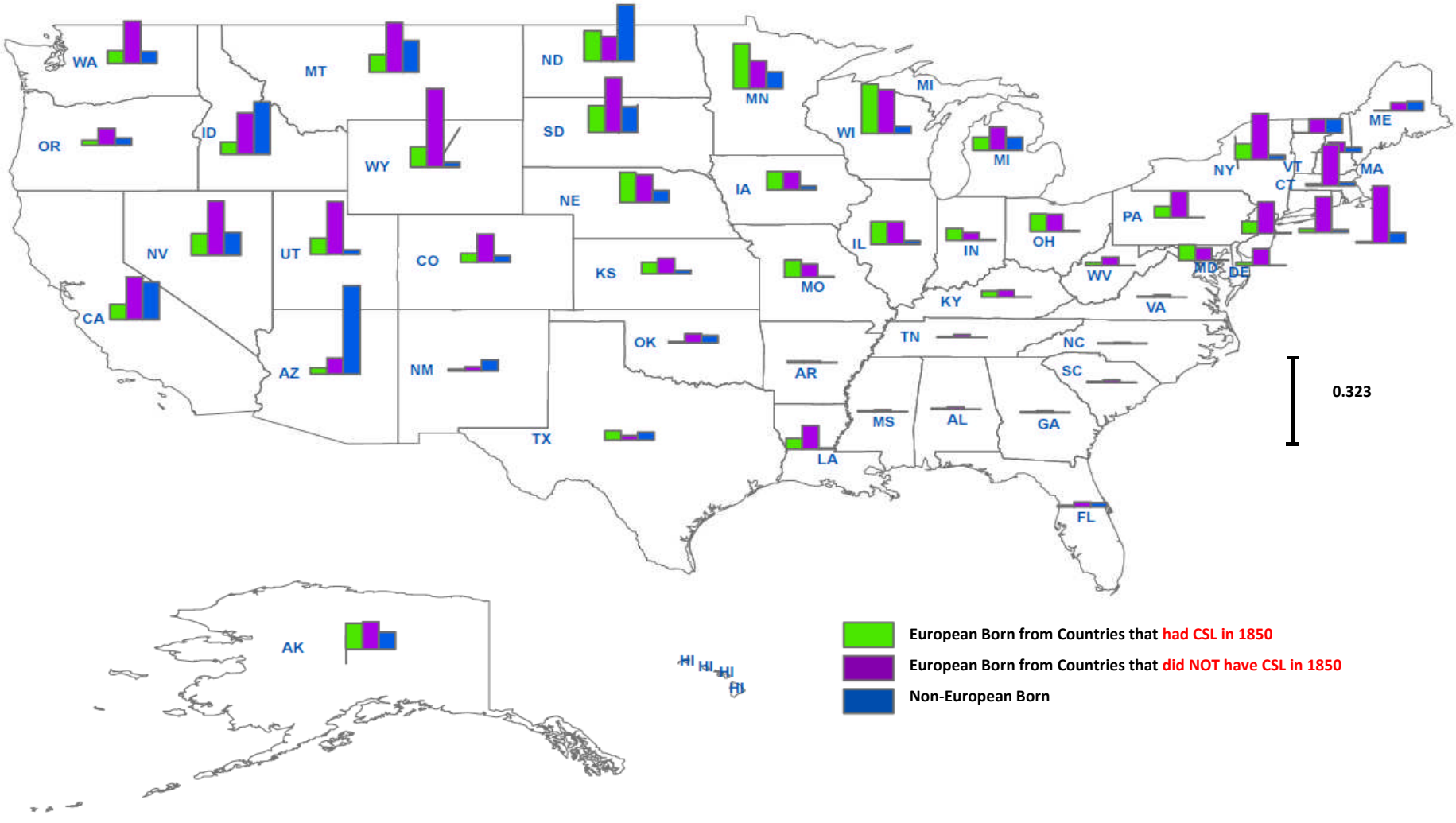
Empirical Implications of State Building

- to measure how different the *values* of immigrants are from the median American (d_{im_j}), exploit empirically:
  - **some** European countries had CSL in place long before the first US state
- **stage zero:** CSL and school enrolment in Europe
- mostly *positive* selection into US [Abramitzky et al. 2014]
- variation in geographic settlement patterns, by migrant group
- [Table A3, Figure 3]

Table A3: Compulsory Schooling Laws and European Enrolment Rates

Source, Enrolment Measure	CSL pre-1850	No CSL pre-1850	Difference (t-test)	Sample
Lindert [2004]: Primary enrolment rate, 5-14 year olds				
Public+private	60.71	57.28	3.43	Austria, Belgium, England and Wales, Finland, France, Ireland, Italy, Netherlands, Norway, Scotland.
Public	57.46	55.9	1.56	Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Scotland, Sweden, Switzerland.
Not specified	51.42	43.31	8.11	Denmark, Greece, Japan, Russia, Spain.
Mitchell [2007]: Primary enrolment rate, 5-14 year olds				
Primary	65.24	56.7	8.54**	Austria, Belgium, Denmark, England and Wales, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Scotland, Spain, Sweden, Switzerland.
Banks and Wilson [2012], CNTS: Number of 5-14 year olds enrolled divided by total population				
Primary	11.66	9.73	1.94***	Albania, Austria (Austria-Hungary until 1913), Belgium, Canada, Denmark, Finland, France, Germany (Prussia until 1866), Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Poland, Portugal, USSR (Russia until 1913), Spain, Sweden, Switzerland, United Kingdom.
Secondary	0.76	0.61	0.15***	
Primary + secondary	12.18	10.41	1.77***	
Flora et al. [1983]: Primary enrolment rate, 5-14 year olds				
Primary	67.5	62.3	5.2***	Austria, Belgium, Denmark, England and Wales, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Prussia, Scotland, Sweden, Switzerland.
Benavot and Riddle [1988]: Primary enrolment rate, 5-14 year olds, by decade				
Primary	56.15	58.92	-2.77	Austria, Belgium, Canada, Denmark, England and Wales, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Russia, Scotland, Spain, Sweden, Switzerland.

Figure 3: Migrant Groups Population Shares, Averaged Across pre-Compulsory Schooling Census Years



Notes: The bars represents the mean population share of immigrants by group for each US state prior to the passage of compulsory schooling laws in the state. The year of passage of compulsory school attendance laws are extracted from Landes and Solomon [1972]. The European countries defined to have had compulsory schooling laws in place in 1850 are Austria-Hungary, Denmark, Germany, Greece, Norway, Portugal and Sweden.

European Migrants, By Historic Exposure to CSL

- Europeans with and without historic experience of CSL in country of birth differ in terms:
- values
- also differ in terms of HK (as measured in US census):
  - adult literacy
  - children's enrolment in schools in US (common, parochial)
- do not differ on other dimensions [age structure, LFPR, urban residence...]
- [Table 1]

Table 1: Characteristics of American-Borns and Immigrant Groups

Sample period for State Descriptives: Census years prior to the introduction of compulsory schooling law

Columns 1 to 4: Mean, overall standard deviation (SD) in parentheses, between SD in brackets, within SD in braces

In Columns 5 and 6, p-values on t-tests are reported in brackets

	(1) American Born	(2) European Born from Countries that did NOT have CSL in 1850	(3) European Born from Countries that had CSL in 1850	(4) Non-European Foreign Born	(5) Test of Equality [Col 2 = Col 3]	(6) Within State Test of Equality [Col 2 = Col 3]
A. State Level						
Population (10,000s)	76.5	4.60	3.14	.862	[.300]	[.333]
	(81.8)	(9.91)	(5.89)	(1.75)		
SD Between States	[70.3]	[10.4]	[5.36]	[1.38]		
SD Within State (over census years)	{45.1}	{2.51}	{2.79}	{1.08}		
Share of Adults (aged 15+) that are Illiterate	.204	.102	.046	.166	[.008]	[.011]
	(.350)	(.074)	(.096)	(.225)		
Enrolment Rate (8-14 year olds)	.570	.297	.441	.331	[.011]	[.016]
	(.245)	(.326)	(.328)	(.368)		

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	(1) American Born	(2) European Born from Countries that did NOT have CSL in 1850	(3) European Born from Countries that had CSL in 1850	(4) Non-European Foreign Born	(5) Test of Equality [Col 2 = Col 3]	(6) Within State Test of Equality [Col 2 = Col 3]
A. State Level						
Share Aged 0-15	.445	.081	.065	.156	[.160]	[.188]
	(.097)	(.066)	(.078)	(.162)		
Share in Labor Force	.305	.585	.609	.486	[.345]	[.378]
	(.108)	(.156)	(.200)	(.252)		
Share Residing on a Farm	.501	.225	.243	.261	[.215]	[.246]
	(.189)	(.180)	(.238)	(.274)		
Mean Occupational Score	18.2	21.1	22.2	19.4	[.153]	[.180]
	(2.94)	(3.90)	(7.14)	(7.36)		

Notes: In Panel A, the unit of observation is the state-census year. All variables are constructed from the IPUMS-USA census data using individual weights. For each state, the sample period starts from 1850 and covers all census years prior to the introduction of compulsory schooling laws. The year of passage of compulsory school attendance laws is extracted from Landes and Solomon [1972]. In Panel B, the unit of observation is the county in 1880. All variables are constructed from the IPUMS-USA 100% 1880 census sample. County populations are measured in shares. For both Panels, in Column 1, the American born are those whose recorded nativity is native born. In Column 2, the European countries defined to have had compulsory schooling laws in place in 1850 are Austria-Hungary, Denmark, Germany, Greece, Norway, Portugal and Sweden. All other European countries are included in Column 3. In the first row, populations are measured in 10,000s. Adults are defined to be aged 15 and above when defining the share of adults that are illiterate, and enrolment rates for 8-14 year olds are the share of this group that report being in school. The occupational score is a constructed variable from IPUMS-USA that assigns each occupation in all years a value representing the median total income (in hundreds of 1950 dollars) of all persons with that particular occupation in 1950. The occupational score thus provides a continuous measure of occupations, according to the economic rewards enjoyed by people working at them in 1950. Column 5 reports the p-value on a test of the null hypothesis that the values in Columns 2 and 3 are equal – this is derived from an OLS regression allowing standard errors to be clustered by region. Column 6 reports the p-value on the same test where we additionally control for state fixed effects.

Cross-State Passage of CSL: Empirical Method

- estimate likelihood of CSL being passed in state s in period t using survival analysis
- estimate hazard rate, $h(t) = \frac{f(t)}{S(t)}$, using Cox-proportional hazards model [flexible baseline hazard]
- unit of observation: US states x census years [1850-1930]
- failure: year of passage of CSL [absorbing state]

Empirical Model

- Cox proportional hazard model:

$$h_s(t|\mathbf{x}_{st}) = h_0(t)\exp(\textstyle\sum_j \beta_j N_{st}^j + \sum_j \gamma_j X_{st}^j + \lambda X_{st})$$

- baseline hazard $h_0(t)$ unparameterized
- t : census year [1850-1930]
- N_{st}^j : population share of group j in state s in census year t [effect size]
- X_{st}^j : group j characteristics
  [Table 1: aged 0-15, LFPR, share on farm, *enrolment rate, adult illiteracy rates*]
- X_{st} : state characteristics [total population, occn index]

Table 2: Immigrant Groups and the Passage of Compulsory Schooling Laws

Non parametric Cox proportional hazard model estimates, hazard rates reported
Robust standard errors; Populations shares and enrolment rates measured in effect sizes

	(1) Foreign	(2) European	(3) Historic Exposure to Compulsory Schooling	(4) Enrolment Rates
Share of the State Population that is:				
Foreign Born	1.24*			
	(.142)			
European Born		1.43**		
		(.226)		
From European Countries that did NOT have CSL in 1850			**1.64*** **	**2.00*** **
			(.225)	(.482)
From European Countries that had CSL in 1850			.988	.794
			(.122)	(.146)
Non-European Born		.998	.995	1.67**
		(.041)	(.035)	(.344)
Enrolment Rate of American-Borns				2.39*
				(1.12)
Enrolment Rate of Foreign-Borns				1.09
				(.155)
Group Controls	No	No	No	Yes
State Controls	No	No	No	Yes
European Groups Equal [p-value]			[.005]	[.005]
Euro Without CSL = Non-Euro [p-value]			[.001]	[.508]
Observations (state-census year)	230	230	230	230

Table A4: Full Baseline Specification

Non parametric Cox proportional hazard model estimates, hazard rates reported
Robust standard errors; All covariates measured in effect sizes

		(1) Baseline
Population Shares	**Share of the State Population that is:**	
	From European Countries that did NOT have CSL in 1850	2.15***
		(.509)
	From European Countries that had CSL in 1850	.780
		(.161)
	Non-European Born	1.80***
		(.409)
Enrolment Rates	Enrolment Rate of American-Borns	2.82**
		(1.39)
	Enrolment Rate of Europeans From Countries that did NOT have CSL in 1850	.815*
		(.094)
	Enrolment Rate of Europeans From Countries that had CSL in 1850	1.03
		(.153)
	Enrolment Rate of Europeans From Non-European Countries	1.18
		(.235)
Illiteracy Rates	Illiteracy Rate of Adult American-Borns	.155**
		(.134)
	Illiteracy Rate of Adult Europeans From Countries that did NOT have CSL in 1850	1.12
		(.197)
	Illiteracy Rate of Adult Europeans From Countries that had CSL in 1850	.256***
		(.088)
	Illiteracy Rate of Adult Europeans From Non-European Countries	.753
		(.186)
	Group Controls	Yes
	State Controls	Yes
	European Groups Equal [p-value]	[.004]
	Euro Without CSL = Non-Euro [p-value]	[.505]
	Observations (state-census year)	230

Alternative Hypothesis: Immigrant HK

- assess whether passage of CSL driven by HK investments of immigrants
- alternative to a nation-building explanation
- **conclusion:**
  - previous exposure of immigrants to CSL matters (**values**)
  - traditional measures of HK of immigrants *per se* do not predict timing of CSL
- [Table 2; Table A4]

Regional Variation

- clear spatial pattern to adoption [Figure 2]
- potential concern that other processes relevant for passage of CSL in Western and Southern states
  - West: desire to join the Union
  - South: desire not to educate blacks

    [Lleras-Muney 2002, Black and Sokoloff 2006, Collins and Margo 2006]
- [Table 3]

Table 3: Regional Variation in the Passage of Compulsory Schooling Laws

Non parametric Cox proportional hazard model estimates, hazard rates reported
Standard errors clustered by state; Populations shares and enrolment rates measured in effect sizes

	(1) Established States	(2) Most Populous States	(3) Exclude Western States	(4) Only Western and Southern States
Share of the State Population that is:				
From European Countries that did NOT have CSL in 1850	3.16**	14.6***	5.55***	4.62**
	(1.64)	(14.2)	(2.50)	(2.94)
From European Countries that had CSL in 1850	1.52	.662	.857	.270**
	(.506)	(.205)	(.197)	(.167)
Non-European Born	1.73***	1.66**	1.37	1.60
	(.302)	(.413)	(.337)	(.512)
Group Controls	Yes	Yes	Yes	Yes
State Controls	Yes	Yes	Yes	Yes
European Groups Equal [p-value]	[.094]	[.004]	[.000]	[.016]
Euro Without CSL = Non-Euro [p-value]	[.201]	[.020]	[.004]	[.091]
Observations (state-census year)	187	153	186	141

Robustness Checks

- rolling window for CSL passage
- internal migration of American-borns [Figure A2]
- internal migration of foreign-born in response to passage of CSL [Table A6]
- parametric hazard functions/time to failure [Table A5]
- upper and lower bound definition of CSL passage in Europe

Table A5: Robustness Checks

Non parametric Cox proportional hazard model estimates, hazard rates reported
Robust standard errors; All covariates measured in effect sizes

	(6) Rolling Window
Share of the State Population that is From:	
European Countries that did NOT have CSL introduced in the past 30 years	2.31*
	(.995)
European Countries that had CSL introduced sometime in the past 30 years	.628*
	(.170)
Non-European Born Country	1.08
	(.262)
State and Group Controls	Yes
European Groups Equal [p-value]	[.049]
Euro Without CSL = Non-Euro [p-value]	[.218]
Observations (state-census year)	230

Other Sources of Within-migrant Diversity ($d_{i^m j}$)

- is it civic values for nation-building or other migrant traits?
- consider diversity stemming from religion, region of origin and language
- nearly always able to split European countries with and without historic exposure to CSL into each source of diversity
- [Table 4]

Table 4: Other Sources of Diversity Within European Migrants

Non parametric Cox proportional model, hazard rates reported
Robust standard errors; Populations shares measured in effect sizes

	(1) Religion
Share of the State Population that is From:	
Euro Countries that did NOT have CSL in 1850, Protestant	1.22
	(.234)
Euro Countries that did NOT have CSL in 1850, Catholic/Other	2.39***
	(.596)
Euro Countries that had CSL in 1850, Protestant	.598*
	(.176)
Euro Countries that had CSL in 1850, Catholic/Other	.840***
	(.044)
Group and State Controls	Yes
With CSL = Without CSL, Protestant	[.052]
With CSL = Without CSL, Catholic/Other	[.000]
Observations (state-census year)	230

Table 4: Other Sources of Diversity Within European Migrants

Non parametric Cox proportional model, hazard rates reported
Robust standard errors; Populations shares measured in effect sizes

	(2) European Region
Share of the State Population that is From:	
Euro Countries that did NOT have CSL in 1850, Northern/Scandinavian	1.89
	(.837)
Euro Countries that did NOT have CSL in 1850, Southern/Eastern	1.16*
	(.099)
Euro Countries that had CSL in 1850, Northern/Scandinavian	.698
	(.162)
Euro Countries that had CSL in 1850, Southern/Eastern	.883***
	(.038)
Group and State Controls	Yes
With CSL = Without CSL, Northern European	[.066]
With CSL = Without CSL, Southern/Eastern European	[.003]
Observations (state-census year)	230

Table 4: Other Sources of Diversity Within European Migrants

Non parametric Cox proportional model, hazard rates reported

Robust standard errors; Populations shares measured in effect sizes

	(4) European Male Suffrage
Share of the State Population that is From:	
From European Countries that did NOT have CSL in 1850	2.72***
	(.719)
From European Countries that had CSL in 1850	.830
	(.157)
European Countries that had Male Suffrage in 1850	.414**
	(.143)
Group and State Controls	Yes
With CSL = Without CSL, Northern European	Yes
European Groups Equal [p-value]	[.000]
Euro Without CSL = Non-Euro [p-value]	[.329]
Observations (state-census year)	230

Endogeneity

- $\widehat{\beta}_j$ not causal as migrants location choices are endogenous
- need underlying model of location choice to differ between European migrants from countries with and without long exposure to CSL
- implement IV strategy in a non-linear hazard model using a control function approach [Terza et al. 2008a, 2008b, Wooldridge 2010]
- instrumenting for migrant shares using a Bartik-Card strategy:

$$W_{st}^{j} = \frac{N_{s,t-1}^{j,E}}{\sum_{l \in R(t-1)} N_{l,t-1}^{j,E}} \sum_{k \in R(t)} N_{k,t}^{j,E}$$

- [Table 5]

Table 5: Second Stage Estimates for 2SRI Instrumental Variables Method

Non parametric Cox proportional and log logistic hazard model estimates

Robust standard errors; Populations shares and enrolment rates measured in effect sizes

	2SRI IV Estimates			
Model:	**(2) NP Cox PH**	**(3) Log logistic (Time Ratio)**	**(4) Log logistic (Time Ratio)**	**(5) Log logistic (Time Ratio)**
Share of the State Population that is:				
From European Countries that did NOT have CSL in 1850	1.65**	.920***	.906***	.923***
	(.382)	(.022)	(.020)	(.018)
From European Countries that had CSL in 1850	1.15	.098	.098*	.986
	(.152)	(.012)	(.011)	(.015)
Non-European Born	.85	.994	.990	.946***
	(.125)	(.014)	(.012)	(.009)
Includes First Stage Residuals [OLS]	Yes	Yes	No	No
Includes First Stage Residuals [Non-parametric]	No	No	Yes	Yes
Group Controls	No	No	No	Yes
State Controls	No	No	No	Yes
European Groups Equal [p-value]	[.262]	[.056]	[.013]	[.011]
Euro Without CSL = Non-Euro [p-value]	[.019]	[.030]	[.006]	[.217]
Gamma Parameter		.048***	.044***	.017***
		(.007)	(.007)	(.003)
Observations (state-census year)	180	180	180	180

Omitted Variables: Alternative Mechanisms Driving State Education

- various arguments made for **state** provision of education
- unclear whether these all justify **compulsion**
  - HK externalities [Marshall 1890, Lucas 1988, Lange and Topel 2006]
  - efficiency
  - equity/redistribution [Atkinson and Stiglitz 1980]
  - complementarity of capital and skilled labor [Gellner 1964, Gerber 1991, Galor et al. 2006]
  - land inequality [Galor et al. 2009: entrenched landed elite vs. emerging capitalist elite]
- [Table 6]

Table 6: Alternative Mechanisms Driving the Passage of Compulsory Schooling Laws

Non parametric Cox proportional model, hazard rates reported
Robust standard errors; Populations shares measured in effect sizes

	(1) Redistribution	(2) Industrialization	(3) Land Inequality
Share of the State Population that is From:			
European Countries that did NOT have CSL in 1850	2.14***	2.38***	1.84**
	(.470)	(.520)	(.461)
European Countries that had CSL in 1850	.831	.819	.901
	(.160)	(.148)	(.196)
Non-European Countries	1.82***	2.01**	2.14***
	(.389)	(.554)	(.518)
SD of Occupational Income Score	1.38		
	(.423)		
Share of Labor Force Engaged in Professional Occupations		1.00	
		(.000)	
Share of Labor Force Engaged in Craft Occupations		2.51*	
		(1.32)	
Share of Labor Force Engaged in Operative Occupations		.550	
		(.296)	
Land Share of Top 20% of Holdings [Galor et al. 2009]			.815
			(.171)
Group and State Controls	Yes	Yes	Yes
European Groups Equal (with and without CSL) [p-value]	[.003]	[.000]	[.025]
Euro Without CSL = Non-Euro [p-value]	[.513]	[.549]	[.591]
Observations (state-census year)	230	230	216

Summary Part Two: Mass Migration and Legal Change

- national origins of migrants matter [La Porta et al. 1998, Acemoglu et al. 2001]
- evidence consistent with nation-building hypothesis
- migrants from countries **without** historic exposure to CSL targeted to be 'homogenized'
- suggests transportability of civic values being provided by compulsory schooling in Europe
- such portability fits the wider notion of CS instilling:
  - common habits/norms/goals [Alesina and Reich 2015]
  - civic values underpinning democracy [Glaeser et al. 2007, Mulligan et al. 2004]
  - helping to build state capacity [Besley and Persson 2010]

Contribution

- bedrock of *Americanization movement*
  - language requirements in schools and citizenship classes, 1918 Literacy Act, 1920's Quota Acts
- **causal impact** on educational attainment?
  - mixed evidence (zero or small impacts): [Stigler 1950...Stephens and Yang 2014]
- providing micro-foundations for CSL has implications for this literature:
  - (white) American-born *not* the intended marginal beneficiary
  - impacts on attainment larger among foreign-born [Lleras-Muney and Shertzer 2015]

Part Three: Demand for American Education by Migrants

- nation-building motive for compulsion $\Rightarrow$ in counterfactual, immigrants would not have acquired civic values because less exposed to common schools
  - especially so for Euro migrants not previously exposed to CSL at home
- now measure **migrant demand** for common schools:
  - exploit *cross-county* variation in locally financed investments into common schools [Go 2009]
  - text-book probabilistic voting model: tight link between locally financed investment and local demand [Persson and Tabellini 2000]
- measure investment in common schooling as teachers financed
  - supply of teachers not directly impacted by CSL [Margo and Finnegan 1996]

Probabilistic Voting Model

- individual i belongs to group j:
  - American-born
  - European born: long exposed to CSL at home
  - European born: not exposed to CSL at home
  - non-European born
- model links investment into common schools (g) with characteristics of j groups in the jurisdiction

Probabilistic Voting Model

- local jurisdiction provides common schools g, financed by income tax τ
- individual budget constraint: $c^j = (1-\tau)y^j$
- individual preferences:

$$u^j(g) = c^j + \alpha^j(.)H(g)$$

- $H(.)$ is increasing and concave in g
- within group heterogeneity: political bias $\sigma^{ij} \sim U[-\frac{1}{2\phi^j}, \frac{1}{2\phi^j}]$

Group Characteristics

- multiple groups in each jurisdiction
- group size N^j, income y^j
- group valuation of public education $\alpha^j(\theta^j, \mathbf{1}(HCSL^j))$
- θ^j is the share of young etc.; $HCSL^j$ is historic entrenchment of CSL in country group j
- earlier documented that American-born voter especially sensitive to those migrants from countries **without** historic exposure to CSL:

$$\alpha^j(\theta^j, \mathbf{1}(HCSL^j = 1)) > \alpha^j(\theta^j, \mathbf{1}(HCSL^j = 0))$$

Political Equilibrium

- $g^* = g_A = g_B$ where g^* is implicitly defined:

$$H_g(g^*) = \frac{\theta \sum_j W^j y^j}{\bar{y} \sum_j W^j \alpha^j(\theta^j, \mathbf{1}(HCSL^j))} \tag{2}$$

- where $W^j = N^j \phi^j$ is group j's 'political weight'
- θ is the share of young in the population ($\theta = \frac{\sum_j \theta^j N^j}{N}$)
- *all* groups have some weight in the determination of g^*

Comparative Static: Mapping Model to Data

$$\frac{\partial H_g(g^*)}{\partial W^j} = \frac{\theta y^j}{\bar{y}\left(\sum_j W^j \alpha^j(\theta^j, \mathbf{1}(HCSL^j))\right)^2}\left[\sum_{k \neq j} W^k y^k [\alpha^k - \alpha^j]\right]$$

- hence the larger is α^j relative to other group α^k's, more likely that $g^* > 0$
- sign($\frac{\partial g^*}{\partial N^j}$) **can** then be informative of $sign(\alpha^j$ relative to $\alpha^k)$
- g^* : investment into common schools in county
- N^j : county population from group j

Empirical Specification

- county year book in **1890** gives details on number of (white) common school teachers for all counties c,

$$\ln(teachers)_{cs} = \delta_s + \sum_j \alpha^j N^j_{cs} + \sum_j \gamma_j X^j_{cs} + \lambda P_{cs} + u_{cs}$$

- $N^j_{cs} =$ population size of group j in county c in state s [effect size]
- $X^j_{cs} =$ other characteristics of group j in county c in state s
- $P_{cs} =$ log(population aged 0-15) in county c in state s
- RHS variables measured in **1880** based on 100% census sample
- weight observations by 1880 county population
- [Table 7]

Table 7: Migrants and County Investments in Common Schools

OLS estimates, robust standard errors
Dependent variable: Log common school teachers in county
County populations measured in effect sizes

	(1) Immigrant Groups	(2) State FE	(3) Controls
County Population that is:			
American Born	.298***	.239***	.029**
	(.060)	(.042)	(.011)
European Born from Countries that did NOT have CSL in 1850	-.180***	-.176***	-.040***
	(.032)	(.024)	(.011)
European Born from Countries that had CSL in 1850	.058*	.076***	.036***
	(.034)	(.025)	(.007)
Non-European Born	.120***	.078***	.017***
	(.018)	(.012)	(.005)
Mean of Dependent Variable (in levels)		133	
State Fixed Effects	No	Yes	Yes
Group and County Controls	No	No	Yes
American = European Born without CSL [p-value]	[.000]	[.000]	[.002]
European Groups Equal (with and without CSL) [p-value]	[.000]	[.000]	[.000]
Observations (county)	2472	2472	2472

Teacher Results

- mapping estimates back to implied demand parameters:

$$\alpha^{Am-born} \geq \alpha^{j}_{\mathbf{1}(HCSL^{j}=1)} > \alpha^{j}_{\mathbf{1}(HCSL^{j}=0)}$$

- **link to Part 2:** American voters especially sensitive to those migrants from countries **without** historic exposure to CSL

- **implication**: pre-compulsion, such groups would have been **less** exposed to civic values taught in American common schools

Impact of CSL on Demand for American Common Schooling

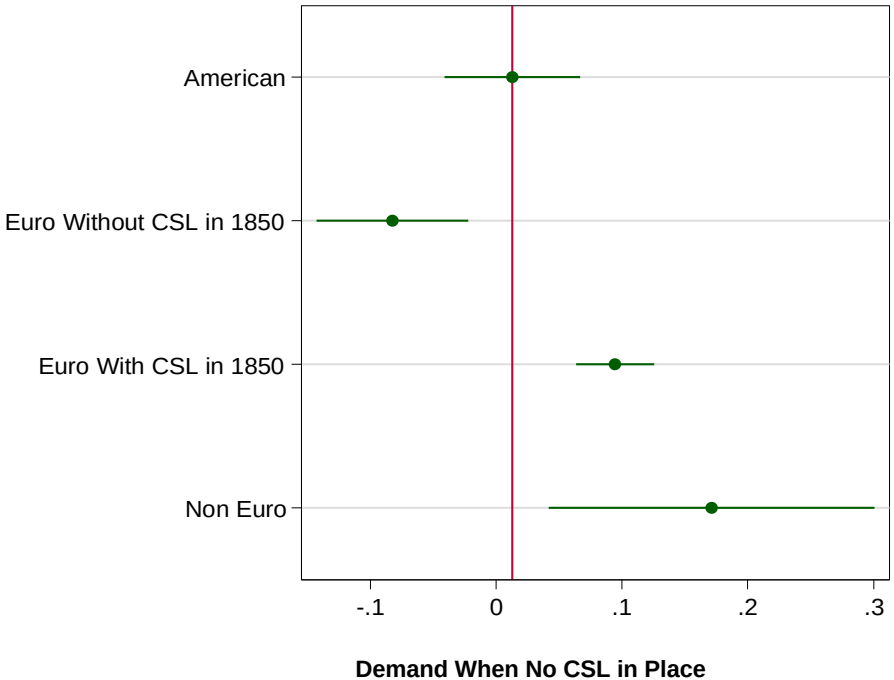
- by 1890, half of all states had introduced compulsion
- how does demand for common schooling **change** with compulsion *within* the same group?
- suppose $\alpha^{js} = \alpha^{js}(\theta^{js}, \mathbf{1}(HCSL^{j}), \mathbf{CSL}^{s})$

$$\ln(teachers)_{cs} = \sum_j \alpha^{j0} N_{cs}^{j} + \sum_j \alpha^{j1} \left[D_s \times N_{cs}^{j} \right] + \sum_j \gamma_j X_{cs}^{j} + \delta_s + u_{cs}$$

- [Figure 4]

Figure 4: Demand for Common Schooling in 1890, by Population Groups and Compulsory Schooling Law

A. Teachers in Common Schools



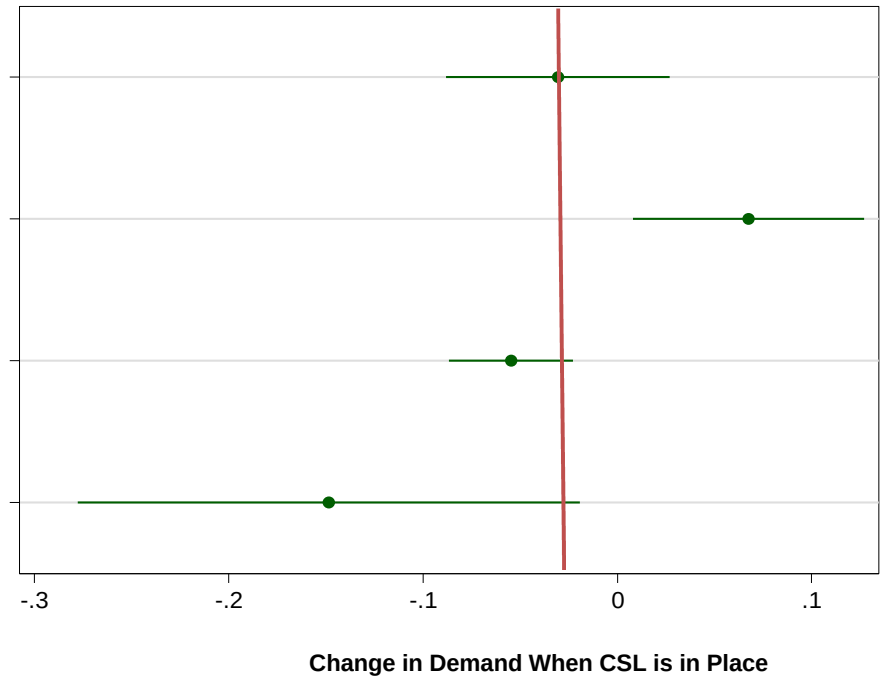
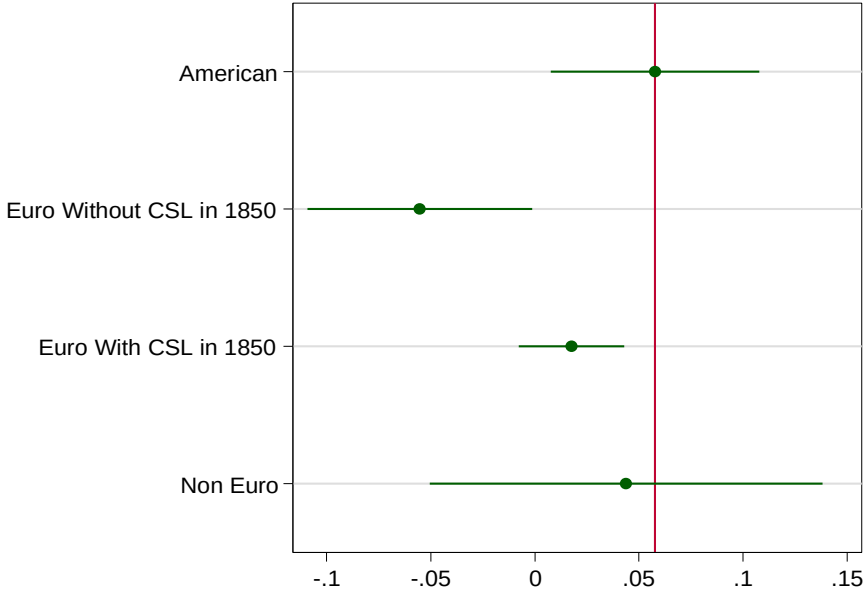
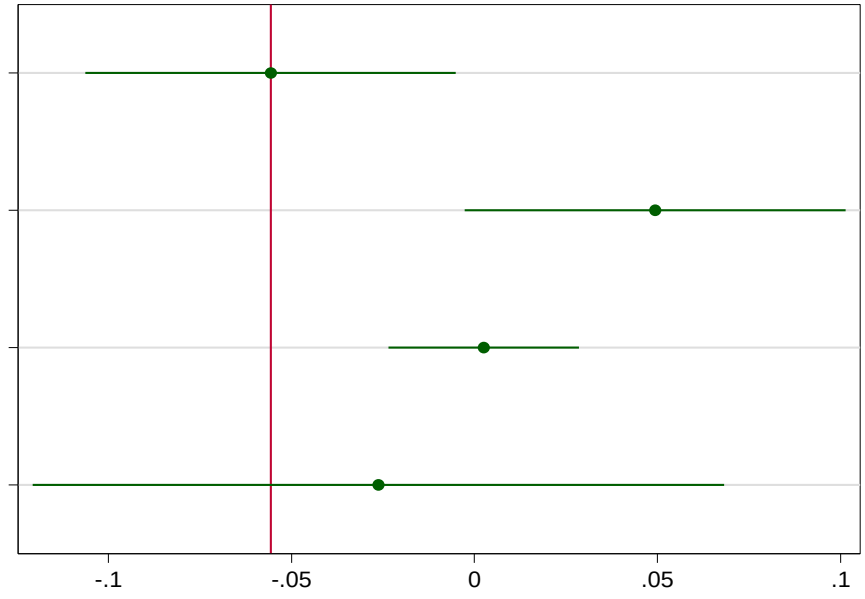


Figure 4: Demand for Common Schooling in 1890, by Population Groups and Compulsory Schooling Law

B. Pupils in Common Schools





Impact of CSL on Demand for American Schooling

- with compulsion, migrants from European countries without historic exposure to CS were **more** exposed to American civic values through public schooling
  - convergence towards native demands for American common schooling
- consistent with documented effects of CSL on immigrant *enrolment rates* [Lleras-Muney and Shertzer 2015]
- ...and civic participation/political participation/voting [Mulligan et al. 2004]

Summary: Research Question

- why did US states introduce **compulsory** schooling laws if enrolment rates among American-born already high, and trending upwards?
- not expecting compulsion to bind on the median American-born
- and were **not** the driving force behind 'the educated American'
- compulsory schooling laws were **not** targeted to blacks
- **explanation:** need to homogenize a large and diverse inflow of migrants
  [10-15% of the population: Age of Mass Migration]

Summary: Answers

- **Result 1:** qualitative evidence suggests nation-build motives first order among common school reformers and in political debate
- **Result 2:** those states with migrants from countries **without** historic exposure to CSL pass CSL earlier
- **Result 3: demand for common schooling** among migrants correlated with historic exposure to CSL in country of birth:

$$\alpha^j(\mathbf{1}(HCSL^j = 1)) > \alpha^j(\mathbf{1}(HCSL^j = 0))$$

- **Result 4:** convergence towards American schooling demands post-CSL in state s across groups j :

$$\alpha^{js}(\mathbf{1}(HCSL^j = 0), \mathbf{1}(\mathbf{CSL}^s = 1)) > \alpha^{js}(\mathbf{1}(HCSL^j = 0), \mathbf{1}(\mathbf{CSL}^s = 0))$$

Future Agenda: Four Directions

- mass migration and other dimensions of cross state variation in the US
  [tax rates, legal and financial market regulation]
- richer political economy model with multiple tools targeting migrants
- come full circle and examine whether **returning** migrants drove institutional change in Europe
- plausibly exogenous sources of population diversity?
  - Colonial carve-up of Africa [Michalopoulos and Papaioannou 2013]

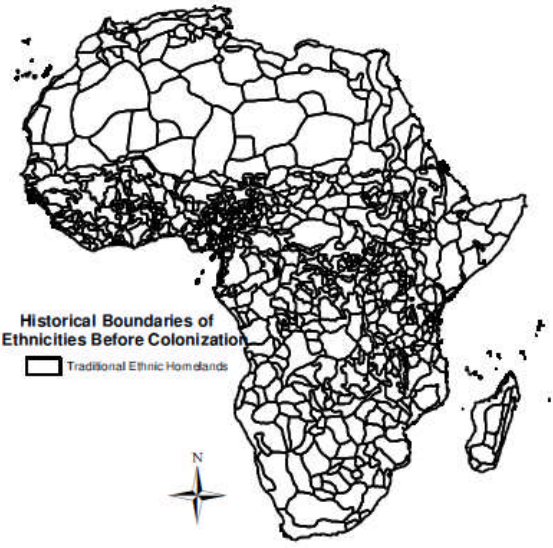


Figure 1*a*: Ethnic Boundaries

Figure 1*b*: Ethnic and Country Boundaries