Econ 113: February 5, 2015

- Fertility Decline
  - Modeling Fertility Decisions
  - David & Sundstrom
  - Lahey
- Immigration
  - Modeling Immigration
  - Historical patterns
- Antebellum Labor Markets
- Antebellum Poor Relief in New York

Turn PS 1 in to the GSIs before class begins

How to go about critiquing a model

- **Option 1:** Before reading: brainstorm
  - What's author's question?
  - Big think: What are possible goals people might be trying to achieve?
  - Medium think:
    - Given a goal, what (readily measured) variables, factors, etc might affect behavior?
    - Are there (perhaps unmeasurable) constraints, institutions, etc that might affect behavior?
  - Small think: Is econometrics done properly?

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How to go about critiquing a model

- **Option 2:** As reading: think "but, what if . . ."
  - Author writes something. You ponder, "Hmm, but what if instead . . ."
    - Much more easily done if you've brainstormed ahead of time

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Modeling Fertility

- Models
  - Question, simplifications, assumptions
- Question: What determines number of children?
- Simplifications: One model "fits" all.
- Building a model:
  - What **goal** are people trying to achieve?
  - What factors influence behavior? (Prices? Income? Other?)
  - What assumptions should/do we make? That is, what else needs to be true people to aim for that goal by responding to those factors?

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Fertility: Goal?

Fertility: Relevant Variables

Fertility: Behavioral Assumptions?

Model #1: "Target Bequest" motive

- Richard Easterlin
- Goal: Bequeath wealth
- Result: Fertility = f (land availability)
    farming → D(labor) → D(children)

    ↑P(land) → ↑cost of bequests → ↓D(children)

Model #2: "Old Age Security" Motive

- Paul David and Bill Sundstrom
- Goal: old-age security
- Result: fertility = f (labor market opportunities)
    Parents bargain with children over care in old age.
  So, ↑ labor market opportunities
    → ↑ bargaining power of children
    → ↓ return on parents' investment in children
    → ↓ D(children)

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Table 4. Determinants of Fertility, 1840

	Dependent Variable: Log of Child-Woman ratio in 1840		
	All States	North	South
Constant	4.7228** (0.6106)	4.0930** (1.3991)	4.7164** (0.3032)
Log (Male-Female ratio in rural areas, 1840)	0.5078 (0.2871)	0.3606 (0.6308)	0.6530** (0.1426)
Log (Rural land availability index, 1840)	0.0269 (0.0484)	0.00783 (0.09151)	0.0461 (0.0321)
Log (ratio of non-agricultural to agricultural labor force, 1840)	-0.1799** (0.0243)	-0.1547* (0.0667)	-0.1547** (0.0153)
Log (ratio of wages paid non-farm labor to wages paid farm labor, 1840)	-0.8228** (0.2122)	-1.0416* (0.4907)	-0.8538** (0.1069)
n	29	16	13
Adjusted R^2	0.776	0.661	0.951

Note: Standard errors in parentheses.
** is significantly different from 0 at 1%
* is significantly different from 0 at 5%
Source: David & Sundstrom, "Old-Age Security Motives," Table 4.

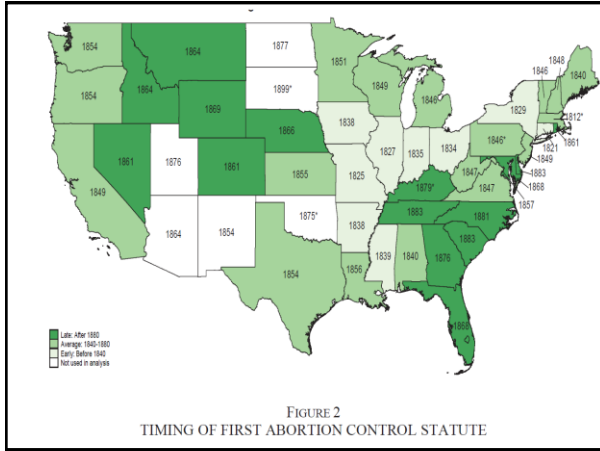## "Old-age security" motive – critique

- What assumptions might we challenge?

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Lahey: Fertility Control

- Question: Could people control fertility? If so, how?
- Lahey examines effect of abortion laws
  – Was fertility higher in states and years when access to abortion was restricted?
  – Finding: Abortion restrictions lowered fertility by 4-15%

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FIGURE 2
TIMING OF FIRST ABORTION CONTROL STATUTE

Doing the Analysis

- State fixed effects

- Year fixed effects

- State-specific time trend

Lahey: Regression Results

Table 5. Determinants of Fertility, 1850-1910					
	Dependent Variable: Log of Child-Woman ratio				
	(1)	(2)	(3)	(4)	(5)
Abortion law	0.121** (0.029)	0.149** (0.034)	0.118** (0.029)	0.124** (0.030)	0.148** (0.034)
Medical Exemption		-0.030 (0.025)			-0.028 (0.025)
Medical School			-0.033 (0.022)		
Birth Control Law				-0.012 (0.019)	-0.010 (0.019)
State & year fixed effects?	yes	yes	yes	yes	yes
State-specific time trends?	yes	yes	yes	yes	yes
Adjusted R²	0.94	0.94	0.94	0.94	0.94
n	291	291	291	291	291

Note: Robust standard errors in parentheses.
** = Significant at the 1 percent level
Source: Lahey, Joanna N., "Birthing a Nation: The Effect of Fertility Control Access on the Nineteenth-Century Demographic Transition," *Journal of Economic History* 74 (June 2014): Tables 2, 3, and 4.

FIGURE 8.10
Immigration, 1820–1970

Source: U.S. Bureau of the Census, *Historical Statistics of the United States* (Washington, D.C.: Government Printing Office, 1975): Series C89.
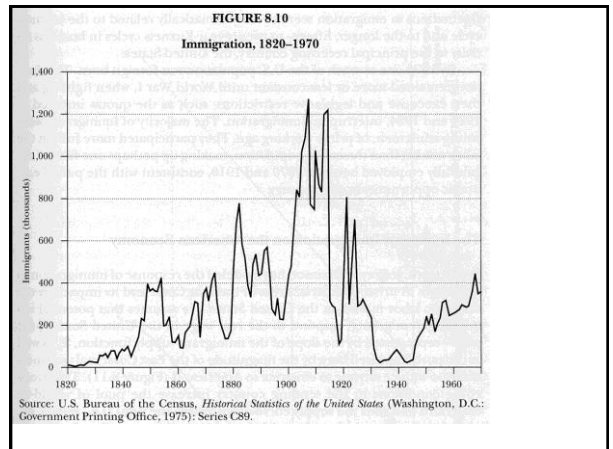
Immigration

- What share of total population growth was due to immigration?

Table 6. Share of Population Growth Attributable to Immigration

1800-25	2-3 %
1830s	over 10 %
1840s	almost 25 %
1850s	almost 33 %

Source: Derived from *Historical Statistics*.

Who were the immigrants?

- **English**
  - throughout period
- **Irish**
  - 1846-55, following potato famine of 1845-47
  - poor, laborers
  - to eastern cities

Who were the immigrants?

- **German**
  - 1850s, following political upheaval and harvest failures
  - not poor, farmers
  - to midwest
- **Chinese**
  - 1850s, following political upheaval and famine
  - laborers, miners
  - to California

Shares of immigrants by home country

Table 7. Patterns of Immigration by Home country

	Great Britain	Ireland	Germany	China	Total #
1820s	20. %	40. %	4. %	0. %	128,500
1830s	14	32	23	0	538,400
1840s	15	46	27	0	1,427,300
1850s	16	37	35	1	2,814,600
1860s	26	20	35	3	2,081,300

Source: U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970,* Series C89, C91, C92, C95, C104.

Shares of immigrants by occupation

Table 8. Patterns of Immigration by Occupation

	Skilled	Farmers	Laborers	Women & Kids
1820s	13. %	9. %	6. %	58. %
1830s	13	12	8	59
1840s	11	15	16	54
1850s	8	14	18	55
1860s	11	8	19	53

Source: U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970,* Series C120, C130, C133, C134, C136.
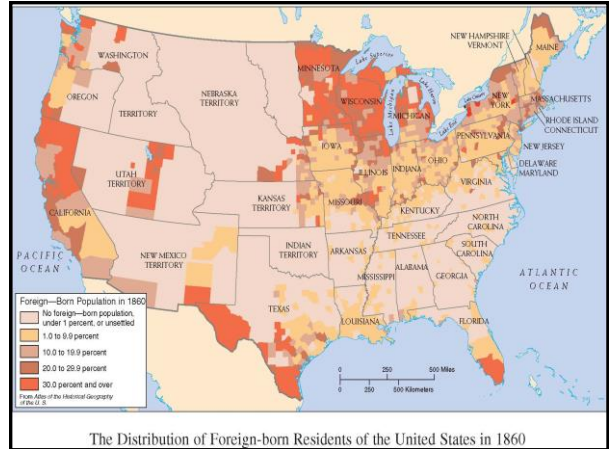
Modeling Migration

- Question: What determines migration?

- Simplifications:
  - Push factors
    - Why leave home
  - Pull factors
    - Why come to U.S.

- Assumptions:
  - Goal?
  - Behavioral assumptions?

Migration: Goal?

Migration: Push & Pull factors?

Migration: Behavioral Assumptions?

The Distribution of Foreign-born Residents of the United States in 1860

Antebellum Labor

Table 9 . Distribution of Labor Force
Percent Distribution

	Agri-culture	Manu-facturing	Trade & Service
1810	83.6	3.2	3.5
1840	63.1	8.8	11.2
1860	52.9	13.8	14.4

Source: Walton & Rockoff, Table 11-1.

Labor Patterns

- Immigrants are disproportionately non-agricultural workers
- Organization of factory
  - Rhode Island System

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Labor Patterns

Modeling Labor Markets

Wage Patterns

- Ratio of female/male wages

1820	30%
1850	50%
1890	55%

Modeling Labor Markets

Antebellum Manufacturing Wages

Table 10. Index of Antebellum Real Manufacturing Wages				
	1820	1832	1850	1860
Total	101	128-150	155-197	159-191
Middle Atlantic:				
Rural	90	118-139	131-166	166-199
Urban	111	150-176	165-209	154-185
Urban/Rural	1.2	1.1-1.5	1.0-1.6	0.8-1.1
New England:				
Rural	95	133-156	143-181	156-187
Urban	110	130-153	150-190	165-198
Urban / Rural	1.2	0.8-1.2	0.8-1.3	0.9-1.3

Source: Walton & Rockoff, Table 11-4. Urban/Rural ratio calculated.

Wages, U.S. versus England

Table 11. Relative Wages, US vs. England For each group, $w_{England}=100$	
Worker	US wage, 1820-21 relative to English wage
Skilled	
carpenter	150
mason	147
ordinary machinist	114 - 129
best machinists	77 - 90
Unskilled	
common labor	135
farm labor	123 - 154
women in mills	102 - 153
boys 10-12 yrs old	115

Source: Walton & Rockoff, Table 11-5.

Rising skill premium

Table 12. Skill Premium	
$\dfrac{daily\ wage\ of\ machinist}{\begin{array}{c}daily\ wage\ of\ common\ labor\\ in\ urban\ Massachusetts\end{array}} \times 100$	
1825	150
1831-40	156
1841-50	190
1851-60	220

Source: Walton & Rockoff, Table 11-6.

Antebellum Poor Relief

- Joan Hannon, studied New York State, mid-1800s
- State and local governments; not federal

- "Indoor relief"
  - being placed in a poorhouse (or, almshouse)

- "Outdoor relief"
  - receiving money and living on own

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Pauperism Rate in New York

Table 13. Relieved Pauperism Rate, NY

	% of Population
1823	1.1
1835	1.8
1849	3.5
1859	6.8

Source: Calculated from Hannon, "Poverty in the Antebellum Northeast," *Journal of Economic History* 44 (December 1984): 1009.

Who Were New York's Paupers?

Table 14. Characteristics of Relief Recipients, 1843-59

	1845-49	1855-59
Male	55.6	44.8
Native born	45.7	41.5
Disabled or Elderly	12.4	5.1
Able-bodied adults	40.6	72.2
Intemperate (alcoholics)	20.4	9.9
Debauched (immoral, probably related to prostitution)	1.6	0.6
Idle & Vagrant	2.9	4.6
Indigent & Destitute (poor)	15.7	57.0

Source: Hannon, "Poverty," Table 1.

Composition of Relief Recipients
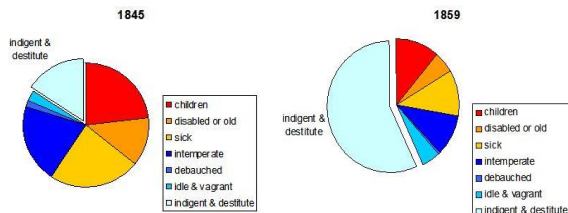
Why rising poverty of able-bodied?

- Standard story:
  - Urbanization
  - Industrialization
  - Immigration
- But 1823 evidence doesn't support.

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Correlations (not regression)

Table 15. Factors correlated with N.Y. state pauperism rate
(Spearman's rank correlation coefficient. Checks to see if independent variable maps to >1 value of dependent variable.)

independent variable	1823		1840/44		1855/59	
	w/NYC	w/o NYC	w/NYC	w/o NYC	w/NYC	w/o NYC
population growth rate	-0.79*	-0.79*	0.23	0.68	0.60	0.43
% population that's urban	0.52	0.29	0.48	0.21	0.60	0.39
% Non-Agricultural L.F.	0.60	0.39	0.81**	0.71*	n.a.	n.a.
% Manufacturing L.F.	n.a.	n.a.	n.a.	n.a.	0.48	0.21
Household production per capita	-0.69*	-0.54	-0.90**	-0.86*	-0.74*	-0.61
% population foreign born	0.27	0.00	0.79*	0.68	0.67*	0.50
Extent of tenancy (versus freeholders)	-0.07	-0.54	n.a.	n.a.	n.a.	n.a.

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Impact of Erie Canal
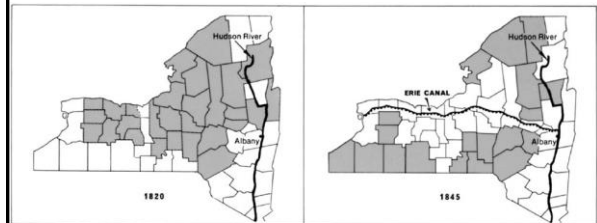
MAP 10.1 Canal Impact Household manufacture of woolen cloth (an index of isolation from commercial routes) underwent a drastic change between 1820 and 1845 along the Erie Canal. The shaded areas indicate the one-third of the counties with the highest home production of woolen goods during this period. (*Source:* Arthur H. Cole, *American Wool Manufacture* [Cambridge, Mass.: Harvard University Press, 1926], vol. 1.)

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So, why rising antebellum poverty?

- Hannon concludes. . .
- Rising able-bodied rural poverty due to
  - Commercialization of agriculture and rise of factory system → decline of household production

- Rising able-bodied urban poverty due to
  - Industrialization created wage labor force facing seasonal, irregular work

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