Education and Unequal Regional Labor Market Outcomes:

The persistence of regional shocks and employment responses to trade shocks.

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Paper Prepared for the Federal Reserve Bank of Boston's Conference:

A House Divided: Geographic Disparities in Twenty-First Century America

Outline

- An end to convergence
- Growing persistence of labor market outcomes
- Trade Shocks
- Policy implications
- Conclusion

- Paper borrows heavily from Nunn, Parsons, and Shambaugh (2018) and Eriksson, Russ, Shambaugh, and Xu (2019)

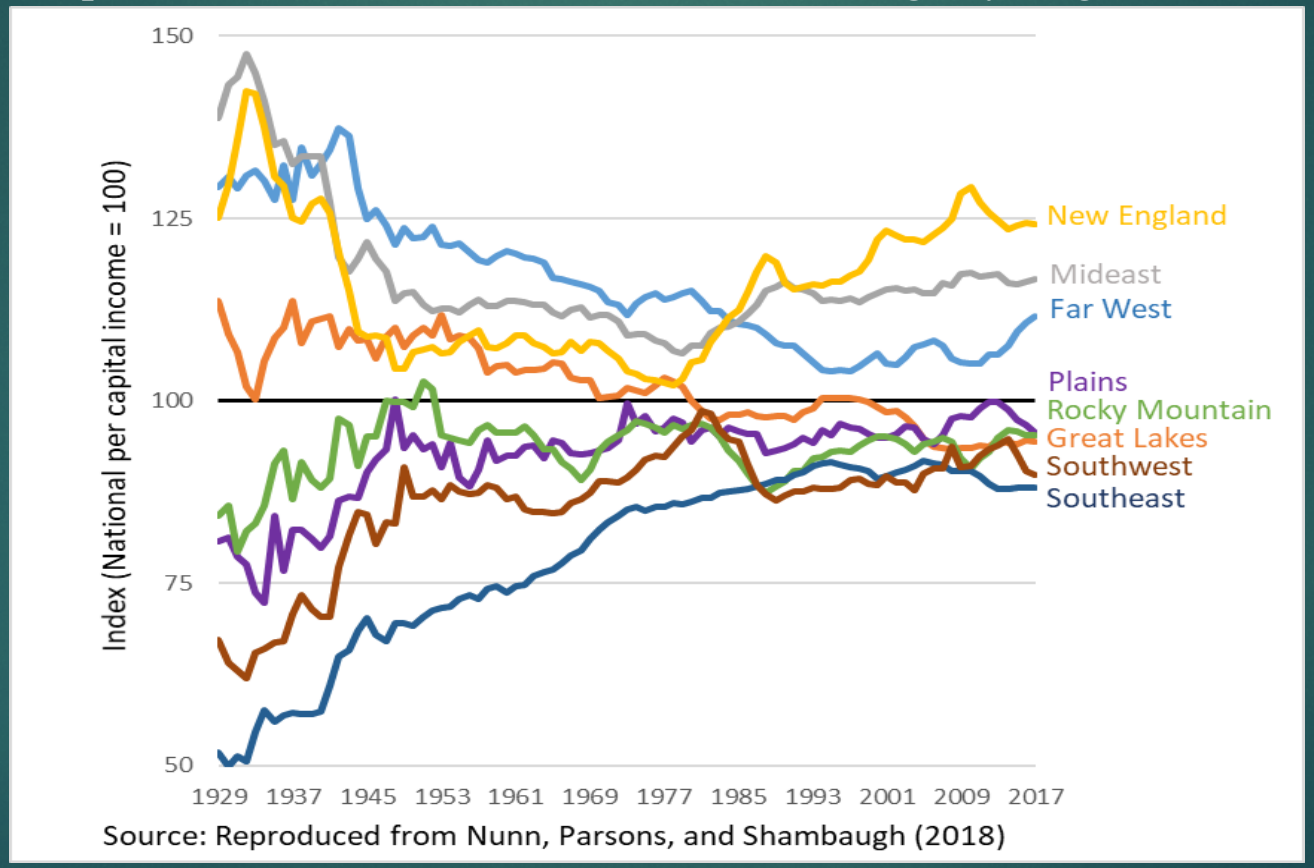
An end to convergence

- Title today is "A House Divided": The house has always been divided. The key is, its not getting less divided anymore.
- Mitchener and McLean (1999): we saw convergence from 1880-1980, in large part because labor productivity converged
- Berry and Glaeser (2005) Moretti (2011) note that this convergence slowed or stopped in late 20th century

- We borrow from Nunn, Parsons, and Shambaugh (2018) to show the extent to which incomes have quit converging and an overall measure of economic outcomes is highly persistent from 1980-2016

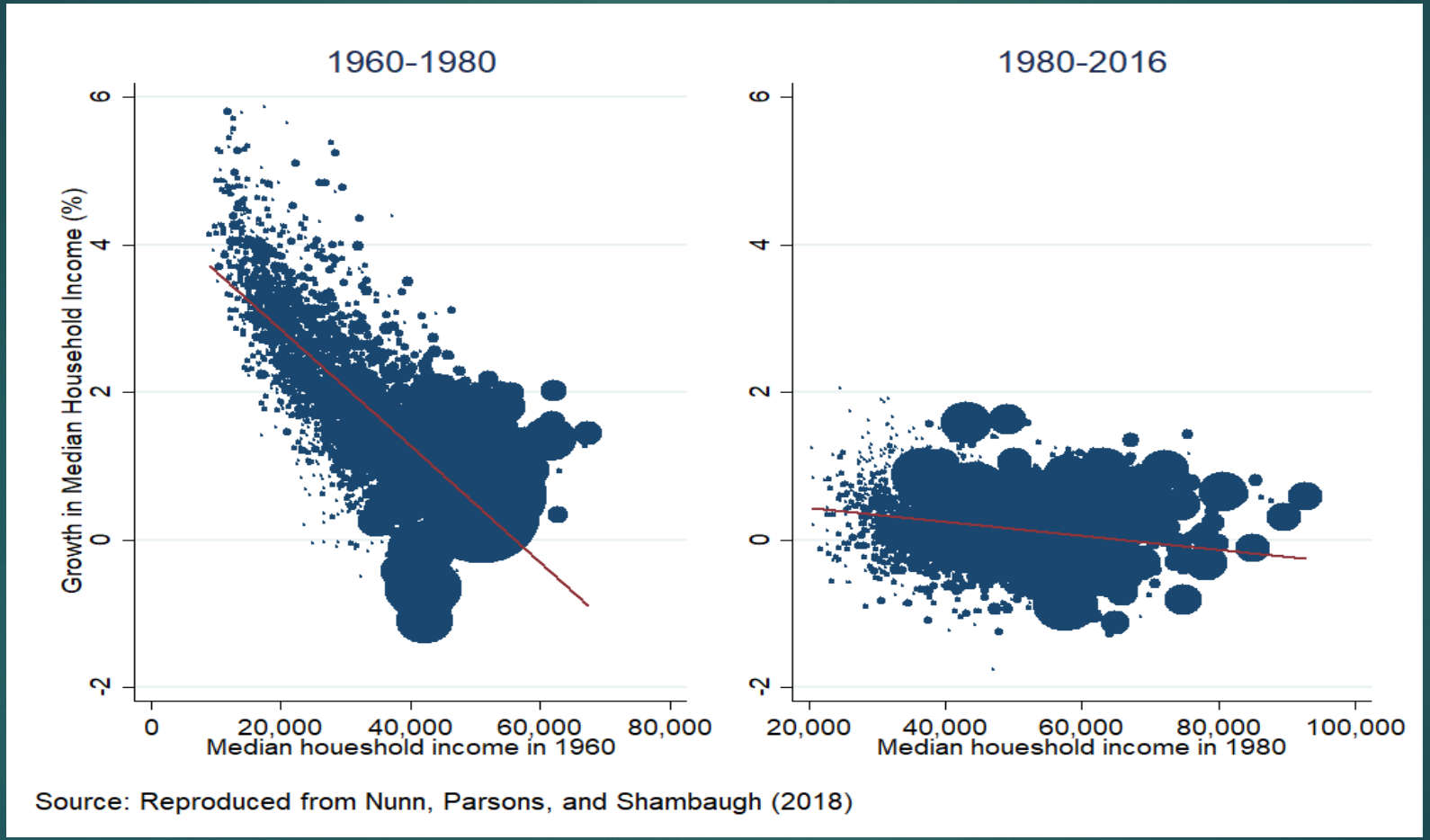
Per capita income convergence stops around 1980

Figure 1: Per Capita Income Relative to the National Average by Region, 1929-2017



Rapid Convergence 1960-80, then it stops

Figure 2: Levels and Growth of Real Median Household Income, 1960-80 and 1980-2016



Source: Reproduced from Nunn, Parsons, and Shambaugh (2018)

Broader measure shows high persistence

Table 1: Nunn, Parsons, and Shambaugh County Vitality Index, Mobility by Quintile

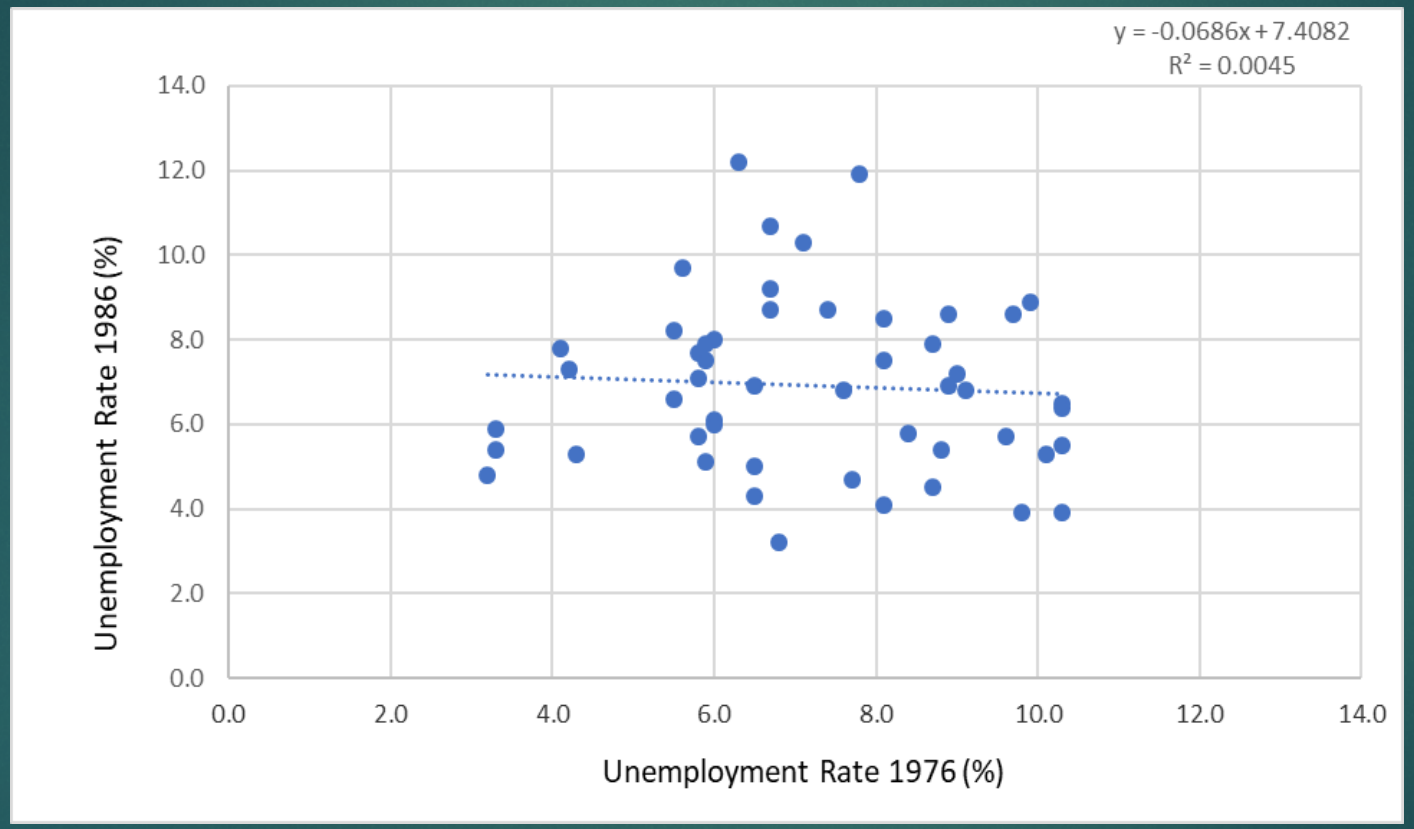
		2016 Vitality Quintile				
		1	2	3	4	5
1980 Vitality Quintile	1	71%	21%	5%	2%	1%
	2	23%	41%	19%	12%	5%
	3	5%	27%	34%	22%	12%
	4	0.5%	10%	31%	34%	24%
	5	0.0%	2%	11%	29%	58%

Source: Reproduced from Nunn, Parsons, and Shambaugh (2018)

- Combine median HH income, labor market outcomes, life expectancy, vacancy rates into index for counties.
  - Use confirmatory factor analysis, not simple average
- Very little upward mobility for counties

Persistence of labor market outcomes: 1970s – shocks seem to fade

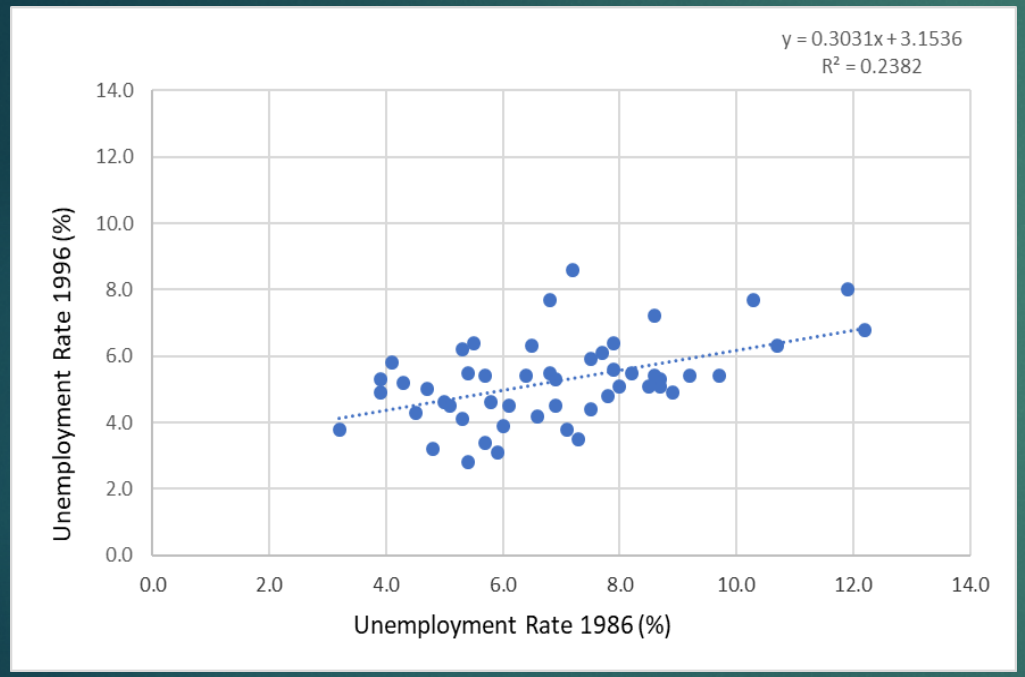
Figure 3: Changes in State Unemployment Rates 1976-1986



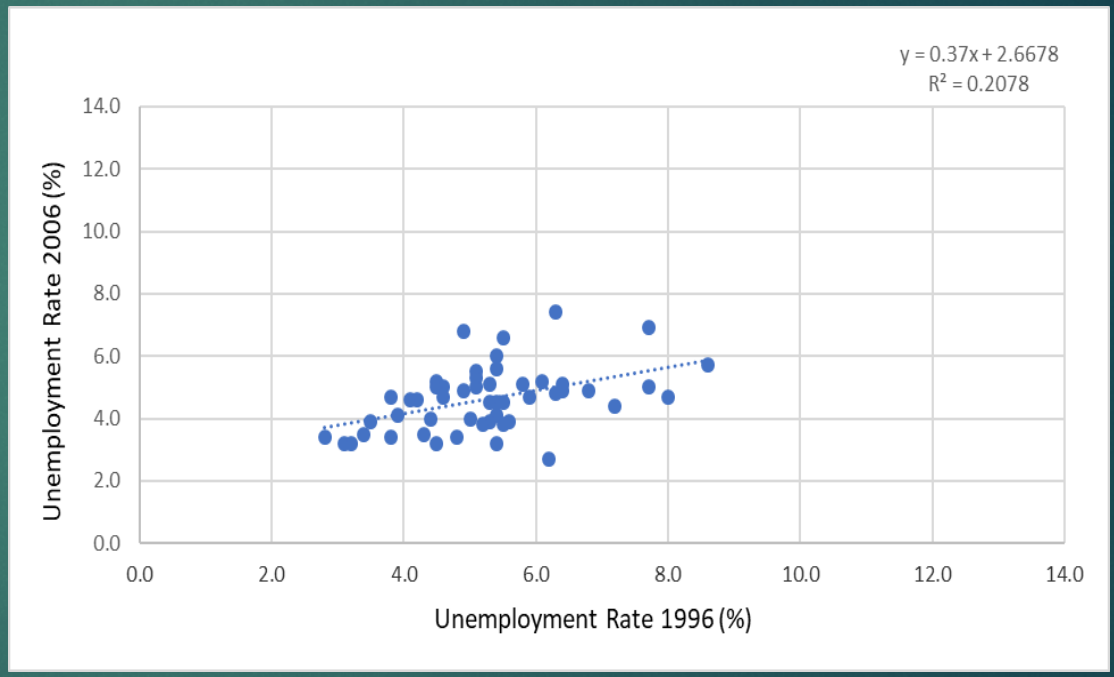
- One of the most famous null results ever: Blanchard and Katz 1992
- Accomplished in part via labor mobility (see also Bound and Holzer 2000)

Growing Persistence

Changes in State Unemployment Rates 1986-1996



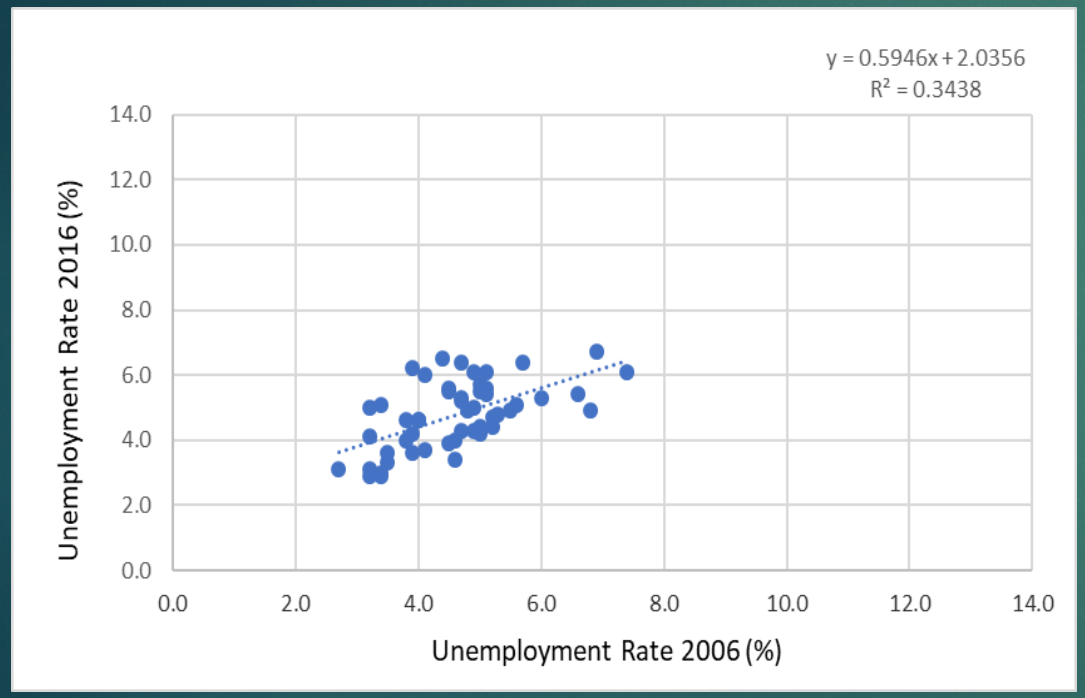
Changes in State Unemployment Rates 1996-2006



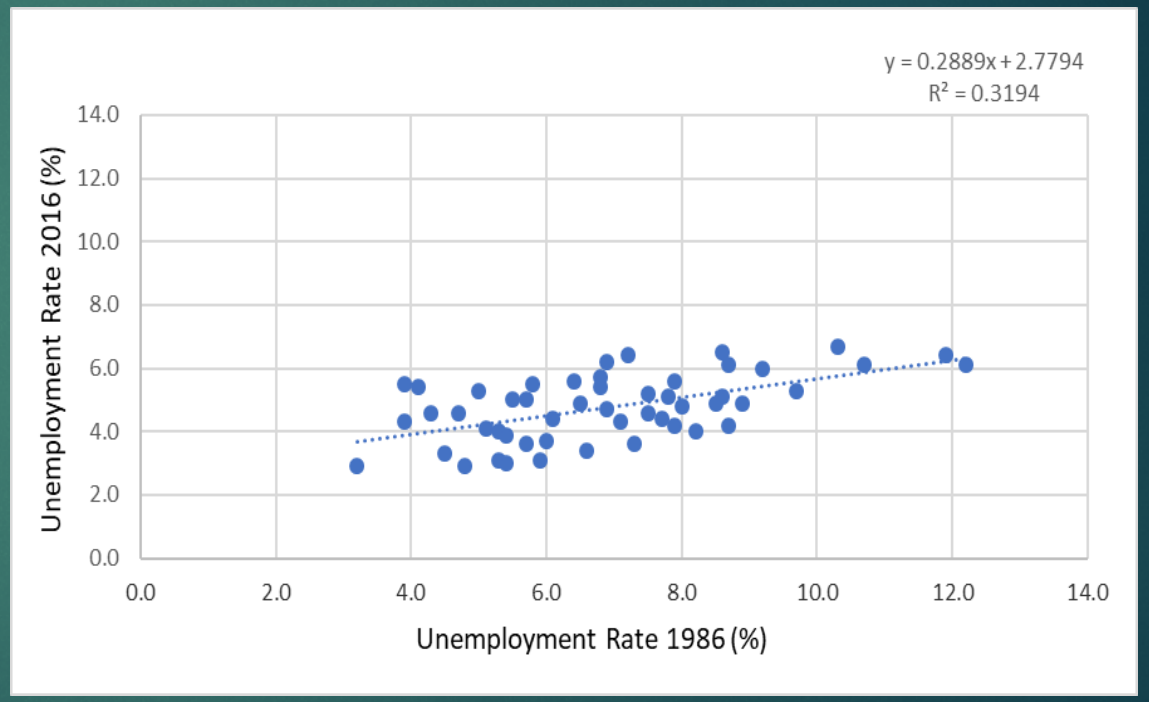
- Stay with same decade pattern, but also conveniently skips recessions

Growing Persistence

Changes in State Unemployment Rates 2006-2016

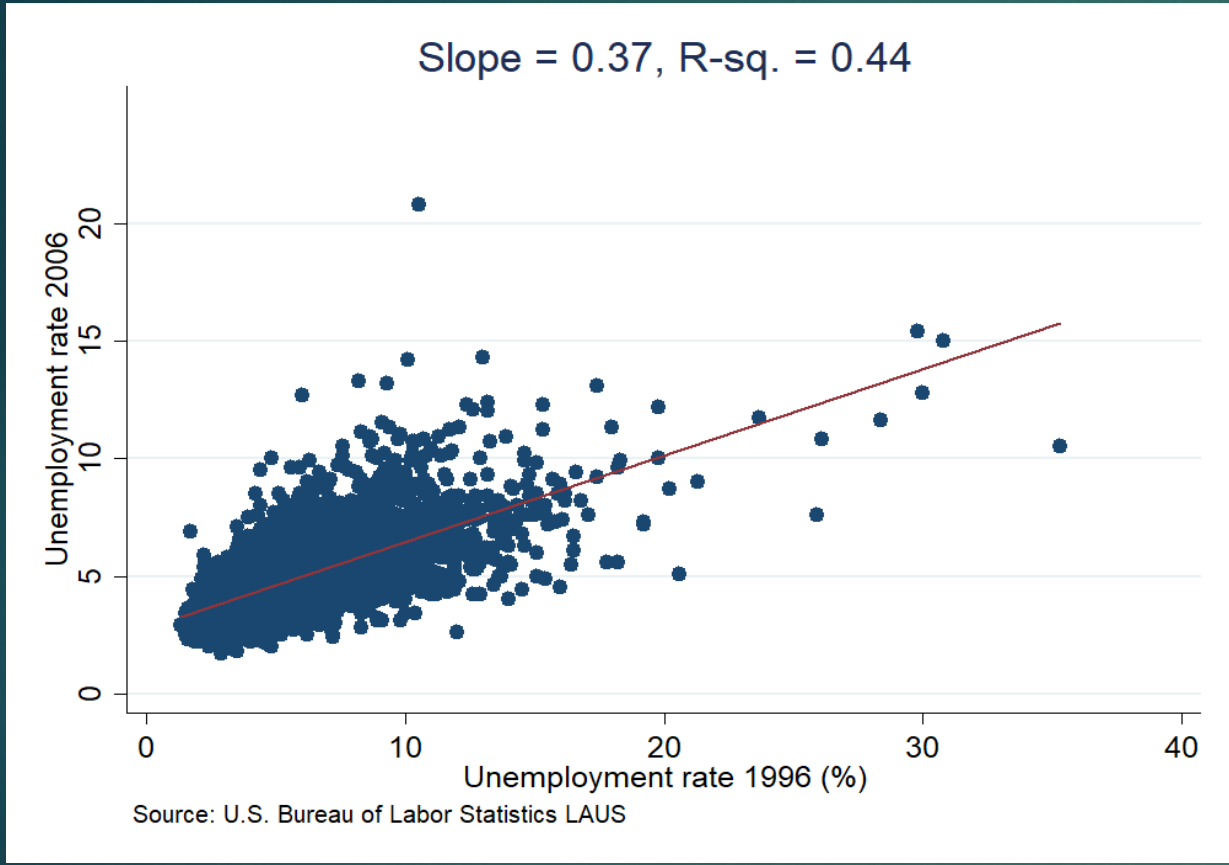


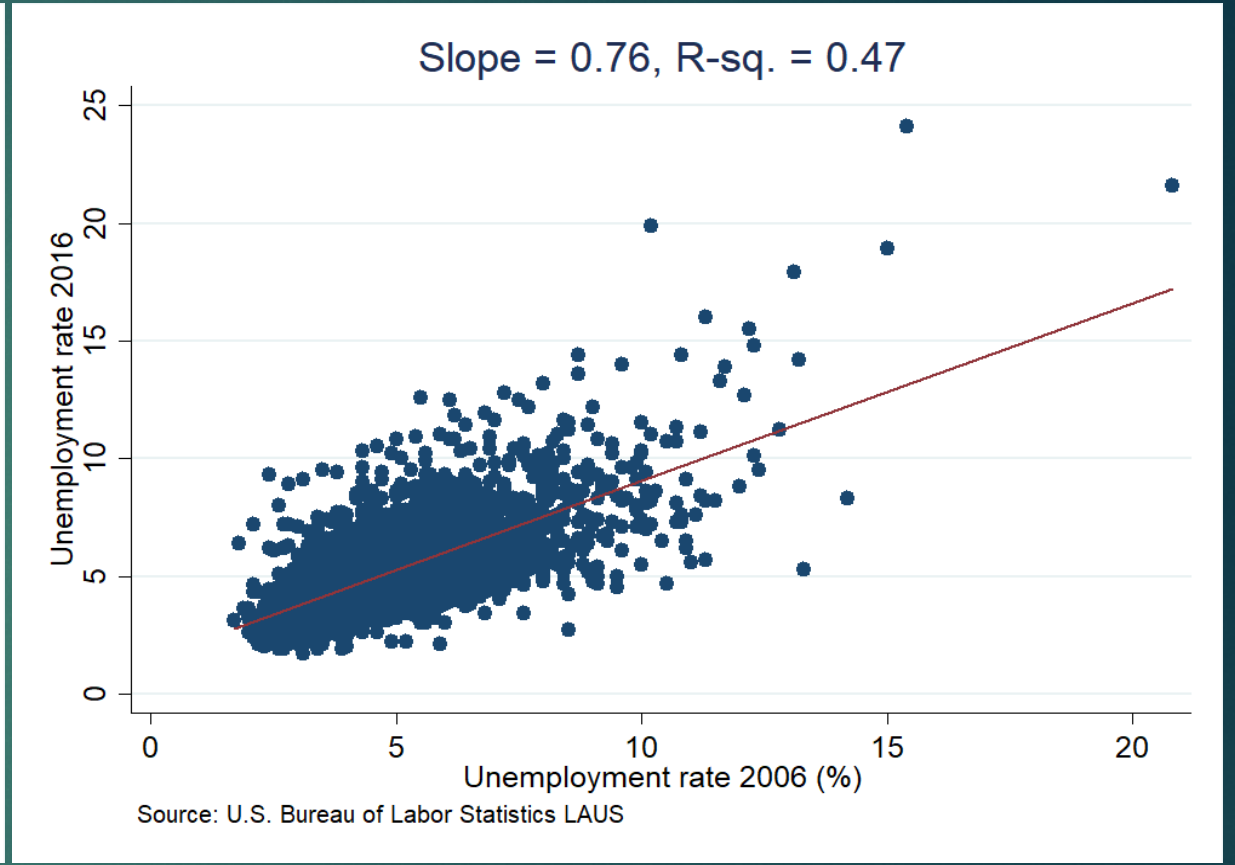
Changes in State Unemployment Rates 1986-2016



- Most recent data highly persistent and even over long time period it is
- See also Dao, Furceri, and Loungani (2017)

Persistent at county level too



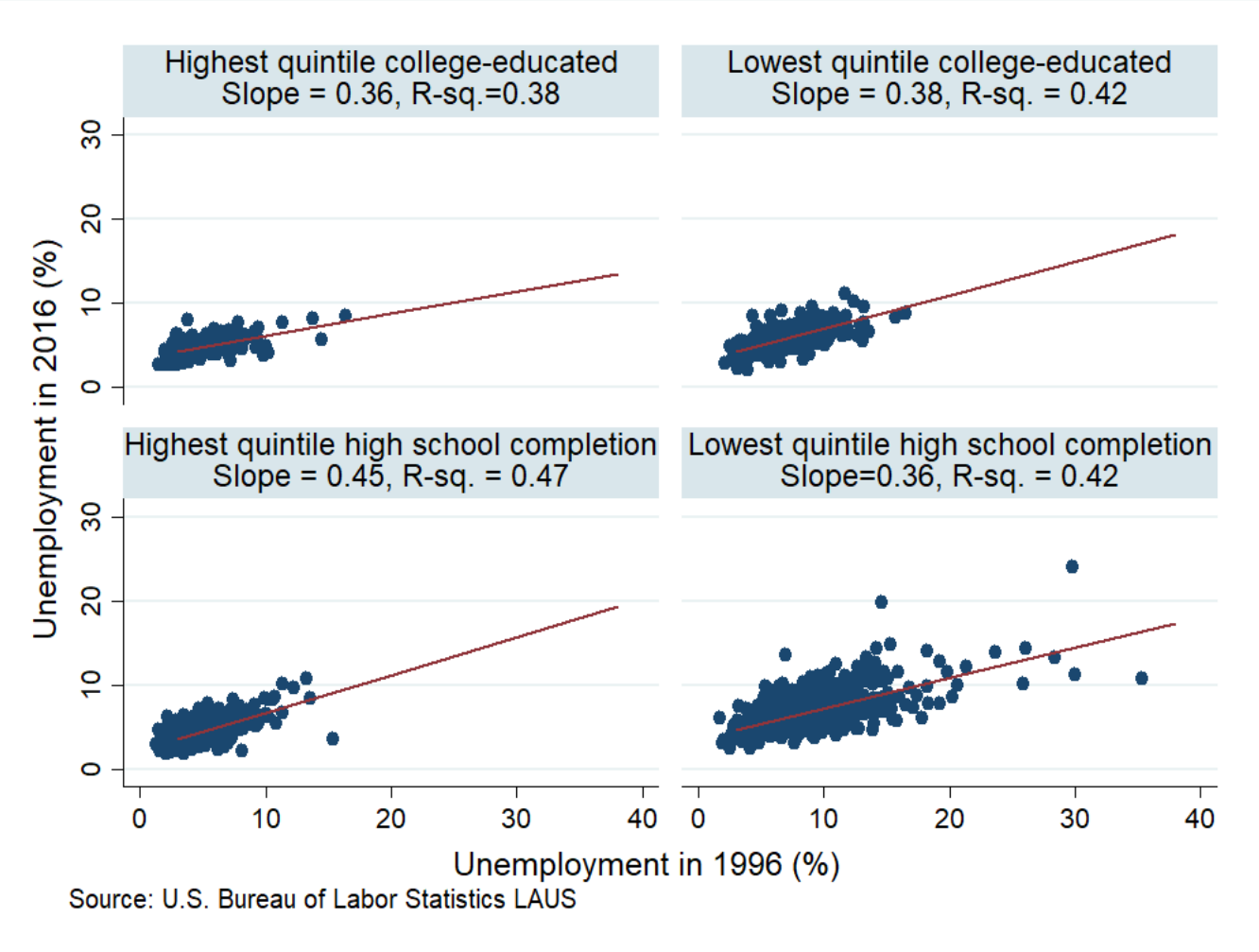


What Happened?

- Mobility is down (see Malloy et al 2016)
  - Especially lower for workers with lower levels of education
  - Barriers to mobility & declining reason for mobility
- A number of features might make one assume the persistence stems from places with lower levels of education
  - Bound and Holzer (2000): workers with less education move after shocks less. (Malloy et al, shows this more generally)
  - Autor 2019: no more urban premium for workers with less education
  - Eriksson et al 2019: China shock hit areas with less education, and hit them harder
  - Bloom et al, higher education >>> quicker pivot after shock
  - Skinner and Staiger (2007): some places better at innovation (especially higher education places)

Persistence across education

Figure 7: County Unemployment Rates 2016 v. 1996, by County Education Levels



Differing Persistence

- Places with high levels of education more likely to "stick" in good outcomes
- Opposite in the places with lower levels of education

Table 2: Probability that a County Begins and Ends in a High- or Low-Unemployment Outcome

		1970-1980	1970-1990
Full sample	All Counties		
	Stay in lowest quintile of unemployment	48	55
	Stay in highest quintile of unemployment	56	56
Places with high levels of education in 1970	Counties in highest quintile, fraction of college-educated adults		
	Stay in lowest quintile of unemployment	49	72
	Stay in highest quintile of unemployment	37	22
	Counties in lowest quintile of adults not finishing high school		
	Stay in lowest quintile of unemployment	52	70
	Stay in highest quintile of unemployment	46	21
Places with low levels of education in 1970	Counties in lowest quintile, fraction of college-educated adults		
	Stay in lowest quintile of unemployment	36	35
	Stay in highest quintile of unemployment	58	64
	Counties in highest quintile of adults not finishing high school		
	Stay in lowest quintile of unemployment	22	24
	Stay in highest quintile of unemployment	55	73

Source: U.S. Bureau of Labor Statistics LAUS and Census County Data Books (ICPSR)

Differing Persistence

- Similar pattern in the more recent decades

Table 3: Probability that a County Begins and Ends in a High- or Low-Unemployment Outcome

		1996-2016
Full sample	All Counties	
	Stay in lowest quintile of unemployment	60
	Stay in highest quintile of unemployment	61
Places with high levels of education in 1990	Counties in highest quintile, fraction of college-educated adults	
	Stay in lowest quintile of unemployment	53
	Stay in highest quintile of unemployment	30
	Counties in lowest quintile of adults not finishing high school	
	Stay in lowest quintile of unemployment	69
	Stay in highest quintile of unemployment	38
Places with low levels of education in 1990	Counties in lowest quintile, fraction of college-educated adults	
	Stay in lowest quintile of unemployment	25
	Stay in highest quintile of unemployment	64
	Counties in highest quintile of adults not finishing high school	
	Stay in lowest quintile of unemployment	29
	Stay in highest quintile of unemployment	67

Source: U.S Bureau of Labor Statistics LAUS and U.S. Census County Data Book (ICPSR)

A nation becoming more divided

Figure 8: Percentage of U.S. Counties in Bottom Quintile of Unemployment Rate

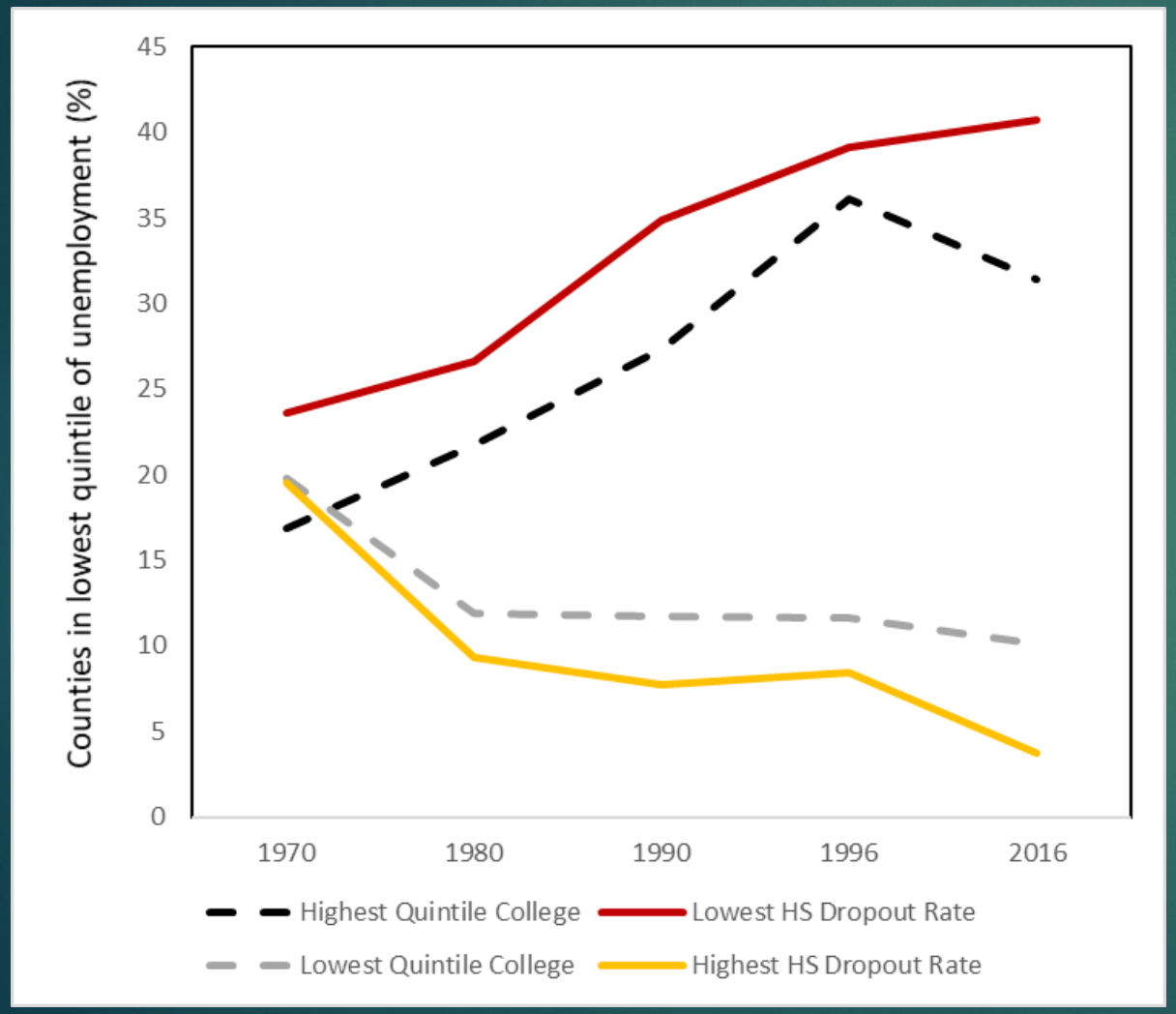
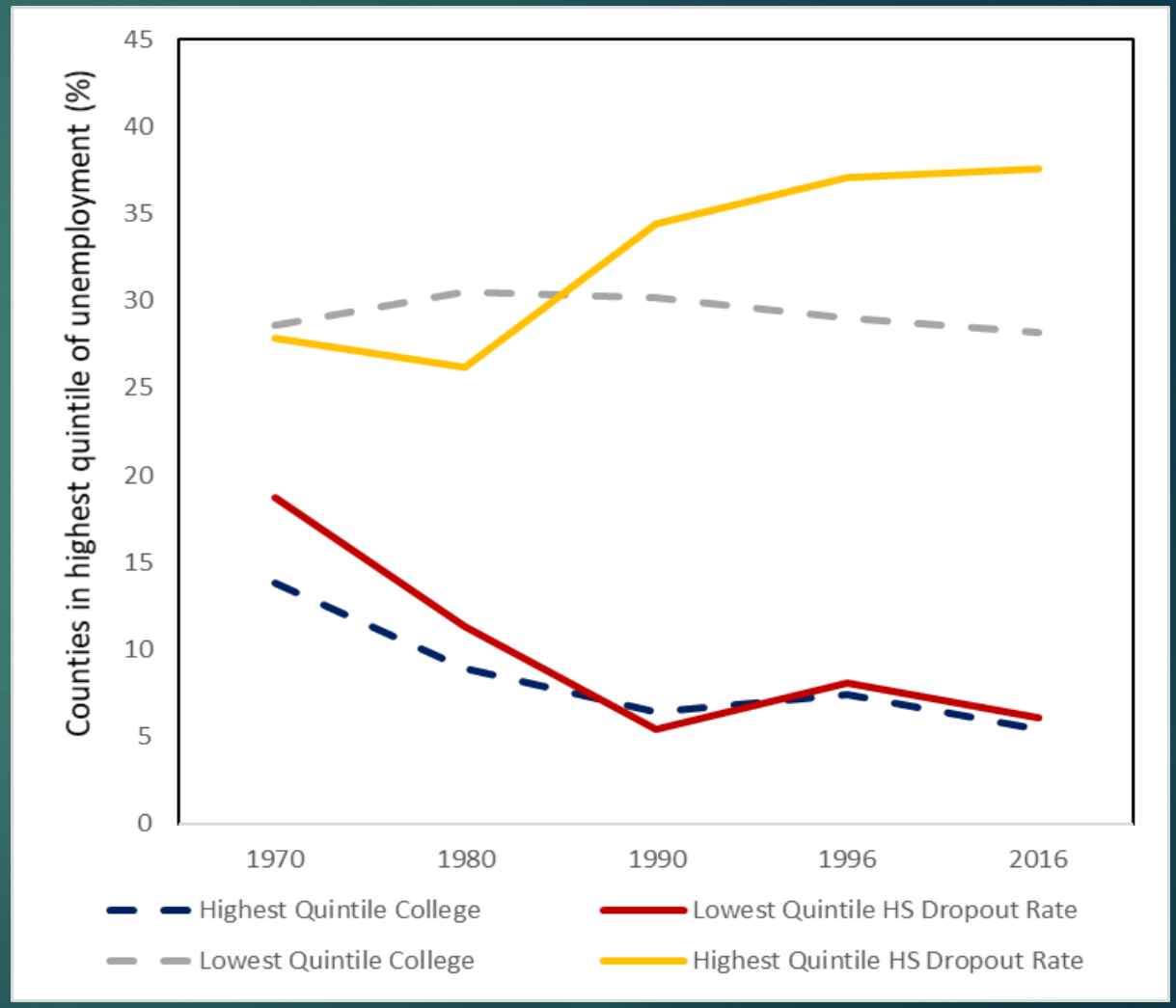


Figure 9: Percentage of U.S. Counties in Top Quintile of Unemployment Rate



Trade shocks and the product cycle

- Part of what is going on is almost certainly skill-biased technological change: technology augmenting labor returns to high skill and perhaps replacing the labor of low skill.
- We argue in Eriksson et al (2019) that another interesting part of the story may be the way trade shocks are hitting the United States
- Product cycle (a la Vernon 1966 or Krugman 1979)
  - Model is international, but can see it in the United States as well
  - High education areas generate innovations and new products
  - Over time, as products are routinized, production migrates to lower cost / lower education areas
  - Manufacturing migrates over time
- This means the location of manufacturing trade shocks may be shifting

Manufacturing less of a high-education activity

Table 4: Correlations with Historical County Employment Shares in Manufacturing Industries

	1910	1960	1990
Patents per capita 1890-1910	0.36***	0.29***	0.09***
Patents per capita 1970-1975	0.39***	0.33***	0.10***
Education% 6-14-year-olds enrolled in school	0.21***		
% pop. age 25+ with HS or college		-0.05	0.03

Source: Reproduced from Eriksson, Russ, Shambaugh, and Xu (2019)

- But, manufacturing composed of both new and old industries and products

China Shock industries migrated to places with less education

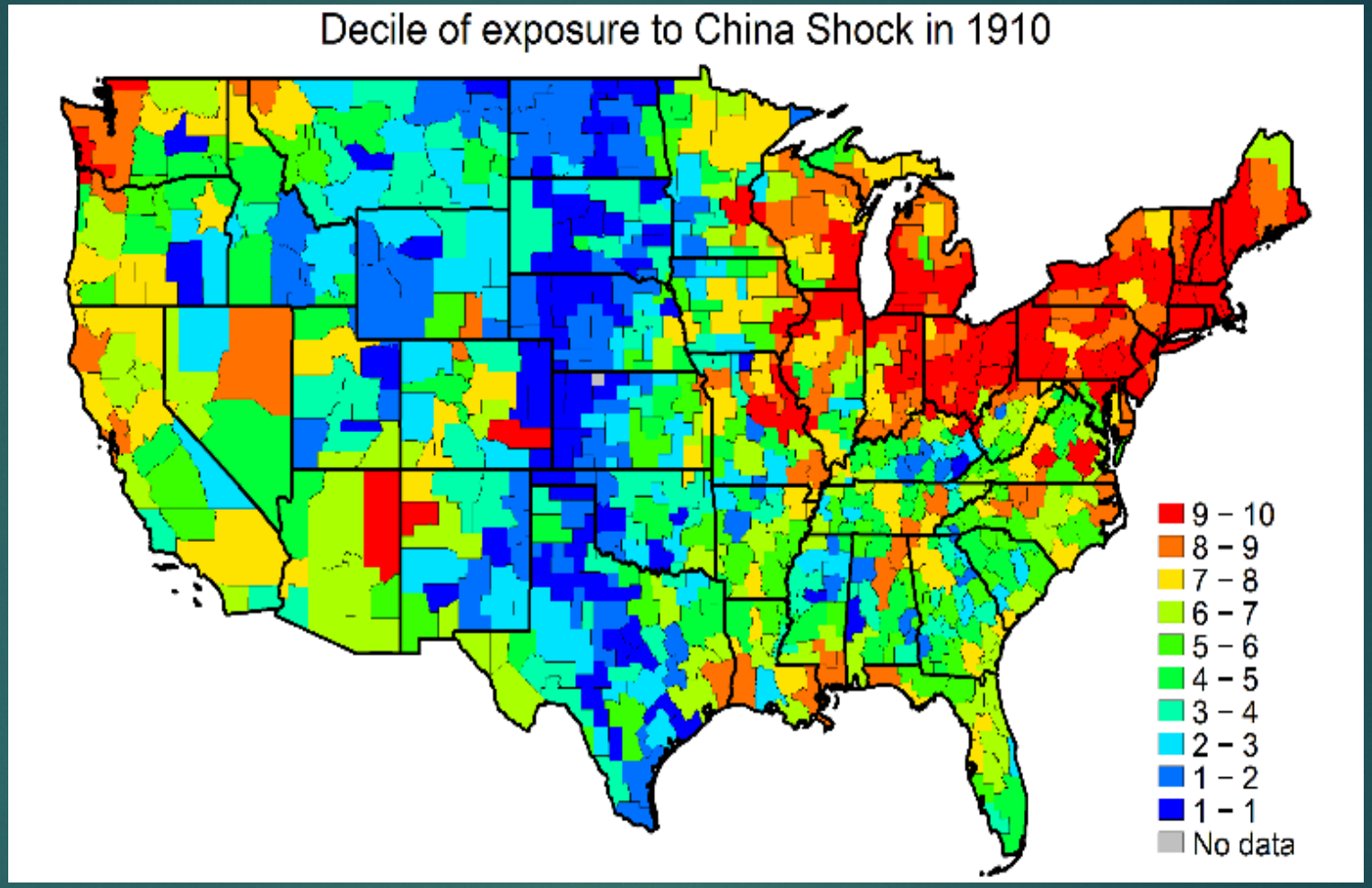
Table 5: Correlations with Historical Employment Shares in 1990-2007 China Shock Industries

	1910	1960	1990
Patents per capita 1890-1910	0.48***	0.34***	0.06
Patents per capita 1970-1975	0.44***	0.32***	0.05
Education% 6-14-year-olds enrolled in school	0.29***	.	.
% pop. age 25+ with HS or college	.	-0.05	-0.19***

Source: Reproduced from Eriksson, Russ, Shambaugh, and Xu (2019)

- Note: ADH have all the right controls, not a comment on their results
- Assumption: if China was exporting products to high income places in 1990, these were late stage products at that point

Moving target: The China Shock



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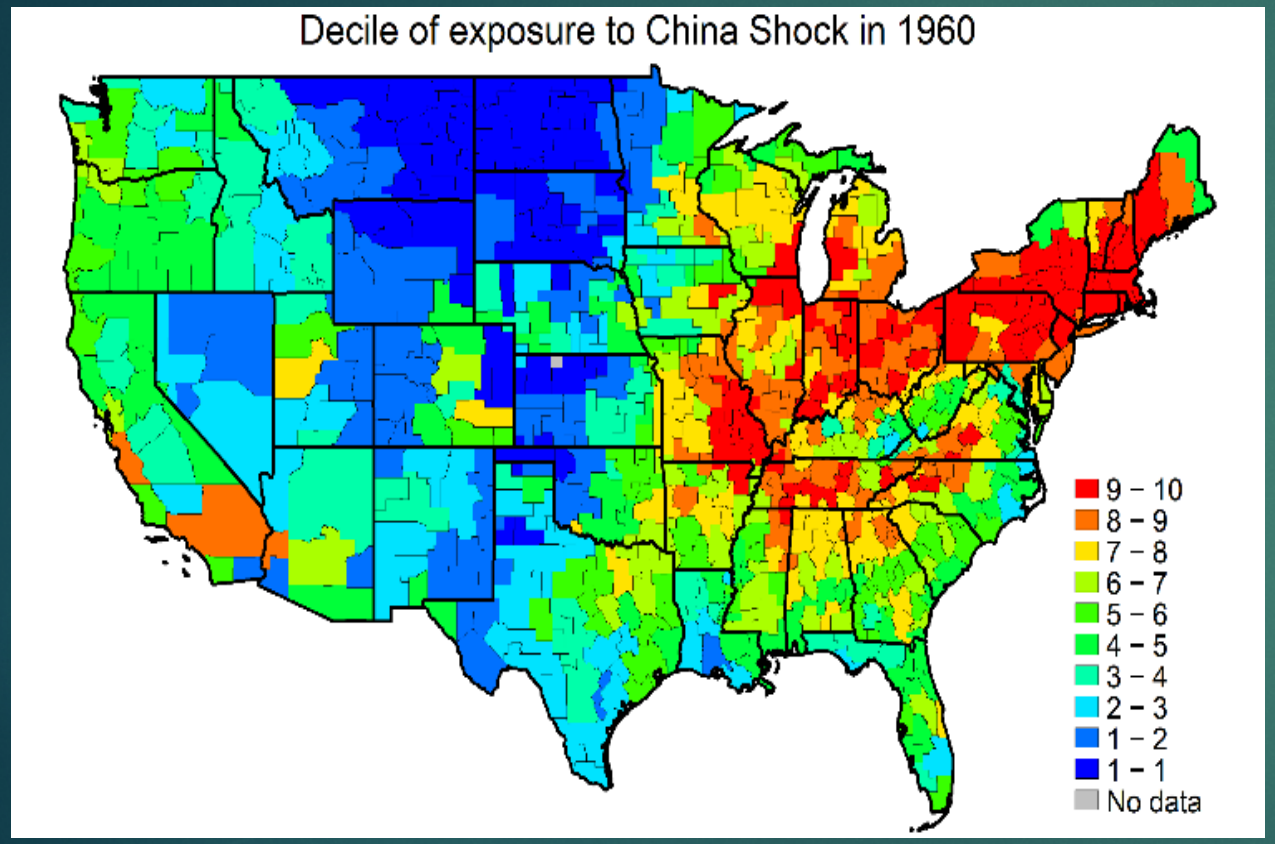

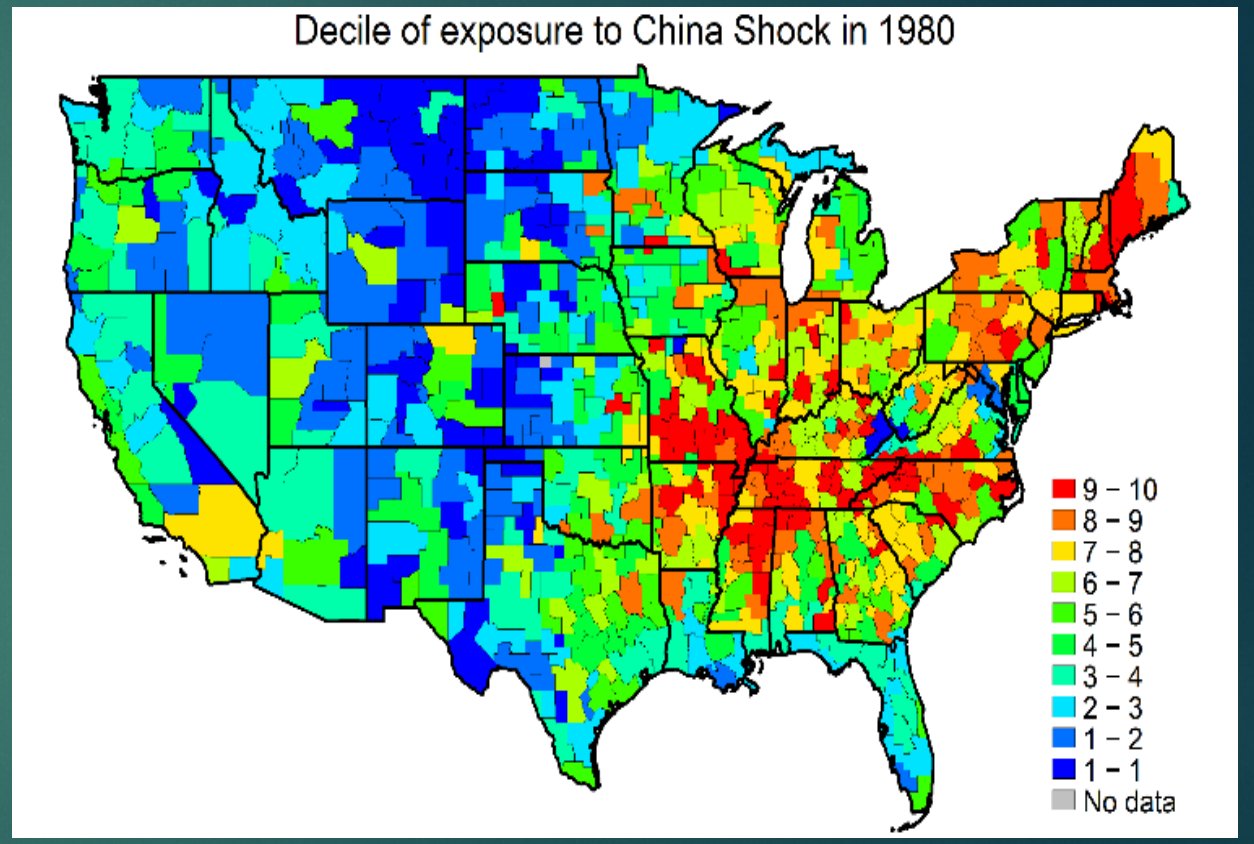

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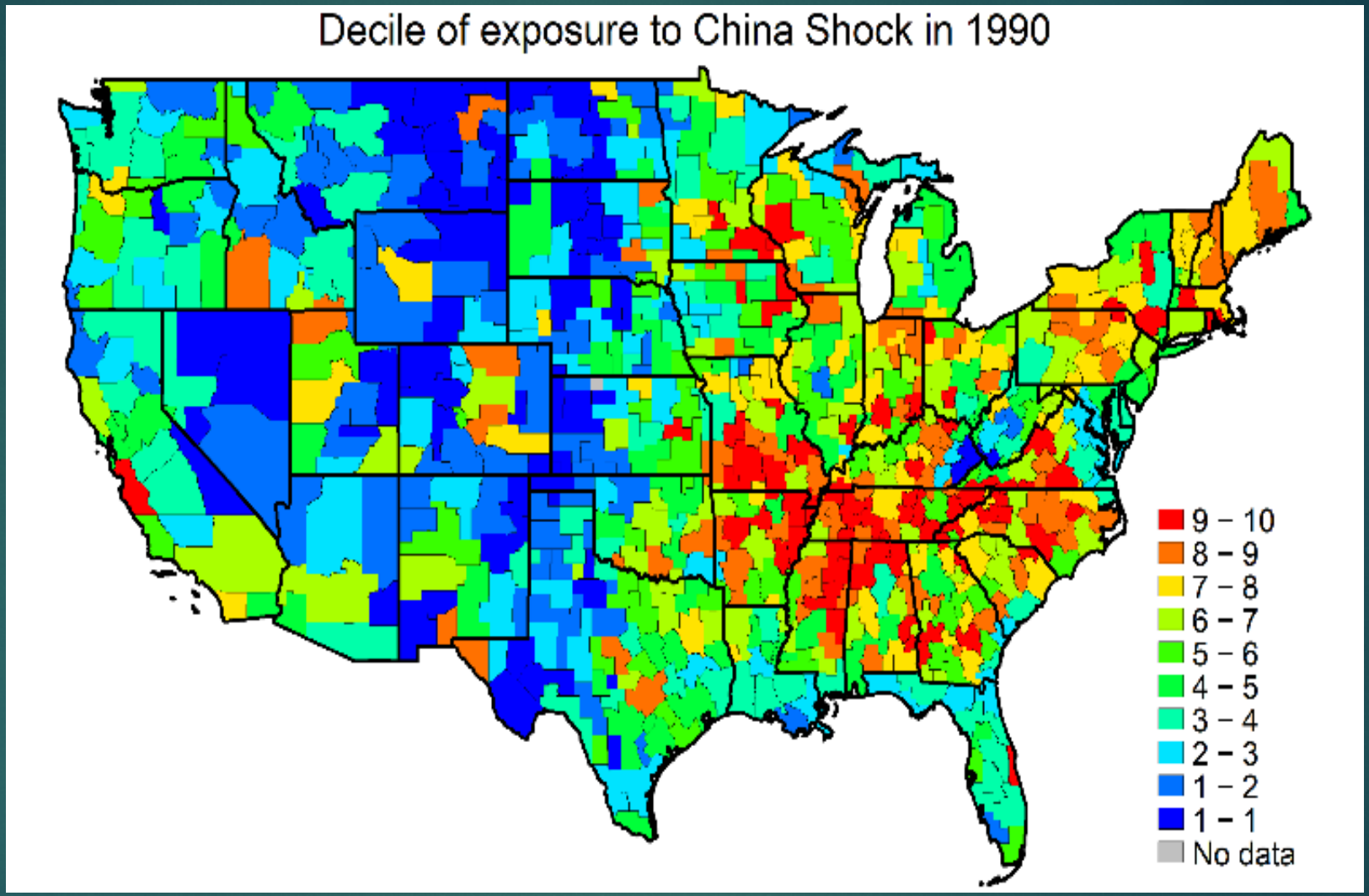

Japan Shock in the 1970s was different

Table 5: Correlations of Historical Employment Shares in Japan Shock Industries

	1910	1960	1990
Patents per capita 1890-1910	0.38***	0.42***	0.15***
Patents per capita 1970-1975	0.38***	0.41***	0.23***
Education% 6-14-year-olds enrolled in school	0.19***	.	.
% pop. age 25+ with HS or college	.	0.00	0.14***

Source: Reproduced from Eriksson, Russ, Shambaugh, and Xu (2019)

- See also Batistich and Bond (2019)

Implications

- One can think of the China shock as short-circuiting the domestic product cycle.
  - Places that produce late stage products getting less of a chance to produce a product as it shifts overseas
- The 1975-85 period saw trade shocks hitting areas that were better prepared to innovate / switch.
  - Hit places that were better off to begin with
  - Hitting locations with higher ed population should make the shock less persistent
  - Note: not exclusively, some places hurt badly
- The China shock, though, is concentrated on areas that were less likely to innovate out of the shock, and were already facing technology shocks relatively biased against them.
- Combined with technology shocks and the institutional shifts around migration, this has all contributed to far more entrenched regional gaps across the country

Policy Thoughts

- **A renaissance of place-based policies?**
  - Worth noting years of work at places like Brookings Metro and Upjohn. It's not a new issue.
  - But, seems to be getting wider attention (politics?)
- **Policy options:**
  - Help with mobility (but not enough)
  - Subsidize labor in lower-participation regions (Austin, Glaeser, Summers 2018; Neumark 2018; Bartik 2019)
  - Improve education in struggling regions
  - Better connectivity (infrastructure, broadband) (Donaldson and Hornbeck 2016, Jaworski, Kitchens, and Nigai 2018)
  - Better connect universities to struggling regions (Baron et al 2018)
  - Immigration reforms (EIG 2019)
- **Many lessons from the past:**
  - Can't just increase supply of higher education
  - Can't just subsidize capital (gains don't usually help struggling people in struggling places)
  - Gaming / defining areas to help can be hard

Conclusion

- Gaps across regions are increasingly persistent, both levels of income and unemployment rates.
- Economic outcomes are also increasingly sorted on educational lines
- In addition to shifting valuation of different skill / education, trade shocks have likely played a role.
  - Most recent trade shocks concentrated on economically weaker areas
  - Short-circuiting the domestic product cycle.
- Income convergence has stopped and labor mobility is not a sufficient adjustment mechanism