



Annual Report Essay

**Altered States: A Perspective on 75
Years of State Income Growth**

Georgia State University Economic Forecast

November 15, 2006

IN THE *ANNUAL REPORT* WE ASK:

- **Why do residents of some states have higher incomes than residents of other states?**
- **Why have these income differences persisted for the past 75 years?**

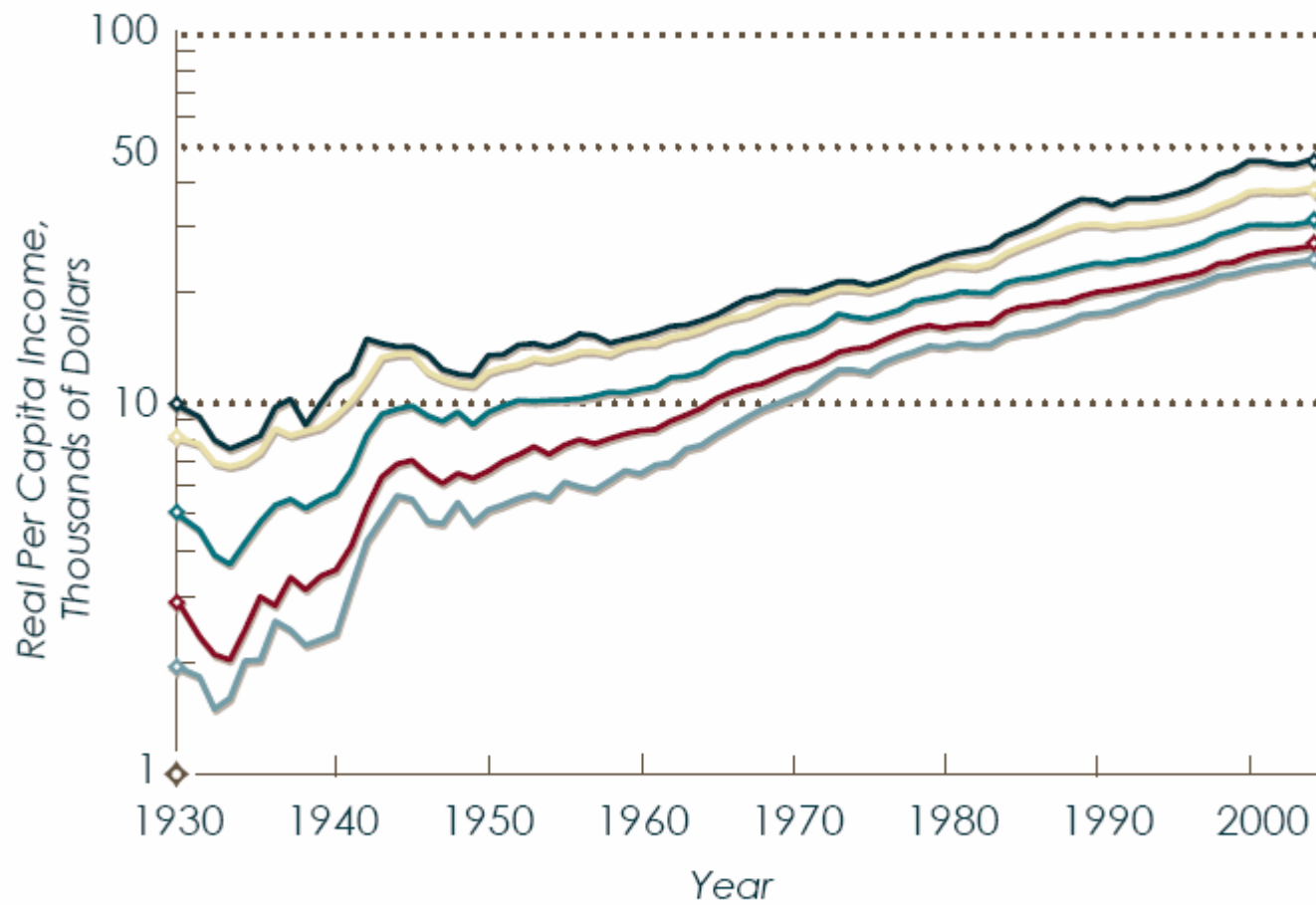
BASED ON A LONG-TERM RESEARCH PROJECT

- An Early Initiative of our Regional Issues Program
- Paul Bauer, Scott Shane (of Case), and myself
- *State Growth Empirics* (Federal Reserve Bank of Cleveland Working Paper 06-06)

**BASIC STATE
INCOME GROWTH FACTS**

Figure 1

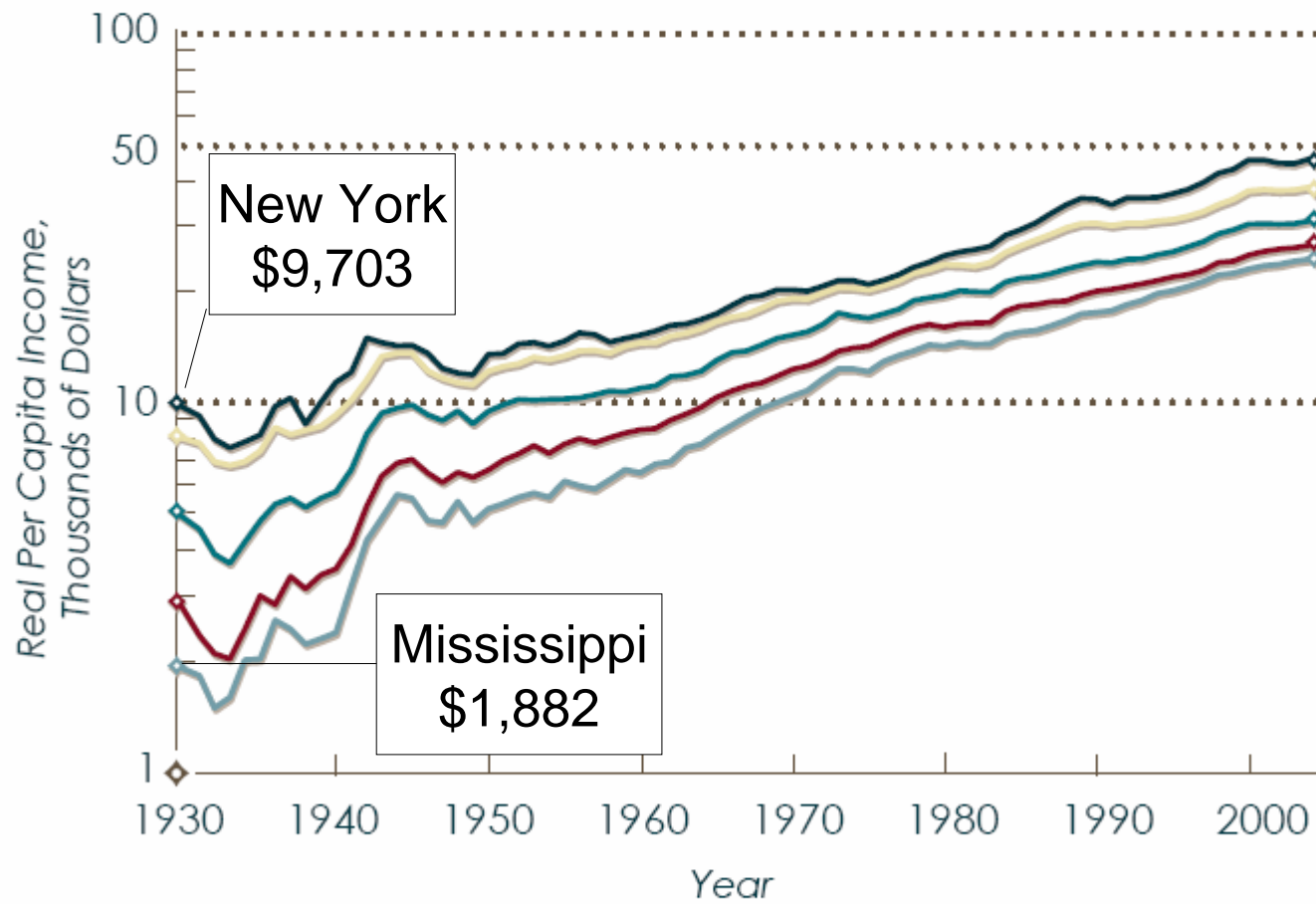
Income Growth



- ◆ Highest state
- ◆ 90th percentile
- ◆ Median state
- ◆ 10th percentile
- ◆ Lowest state

Figure 1

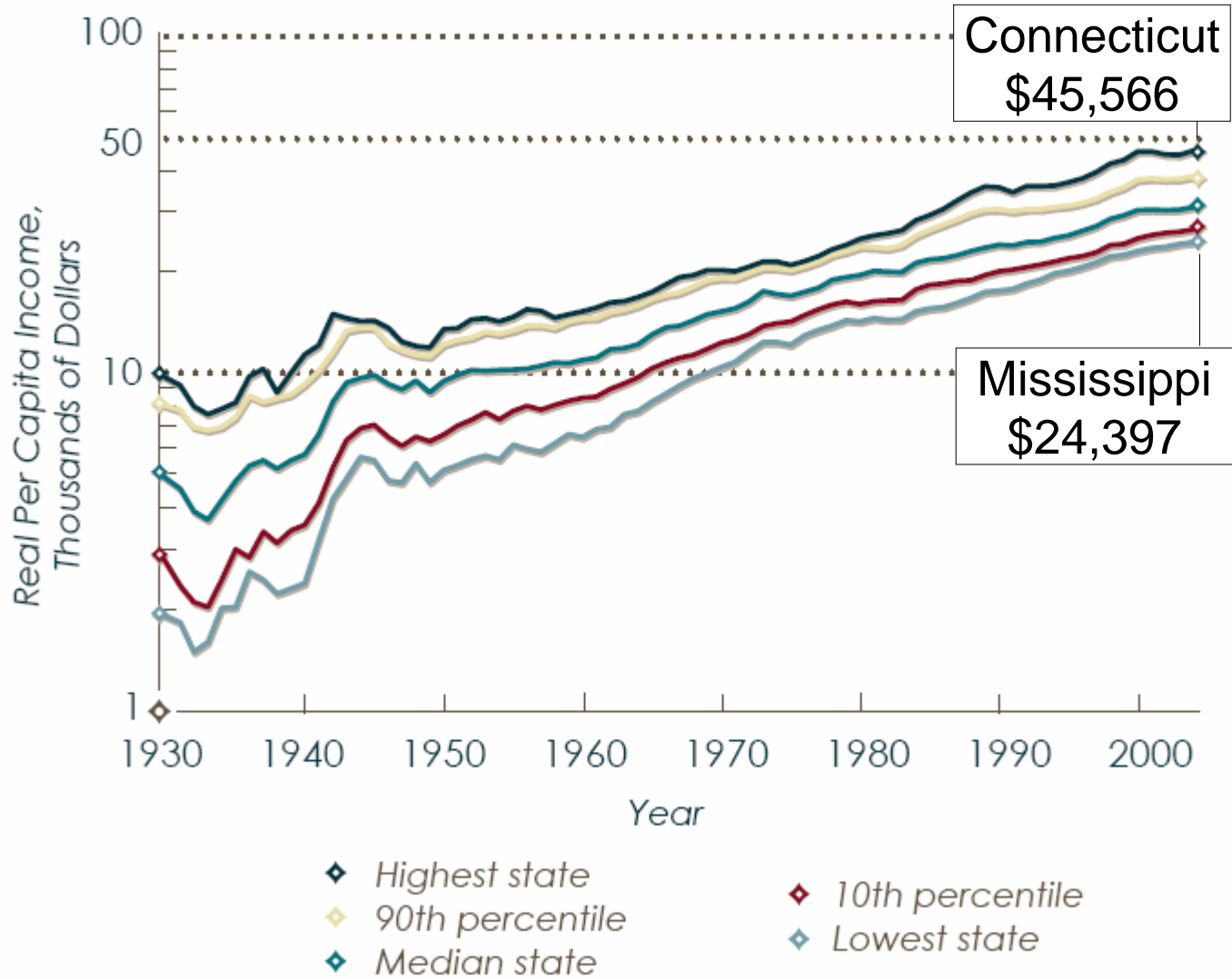
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Figure 1

Income Growth



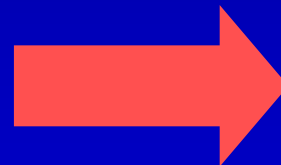
**WHAT SHOULD WE
EXPECT TO SEE?**

BASIC (SOLOW) MODEL

- Simple workhorse macro model that tells how much output to expect based on capital, labor, and technology

BASIC (SOLOW) MODEL

- Simple workhorse macro model that tells how much output to expect based on capital, labor, and technology
- Strong implications for relative growth
 - Shared technology
 - Capital mobility
 - Labor mobility



Income
convergence

Figure 3

State Manufacturing Employment



Figure 2

Income Convergence

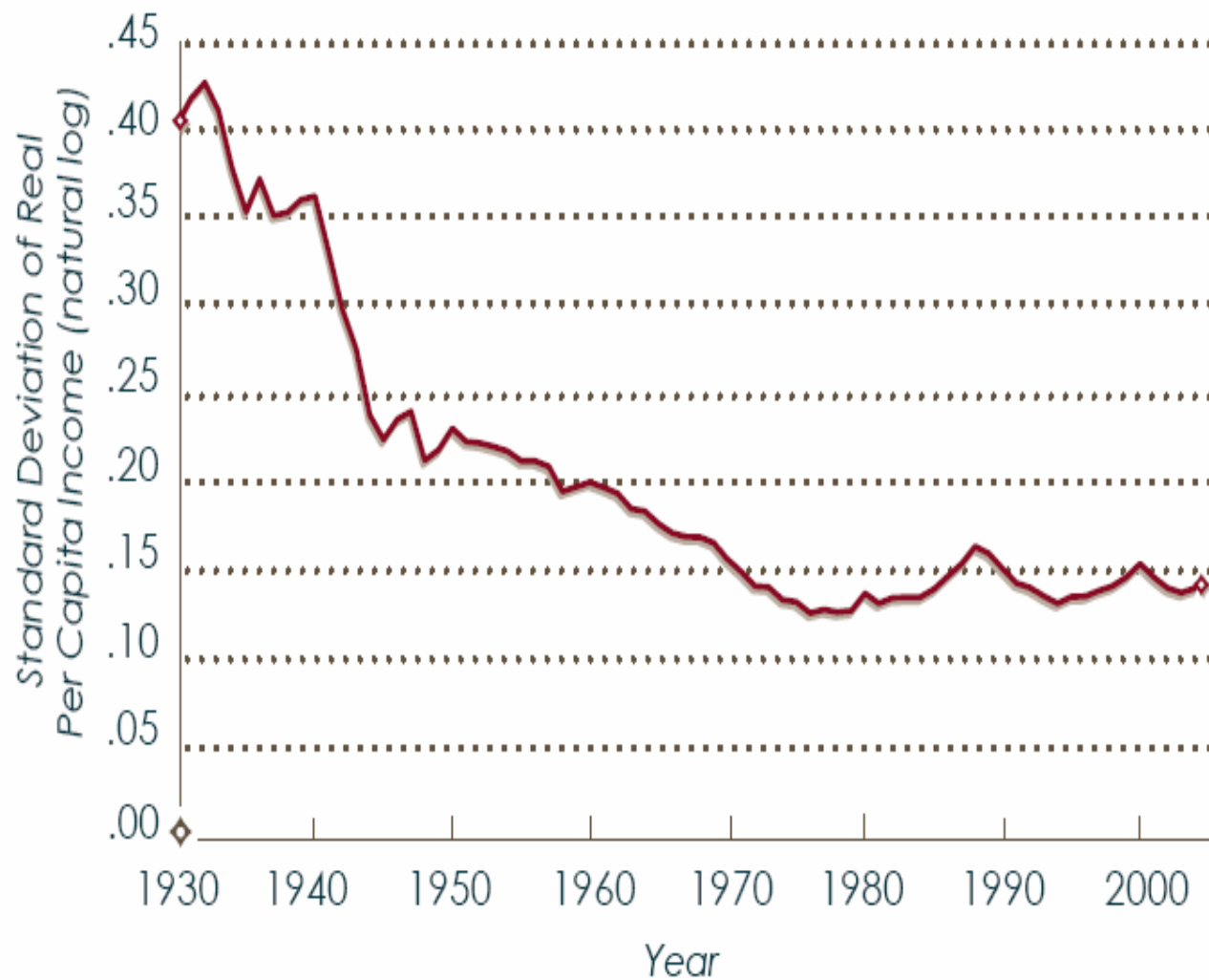


Figure 4

State Relative Incomes in 2004

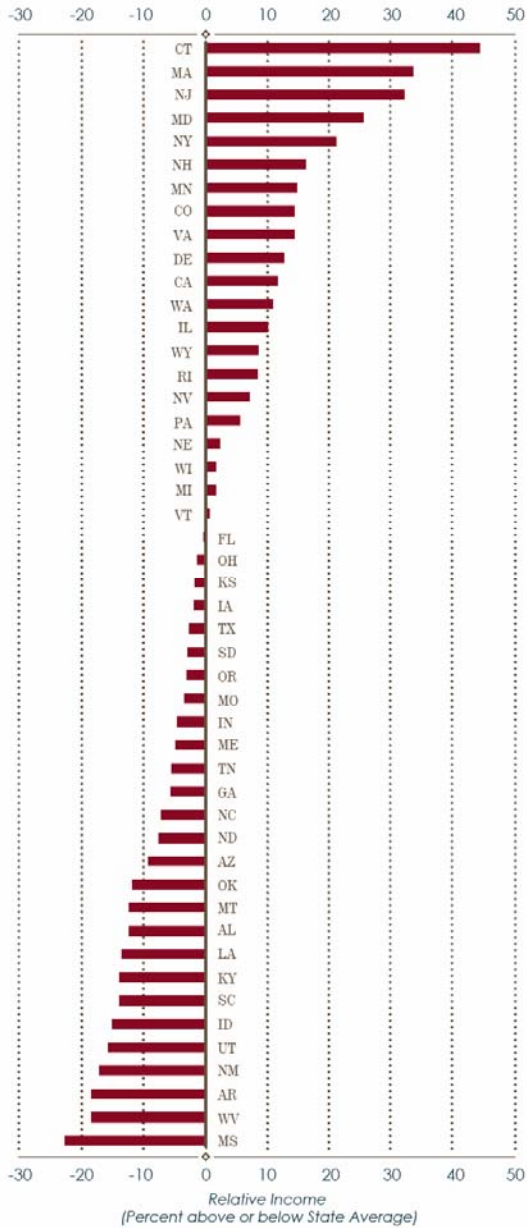
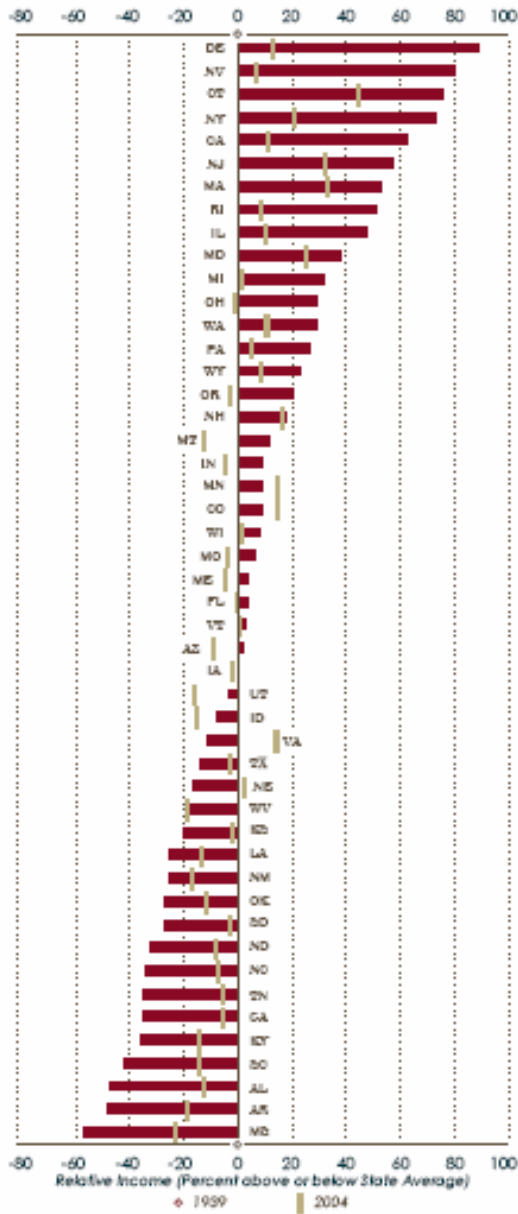


Figure 5

State Relative Incomes in 1939



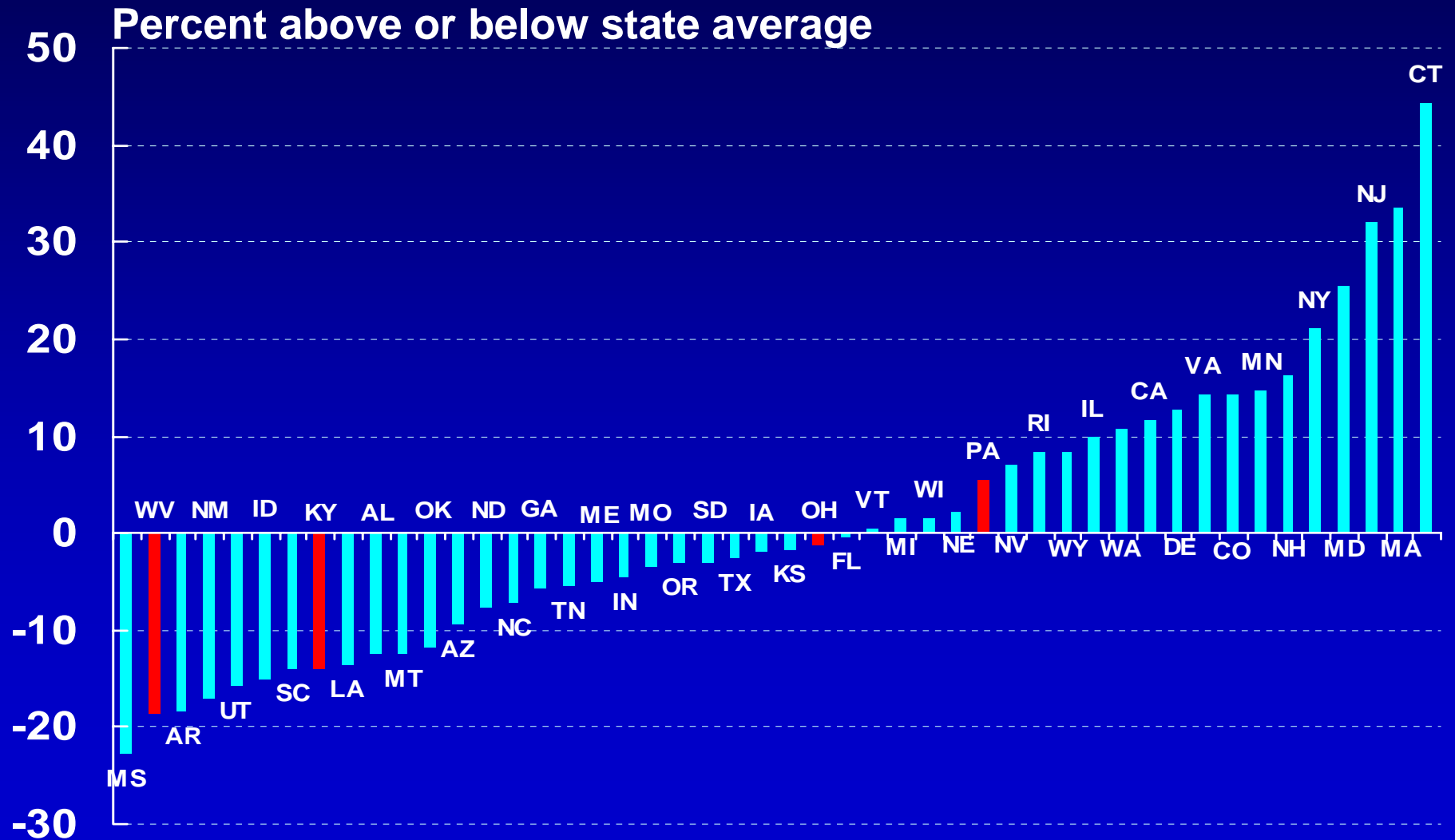
Convergence is evident

You might be able to find patterns in the data, but there are many exceptions to most patterns

EXTENDED MODEL (ENDOGENOUS GROWTH)

- Newer growth theory models focus on the process of acquiring new technology
- Growth could vary more permanently
 - Human capital
 - Taxes and public infrastructure
 - Research and development

STATE RELATIVE INCOME, 2004



LONG-TERM RESEARCH PROJECT

- **State Growth Empirics, by Paul Bauer, Scott Shane and myself**
- **Research looks for underlying patterns in relative income changes**
- **Need data on potentially relevant state differences**
 - **Human capital**
 - Education
 - **Taxes and infrastructure**
 - Per capita state revenues and road expenditures
 - **Innovation**
 - Patents per capita
 - **Industry structure**
 - Share of income by industry

LONG-TERM RESEARCH PROJECT

- **Income is estimated to be function of**
 - **Past income levels**
 - Help to account for unobserved elements like the existing capital stock
 - **Other factors**
 - Education
 - Innovation
 - Industry structure
 - Climate was marginal
 - Taxes, road spending, banking assets, and business dynamics are not associated with income growth

Figure 4

State Relative Incomes in 2004

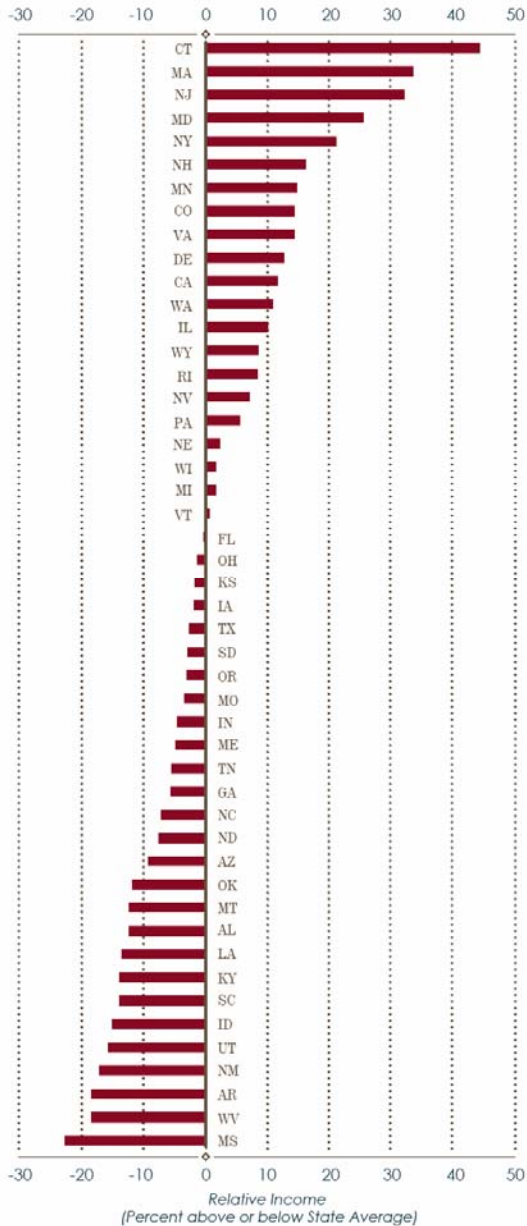
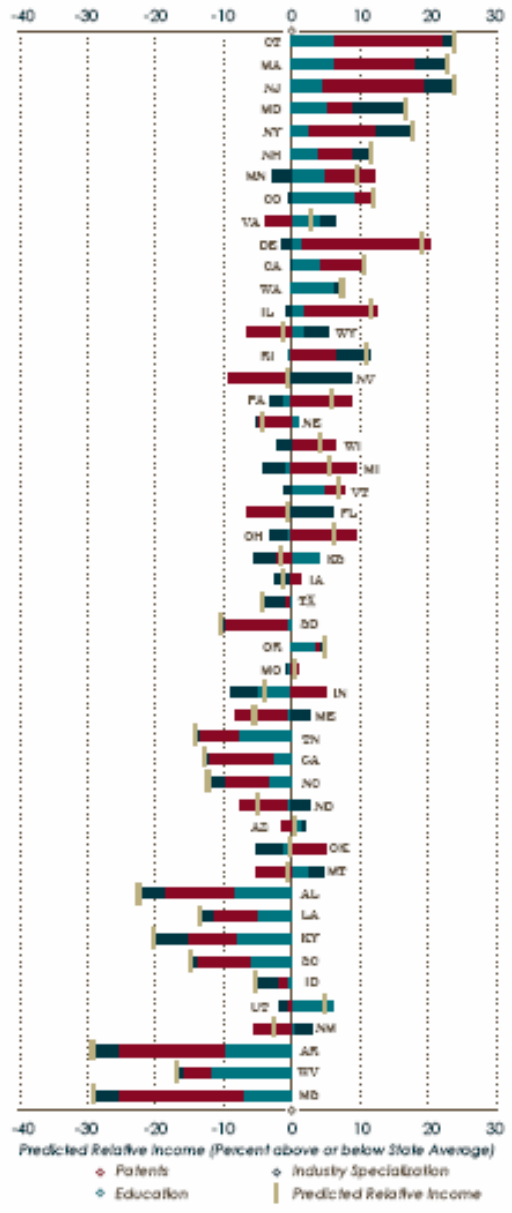


Figure 6

Predicted Impact of Key Factors on 2004 State Incomes

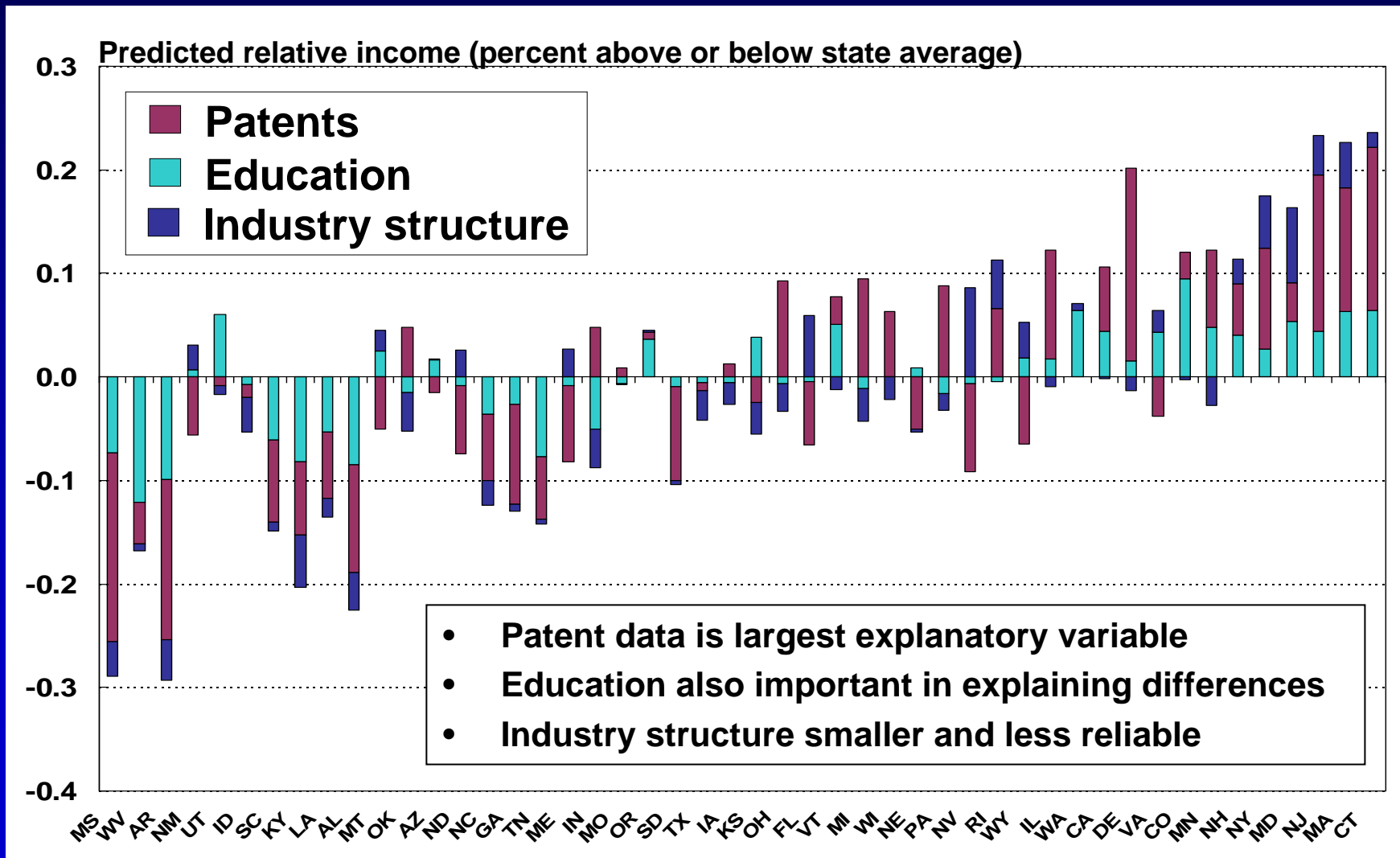


Not exact, but the pattern is reproduced applying only state histories of these variables

Ordering largely preserved

Scale of total three predictions large (~70% of overall variation)

PREDICTED IMPACT OF KEY FIGURES ON 2004 STATE INCOMES



LESSONS FOR THE STATES

- We do not study specific policies that might be implemented and thus have no specific recommendations
- However, it is evident that over a span of 75 years the most reliable indicators of relative income levels and growth are knowledge variables
- Economic development efforts should not ignore either education or innovation



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www.clevelandfed.org/annual05/PDF/Essay2005.pdf