

# **Impact of Oil Booms on Human Capital Investment in Texas**

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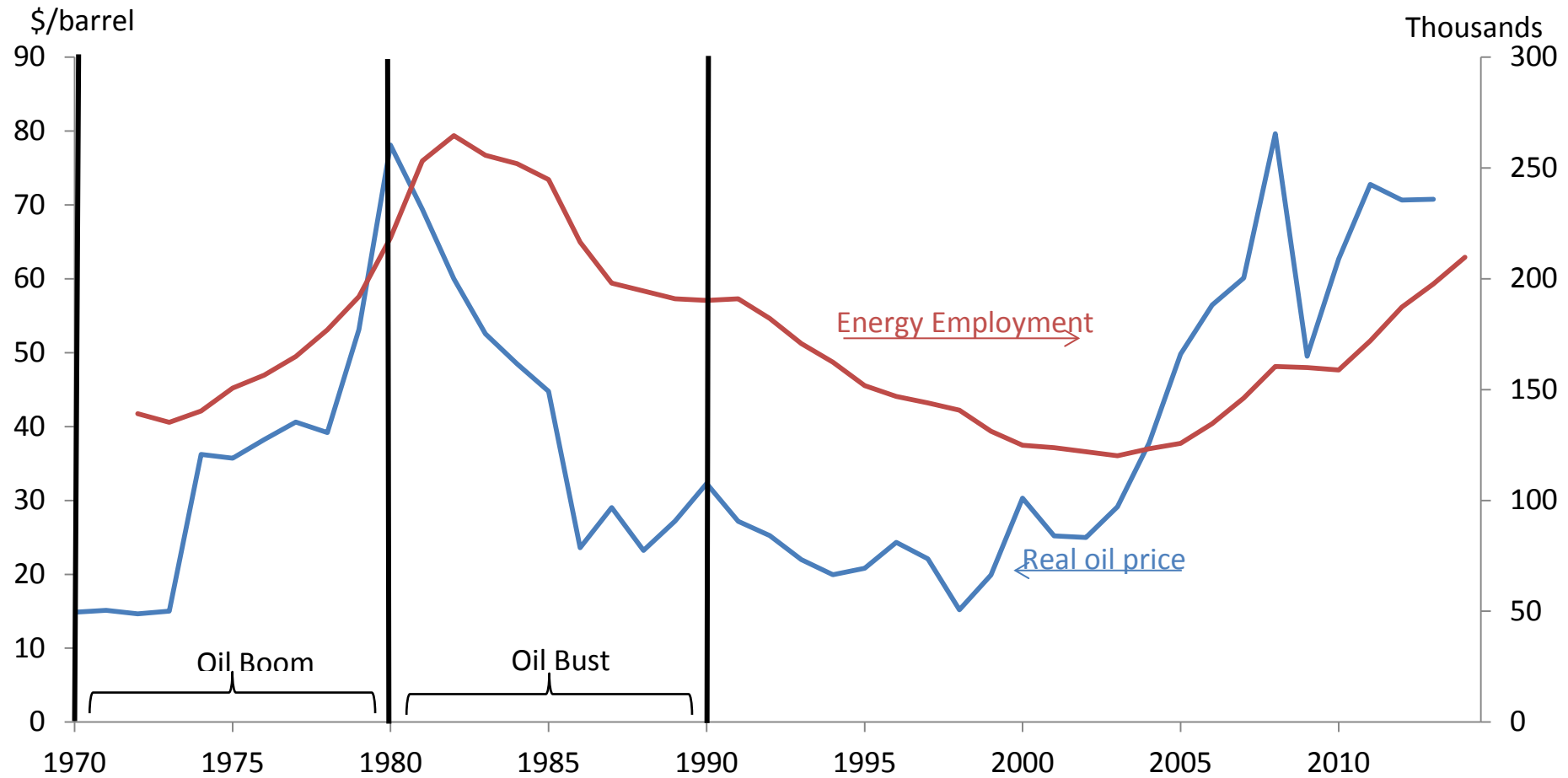
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# Motivation

- Energy sector crucial for oil-rich states such as Texas
- Positive oil price shocks tend to benefit Texas
- Long commodity price booms can deter human capital investment
- Important implications for net economic impact of prolonged resource booms
- Previous research focused on macroeconomic effects of oil price shocks

# Oil Price Booms and Busts



Source: Federal Reserve Bank of St. Louis FRED.

# Potential Labor Market Effects of Prolonged Oil Booms

- Effect on wages
  - Decline in aggregate wages
  - Increase in oil-rich regions
- Effect on skill premium
  - May increase relative demand for unskilled labor
  - Depends on capital/energy complementarity
- Impact of boom on human capital investment
  - Raises opportunity cost of additional schooling
  - Lowers college wage premium
  - May deter human capital investment

# This Paper

- Did the oil boom adversely affect human capital investment in Texas and other oil-rich regions?
- Use Census and American Community Survey (ACS) data from 1970 to 2010
- Investigate impact of oil boom and bust on
  - Real wages
  - Skill premium
  - Human capital investment
- Key findings:
  - Oil boom drove up real wages in Texas
  - Small negative impact on college enrollment

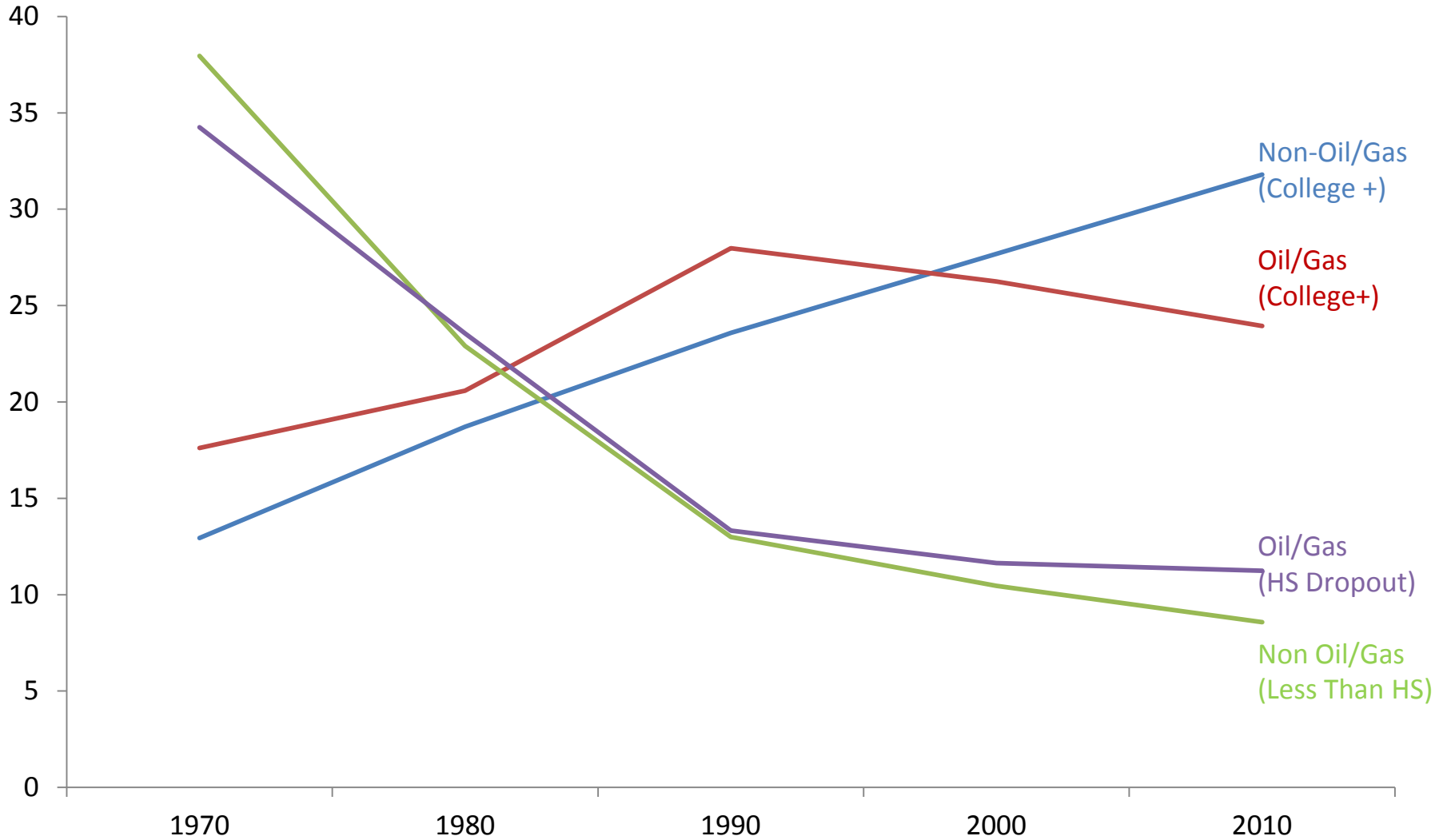
# Previous Literature

- Coal boom and bust
  - Black, McKinnish, & Sanders (2005)
- Resource booms and human capital
  - Gylfason, Herbertsson, & Zoega (1999)
  - Gylfason (2001)
- Oil price shocks and wages/skill premium
  - Negative effect on wages
  - Keane & Prasad (1996): wider skill premium
  - Polgreen & Silos (2009): narrower skill premium
- Oil boom and human capital investment
  - Emery, Ferrer, & Green (2012): Canada

# Data

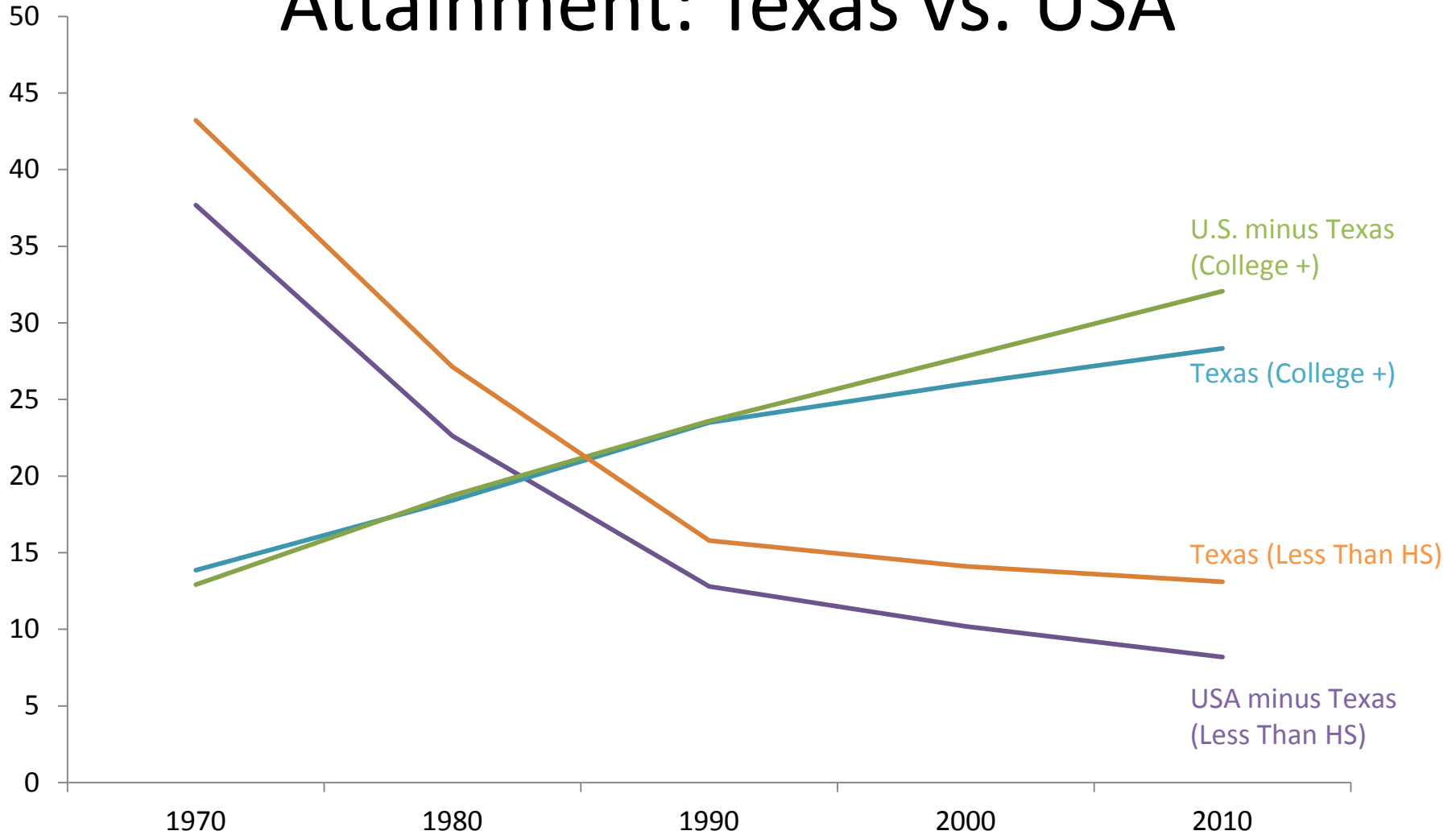
- 1% Census IPUMS for the years 1970, 1980, 1990, 2000, and ACS for 2010
- Sample restricted to employed workers with positive wages and hours.
- $\text{Wage} = \text{annual wage and salary income} / \text{annual hours worked}$
- $\text{Annual hours worked} = \text{weeks worked last year} \times \text{hours worked per week}$
- Oil Area defined as county groups with  $>2\%$  employment in oil and gas sector,
  - Non-oil area  $<0.5\%$ .

# Worker Shares by Educational Attainment: Oil & Gas Vs. Non Oil/Gas

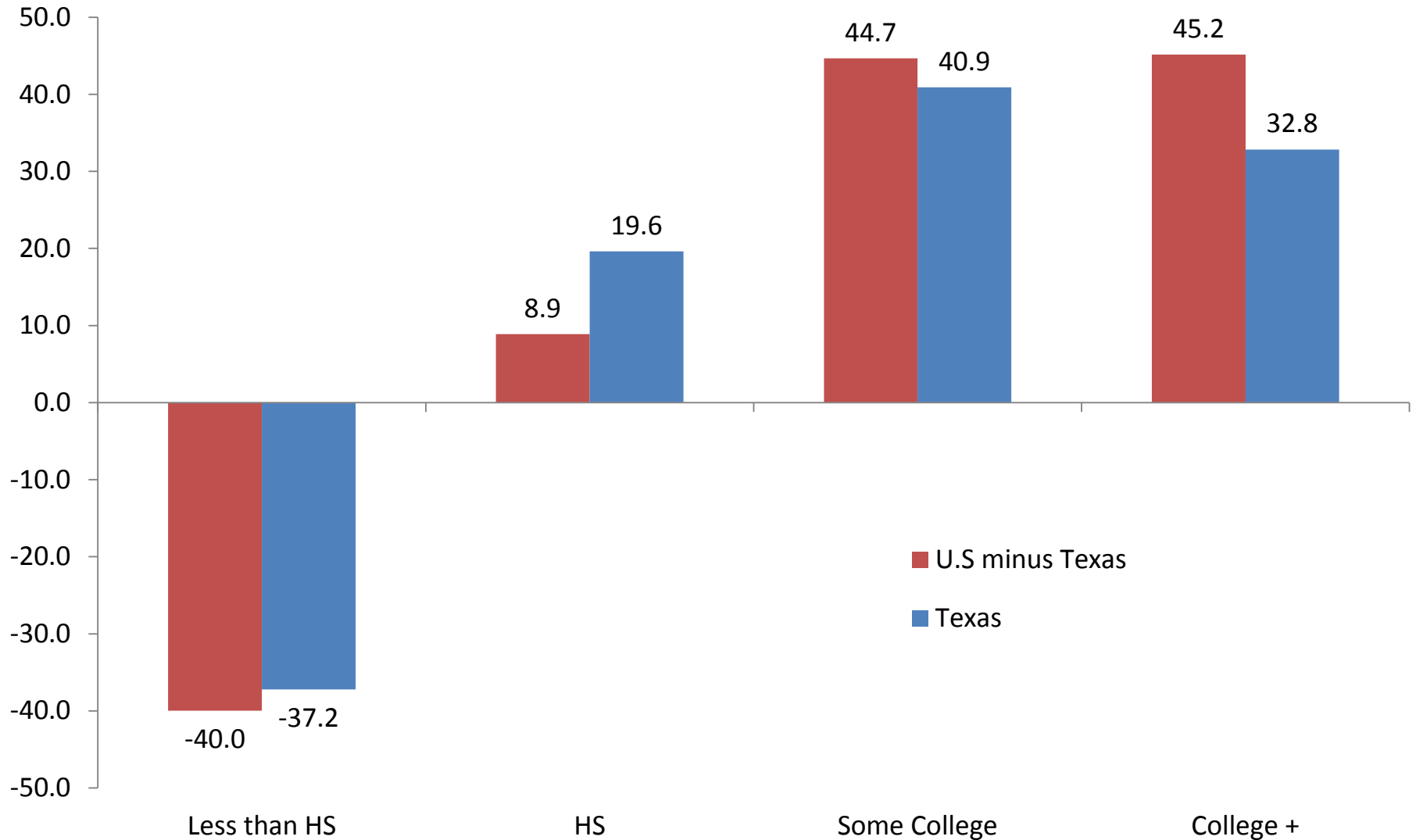




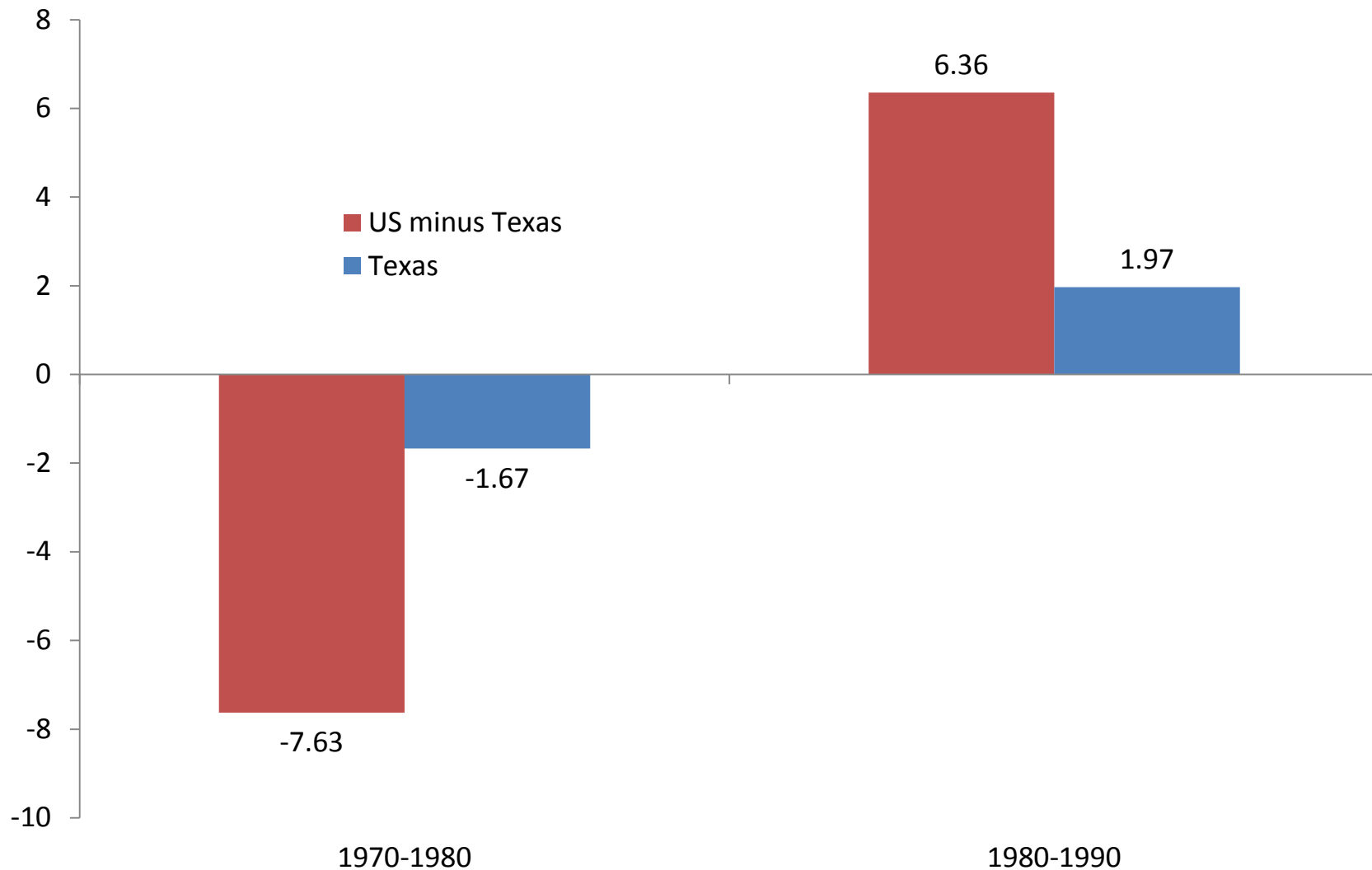
# Worker Shares by Educational Attainment: Texas vs. USA



# Percent Change in Worker Share by Educational Attainment (1970-1980)

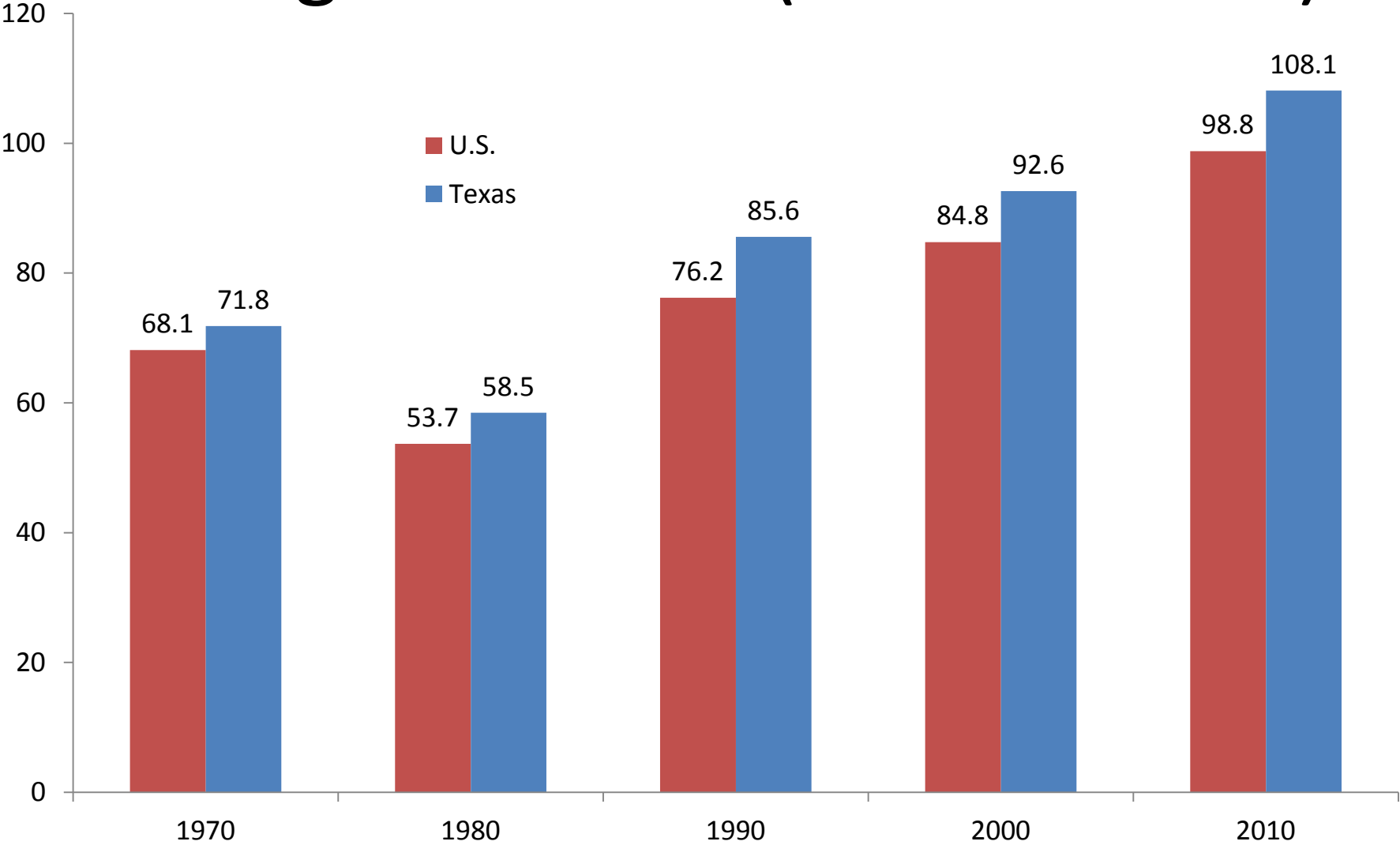


# Percent Change in Mean Real Hourly Wages (Texas vs. Rest of U.S.)



Source: 1% Census IPUMS obtained from Minnesota Population Center; Author's calculations.

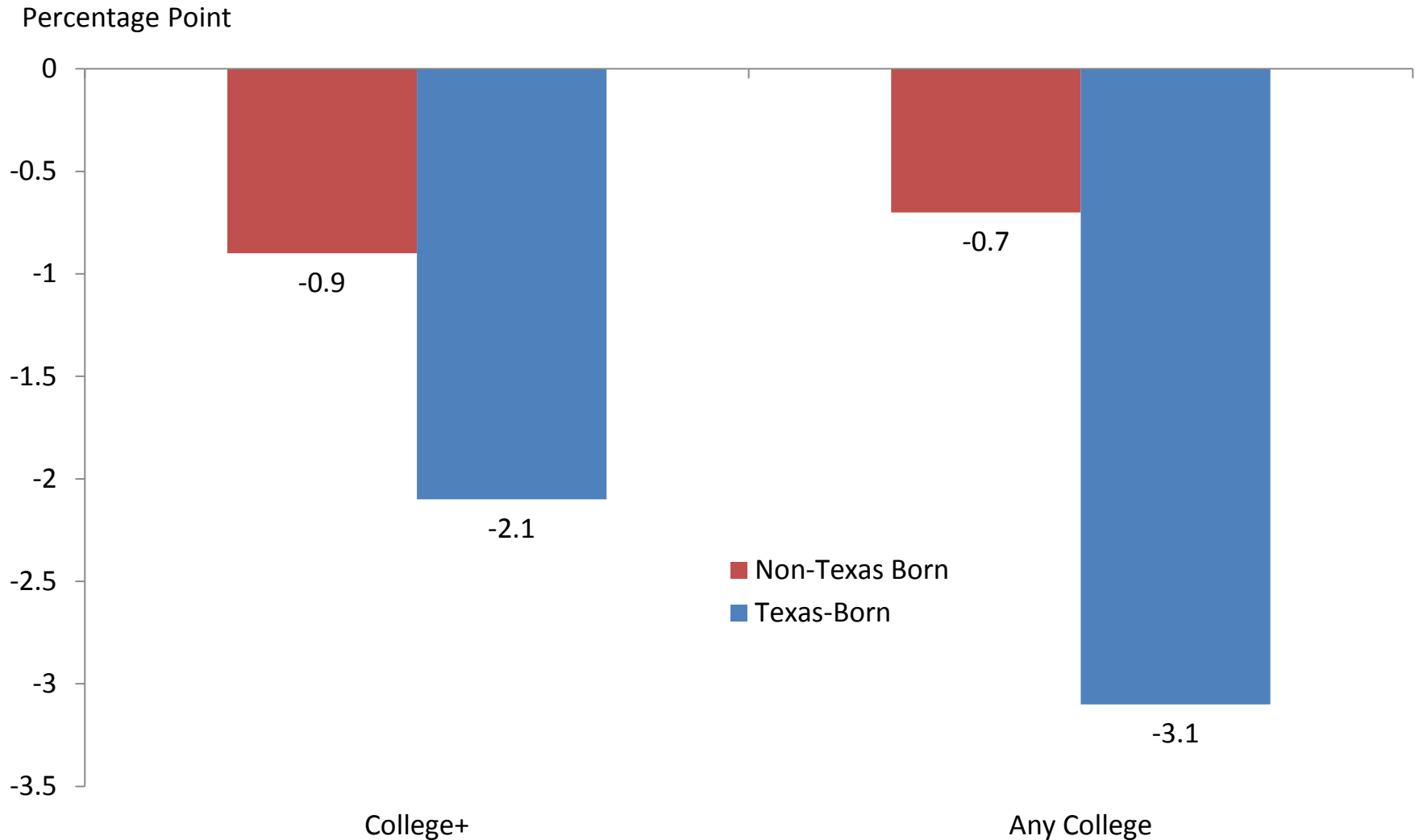
# College Premium (Texas vs. USA)



# Synthetic Cohort Approach

- Treatment group affected by oil boom
  - Texas-born who turned 17 when oil prices peaking (1978 to 1981)
- Control group unaffected by the oil boom
  - Texas-born who turned 17 during pre-boom (1970 to 1973)
- Compare education attainment of two groups in 2010
- Net out any differences between the two cohorts born outside Texas
- Remaining difference interpreted as oil boom's impact

# Change in Share with College Education in 2010 (Boom Cohort *minus* Pre-Boom Cohort)

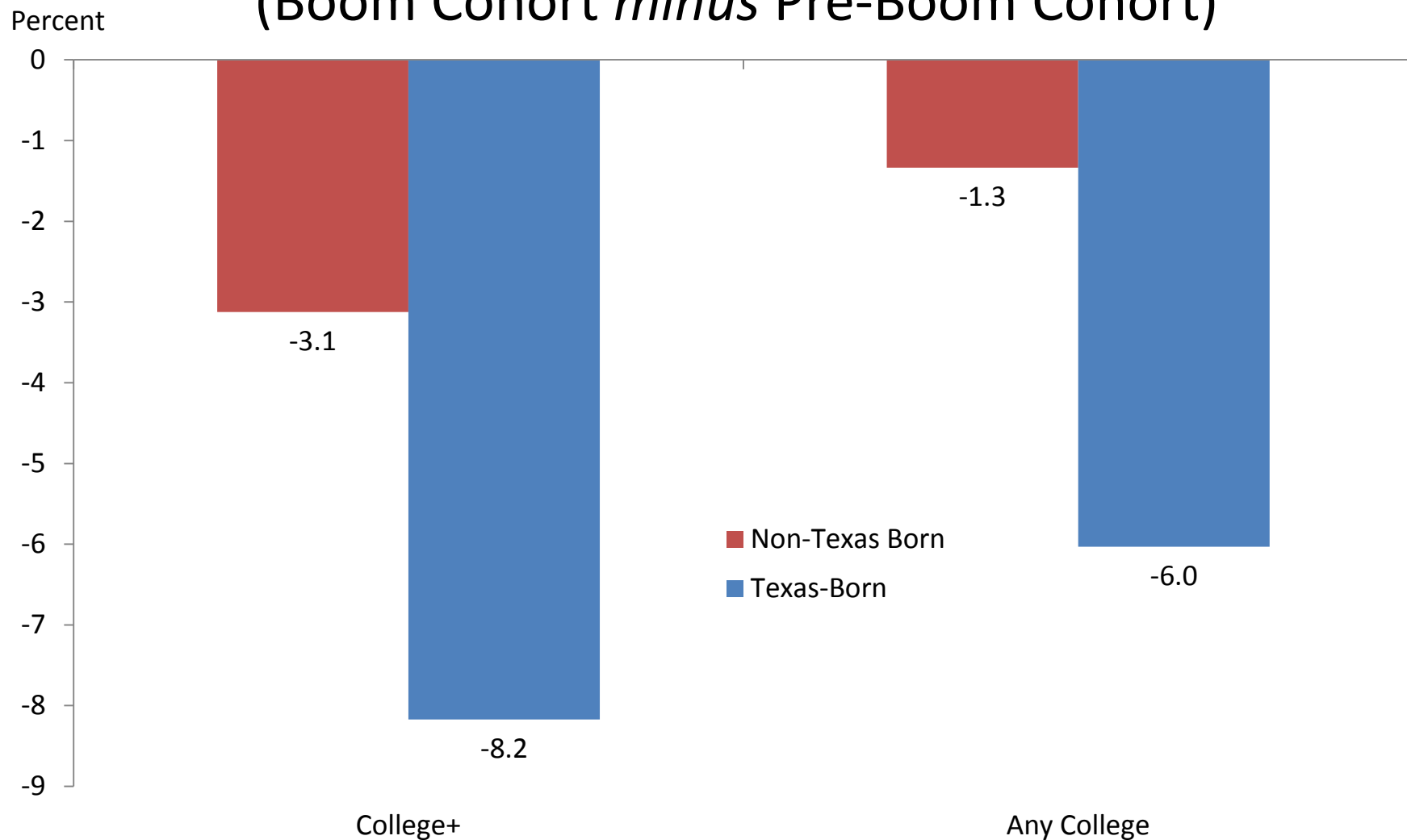


Source: 2010 ACS obtained from Minnesota Population Center; Author's calculations.

# Conclusion

- Census IPUMS data from 1970 to 2010
- Primary findings
  - Oil boom associated with slower growth in the relative demand for skills
  - Significant impact on real wage growth
  - Insignificant impact on skill premium
  - Texas-born boom cohort less likely to have college education
    - 1 percentage point less likely to have a college degree
    - 2 percentage less likely to have any college
- Case for increased subsidies to higher education in oil-rich regions

# Percent Change in Share with College Education in 2010 (Boom Cohort *minus* Pre-Boom Cohort)



Source: 2010 ACS obtained from Minnesota Population Center; Author's calculations.