The Emergence of a Uniform Business Cycle in the United States: Evidence from New Claims-Based Unemployment Data

Andrew Fieldhouse
Mays Business School
Texas A&M University

David Munro
Middlebury College

Christoffer Koch
Empirical Research Partners

Sean Howard

BPEA Spring 2024 Conference

March 29, 2024

Motivation: Limited Data Availability

Macroeconomists are increasingly leveraging panel datasets and regional heterogeneity to identify economic relationships

- Nakamura and Steinsson (2014); Chodorow-Reich (2019); Hazell, Herreño, Nakamura, and Steinsson (2022); Glandon et al. (2023)

Motivation: Limited Data Availability

Macroeconomists are increasingly leveraging panel datasets and regional heterogeneity to identify economic relationships

- Nakamura and Steinsson (2014); Chodorow-Reich (2019); Hazell, Herreño, Nakamura, and Steinsson (2022); Glandon et al. (2023)

Regrettably, official monthly unemployment data for U.S. states only go back to 1976, a major impediment to state-level work

Motivation: Limited Data Availability

Macroeconomists are increasingly leveraging panel datasets and regional heterogeneity to identify economic relationships

- Nakamura and Steinsson (2014); Chodorow-Reich (2019); Hazell, Herreño, Nakamura, and Steinsson (2022); Glandon et al. (2023)

Regrettably, official monthly unemployment data for U.S. states only go back to 1976, a major impediment to state-level work

Data limitations → lots of related work starts in the late 1970s

- Blanchard and Katz (1992); Owyang, Piger, and Wall (2005); Crone and Clayton-Matthews (2005); Dao, Furceri, and Loungani (2017); Tasci and Zevanove (2019)...

Contribution #1: Historical Data Availability

We digitize monthly state unemployment claims back to 1947 from a series of government publictaions

Contribution #1: Historical Data Availability

We digitize monthly state unemployment claims back to 1947 from a series of government publictaions

Using this data, we construct claims-based unemployment rates, which we show are highly correlated with official measures

- Monthly data: Jan 1947–Dec 2023, for 50 states, DC, US
- Nearly three additional decades of monthly state-level data, spanning the first six post-war recessions (1948–49 to 1973–75)

Contribution #1: Historical Data Availability

We digitize monthly state unemployment claims back to 1947 from a series of government publictaions

Using this data, we construct claims-based unemployment rates, which we show are highly correlated with official measures

- Monthly data: Jan 1947–Dec 2023, for 50 states, DC, US
- Nearly three additional decades of monthly state-level data, spanning the first six post-war recessions (1948–49 to 1973–75)

Our preliminary dataset is publicly available on BPEA's website

- Claims-based unemployment rates
- Digitized unemployment insurance claims

Contribution #2: Emergence of Uniform Business Cycle

We study the evolution of state unemployment fluctuations around U.S. recessions, labor market adjustments to shocks

Contribution #2: Emergence of Uniform Business Cycle

We study the evolution of state unemployment fluctuations around U.S. recessions, labor market adjustments to shocks

We document the following:

1. a trend decrease in the dispersion of relative unemployment rates and relative employment growth across states

Contribution #2: Emergence of Uniform Business Cycle

We study the evolution of state unemployment fluctuations around U.S. recessions, labor market adjustments to shocks

We document the following:

1. a trend decrease in the dispersion of relative unemployment rates and relative employment growth across states
2. a convergence across states in both the speed and degree to which unemployment recovers after recessions

Contribution #2: Emergence of Uniform Business Cycle

We study the evolution of state unemployment fluctuations around U.S. recessions, labor market adjustments to shocks

We document the following:

1. a trend decrease in the dispersion of relative unemployment rates and relative employment growth across states
2. a convergence across states in both the speed and degree to which unemployment recovers after recessions
3. a stark attenuation of relative population responses to state-specific demand shocks, whereas relative employment and unemployment responses are more stable

Contribution #2: Emergence of Uniform Business Cycle

We study the evolution of state unemployment fluctuations around U.S. recessions, labor market adjustments to shocks

We document the following:

1. a trend decrease in the dispersion of relative unemployment rates and relative employment growth across states
2. a convergence across states in both the speed and degree to which unemployment recovers after recessions
3. a stark attenuation of relative population responses to state-specific demand shocks, whereas relative employment and unemployment responses are more stable

Evidence points to the emergence of a U.S. business cycle experienced more uniformly across states since the late 1950s

Claims-based Unemployment Rates

Claims-Based Unemployment Rates

We first digitize monthly state-level data on Initial Claims (IC) and Continued Claims (CC) from various government reports

- We digitize ∼36,000 monthly observations back to 1946, merge with public unemployment claims data available for 1971+

Claims-Based Unemployment Rates

We first digitize monthly state-level data on Initial Claims (IC) and Continued Claims (CC) from various government reports

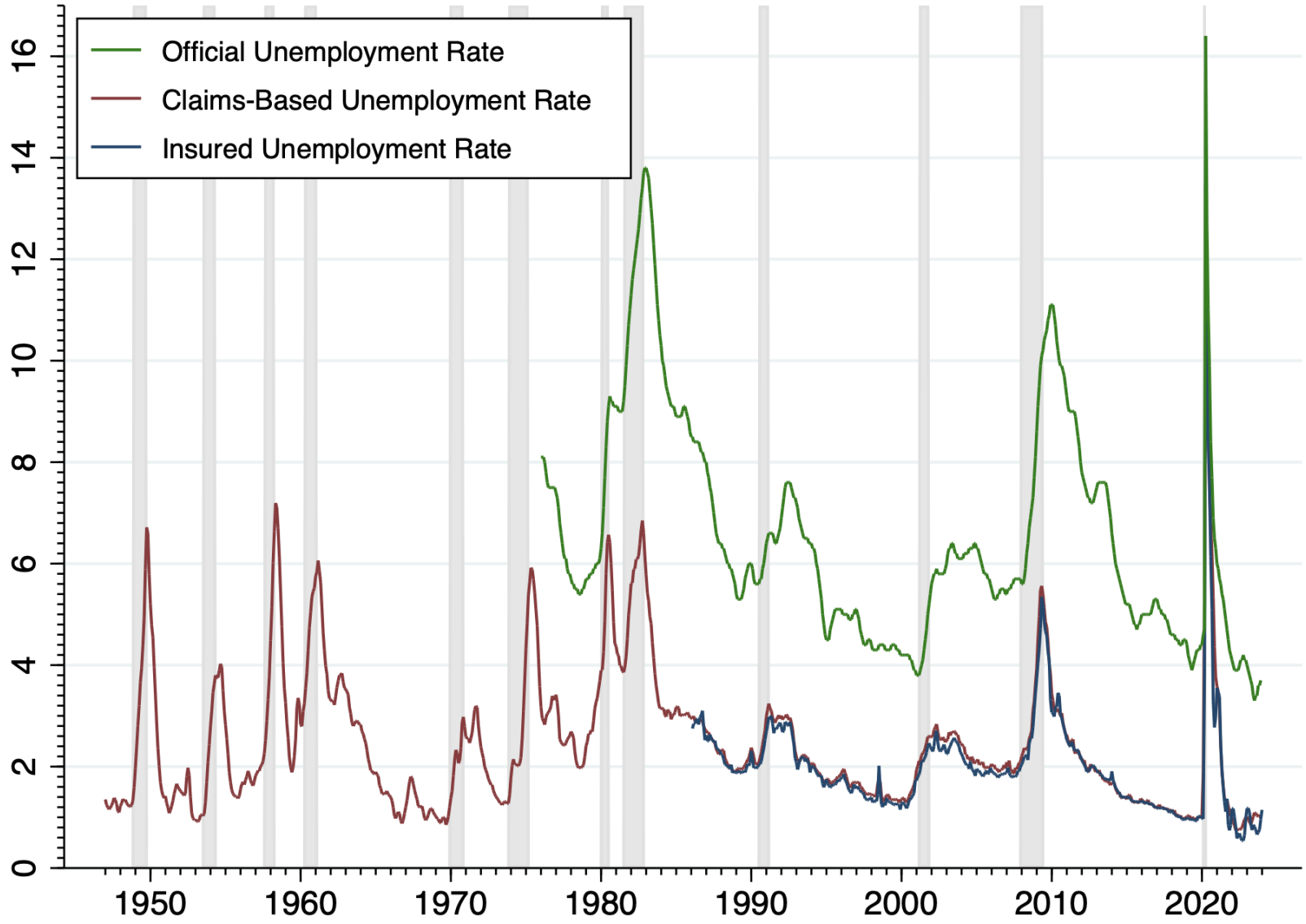
- We digitize ~36,000 monthly observations back to 1946, merge with public unemployment claims data available for 1971+

Our claims-based unemployment rate for state i in month t is computed as

$$UR_{i,t}^{Claims} = \frac{IC_{i,t} + CC_{i,t}}{NP_{i,t} + IC_{i,t} + CC_{i,t}} \tag{1}$$

- Average weekly $IC_{i,t} + CC_{i,t}$ is our proxy for U (similar to IUR)
- We use nonfarm payroll employment ($NP_{i,t}$) as measure of E (only monthly state-level employment data back to 1940s)

Claims-Based Unemployment Rate: Ohio



▸ U.S. Claims-Based Unemployment Rate

Conceptual Differences and Robustness Checks

There are conceptual differences between our series, the official unemployment rate, and insured unemployment rate

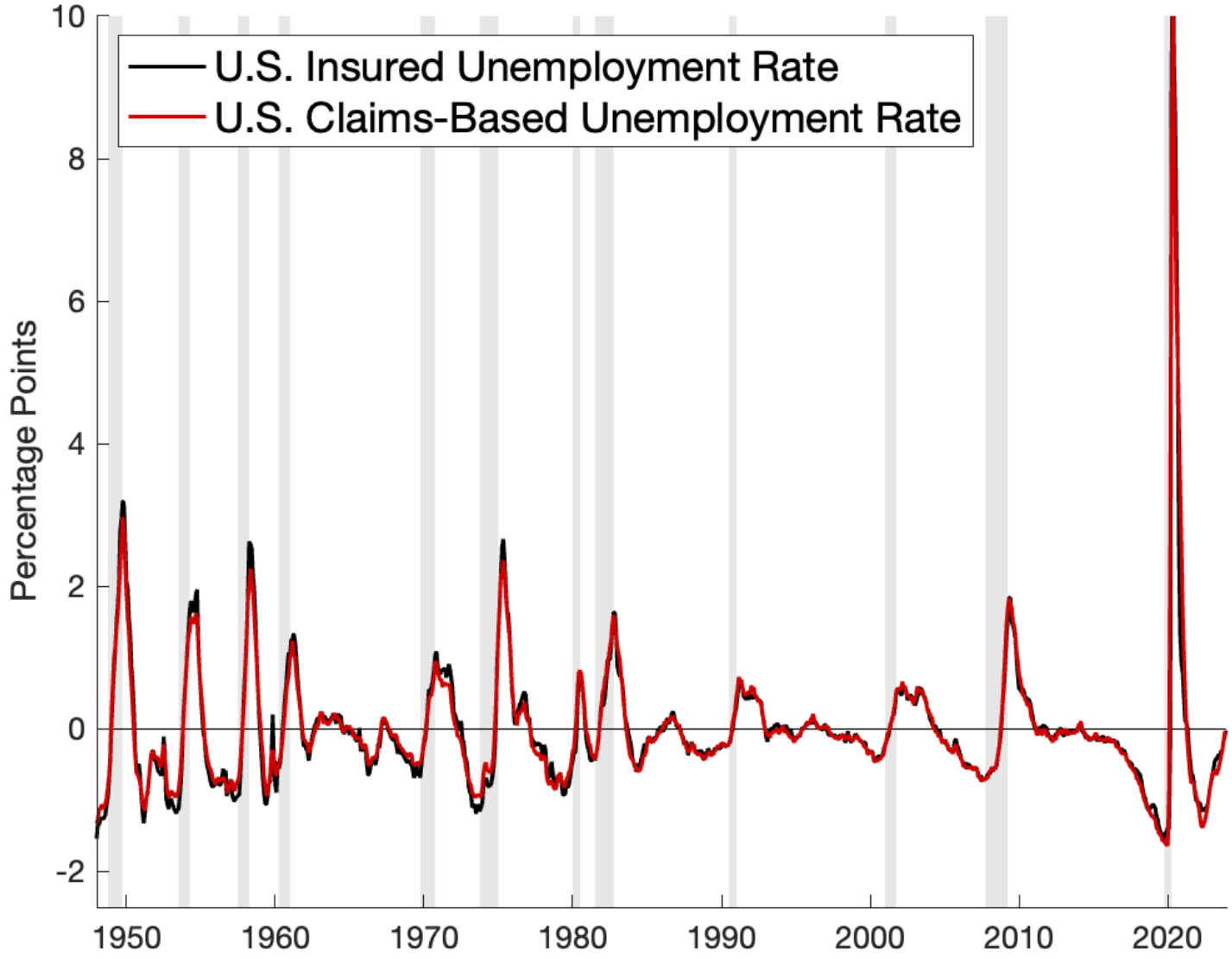
Related robustness checks:

- Backdated U.S. insured unemployment rate data to 1940s
- Detrend series, analyze cyclical vs. trend components
- Study out-of-sample fit with "unemployment rate" snapshots for larger states (constructed from March CPS supplement)
- Analyze nonfarm payroll vs. total employment (for U.S.)
- Digitize covered employment data, study UI coverage expansions
- Analyze claims per capita by Census region

Largely skipping over this for a 15 minute presentation...

▸ CPS vs. CES Employment ▸ UI Expansions ▸ Benefit Exhaustion ▸ Census Regions

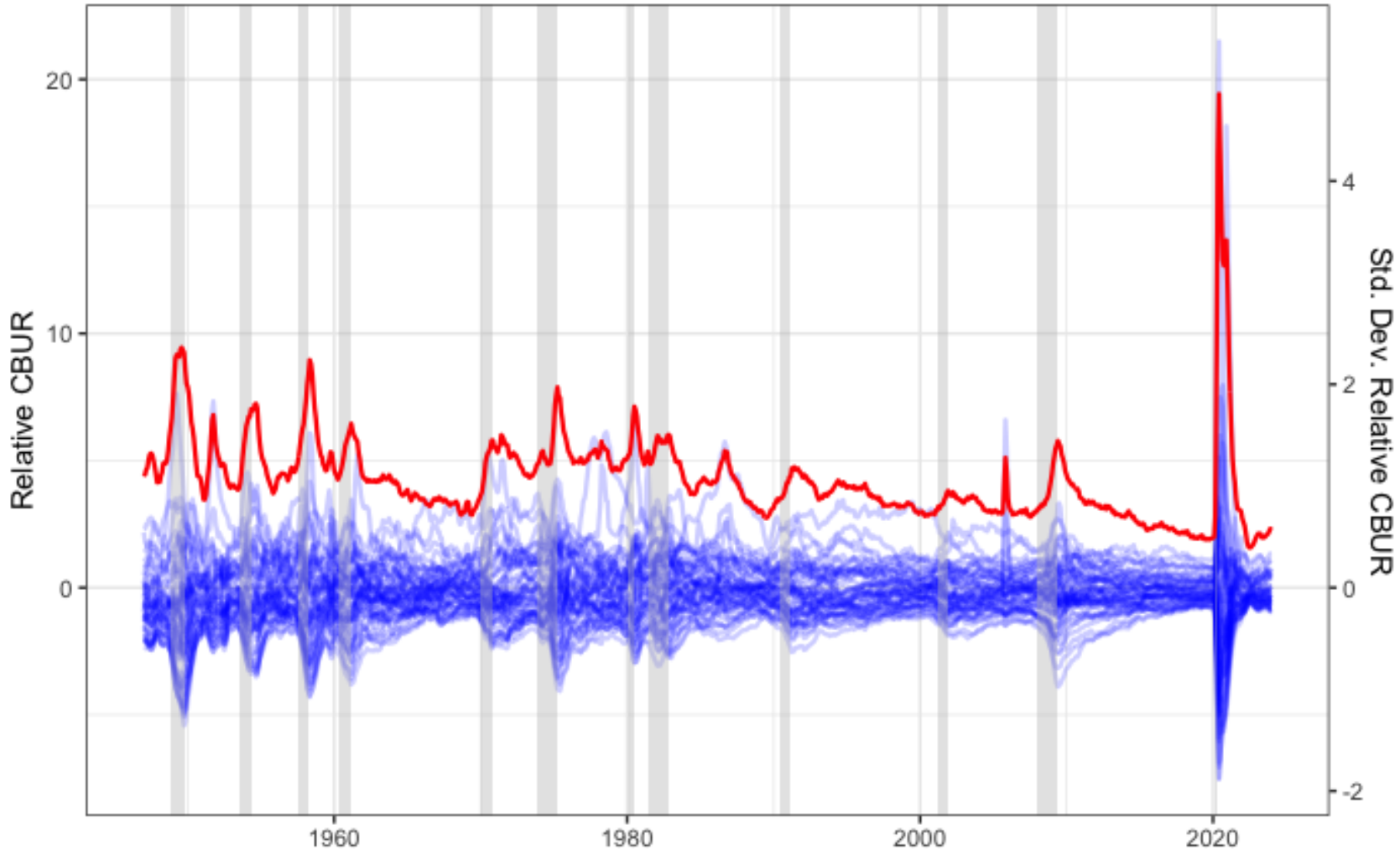
Comparison of Cyclical Unemployment (HP-filtered)



▸ U.S. Unemployment Rate

Emergence of a Uniform Business Cycle Across U.S. States

Convergence in Relative Claims-Based Unemployment



▸ Relative Employment Growth

Unemployment Recovery Rates and Recession Dates

Hall and Kudlyak (2020) document that recoveries in the U.S. unemployment rate were faster in 1940s–50s, then slowed

Unemployment Recovery Rates and Recession Dates

Hall and Kudlyak (2020) document that recoveries in the U.S. unemployment rate were faster in 1940s–50s, then slowed

Following Hall and Kudlyak (2020) we compute the pace of recovery as mean decline in log unemployment over recovery:

$$\text{Recovery Pace} = -12 \cdot (\log UR_0 - \log UR_T)/T$$

Unemployment Recovery Rates and Recession Dates

Hall and Kudlyak (2020) document that recoveries in the U.S. unemployment rate were faster in 1940s–50s, then slowed

Following Hall and Kudlyak (2020) we compute the pace of recovery as mean decline in log unemployment over recovery:

$$\text{Recovery Pace} = -12 \cdot (\log UR_0 - \log UR_T)/T$$

This requires business cycle dates for the start of recovery (0) and end of recovery (T) for each expansion

- We adopt the unemployment-based recession dating algorithm of Dupraz, Nakamura, and Steinsson (2023)

Unemployment Recovery Rates and Recession Dates

Hall and Kudlyak (2020) document that recoveries in the U.S. unemployment rate were faster in 1940s–50s, then slowed

Following Hall and Kudlyak (2020) we compute the pace of recovery as mean decline in log unemployment over recovery:

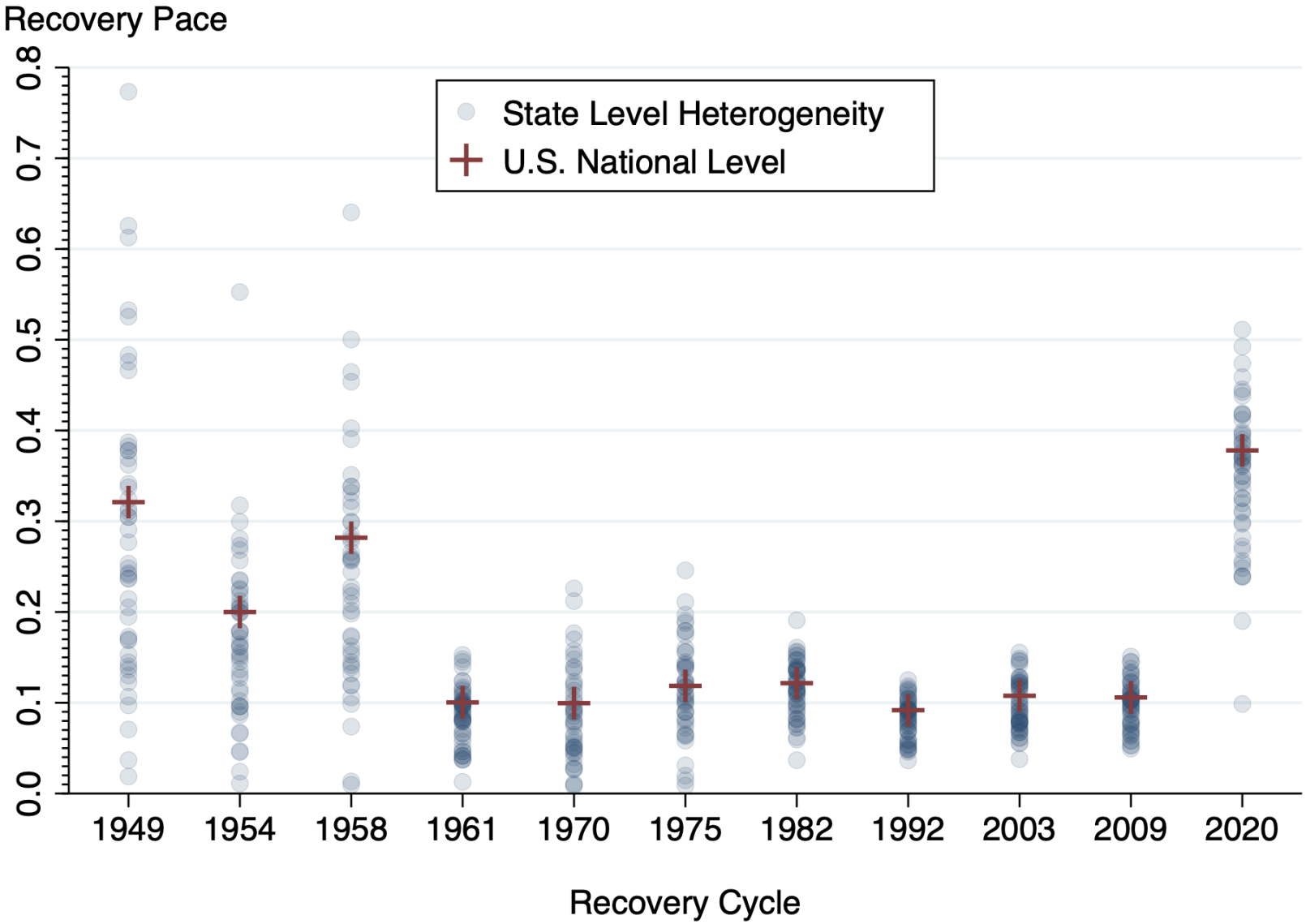
$$\text{Recovery Pace} = -12 \cdot (\log UR_0 - \log UR_T)/T$$

This requires business cycle dates for the start of recovery (0) and end of recovery (T) for each expansion

- We adopt the unemployment-based recession dating algorithm of Dupraz, Nakamura, and Steinsson (2023)
- We calculate recession dates for the U.S. and all 50 states

▸ DNS Algorithm

Convergence in State Unemployment Recovery Rates



▸ National Recoveries ▸ Standard Deviation ▸ By Recession ▸ Degree of Recovery

Labor Market Adjustments to Local Shocks

We estimate relative employment/unemployment/population responses to relative Bartik (1991) shocks in LP-IV framework:

$$\Delta Y_{i,t+h} = \alpha_i + \gamma_t + \beta_h rimix_{i,t} + \varphi_h(L)\mathbf{Z}_{i,t-1} + \varepsilon_{i,t+h}$$

Similar to Blanchard and Katz (1992) and Dao, Furceri, and Loungani (2017), but over full post-war panel (1950–2019)

Labor Market Adjustments to Local Shocks

We estimate relative employment/unemployment/population responses to relative Bartik (1991) shocks in LP-IV framework:

$$\Delta Y_{i,t+h} = \alpha_i + \gamma_t + \beta_h rimix_{i,t} + \varphi_h(L)\mathbf{Z}_{i,t-1} + \varepsilon_{i,t+h}$$

Similar to Blanchard and Katz (1992) and Dao, Furceri, and Loungani (2017), but over full post-war panel (1950–2019)

Main takeaways:

- Migration used to be an important margin, but we find a negligible population response since the mid-1980s

Labor Market Adjustments to Local Shocks

We estimate relative employment/unemployment/population responses to relative Bartik (1991) shocks in LP-IV framework:

$$\Delta Y_{i,t+h} = \alpha_i + \gamma_t + \beta_h rimix_{i,t} + \varphi_h(L)\mathbf{Z}_{i,t-1} + \varepsilon_{i,t+h}$$

Similar to Blanchard and Katz (1992) and Dao, Furceri, and Loungani (2017), but over full post-war panel (1950–2019)

Main takeaways:

- Migration used to be an important margin, but we find a negligible population response since the mid-1980s
- Less attenuation in relative employment, unemployment

Labor Market Adjustments to Local Shocks

We estimate relative employment/unemployment/population responses to relative Bartik (1991) shocks in LP-IV framework:

$$\Delta Y_{i,t+h} = \alpha_i + \gamma_t + \beta_h rimix_{i,t} + \varphi_h(L)\mathbf{Z}_{i,t-1} + \varepsilon_{i,t+h}$$

Similar to Blanchard and Katz (1992) and Dao, Furceri, and Loungani (2017), but over full post-war panel (1950–2019)

Main takeaways:

- Migration used to be an important margin, but we find a negligible population response since the mid-1980s
- Less attenuation in relative employment, unemployment
- Larger (above-average) shocks are driving all the action, but these are fewer and relatively smaller in recent decades

▸ Population: 1950–1985 ▸ Population: 1986–2019

Concluding Thoughts

Concluding Thoughts

- We digitize state-level unemployment claims data back to 1940s, construct monthly claims-based unemployment rates

Concluding Thoughts

- We digitize state-level unemployment claims data back to 1940s, construct monthly claims-based unemployment rates
- Using our data, we document the emergence of a U.S business cycle experienced more uniformly across states

Concluding Thoughts

- We digitize state-level unemployment claims data back to 1940s, construct monthly claims-based unemployment rates
- Using our data, we document the emergence of a U.S business cycle experienced more uniformly across states
- States' increasingly common experience in recessions and recoveries helps explain why interstate migration is bearing less of the adjustment following local demand shocks

Concluding Thoughts

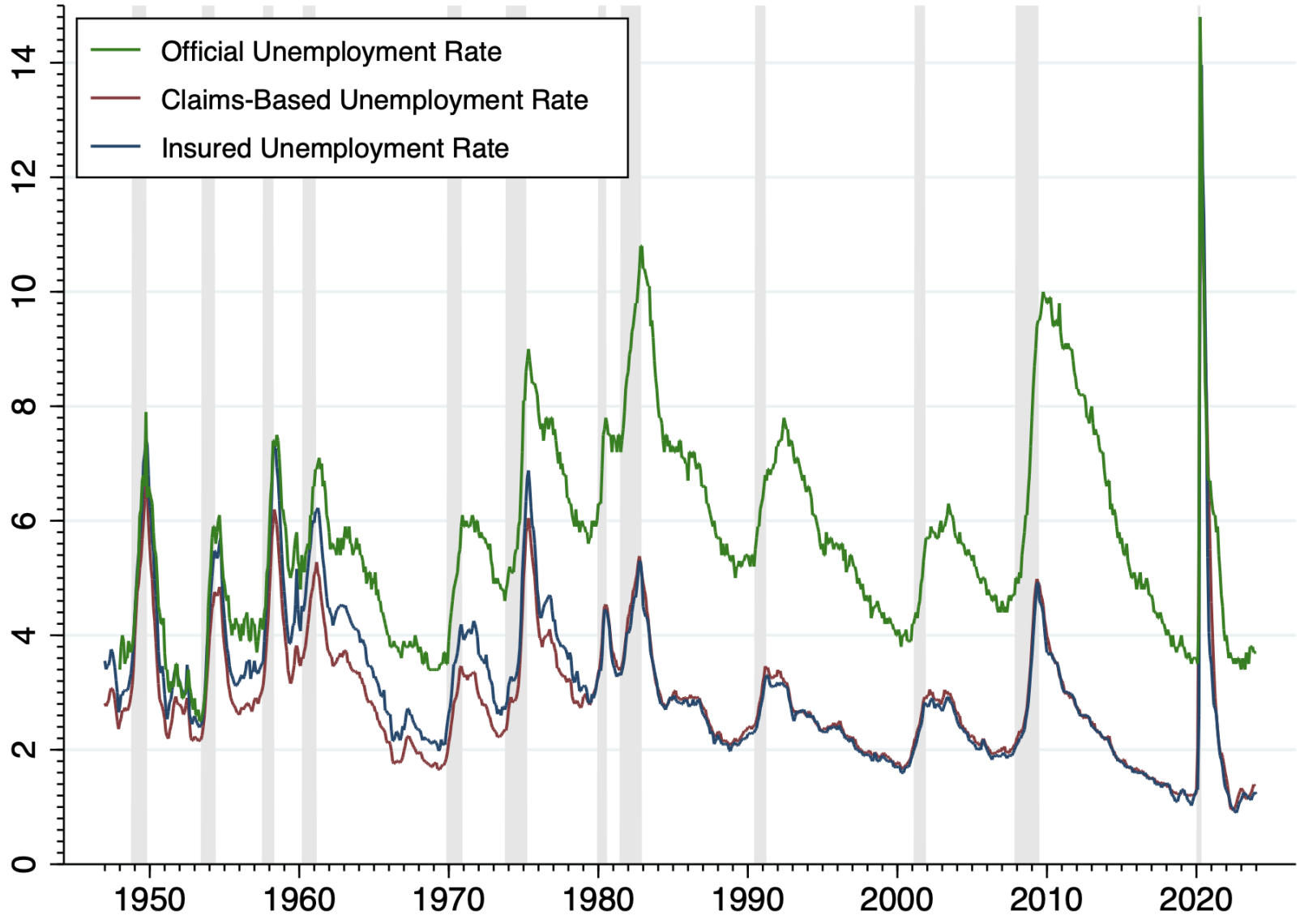
- We digitize state-level unemployment claims data back to 1940s, construct monthly claims-based unemployment rates
- Using our data, we document the emergence of a U.S business cycle experienced more uniformly across states
- States' increasingly common experience in recessions and recoveries helps explain why interstate migration is bearing less of the adjustment following local demand shocks
- We take a stab at *why* state economies converged when they did: convergence in industrial composition seems key

Concluding Thoughts

- We digitize state-level unemployment claims data back to 1940s, construct monthly claims-based unemployment rates
- Using our data, we document the emergence of a U.S business cycle experienced more uniformly across states
- States' increasingly common experience in recessions and recoveries helps explain why interstate migration is bearing less of the adjustment following local demand shocks
- We take a stab at *why* state economies converged when they did: convergence in industrial composition seems key
- We hope our historical dataset proves useful for a wide range of empirical work using state-level panel data

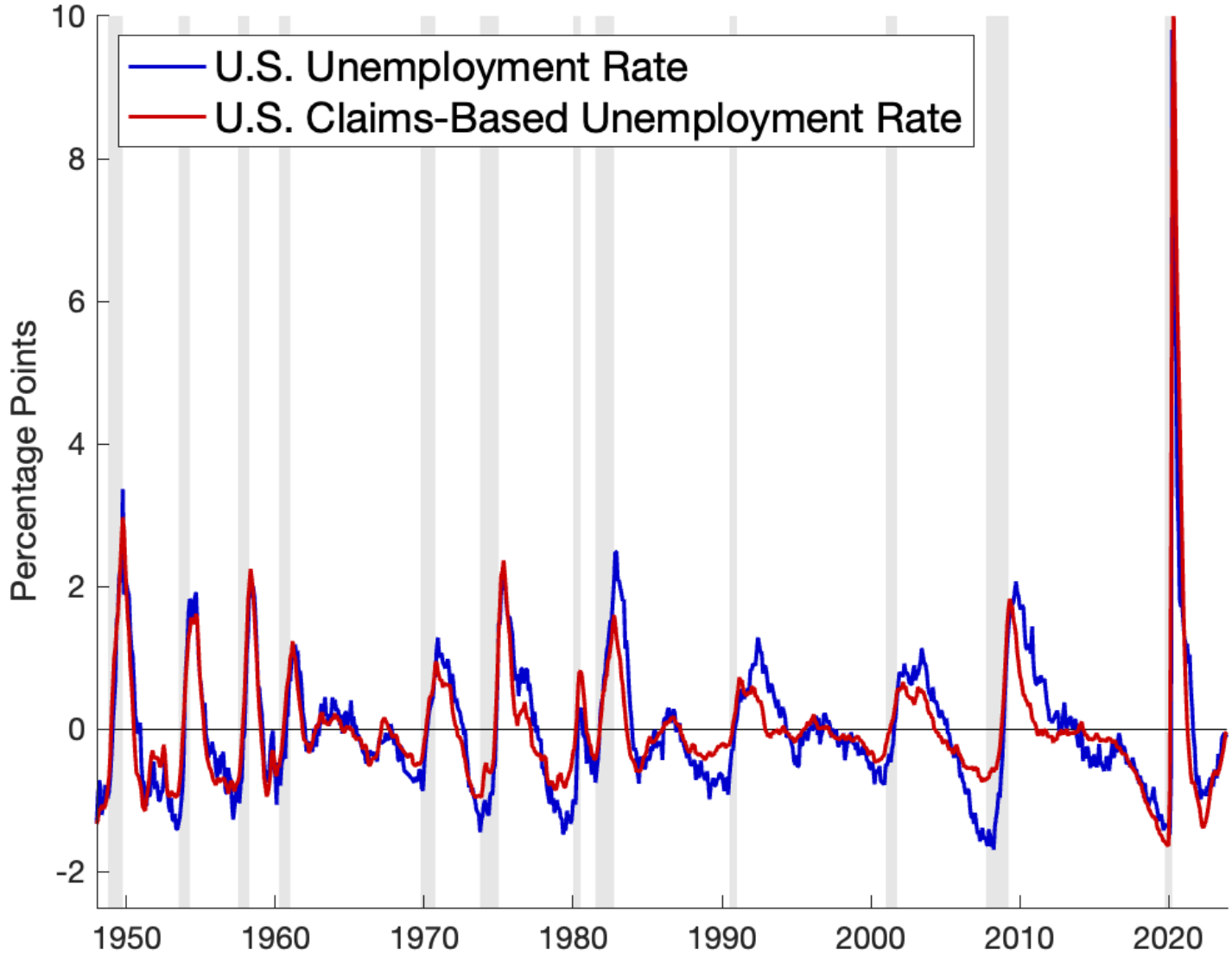
Appendix Slides

Claims-Based Unemployment Rate: National



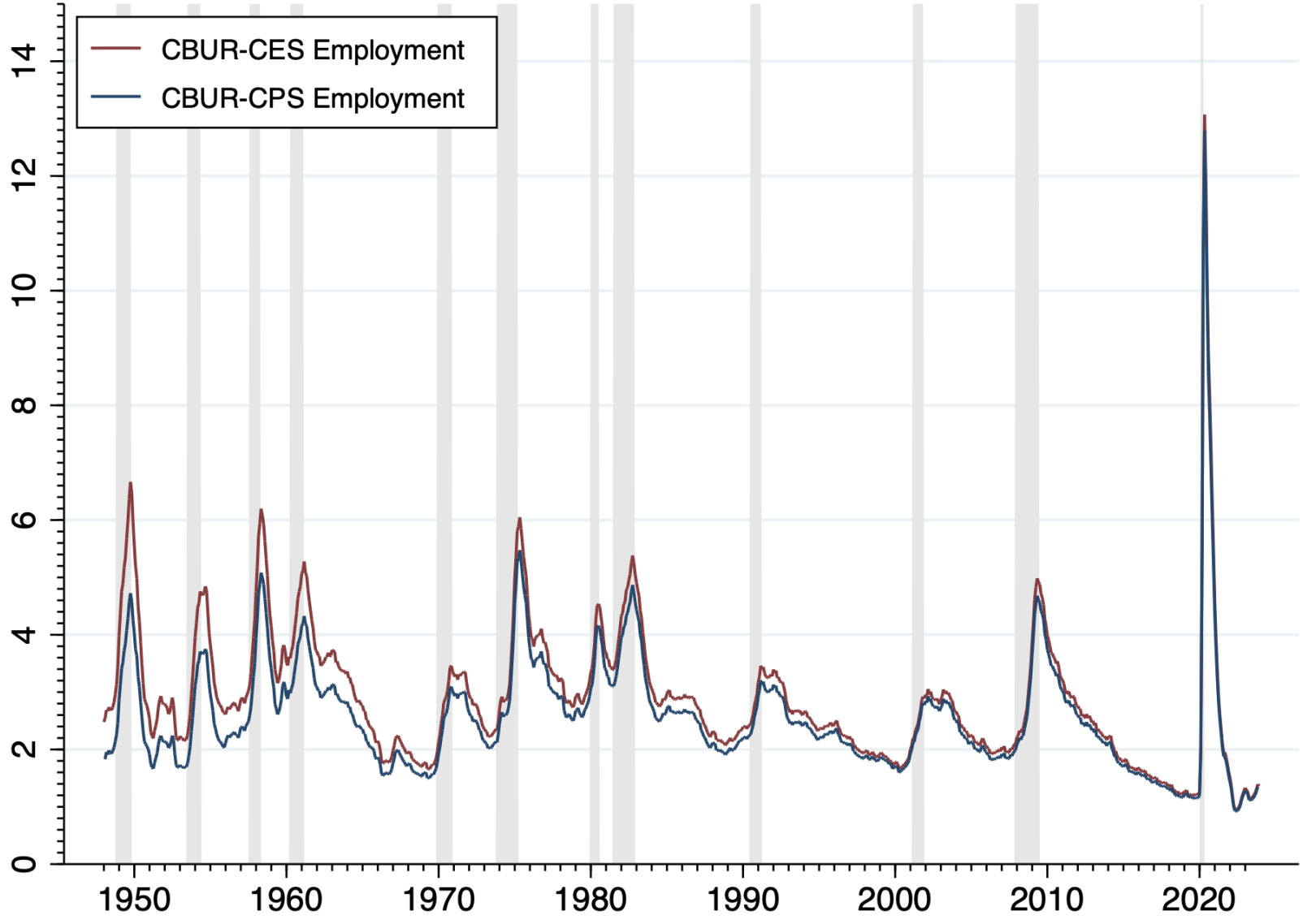
Back

Comparison of Cyclical Unemployment (HP-filtered)



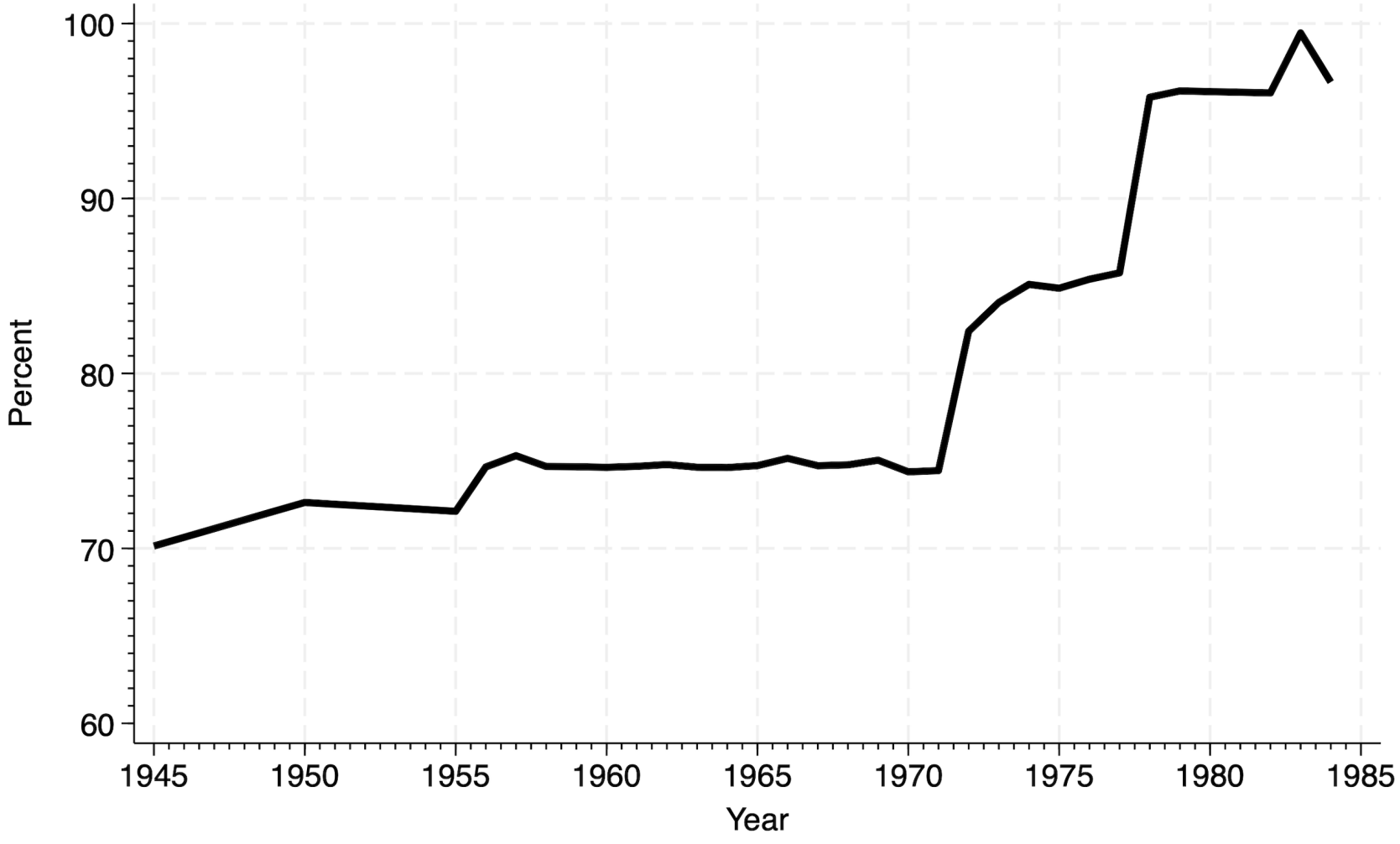
Back

U.S. Claims-Based Unemployment Rate: CPS vs. CES



Back

Covered Employment / Nonfarm Payroll Employment



Back

Federally Induced UI Coverage Expansions

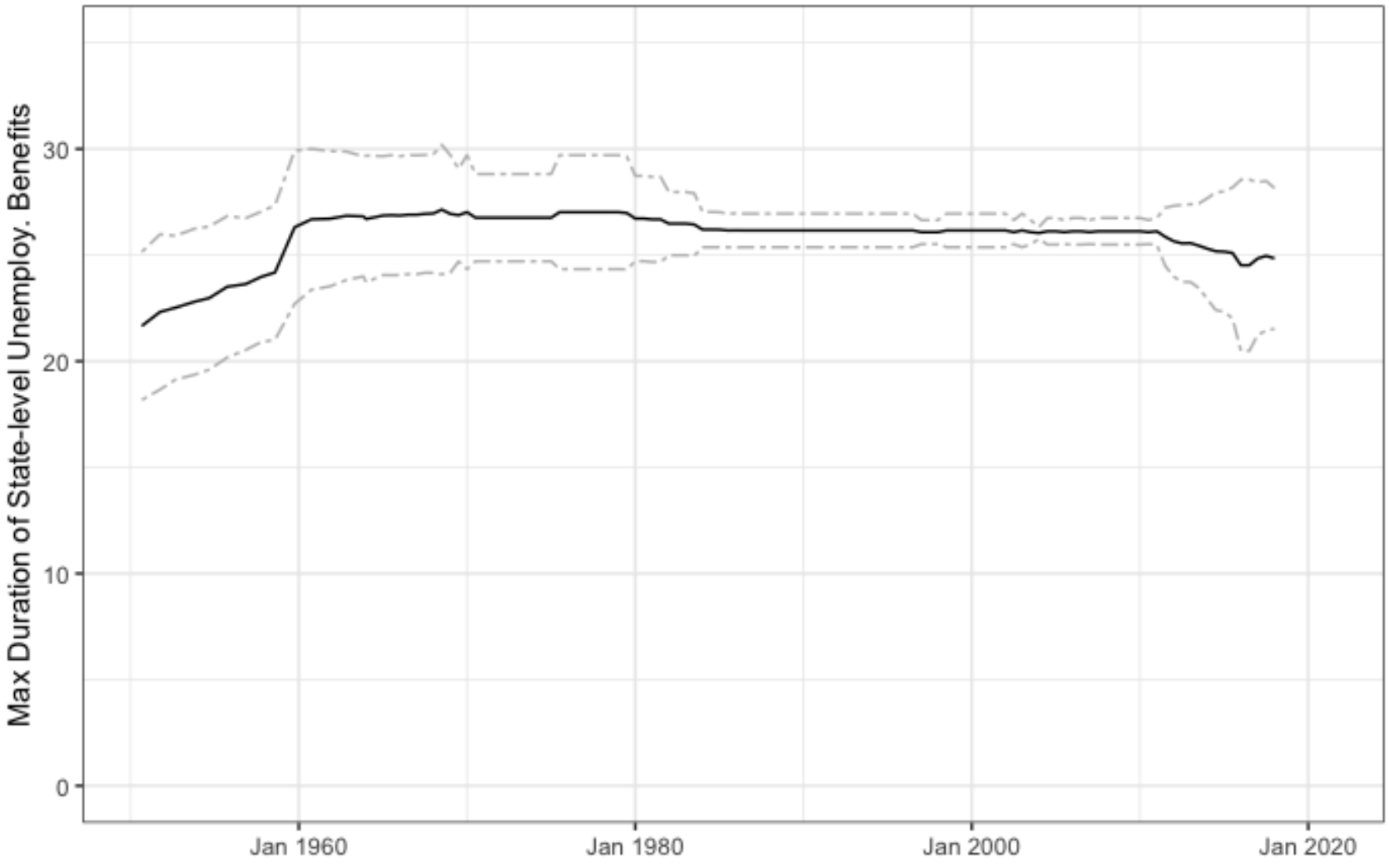
1954-55: The "Act to extend and improve the unemployment compensation program" (PL 83-767) lowered the firm size threshold for FUTA tax base/eligibility to 4+ more employees (down from 8+)

1972–73: The Employment Security Amendments of 1970 (PL 91-373) compelled states to expand UI coverage to state hospitals and universities

1977-88: The Unemployment Compensation Amendments of 1976 (PL 94-566) compelled states to expand UI coverage to stet/local government employees and nonprofit schools

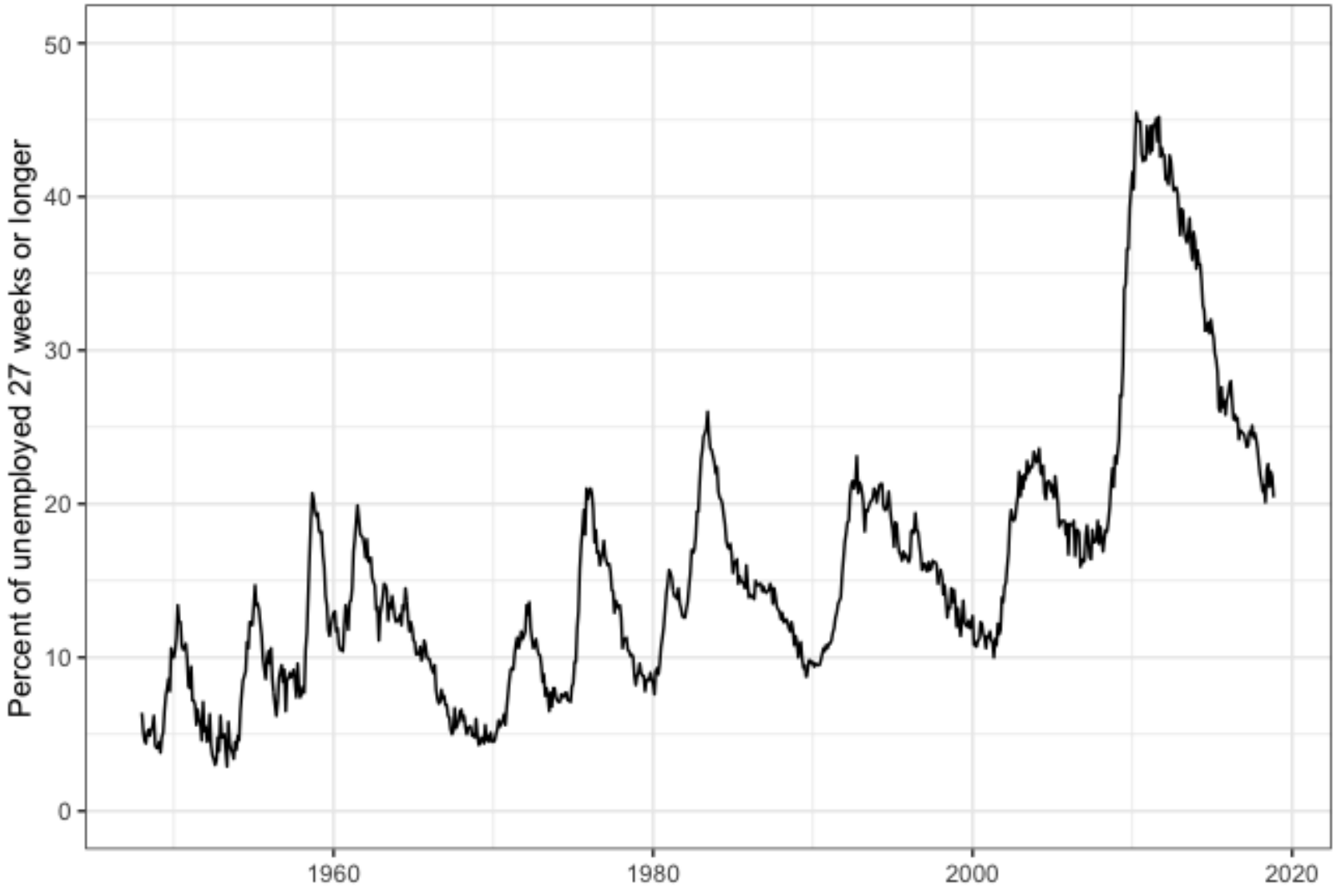
These policy changes were largely motivated by improving and shoring up UI financing, not cyclical responses to unemployment...

State-level Max Benefit Duration



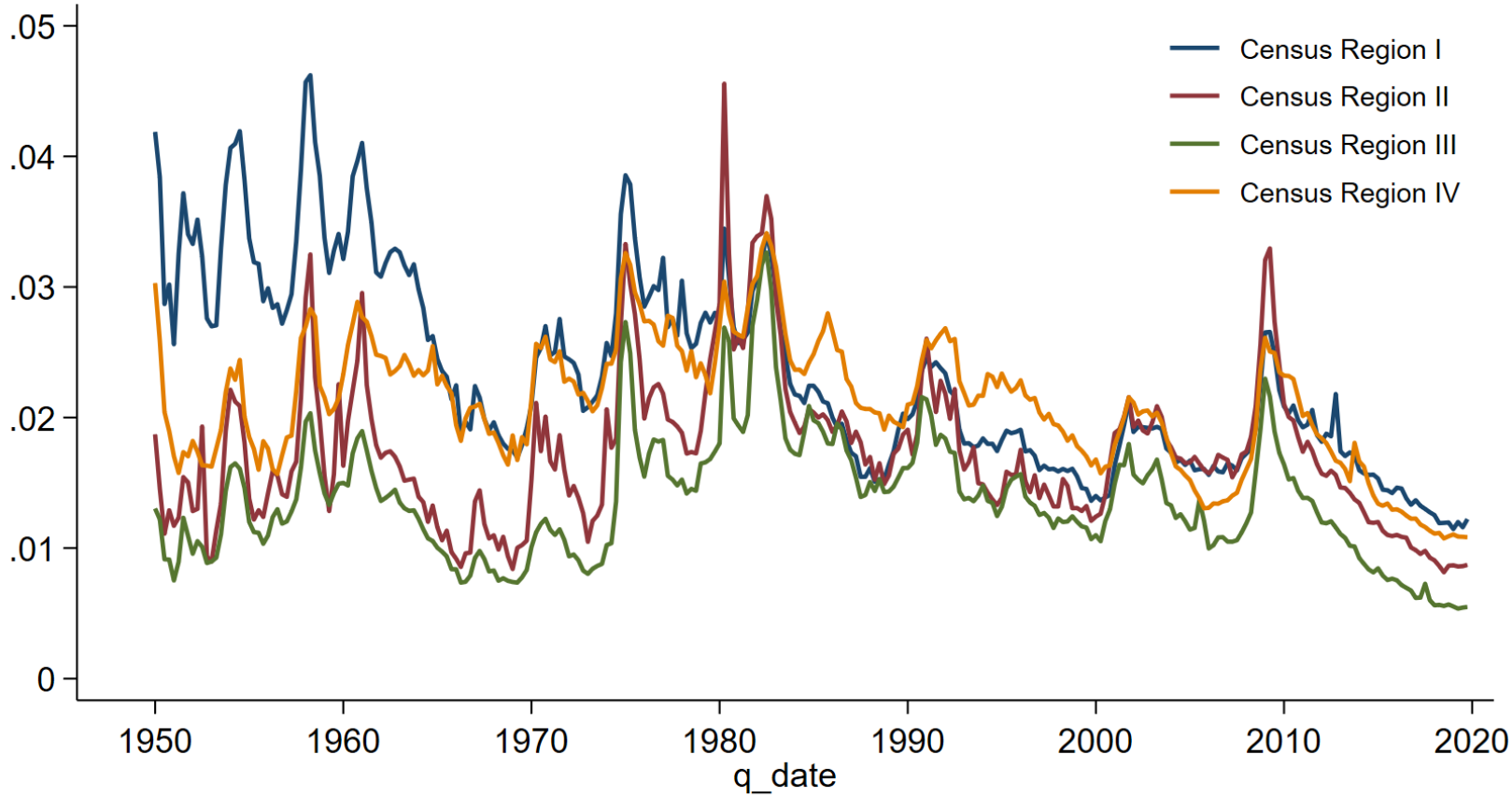
▸ Back

Long-Term Unemployment Share



▸ Back

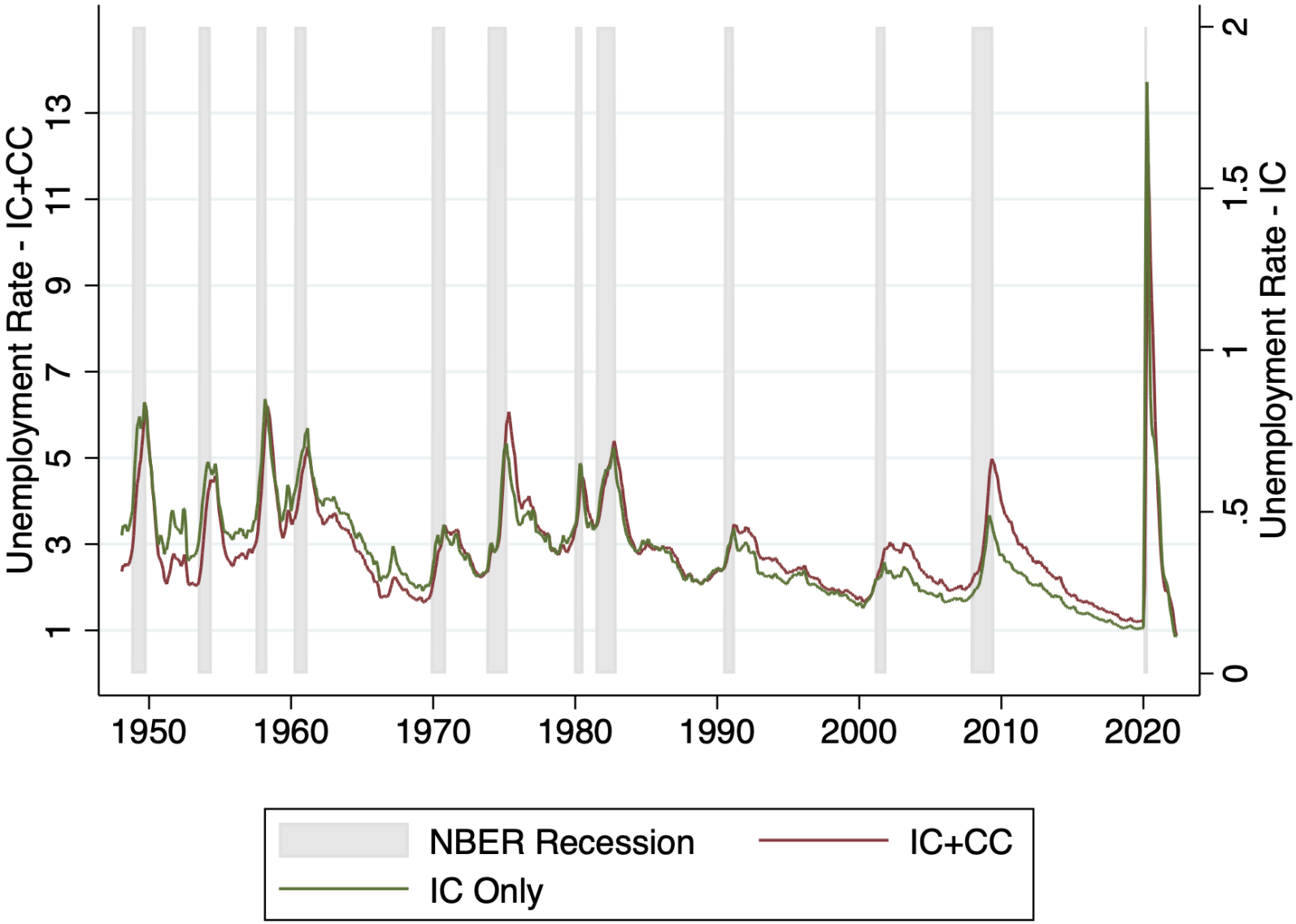
Unemployment Claims by Census Regions



Census Region I: CT, ME, MA, NH, RI, VT, NJ, NY, PA.
Census Region II IN, IL, MI, OH, WI, IA, KS, MN, MO, NE, ND, SD.
Census Region III: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX.
Census Region IV: AZ, CO, ID, NM, MT, UT, NV, WY, AK, CA, HI, OR, WA.

▸ Back

Alt. Claims-Based Unemployment Rate: IC Only



Back

Claims-Based Unemployment Rates: Fitted Model

In addition to the "raw" claims-based URs, we also conduct a fitting exercise on state-level unemployment rates. From 1976 onwards we fit the following statistical model:

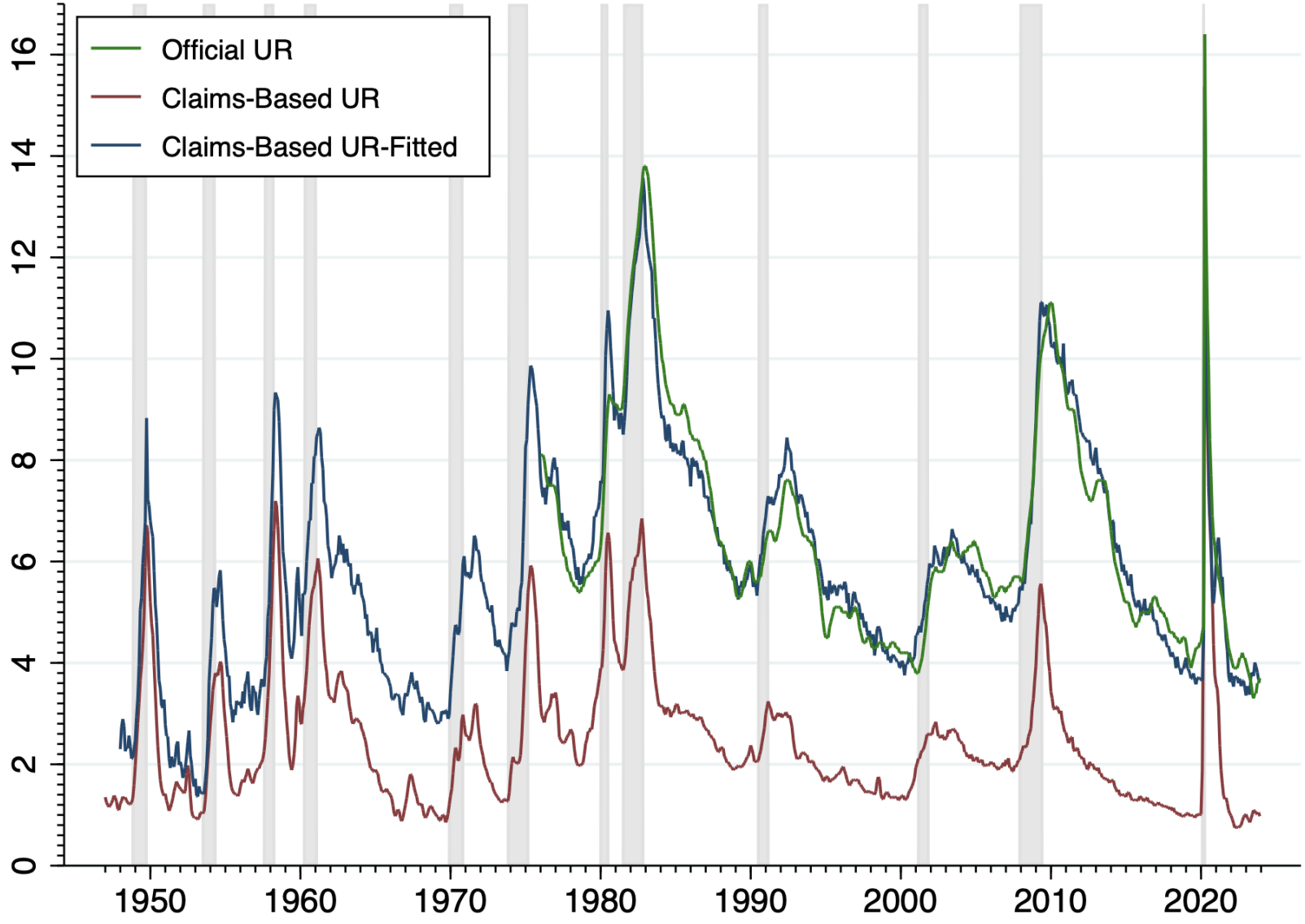
$$UR_{i,t}^{Official} = \beta_{0,i} + \beta_{1,i}(UR_{i,t}^{Claims} - UR_{US,t}^{Claims}) + \beta_{2,i} UR_{US,t}^{Official} + \varepsilon_{i,t}$$

where

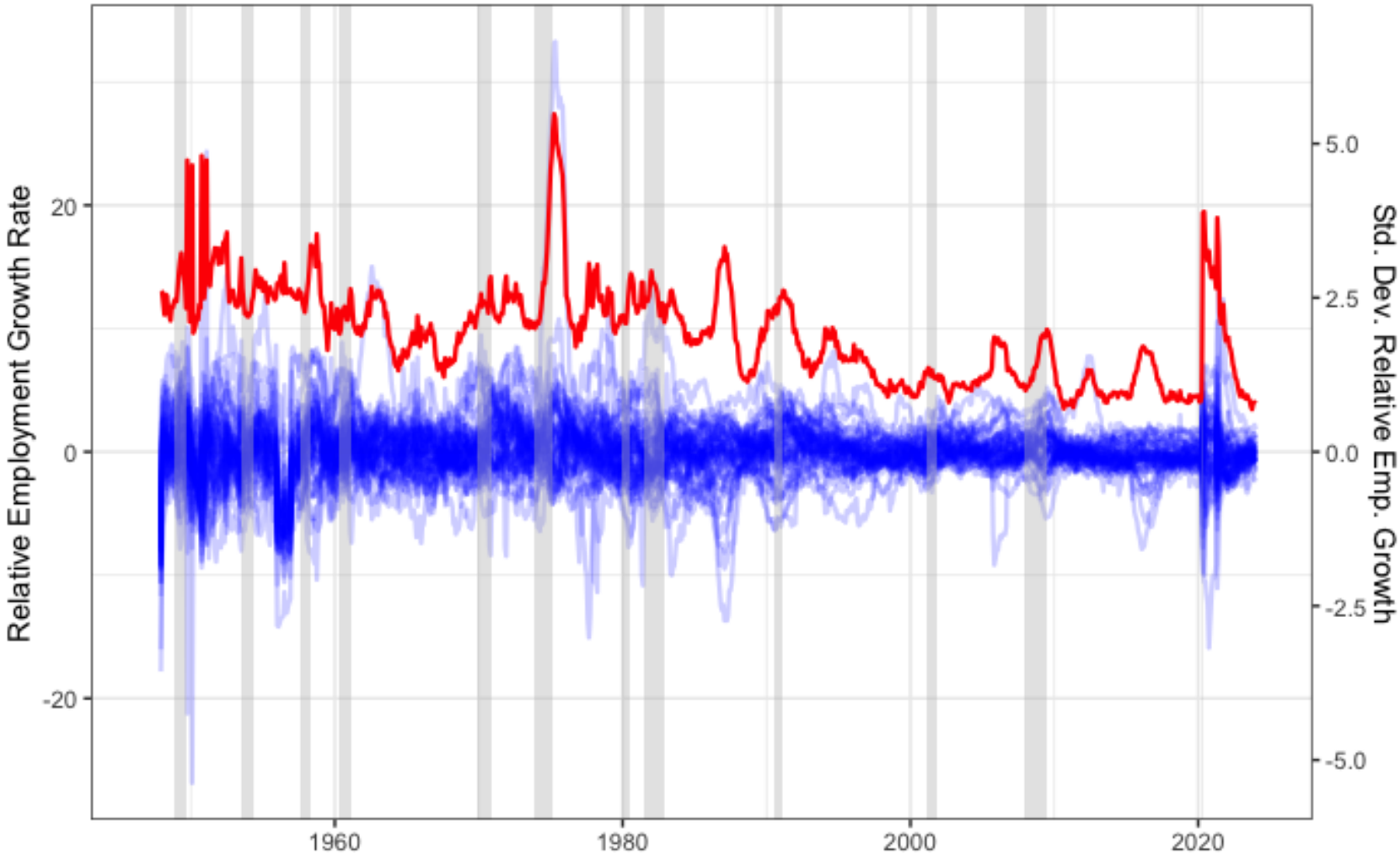
- $UR_{i,t}^{Official}$ is BLS's official unemployment rate for state i
- $UR_{US,t}^{Official}$ is BLS's national unemployment rate
- $UR_{i,t}^{Claims} - UR_{US,t}^{Claims}$ is the difference between our state and national claims based unemployment rates

We use these fitted models to backcast fitted CBUR for 1948–75

Fitted Claims-Based Unemployment Rates



Relative Employment Growth



▸ Back

Recession Dating: DNS Algorithm

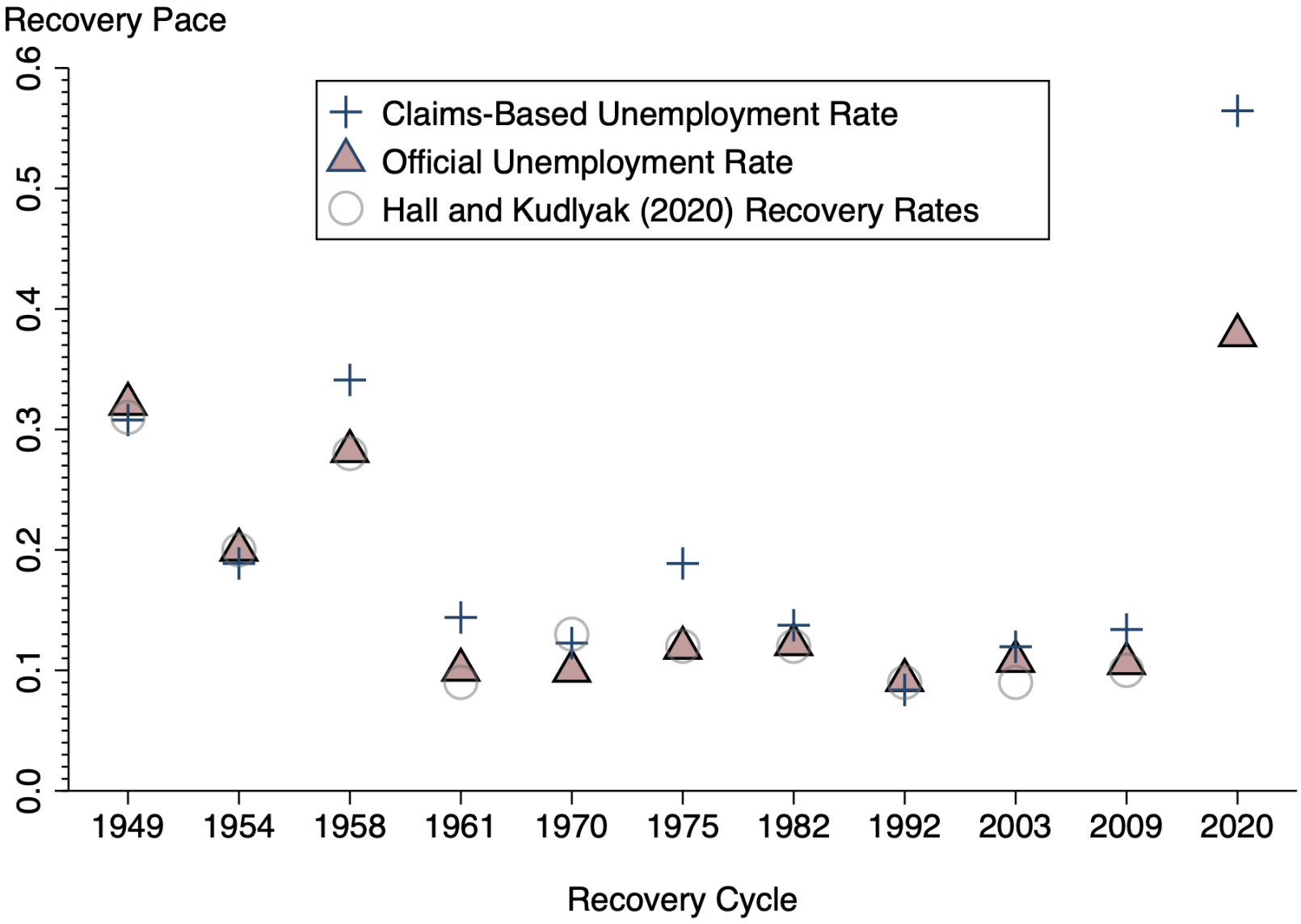
Gist: identifying local minima and maxima of the unemployment rate, ignoring low frequency variation in the unemployment rate

- Let u_t be a candidate for a cycle peak (cp)
- If $u_{t+h} > u_{cp}$ in all subsequent months until $u_{t+h+1} > u_{cp} + X$, confirm cp
- If $u_{t+h} < u_{cp}$, new candidate for cp
- After identifying a cp, proceed analogously to identify the next cycle trough (ct)...

Setting $X = 1.5$ identifies unemployment-based peak/troughs similar to those identified by NBER

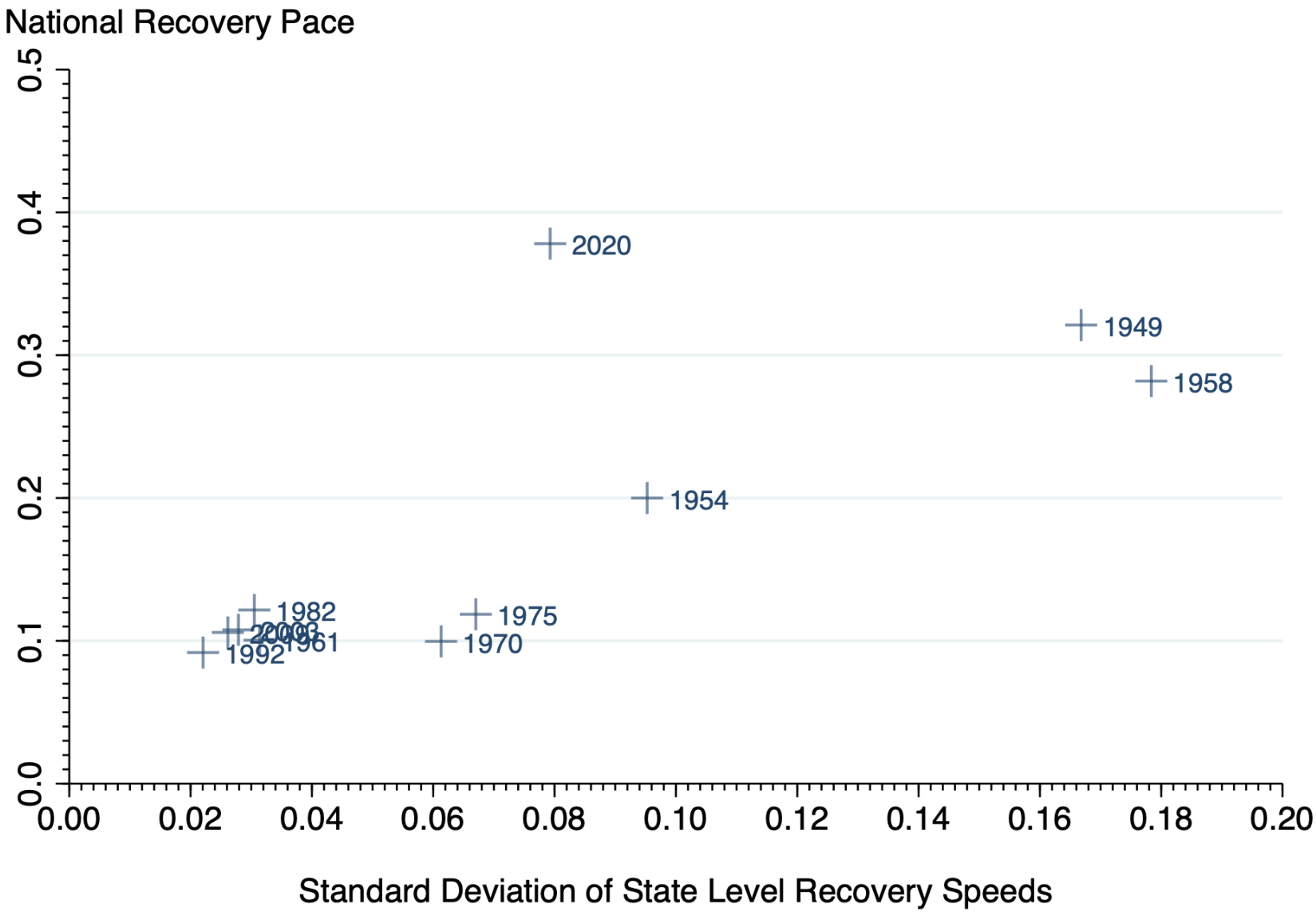
Back

Recovery Pace: National Recoveries



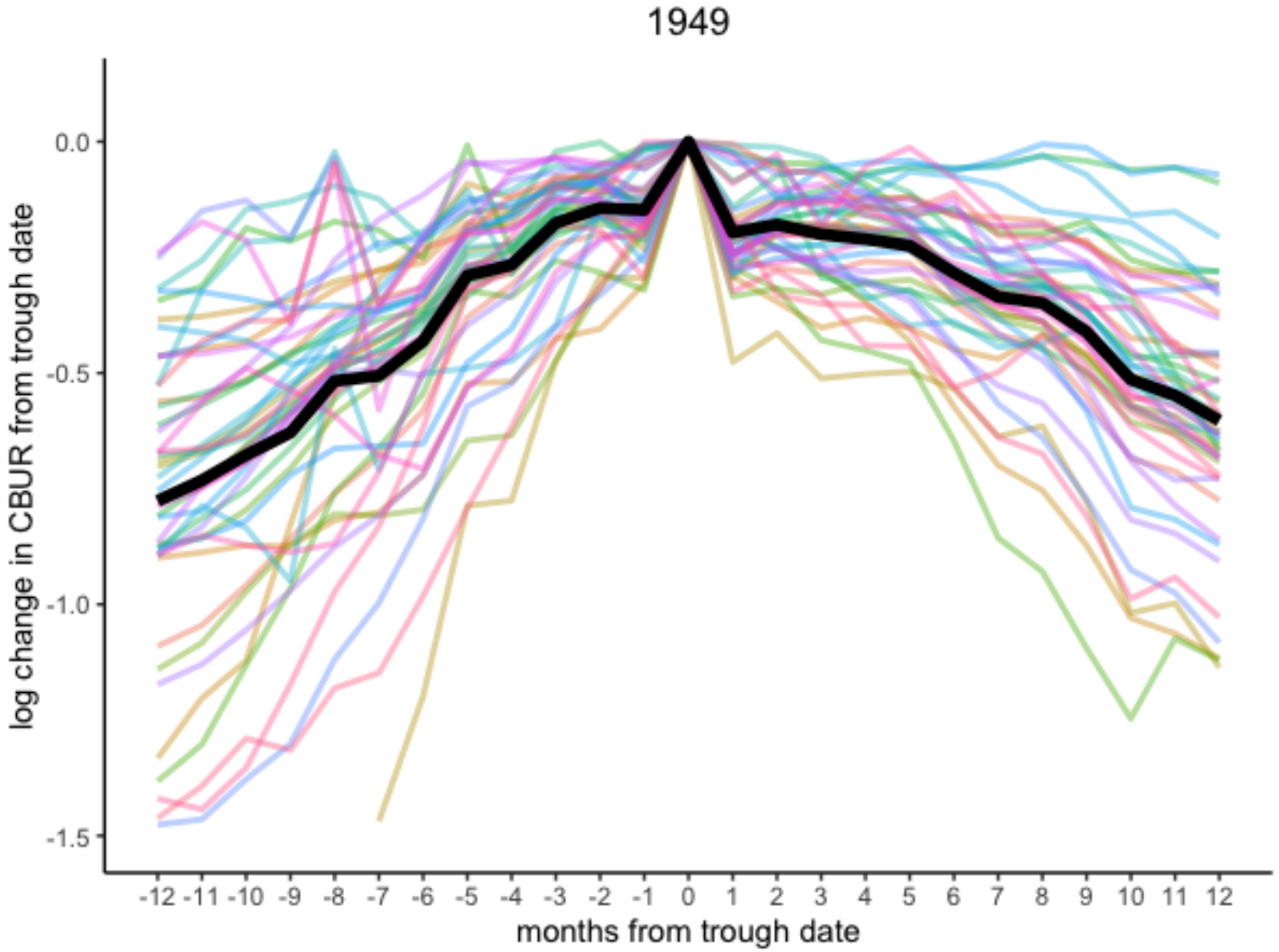
▸ Back

Recovery Pace: National Rate vs. State-level Dispersion



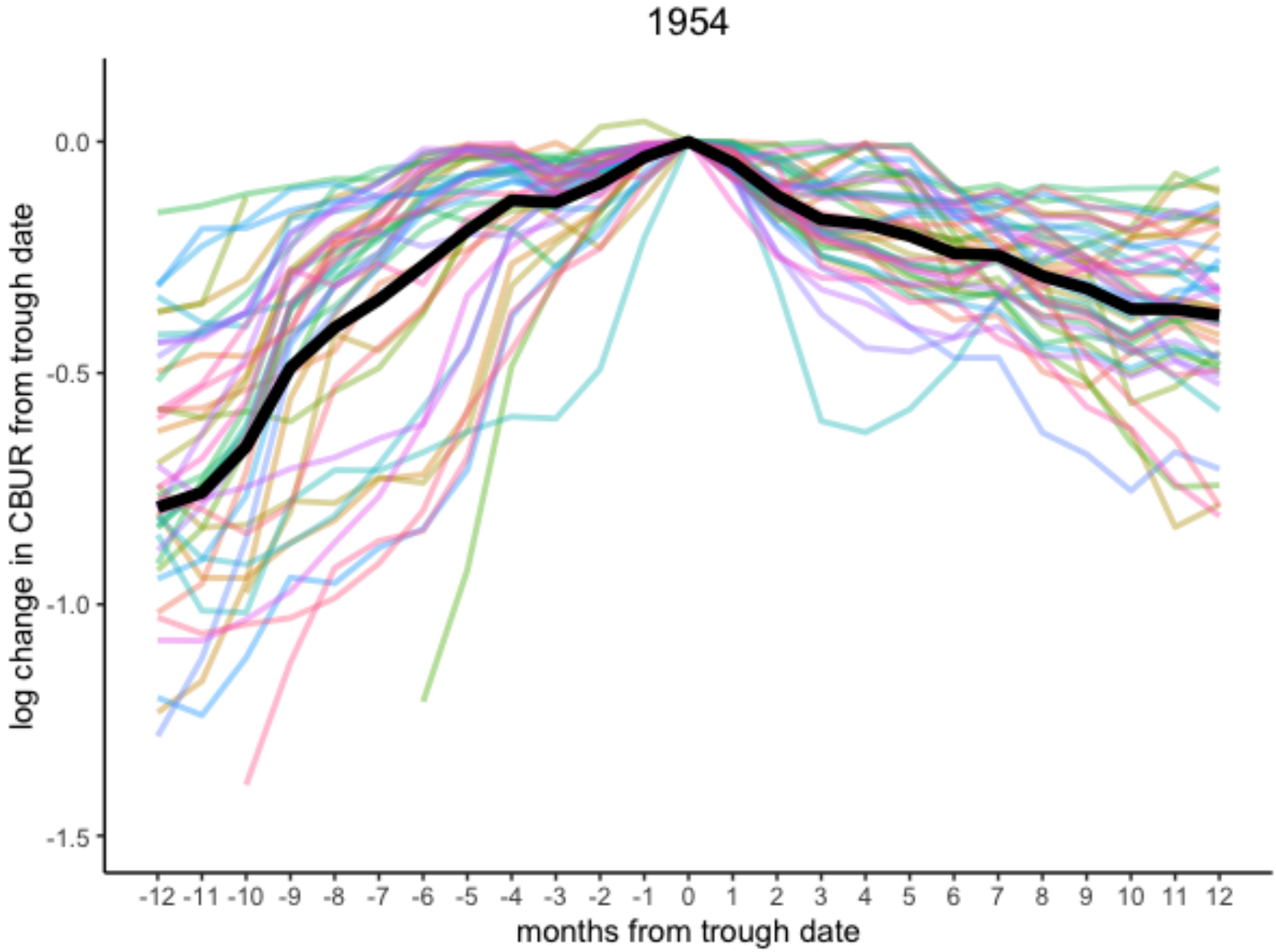
▸ Back

Cumulative Change in CBUR Relative to Peak



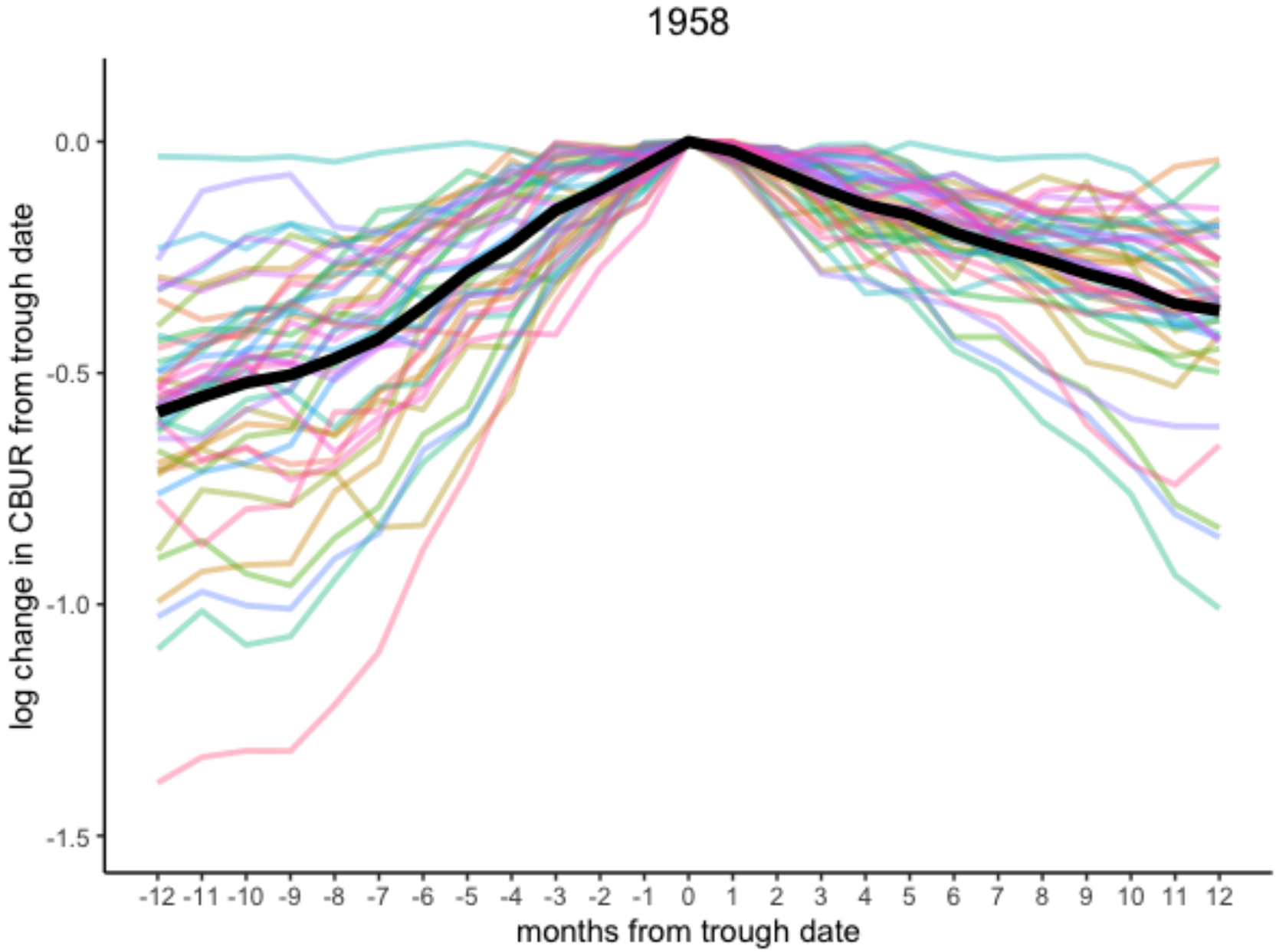
Back

Cumulative Change in CBUR Relative to Peak...



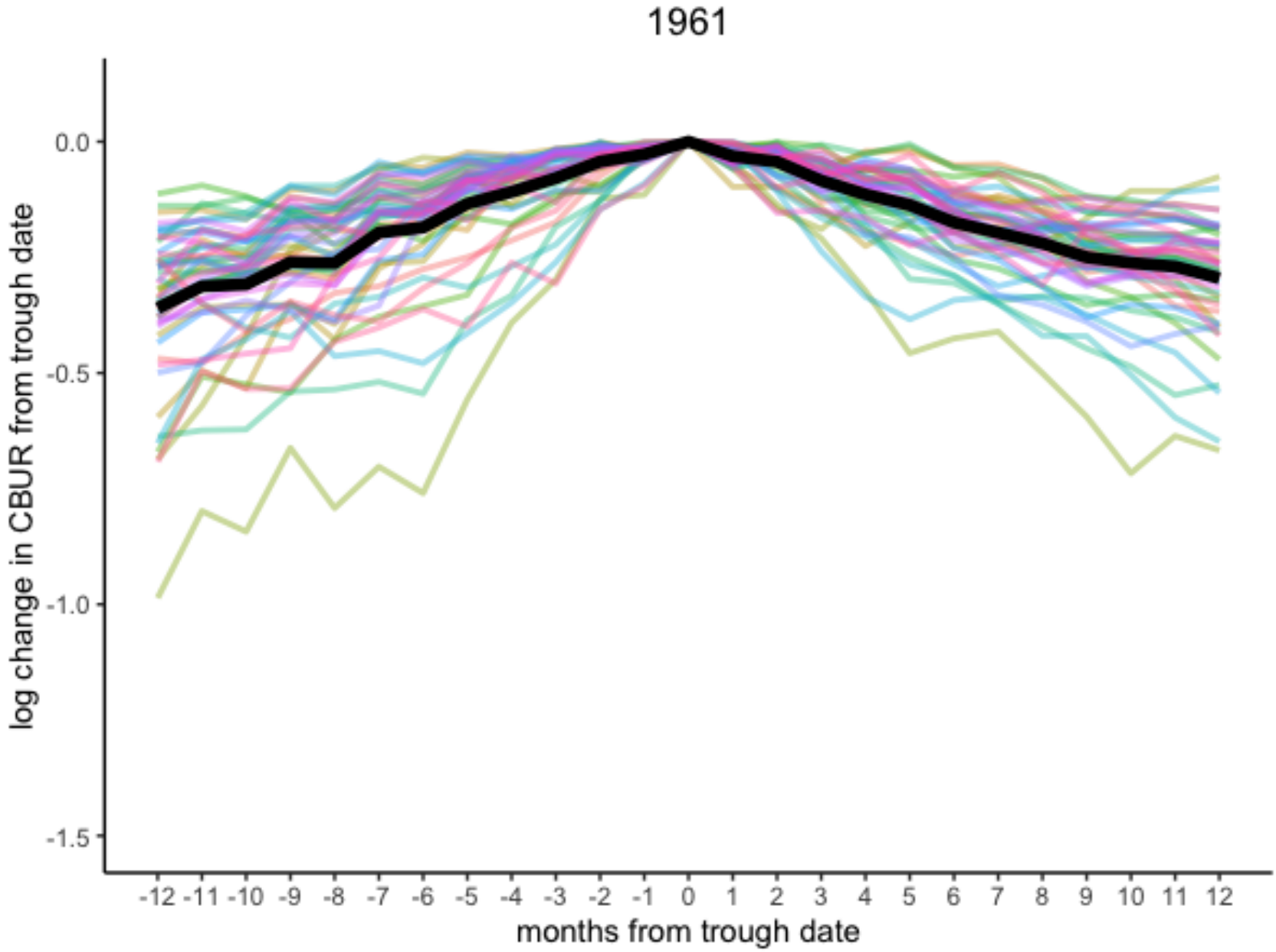
▸ Back

Cumulative Change in CBUR Relative to Peak...



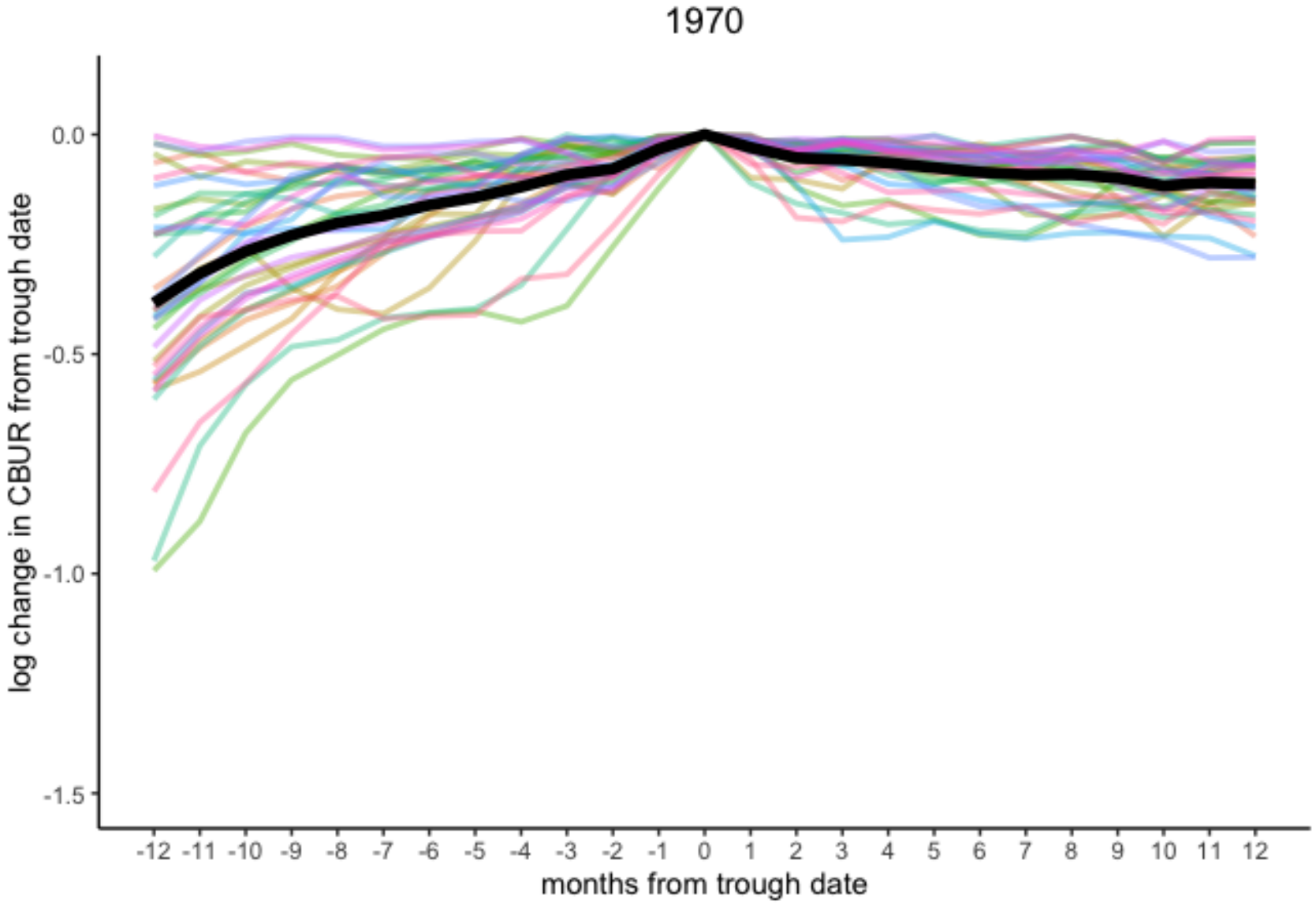
▸ Back

Cumulative Change in CBUR Relative to Peak...



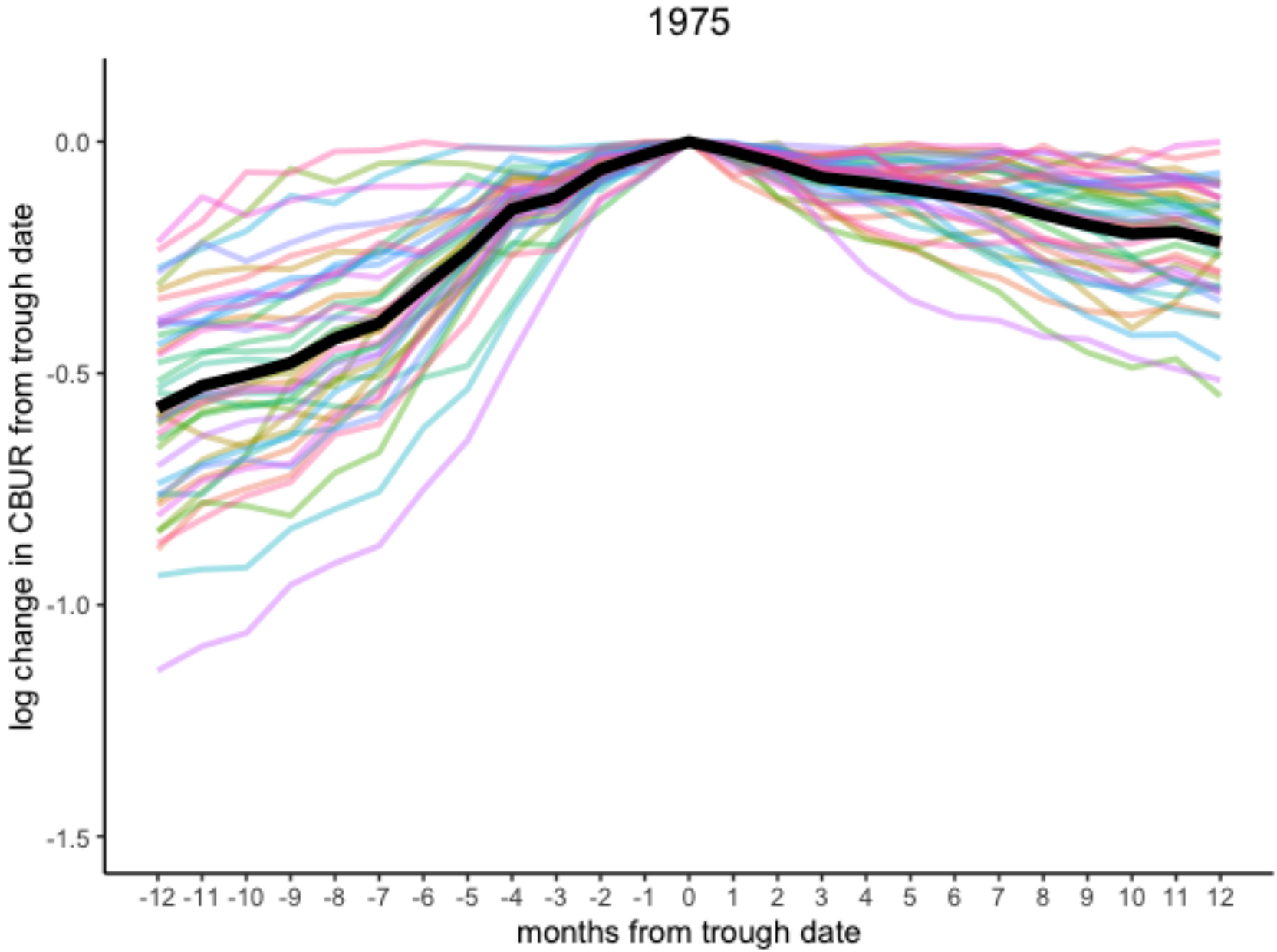
Back

Cumulative Change in CBUR Relative to Peak...



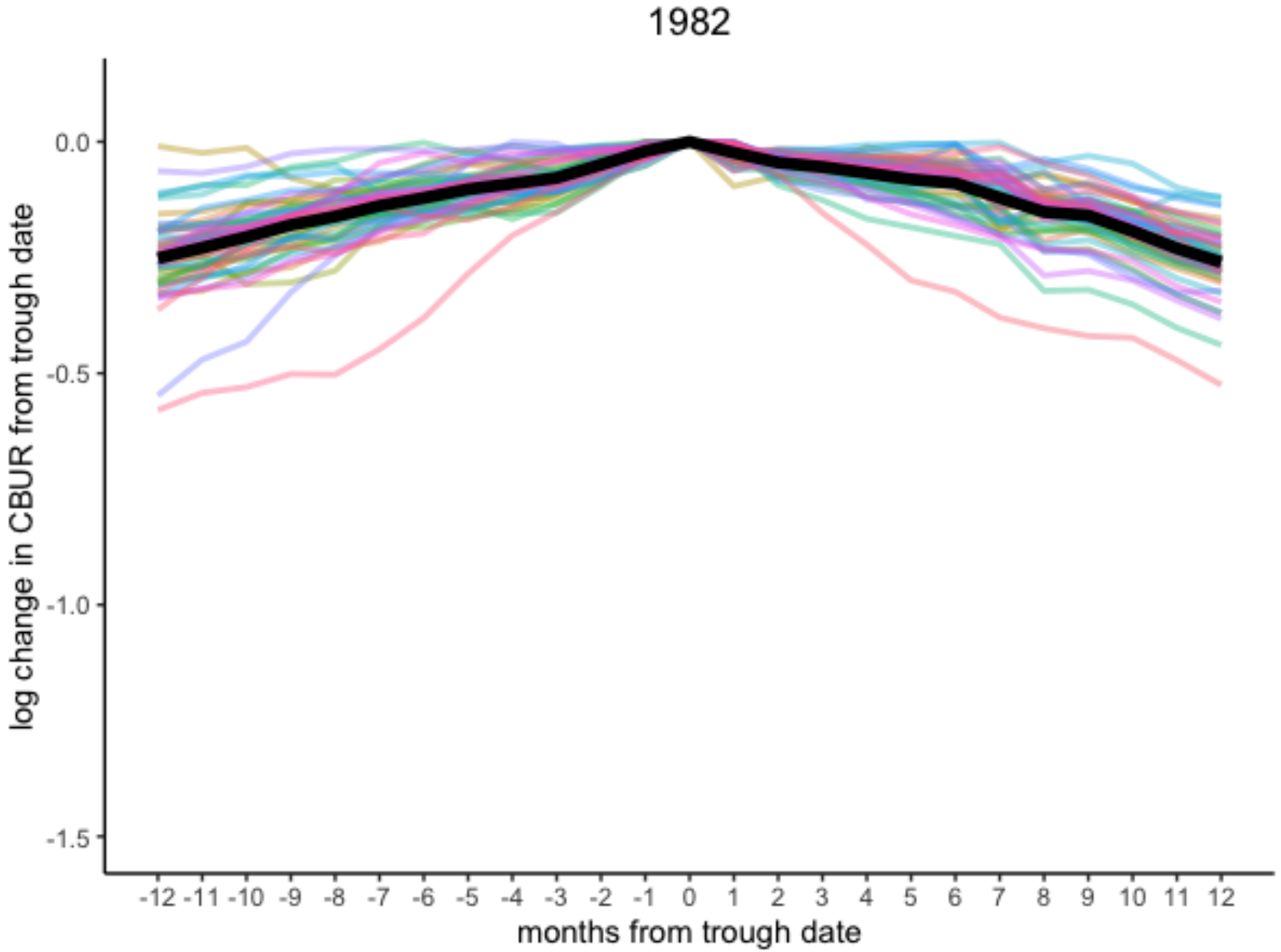
▸ Back

Cumulative Change in CBUR Relative to Peak...



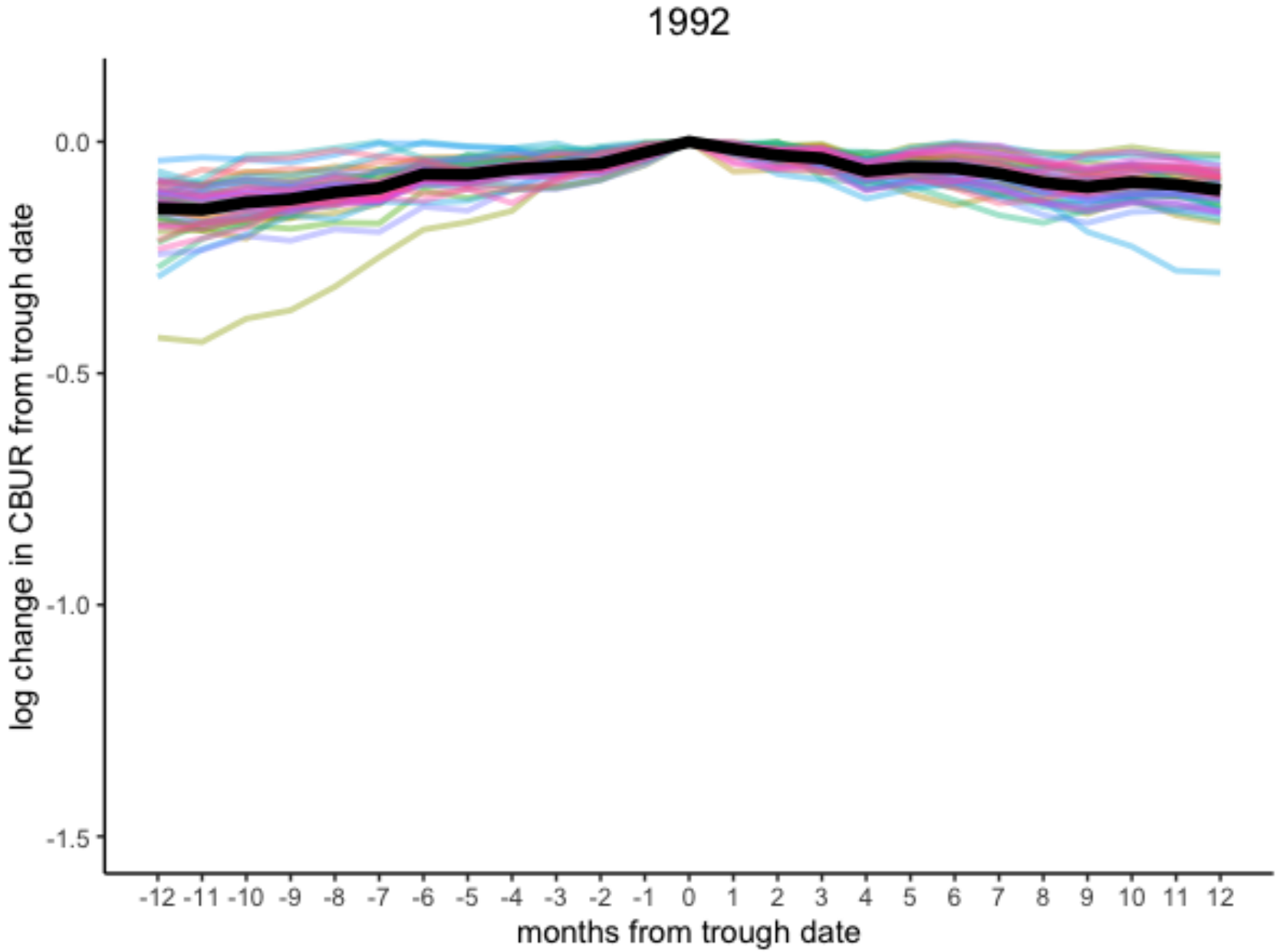
Back

Cumulative Change in CBUR Relative to Peak...



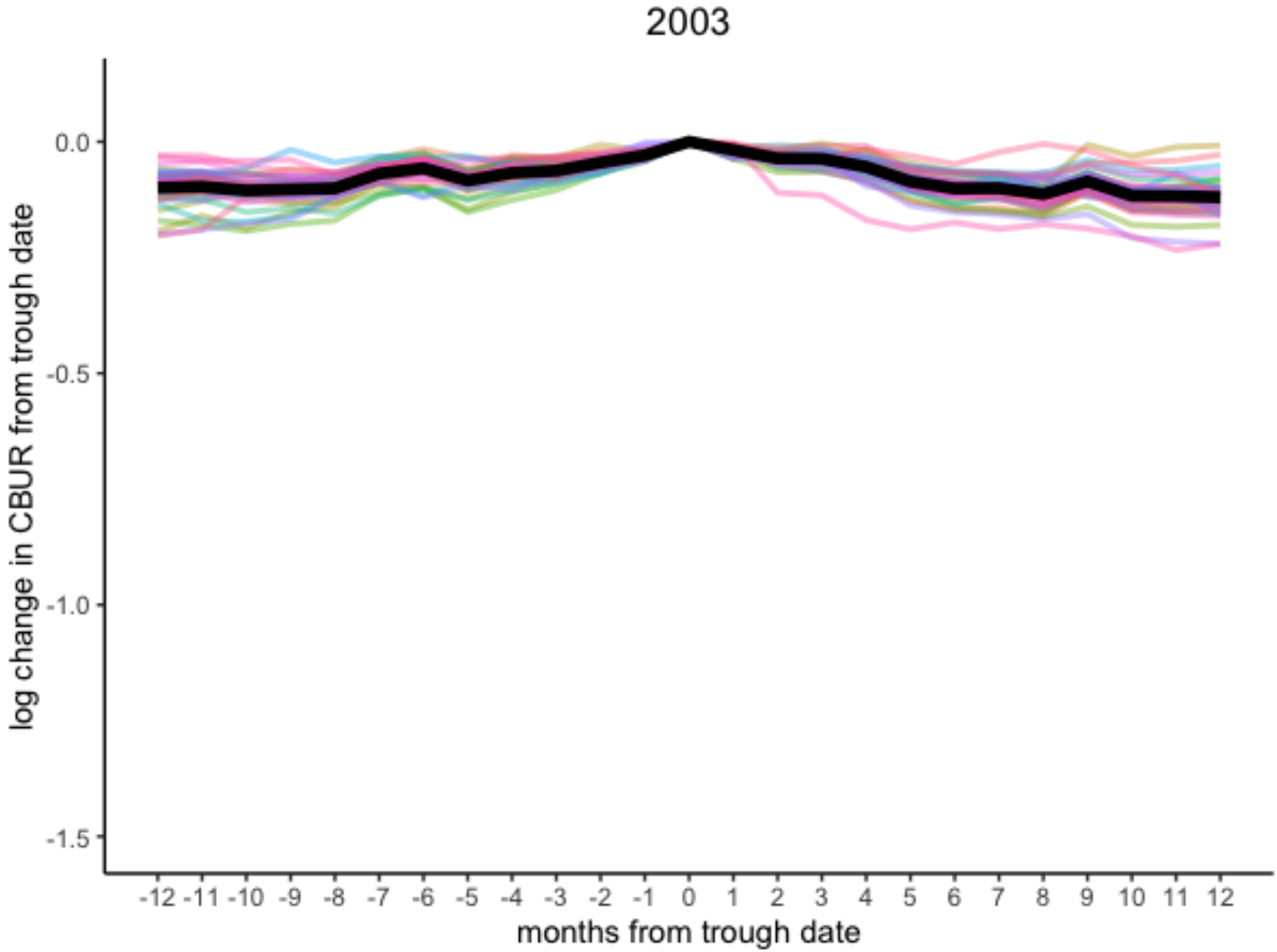
▸ Back

Cumulative Change in CBUR Relative to Peak...



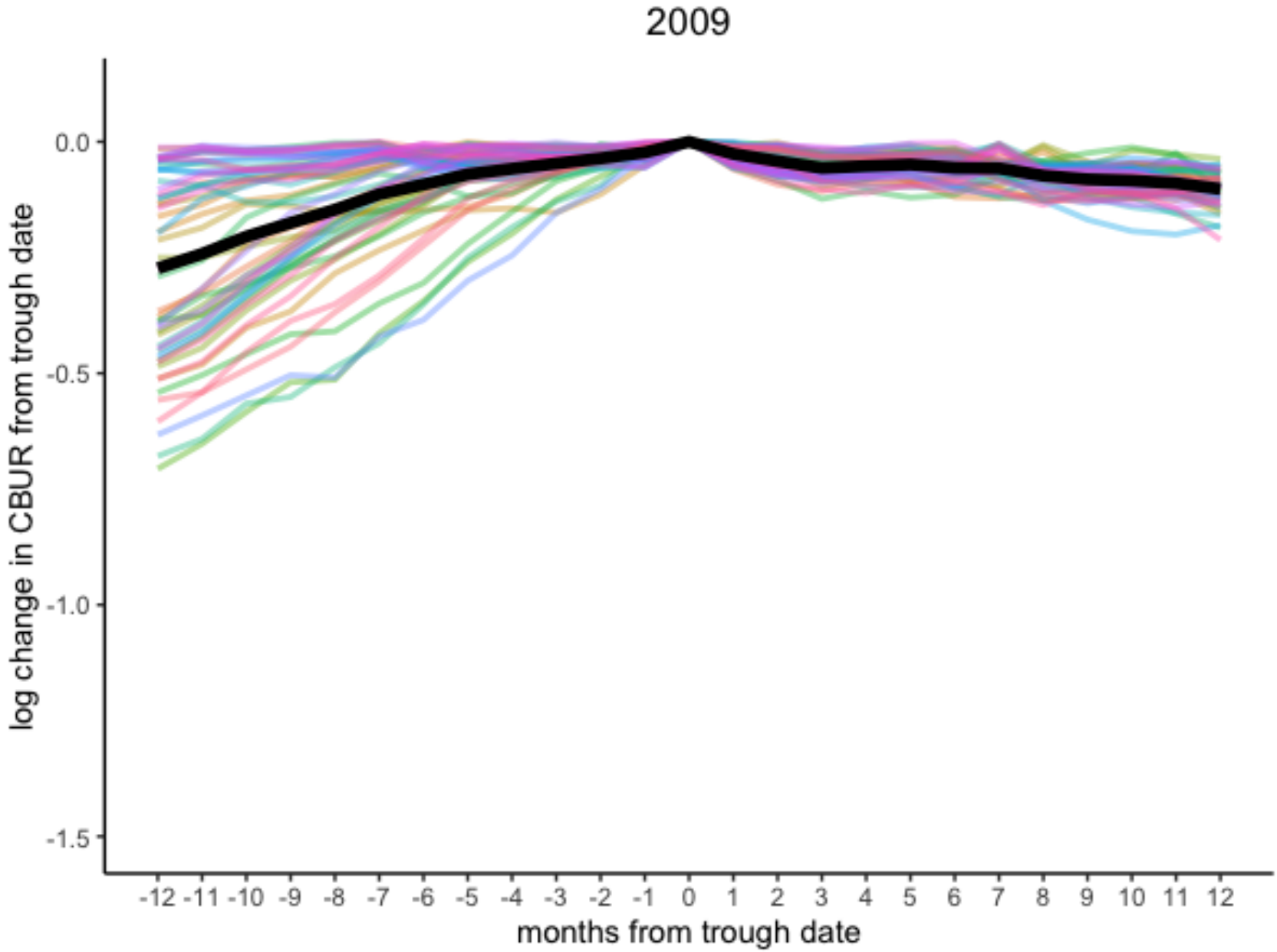
Back

Cumulative Change in CBUR Relative to Peak...



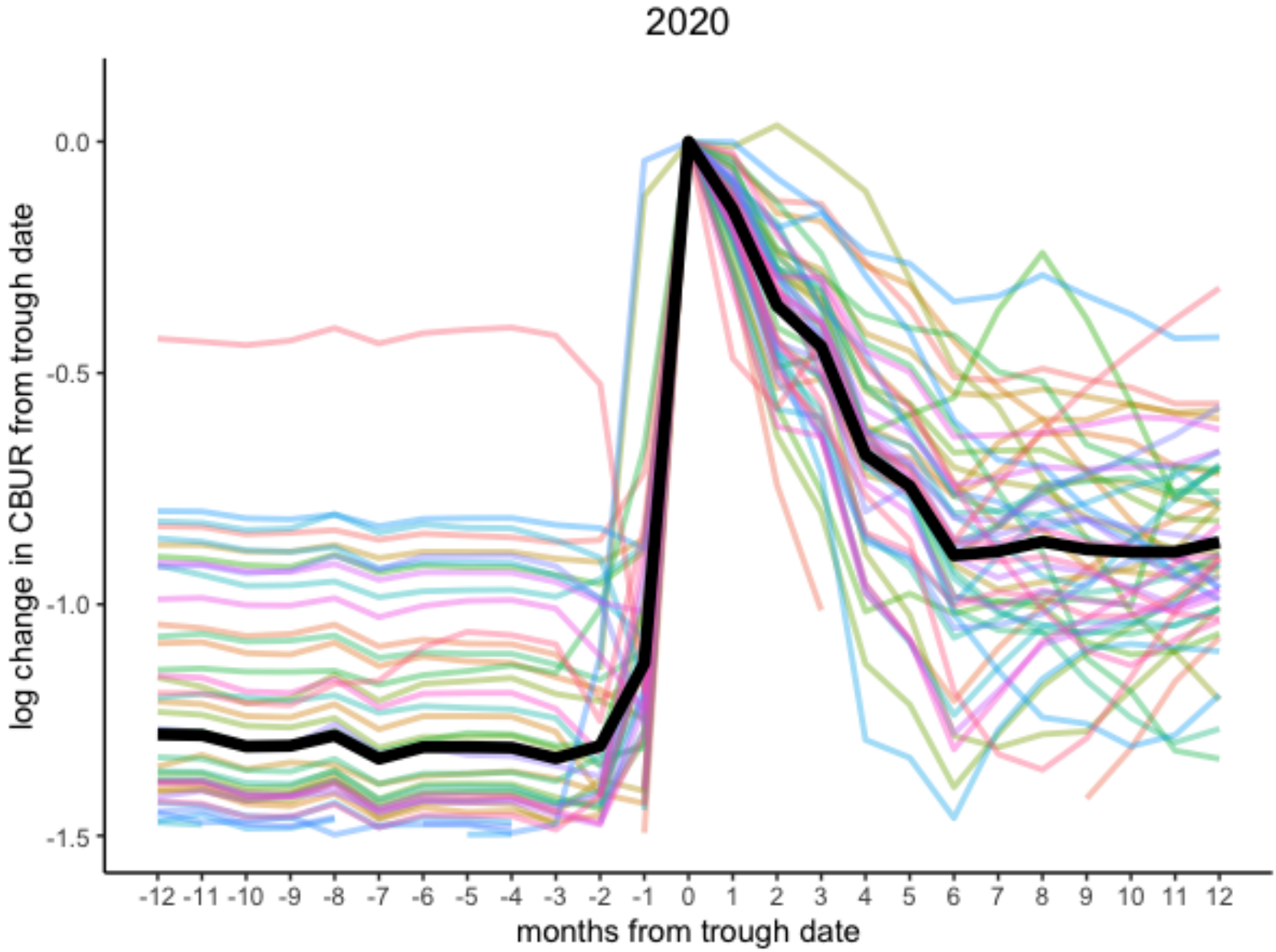
Back

Cumulative Change in CBUR Relative to Peak...



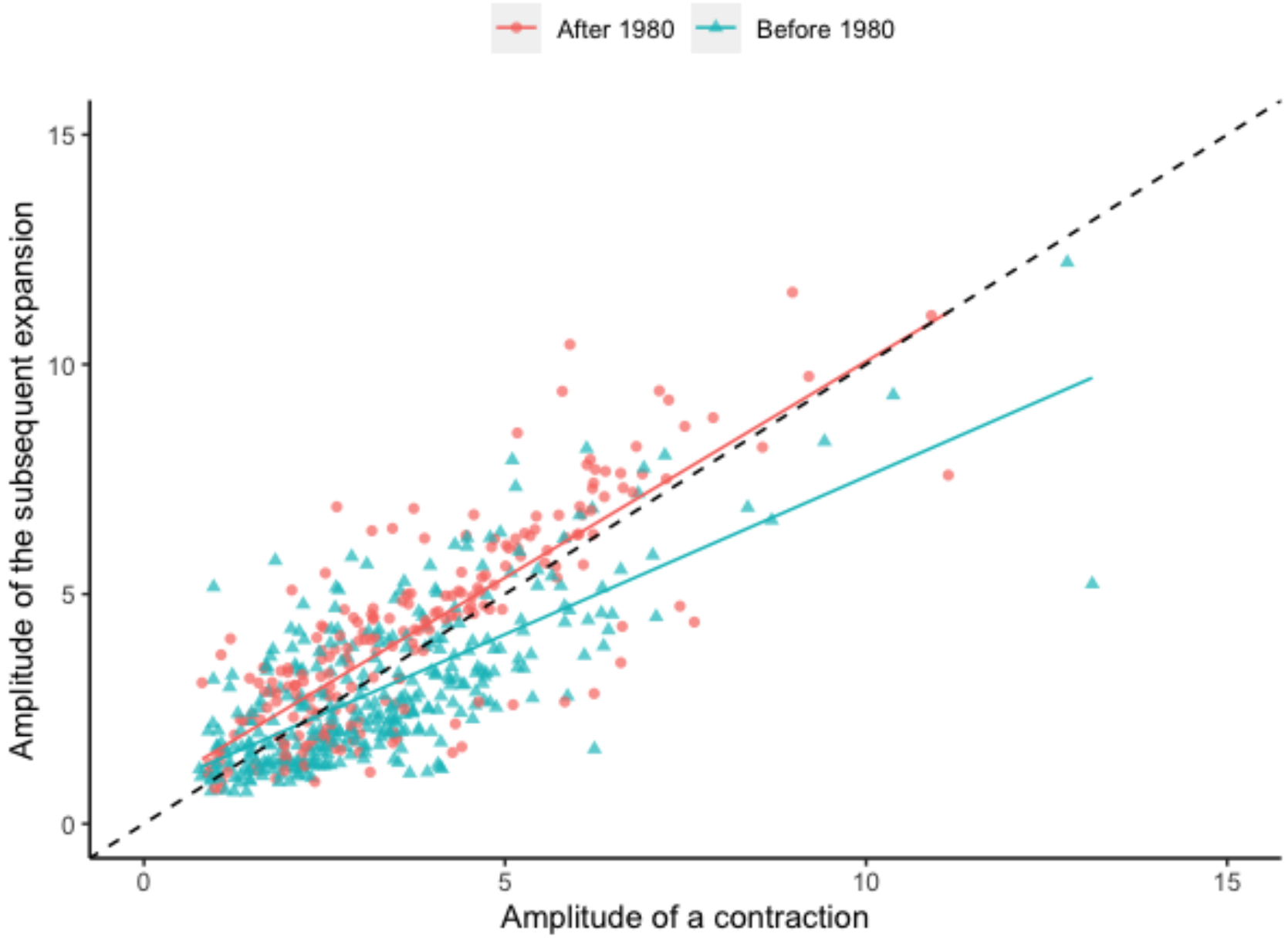
Back

Cumulative Change in CBUR Relative to Peak...



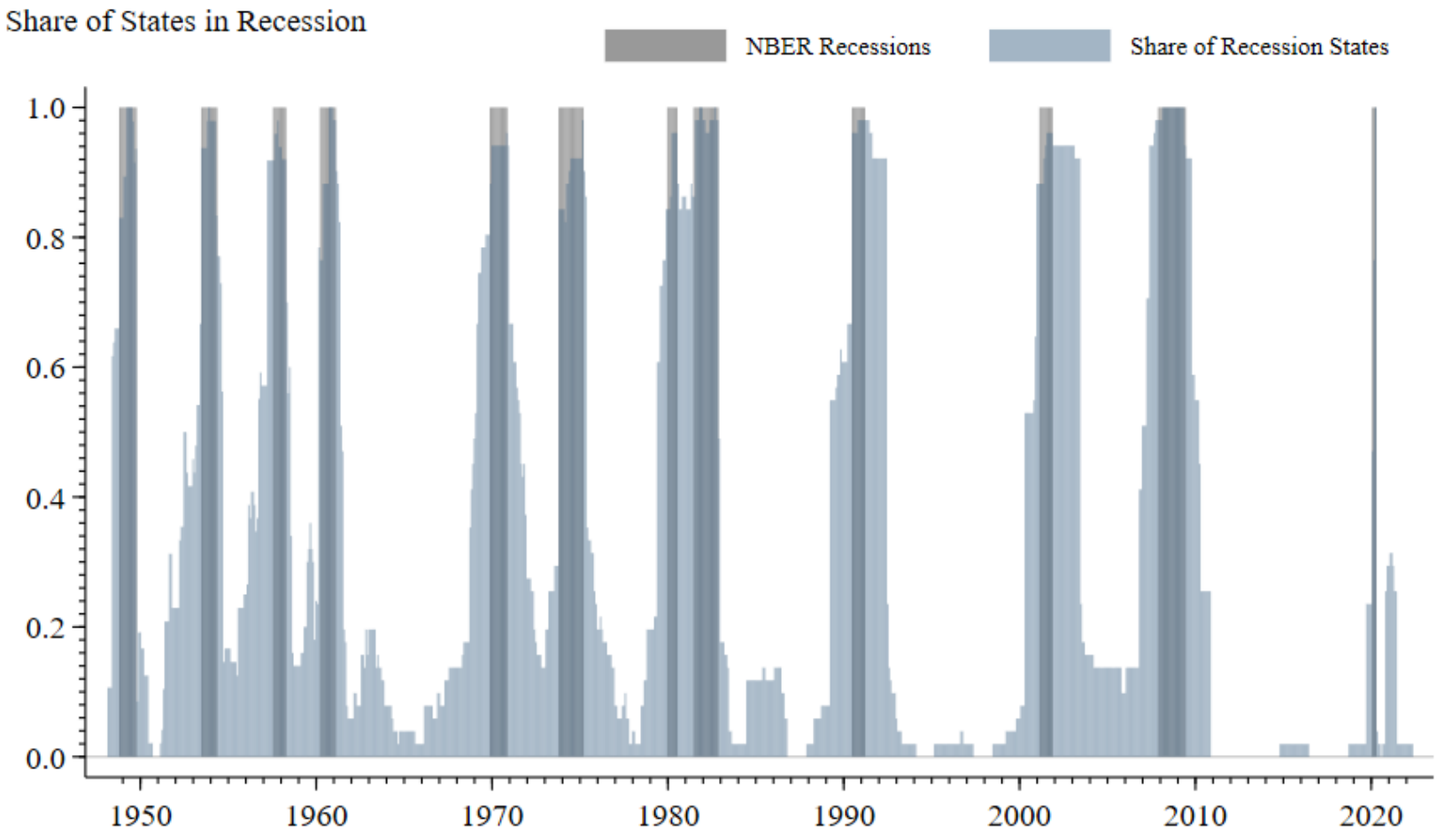
▸ Back

Convergence in Degree of Unemployment Recoveries

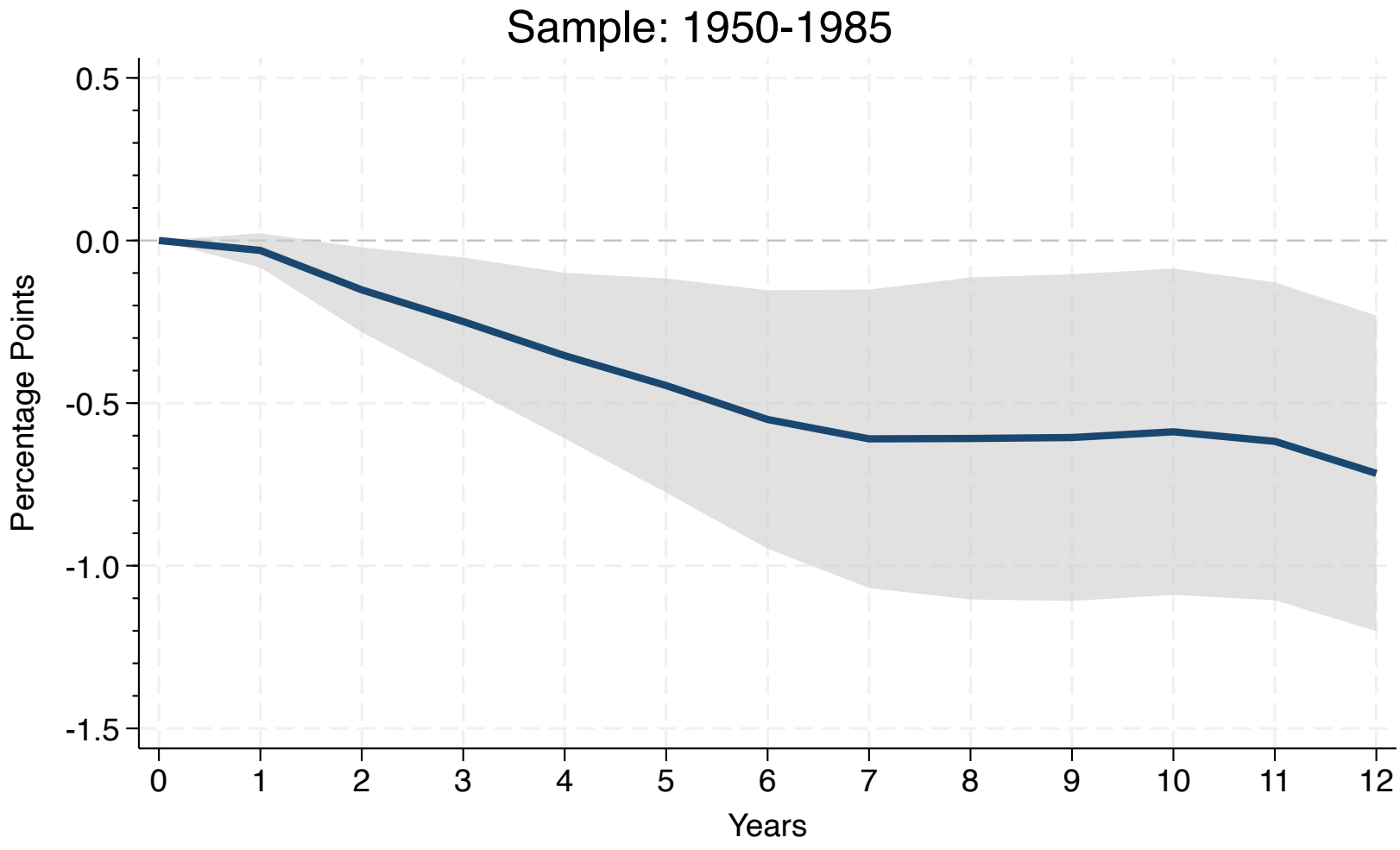


▸ Back

Recession Dating: State-level Recessions vs. NBER

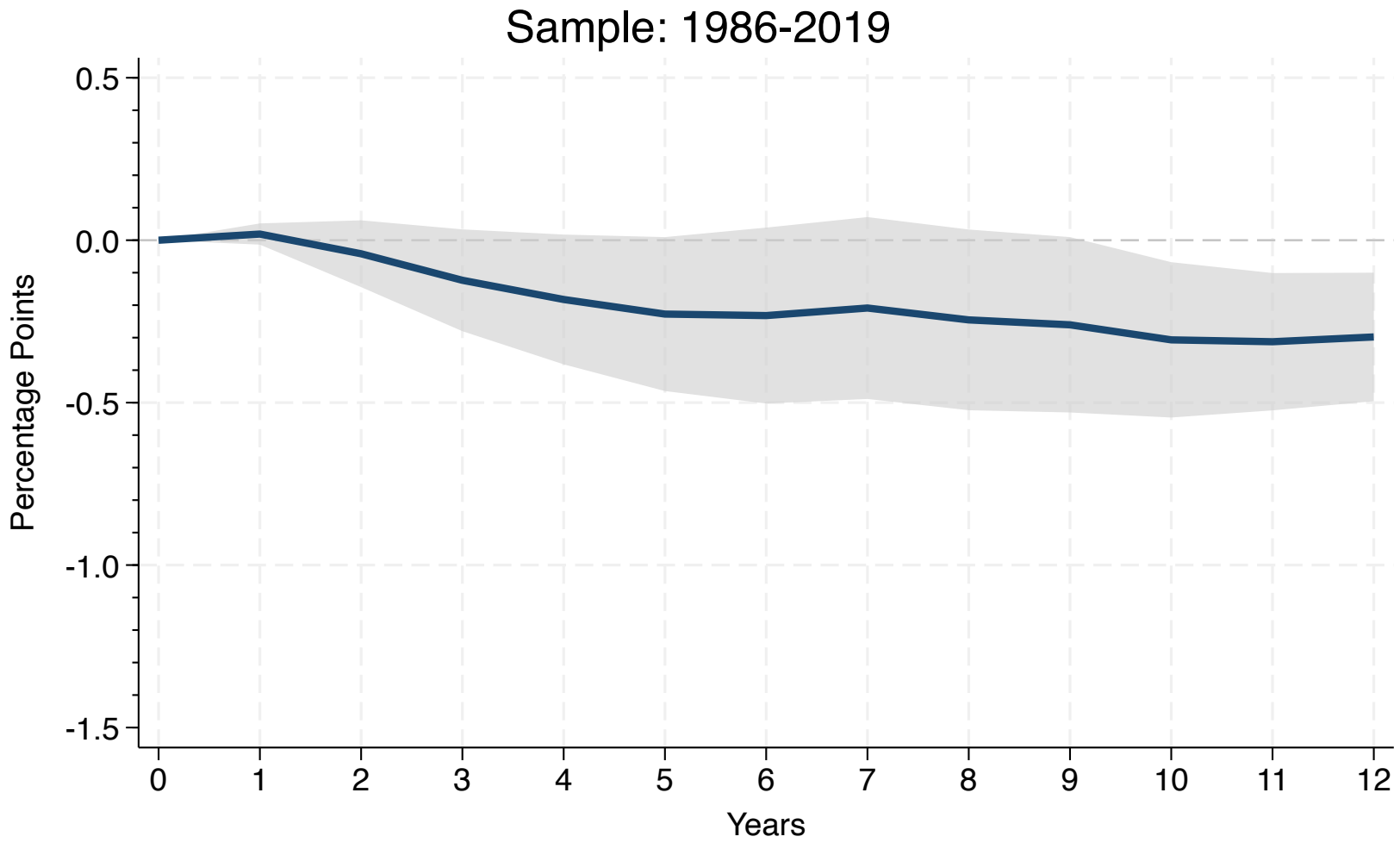


Impulse Response of Relative Population



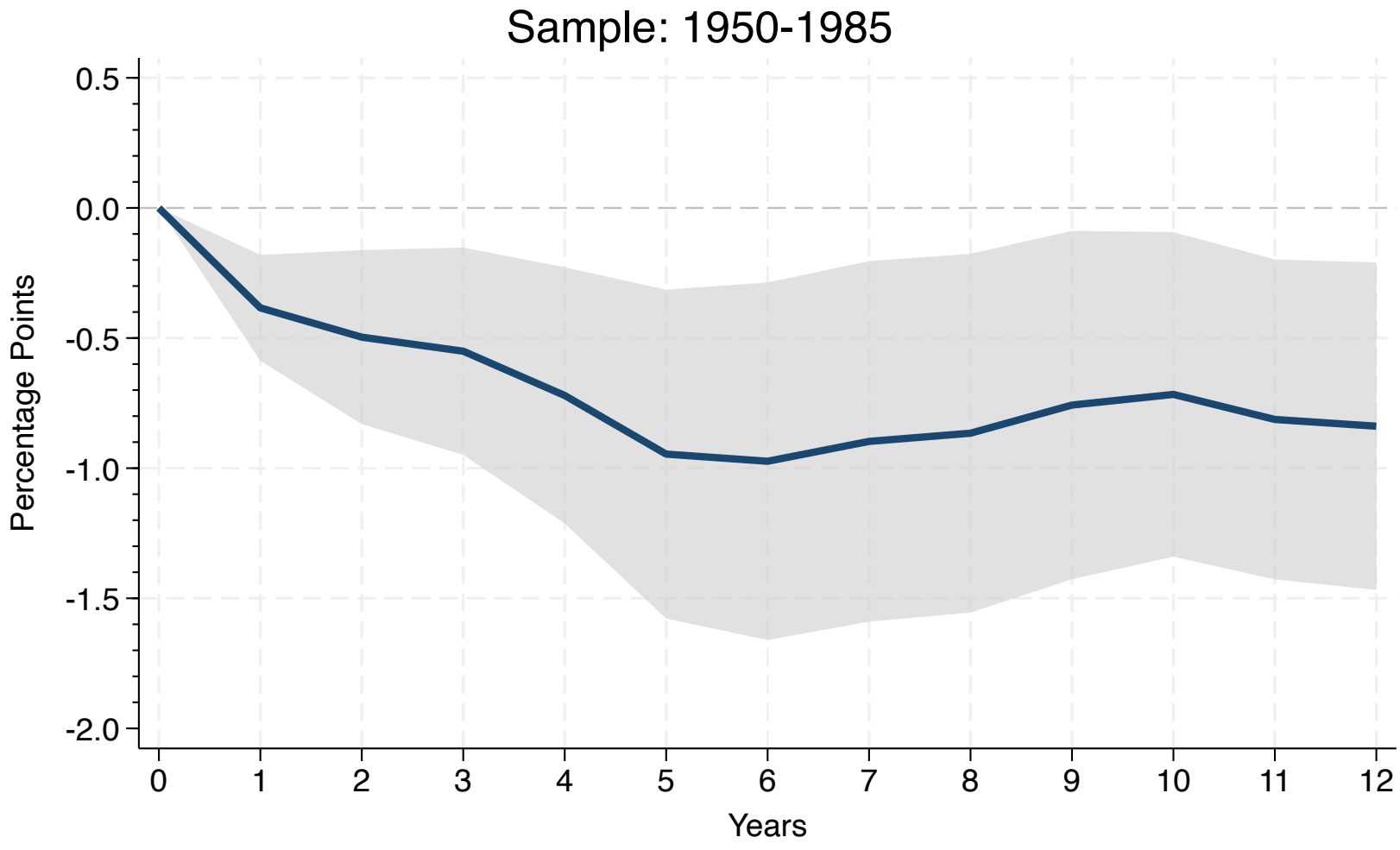
▸ Back

Impulse Response of Relative Population...



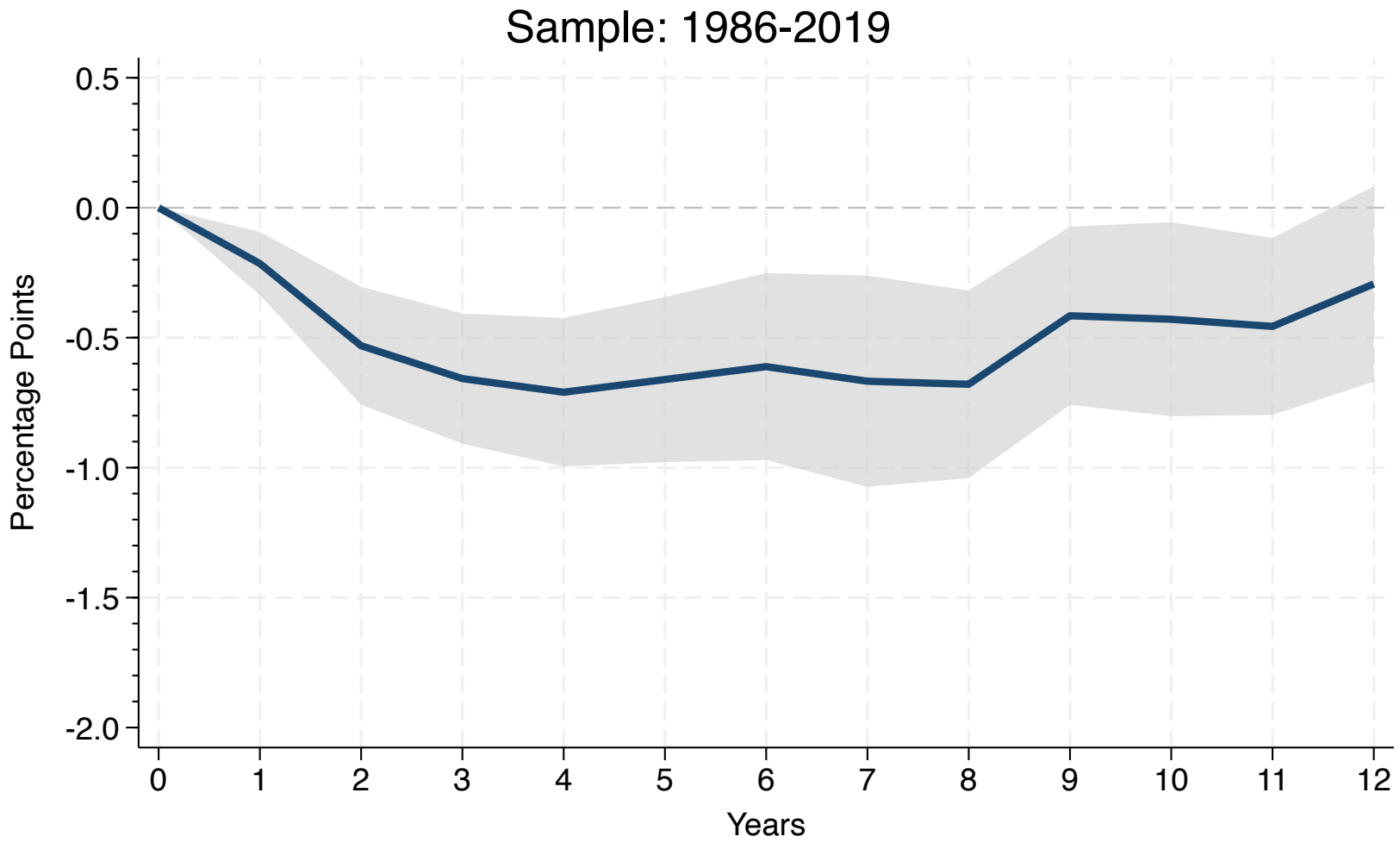
▸ Back

Impulse Response of Relative Employment



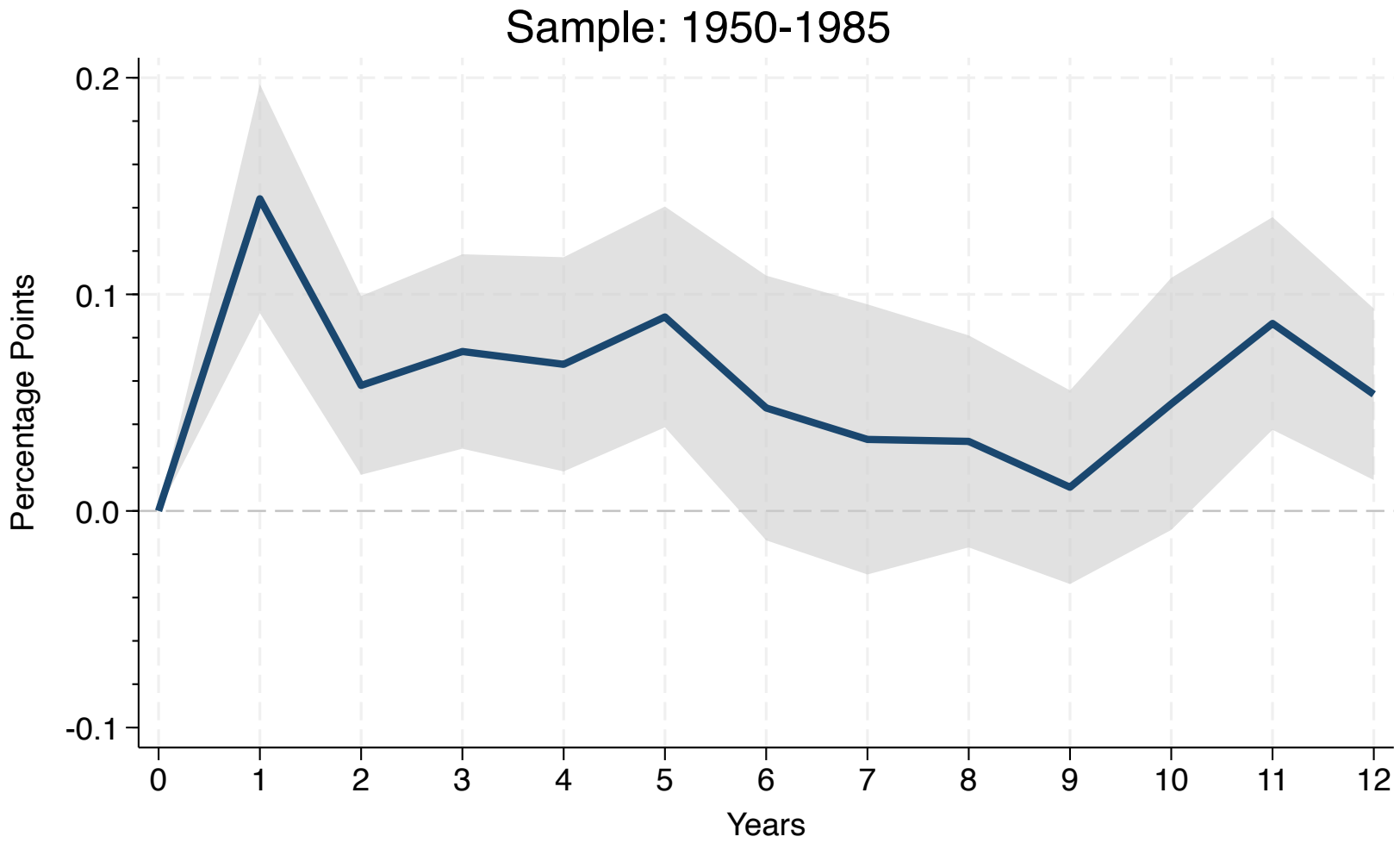
▸ Back

Impulse Response of Relative Employment...



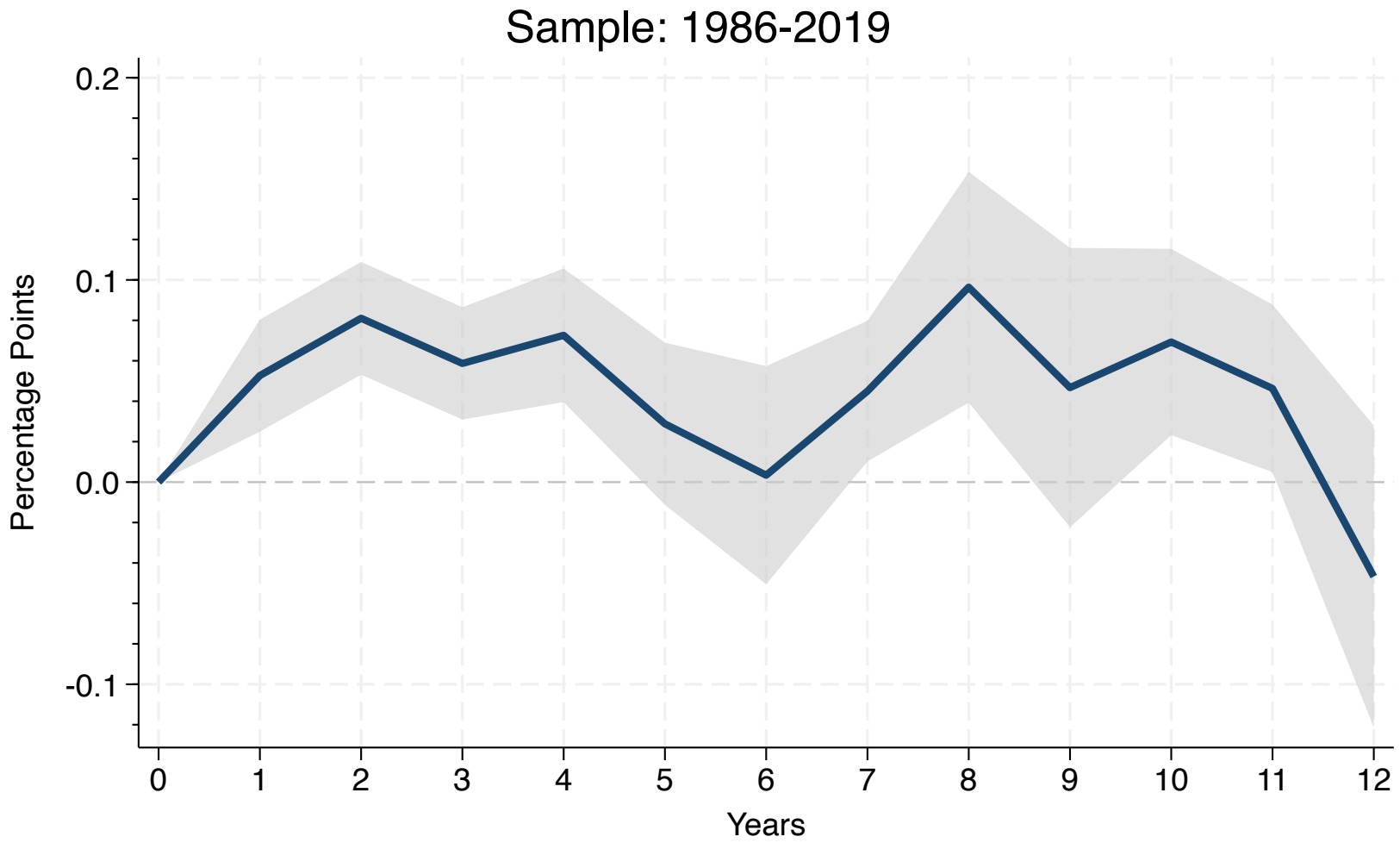
▸ Back

Impulse Response of Relative Unemployment



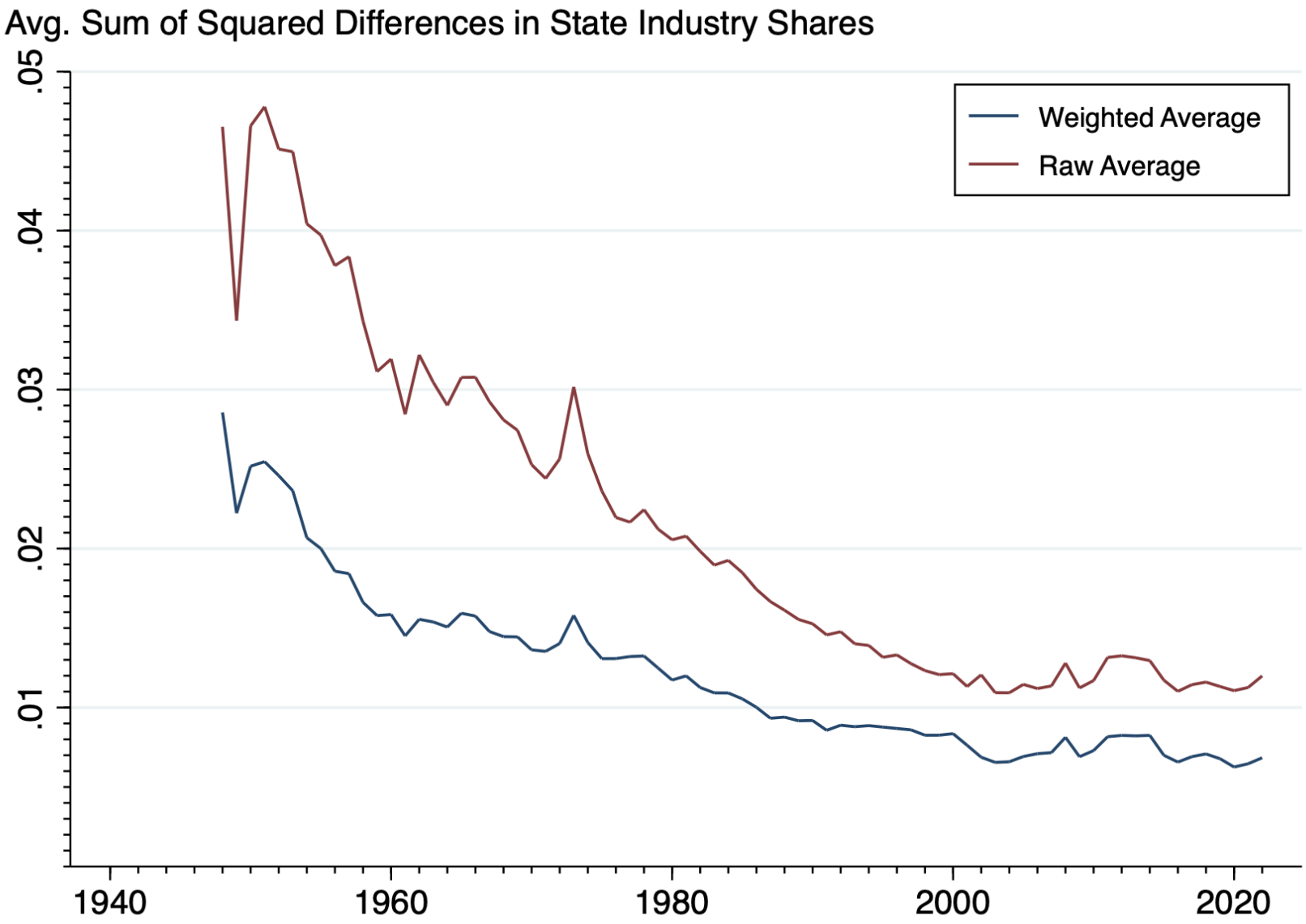
Back

Impulse Response of Relative Unemployment...

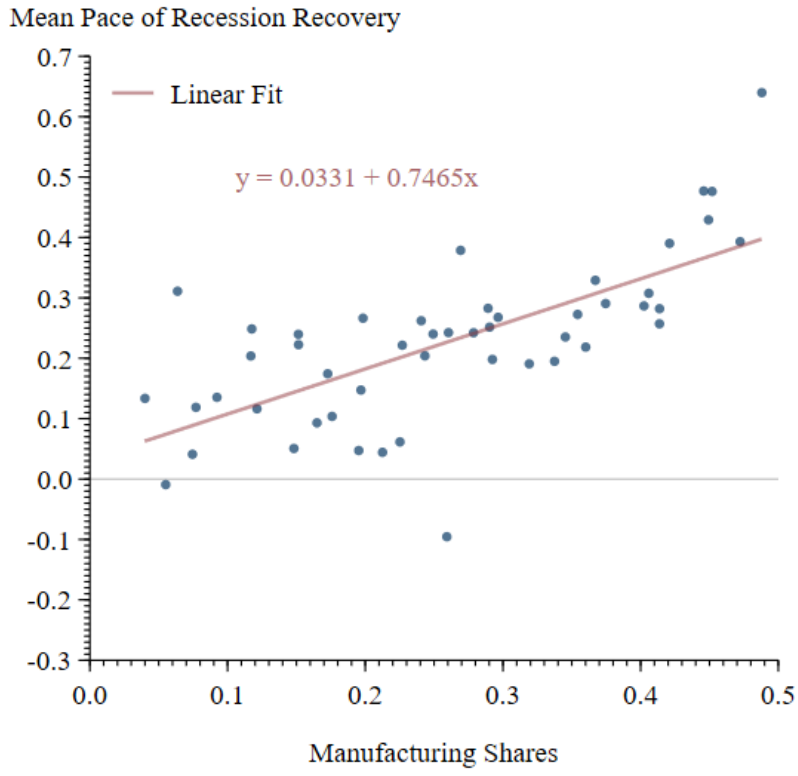


Back

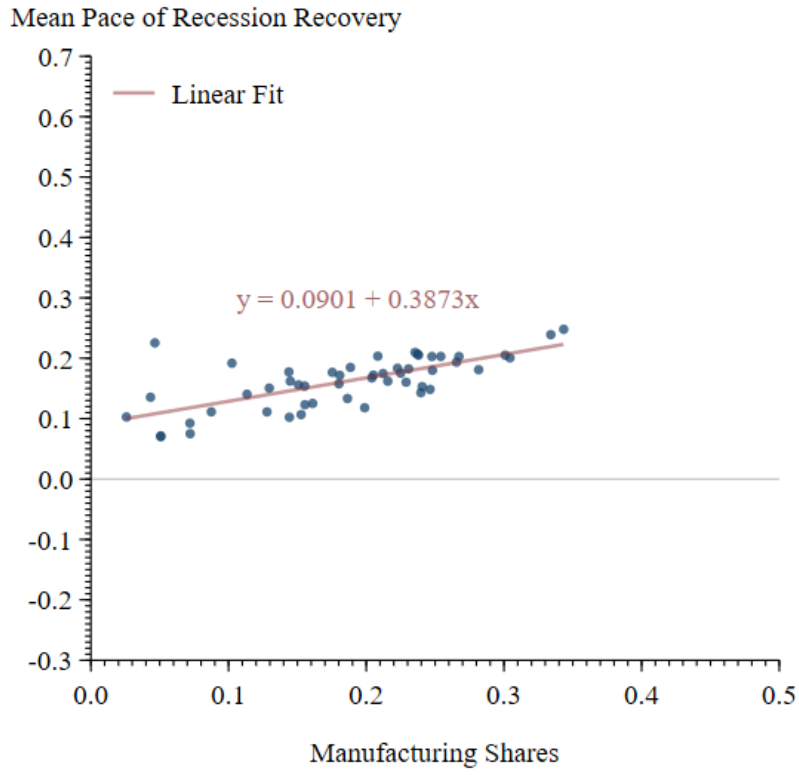
Convergence in Industrial Composition Across States



Recovery Pace by State Manufacturing Share



(a) 1948–1958 Recoveries



1961–2020 Recoveries