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

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Motivation: Limited Data Availability

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

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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

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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)
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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

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3. a stark attenuation of relative population responses to state-specific demand shocks, whereas relative employment and unemployment responses are more stable
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Evidence points to the emergence of a U.S. business cycle experienced more uniformly across states since the late 1950s
Claims-based Unemployment Rates
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Our claims-based unemployment rate for state $i$ in month $t$ is computed as

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

- 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

Graph showing the official unemployment rate, claims-based unemployment rate, and insured unemployment rate for Ohio over time, compared to the 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...
Comparison of Cyclical Unemployment (HP-filtered)

- U.S. Insured Unemployment Rate
- U.S. Claims-Based Unemployment Rate
EMERGENCE OF A UNIFORM BUSINESS CYCLE ACROSS U.S. STATES
Convergence in Relative Claims-Based Unemployment

Relative Employment Growth
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

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

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- 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
Labor Market Adjustments to Local Shocks

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

$$\Delta Y_{i,t+h} = \alpha_i + \gamma_t + \beta_{h rimix_{i,t}} + \varphi_h(L)Z_{i,t-1} + \varepsilon_{i,t+h}$$

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Main takeaways:

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

- Migration used to be an important margin, but we find a negligible population response since the mid-1980s
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- Larger (above-average) shocks are driving all the action, but these are fewer and relatively smaller in recent decades
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- We take a stab at why state economies converged when they did: convergence in industrial composition seems key.
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- 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
Comparison of Cyclical Unemployment (HP-filtered)

- U.S. Unemployment Rate
- U.S. Claims-Based Unemployment Rate

Percentage Points

-10 to 10

Year:
- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010
- 2020
U.S. Claims-Based Unemployment Rate: CPS vs. CES
Covered Employment / Nonfarm Payroll Employment
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 state/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
Long-Term Unemployment Share
Unemployment Claims by Census Regions
Alt. Claims-Based Unemployment Rate: IC Only
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:

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

where

- \(UR_{i,t}^{\text{Official}}\) is BLS’s official unemployment rate for state \(i\)
- \(UR_{US,t}^{\text{Official}}\) is BLS’s national unemployment rate
- \(UR_{i,t}^{\text{Claims}} - UR_{US,t}^{\text{Claims}}\) 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
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
Recovery Pace: National Recoveries

Recovery Pace

- Claims-Based Unemployment Rate
- Official Unemployment Rate
- Hall and Kudlyak (2020) Recovery Rates

Recovery Cycle

- 1949
- 1954
- 1958
- 1961
- 1970
- 1975
- 1982
- 1992
- 2003
- 2009
- 2020
Cumulative Change in CBUR Relative to Peak

1949

log change in CBUR from trough date

months from trough date
Cumulative Change in CBUR Relative to Peak...
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Convergence in Degree of Unemployment Recoveries
Recession Dating: State-level Recessions vs. NBER

Share of States in Recession

- NBER Recessions
- Share of Recession States

Graph showing the share of states in recession over time.
Impulse Response of Relative Population

Sample: 1950-1985

Years

Percentage Points

0 1 2 3 4 5 6 7 8 9 10 11 12
Impulse Response of Relative Population...

Sample: 1986-2019

Percentage Points

Years

Sample: 1986-2019
Impulse Response of Relative Employment

Sample: 1950-1985
Convergence in Industrial Composition Across States

Avg. Sum of Squared Differences in State Industry Shares

- Weighted Average
- Raw Average
Recovery Pace by State Manufacturing Share

(a) 1948–1958 Recoveries

1961–2020 Recoveries