NABE Economic Measurement Seminar:
Federal Reserve District Research and Surveys

An Introduction to the Chicago Fed’s Activity Indexes

Scott A. Brave

The views expressed herein are my own and do not necessarily represent those of the Federal Reserve Bank of Chicago.
1. National Activity Index
2. Brave-Butters-Kelley Indexes
3. Midwest Economy Index
4. Detroit Economic Activity Index
5. Survey of Business Conditions
6. National Financial Conditions Index
The Chicago Fed National Activity Index (CFNAI)

A monthly summary statistic for U.S. economic growth

- Weighted average of 85 indicators of U.S. economic activity
- Weights capture the relative importance to historical fluctuations
- Estimated by principal components analysis
- Covers four broad categories of data
  1. *Production and Income*: e.g., Industrial Production
  2. *Employment, Unemployment, and Hours*: e.g., Payroll Employment
  3. *Personal Consumption and Housing*: e.g., Housing Starts
  4. *Sales, Orders, and Inventories*: e.g., Manufacturing & Trade Sales
- First introduced in Evans, Liu, and Pham-Kanter (2002)
- Released toward the end of each month at chicagofed.org/cfnai
CFNAI-MA3 and Business Cycles

Above −0.7 characteristic of periods of economic expansion  
Below −0.7 increasing chance of recession | Above +0.2 significant chance of recovery
The Aruoba-Diebold-Scotti Business Conditions Index (ADSBCI) is produced by the Federal Reserve Bank of Philadelphia.

**Chicago Fed Insights:**
Measuring the Decline in Economic Activity (Jun 15, 2020)
The Brave-Butters-Kelley Indexes (BBKI)

Business Cycle Indexes and Monthly GDP Growth

- A mixed-frequency collapsed dynamic factor analysis of U.S. GDP
- An application of "big data" in macroeconomics to
  - U.S. business cycles and
  - Monthly measurement of U.S. GDP growth
- Longer history based on 500 monthly indicators and quarterly GDP
- More closely aligned with historical U.S. recessions and expansions
- Available monthly at chicagofed.org/bbki

For more information see: Technical report
BBK Coincident Index vs. CFNAI-MA3

A new “big data” index of U.S. economic activity
BBK Leading Index vs. Conference Board Leading Economic Index

The Conference Board Leading Economic Index was accessed via Haver Analytics.

A “big data” view of the U.S. economy: Introducing the BBKI
Trend-Cycle Decomposition of U.S. real GDP growth, 2017-20

Real gross domestic product

- Trend
- Cycle
- Irregular

log annualized percent change

Cumulative decline in BBK Monthly GDP since February 2020

BBK Monthly GDP Growth vs. Weekly Economic Index (WEI)

The WEI is produced by the Federal Reserve Bank of New York.

The Midwest Economy Index (MEI)

Similar to the CFNAI, but for the *Midwest* nonagricultural economy

- Weighted average of **129** state/regional indicators
- Estimated by principal components analysis
- Covers *four* broad sectors of the Midwest economy
  - Manufacturing, Services, Construction and Mining, Consumer Spending
- Spans the *five* states in the *Seventh Federal Reserve District*
  - IL, IN, IA, MI, WI
- First introduced in Brave and Lu (2010)
- Released near the end of each month at chicagofed.org/mei
MEI and the CFNAI-MA3
Relative MEI and the CFNAI-MA3
Detroit Economic Activity Index (DEAI)

A *monthly* summary statistic for Detroit economic growth

- Estimated by mixed frequency dynamic factor analysis
- Summarizes 24 annual, quarterly and monthly time series
- Covers city income, labor, real estate, and trade data
- Can be used to estimate GDP for the City of Detroit
- And forecast the City of Detroit’s real per capita income
- Released *quarterly* at chicagofed.org/deai
Detroit Economic Activity Index (DEAI)

Tracking Detroit’s Economic Recovery After Bankruptcy with a New Index
Detroit Gross City Product (GCP)

Michigan Economy Blog:
– Detroit Economic Growth Decreased Substantially in March to Its Lowest Level Since the Great Recession, According to Chicago Fed Index (Jun 4, 2020)
Detroit Real Per Capita Income

Measuring Detroit's Economic Progress with the DEAI

Scott A. Brave (FRB Chicago)
The Chicago Fed Survey of Business Conditions (CFSBC)

Survey conducted 12 times per year released at chicagofed.org/cfsbc

- Described in Brave and Walstrum (2014, 2015)
- Over 800 business contacts from a wide variety of industries
- Average response rate of approx. 10% (75% repeat responders)
- About equal percentage from goods and services industries
- Covers activity, hiring, capital spending, labor and nonlabor costs

Ex: How did demand for your firm’s goods or services change?

- Large increase
- Medium increase
- Small increase
- No change
- Small decrease
- Medium decrease
- Large decrease
CFSBC Activity Index
CFSBC Manufacturing vs. Nonmanufacturing Industries

FAQs
The National Financial Conditions Index (NFCI)

Weekly update on U.S. financial conditions at chicagofed.org/nfci

- Weighted average of 105 indicators of financial activity
- Weights capture relative importance to historical fluctuations
- Estimated by mixed-frequency dynamic factor analysis
- Broad coverage of the financial system
  1. Money markets
  2. Debt and Equity markets
  3. Traditional and “Shadow” banking systems

Useful in monitoring financial stability and forecasting

- Brave and Butters (2012)
- Brave and Butters (2011)
The NFCI and ANFCI

National Financial Conditions Index (NFCI)

FAQs
Risk, Credit, and Leverage Subindexes

Risk is a coincident, Credit a lagging, and Leverage a leading indicator of financial stress

Diagnosing the Financial System
Nonfinancial Leverage Subindex

Nonfinancial leverage is a leading indicator of financial stress and recessions.

Detecting Early Signs of Financial Instability
Additional information available at chicagofed.org/research/data/index

And in Alternative Economic Indicators available from the Upjohn Institute

Register for electronic notifications at chicagofed.org/utilities/subscribe

Contact:

Scott Brave
Economic Research
Federal Reserve Bank of Chicago
312-322-5784
sbrave@frbchi.org