Changes to Methodology: State Coincident Indexes (Last updated: April 2, 2020)

The following changes have been made to the state coincident index methodology.

April 2, 2020

Changes to Input Series

Since the introduction of the state coincident indexes in 2005, the Federal Reserve Bank of Philadelphia's Research Department has utilized the same four input series, which exclusively reflect labor market dynamics. These were nonfarm payroll employment, the unemployment rate, average hours worked in manufacturing, and wage and salary disbursement. To more accurately measure overall economic activities, the Bank's researchers have implemented two changes effective with the January 2020 release of the state coincident indexes:

- **Include proprietors' income to broaden the income component —** The proprietors' income component allows the coincident indexes to capture some changes in capital movement outside of the labor market.
- **No longer exclude certain large changes in these input series —** Our past practice had excluded specific data points for certain months in which large changes created difficulties in achieving convergence during model estimation. However, by excluding large changes, some state trends were understated. This problem has lessened, in part, because we now have significantly more data observations. Going forward, we only exclude data points for months in which the source statistical agency altered its methodology and introduced a discontinuity into the data series.

April 3, 2018

Indexing to 2007 Annual Averages

Effective with the release of the Philadelphia Fed's state coincident indexes for January 2018, all 50 state indexes and the U.S. index are indexed to their 2007 annual averages (previously indexed to July 1992). This change more directly ties the current indexes to the peak of the prior economic cycle.

April 10, 2017

Methodological Changes

Since the introduction of the state coincident indexes in 2005, the Federal Reserve Bank of Philadelphia's Research Department has utilized the same software and procedures,[1] essentially unchanged, as the core estimating process for the indexes. As part of a longer-term project to update the methodology of the coincident indexes to take into account advances in statistical theory and data and improve the accuracy of these indicators, the Bank's researchers have implemented three changes effective with the January 2017 release of the state coincident indexes:

- **Annual estimation —** The coefficients of each state model will be estimated only once a year, for the reference month of January, rather than every month as in the past. This will improve the efficiency of our monthly process and the transparency of our output.
- **New smoothing weights —** A new algorithm for smoothing the series, as suggested in Koopman and Harvey (2003),[2] is being used.
- **New estimation —** A variance restriction to the underlying (latent) factor equation is being imposed during the estimation process in order to lessen the degree of customization required in the model to avoid large variance estimates. This may affect some state indexes more significantly than others.

April 6, 2016

New Method for Computing Seasonally Adjusted Employment

The Federal Reserve Bank of Philadelphia's Research Department has produced the state coincident indexes since January 2005 using seasonally adjusted indicator series for each state's payroll employment, unemployment rate, average hours worked in manufacturing, and wage and salary disbursements. In particular, over this period, we computed our own estimates of the seasonal factors for each state's employment data.

Beginning with our release of the January 2016 state coincident indexes, we have decided to rely upon the seasonal factors produced by the U.S. Bureau of Labor Statistics rather than our own internal procedures. Going forward, we think this change will improve the accuracy of the coincident indexes.

This methodological change had little effect on our coincident indexes for most states. However, the effect was somewhat greater for Hawaii, Oregon, and Tennessee.

[1] Clayton-Matthews, Alan. *DSFM Manual* (version 4/17/2001) mimeo, University of Massachusetts–Boston (2001).
[2] Koopman, Siem Jan, and Andrew Harvey. "Computing Observation Weights for Signal Extraction and Filtering," *Journal of Economic Dynamics & Control*, 27 (2003), pp. 1317–1333.