Update of "How Big is the Output Gap?

By Justin Weidner and John C. Williams

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This note reports updated estimates of output gaps based on the methods used in "How Big is the Output Gap?" *FRBSF Economic Letter* 2009-19, June 12, 2009, by Justin Weidner and John C. Williams: http://www.frbsf.org/publications/economics/letter/2009/el2009-19.html. The estimates reported in the original *Economic Letter* were based on data through the first quarter of 2009. The updated estimates reported here use data through the fourth quarter of 2015. This note also takes into account the Congressional Budget Office's estimates of potential output and NAIRU in its Budget and Economic Outlook released in January 2016. In addition to providing estimates, this update reports revised estimates for past quarters, which incorporate the effects of data revisions and changes in parameters used in estimating output gaps.

Table 1.

Alternative estimates of output gap

	2007Q4	2008Q4	2009Q4	2010Q4	2011Q4	2012Q4	2013Q4	2014Q4	2015Q1	2015Q2	2015Q3	2015Q4
1. CBO output-based	-0.6	-5.0	-6.4	-4.8	-4.2	-4.2	-3.3	-2.5	-2.7	-2.1	-2.0	-2.0
2. Laubach-Williams	2.3	-0.5	-1.6	-0.4	0.0	0.1	0.4	1.0	1.0	1.1	1.1	1.1
3. Capacity utilization	-0.8	-5.9	-7.8	-4.5	-3.4	-3.4	-3.2	-2.4	-2.7	-2.7	-2.6	-2.8
4. CBO unemployment-based	0.2	-3.3	-8.4	-7.5	-5.9	-4.6	-3.3	-1.4	-1.2	-0.9	-0.5	-0.2
5. Job market perceptions	-0.5	-4.0	-5.7	-5.4	-4.9	-3.6	-3.1	-2.0	-1.2	-1.4	-1.0	-1.0
6. Business survey	-1.1	-4.2	-7.1	-6.1	-4.3	-3.4	-1.5	-0.4	0.6	0.8	0.6	1.1
7. Job vacancies	-1.4	-5.8	-8.3	-5.7	-4.1	-3.2	-2.1	0.9	1.6	2.8	3.2	2.3

Figure 1.

Estimates of the output gap
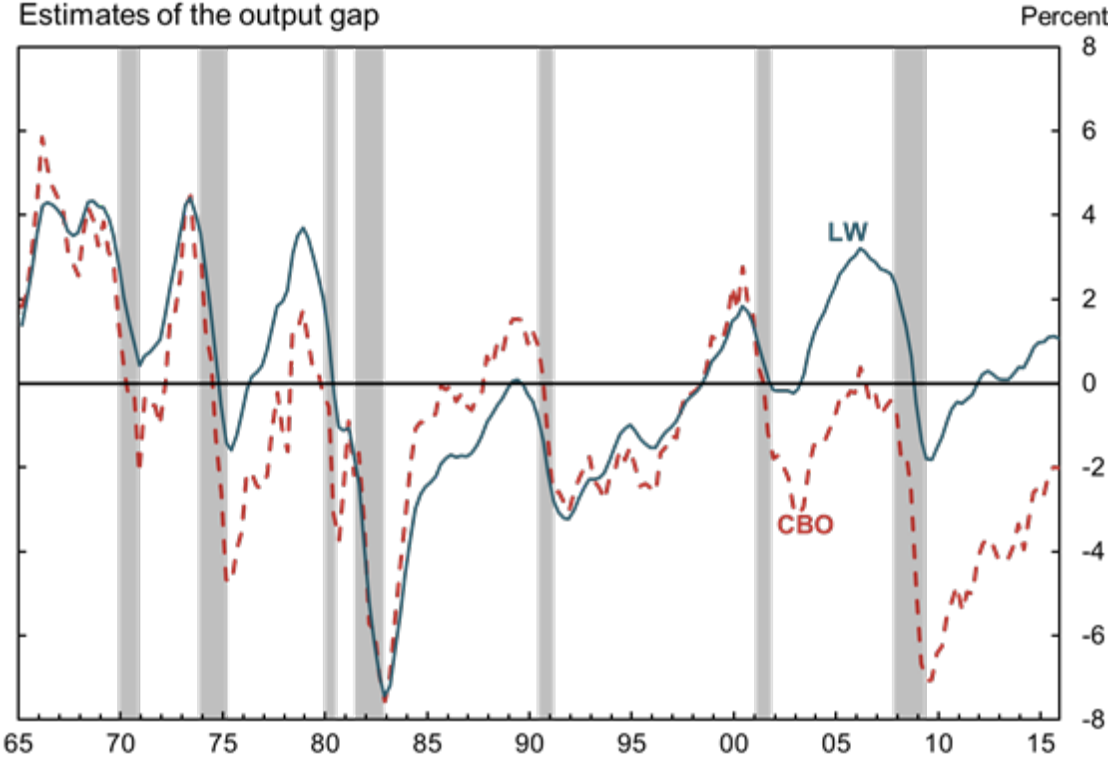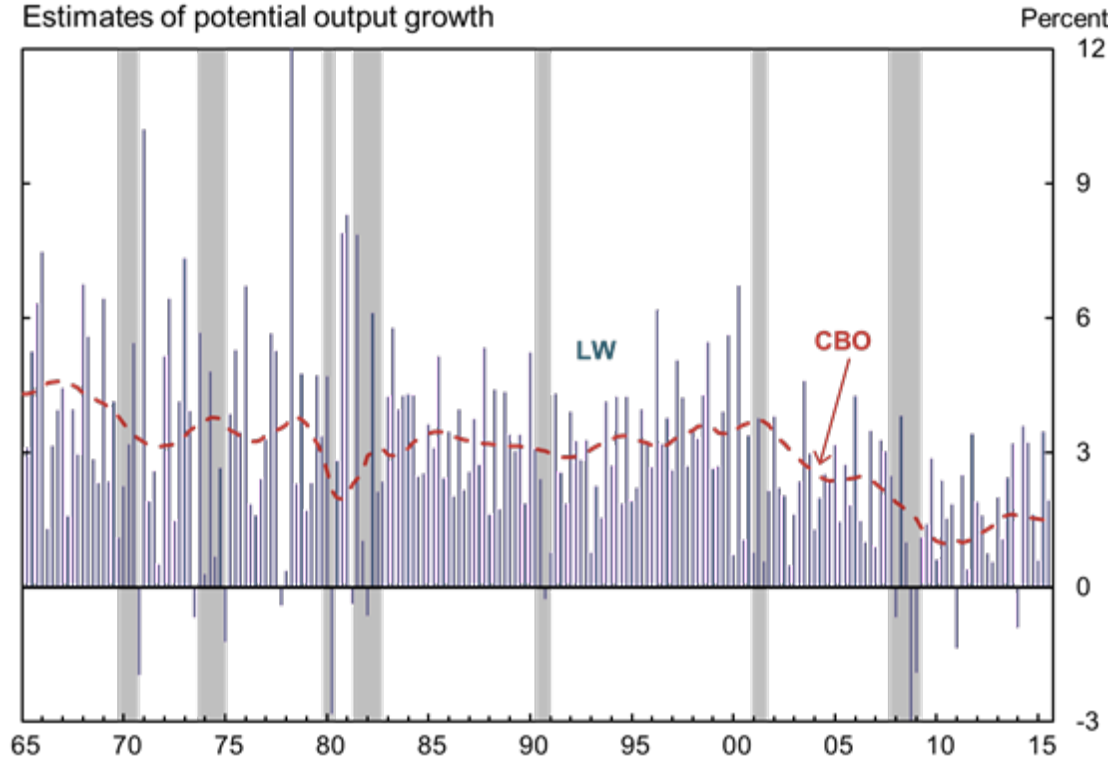
Percent

Figure 2.

Estimates of potential output growth

Percent

Methodological Note on Estimates Underlying Table 1

Capacity utilization is the manufacturing capacity utilization from the Federal Reserve Board's G.17 Statistical Release. The job market perceptions series is constructed from the Conference Board survey as a diffusion index of percentage of households that think jobs are plentiful versus the percentage of households that think jobs are hard to get (%plentiful - %hard to get + 100). The business survey is a three-month moving average of the percent of firms with at least one "hard-to-fill" position from the National Federation of Independent Businesses survey. Job vacancies are the total private job opening rate from the BLS Job Openings and Labor Turnover Survey. The data we use in normalizing the capacity utilization, job market perceptions, and business survey series is January 1990 – December 2015. For the job vacancies series, the data only goes back to December 2000, so the relevant data range for this series is December 2000 – December 2015.

The general procedure to generate the alternative estimates of the output gap is as follows:

1. For each of the measures, we normalize the series to have the same mean and standard deviation as the CBO unemployment gap over the data period to get unemployment gap equivalents.
2. Aggregate the monthly data into quarterly data.
3. Multiply the CBO unemployment gap and the unemployment gap equivalents for each series by 1.7, which is the coefficient from an Okun's Law regression of the CBO output gap and the CBO unemployment gap, to get the synthetic output gaps.

This standard statistical method in step one of transforming the series to have the same mean and standard deviation as the CBO unemployment gap may result in changes in past data points as new observations change the mean and standard deviation of each series.