



## Mind the Gap: Measuring Actual vs. Potential Output

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The Organization for Economic Cooperation and Development recently forecasted that real U.S. GDP (output) in 2004 will average 0.3 percent less than potential output. In the third quarter of 2003, though, real GDP grew at a surprising 8.2 percent annual rate, the economy's fastest rate of growth in nearly 20 years. If real GDP has increased by 4 percent (annual rate) in the fourth quarter of 2003, which many economists expect, then the economy will have grown at a 6.1 percent annual rate over the second half of 2003.

Although few economists expect this growth rate to persist into 2004, it seems apparent that recent economic growth has been boosted by expansive monetary and fiscal policies. Hence, an important question for policymakers is when will the percentage difference between the economy's hypothesized level of potential output and actual output—termed the output gap—be closed? A highly expansionary monetary policy entails little risk of an acceleration of inflation when there is considerable resource slack. But as the gap closes and the economy increases its use of resources, continuing such a policy carries significant risk of a rapid acceleration of inflation. Key to this framework, though, is a correct measurement of the gap. Thus, perhaps a more pertinent question is how accurate are measures of the output gap?

The chart plots three different measures of the output gap using three different vintages of data. The first measure is derived from the Congressional Budget Office's (CBO) measure of potential real GDP, which is estimated from an econometric model. This gap is measured in 1996 dollars, which are the estimates prior to the Dec. 10, 2003, 12th comprehensive revision of the national income and product accounts (NIPA).

The remaining two measures are derived from two different statistical filtering (detrending) techniques that extract the long-run component of real GDP, which approximates potential output. The first, using the band-pass (BP) technique, measures the gap in "real time."<sup>1</sup> For example, the output gap for the first quarter of 2001 is calculated from data

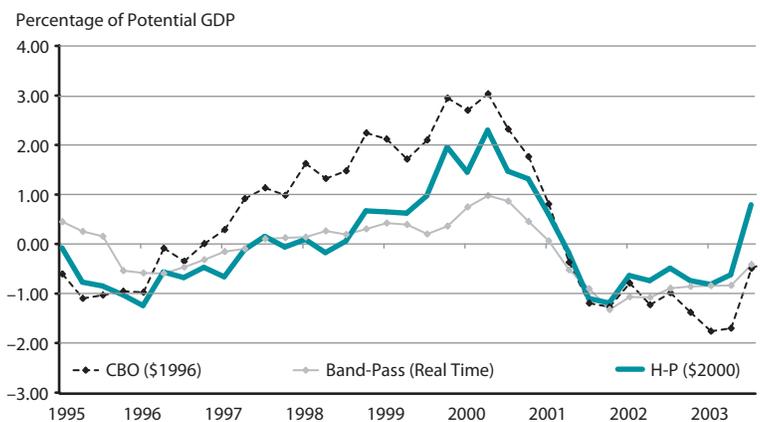
available to policymakers as of May 2001 (initial estimate of first-quarter real GDP). The third measure uses the Hodrick-Prescott (HP) technique, which measures the gap with the current vintage of NIPA data (in 2000 dollars).

From the chart, it is apparent that estimates of the output gap can differ significantly across both estimation techniques and data vintages. For example, in the first quarter of 2000, the difference between the CBO estimate and the real-time BP estimate was 2 percent of potential GDP.

There are two key reasons why estimates of the gap should be viewed cautiously. First, the output gap depends on a value that *can* be measured with reasonable accuracy (real GDP) and a value that *cannot* (potential output); moreover, there is no agreed upon method for calculating potential output. Second, actual GDP is continually revised to incorporate improved data or new methodologies. Hence, the current estimated gap may look much different after a future revision that incorporates new information. ■

<sup>1</sup>Data are from the manuscript "The Reliability of Inflation Forecasts Based on Output Gap Estimates in Real Time," by Athanasios Orphanides and Simon van Norden (November 2003).

### GDP Output Gaps: How Reliable?



NOTE: The H-P measure uses data after the Dec. 10, 2003, NIPA comprehensive revision. The other two measures use data prior to this revision.