

Does capacity utilisation help estimating the TFP cycle?

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The output gap is a key variable for calculating cyclically adjusted budget balances (CAB) of EU Member States. Following a 2002 ECOFIN decision, the European Commission (EC) measures the output gap via a Cobb-Douglas production function (see Denis et al., 2002) that relates the cyclical component of GDP to the cyclical components of labour and of total factor productivity (TFP). While the labour cycle is estimated using unemployment and wage inflation in a Phillips curve relationship (see Denis et al., 2006), so far the EC procedure extracts the TFP cycle with the Hodrick-Prescott filter (HP; Hodrick and Prescott, 1997).

Output gap measures have, for example, been criticized for their real time performance by Ruenstler (2002) as well as Planas and Rossi (2004). More recently Marcellino and Musso (2008) use a comprehensive real time data set and compare several methodologies as well as the various approaches adopted by international organisations and confirm real time problems of output gap measures. Strong revisions of output gaps are often made for boom periods. During the boom there is a tendency to overestimate the underlying trend and therefore underestimate the positive output gap.

In this paper we concentrate on one source of the problem, namely HP filtering of TFP. The HP filter is known to be problematic because of the end point bias problem, but also for not using complementary information, useful for extracting cyclical components from the data. Such information is, for example, provided by indicators of capacity utilisation. Capacity utilisation also arises naturally as a measure for cyclical variation in measured TFP within a production function framework. We propose a bivariate model that links TFP to capacity utilization and we show that this model improves the TFP trend-cycle decomposition upon univariate and Hodrick-Prescott filtering. In particular, we show that estimates of the TFP cycle that load information about capacity utilization are less revised than univariate and HP estimates, both with 2009 and real-time TFP data vintages. We obtain this evidence for twelve pre-enlargement EU countries. Also our data vintages contain the 2000 and the 2007 boom.