

Potential for Trouble: The IMF's Estimates of Potential GDP

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Real Gross Domestic Product (GDP) — a measure of the quantity of goods and services produced — serves as one basic indicator of the state of the economy and one that the International Monetary Fund (IMF) relies upon in assessing the economic policies of its member countries.

This emphasizes the importance of accurate IMF forecasts of GDP, yet a number of economists have noted problems with overoptimistic forecasts of GDP in recent years in Greece (and previously, Argentina). The IMF's own research confirms that they have previously underestimated fiscal multipliers — the impact of tax and spending policy on GDP.¹ Indeed, this has helped lead the IMF to underestimate the depressing effect of tightening government budgets.

Another relevant indicator, *potential* GDP — the capacity of the economy to produce goods and services — may be just as important as actual GDP from a policy perspective. Whether or not an economy is operating near capacity helps determine the scope of action among monetary and fiscal policymakers. Unfortunately, potential GDP is neither directly measurable nor nearly as well defined as GDP, allowing economists considerable discretion in forming their estimates.

1 See Krugman, Paul. June 25, 2015. "Breaking Greece." The Conscience of a Liberal (blog), The New York Times. http://krugman.blogs.nytimes.com/2015/06/25/breaking-greece/?_r=0 See also Weisbrot, Mark and Juan Antonio Montecino. 2012. "More Pain, No Gain for Greece: Is the Euro Worth the Costs of Pro-Cyclical Fiscal Policy and Internal Devaluation?" Washington, DC: Center for Economic and Policy Research. <http://cepr.net/publications/reports/more-pain-no-gain-for-greece> For the IMF research on errors in estimating multipliers, see Blanchard, Olivier and Daniel Leigh. January 2013. "Growth Forecast Errors and Fiscal Multipliers." International Monetary Fund Working Paper 13/1. <https://www.imf.org/external/pubs/ft/wp/2013/wp1301.pdf>



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For example, in the October 2015 World Economic Outlook, the IMF projects Spain to have an unemployment rate of 16.6 percent in 2019.² Yet, even by the IMF's lowest estimate of the output gap — the difference between potential and actual GDP — Spain's GDP is forecast to be above potential GDP in 2019. In other words, the IMF estimates that Spain will in some sense be fully employing its labor force despite one in six still looking for work.³

There is danger in such contradiction. The IMF concludes that “structural reforms” — particularly those aimed at increasing “labor flexibility” — are key to increasing potential GDP. In response, the Spanish government passed in 2012 a number of such reforms that weakened labor's bargaining ability and other rights. Yet, if the IMF is underestimating potential, such supply-side reforms may likely weaken — rather than strengthen — the Spanish economy.

Spain is not the only country for which the IMF argues such reforms are required. The IMF estimates that Greece's economy will be only 1.2 percent below potential in 2020, yet continue to suffer 19.9 percent unemployment. Clearly, there is trouble in Greece if policymakers cannot find a way to employ one fifth of its workforce. However, if the IMF is underestimating the economy's ability to produce, the problem may be on the demand — not supply — side.

The IMF's estimates for potential GDP therefore have dramatic implications for the economies they advise. This issue brief, then, begins to probe the IMF's approach to forming those estimates and explores the importance of carefully considered methodology.

First, it should be noted that there is no consistent methodology for estimating potential GDP at the IMF. Rather, the Independent Evaluation Office (IEO) surveyed various country desks and found:

Survey evidence shows that in the Fund's medium-term forecasting the use of any particular individual forecasting method is much less universal than the use of judgment — understood as a set of information and knowledge, not necessarily quantitative in nature, that desk economists and mission chiefs accumulate about the countries on which they work.⁴

2 International Monetary Fund (IMF). 2015. “World Economic Outlook Database, October 2015.” World Economic and Financial Surveys.

https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/weorept.aspx?pr.x=80&pr.y=3&sy=2013&ey=2020&scsm=1&ssd=1&sort=country&ds=.&br=1&c=184&s=NGAP_NPGDP%2CLUR&grp=0&a=

3 IMF. 2015. “Spain: Selected Issues.” IMF Country Report No. 15/233, p. 57, Figure 1.

<https://www.imf.org/external/pubs/ft/scr/2015/cr15233.pdf>

4 Resende, Carlos de. 2014. “An Assessment of IMF Medium-Term Forecasts of GDP Growth.” IEO Background Paper. Independent Evaluation Office of the International Monetary Fund, p. 25.

<http://www.imf.org/ieo/files/completedevaluations/BP%2014%2001%20-%20An%20Assessment%20of%20IMF%20Medium-Term%20Forecasts%20of%20GDP%20Growth%20-%20CDR.pdf>

Even in data-rich Europe, only half of IMF economists used any statistical method to produce their forecasts. As noted by the IEO, the popularity of the Hodrick-Prescott (HP) filter⁵ to estimate potential output is especially problematic:

Assuming a trend that is too smooth has implications for the volatility of the estimated output gap: it can generate excessive cyclicality in the output gap when there is little, or smooth out existing structural breaks in potential output. The second major drawback of using the HP filter to estimate potential output is its high sensitivity to the addition of new data points at the end of the sample period.⁶

Policy decisions depend greatly on estimates of potential output. A country with a large output gap and high unemployment is surely demand constrained, while one with a small output gap and high unemployment may have supply-side problems. Consequently, an underestimate of potential output may lead policymakers to excessively tighten fiscal and monetary policy and thereby cause the economy to underperform.

The problem is particularly acute for a country that suffers a large downturn. While such an economy is contracting, filtering will cause downward revisions to *forecasts* of potential output. To some extent, such revisions may make sense. Low output today almost certainly comes with low investment and thus depressed *future* capacity for production. Indeed, a severe and prolonged downturn may create a self-fulfilling prophecy, as low demand for goods may result in companies not maintaining or replacing equipment, thereby depressing potential.⁷

However, in the face of a sharp depression, filtering techniques will result in an apparent fall in *past* potential as well as future. That is, it will appear that the economy had been operating well in excess of capacity, when this was not necessarily the case. **Figure 1** shows several filter-driven estimates of potential GDP for a country that experienced a multiyear collapse. The estimates of trend output vary only by the number of years of data used in the process. That is, the first estimate shows HP filtered data from 1980 to 2000, while the last filters real GDP from 1980 to 2015.

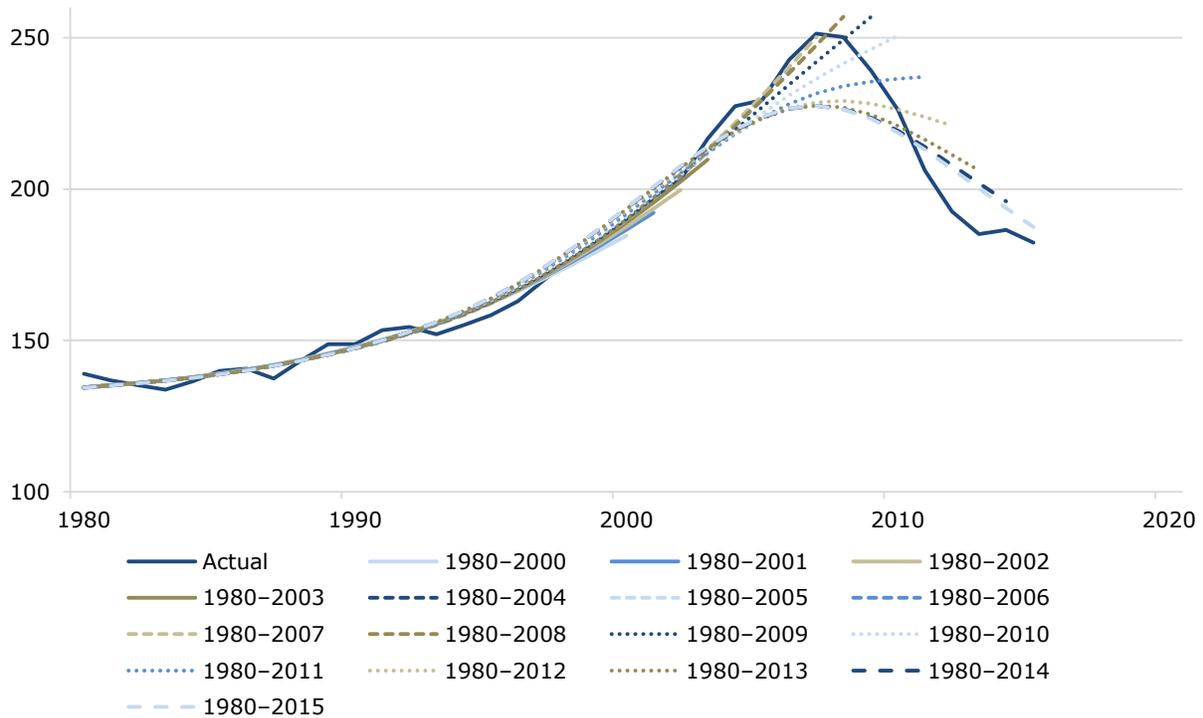
5 The HP filter seeks to smooth out fluctuations in data. That is, respecting GDP it aims to filter out the effects of the business cycle and leave the trend.

6 Ibid, p. 20.

7 See also Ball, Laurence M. 2014. "Long-term Damage from the Great Recession in OECD Countries." Working Paper 20185. National Bureau of Economic Research.
http://siteresources.worldbank.org/INTMACRO/Resources/w20185_LBall_November5.pdf

FIGURE 1

Estimates of Potential GDP Using HP Filtered Data in Different Year Ranges



Source: Author's calculations.

As we can see, trends fit the data very reasonably precrisis, but the collapse of the economy brought large downward revisions to previous estimates of potential GDP. That is to say, looking back at previous years after the downturn, the filtered data indicate that previous levels of GDP were above potential GDP. For example, if we accept the filtered data as estimates of potential output, we would have thought — in real time — that the economy was on track in 2007, but by 2015 would believe that the economy had been operating at more than 10 percent above potential.

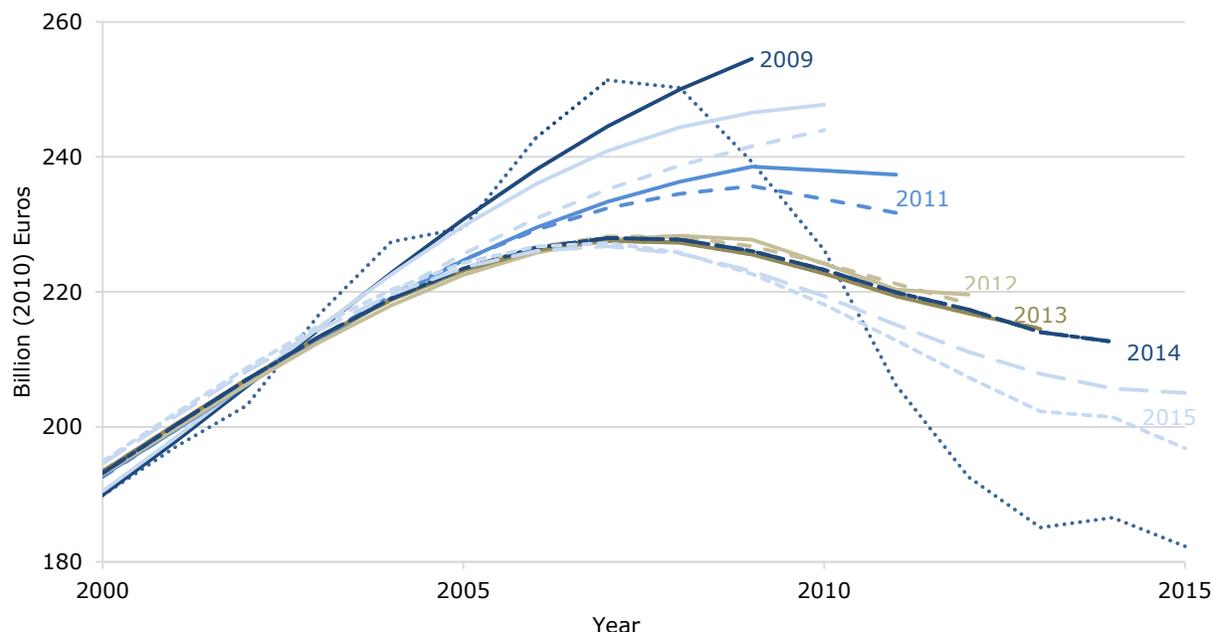
Even after two years of decline, such estimates in 2009 would have put 2009 GDP more than 6 percent below potential, while looking back from 2015, we would see the economy in 2009 some 7 percent above capacity. Clearly, HP filtering provides highly inconsistent guidance and could cause real-time policy to be misled and apparent effectiveness of past policy to be misjudged.

To illustrate this point, we take the particularly vivid example of Greece. **Figure 2** shows recent vintages for IMF estimates of Greek potential GDP starting with the fall 2009 World Economic Outlook (WEO).⁸

⁸ For years where data is not available in the WEO database, we assume that projected GDP reaches potential in the final year of each forecast.

FIGURE 2

IMF Estimates of Potential GDP (and Current Estimates of Real GDP)



Source: IMF WEO and author's calculations.

In 2009, after two years of economic decline, the IMF estimated that real GDP in 2007 stood at 2.9 percent above potential. By 2015, however, the IMF revised its estimate of this 2007 output gap to 10.6 percent. Yet the economy exhibited no real sign of overheating in 2007. **Table 1** compares 2007 to 2002, the last prior year for which the IMF estimates the economy had operated below potential.

TABLE 1

Select Economic Indicators for Greece

	2002	2007
Output gap (% of potential)	-2.7	10.6
Unemployment rate (%)	10.4	8.4
Employment (millions)	4.3	4.6
Employment rate (% age 16–64)	58.5	60.9
Inflation rate (% Dec.–Dec.)	3.4	3.9

Source: IMF WEO and OECD Main Economic Indicators.

To be sure, the economy had improved in those five years. But, given the IMF's estimates for potential GDP, had the output gap of -2.7 percent in 2002 merely closed over those five years, then the employment rate for Greeks aged 16–64 likely would have fallen below 55 percent. Such a result would hardly be consistent with an economy growing toward capacity.

In other words, there is no good reason to suspect that the Greek economy had overheated in the middle of the decade, except for the fact that it has since collapsed. Yet the IMF's methodology

produces this dubious estimate of an economy operating at greater-than-potential output at that time.

Furthermore, if we do accept the IMF's estimates of potential GDP, then Greece underwent an immense fiscal stimulus. This is because the cyclically-adjusted primary balance (CAPB) is measured relative to potential GDP.⁹ In this case, IMF estimates imply that the CAPB shifted from a surplus of 1.7 percent of potential output in 2002 to a deficit of 6.7 percent in 2007. On the other hand, if GDP in 2007 was actually at potential, then the CAPB would have been a modest 2.2 percent of potential GDP.

The loosening of fiscal policy between 2007 and 2009 is similarly exaggerated on account of revisions to potential GDP. In the spring of 2008, the IMF projected that real potential output in 2009 would be about 14 percent above 2005 real GDP. Even lowering this to 10 percent — allowing for the possibility that the IMF had previously over-estimated the increase in potential GDP for understandable reasons — this would still leave the Greek economy at 5.2 percent below potential in 2009 (rather than 3.7 percent above, as in their most recent estimate). Therefore, if the IMF had not so sharply lowered its estimate of potential GDP in 2009, the CAPB in 2009 would read as a deficit of 7.7 percent of potential, rather than 13.9 percent.

To the extent that the collapse of the Greek economy drove down estimates of (but not actual) potential output, the case for severe austerity — based purely on its fiscal position — is, in retrospect, exaggerated. That is to say, with an underestimate of potential output, a given level of fiscal deficit will be seen as much bigger, and therefore expansionary, than it really was. Whether or not some degree of fiscal tightening was necessary to rebalance trade via “internal devaluation” is another question. Note that such a decline in GDP would be entirely demand-driven — a fall in productive capacity beyond the 10 percent of GDP deficiency now presumed to have existed in 2007. That is, even if we believe today that Greece's capital stock was insufficient (or misallocated) in 2007, the fall in demand has destroyed a significant share of the country's useful capital and has left an atrophied labor force.

It is therefore critical that policymakers do not rely on trend-based estimates of potential GDP for setting policy and policy analysts do not rely on them for evaluating past policy decisions.

⁹ The CAPB relative to potential output is given as the ratio of revenues to GDP, less that of primary (non-interest) spending to *potential* GDP. The underlying justification is that revenue losses are a natural result of depressed economic activity and policy largely affects only the level of taxes in comparison to the size of the economy. The CAPB is therefore an estimate of the counterfactual primary balance *if the economy had — under actual policy — operated at capacity*. This simple adjustment may be inadequate. For example, progressive taxation causes revenues to fall faster than income. Likewise, unemployment benefits rise as the economy contracts. Both of these make our cyclically adjusted deficits increase during downturns with no corresponding policy changes. More sophisticated cyclical adjustments (e.g., those performed by the OECD) try to take more careful account of how taxes and spending move absent changes in policy.