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Article — Published Version

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Intereconomics

Suggested Citation: Klär, Erik (2013) : Potential economic variables and actual economic policies in Europe, Intereconomics, ISSN 1613-964X, Springer, Heidelberg, Vol. 48, Iss. 1, pp. 33-40, https://doi.org/10.1007/s10272-013-0442-2

This Version is available at:
https://hdl.handle.net/10419/74565

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DOI: 10.1007/s10272-013-0442-2

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Potential Economic Variables and Actual Economic Policies in Europe

Ignoring for a moment the debate on whether balanced budget rules are a sensible idea from a macroeconomic point of view, there remains a major problem with tying one's fiscal policy to econometric estimates of potential variables: their notorious unreliability. With every one of its biannual economic forecasts, the EC provides revised estimates of structural parameters that are crucial components of its macroeconometric models and, by extension, its economic policy advice. This article shows that the EC's econometric estimates of potential growth variables in Europe have been subject to massive revisions since the financial crisis.

On 7 November 2012, the European Commission released its latest economic forecast for the European Union, the eurozone and the individual member states.[1] As is usually the case with macroeconomic forecasts by both national and international institutions, the media and the general public focused on the projections for real GDP growth, the unemployment rate and the expected evolution of public finances.

This narrow focus is unfortunate, given that with every one of its – biannual – economic forecasts, the EC also provides revised estimates of structural parameters that are crucial components of its respective macroeconometric models and, by extension, its economic policy advice. Those results do not appear inside the 150-page *European Economy* publication that comes with every biannual forecast, nor indeed in its voluminous statistical annex. They are, however, well documented and publicly accessible for the period since autumn 2002 on the European Commission's CIRCA website[2] and contain a number of results that deserve to become the subject of political and public debate in Europe.

How exercises in econometrics determine the scope of economic policy

The reason policy makers and the public should care about the details of the EC's macroeconomic forecasting exercises is that over the past couple of years, structural variables – above all, potential output growth and the output gap derived from it, as well as the non-accelerating inflation rate of unemployment (NAIRU) – have gradually become indispensable tools for judging the economic and fiscal policy stances in Europe. Moreover, if anything, their importance will continue to grow in the years to come with the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union ("the Fiscal Compact") that is currently undergoing ratification in the eurozone and a number of non-euro EU countries.

A quick look into the mechanisms established with the balanced budget rule (debt brake) in Germany highlights the significance that those potential variables have taken on. This rule serves as a role model for similar rules to be implemented – preferably with constitutional rank – by EU member states that ratify the fiscal compact.[3]

The German budgetary rule limits structural net new borrowing by the federal government to 0.35 per cent of GDP from 2016 onwards, while states (*Länder*) and municipalities have to achieve balanced budgets by 2020. In addition, it allows for a cyclical component of net borrowing that varies with the state of the economy: it requires public budgets to record a cyclical surplus in upswings, while providing leeway for new net borrowing in excess of 0.35 per cent of GDP in downturns.

* The views expressed in this article reflect the author's personal opinion.

1 European Commission: European Economic Forecast, Brussels, Autumn 2012.

2 See http://circa.europa.eu/Public/irc/ecfin/outgaps/library.

3 A detailed description of the German federal budget rule is available from the German Federal Ministry of Finance website in German (www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Oeffentliche_Finanzen/Schuldenbremse/2012-06-14-kompendium-dt.pdf?__blob=publicationFile&v=3) and English (www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Oeffentliche_Finanzen/Schuldenbremse/2012-06-14-kompendium-en.pdf?__blob=publicationFile&v=2).

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Figure 1a
EC estimates of the 2005 output gap in Germany

Source: European Commission.

Key to isolating and quantifying the cyclical component is the estimation of the economy's (unobservable) potential output, which is calculated using the EC's production function methodology. A production function relates the economy's output (GDP) to two broadly aggregated inputs, capital and labour. Potential output grows with input factor increases and/or with the augmentation of factor productivity. Potential GDP is the size of economic output that would be achieved at normal levels of utilisation of the available factors of production, that is, the economy's capital stock and labour force. The difference between potential and actual GDP is called the output gap and is usually expressed as a percentage of potential GDP. If actual output is below calculated potential output, the output gap is negative; if actual output exceeds potential output, it is positive.

To get from the output gap to the cyclical component, the former, which econometric models yield in real economic terms, is first assumed to be identical in nominal terms (since all budgetary planning has to be done in current euros) and then multiplied by the so-called budget sensitivity. This next unobservable parameter measures the impact of upswings and downturns on public sector balances – put simply, the effects of automatic stabilisers. Its current value of 0.51 for Germany is taken from a 2005 OECD Working Paper.[4] This value is derived from calculations of elasticities with respect to cyclical fluctuations in economic activity for four public sector income categories (corporate, personal and indirect taxes, social security contributions) and one expenditure category (unemployment-related social benefits).

To get a feeling for the magnitudes involved, assume that the German economy's output gap for 2014 were estimated at one per cent, signalling an overutilisation of the available factors of production. The required 2014 cyclical public surplus would then be 0.51 (1.0 * 0.51) per cent of potential German GDP, which comes to around €14 bn. If, conversely, there is a negative output gap of one per cent, the budgetary rule would allow for countercyclical new net public borrowing of €14 bn.

The unfortunate unreliability of econometric potential variable estimations

Ignoring for a moment the entire debate on whether balanced budget rules are a sensible idea from a macroeconomic point of view, there remains a major problem with tying one's fiscal policy to econometric estimates of potential variables: their notorious unreliability. Even one and the same institution, such as the EC, revises its past estimates with every new forecast as new or revised data become available and as estimation methods are adjusted.

The figures that follow exemplarily illustrate the size of output gap revisions over time. Figures 1a and 1b show the 2005 output gap estimates for Germany and Spain that the EC has published over the years, beginning with the spring 2004 forecast and ending with the latest estimate of November 2012. The earliest forecast reflects the econometric real-time assessment of the macro economy at the point when the respective Ministry of Finance sets up its budget plans for the upcoming fiscal year. Again, a negative estimated output gap provides leeway for expansionary fiscal policy.

4 See N. Girouard, C. André: Measuring Cyclically-adjusted Budget Balances for OECD Countries, in: OECD Economics Department Working Papers, No. 434, July 2005. It is noteworthy that those calculations themselves invariably rely on output gap and NAIRU estimates, with the added twist that the OECD's estimates of those variables differ systematically from those by the EC. As an example, OECD Economic Outlook No. 91, OECD Publishing France, June 2012, estimated the German output gap and NAIRU in 2011 at -0.7 and 7.3 per cent respectively, while the corresponding EC estimates are 0.02 and 6.6 per cent respectively. Over the past ten years, the average deviation between OECD and EC estimates for Germany was 0.4 percentage points for the output gap and 0.8 percentage points for the NAIRU. In any case, the numerical point estimate of budget sensitivity in Germany is 0.51, of which around one third – 0.16 – is attributed to the federal budget. See the Ministry of Finance document referenced above for details.

Figure 1b
EC estimates of the 2005 output gap in Spain

Source: European Commission.

The evolution of output gap estimates over time depicted in Figure 1a, however, shows that countercyclical fiscal policy in Germany relying on the real-time estimate of potential GDP would have been too timid, given that in hindsight, the negative output gap in 2005 is considered to have been almost twice as big as was projected at the time (-1.2 versus -2.2 per cent, according to the latest EC estimate). The contrast is even more striking in the case of Spain, where the economy recorded a negative output gap of 2.5 per cent according to calculations at the time, but is now considered instead to have been in a state of overutilisation (Figure 1b). The cyclical component in a fiscal rule, had it been in place then, would have been off by one percentage point of potential GDP in Germany and well over three percentage points in Spain.

Figures 2a and 2b plot the differences between real-time output gap estimates – taken from the EC autumn forecast of the respective year – and the latest (autumn 2012) *ex post* estimates for the years from 2002 to 2010.[5]

Whereas the – quite substantial – revisions of output gap estimates for the past decade go in both directions in the case of Germany, those for Spain have almost exclusively been revised up. The Spanish economy is now considered to have been in a state of significantly higher utilisation during the years 2002-2008 compared to real-time estimates, which would have called for a substantially stronger fiscal tightening.

Working in the background here is a major and ongoing downward revision of Spanish growth potential in the EC's post-crisis estimates, which is considered in more detail in the next section.

Unexplained effects of the financial and economic crisis on potential variables

Applying the above estimation procedures to the eurozone economy, the EC predicts in its 2012 forecasts that the overall fiscal policy stance in 2013 will be basically neutral. In other words, the EC deems the major fiscal consolidation that governments – not only in the imminent crisis countries but the entire eurozone – are currently engaged in as not necessarily contractionary. The current *European Economy* publication accompanying the latest EC forecast exercise casts doubt on the recent IMF Economic Outlook findings of a fiscal multiplier larger than one.[6] This is rather remarkable, seeing as the very same autumn forecast undertakes the next in a series of substantial downward revisions of expected real GDP growth in the European crisis countries.

Comparing the current forecast with that from just six months earlier – an exercise more demanding than hitherto, as the standard overview table no longer lists the differences from the previous forecast – reveals that the European Commission has revised down its 2013 growth expectations by 0.8 percentage points for Ireland, 1.1 percentage points for Spain, 1.3 percentage points for Portugal and no less than 4.2 percentage points for Greece. The reader is left to wonder

5 Figures for 2002 thus compare the EC real-time assessment in autumn of 2002 to the latest (November 2012) estimate for 2002, and so on, ending with a comparison of the autumn 2011 and autumn 2012 estimates for 2011.

6 See European Commission: European Economic Forecast, Brussels, Autumn 2012, p. 41.

Figure 2a

Deviations between real-time and *ex post* output gap estimates, Germany

Source: European Commission.

Figure 2b

Deviations between real-time and *ex post* output gap estimates, Spain

Source: European Commission.

what exactly – if not systematic underestimation of negative fiscal multiplier effects – is behind those enormous revisions.

Regarding the *mechanics* behind the Commission's take on the fiscal policy stance, it is necessary to look a little closer at recent revisions in potential growth estimates. First, conventional macroeconomic theory suggests that potential variables should be relatively stable over short- to medium-term horizons, the rationale being that their main determinants are largely independent of business cycles. Even large swings in net investment (flows) will not quickly affect the economy's productive capital stock, and cyclical unemployment is – again according to standard economic theory – a transitory phenomenon that will not affect the longer-run equilibrium unemployment, which is structural in nature. This is the (Walrasian) general equilibrium paradigm, which underlies the new classical/new Keynesian synthesis model of the macro economy. Its longer-run growth path is determined by supply-side factors, in particular capital accumulation, productivity and demographic developments affecting the available labour force. This potential path is, for all practical purposes, independent of cyclical, short-run fluctuations in economic activity that arise from various "imperfections" or "frictions". Prolonged periods of (demand-driven) over- or underutilisation of economic resources are deemed impossible, because they would have to result in either accelerating inflation or deflation respectively.

In stark contrast to the requirements of macroeconomic theory, however, the EC's econometric estimates of potential growth variables in Europe have been subject to massive revisions since the financial and economic crisis. As early as 2010, Cohen-Setton and Valla have pointed to substantial revisions.[7] Since then, new EC forecasts have ever continued to add to previous revisions, particularly in the crisis countries of the European periphery.

Looking at the calculations for Spain, one can observe a downward revision of the EC's potential GDP growth rates that goes back to 2003 and becomes particularly pronounced in the years following the Great Recession. Figure 3a shows the latest potential growth estimates and the revision compared with the spring 2008 estimate for Spain. For the year 2012, the EC's current estimate and its 2008 forecast differ by no less than 3.1 percentage points. The Spanish economy's growth potential is estimated to shrink by 1.1 per cent this year and another 1.2 per cent in 2013.

The picture in fact looks even worse for a country like Ireland, which has been the poster child for fiscal austerity among the euro crisis countries. As of autumn 2012, the EC is estimating potential growth in Ireland to have been as many as three percentage points lower than previously thought – but in this case already in the *pre*-crisis years up to 2008 (see Figure 3b). For the years 2009-2012, the EC tables for the Irish economy display negative potential output growth and revisions of close to four percentage points compared to the 2008 forecast.

The figures for other eurozone economies look rather similar, the difference being mainly in the size of revisions. Potential growth in Portugal in 2012 is currently estimated at -1.3 per cent, a fall of 3.2 percentage points compared with the 2008 forecast, while the worst outlook – sadly yet unsurprisingly – is for Greece, where potential output is projected to continue shrinking all through 2017. Back in 2008, the EC still expected the Greek economy's potential to grow by three to four per cent per year from 2009 to 2012.[8]

7 J. Cohen-Setton, N. Valla: Unnoticed potential output revisions and their impact on the "stimulus/austerity debate", VoxEU, 17 August 2010, www.voxeu.org/article/output-revisions-and-stimulus-debate.

8 The downward revisions are not, however, limited to the current crisis countries. Compared to pre-crisis forecasts, potential growth is currently estimated to be 1.6 percentage points lower in Italy, one percentage point in the Netherlands, and 0.2 and 0.1 in Germany and France respectively. Outside the eurozone, the Danish economy's 2012 potential growth has been revised down by 1.1 percentage points and the British economy's by 1.2.

Figure 3a
Estimates of potential growth: Spain

Source: European Commission.

Figure 3b
Estimates of potential growth: Ireland

Source: European Commission.

The documentation of the EC's forecasts on its CIRCA website also allows for a decomposition of potential growth revisions into the contributions of labour, capital and total factor productivity. Performing this decomposition reveals that in the crisis countries in particular, revisions are largely driven by a decrease of labour inputs. These account for about two-thirds of the decrease in potential growth estimates in both Ireland and Spain.

Now, recall that according to economic theory, potential growth estimates are supposed to reflect structural (supply-side) economic effects. With regard to labour, such supply-side factors are changes in the size of the labour force, changes in participation rates and/or trend changes in average hours worked per employee. Looking at the data provided by the EC, however, none of these factors is driving the decrease in labour inputs. Rather, it is very clear that unemployment is the key factor (see Figures 4a and 4b). If this unemployment was cyclical in nature, however, it could not be influencing the economy's potential growth. Accordingly, the increasing unemployment must be structural in nature. In macroeconom(etr)ic terms, the NAIRU, i.e. the unemployment rate required to keep inflation stable, must have risen substantially.

Figure 4a
Contribution of components to potential growth revisions: Spain
Autumn 2012 versus spring 2008

Source: European Commission.

Figure 4b
Contribution of components to potential growth revisions: Ireland
Autumn 2012 versus spring 2008

Source: European Commission.

Indeed, this is precisely what the EC country tables report: again comparing the spring 2008 and autumn 2012 forecasts, the NAIRU in Spain is no less than 12 percentage points higher than previously estimated, while the 2008 real-time estimate has been revised up by over four percentage points (see Figure 5a). The corresponding estimates for 2012 are 8.2 points higher in Ireland (see Figure 5b), 6.8 points in Greece and 5.6 points in Portugal.

At this point it should be becoming clear how the EC's forecasting exercises can yield a neutral fiscal policy stance for the eurozone in 2013: massive downward revisions of potential growth for consecutive years, to significant degrees due to presumed major increases in the NAIRU, lead to a much-reduced potential GDP, against which actual GDP is then compared to yield the respective output gaps. In other words, the further NAIRU estimates are revised up and potential growth estimates are revised down, the more quickly crisis-induced negative output gaps disappear, rendering expansionary fiscal policy unnecessary at best and potentially harmful.

Figure 5a
NAIRU estimates: Spain

Source: European Commission.

Figure 5b
NAIRU estimates: Ireland

Source: European Commission.

Ireland is a good example to illustrate this effect: with negative potential growth rates in 2012 as well as the three previous years (see Figure 3b), even modest actual growth, such as the Irish economy recorded last year and is currently projected to realise this and next year, are sufficient to quickly reach the point of "overutilisation". Thus, the Irish output gap shrinks to -0.5 per cent next year and turns positive (0.8 per cent) in 2014.[9]

It is important to highlight again at this point that conventional economic theory sees unemployment in the medium to longer run as independent of short-run cyclical events. This is despite the fact that studies on "hysteresis" in the labour market (i.e. effects that reduce the probability for the jobless to regain employment with the increasing duration of their unemployment spell) have detailed numerous routes through which actual unemployment may become structural if it is allowed to persist for longer periods of time. Still, the majority view is that the NAIRU is an exogenous variable that is determined almost exclusively by structural labour market parameters (level and duration of unemployment benefits, union density, degree of employment protection, etc.) which are considered to affect the wage-setting process.[10] Accordingly, when the policy debate touches on structural reforms which are meant to raise the medium-term growth perspectives, this is where the focus of attention lies.

The essential problem with the labour market-based story is that there simply is no evidence of structural deterioration that would even come close to explaining the kind of massive NAIRU increases reported above. Looking at Ireland, for example, it would appear extremely difficult to explain how a country with labour market institutions arguably corresponding the closest to the textbook ideal – with post-crisis wage agreements in fact producing substantial *nominal* wage cuts for four consecutive years (2009 through 2012, the latter according to the EC forecast) and with cuts in unemployment benefits and the minimum wage level – should see its NAIRU rising from just over four per cent in 2007 to 14 per cent in 2012. In fact, the EC, in its latest forecast, is projecting the Irish NAIRU to continue to climb through 2017, when it is expected to reach 15.9 per cent.

Unsurprisingly, then, the EC's *European Economy* publications are by and large silent on the causes of the massive NAIRU increases that are driving its econometric model results. There is, of course, some mention of the problems involving the reallocation of labour from collapsing construction sectors to other sectors of the economy in the countries affected by deflating real estate bubbles (Spain and Ireland).[11] Apart from that, however, there are a number of rather general, unspecific statements pointing to the experiences of past financial crises, which were found to lower potential growth for extended periods of time.

Regarding the ongoing and intensifying unemployment debacle in Europe, there is an alternative viewpoint held by a minority of economists who maintain that cyclical events, and the evolution of capital investment in particular, have a large impact not just on short-run but also on longer-run un-

9 The spring 2011 forecast projected the Irish output gap to be one per cent in 2013 already – this estimate has been revised down along with the growth outlook for Ireland and the rest of the euro area.

10 Studies on the impact of oligopolistic product market structures affecting the price-setting process (mark-ups of prices over costs), which is the second factor in the mainstream labour market model, are much less common.

11 The EC itself, however, qualifies this effect in its Autumn 2009 European Economy publication (pp. 44-45), which presents results of regressing actual unemployment and the NAIRU on diverging sectoral employment patterns. It finds rather substantial effects of dispersion in sectoral employment on unemployment but very minor effects on the NAIRU. Moreover, if sectoral reallocation was found to be the major problem, the conclusion for economic policy advice would be to prop up investment in measures improving the matching process, above all training/re-training and other active labour market policies. Currently propagated policies of fiscal retrenchment, however, would appear to have the exact opposite effect, particularly in immediate crisis countries.

Figure 6
Annual growth rates of gross investment and hours worked, total economy, euro area

Source: European Commission.

employment.[12] Figure 6 illustrates the correlation of (rates of change of) gross fixed capital investment and employment, measured in total hours worked, where changes in investment are leading changes in the volume of employment.

For proponents of this alternative view, the (rough) line of causation runs from a demand-induced collapse in investment during the 2008/2009 crisis to massive reductions in hours worked that resulted in sharp rises of unemployment rates in countries where there was no internal (working-time) flexibility – arguably the single most important factor in dealing with the crisis in Germany.[13] With expected aggregate demand remaining sluggish over the following years as private actors (both households and firms) began repairing their balance sheets, investment never picked up and indeed continued to shrink in the European peripheral countries most affected by the current eurozone crisis, allowing for no respite in the labour market.

Currently, the econometric models used by the EC invariably produce estimates of a rising NAIRU, since actual unemployment is rising, whereas wages and particularly prices refuse to fall in tandem. Again, substantiated economic explanations of this technically required rise are so far largely missing. If, however, one looks at volumes of investment and the evolution of the NAIRU in a comparison of pre- and post-crisis EC forecasts, the alternative view of collapsing capital accumulation driving unemployment and, in consequence, the NAIRU does not look so far-fetched.

Note that the leading nature of investment shares is substantially obscured in these figures by the fact that the EC has effectively "smoothed" its massive upward revisions in the NAIRU by also retroactively adjusting it for past years going back as far as 2004, as Figures 7a and 7b reveal quite clearly.

The drop in investment activity and the concomitant increases in unemployment and estimated NAIRU are not restricted to the euro area crisis countries, as an exemplary look at the corresponding figures for Denmark (Figure 8a) and the UK (Figure 8b) reveals. In the EC's "flexicurity" role model economy, Denmark, a four percentage point drop in the share of investment to (potential) GDP since the onset of the crisis came with an increase in the NAIRU from 3.5 per cent (the real-time estimate for 2008) to 5.9 per cent in 2012 (climbing further to 6.4 per cent by 2016 according to the current EC projection).

In the UK, during the same period, the drop in investment amounted to about 3.5 percentage points, and the (unsmoothed) NAIRU rose from 5.1 to 7.3 per cent (projected to rise above eight per cent in the coming years).

Conclusions: macroeconomic policy advice based on questionable econometric results

An independent observer looking at Europe at the moment would arguably consider unemployment the biggest and most pressing problem on the continent. Across all 27 European Union member states, unemployment has increased by about 50 per cent since the onset of the crisis and currently stands at close to 26 million. Youth unemployment exceeds 50 per cent in Spain and Greece and has reached intolerable levels in many other European countries.

In truth, priorities appear to be quite different. The most important challenge facing the EC, and national political leaders in euro area member states in particular, is impressing financial markets with efforts at fiscal consolidation that it is hoped will prevent interest rates on government debt from rising any further. The EC is not openly acknowledging the apparent problem that this path of fiscal consolidation, coming at a time when demand from the private sector is weakened by efforts to reduce debt-to-income levels, is unlikely to produce a climate where investment flourishes. Instead, via its growth forecasts and potential output estimates, it is effectively declaring unused factors of production *unusable*. In policy debates, it should be made very clear that this is precisely what the reported major potential growth and NAIRU revisions signal: that the economy simply *cannot* grow faster, unemployment *cannot* be substantially reduced except through structural reforms (the effects of which will not materialise for several years), and attempts to alleviate the

12 See E. Stockhammer, E. Klär: Capital Accumulation, Labour Market Institutions, and Unemployment in the Medium Run, in: Cambridge Journal of Economics, Vol. 35, No. 2, 2011, pp. 437-457, as well as references therein.

13 See e.g. A. Herzog-Stein, F. Lindner, S. Sturn, T. van Treeck: From a source of weakness to a tower of strength? The changing German labour market, IMK Report 56, November 2010.

Figure 7a
Investment share and NAIRU: Spain

Source: European Commission.

Figure 7b
Investment share and NAIRU: Ireland

Source: European Commission.

Figure 8a
Investment share and NAIRU: Denmark

Source: European Commission.

Figure 8b
Investment share and NAIRU: UK

Source: European Commission.

burden through fiscal policy tools aimed at boosting aggregate demand will be useless and only serve to further raise already high public debt levels.

There is ample reason to be sceptical of such conclusions. The fact that they are based on econometric forecasting exercises relying on a theoretical model that essentially considers short-run fluctuations in economic activity irrelevant for the longer-run growth outlook is arguably the most important one. Back in 2008, US Nobel laureate Robert Solow testified in front of the US House of Representatives Committee on Science and Technology, criticising that the mainstream general equilibrium model "has no real room for unemployment of the kind we see most of the time, and especially now: unemployment that is pure waste. There are competent workers, willing to work at the prevailing wage or even a bit less, but the potential job is stymied by a market failure. The economy is unable to organize a win-win situation that is apparently there for the taking."[14]

14 Note that when economists speak of "waste" in relation to unemployment, what is generally meant is the loss in terms of goods that could be produced or services that could be rendered under full employment. The true social costs of unemployment obviously extend far beyond that.

The urgent question warranting more discussion in Europe, then, is clearly: How much of the unemployment that we see is in fact total waste, and what could be done to reduce it? Obviously, it cannot be in anybody's interest to replace unsustainable private sector debt dynamics with unsustainable public sector debt dynamics. Pro-cyclical fiscal consolidation in the current situation, however, is very likely producing exactly the kind of waste that Solow laments – a fact that policy makers in Europe had realised during the 2008/9 crisis, one that has long been apparent in Greece, and one that is now becoming increasingly evident in Spain and elsewhere in the euro area.

Economists relying on estimations of potential variables for their take on macroeconomic developments also have questions to address. Given that these estimates are regularly and substantially revised even in normal economic times, the very least one should be able to expect is for policy advice based primarily on those estimates to be handed out with utmost caution. Declaring unused resources unusable, as recent EC forecasts effectively do, should not be something that is accepted at face value. Rather, the scope of revisions that are evident with respect to potential variable estimations clearly warrant the question whether something might be significantly wrong with the underlying theory.