

BRIEFING PAPER

Productivity, Growth Potential and Monetary Policy in EMU

by

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Executive Summary

The paper outlines the importance of productivity and potential output developments for monetary policy. In a first step the recent productivity gap between the US and the Euro area is analysed. It is argued that it is mainly due to cyclical factors. The conclusion for monetary policy is to stabilise the economy more actively.

The computation of potential output proves very difficult and unreliable. Different methods deliver similar results at a given point of time, but results for a given period are highly unstable over time. What was considered a recession in Germany in 2001 from a 2001 perspective is a boom from the perspective of 2005. These changes cast doubt whether presently used potential output figures are a useful yardstick for monetary policy. The recommendation is to use more reliable measures in a pragmatic manner.

Introduction

Productivity developments as well as growth potential is a key variable for monetary policy. The former has to be taken into account for inflation forecast directly. The latter is also included in inflation forecasts when the output gap is assessed. Furthermore it is important when computing an appropriate reference value for monetary aggregates.

Inflation is strongly influenced by unit labour costs. This is defined as wages per hour in relation to productivity per hour. There is a quite stable relation to inflation. Therefore the ECB has to check carefully whether wage movements are in line with productivity movements such that the inflation target is preserved. This means that nominal wages should not grow more than 2 percentage points stronger than productivity. If that is the case there is no inflationary danger resulting from excessive wage movements. As a matter of fact any change in productivity trends is therefore important for inflation forecasts. A slow down that is not accompanied by an appropriate wage moderation, must lead to a stricter monetary course whereas any acceleration with resilient wage movements should lead to a softer monetary stance.

A similar reasoning applies production potential. There is a relation between productivity growth trend and production potential. An increase of productivity trend growth leads to a higher potential growth, since with a given potential employment, potential output then rises. Appropriately any decline leads to a lower potential growth path. Production potential is used to for a twofold purpose. Firstly is used to calculate the output gap by subtracting it from actual output. If the output gap is negative, not all production possibilities are used. The economy is in a state of underutilization of its resources. In such a situation one would expect that prices increase only moderately such that no inflationary dangers occur. On the other hand if the output gap is positive, the economy is overheated possibly showing higher inflation. Therefore the output gap and also potential output are part of a proper inflation forecast as it is in fact provided by the ECB. Secondly, potential output is used to calculate the reference value for the monetary pillar of the ECB monetary policy strategy. This is based on the idea that monetary growth should be in line with trend change of money velocity and potential growth. If that is the

case there would be no monetary overhang to create inflation since the available liquidity is used to finance growth. Any decline in potential output growth with an unchanged money growth would lead to excess liquidity that may induce inflationary developments. On this relation some doubts have been cast recently. Since monetary growth has exceeded the reference meanwhile for several years without triggering inflation, its stability is questioned.

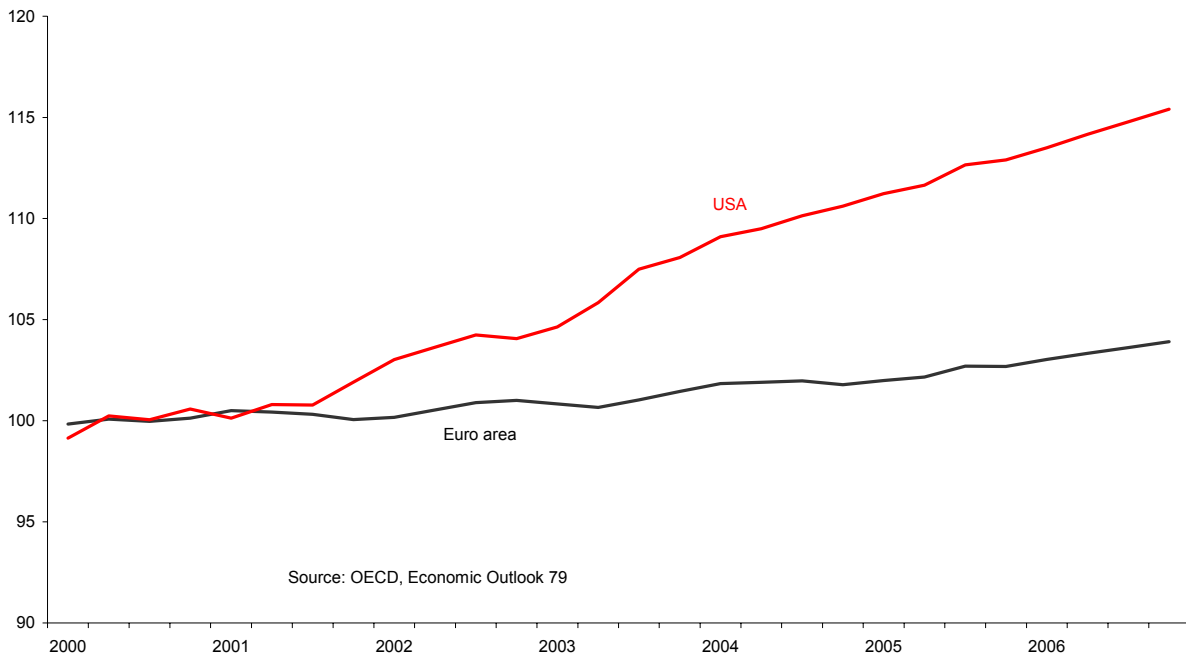
There is a fundamental difference between productivity growth and potential output with respect to measurement. While the former can be easily calculated from observable economic variables, the latter is basically unobservable. As will be shown later on, sophisticated statistical and econometrical procedures are used to solve this problem. But nevertheless both variables play a major role for the ECB's monetary policy.

The Euro-area Productivity Backlash

Productivity developments are determined by cyclical as well as non cyclical factors. The former reflect the impact of the business cycle on productivity. If economic activity is very strong, firms will use their resources very intensively. That means they will exploit any chance to increase their productivity. Furthermore in a booming economy, investment tends to be very dynamic, too. Higher investment also leads e.g. by the introduction of new machines and technology to higher productivity. On the other hand, if the economy is slack, firms tend to resiliently adjust capacities leading to lower productivity. Weak investments enhance this process.

The non cyclical components of productivity developments are technical change and innovation in general. These spur productivity as has been shown e.g. for IT technologies. These new technologies have been spread on a global level. Hence they should account for too high differences between the US and the Euro area. Especially they should not account for growing differences. If the Euro area is, what is sometimes assumed, lagging behind the US in the application of new technologies, the catch -up process should rather lead to decreasing differences. But a look on the figures for the last six years shows that the difference is not closing but widening.

Productivity Gap USA - Euroarea



The figures present the time series of labour productivity development (as index 2000 =100) since 2000. Whilst during the first half of 2000 economic activity was buoyant in the US as well as in the Euro area, production stalled in the second half, and 2001 there was a recession on both sides of the Atlantic.

During this phase productivity in both areas was more or less stagnating. The gap widened when in 2002 the recovery in the US started. Especially in 2004 and 2005 when the US showed already relatively high growth rates whereas the recovery in the Euro area lagged well behind, the US productivity in the US was growing much faster. These observations indicate that the recent widening of the gap may be mainly due to cyclical reasons. There should be a turnaround, as soon as growth in the Euro area is at least as strong as in the US. With some luck, that could be the case already in 2006.

These considerations reveal that the main causality may not just run from productivity to growth but there is rather some interdependency. However, this only applies if there are no systematic costs differences especially with respect to wages. Real wages should

basically move in line with productivity. A high productivity growth then leads to higher wages increasing real incomes. Thus productivity is the source of real income rises that in turn may spur growth and productivity again.

The implications of this reasoning for monetary policy is that a monetary policy that is devoted to foster growth will at the same time stimulate productivity. So there is no better policy for productivity than a monetary policy that ensures a steady growth process. This implies that as in the US a monetary policy must clearly stabilise economic developments at times of recessions and of booms.

The Manifold of Potential Growth Calculations

Whereas measurement problems do not play any significant role with respect to productivity, these are a major cause of concern when dealing with potential growth issues. Problems start already at the theoretical level of definition.

Potential output is the sustainable level of real (inflation-adjusted) GDP. It is constrained due to limited natural resources (population, raw materials), institutional factors (e.g. on labour markets) and the factor endowment (especially the capital stock and human capital). A given level of output is sustainable if it does not generate inflationary or deflationary tendencies. Arthur M. Okun, who coined the term potential output in 1962, defined it as the level production at full employment, the latter according to Okun referring to the degree of utilisation of the factors of production that does not cause inflationary pressure.

The theoretical difficulties of unambiguously defining potential output are due to divergent opinions about the persistency of output gaps and the possible endogeneity of potential output, both of which arise from different assumptions about the inherent stability of the economy. From a Keynesian perspective the effectiveness of endogenous mechanisms that return the economy to equilibrium is uncertain at best. Long-lasting negative output gaps are thus a likely occurrence and entail the danger of hysteretic (long –lasting) effects causing potential output to adjust to the GDP rather than vice

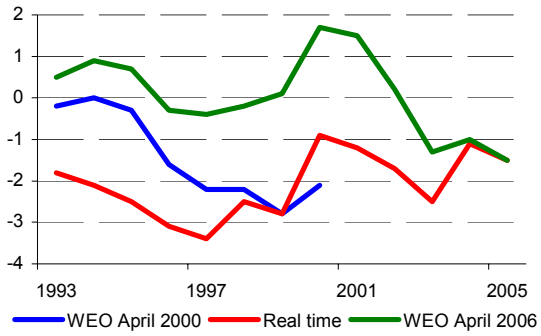
versa. In contrast, monetarists and proponents of new classical theory hold the view that the rational behaviour of economic agents rapidly corrects disequilibria and that potential output is unaffected by economic downswings and upswings. New Keynesians occupy a position somewhere in between. Economic policy advice differs in accordance with these divergent views. Whereas Keynesians tend to favour active macroeconomic stabilisation policies and regard macroeconomic policy as a necessary adjunct to structural reform, monetarists and new classical theorists view macro policy as more or less superfluous, argue strongly for rule-based policies, and consider structural reforms to be the key to higher economic growth.

Methods to empirically estimate potential output can be categorised into three groups: first, purely statistical methods (e.g. Hodrick-Prescott filter and Rotemberg filter); second, methods that determine potential output primarily on statistical grounds but make use of the interaction between certain economic variables (semi-structural methods, eg. multivariate Hodrick-Prescott filter and multivariate Kalman filter); and third, methods that determine potential output on the basis of economic factors (structural methods, e.g. production function approach). Only structural methods make possible a distinction between different theoretical approaches. They are also better suited for projections and simulations exercises, especially in the case of changes in the structural or macroeconomic environment at the end of the observation period. They are superior to univariate methods because they provide an economic explanation of movements in potential output.

In practice, however, estimates based on production functions are to a large extent based on univariate methods, especially the Hodrick-Prescott filter, to estimate the potential values of the individual components of the production function. It is therefore not surprising that the estimates of potential output of different institutions are quite similar and actually more similar than are the estimates of each organization for a specific year at different points in time. In the case of the International Monetary Fund (IMF) this difference can be exemplified best using the years 1999 and 2001.

IMF estimates at different points in time¹

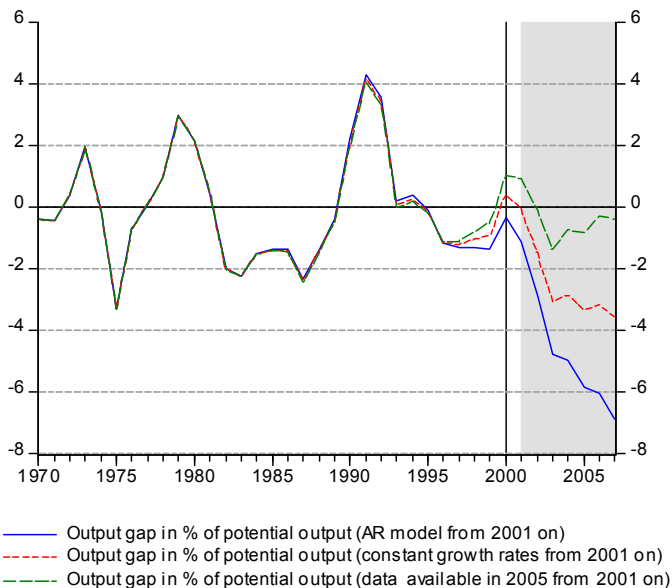
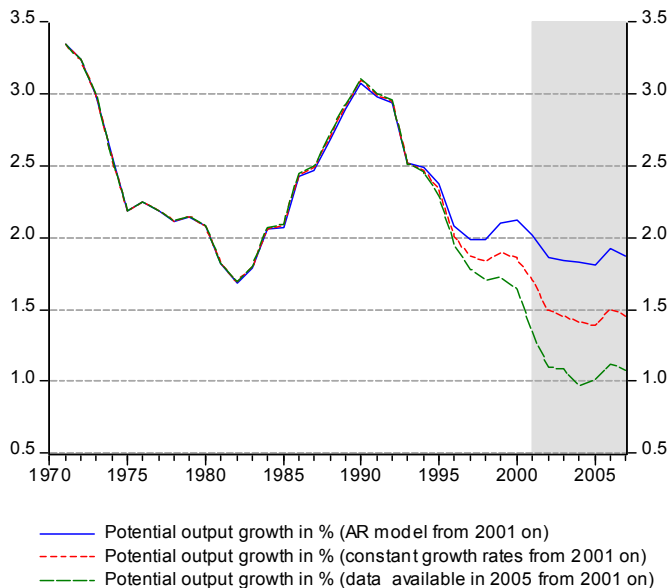
Output gap in % of potential output



¹ Real time is the output gap estimate for the year preceding the publication year

Sources: International Monetary Fund, World Economic Outlook, spring issues 1994 to 2006.

Output gaps and potential growth in artificial real time



In the spring 2000 the IMF estimated Germany's output gap in 1999 to be -2.8 %; in the spring of 2006 the IMF puts the output gap in 1999 at +0.1 %: this is not only a difference of almost 3 percentage points but also a change from negative to positive. The real-time estimate of Germany's output gap in 2001, i.e. the estimate in the spring of 2001, was -1.2 %; from today's perspective (spring 2006) the IMF estimates the output

gap in 2001 to have been 1.5 % and thus markedly positive. An equally stark picture emerges when looking at the figures provided by the EU Commission and the OECD. Revisions in this magnitude invalidate the use of measures of output gaps and potential output growth as indicators for economic policy. To illustrate the problem we calculate Germany's output gap for 2005 on the basis of the rate of potential growth that the IMF estimated in spring 2000 for period from 1992 to 2001, that is 2.1 %. According to this calculation the output gap in 2005 would have exceeded 8 %. The frequent and large potential output revisions are largely due to the econometric methods used for estimating potential output, in particular the endpoint problem and forecast mistakes.

The ultimate lack of knowledge about the precise values of potential output makes it extremely problematic to use this theoretically compelling concept as a basis for economic policy advice. This is particularly so for monetary policy. It is possible to identify factors that positively affect potential output, as for example, the investment ratio. But no estimate of potential output can be claimed to be accurate or precise, so that several different estimates have to be used as policy indicators. But even that does not solve the fundamental problems given the fact that the estimates for a given period vary significantly over time. This, however, vastly complicates fiscal planning and the use of monetary policy rules, such as the Taylor rule. Policy makers cannot rely on actual figures presented since they may change the following period. The bottom line is that potential output as measured by the methods presently available cannot be considered as a yardstick for economic policy theory. Given the difficulties involved in robustly estimating potential output, economic policy makers need to learn to pursue their policy objectives without reference to this variable. Pragmatism should prevail. In the face of a benign inflation outlook and high unemployment economic policy should strive to test the limits of potential output and to set in motion a virtuous cycle of a decreasing NAIRU, a rising participation rate, higher productivity growth and an improvement in fiscal balances.

