

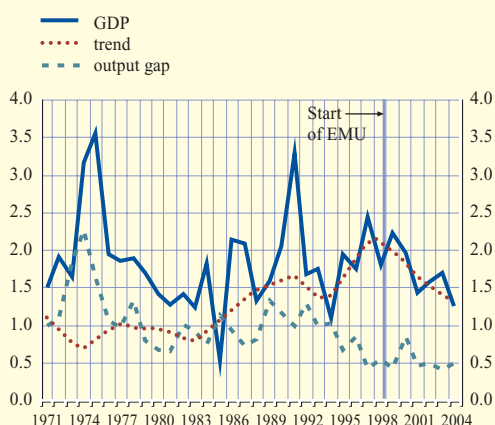
Box 6

OUTPUT GROWTH DIFFERENTIALS WITHIN THE EURO AREA: ARE THEY CYCLICAL OR TREND-DRIVEN?

Dispersion of real GDP growth rates in annual average terms, as measured by the unweighted standard deviation, has remained relatively stable across the euro area countries during the period 1970-2004 as a whole.¹ This box considers to what extent this dispersion pattern reflects differences in the evolution of dispersion in the cyclical and trend components of GDP across the euro area countries.

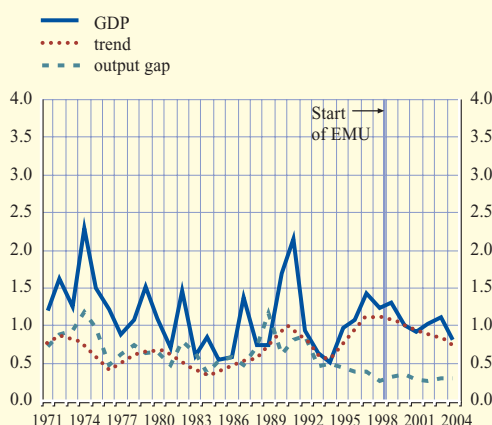
Real GDP of a particular country may deviate temporarily from its long-term trend. Such deviations, capturing cyclical developments, are often presented as a share of the trend, and are referred to as the output gap. Without entering into a detailed discussion, it is important to stress three key caveats related to the decomposition of GDP into its cyclical and trend components.² First, since both the trend and the cyclical components of GDP are unobservable, there is no single undisputed method to extract trends and cycles. Second, for any statistical or economics-based method, the results are conditional on the parameters used for the computations. Third, all methods are, to some extent, affected by “end-point problems”, i.e. the fact that the estimates at the end of the sample either are unreliable or need to be based on an extension of the historical data set with forecast values. The methodology used in this box is based on a band-pass filtering³ technique.

Chart A Dispersion in real GDP growth rates, trend growth rates and output gaps across the euro area countries – unweighted standard deviation



Sources: European Commission and ECB calculations.

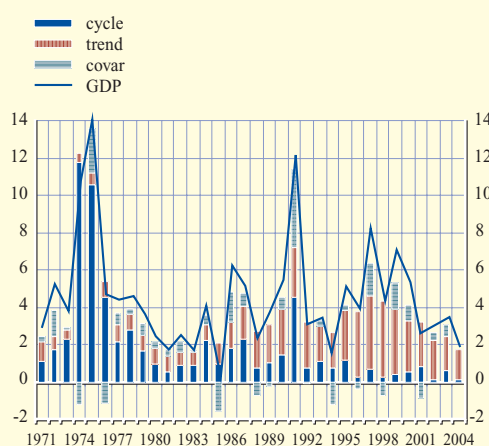
Chart B Dispersion in real GDP growth rates, trend growth rates and output gaps across the euro area countries – weighted standard deviation



Sources: European Commission and ECB calculations.

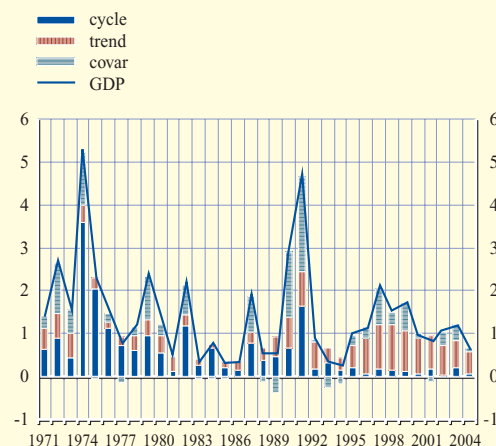
- 1 See the box entitled “Recent Developments in output growth divergences across euro area countries” in the May 2005 issue of the Monthly Bulletin for further details.
- 2 For a short review see the article entitled “Characteristics of the euro area business cycle in the 1990s” in the July 2002 issue of the Monthly Bulletin.
- 3 The filter used relies on the “approximate” band-pass filter suggested in M. Baxter and R. King (1995), Measuring Business Cycles: approximate band-pass filters for economic time series, NBER working paper 5022, February. For a review of potential output estimates for the euro area, see Box 5 in the February 2005 issue of the Monthly Bulletin. A band-pass filter is a particular type of moving average which transforms macroeconomic data to obtain the business-cycle component. The standard parameters of the Baxter and King filter have been used, namely a lower limit of 6 quarters for cyclical movements, an upper limit of 32 quarters and a lag length of 12 quarters.

Chart C Contributions to the variance of real GDP growth across the euro area countries – unweighted



Sources: European Commission and ECB calculations.

Chart D Contributions to the variance of real GDP growth across the euro area countries – weighted



Sources: European Commission and ECB calculations.

Charts A and B show the dispersion of real GDP growth rates since the 1970s, as well as the dispersion of output gaps (the cyclical component) and of trend growth rates across the euro area countries, in unweighted and weighted terms. As can be seen, there are some striking differences in the way in which the dispersion of output gaps and trend growth rates has developed. As far as the output gap is concerned, it seems that its dispersion decreased significantly in the course of the 1990s, and has remained broadly stable at a low level in the last five years. Regarding trend growth rates, dispersion increased in the course of the 1980s and for most of the 1990s, but has fallen somewhat since the late 1990s.

In order to better understand the relative importance of trends and cycles in explaining growth differences between countries, contributions by these two components to the total variance⁴ can be computed. As can be seen in Charts C and D, the breakdown of the variance of real GDP growth rates across the euro area countries indicates a large decrease in the contribution of the cyclical component to dispersion and, simultaneously, a large increase in the contribution stemming from trend growth differences, mainly since the beginning of the 1990s. Thus, the contribution of the cyclical component to dispersion seems to have been relatively limited in the last ten years, with most of the dispersion being attributable to differences in trend output growth.⁵

There may be several reasons for such differences in trend growth. They may be related, among other things, to catching-up processes, as well as to diverse trends in demographics, in labour utilisation or in productivity patterns. In turn, some of these factors may be related to differences in the speed of structural reforms undertaken in the past. The challenge is for those countries which lag behind in terms of potential growth to determinedly address their structural problems.

4 The standard deviation, as used above, cannot be easily decomposed. The square of the standard deviation, the variance, can be decomposed in the following way: when the trend and cycles are expressed as contributions to real GDP growth, $\text{var}(\text{GDP}) = \text{var}(\text{trend}) + \text{var}(\text{cycle}) + 2\text{covar}(\text{cycle}, \text{trend})$.

5 It should be noted that a necessary component of this decomposition is the covariance between trend growth and the cycle. However, as shown in Charts C and D above, this part is relatively small and does not affect the overall conclusions.