Box 1

The influence of base effects on annual monetary growth rates

The Governing Council of the ECB announced in December 1998 and confirmed in December 1999 that it would monitor developments in M3 in relation to the reference value of 4½% using three-month moving averages of the annual growth rates. Year-on-year comparisons are one of the standard methods used to present developments in monetary and other economic variables. One of the advantages of this procedure is that seasonal influences are, in principle, excluded. Moreover, a 12-month period is usually sufficiently long in order to avoid overstating temporary short-term movements. Finally, annual growth rates facilitate comparisons with data which are only available at lower frequencies. In order to further eliminate erratic one-month disturbances to M3, the ECB uses three-month averages of annual growth rates.

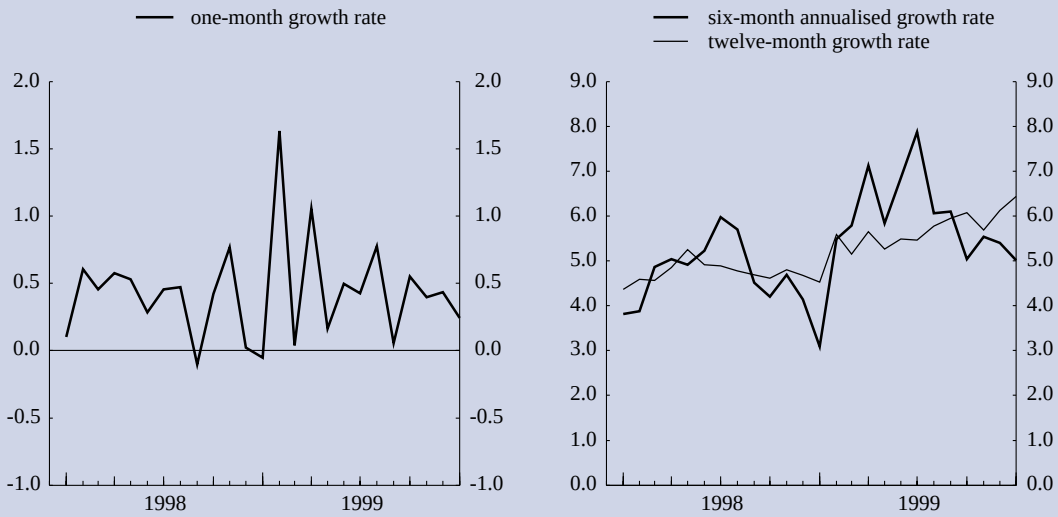
However, when interpreting changes in annual growth rates on a month-to-month basis, due account has to be taken of possible base effects. These base effects may arise because a change in the 12-month growth rate is influenced not only by developments in the most recent month, but also by developments in the same month of the previous year. For example, if the money stock grows rather strongly (or rather weakly) in a specific month of one year, this may cause a decline (or an increase) in the 12-month growth rate one year later because the increase (or decrease) of one year ago drops out of the calculation of the 12-month growth rate.

The ECB therefore does not base its assessment of developments in M3 exclusively on year-on-year comparisons. It also regularly monitors seasonally adjusted growth rates over periods that are shorter or longer than 12 months. Seasonally adjusted one-month growth rates (see Table 2.4 in the "Euro area statistics" section) show developments in the most recent month. While monthly changes in M3 can be rather volatile and should thus not be overemphasised, comparing the seasonally adjusted increase in M3 in one month with that in the same month of the previous year can help to identify the presence of base effects in annual growth rates. In addition, annualised growth rates over periods shorter or longer than one year can be calculated on the basis of the seasonally adjusted index of M3. On occasion, in particular when changes in 12-month growth rates are heavily influenced by base effects, investigating monetary developments over such shorter or longer periods is helpful in order to come to a reliable assessment of money growth.

The distorting influence of base effects can be illustrated by the monetary developments in the euro area around the end of 1999. In December 1998 the (seasonally adjusted) stock of M3 declined. This was followed

Growth rates of M3

(percentage changes; based on seasonally adjusted data)



Source: ECB.

by an exceptionally strong increase in this stock in January 1999 (see the left panel of the chart above). This volatility in the monetary data of one year ago, which was largely associated with the specific circumstances prevailing just before and after the introduction of the euro, had a major impact on the annual growth rates of M3 in December 1999 and January 2000. The (seasonally adjusted) fall in M3 in December 1998 was the main reason for the year-on-year growth rate of M3 increasing from 6.2% in November 1999 to 6.4% in December 1999. In the same vein, the base effect of the jump in M3 seen in January 1999 will have a significant dampening impact on the annual growth rate of M3 in January 2000. The three-month moving average of the annual growth rate of M3 is also affected by these base effects, albeit to a lesser extent, as their impact is averaged out over three months.