Box 2

Recent developments in real interest rates in the euro area

Real interest rates are normally defined as nominal interest rates adjusted for expected inflation over the corresponding time horizon. Real interest rates can be interpreted as measures of the real return on an investment or the real cost of financing. Only in a few instances is it possible to observe real interest rates on the basis of financial instruments denominated in real terms. The computation of real interest rates based on nominal interest rates is subject to several practical and conceptual difficulties, as a reliable measure of expected inflation over the relevant horizon is normally not observable and can only be estimated. Furthermore, it is not obvious which price deflator is most relevant (see Box 1 in the "Monetary and financial developments" section of the March 1999 issue of the Monthly Bulletin for a discussion of this issue and the article entitled "Stability-oriented policies and developments in long-term real interest rates in the 1990s" in the November 1999 issue).

The simplest approach to the computation of short and long-term real interest rates is to use the latest available annual consumer price inflation rate as a proxy for expected inflation. As regards the short-term interest rate, this procedure may be warranted by the fact that, at very short horizons, actual inflation should not differ significantly from expected inflation. However, the effect of temporary shocks on current inflation, expected to be reversed in the future, may cause current inflation to be a distorted measure of expectations, even at short horizons. This is particularly the case at the present juncture, where inflation has been significantly affected by, inter alia, the increase in oil prices. For longer horizons there may be even larger deviations between expected and current inflation. However, when considering historical averages over long periods of time, this problem is likely to be less severe as shocks to inflation tend to cancel each other out over time.

In order to take into account the shortcomings associated with the use of realised headline inflation as a measure of expected inflation, some alternative measures of short and long-term real interest rates have been computed. Chart A shows the evolution of three different measures of the short-term real interest rate since the beginning of 1999. All measures are based on the nominal three-month EURIBOR, but they use different deflators. Two of these deflators, namely the annual increases in the HICP and the HICP excluding energy and unprocessed food, are backward-looking as they reflect past developments. However, the latter measure is not affected by some of the most volatile factors. The third measure uses a forward-looking indicator, based on the inflation forecasts compiled by Consensus Economics.[1] It should be noted, however, that this measure may not be fully representative of the general public's inflation expectations and should therefore only be seen as illustrative.

In March 2001, the real three-month EURIBOR deflated by the latest available HICP annual inflation rate (of February) stood at 2.1%, which was somewhat below the level at the start of Stage Three of EMU in January 1999. Between the trough observed in January 2000 and March 2001, this measure of the short-term real interest rate increased by around 70 basis points, whereas the nominal rate rose by around 140 basis points. Compared with the measure based on the HICP, the measure based on inflation forecasts increased more closely in line with the nominal three-month EURIBOR between January 2000 and March 2001, reflecting the fact that short-term inflation expectations increased less than HICP inflation observed over this period. However, in the second half of 2000 and early 2001 it tended to decline, reflecting higher inflation forecasts and a slight decrease in the nominal rate. The measure deflated by the HICP excluding energy and unprocessed food increased by even more during most of last year, but a significant part of the increase was reversed in late

1 *For each period, the latest available forecast at that time is used. Consensus Economics reports, on a monthly basis, inflation forecasts for the euro area as annual averages. Every January (year t), another year (t+1) is added to the forecast. The measure of expected inflation based on these forecasts is calculated in the following way: in the first six months of each year, the average of the forecast for the same year and the coming year is used. In the second half of each year, only the forecast for the coming year is used.*

2000 and early 2001, as the rate of HICP inflation excluding energy and unprocessed food crept up. All in all, keeping the above-mentioned caveats in mind, the measures indicate that short-term real interest rates have tended to increase less than the corresponding nominal rate over the past two years. In addition, the relatively wide range of the measures, extending over almost 100 basis points in March 2001, provides some indication of the uncertainty surrounding the computation of real interest rates.

Chart B shows the evolution of two different measures of long-term real interest rates since January 1999. Ideally, the nominal yield on ten-year government bonds should be deflated by a measure reflecting expected inflation for the euro area over the coming ten years. However, no such measure is available on a timely basis. As a rough approximation, the measure of expected inflation based on the Consensus Economics inflation forecast was used to deflate euro area nominal ten-year bond yields. In addition, the chart shows the yield on the ten-year French index-linked bond, which, although subject to several caveats, offers a more direct measure of the long-term real interest rate. In March 2001, the two measures stood at around 40 to 60 basis points above the levels seen at the start of Stage Three of EMU in January 1999, but around 50 to 120 basis points below their peak levels reached in January 2000.

The table below compares the levels of real interest rates in March 2001 with the average levels over the past two decades. All averages are deflated by annual headline consumer price inflation. In addition to the euro area, averages for Germany are included. This is justified by the fact that interest rates in many countries which are now part of the euro area incorporated premia reflecting exchange rate risk during the period prior to Monetary Union. By contrast, German interest rates were less affected by this and may therefore be more comparable with present levels of euro area rates.

The table shows that, in March 2001, the entire range of the three measures of the short-term real interest rate was below the averages for the 1980s and the 1990s.

The same applies when comparing these measures with the averages for Germany, although the differences are slightly less pronounced. Turning to long-term real interest rates, similar conclusions apply. The range consisting of the latest observations of the measures displayed in Chart B is considerably lower than the average level over the 1990s for the countries which now form the euro area. The range is also below the historical averages for Germany. While such comparisons need to be assessed carefully since they can be affected by structural changes which may occur over time, the calculations in this box indicate that current levels of short and long-term real interest rates in the euro area are at moderate levels compared with the previous two decades.

Long-term averages of short-term and long-term real interest rates for the euro area and Germany

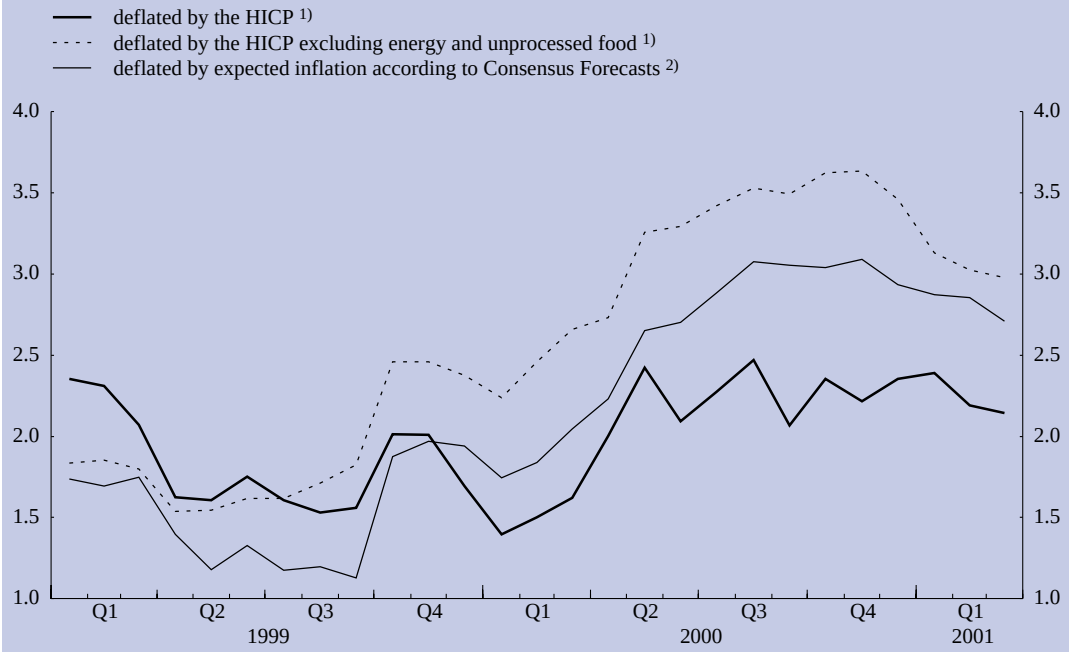
(percentages per annum; monthly data)

	Short-term real interest rate [1]		Long-term real interest rate [2]	
Period	**euro area**	**Germany**	**euro area**	**Germany**
1981 - 1990	4.6	4.2	-	5.2
1991 - 1998	4.6	3.5	5.2	4.5
1999 - March 2001	2.0	-	3.2	-
Current value (range) [3]	2.1 - 3.0	-	2.9 - 3.4	-

Source: ECB.
1) Three-month interbank rates minus twelve-month consumer price inflation.
2) Whenever available, ten-year government bond yields minus twelve-month consumer price inflation.
3) Ranges of measures shown in Charts A and B.

Chart A: Short-term real interest rates

(percentages per annum; monthly averages)



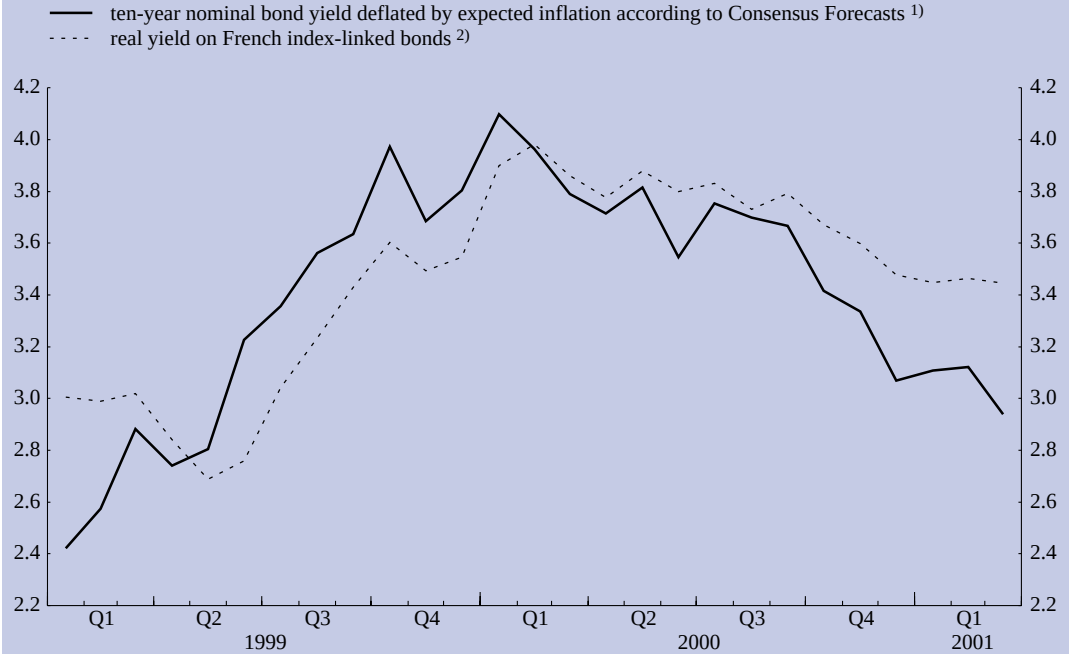
Source: ECB.

1) Three-month interbank rates minus annual consumer price inflation.

2) See footnote 1 to the main text in the box.

Chart B: Long-term real interest rates

(percentages per annum; monthly averages)



Source: ECB.

1) See footnote 1 to the main text in the box.

2) Derived from the market prices of French government bonds which are indexed to the French CPI (excluding tobacco prices), maturing in 2009.