Box 3

MEASURING REAL INTEREST RATES IN THE EURO AREA COUNTRIES

In the euro area, as in other monetary unions, the official interest rate set by the central bank is uniform across countries participating in the union. In addition, in an integrated market such as the euro area, cross-country spreads between homogeneous financial market instruments are typically small. At the same time, inflation differentials across countries or regions may arise, as they are an integral part of the adjustment mechanism resulting from demand and supply shocks in the regions' economies. The combination of the above two factors implies that, at any point in time, the difference between the nominal interest rate and the actual inflation rate may vary across countries. In this respect, it is sometimes argued a) that this divergence implies a difference in "real" interest rates and b) that the resulting difference may be destabilising for the national economies. For example, it is argued that countries experiencing higher than average inflation would also have lower real interest rates, which would in turn fuel domestic demand and reinforce inflationary pressures.

However, these views do not take into account all the underlying factors and may even be misleading for several reasons.

With regard to the differences in real interest rates across countries, there are several measurement issues connected to their calculation that need to be taken into account. The above

argument is made with reference to a measure of real interest rates which is calculated by subtracting the current observed level of inflation from the nominal interest rate. Such an ex post measure is not, however, an accurate measure of the relevant real interest rate that is taken into account by economic agents in their consumption and investment decisions.

Real interest rates are measures of the expected real return on an investment at a given horizon. What matters for consumption and investment are thus ex ante measures of real interest rates, i.e. the difference between market interest rates and expectations for inflation developments over the horizon of the investment. It is clear that, at any point in time in a given country, expectations of future inflation for horizons longer than a few months may differ substantially from current inflation developments. It is also to be expected that in a currency union, where the exchange rate across countries is fixed, inflation expectations, particularly at medium to longer-term horizons, are less dispersed across countries than current inflation developments. This is because significant inflation differentials in a currency union are unlikely to be sustainable as they would imply a permanent loss in competitiveness for some countries. Indeed, only small differences in inflation trends across countries may be sustainable over longer periods of time, notably those related to price level and income convergence and/or Balassa-Samuelson effects.[1] For these reasons, it is rational for consumers and investors not to extrapolate observed "national" inflation (which can be due to various factors) in a mechanical manner into the future.

In fact, there is substantial evidence that Monetary Union has reduced the dispersion of inflation expectations over the medium-term horizon across euro area countries. A problem in calculating ex ante measures of real interest rates is that inflation expectations (at the relevant horizons) cannot easily be measured. Nevertheless, some measures of inflation expectations are available, such as those based on surveys or those derived from bond yields.

For illustration, the table below compares measures of ex post and ex ante real interest rates, the latter being computed using the average of the inflation forecasts (for the consumer price index) over the relevant horizon compiled by Consensus Economics. While Consensus inflation forecasts are available for all euro area countries except Luxembourg over short horizons, they are only available for the five largest euro area countries over longer horizons. Ex ante long-term real interest rates thus cannot be computed on the basis of Consensus Economics forecasts for all euro area countries. For this reason, the long-term real interest rates in the table refer only to these five countries (which represent about 85% of euro area GDP).

As expected, the dispersion across countries of ex ante measures of real interest rates is significantly lower than that of ex post measures. For short-term real interest rates there is a reduction of 27 basis points in the (unweighted) standard deviation (from 0.80 to 0.53) in the period 1999-2004. The reduction is even more accentuated for measures of long-term real interest rates, which are typically more relevant for economic decisions than shorter-term rates. When longer-term expected inflation trends are used in the calculation, there is a reduction of 36 basis points in the standard deviation (from 0.62 to 0.26) over the period 1999-2004. It is also notable that this picture contrasts significantly with the situation in the period 1990-98, when the expected inflation differentials tended to be larger than the observed inflation differentials.

1 See the ECB report entitled "Inflation differentials in the euro area: Potential causes and policy implications", published in September 2003.

Selected statistics on the measures of real interest rates in the euro area

(percentages per annum)

		Short-term real interest rates [1]		Long-term real interest rates [2]	
		Ex ante	Ex post	Ex ante	Ex post
		National nominal interest rates deflated by:			
		National inflation forecasts for the following year [3]	Current national HICP annual inflation rate	Long-term (6 to10 years ahead) national inflation forecasts [3]	Current national HICP annual inflation rate
Average level [4]					
1999-July 2004		1.51	1.24	2.92	2.75
July 2004		0.33	-0.21	2.46	1.96
Standard deviation					
1999-July 2004	*unweighted* [5]	0.53	0.80	0.26	0.62
	weighted [4]	0.45	0.70	0.23	0.57
July 2004	*unweighted* [5]	0.50	0.86	0.32	0.70
	weighted [4]	0.46	0.59	0.30	0.54
Memo item:					
Average level [4]	1990-1998	4.60	4.68	5.15	5.12
Standard deviation	1990-1998 *unweighted* [5]	1.69	0.82	1.29	0.68
	weighted [4]	1.26	0.75	1.23	0.64

Sources: BIS, Consensus Economics, ECB, ECB calculations, Eurostat and Reuters.
1) Three-month money market rates (EURIBOR for the period 1999-2004). All euro area countries excluding Luxembourg.
2) Ten-year government bond yields where available; otherwise yields on instruments with the closest maturity. Figures include France, Germany and Italy, and from 1995 also the Netherlands and Spain.
3) Individual countries' forecasts are taken from Consensus Economics.
4) Based on 2002 GDP weights at PPP exchange rates.
5) The same weight is attributed to each of the euro area countries considered.

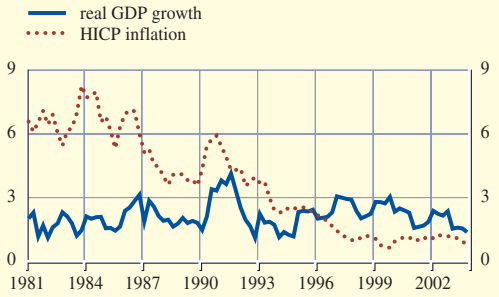
An even more subtle measurement problem stems from the fact that in any country or region economic agents are heterogeneous, with the result that no single measure of real interest rates is likely to be relevant for all of them. For example, local price developments may be of less relevance for the investment choices of a company operating on the international markets than for those of a consumer. This highlights the fact that any choice of a specific price index in the computation of real interest rates is somewhat arbitrary and potentially not representative of the conditions faced by the whole population.

While it is therefore problematic to use the ex post measure of real interest rates, a critical view should also be taken of the claim that the existence of inflation differentials could by itself create destabilising dynamics for the individual countries. In this respect, there are several factors to consider.

From a general viewpoint, it should be kept in mind that the economic consequences of expected inflation differentials – and thus of real interest rate differentials – depend on the underlying determinant factors of the differentials. For example, if a lower than average inflation rate in a given country is due to higher than average productivity growth, this would be an indication that the country has strong investment prospects, even if its observed "real interest rate" is higher than in other countries. In the same vein, if a high level of inflation is caused by very strong wage growth, this does not necessarily strengthen investment prospects in that country, even if the observed "real interest rate" is relatively low in that country. Indeed, as pointed out by a number of recent studies, several demand, supply and structural factors have played a role in explaining the differences observed in inflation developments across countries in the euro area

in recent years.[2] These various factors may imply very different consequences for the economies concerned.

Dispersion[1] in real GDP growth and HICP inflation in euro area countries



Sources: Eurostat and ECB calculations based on Eurostat data.
1) Unweighted standard deviation of the annual percentage changes.

Moreover, as already indicated above, in a monetary union, where exchange rates among countries are fixed by definition, there are strong market-based forces that work in a stabilising manner. In particular, if a country has lower than average inflation rates due to weak demand, it will gain in competitiveness with respect to other countries. This tends to boost demand in that country (and reduce demand in others) over time. As shown in a number of recent studies, the "real exchange rate" channel, although slow to build up, eventually becomes the dominating factor of adjustment.[3]

To sum up, the view that inflation differentials in a monetary union may lead to large differences in real interest rates across countries and thereby to destabilising forces at the national level is often based on simplistic arguments. First, it is important to consider that the real interest rates which are relevant for economic decisions should be measured in an ex ante manner, i.e. considering inflation expectations over the relevant horizon. In this respect, there are good economic reasons for private agents not to expect large inflation differentials to persist in a monetary union, since they would imply persistent losses in competitiveness. Second, the underlying sources of divergent inflation developments have to be taken into account in order to assess their possible economic consequences. In this regard, the stabilising role of the competitiveness channel typically dominates.

While the period since the start of Stage Three of EMU is clearly still too short for any robust conclusion to be drawn, it is worth noting that there has not so far been any evidence of an increased divergence of economic performances across euro area countries. As shown in the chart, the dispersion of real GDP growth rates has remained close to its historical average over recent years.

Finally, it should be not overlooked that the average level of real interest rates (however computed) since 1999 has been very low – from a historical perspective – in all countries in the euro area. This also reflects the benefits of Monetary Union and the process of convergence towards it, whereby lower inflation and inflation expectations, exchange rate stability and improved fiscal positions have substantially reduced risk premia in interest rates.[4] These benefits can be fully reaped through the implementation of structural reforms in the euro area countries, notably with a view to making product and labour markets more flexible, thereby reinforcing the capability of regions to respond to economic shocks.

2 See the report mentioned in footnote 1 and the references therein.
3 See, for instance, S. Deroose, S. Langedijk and W. Roeger (2004), *Reviewing adjustment dynamics in EMU: from overheating to overcooling*, Economic Papers No 198, European Economy, European Commission, and I. Angeloni and M. Ehrmann (2004), *Euro area inflation differentials*, ECB Working Paper No 388.
4 For an analysis of the developments in real interest rates over the past four decades in the euro area and in Germany, see also the box entitled "Current euro area interest rates from a historical perspective" in the September 2003 issue of the ECB's Monthly Bulletin.