Box 4

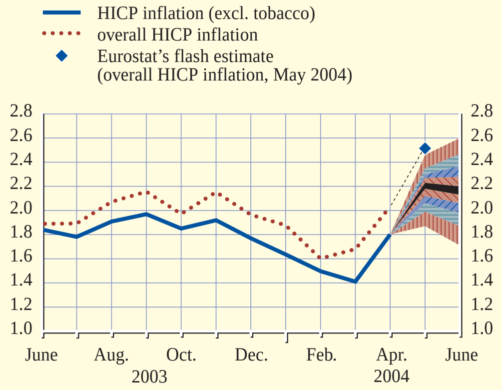
USING FINANCIAL DERIVATIVES TO ASSESS MARKET PARTICIPANTS' SHORT-TERM INFLATION EXPECTATIONS FOR THE EURO AREA

Financial derivatives can provide an important source of information about market participants' macroeconomic expectations. By using information contained in option prices it is possible to extract the uncertainty surrounding the expected future mean value of the asset.[1] This box looks at recently introduced financial derivatives based on data releases for euro area inflation.

In 2003 two large financial institutions organised the trade of options on the euro area harmonised index of consumer prices (HICP) excluding tobacco. This followed the introduction of similar trades of options on key macroeconomic data releases for the United States, such as the ISM Purchasing Managers' Index (PMI) or changes in non-farm payroll data. Derivatives based on inflation statistics provide, among other things, a means for investors with a portfolio exposed to substantial inflation risk to hedge directly against that risk.

1 For a general description of derivatives and options, see the article in the May 2000 issue of the Monthly Bulletin entitled "The information content of interest rates and their derivatives for monetary policy".

Implied distribution of market participants' expectations for May and June HICP inflation (excluding tobacco)



Sources: Deutsche Bank, Goldman Sachs and ECB calculations.
Notes: The fan chart depicts the implied distribution of market expectations on 19 May 2004 of HICP (excluding tobacco) inflation outcomes in May and June 2004. The darkest band includes the central (single most likely) outcome and covers 10% of the probability. Each successive pair of bands is drawn to cover a further 10% of probability, until 90% of the probability distribution is covered. The bands widen as the time horizon is extended, indicating an increasing uncertainty about outcomes.

Trades on euro area HICP (excluding tobacco) releases take place once a month, in an auction-based framework. They concern inflation outcomes for the month in which the auction takes place and for the following month. The auction occurs between the last official euro area HICP release by Eurostat and the first publication of any of the (preliminary) country estimates for the current month's inflation. As a result, trades are based solely on auction participants' private assessments.[2] From the observed prices of the inflation derivatives the organisers report the probabilities surrounding market participants' central expectations for the various possible outcomes of future inflation rates.

The chart displays the results of the auction that took place on 19 May 2004 where the outcomes for the May and June 2004 inflation data were traded.[3] Three main conclusions can be drawn from the chart.

First, regarding their central (baseline) scenario, market participants expected the year-on-year rate of change of HICP (excluding tobacco) to rise significantly, from 1.8% in April to around 2.2% in May, and to stay marginally below that level in June 2004.

Second, in terms of the uncertainty surrounding those expectations, the width of the bands for less likely outcomes makes it possible to gauge market participants' assessment of the balance of risks. As can be seen in the fan chart, the width of the bands below the central (darkest) range is greater than that of the bands above the central range, and this is the case for both May and June 2004. This suggests that market participants perceive the likelihood of actual HICP (excluding tobacco) inflation turning out below 2.2% as being somewhat higher than it turning out above 2.2% in May. A similar pattern emerges for the expected inflation rate of 2.1% in June.

Finally, an estimate for overall HICP inflation in May and June can be constructed on the basis of these expectations for HICP inflation (excluding tobacco). Assuming that the contribution from tobacco prices to overall inflation will be similar to that in April 2004 in the following two months, the 19 May 2004 auction results would then suggest that overall HICP inflation was expected to rise from 2.0% in April to about 2.4% in May. This expectation was slightly lower than the HICP flash estimate for May 2004 of 2.5%, published by Eurostat on 28 May. Similarly, market participants' expectation for HICP inflation in June can be calculated to be around 2.3% as of 19 May 2004.

Overall, therefore, these newly introduced instruments offer an interesting additional source of information complementing surveys of market participants' expectations regarding very short-term inflation expectations.

2 Eurostat's flash estimate for euro area HICP inflation is usually published by the end of each month. By that time, preliminary figures are available for Germany, Italy, Belgium and (since very recently) Spain.

3 Trade in these derivatives is based on the expected level of the HICP (excluding tobacco) index. However, for the sake of clarity this box focuses on the year-on-year inflation rates implied by the results of the options as reported by the organisers. For further details, visit www.deutsche-bank.de and www.gs.com.