Box 1

PREDICTION OF FUTURE OIL PRICES

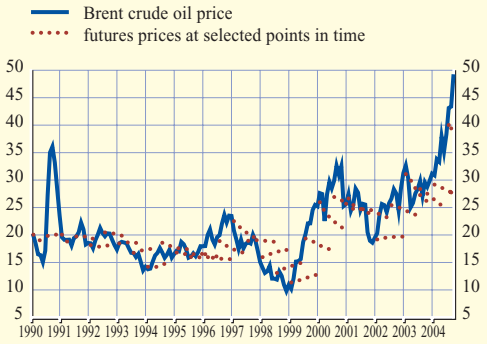
Over recent years, HICP inflation has been influenced to a great extent by changes in oil prices. These changes have been largely unanticipated by markets and economic forecasters. This raises the issue of what the most appropriate method would be to make technical assumptions about oil prices in the context of macroeconomic forecasts.

There are three main approaches to forming assumptions as regards oil prices, as can be seen from the methods employed by various institutions. The Eurosystem staff macroeconomic projections and the European Commission forecasts use futures. The rationale for using futures contracts to predict oil prices is that futures should incorporate market operators' best views, although time-varying risk premia might lead to distortions. The IMF, on the other hand, assumes that the price of oil will remain constant at its last-observed value over the whole projection horizon (the so-called random-walk assumption). And the OECD has recently opted for a judgmental approach, rather than a market-based approach or the use of model results.

In recent years, futures markets have repeatedly under-predicted actual developments in oil prices, as the increases between 1999 and 2004 were not anticipated. However, over a longer period of analysis, such as ten to fifteen years, this indicator did not lead to prediction errors that were systematically either positive or negative. The path predicted by futures was generally smoother than that actually followed by oil prices, but episodes of strong underestimation or

Chart A Brent crude oil prices and futures prices

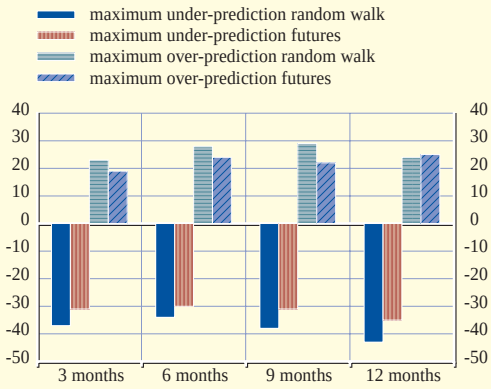
(USD per barrel)



Source: Bloomberg.
Note: The futures prices in the chart are the prices of the 1-month up to 12-months ahead Brent crude oil futures contracts traded at the International Petroleum Exchange in London.

Chart B Random walk versus futures markets: forecast errors

(in percentages)



Source: ECB Staff.
Note: The sample for three and six-month futures starts in 1989, while the samples for the nine-month and twelve-month futures start in March 1992 and April 1995, respectively. All samples end in July 2004.

overestimation were not often observed (see Chart A). This also holds true for the random-walk assumption.

Moreover, analysis of the last ten years reveals that oil price futures appear to be a better predictor than the random-walk assumption, at least up to a horizon of one year, since the forecasting error made was, on average, lower for the futures. Furthermore, the particularly large prediction errors were generally higher when using the random-walk assumption (see Chart B).