

## Box 6

### The information content of the main money market instruments in the euro area

The interest rate developments in the money market provide information about, inter alia, market participants' expectations of future interest rates. In the euro money market there are two important reference rates for the unsecured market, the EONIA (euro overnight index average) and the EURIBOR (euro interbank offered rate), which together provide price references for maturities from overnight to one year. This box contains a description of these instruments, together with associated derivatives contracts, and their information content.

The EONIA is computed as a weighted average of all overnight unsecured lending transactions made in the euro area interbank market by a panel of declaring banks. The panel consists of prime banks actively engaged in the euro money market. The overnight market for unsecured loans is highly liquid, with a large volume and narrow bid-offer spreads. Under normal circumstances, the EONIA is close to the minimum bid rate in the main refinancing operations, as can be seen from Chart 1 in the main text. On occasions, the EONIA can be affected by interest rate expectations. In situations where market participants consider it highly likely that there will be a change in the key ECB interest rates before the end of the ongoing reserve maintenance period, the EONIA may move in the direction of the expected change. This is due to the averaging provision of the minimum reserve system, which gives the credit institutions some flexibility within the reserve maintenance period to meet the minimum reserve requirement. For example, expectations of lower interest rates later in the reserve maintenance period can lead to a lower immediate liquidity demand and drive down the EONIA. The level of the EONIA can also be affected by the liquidity conditions at the end of the reserve maintenance period as well as by several special factors in the course of the period, e.g. unusual liquidity demand on the last business day of a calendar month, quarter or year resulting from balance sheet considerations of financial institutions. Owing to these factors, the information content of the EONIA with regard to future movements in interest rates is limited.

More information about market expectations of interest rate movements can be derived from EONIA swaps. An EONIA swap is an agreement between two parties to exchange a set of variable daily payments at the EONIA rate with a set of payments at a fixed rate over an agreed period of time. The interest rate on the fixed leg of this swap is referred to as the EONIA swap rate, and it reflects the expected average level of the EONIA over the maturity of the swap. The credit risk in EONIA swaps is limited since the swaps do not involve an

exchange of principal amounts. EONIA swaps are offered at maturities of one, two and three weeks and from one to twelve months, and they are traded over the counter (OTC), i.e. bilaterally and not at an exchange. The yield curve consisting of these rates is often regarded as a benchmark for the euro area money market. The liquidity is high at the shortest maturities; hence they convey information which is relatively precise about the markets' near-term expectations of rate changes.

Information about interest rate expectations can be extracted by computing the forward rates implied by the EONIA swap rate curve. In particular, the implied one-week forward rates, as shown in the

#### One-week to one-month EONIA swap rates and the implied forward rates as of 31 May 2001

(percentages per annum; mid rates)

Minimum bid rate	4.50	
EONIA swap rates	Spot rates	Implied one-week forward rates in
One week	4.53	4.55
Two weeks	4.54	4.53
Three weeks	4.54	4.53
One month	4.54	-

Sources: Reuters and ECB calculations.

table above, provide some information about market expectations of the tender rates in future main refinancing operations. These implied forward rates should be adjusted downwards for a narrow spread, since the EONIA swap rates reflect the credit risk premium embedded in the unsecured overnight rate. Moreover, the rates on EONIA swaps maturing within the ongoing reserve maintenance period can be affected by the liquidity conditions, although to a lesser extent than the EONIA. On 31 May 2001 the implied forward rates derived

from near-term EONIA swaps were close to the minimum bid rate in the main refinancing operations (4.50%), as shown in the table above. The chart below compares the spot EONIA swap rates with the implied forward rates as of 31 May 2001, derived from EONIA swaps with maturities of up to six months. While the EONIA swap rate curve was only modestly negatively sloped, the implied forward rates showed more clearly the expectations of decreasing rates in the future.

At the longer maturities, the EURIBOR and three-month EURIBOR futures provide relatively reliable information about market interest rate expectations. The EURIBOR are the offered rates on unsecured interbank loans within the euro area as quoted by contributing panel banks (the same banks as in the panel for the EONIA). The EURIBOR are computed as the average of offered rates and are reported at maturities of one week, and from one month up to twelve months. These rates reflect the conditions of the unsecured interbank market. The liquidity in this market is highest at the shortest maturities, due to credit risk considerations. The three-month maturity is very actively traded, as several derivatives contracts are linked to it.

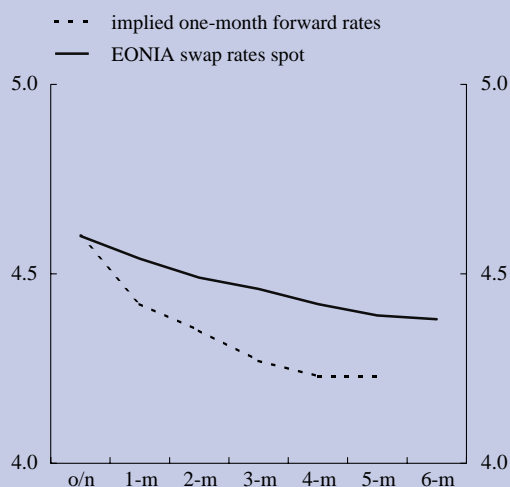
Owing to the high representativity of the three-month EURIBOR and the liquidity of the corresponding futures market, the interest rates implied in three-month EURIBOR futures contracts are widely used to extract information about interest rate expectations at the three-month horizon and beyond. A three-month EURIBOR future is a contract to engage in a three-month loan or deposit of a set amount, starting on a specific future date. By buying or selling this contract, an investor can fix the effective rate for borrowing or lending a set amount of money over a future three-month period. Hence the main use of this instrument is to hedge against interest rate risk. At horizons up to 18 months, EURIBOR futures are very liquid and the implied interest rates at these maturities are likely to reliably reflect the expected future level of the three-month EURIBOR. However, as the horizon increases, the distortion due to term premia is likely to become larger, leading the implied rates to overstate the expected level of the three-month EURIBOR. Chart 13 of the main text illustrates the expectations embedded in three-month EURIBOR futures. In the chart, the actual development of the three-month EURIBOR up to 6 June 2001 is linked to a curve consisting of three-month EURIBOR implied in futures contracts maturing in June, September and December 2001 and in March 2002, as observed on 6 June 2001. A curve consisting of the same futures rates observed at the end of February 2001 is included for comparison.

Other money market instruments can also provide information about market participants' expectations of future interest rates. Repos (repurchase agreements) are fully collateralised instruments and the repo rates observed in the market are therefore more directly comparable with the official ECB rates at similar maturities. However, the low liquidity at several maturities restricts the use of repo rates to extract information about interest rate expectations. Moreover, repo rates are sensitive to the characteristics of the securities employed as collateral, e.g. the credit rating of the issuer, which further complicates their use.

Information about the degree of uncertainty which the market attaches to future developments can be provided by options contracts on the underlying instrument. The extraction of this information was described in the article entitled "The information content of interest rates and their derivatives for monetary policy", as published in the May 2000 issue of the Monthly Bulletin.

### One to six-month EONIA swap rates and the implied forward rates as of 31 May 2001

(percentages per annum; mid rates)



Sources: Reuters and ECB calculations.