

Box 4

Deriving euro area inflation expectations from inflation-linked swaps

The most commonly used financial indicators of euro area inflation expectations have thus far been break-even inflation rates derived from the difference between French nominal bond yields and French index-linked bond yields (linked to the euro area HICP excluding tobacco) of similar maturities. This box describes new financial measures of euro area inflation expectations extracted from inflation-linked swaps (I/L swaps) and examines what these new measures signal with regard to changes in euro area inflation expectations since early 2003. The main advantage of using I/L swaps to monitor developments in inflation expectations is that they provide a wider spectrum of maturities than similar bonds, in particular for the short and medium-term horizons and as such they are useful in the monitoring of inflation expectations.

In an I/L swap agreement, investor A commits to pay investor B a stream of fixed payments in return for a stream of inflation-linked payments. The payments can take place at the maturity of the swap (zero coupon I/L swap) or each year over the life of the swap (multi-payment I/L swap). From a zero coupon I/L swap it is possible to extract an indicator of average inflation expectations over the life of the swap.

The underlying inflation indexes used in the most actively traded of such products are the euro area HICP excluding tobacco and the French CPI excluding tobacco. These are also the two indexes used by *Agence France Trésor* for its inflation-linked bonds, which are used in the pricing of I/L swaps and in hedging positions on the I/L swap market.

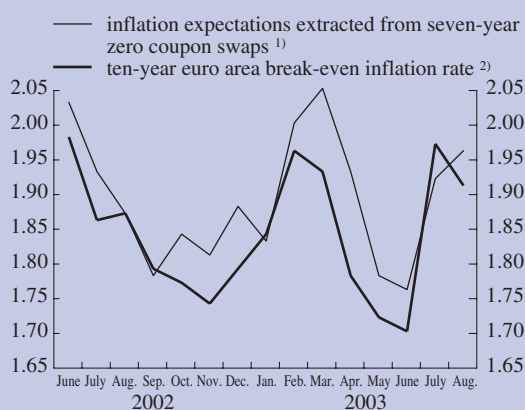
The I/L swap market grew rapidly in 2002. In fact, corporations with revenues linked to inflation (including utilities and retailers) used this market to hedge against the risk of low inflation, while corporations with liabilities linked to inflation (e.g. pension funds and life insurance corporations) used it to hedge against the risk of high inflation.

As with break-even inflation rates, measures of inflation expectations extracted from I/L swaps are an imperfect indicator of inflation expectations. Notably, they are biased by an inflation risk premium as well as a liquidity premium.¹ In addition, a counterparty risk is also included in the measure of inflation expectations extracted from I/L swaps. However, this risk is usually mitigated through collateral.

Bearing in mind the shortcomings of the different measures, the break-even inflation rate and the measure of inflation expectations extracted from I/L swaps give similar information on inflation expectations.² As shown in Chart A, the ten-year euro area break-even inflation rate and the comparable measure using I/L swaps are extremely close to each other, the latter being on average only 5 basis points higher than the former over the past year. However,

Chart A: Comparison of euro area inflation expectations extracted from inflation-linked bonds and inflation-linked swaps

(percentages per annum; end-of-month data)



Sources: CDC IXIS Capital Markets, Reuters and ECB calculations.

- 1) A horizon of seven years has been chosen since it corresponds to the duration of the bonds used to calculate the ten-year break-even inflation rates.
- 2) The difference between the nominal yield of the French nominal bond maturing in 2012 and the real yield of the French index-linked bond linked to the euro area HICP maturing in 2012.

1 For more details, see the box entitled "Deriving long-term euro area inflation expectations from index-linked bonds issued by the French Treasury" in the February 2002 issue of the Monthly Bulletin.

2 On the comparison between break-even inflation rates and inflation expectations extracted from I/L swaps see also the July 2002 edition of the monthly review published by the French bank CDC IXIS entitled "Inflation linked".

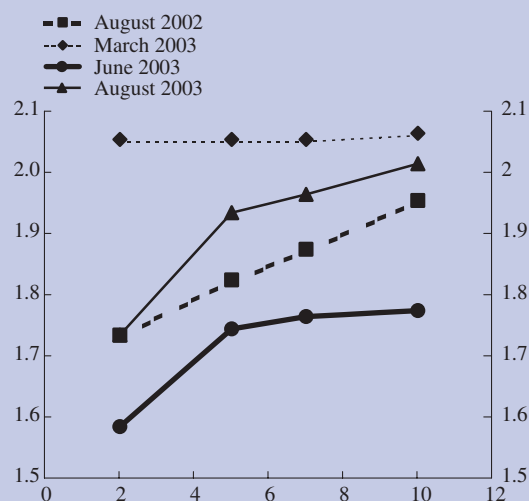
because of the presence of the above-mentioned biases, and as in the case of break-even inflation rates, when monitoring the I/L swap market, it is always safer to focus on changes in the inflation expectations measure extracted from I/L swaps than on levels.

As shown in Chart B, short-term inflation expectations extracted from I/L swaps fluctuated considerably. In 2003, the two-year average inflation expectations have fluctuated between 1.58% and 2.05%, and seem to have been partly affected by temporary shocks on prices, such as those on oil prices. In contrast, the ten-year inflation expectations have been more stable suggesting that long-term inflation expectations were well anchored at levels more or less compatible with price stability over the medium to long term.

From the peak in inflation expectations at end-March 2003 to the trough at end-June 2003, market participants seemed to have revised downward their expectations for average inflation over the next two years by 50 basis points. Despite these significant revisions, and bearing in mind the several caveats mentioned above, inflation expectations did not suggest that investors in June had priced in any significant deflationary risks at any horizon. At end-August, the inflation expectations curve was close to the level of one year earlier, with the average ten-year inflation expectations standing at around 2%.

Chart B: Changes in inflation expectations extracted from inflation-linked swaps

(x-axis: horizon in years; y-axis: percentages per annum, end-of-month data)



Sources: CDC IXIS Capital Markets, Reuters and ECB calculations.