

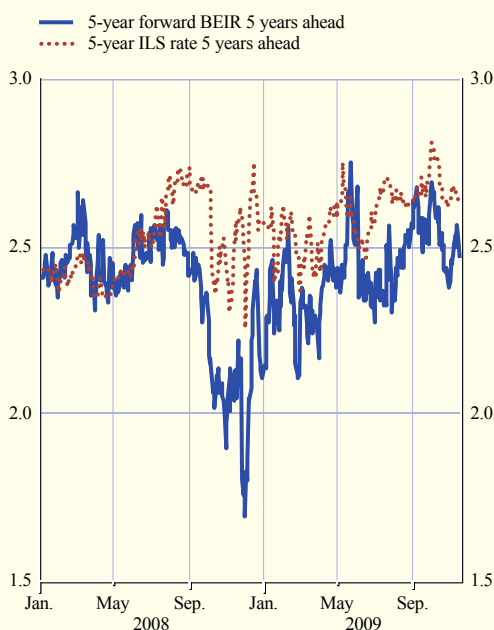
## Box 4

## AN ASSESSMENT OF RECENT DEVELOPMENTS IN LONG-TERM FORWARD BREAK-EVEN INFLATION RATES

Section 2.4 of the “Economic and Monetary Developments” part of the Monthly Bulletin contributes to the regular monitoring of financial indicators of long-term inflation expectations. Since the intensification of the financial turbulence in the autumn of 2008, this section has emphasised that the increase in the volatility of long-term forward break-even inflation rates (BEIRs) has reflected the severe dislocations in the market for inflation products. Despite the gradual normalisation in bond markets over 2009, recently long-term forward BEIRs have been fluctuating around a relatively high level of 2.5%, and even close to 2.7% in the first days of October 2009 (see Chart 23 in the main text). Moreover, comparable forward rates extracted from inflation-linked swaps (ILSs) also reached high levels of 2.8% around the same dates (see Chart A). The Governing Council of the ECB, while closely monitoring such developments, has however emphasised that inflation expectations over the medium to long term remain firmly anchored.

Chart A Long-term forward BEIRs and ILS rates

(percentages per annum)



Sources: Reuters, Bloomberg and ECB calculations.

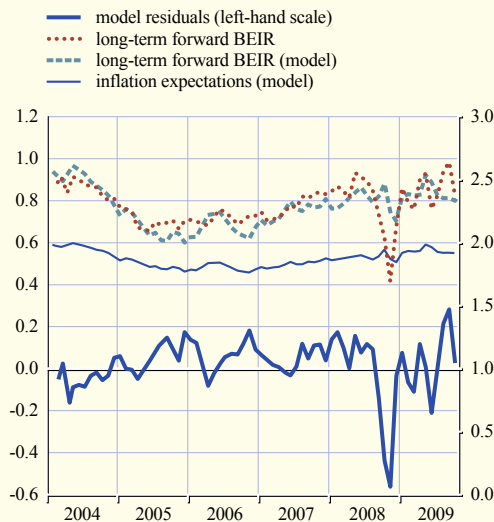
This box briefly presents the market situation and concludes that such levels of long-term forward BEIRs remain consistent with a situation of well-anchored inflation expectations and stable inflation risk premia. Liquidity distortions, although gradually disappearing, continue to affect to varying degrees the different segments of the BEIR curve, as well as the calculation of long-term forward BEIRs.

Decomposing BEIRs into inflation expectations and inflation risk premia remains challenging. Term structure models can however provide some insights into the factors affecting BEIRs. Chart B shows a model-based estimation of the euro area long-term forward BEIR together with the observed one, and model residuals reflecting the difference between the two. It also shows the implicit level of (market) inflation expectations in the estimated long-term forward BEIR.<sup>1</sup> First, since the start of the financial turbulence, model-based long-term forward BEIRs (shown by the dashed blue line) have been much less volatile than the observed BEIRs. Second, long-term inflation expectations have also been rather stable and remained at levels below, but close to, 2%.

<sup>1</sup> The underlying term structure model is relatively similar to A. Ang, G. Bekaert and M. Wei (2008), “The Term Structure of Real Rates and Expected Inflation”, *Journal of Finance*, 63(2), pp. 797-849. Specifically, the model is estimated using five and ten-year nominal government bond yields, three, five and ten-year real government bond yields, actual HICP inflation and long-term (six-to-ten years ahead) survey inflation expectations from Consensus Economics.

**Chart B Model-based decomposition of five-year BEIRs five years ahead for the euro area**

(percentages per annum)



Sources: Reuters, Consensus Economics and ECB calculations.

**Chart C Long-term forward ILS rates**

(percentages per annum)



Sources: Bloomberg and ECB calculations.

Finally, model residuals, rather than movements in the estimated inflation risk premium, explain a significant part of the volatility of observed long-term forward BEIRs. Moreover, recently, model residuals have turned positive. This might reflect the protracted decline of inflation-linked bond yields over 2009 (the ten-year real yield is currently around 1.5%), thereby mechanically exerting upward pressure on long-term (both spot and forward) BEIRs. These marked fluctuations in real yields are mainly the result of technical market factors, in particular liquidity considerations, and not of macroeconomic fundamentals.<sup>2</sup> Recent survey evidence on inflation expectations corroborates that assessment.<sup>3</sup>

Further evidence on the existing distortions in BEIRs across maturities can be obtained from the term structure of ILS rates. Chart C shows two long-term forward ILS rates, the five-year rate five years ahead and the ten-year rate ten years ahead. At such very long horizons, one can assume that the level of inflation expectations embodied in forward rates is to the same extent in line with the central bank's objective of price stability. However, the longer the horizon, the higher the uncertainty (and therefore the risk), so typically the further ahead the horizon, the higher the forward rate should be. While this was the case before the intensification of the financial turbulence in the autumn of 2008, following the Lehman Brothers collapse and the liquidity drought in the market for inflation-linked products, the concentration of demand for inflation protection around the benchmark ten-year horizon led the five-year forward rate five years ahead above the ten-year forward rate ten years ahead. Although in recent months the spread between these two long-term forward rates has somewhat normalised,

2 In contrast, model residuals became strongly negative in the autumn of 2008, reflecting the sharp rise of real yields as a result of the sell-off of inflation-linked bonds (ten-year real yields peaked above 3% in early November 2008), thereby contributing to pushing down long-term BEIRs and in particular the observed five-year BEIR five years ahead.

3 See the box entitled "Results of the ECB Survey of Professional Forecasters for the fourth quarter of 2009" in the November 2009 issue of the Monthly Bulletin.

it still remains in negative territory, suggesting that the normalisation is not yet complete (see Chart D).

Looking ahead, liquidity conditions in the euro area market for inflation-linked products may improve further in the coming months. After practically no supply of inflation-linked bonds in the first half of 2009, Treasuries' issuance of inflation-linked bonds has recently resumed and is expected to intensify in 2010. Moreover, if liquidity continues to improve, volatility in BEIRs should diminish further. This being said, the timing of such an improvement and the way in which it would propagate across the whole BEIR curve remain uncertain at this stage. Therefore, some volatility in forward BEIRs should still be expected, reflecting mainly those technical adjustments.

In sum, the volatility and the recent high levels of long-term forward break-even inflation rates and inflation-linked swap rates do not seem to reflect a significant shift in long-term inflation expectations. Instead, they appear to be related to technical market factors, namely the ongoing but incomplete normalisation of liquidity conditions across the maturity spectrum and demand-supply imbalances in the market for inflation-linked products, especially at the ten-year horizon. It remains crucial, however, to continue monitoring these indicators closely.

Chart D Spread between ten-year in ten years and five-year in five years forward ILS rates

(in basis points)



Sources: Bloomberg and ECB calculations.