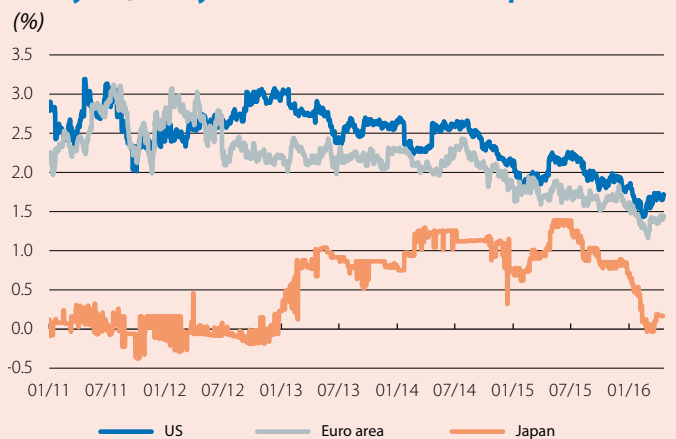


## On the use and abuse of inflation expectations embedded in asset prices

Throughout of the last year and a half the trend in inflation expectations in the developed countries might well have been classed as worrying, at least at first sight, as there has been a particularly sharp drop in expectations reflected in the price of financial assets in the United States, the euro area and Japan. Given this circumstance, investors, analysts and members of central banks have all warned of the risk of inflation expectations (IE) becoming unanchored in the long term. However, a «rough» interpretation of these indicators could lead to skewed or erroneous conclusions. To assess whether such concern is well-founded we need to analyse two questions: what is causing this downward trend in IE and just how accurately do the IE contained in financial instruments reflect the true, and unobservable, inflation expectations (TIE).

One of the most widely-used measures to estimate inflation expectations is based on the difference between the nominal yield on a fixed-rate investment and the real yield on a similar inflation-linked investment. This difference is called the breakeven inflation rate (BEIR).<sup>1</sup> In the US, the 10-year BEIR has gone from 2.2% at the end of 2014 to 1.5% currently, while in Europe it has not fallen quite so sharply, going from 1.1% to 0.9%, and in Japan it has dropped from 1.1% to 0.3%. Five-year, five-year forward BEIR, which are less affected by distortions caused by temporary shocks to the inflation rate such as those resulting from fluctuations in the price of oil, and reflecting medium and long-term inflation expectations, have behaved in a very similar way: since the end of 2014 they have fallen by 0.6 pps in the US, down to 1.7% at present, by the same figure in the euro area, down to 1.4%, and by close to 1 pp in Japan, down to 0.1%. Inflation-linked swaps, for their part, have fallen in line with the BEIR, both in the case of 10-year IE and their forward version. With regard to markets for inflation-linked options, of note is the recent rise in premia to hedge desinflationary scenarios in the medium term.<sup>2</sup>

### Five-year, five-year forward inflation expectations \*



Note: \* Obtained from inflation-linked bonds. In the case of Japan, from the swaps market.  
Source: CaixaBank Research, based on Bloomberg data.

However, BEIR not only reflect the TIE of agents involved in bond or swap markets but also contain other components that cannot be directly observed; specifically, an inflation risk premium (IRP) and a liquidity risk premium (LRP). The former is associated with the uncertainty among market participants that the TIE does not coincide with the inflation that will actually occur, while the latter represents the compensation received by investors due to the lower liquidity of index-linked bonds compared with their parents; i.e. nominal bonds. The IRP increases with the degree of uncertainty (greater dispersion of expectations) which, all things being equal, pushes up the BEIR (those holding nominal bonds demand a higher yield because they are subject to more risk) while, also all thing being equal, an increase in the LRP pushes the BEIR down.<sup>3</sup>

Empirically, several studies by the Federal Reserve (Fed) have focused on the US case in an attempt to determine which factors have led, and to what extent, to the drop in inflation compensation indicators. Although their findings do not always coincide, mostly due to the methodology used to produce estimates, they do suggest that the TIE remains firmly anchored at a level between 2% and 2.5% and attribute most of the drop in the BEIR to the LRP and, to a lesser extent, the IRP. Regarding the latter, several authors have found that the degree of dispersion in IE based on surveys carried out on various groups has narrowed significantly over the last few years in line with the downward trend shown by different estimates of the IRP, but this can only explain a small part of the recent fall in the BEIR (less than 10 bps).<sup>4</sup> For its part, it is estimated that the LRP has increased by

1. For a detailed description of each of the financial instruments mentioned in this article, see the Focus «Inflation expectations and financial instruments: a valuable duo» and the Dossier «Measuring inflation expectations: the devil is in the detail» of the MR04/2014 and MR02/2015, respectively.

2. In particular, a higher probability has been assigned to a scenario of inflation below 2% in the US and 1% in the euro area over the next five years.

3. Specifically  $TIE_{t,T} = BEIR_{t,T} - IRP_{t,T} + LRP_{t,T}$ . For more details, see D'Amico, S., Kim, D. and M. Wei (2014); «Tips from TIPS: the informational content of Treasury Inflation-Protected Security prices». Finance and Economics Discussion Series 2014-24, Board of Governors of the Federal Reserve System.

4. See Nechio, F. (2015), «Have Long-Term Inflation Expectations Declined?». Economic Letter 11/2015, Federal Reserve Bank of San Francisco.

around 70 bps. This increase would largely be due to the effects of the slump in the price of crude oil and the episodes of volatility occurring on the international financial scene in 2015 and the beginning of 2016.<sup>5</sup> Although it is true that LRP have shown a downward trend in the long term as a consequence of the growing size and depth of the inflation-linked bond market, financially turbulent episodes have always been accompanied by significant upswings in liquidity premia. This phenomenon has been observed in the second half of 2015 and at the start of this year when the shock of the oil market and fears of a sharp slowdown in world growth led to spikes in global risk aversion and a flight to quality on the part of investors, principally to (nominal) Treasury bonds from the US, Germany and Japan.

This results in a threefold corollary. Firstly, in spite of the sharp drop in various inflation compensation indicators, TIE have generally remained anchored at the Fed's inflation target. Secondly, the LRP has been the main reason for these drops since the end of 2014. Lastly, the size of this component is susceptible to sudden, sharp increases in periods of financial agitation, making variables such as the BEIR and inflation-linked swaps less useful in terms of their informational content under such circumstances. Nonetheless, given the uncertainty regarding risk premia estimates implied in the BEIR, it may still be the case that TIE have fallen slightly over the last few months, as suggested by some surveys on professionals in the US. One possible explanation for this drop would come from how agents' inflation expectations are formed which, as the current situation of inflation is used to extrapolate to the future, could suffer from bias such as short-sightedness.<sup>6</sup>

In summary, fluctuations in the risk premia contained in financial asset prices make it difficult to observe real inflation expectations. During periods of high uncertainty and financial volatility, the LRP represents the main obstacle to calculating such expectations and it is therefore crucial to determine this risk premium. Once both components have been deducted, various estimates of TIE show that this is still in line with the Fed's target of 2%, suggesting that inflation expectations in the US are well anchored.

*Carlos Martínez Sarnago*  
*Financial Markets Unit, Strategic Planning and Research Department, CaixaBank*

### Premia on five-year inflation-linked options \*

(bps)



Note: \* For the US, 2% floor and for the euro area, 1% floor.  
Source: CaixaBank Research, based on Bloomberg data.

5. See Gospodinov, N. et al., (2016). «Are Long-Term Inflation Expectations Declining? Not So Fast, Says Atlanta Fed» Macroblog, Federal Reserve Bank of Atlanta.

6. On this issue, see Faust, J. and Wright, J. (2013). «Forecasting Inflation» Handbook of Economic Forecasting, vol. 2A.