

The breakeven inflation rate in the bond market rose sharply in the first half of the year, apparently reflecting to a large extent rising market inflation expectations and increased uncertainty about the inflationary effects of the wage settlements then pending (see Box 2 in *Monetary Bulletin* 2015/2). Early in the summer, however, it began to decline again (Chart 1). Wage settlements for most of the private sector had recently been approved, and they provided for sizeable pay increases, albeit smaller than many had feared, given the steep wage demands that had been made. Uncertainty about the inflation outlook was therefore considered to have subsided, and the Central Bank's Monetary Policy Committee (MPC) had already responded to increased inflationary pressures by raising interest rates and signalling further rate hikes in the future. Even though the breakeven inflation rate declined during the summer, it remained elevated, particularly at the long end of the yield curve.

In recent weeks, however, it has fallen still further. The breakeven rate on long bonds is currently lower than it was at the beginning of the year, and long-term Treasury bond interest rates are now at a similar level as the Central Bank's key rate (Chart 2). As a result, the yield curve has become inverted (Charts 3 and 4). What is the reason for this sudden drop in nominal bond yields and the resulting decline in the breakeven inflation rate? And what impact can a development like this have on monetary policy conduct and transmission?

### Determinants of nominal bond yields

Yields on nominal Treasury bonds consist of three main components: expectations concerning developments in short-term real rates over the lifetime of the bond, inflation expectations over the same period, and a risk premium. Changes in yields can therefore reflect changes in one or more of these factors. Breaking down bond yields into their components is not simple, nor is interpreting changes in them. This applies particularly to the risk premium, which actually covers a number of different premia, including inflation risk premium, a credit risk premium, and a liquidity premium. The risk premium can also vary depending on the duration of the bonds and is generally higher for long-term bonds because of greater uncertainty about future developments in the underlying factors, such as inflation, economic activity, and interest rates. Yields on longer bonds therefore include what is called a term premium, which is the additional return demanded by investors for investing in long-term bonds as opposed to rolling over shorter bonds from the same issuer. The term premium is generally positive; therefore, the yield curve is usually upward-sloping. However, this can change if, for instance, investors' assessment of the risk attached to long bonds changes, or if there are changes in demand for long bonds for a given level of bond supply.

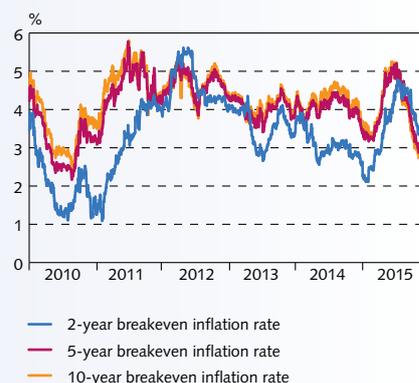
### Inflation expectations have probably fallen ...

An inverted yield curve because of the aforementioned decline in nominal bond yields could to some extent reflect expectations that short-term real rates will be somewhat lower in coming years than was expected earlier in 2015. It is unlikely, though, that this factor has weighed heavily in the fall in longer bond yields, as strong GDP growth and increased absorption of spare capacity in the economy are still generally expected, even though recent developments in inflation have been more favourable than previously anticipated. Also, according to the Central Bank's recent survey of market agent's expectations, respondents do not expect short-term real rates to be much lower in the long run than in the previous survey.

## Box 1

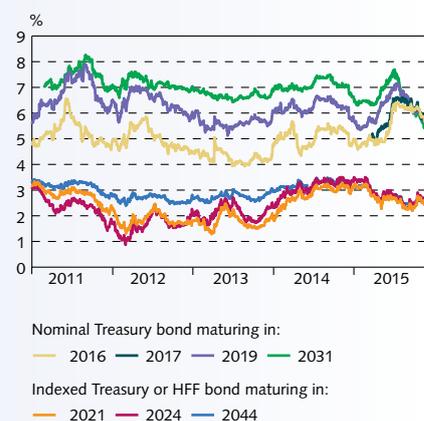
### Recent turbulence in the domestic bond market: capital inflows and reduction of nominal long-term interest rates

Chart 1  
Breakeven inflation rates<sup>1</sup>  
Daily data 4 January 2010 - 30 October 2015



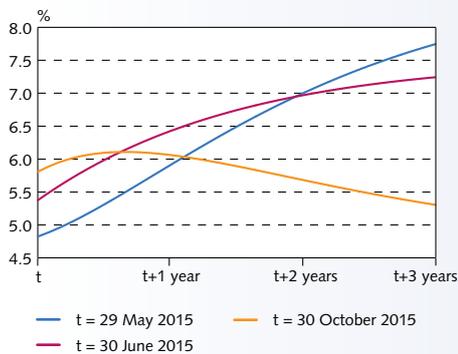
1. Forward breakeven inflation rate based on nominal and indexed yield curves. The breakeven rate indicates the expected annual inflation rate in two, five, and ten years.  
Source: Central Bank of Iceland.

Chart 2  
Nominal and indexed bond yields  
Daily data 3 January 2011 - 30 October 2015



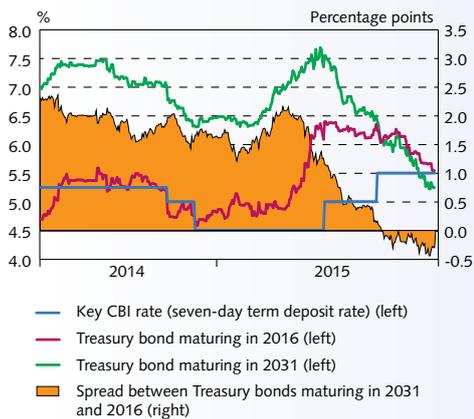
Source: Central Bank of Iceland.

Chart 3  
Forward market interest rates<sup>1</sup>



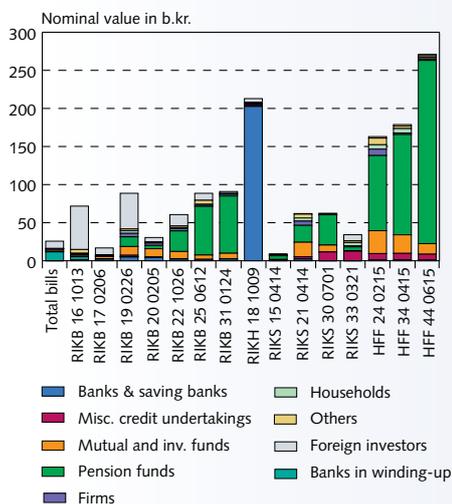
1. Interbank interest rates and Treasury bond yields were used to estimate the yield curve.  
Source: Central Bank of Iceland.

Chart 4  
Key Central Bank rate and nominal Treasury bond yields  
Daily data 21 May 2014 - 30 October 2015



Source: Central Bank of Iceland.

Chart 5  
Owners of Government securities  
and HFF bonds  
As of 31 May 2015



Source: Central Bank of Iceland.

Another explanation for the reduction in long-term bond yields could be the decline in market agents' long-term inflation expectations, as investors' concerns about increased inflation following the wage settlements appear to have abated because inflation has turned out lower than forecasts (including the Bank's) had indicated. The Bank's market expectations survey also showed signs that respondents expect slightly lower near-term inflation than they did previously. However, the survey results indicate that they expect higher inflation in two years' time and that their long-term inflation expectations are broadly unchanged. As a result, it is difficult to see how changes in investors' expectations concerning developments in short-term real rates or long-term inflation expectations can play a leading role in the recent plunge in long-term interest rates. It is more likely that the explanation lies in changes in the risk premium on long nominal rates.

### ... but the decline in yields is probably due in large part to lower term premia ...

It is difficult to see that uncertainty about the long-term inflation outlook has subsided much since early 2015; therefore, the decline in the inflation risk premium does not appear to be a major cause of the steep decline in long-term nominal Treasury bond yields. On the other hand, it could be due in part to a reduction in credit risk, owing to increased optimism about the Treasury's position following the publication of the capital account liberalisation strategy in early June and the ensuing upgrade in Iceland's sovereign credit ratings. The liberalisation of the capital controls is expected to entail a reduction in Treasury debt concurrent with the payment of stability contributions and/or taxes by the failed banks' estates, which, together with the new fiscal budget proposal, may well have fuelled expectations of reduced Treasury bond issuance. If a reduction in credit risk were an important explanation of the decline in long-term nominal bond yields, however, it could be expected to have a less pronounced impact on the slope of the yield curve than has been the case; furthermore, indexed bond interest should also have declined in a similar manner, whereas it has fallen considerably less since June. The stronger impact on long-term nominal bonds could however reflect their greater supply and liquidity as compared with similar indexed bonds (see Box 1 in *Monetary Bulletin* 2015/2); furthermore, it could be due to the fact that the vast majority of short nominal bonds are owned by non-residents with assets that are locked in by the capital controls. Such investors are likely to want to hold their Treasury bonds following the tightening of the controls in March which restricted their securities investments to Treasury bills only (Chart 5).

In view of all this, the steep drop in long-term interest rates appears to be due primarily to an increase in foreign investors' demand for long-term nominal Treasury bonds since late summer, which has pushed their term premia downwards.<sup>1</sup> Non-residents' new investment in long nominal Treasury bonds has amounted to nearly 49 b.kr. since end-May, as the risk-adjusted interest rate differential with abroad has seldom been wider (Charts 6 and 7). Iceland's interest rates are higher, and economic activity is stronger than in most other developed countries; furthermore, the exchange

1. This is also in line with the opinion of a majority of participants in the Central Bank survey, who were asked what they considered the main underlying reason for the decline in long-term breakeven inflation rates in the bond market since mid-summer. The greater impact on nominal rates than on indexed rates is therefore probably also a reflection of less interest by foreign investors in the latter bonds, as there is less of a tradition for such bonds abroad (indexed bond markets are still relatively small abroad, although indexed issuance has been on the rise). Issues relating to the Government guarantee of the Housing Financing Fund's indexed bonds could also have reduced investors' interest.

rate has been relatively stable and the credit ratings of the sovereign have improved. Foreign residents' purchases of long Government bonds have therefore been sizeable. The limited liquidity in the domestic bond market could have exaggerated the price effects, and domestic investors' demand may have increased afterwards, due to expectations of continued new investment by non-residents at a time of reduced Treasury borrowing need concurrent with the liberalisation of the capital controls.<sup>2</sup>

One of the main manifestations of foreign investors' increased demand for Treasury bonds and the expectation of reduced supply is therefore the reduction in the term premium on nominal bonds, which causes the yield curve to flatten out and even become inverted in spite of a general expectation of further short-term interest rate hikes in the coming term. This development complicates monetary policy transmission via the interest rate channel and shunts it increasingly to the exchange rate channel. This channel is in many ways less reliable as the exchange rate has a tendency to rise excessively with the associated risk of a sharp correction as occurred in Iceland prior to the financial crisis.<sup>3</sup> The weaker transmission through the interest rate channel also complicates the assessment of market agents' inflation expectations based on developments in bond market interest rates.

### ...which probably reflects spillovers from other countries

This situation is not unique to Iceland, however, and term premia in the global bond markets have been at record lows in the recent term, in part due to quantitative easing programmes undertaken by developed economies' central banks in order to lower medium- to long-term market interest rates after short-term rates have been reduced to their assessed lower bound.<sup>4</sup> Although the reasons for the reduction in term premia differ from those in Iceland, it is likely that the effects of these measures undertaken abroad started spreading to the domestic bond market when the domestic situation started to improve. This can be seen, for example, in an improving Government debt position and rising credit rating, as foreign institutional investors in long-term bonds look to Iceland for better returns than are available in other industrialised countries.<sup>5</sup> For this reason, the Central Bank is analysing how other policy tools can be used in addition to the interest rate tool in order to ensure economic stability and inflation in line with the target.<sup>6</sup>

2. The sharp drop in yields into mid-August could also stem in part from reluctance by pension funds, the largest owners of long Treasury bonds, to sell at yields higher than 6.1%, as this would weaken their actuarial position. By the same token, the supply of the bonds may have increased when yields fell below 6.1%, which reduces downward pressure on yields.

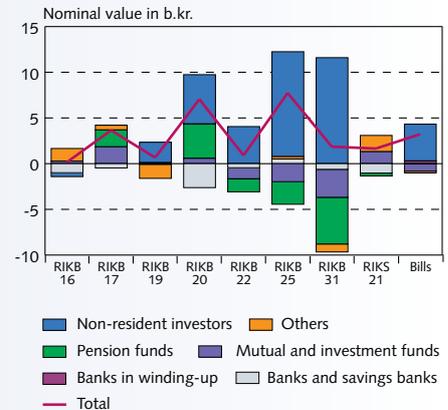
3. See Már Gudmundsson (2015), "Financial integration and central bank policies in small, open economies: what are the lessons from the crisis?", speech given at the *Singapore Economic Review Conference*, August 2015. More detail on the theoretical background and empirical analysis can be found in Már Gudmundsson (2008), "Financial globalisation: key trends and implications for the transmission mechanism of monetary policy", *BIS Papers*, no. 39.

4. A reduction in the term premium in these countries therefore pulls in the same direction as monetary policy, in contributing to the economic recovery and bringing inflation up to target, although premium adjustment could raise difficulties later on. As in Iceland, assessing inflation expectations will become more difficult (see M. Ciccarelli and J. A. Garcia, 2015, "International spillovers in inflation expectations", *ECB Working Paper Series*, no. 1857).

5. See, for instance, the discussion of the impact of major central banks' policy measures on small developed countries and emerging market countries in Hofmann, B. and E. Takáts (2015), "International monetary spillovers", *BIS Quarterly Review*, September 2015, 105-118.

6. See, for example, Central Bank of Iceland (2010), "Monetary policy after capital controls", *Special Publication*, no. 4, Central Bank of Iceland (2012), "Prudential rules following capital controls", *Special Publication*, no. 6, and the previously cited speech by Már Gudmundsson.

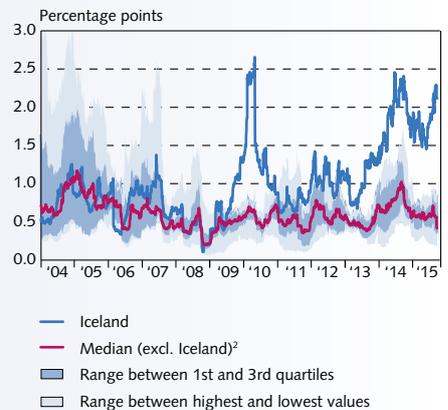
Chart 6  
Changes in ownership of Treasury securities  
31 May 2015 - 30 September 2015



Source: Central Bank of Iceland.

Chart 7  
Risk-adjusted interest rate spreads of Iceland  
and selected other high-yielding currencies  
against the euro area<sup>1</sup>

Daily data<sup>4</sup> 1 January 2004 - 30 October 2015



1. Ratio of interest rate spread on 3-month interbank rates to 3-month standard deviation of daily exchange rate movements. 2. Brazil, New Zealand, South Africa, and Turkey.  
Sources: Macrobond, Central Bank of Iceland.