



Economic Commentary

# Why have US long-term yields risen?

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## **Economic Commentaries**

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# Introduction

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The increase in US bond yields has spread via global financial markets to bond yields in other countries to a varying extent. Reasons such as a brighter economic outlook and rising long-term inflation expectations have been highlighted by several analysts as explanations for the increase. When the economy improves and inflation is expected to rise, investors normally assume that the Federal Reserve will raise policy rates more, and perhaps earlier, than they did before. There are signs that investors have changed their view about the future policy rate, but not to such a degree that it can explain all the increase in long-term US bond yields. There are therefore many indications that the increase is due to the compensation required by investors in order for them to invest in longer-term bonds, the term premium, having increased.<sup>2</sup>

The brighter economic outlook and rising long-term inflation expectations are happening against the background of extensive economic -policy support measures. The expansionary fiscal policy in the United States is being funded by an increased supply of long-term nominal bonds. The Federal Reserve has expressed a tolerance for higher inflation and anchored long-term inflation expectations. The expansionary policy has probably also contributed to the increase in the term premium. In addition, measures of the term premium show that it has historically been countercyclical and gradually increased after the economy has entered a recession. There are thus several factors indicating that the term premium is also following this pattern in the current recession.

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<sup>2</sup> In the minutes of its monetary policy meeting in March (published in 7- April- 2021), the Federal Open Market Committee (FOMC) discussed that the increase in long-term yields in the United States was primarily associated with an increase in the term premium. The ECB also adopted a similar reasoning in the minutes (published on 8 April 2021) from its monetary policy meeting in March.

# 1 Long-term bond yields have risen as the economic outlook has improved

Since the summer of 2020, the 10-year US treasury yield has increased by around 100 basis points although it has decreased somewhat since the end of March, see Figure 1. Financial markets are global and the increase in US yields has spread to bond yields in other countries to a varying extent. Mainly long-term nominal treasury yields have increased while inflation-linked (real) bonds have not risen to the same extent.

**Figure 1. 10-year US treasury yield**

Per cent



Note. Refers to the benchmark 10-year rate for the United States.

Source: U.S. Department of the Treasury.

According to the so-called ‘expectation hypothesis’, an investor who buys a two-year bond has the same expected return as another investor who rolls over a one-year bond over a two-year period. As the central bank decides the policy rate, which directly affects shorter-term yields, policy rate expectations are an important component of longer-term yields.

However, bond yields depend not only on policy rate expectations but also contain a compensation component, the term premium, which investors require in order for them to invest in longer-term bonds.<sup>3</sup> Fundamentally, the term premium is a risk premium and thereby compensation to an investor for holding an asset that may decline in value when the economy goes into recession and whose return is uncertain. The investor can then be more or less prepared to hold such an asset in their portfolio depending on their risk appetite. On bond markets, rising risk premiums can manifest themselves as increased yield spreads between risky and safe bonds and as a higher term premium on long-term bonds. Disagreement among investors about the future

<sup>3</sup> See Alsterlind (2017) for a discussion. The underlying reason for the term premium is that the price of a long-term bond is more sensitive to a given interest rate adjustment than the price of a shorter-term bond. Such higher price sensitivity means that an investor takes a greater risk when buying a long-term bond, which will then be compensated for with extra return.

economic outlook can also give rise to a term premium.<sup>4</sup> There is also much to suggest that the supply of, and demand for, a bond can affect the term premium.<sup>5</sup>

The question is then whether the increase in US bond yields is due to investors gradually changing their view about the US policy rate, in light of a brighter economic outlook, or whether the increase depends on factors that have caused the term premium to rise.

## 2 A changed view about the policy rate does not seem to explain all of the increase in long-term yields

When the economy improves and inflation is expected to rise, investors normally assume that the Federal Reserve will raise policy rates more, and perhaps earlier, than they did before in order to keep inflation within the target interval. Various surveys indicate that the view about the future policy rate has changed in this direction, but not enough to explain all the increase in long-term US bond yields. In the survey of various forecasters compiled by the Federal Reserve Bank of Philadelphia, the latest forecasts for the short-term treasury yield, which is closely linked to the Federal Reserve's policy rates, have been revised upwards although the change is small.<sup>6</sup> In the survey carried out by the Federal Reserve Bank of New York prior to each monetary policy meeting, the monetary policy counterparties expect somewhat faster rate rises now than they did in the autumn. But even in this case, the change is small and the counterparties have not revised their forecast for the long-term policy rate level.<sup>7</sup> Surveys of various market participants' forecasts for when the Federal Reserve's first policy rate rise will occur also show that these have been more or less unchanged between February and April.<sup>8</sup> These minor changes in monetary policy expectations are in line with Fed's forward guidance on policy rates not being increased in the near future.

The surveys therefore show that US policy-rate expectations have not changed much at all. At the same time, long-term bond yields have risen relatively substantially. This

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<sup>4</sup> New research suggests that disagreement on the interest-rate path and above all disagreement on the long-term level of the short (risk-free) rate can be a significant factor driving the term premium, see Cao, Crump, Eusepi and Moench (2020).

<sup>5</sup> See Vayanos and Vila (2021).

<sup>6</sup> See Federal Reserve Bank of Philadelphia: Survey of Professional Forecasters. The survey of forecasters is quarterly and the survey for the fourth quarter of 2020 was published on 16 November. The survey for the first quarter this year was published on 11 February and indicates a slight increase in the forecast for the three-month rate in 2023 and 2024. The forecast difference is therefore about 25 basis points.

<sup>7</sup> The Federal Reserve Bank of New York conducts a survey of the expectations among the monetary policy counterparties prior to each monetary policy meeting which is called the "Survey of Primary Dealers". In the latest survey from March of this year, the expectations for the average development in the Federal Funds Rate for the next ten years were revised upwards by about 25 basis points compared to September. The long-term level was unchanged at 2.25 per cent ten years ahead.

<sup>8</sup> In Bloomberg's survey of market participants' forecasts, the median response is that the US policy rate will remain at its current level at least until the third quarter of 2023. This was also the case in March and February.

indicates that the increase depends largely on the increase in the term premium. This conclusion is also supported by model results, for example by the model constructed by the Federal Reserve Bank of New York.<sup>9</sup> Model results suggest that the component of the bond yield consisting of a term premium is the main reason for the rise in long-term yields. As always, results from models shall of course be interpreted with caution but they support the view emerging from the surveys: that the increase in long-term yields cannot be explained by expectations of a rising policy rate alone. The same conclusion, that the increase on long-term bond yields is due to an increase in the term premium, has also been reached by international analysts and central banks.<sup>10</sup>

### 3 What can explain the increase in the term premium?

This section discusses some reasons why economic policy may have contributed to the increase in the term premium. Although economic policy contains cyclical elements, there may be many other reasons why the term premium varies across the business cycle. This section also shows that there is a clear countercyclical pattern in the term premium. The increase in the term premium in the current recession is compatible with the historical pattern, which has been repeated in conjunction with every US recession since the 1960s-.

#### 3.1 US economic policy and the link to interest rate developments

In the United States, as well as in other countries, public budget deficits are growing and the public debt burden will be significantly higher than it was before the pandemic for many years to come. In September 2020, the US Congressional Budget Office (CBO) reported that the federal budget deficit for 2020 would be around 16 per cent of GDP, making it the largest deficit since the Second World War.<sup>11</sup> The CBO has revised up its latest scenario for sovereign debt as a share of GDP (the debt ratio) by almost 20 percentage points compared to before the pandemic, see Figure 2. When the supply of bonds increases, yields may need to rise in order for investors to be willing to hold more bonds in their portfolios, without this necessarily affecting policy-rate expectations.<sup>12</sup> According to a study of the links between budget deficit and long-

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<sup>9</sup> See Adrian, Crump and Moench (2013a).

<sup>10</sup> In two IMF blogs, Adrian (2021a, 2021b) explains that the increase in long-term yields is due to an increase in the term premium. This explanation is also put forward by BIS (2021) and is, as previously mentioned, the explanation offered by the FOMC in the minutes (published on 7 -April -2021) after its monetary policy meeting in March. The ECB also points to the term premium as the driving-force behind the increase in long-term yields in the minutes (published on 8 April 2021) from its monetary policy meeting in March.

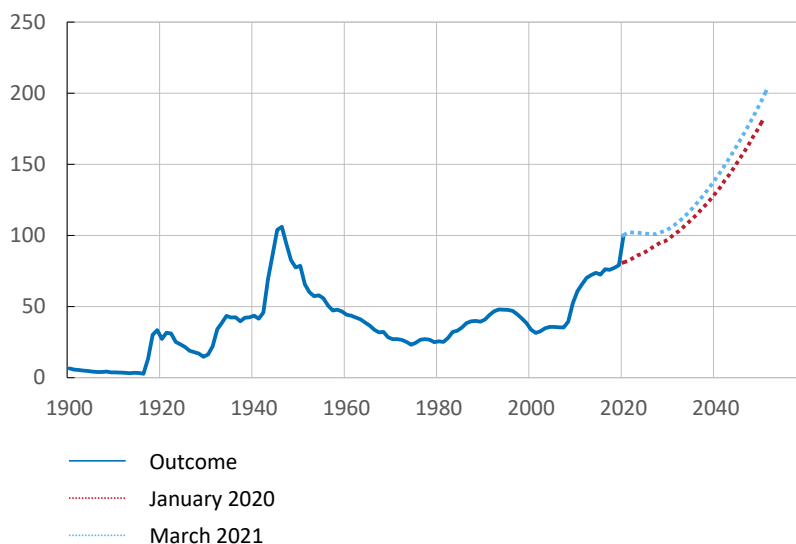
<sup>11</sup> Congressional Budget Office (2020).

<sup>12</sup> See Vayanos and Vila (2021).

term US bond yields, the debt increase illustrated by the change in the CBO’s scenarios would explain a significant part of the increase in long-term treasury yields.<sup>13</sup>

**Figure 2. Congressional Budget Office scenarios for US federal debt**

Per cent of GDP



Note. The CBO constructs its scenarios assuming unchanged fiscal policy rules which implies that development of the debt ratio in the scenarios need not be stable. The debt refers to the federal debt component held by private agents.

Source: Congressional Budget Office.

In the spring of 2020, measures to combat the pandemic in the United States were primarily funded by borrowing via short-term treasury bills. Since the end of the summer, borrowing has instead occurred in the form of the US Department of the Treasury issuing longer-term bonds. As a result, the maturity on the US bond debt lengthened during the autumn of last year.<sup>14</sup> The increase primarily in long-term bond yields may have to do with investors demanding extra compensation for holding a larger share of these bonds in their portfolios due to the increased risk.<sup>15</sup>

Another reason why economic policy could affect the term premium is the increasingly clear forward guidance from the Fed signalling greater tolerance for higher inflation for a period. The measure has anchored long-term inflation expectations and has

<sup>13</sup> See Laubach (2009). The study analyses the link between revisions of the CBO’s debt scenarios (which are interpreted as unexpected revisions of the deficit forecasts) and a five-year ahead five-year forward rate. The aim of analysing such a forward rate is to adjust for cyclical and monetary policy effects in the analysis. The study says nothing explicit about the link between deficit and the term premium, but it is reasonable to interpret the results in this direction.

<sup>14</sup> See U.S. Department of the Treasury (2020). Although the Fed has purchased long-term bonds in 2020, most indications are that the supply of longer-term bonds will increase in 2021 and going forward. The latest plans from 3 February 2021 state that the refinancing of redemptions in the first quarter would mainly take place in longer-term bonds.

<sup>15</sup> See the reasoning in Vayanos and Vila (2021).

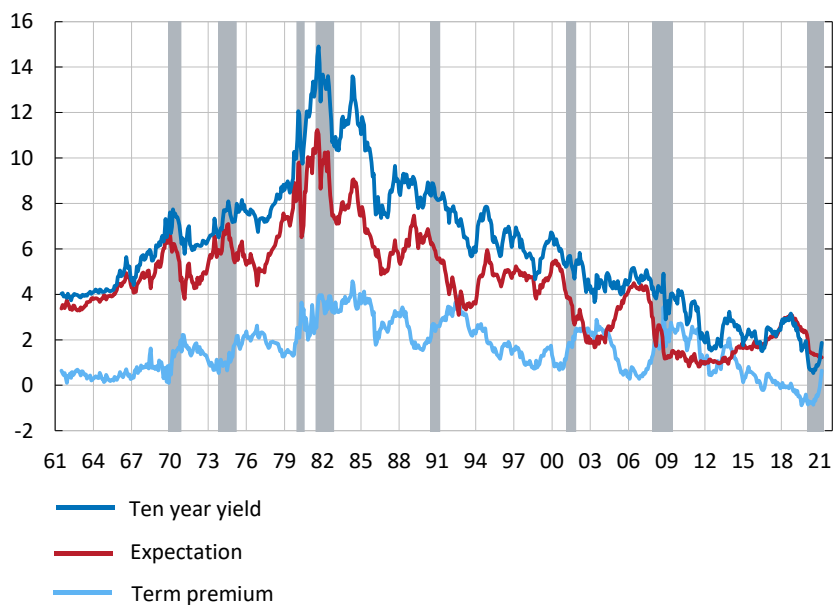
probably led to investors deeming there to be less risk of very low inflation in the period ahead.<sup>16</sup> The fact that investors then demand extra compensation for holding nominal bonds in their portfolios is thus to be seen as a welcome normalisation of inflation risks.

### 3.2 The term premium is countercyclical

There are clear signs that the term premium in a treasury yield is countercyclical and increases when the economy goes into recession.<sup>17</sup> Figure 3 shows the ten-year US treasury yield and the component of the bond yield that depends on the expected future short-term rate during the bond’s maturity, and the component consisting of a term premium, according to the model constructed by the Federal Reserve Bank of New York.

**Figure 3. Nominal 10-year US treasury yield and a breakdown into expectations and term premium**

Per cent



Note. Expectations and term premiums in the figure are model results calculated by the Federal Reserve Bank of New York. The grey field in the figure shows the months defined by the National Bureau of Economic Research (NBER) as the US economy having been in recession. The NBER has not defined a final date for the current recession episode so this may be revised afterwards. The NBER might subsequently declare that the recession in the United States is already over.

Sources: Federal Reserve Bank of New York, NBER and Macrobond.

From Figure 3, it is clear that the part of the bond yield that consists of expectations (red line) falls during a recession. Once this is over, expectations increase normally

<sup>16</sup> Market pricing indicates that the risks of deflation have decreased after the spring of 2020, see discussion in Goy, Hoogland and Petersen (2021).

<sup>17</sup> See Adrian, Crump and Moench (2013b).



again. However, it can sometime take longer before this happens, as was the case after the last recession (December 2007 to June 2009). Already before the pandemic and at the beginning of the recession, yield expectations fell substantially. This year, expectations have been relatively unchanged and have still not begun to rise. It is also clear from Figure 3 that the term premium (light-blue line) gradually increases during a recession. Once the recession is over, the increase tends to slow or go into reverse. According to economic theory and empirical evidence, there is much to suggest that risk premiums in general should be countercyclical, due in part to the fact that risk appetite can vary depending on the state of the economy.<sup>18</sup> Investors demand more compensation for risk in bad times and less compensation in good times. There may be many different reasons why the term premium behaves counter cyclically. It may have to do with risk appetite, or disagreement about the economic outlook, varying depending on the state of the economy. It may also demonstrate that public borrowing normally increases when the economy goes into recession.

## 4 Summary

As discussed above, it is likely that economic policy is affecting the term premium and to a greater degree in the present recession than in many others. This is partly because an unusually large borrowing need is being financed in the form of long-term nominal bonds and partly because an amendment to the US monetary policy framework has probably caused investors to change their view about risks associated with the outlook for inflation.<sup>19</sup> It is also clear that the term premium increases when the economy goes into recession and that it then continues to increase gradually as the economy recovers. This seems to be a regular historical pattern. There is therefore much to suggest that the increase in nominal long-term US treasury yields is also following its normal pattern in this recession.

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<sup>18</sup> See the discussion in Section 8.3 in Campbell, Lo and MacKinley (1997), Cochrane and Piazzesi (2005), and Adrian, Crump and Moench (2013b).

<sup>19</sup> See Goy, Hoogland and Petersen (2021).

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## References



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