Yield curve inversion: This time is not different

US Special

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Summary

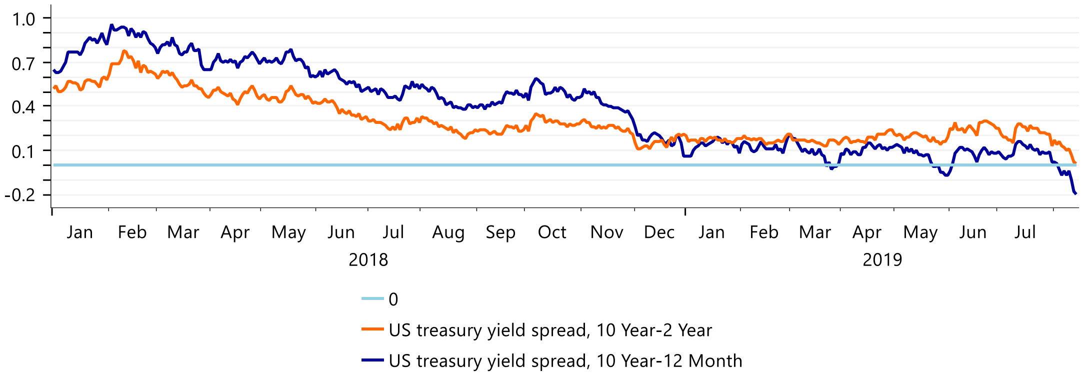
- The Fed is downplaying the recent inversions of the yield curve on the assumption that the Fed's asset purchases have flattened the yield curve.
- However, we show that this is no longer the case for the spreads that have predictive power for the business cycle.
- Therefore, the recession signals from the yield curve should be taken seriously.

Introduction

The recent inversions of the US treasury yield curve (Figure 1) have raised concerns about a US recession being around the corner. However, various FOMC participants have downplayed the risk of a recession on the assumption that this time is different. Their argument[1] is that the Fed's asset purchase programs have flattened the yield curve, so the recent yield curve inversions should not be interpreted as a recession signal.

At first sight, the argument seems plausible. However, if we take a closer look there are three flaws in the argument. The first is that it mixes up level and slope effects of asset purchases. The second is that the dynamic nature of bonds is ignored. The third is that the impact of asset purchases is not determined by the absolute amount of asset purchases, but by the share in the total amount outstanding.

Figure 1: Yield curve inversions



Source: Macrobond

[1] This argument was expressed in several editions of the FOMC minutes, see for example Minutes of the Federal Open Market Committee, September 25-26, 2018: page 8.

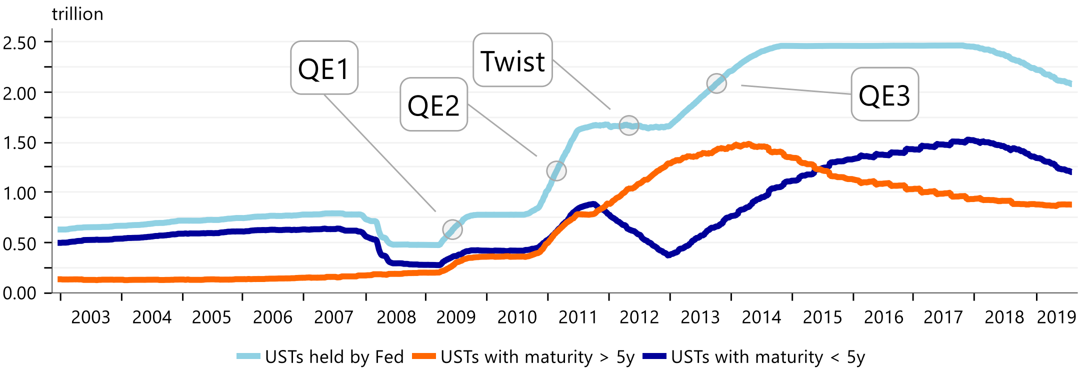
Level versus slope & the dynamic nature of bonds

Let's start with the first flaw. The argument is that the Fed's asset purchases have reduced the 10y yield, so the curve has been flattened artificially. However, the recession signals given by the yield curve are obtained from the spread between 12 month and 10 year yields or between 2 year and 10 year yields. Therefore, the question is not whether the 10y yield is artificially suppressed by the Fed's purchases, but whether the downward impact on the 10 year is larger than on the 2 year and 12 month yields. It is the impact on the slope that matters, not the level of the 10 year yield.

The second flaw is that the argument ignores the dynamic nature of bonds. If the Fed purchased a 10-year bond in 2010, the remaining time to maturity of that asset was 2 years in 2018 and 12 months in 2019. Consequently, if the Fed's stock had a downward impact on the 10y yield in 2010, it should now have a downward impact on the 12m yield, assuming that the impact of reinvestment is relatively small[2]. Therefore any downward impact on the 12m-10y slope in 2010 should have become an upward impact on that slope by 2019, if we accept the premise that the Fed's portfolio is artificially reducing yields by withholding assets from private investors.

To illustrate these two observations, in figure 2 we take a look at the composition of the Fed's portfolio of treasuries in recent years. We decompose the portfolio into treasuries with time to maturity below and above 5 years. In order to forecast recessions the 10y yield is usually compared to the yield of a security with a time to maturity of less than 5 years, such as 2 years or 12 months.

Figure 2: The composition of the Fed's portfolio of treasuries



Source: Macrobond

From figure 2 it is clear that below the surface of the straightforward evolution in the total stock of treasuries lies a more nuanced pattern in terms of the composition of the Fed's portfolio. This also means that the impact of the Fed's stock of treasuries on the yield curve is not that straightforward. In periods when the Fed's holdings in both segments (below and above 5 years) move up equally, they are less likely to affect the slope of the yield curve and distort recession signals than in periods when the composition is shifting one way or another. One way to shift the composition is through the nature of the asset purchase program, with Operation Twist being the most biased program[3]. Another way the composition of the Fed's portfolio changes is through time. A 10 year bond today will be a 9 year bond next year, and so on. Note that between the end of QE3 and the start of balance sheet normalization the total stock of treasuries was held constant, but the composition naturally shifted in favor of the amount of treasuries with time to maturity below 5 years and at the cost of the longer maturities.

[2] Until the start of its balance sheet normalization program, the Fed continued to reinvest all principal payments from maturing treasuries.

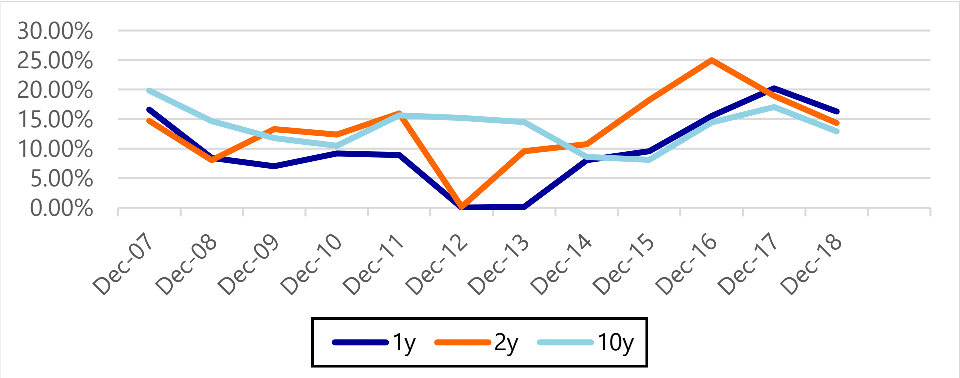
[3] In 'Operation Twist' the Fed bought treasuries in the 6-30 year segment and sold treasuries with time to maturity below 3 years.

The Fed's share of the market

We have established that from the perspective of recession signaling, we have to look at the slope of the curve instead of the level, and we have to take into account that the remaining time to maturity of a purchased bond changes over time. The easiest way to make these points was by looking at the evolution of the Fed's portfolio in absolute terms. However, the final point is that the impact on the curve depends on the Fed's holdings in relative terms: the share of the total amount outstanding in each segment that is held by the Fed. With this third point in mind Figure 3 shows the Fed's shares of 1y, 2y and 10y treasuries[4]. These are the most relevant tenors for recession forecasting by financial market participants.

In line with the 'this time is different'-argument, the share of 10y treasuries (the grey line) was larger than the share of 1y treasuries (the blue line) in 2007-2014 and larger than the share of 2y treasuries (the orange line) in 2007-2008 and 2012-2013. However, the share of 10y treasuries has been below the share of 2y treasuries since the end of 2014 and below the share of 1y treasuries since the end of 2015. At present, the three shares are about the same size[5]. Therefore, the 1-10 and the 2-10 spreads are no longer artificially suppressed by the Fed's asset purchase programs.

Figure 3: The Fed's share of 1y, 2y and 10y treasuries



Source: Federal Reserve, Treasury Department, Rabobank calculations

Conclusion

To conclude, while quantitative easing flattened the yield curve in the past, the evolution of the Fed's portfolio suggests that the 1-10 and the 2-10 spreads are no longer artificially suppressed at present, as the Fed's shares of 1y, 2y and 10y treasuries are now about equal. Consequently, we should take recession signals given by these spreads seriously. In particular, the negative 1-10 spread observed in recent months[6] points to a recession in 2020.

[4] I would like to thank Willem Kneppelhout for his research assistance.

[5] The difference between the shares has only been a few percentage points since 2017. In contrast, in 2012 the Fed's share of 10-year bonds was about 16%, while the shares of 1- and 2-year bonds had fallen below 1%.

[6] The 10 year US treasury yield fell below the 12 month yield in late March, late May and early August 2019, as shown in Figure 1.

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