

# US fixed income

## US Yield Curve: Running flat

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 Leslie Falconio, Senior Fixed Income Strategist Americas, leslie.falconio@ubs.com

- The US economic expansion recently crossed the nine-year mark, the second-longest growth upswing on record (Fig. 1). As the business cycle continues to mature, and US monetary policy becomes less accommodative, the flattening US Treasury yield curve has become a focus among investors as a potential indicator that the expansion may soon be ending.
- The shape of the yield curve has been used by economists as a measure of the ease or tightness of monetary conditions, and is an indicator in our [Bull Market Monitor](#). The curve is now the flattest it has been since the global financial crisis – meaning the spread between the 2-year and 10-year Treasury yield is now the narrowest in about a decade. There is concern that a yield curve inversion will take place and signal an imminent recession.
- However, the past is not always a prelude to the future. In a speech last December, former Fed Chair Janet Yellen said: "Now there is a strong correlation historically between yield curve inversions and recessions, but let me emphasize that correlation is not causation, and I think there are good reasons to think that the relationship between the slope of the yield curve and the business cycle may have changed."
- We concur, and therefore we're not that concerned about the recently flattening of the curve. In this report we elaborate on the reasons for this view, discussing why the yield curve has been trending flatter, what's different in today's marketplace, and what potential signals investors should monitor as the business expansion cycle matures.

### The shifting shape of the yield curve

The yield curve plots the interest rates of similar debt instruments at different maturities. It is often represented by subtracting the rate of the short-term bond from that of a longer-term bond. For example, the yield curve formed by the spread between the 10-year Treasury bond and the 2-year Treasury note is the most closely watched. But the yield curve formed by the spread between the 10-year Treasury bond and the 3-month Treasury bill, (which incorporates truer borrowing costs) is more important. The yield curve is typically upward sloping (i.e., positive) because borrowers require higher interest rates for locking up their money for a longer period of time.

**Fig. 1: The current economic expansion is the second longest on record**

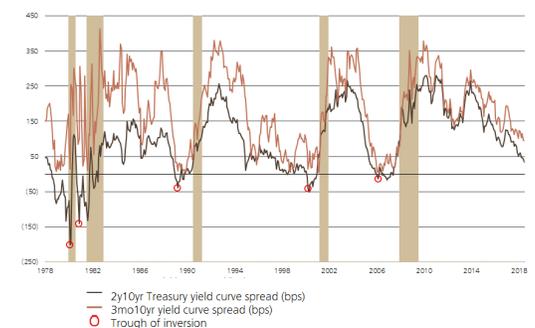
Trough to Peak expansions since 1970

Expansion (trough to peak)	Trough month	Peak month	Length (mos)
1	November 1970	November 1973	36
2	March 1975	January 1980	58
3	July 1980	July 1981	12
4	November 1982	July 1990	92
5	March 1991	March 2001	120
6	November 2001	December 2007	73
7	June 2009	?	109

Source: National Bureau of Economic Research; UBS, as of 20 July 2018

**Fig. 2: Historically, yield curve inversions are followed by economic recessions**

Shaded areas = recession periods



Source: Bloomberg; UBS, as of 29 June 2018

On occasion, interest rates on longer-term bonds can fall below interest rates on shorter-term bonds. This is called a yield curve inversion. Recessions are almost always preceded by a flat or inverted yield curve. As Fig. 2 shows, there have been multiple times in the past where a flat or inverted yield curve has been followed by a recession. An inverting yield curve usually occurs when short-end yields rise as Federal Reserve policy becomes too restrictive. As a result, the cost of capital becomes greater than the return on capital, restricting lending and, consequently, economic activity.

Movements in the curve are largely a result of investor expectations, or where investors currently assign risk. However, in today's marketplace, there are unique dynamics that are influencing the current shape of the yield curve.

**What's driving the US yield curve flatter?**

The US Treasury yield curve started forcefully flattening in 2017, and the trend has continued in 2018. Short-term yields are rising, while long-end yields remaining anchored (or, as witnessed in 2017, declining). The recent trends of these two distinct points on the yield curve are discussed below.

**Why are short-end yields rising?**

*a) The Federal Reserve*

History shows that when the Fed increases the federal funds rate, short-end yields rise in tandem. Although it has been two-and-a-half years since the Fed's first rate hike post-financial crisis (December 2015), the market's perception of the Fed's likely path for hiking interest rates rose sharply in the second quarter of 2018. As a result, short-end yields also rose. However, it is important to distinguish between a less accommodative Fed that gradually increases interest rates (i.e., normalizing policy conditions) as a means to head off the potential overheating in economic growth and inflation, and a Fed that is actually tightening monetary policy to suppress current growth. Today, we are experiencing the former.

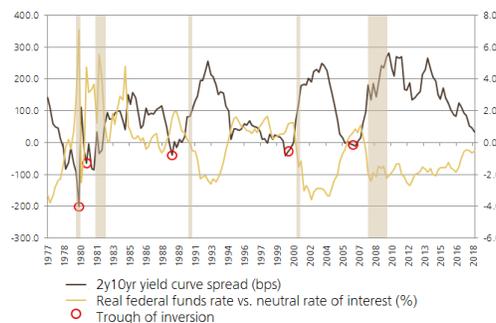
Fig. 3 charts the real fed funds rate (i.e., the effective fed funds rate minus the rate of personal consumption expenditures [PCE] inflation) versus the Laubach-Williams estimate of the neutral real rate of interest and the slope of the yield curve. As shown, this number currently is negative, indicating that the market remains below the neutral rate ( $r^*$ ), in turn suggesting that monetary policy remains accommodative. Historically, prior to a yield curve inversion, and the potential of a future recession, this number was positive. In fact, as shown, except for late 1970, this indicator was positive (i.e., restrictive) prior to the 1980, 1989, 1998, and 2006 inversions. Although short-end yields rise when the Fed shifts monetary policy, there are substantial differences between policy normalization and restriction. Given the market's access to capital, and the gradual pace of rate increases from the Fed, we do not believe that we are in the final stage of economic expansion.

*b) The increase in Treasury bill issuance*

The rise in short-end Treasury yields has also been a result of the large increase in Treasury bill issuance. The Department of the Treasury has issued an historic amount of US Treasury bills to finance a growing US budget deficit. The surge in issuance, which was particularly large in the first quarter (see Fig. 4), has contributed to the rise in short-end yields – from LIBOR to commercial deposits to 3-year Treasuries. Although the market anticipates less short-end issuance in the second half of the year, the supply from the first half has pushed short-end yields higher.

**Fig. 3: The real fed funds rate remains negative and remains below neutral. Fed remains accommodative.**

lhs: 2y10yr spread, bp rhs: Real FF rate minus the neutral rate, %



Source: Bloomberg; FRED; UBS, as of 29 June 2018

Although other factors have influenced the rise in short-end yields, such as tax repatriation and the impact of a rising US dollar on foreign Treasury holdings and foreign-exchange reserves, much of the rise has been a result of the Fed rate hikes and increasing Treasury issuance.

**Why do long-end rates remain anchored?**

a) *Quantitative easing*: To help the US economy recover from the Great Recession, the Fed imposed a zero-interest-rate policy and initiated quantitative easing (QE) measures in 2008. The central bank bought a substantial amount of outstanding US Treasuries via the QE program and through Operation Twist, which focused purchases on the longer end of the Treasury curve. As Fig. 5 shows, this amount was substantial, and has kept the yields on the long end of the curve anchored due to the lower supply of available securities.

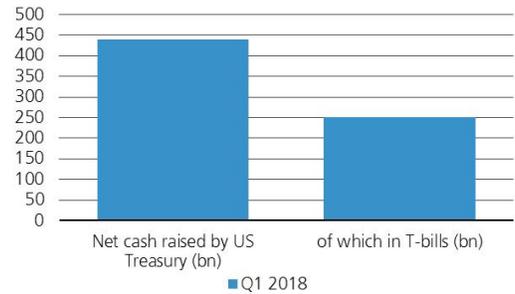
b) *Term premium*: The term premium is the difference between what you get for locking up your money for an extended period and what you would get if you simply kept rolling over short-term instruments for the same period of time. Historically, the term premium is positive (see Fig. 6) because investors require extra yield for committing their capital for a longer period of time. However, aggressive monetary policy by the Fed (QE), combined with continued low levels of volatility, has kept the term premium unusually anchored and currently negative.

c) *Inflation expectations*: Similar to inflation itself, inflation expectations have been trending higher but remain moderate. Fig. 6 also shows the 10-year breakeven inflation rate. Although inflation expectations have recovered from the financial-crisis lows, the markets have witnessed only a modest rise over the past few years. However, expectations have been rising, while longer-term rates have remained anchored, suggesting there are other technical forces (discussed above) influencing the marketplace.

d) *Rising yield gap and divergence in global monetary policy*: While the Federal Open Market Committee has been raising the fed funds rate, the European Central Bank (ECB) has kept monetary policy more accommodative. These diverging policies have resulted in negative interest rates abroad and a continued large yield gap between 10-year US Treasuries and 10-year German Bunds. As a result, foreign investors and pension funds prefer the higher yields of the US. Fig. 7 shows the spread difference in the US-German 10-year yield going back to 1989 – the collapse of the Berlin Wall. This yield gap has continued throughout 2018, and given the recent political risks in Italy, the softer-than-anticipated Eurozone economic growth numbers, and the ECB’s commitment in June not to hike interest rates before the summer of 2019, the yield gap will continue to play a part in anchoring longer-end US interest rates.

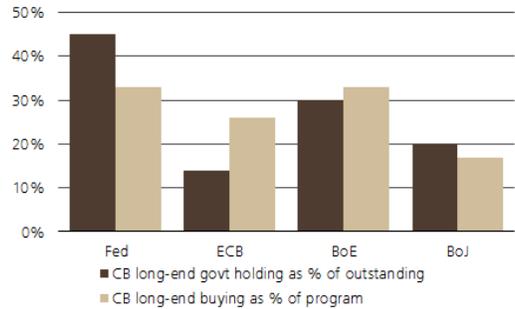
e) *Increasing pension fund demand*: The demand of pension funds for US Treasuries has continued in 2018 following the passage of cor-

**Fig. 4: The first quarter of 2018 saw a large increase in T-bill issuance**



Source: JPM; UBS as of 15 April 2018

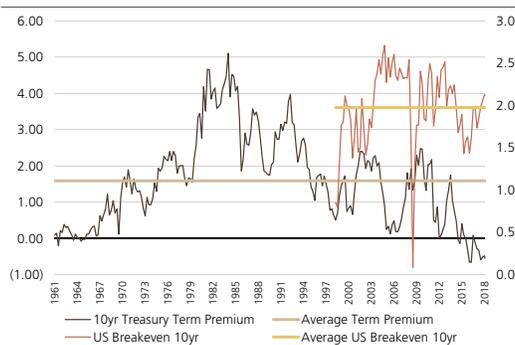
**Fig. 5: Varying degrees of QE impact in the long-end (10yr+)**



Source: Nomura, Bloomberg, as of 31 December 2016. Note: At the peak for Fed QE and current levels for others. ECB numbers estimated.

**Fig. 6: The term premium has remained negative even with rising inflation expectations.**

lhs: Term Premium, in bp; rhs: 10-year break-even inflation rate, in %



Source: Bloomberg; UBS as of 20 July 2018

porate tax cuts late last year. Corporations are looking to increase their pension plan contributions to take advantage of the higher

deductions before the potential September 2018 deadline. This has also resulted in increased demand for longer-maturity Treasuries.

The above outlines the reasons why the US yield curve has continued to flatten over the past year-and-a-half. Although most contributors are technical rather than fundamental, investors should not completely ignore the trend. Below we outline the historical performance of risk assets under various times of yield curve inversions, and outline why the past is not always a prelude to the future.

**Past is not always prelude**

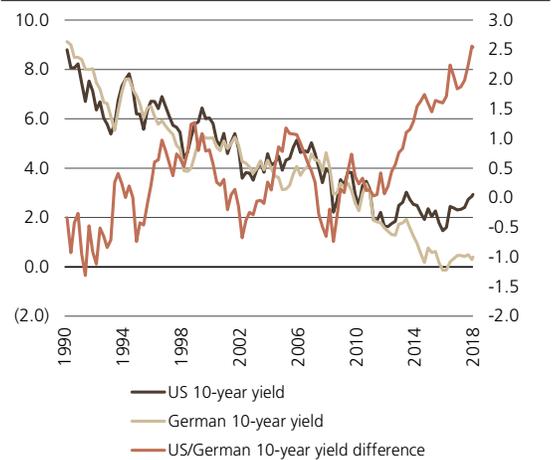
An inversion of the yield curve has occurred prior to each of the past seven US economic recessions. Looking at previous cycles, inversions occur on average around 70% of the way through the expansion cycle (see Fig. 8).

Therefore, today's flattening trend can signal several things about today's economic expansion, but that does not necessarily mean that a recession is around the corner. The lag time associated with each inversion prior to a recession can be fairly long. An inverted yield curve led the 1980s and 1990s recessions by 18 months, and the early 2000 recession by over 22 months.

We looked at the total returns from the date of the inversion to the beginning and through the end of the subsequent recessions. Fig. 9 shows the total return of equities, government bonds, and high yield and investment grade corporate bonds during these periods going back to 1978. On average, healthy equity and fixed income performance resulted; however, one would anticipate rising equity returns as recessions come to a close. Also, as in the case of the beginning of the 2000s, bear markets in equity and fixed income continued well after the official end of the recession in November 2001.

**Fig. 7: The yield gap between the US and Germany 10 year is at decade widest.**

lhs: US and German 10-year yield, in %; rhs: US/Ger 10-year yield difference, in bp



Source: Bloomberg; UBS as of 23 July 2018

**Fig. 8: Historically, the yield curve begins to invert 70% of the way through the expansion cycle**

Expansion (trough to peak)	Trough month	Peak month	Length (mos)	Inversion month	% through expansion
1	Nov-70	Nov-73	36	Jun-73	86%
2	Mar-75	Jan-80	58	Aug-78	71%
3	Jul-80	Jul-81	12	Sep-80	17%
4	Nov-82	Jul-90	92	Jan-89	80%
5	Mar-91	Mar-01	120	Jun-98	73%
6	Nov-01	Dec-07	73	Jan-06	68%
7	Jun-09	?	109	?	?

Source: National Bureau of Economic Research; UBS

**Fig. 9: There is a large lag time between yield curve inversion and economic recession.**

Date of inversion	Date of trough	Recessions	S&P Price Returns <sup>1</sup>	US Govt Interm TR <sup>1</sup>	US LT Corp TR <sup>1</sup>	US HY TR <sup>1</sup>	S&P Price Returns <sup>2</sup>	US Govt Interm TR <sup>2</sup>	US LT Corp TR <sup>2</sup>	US HY TR <sup>2</sup>
Aug. 1978	Mar. 1980	Jan. 1980 - Jul. 1980	10.63%	4.69%	-10.11%	1.03%	17.91%	14.76%	1.10%	8.19%
Sep. 1980	Dec. 1980	Jul. 1981 - Nov. 1982	4.35%	-1.10%	-7.42%	3.92%	10.43%	33.89%	34.86%	39.25%
Jan. 1989	Mar. 1989	Jul. 1990 - Mar. 1991	19.73%	16.82%	18.29%	6.20%	26.14%	23.86%	25.91%	11.22%
Jun. 1998	Apr. 2000	Mar. 2001 - Nov. 2001	2.34%	19.88%	15.77%	1.15%	0.49%	25.38%	22.51%	0.95%
Jan. 2006	Nov. 2006	Dec. 2007 - Jun. 2009	14.71%	12.85%	6.19%	13.30%	-28.18%	21.08%	12.27%	13.42%

<sup>1</sup> Returns from the start of inversion to the first month of recession

<sup>2</sup> Returns from the start of inversion to the end of recession

Source: Bloomberg; Morningstar Fixed Income Index; UBS.

The shape of the yield curve is only one economic variable used to forecast potential future recessions or asset performance. It has also produced false positives and false negatives. The crash of 1987 occurred when the yield curve was positively sloped and the 1998 inversion was not followed by a recession for several years.

As such, there are several fundamental and technical variables that influence the relationship between equity and fixed income outside of the shape of the yield curve. Looking at the one-year rolling correlation between equity and government bonds going back to 1979 (see Fig. 10), the majority of the recession periods resulted in an increasing negative correlation between the two asset classes; however, the results are inconclusive when examining the point in time at which the yield curve begins to invert.

**This time it's different**

As discussed, there are unique factors influencing the shape of today's yield curve. We do not believe investors should be complacent regarding the shape of the curve, particularly with volatility historically low and geopolitical risks increasing. However, there are multiple indicators that lead us to conclude the economy is not too restrictive and a recession is not in the very near future.

True, the Fed is moving into a less accommodative stance, but monetary policy is not restrictive, as the real fed funds rate remains negative. However, starting with the Laubach-Williams estimate of 0.56% for the neutral real rate of interest and adding the current core PCE inflation rate of 2.0% leads to a rough estimate of 2.6% for the neutral fed funds rate. Currently, the market is pricing in a fed funds rate of 2.7% by the end of 2019, which implies that monetary policy will be restrictive for the economy at that time.

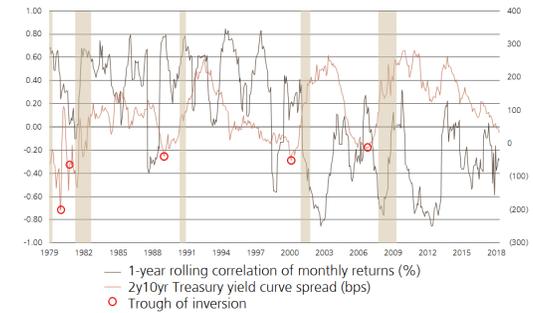
**Market indicators not signaling recession concerns**

In credit markets, high yield spreads remain relatively tight versus historical averages (Fig. 11 and 12). Widening high yield spreads are a key indicator of tight monetary policy because they represent lower-quality borrowers. Rising defaults and increasing credit and liquidity risk premiums drive a sharp pullback in the performance of high yield bonds before and during recessions. Currently, the low spreads between high yield and investment grade corporate bonds, combined with downward trending default rates, does not indicate a near-term concern or a move toward tighter credit restrictions.

The Board of Leading Economic Index (LEI), which measures 10 key variables that include the yield curve spread, is mainly trending higher (Fig. 13). The LEI also includes unemployment claims and measures of consumer and business confidence. Although the LEI has flaws, it has consistently turned negative about three to seven months prior to recessions.

**Fig. 10: S&P 500 and Bloomberg Barclays US Government bond total return indexes and 2yr10yr Treasury yield curve spreads**

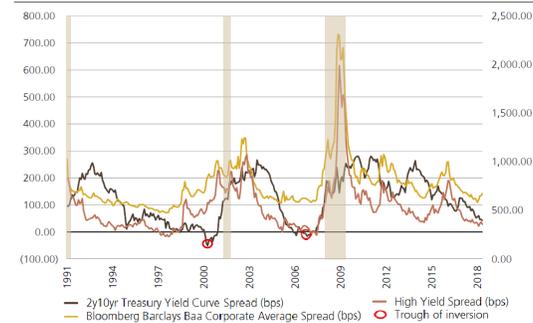
lhs: rolling correlation, in % rhs: 2y10y spread in, bp



Source: UBS, Bloomberg, as of 1 July 2018

**Fig. 11: High Yield and IG Corporate spreads are not signaling credit restrictions.**

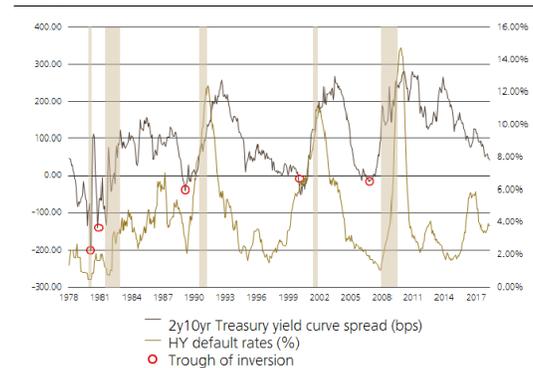
lhs: IG corporate spreads and 2y/10y spread in, bp rhs: High Yield spread, in bp



Source: Bloomberg Barclays; UBS as of 31 May 2018

**Fig. 12: Current default rates are not showing signs of credit concerns.**

lhs: 2y/10y spread in, bp rhs: High Yield default rate, in %



Source: Moody's, UBS as of 31 May 2018

Although the consumer debt-to-income ratio remains relatively high compared with the past several years (Fig. 14), mortgage forgiveness programs after the Great Recession, combined with low interest rates, have led to a downward trend in the debt-to-income ratio since 2008. Also, the household debt service coverage ratio, a measure of the cash flow available to pay current debt, is rising to pre-financial crisis levels. A higher debt service ratio implies better household cash flow relative to household debt. Rising short-end interest rates, or increasing borrowing costs from rising short-end yields, have yet to negatively impact the consumer.

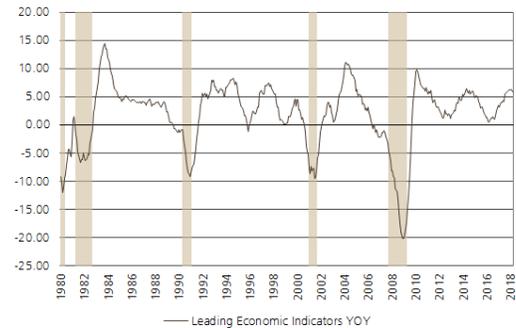
The US Commercial Bank Asset Loans and Leases outstanding (Fig. 15) continues to trend higher regardless of the year-and-a-half-long flattening trend. This supports the fact that lending and access to credit have not been impeded by the shape of the yield curve, which one would anticipate if a recession were to happen sooner than projected.

**Conclusion**

Investors should not ignore trends within the shape of the yield curve. Historically, the yield curve has been a constant input with projected future recessions. Today's technical market influences are pushing the shape of the yield curve more than fundamental indicators. We cannot rule out a yield curve inversion in the future if the Fed unexpectedly tightens materially above the neutral rates, but an imminent recession strikes us as unlikely.

*This report was compiled with the assistance of Greta Chevance.*

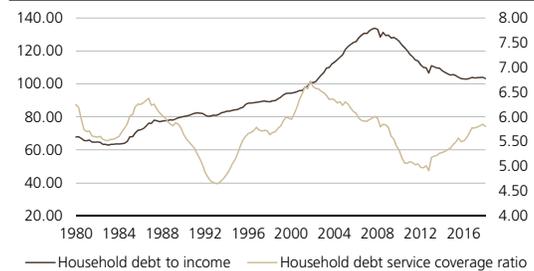
**Fig. 13: Leading Economic Indicators, which include the slope of the curve, are rising.**



Source: Bloomberg; UBS as of 29 June 2018

**Fig. 14: To date, consumers have not been impacted by the flattening yield curve.**

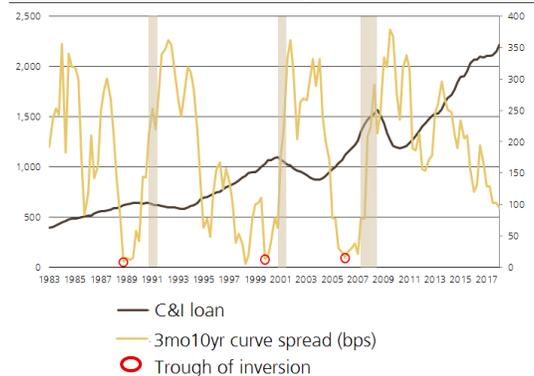
lhs: HH debt to income; rhs; HH debt service coverage ratio



Source: Bloomberg; UBS as of 31 March 2018

**Fig. 15: C&I bank assets, loans and leases continue to rise indicating credit remains accessible**

lhs: C&I loans, bn rhs: 3m/10yr Treasury curve



Source: Fed; UBS as 29 June 2018

## Appendix

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