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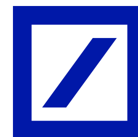

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After a turbulent October, what are markets saying about recession risks?

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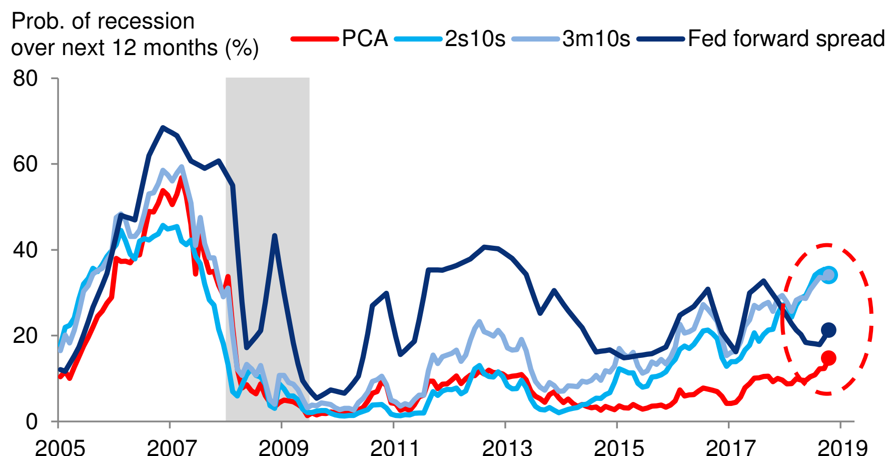
- Market sentiment about growth prospects has deteriorated, as the specter of recession risks has re-emerged in response to recent market turbulence. Lower equities, higher volatility, and wider credit spreads have tightened financial conditions, which has stoked worries that the Fed is at risk of a policy mistake. We update our suite of recession probability models to assess what markets are saying about impending recession risks after recent market developments.
- Signals from the yield curve have been mixed, with a few of the Fed's preferred measures flattening in recent weeks, consistent with higher recession odds, while the gap between 10-year and 2-year Treasury yields has widened. Our yield curve principal component analysis approach suggests that recession risks over the next twelve months have indeed risen, but they are not elevated from a historical perspective (~15%). A comprehensive view based on broader financial conditions concurs. Consistent with our fundamental view, this analysis suggests that recession risks are low over the next year, though they do rise more significantly in 2020 and beyond.

Figure 1: Recession signal from yield curve PCA remains considerably lower



Note: Dots represent estimates from the most recent daily values for the variables. Source: FRB, Bloomberg Finance LP, Haver Analytics, Deutsche Bank

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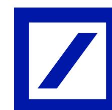


Introduction

The specter of recession risks has once again emerged in response to recent market turbulence. Lower equities, higher volatility, and wider credit spreads have helped to tighten financial conditions. Tighter financial conditions have, in turn, triggered worries that the Fed is at risk of a policy mistake and that the growth outlook has deteriorated materially.

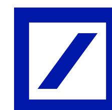
From a causal perspective, tighter financial conditions can lead to slower growth or at least greater downside risks to growth from a variety of channels, including by influencing confidence, wealth effects, borrowing costs, and relative prices via exchange rate moves, just to name a few. [1]From a predictive perspective, forward-looking asset prices may anticipate a growth slowdown or potential recession risks prior to the emergence of these trends in the data. As we argued recently, the importance of financial conditions for future growth prospects implies that, at some point, developments begin to materially affect the economic outlook and thus the Fed, though we believe that this point is still some ways off. [2]

After the recent bout of market turmoil, what are markets telling us about evolving recession risks? We update our suite of recession probability models in response to recent market developments. Signals from the yield curve have been mixed, with a few of the Fed's preferred measures flattening in recent weeks, consistent with higher recession odds, while the traditional gap between 10-year and 2-year Treasury yields has widened (i.e., this measure of the yield curve slope has steepened). Our principal component analysis (PCA) approach, which provides a comprehensive view about information embedded in the spot yield curve, suggests that recession risks over the next twelve months have indeed risen, but they are not elevated from a historical perspective (~15% odds). [3] Our most comprehensive recession probability model, which incorporates information from a broader swathe of financial market data, concurs. These signs are consistent with our fundamental view that US growth momentum should remain solid, at least over the next year. However, while we see the Fed being able to orchestrate an unprecedented smooth landing, recession risks should rise in 2020 and beyond.

Yield curve recession signal: Confused

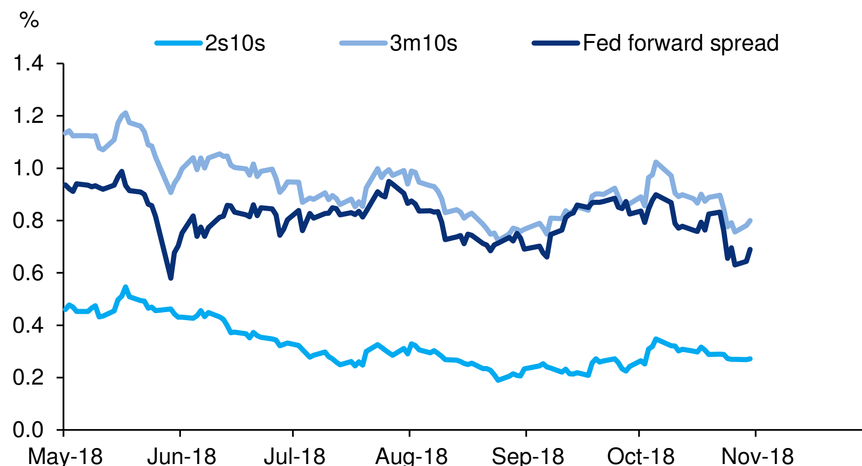
The most commonly followed market recession signal, the yield curve slope, has sent mixed signals in recent weeks. While the difference between 10-year and 2-year Treasury yields (2s10s) has risen a few basis points on balance in October, two measures that the Fed has advocated for in recent research – the difference between 10-year and 3-month Treasury yields (3m10s) and the difference between the 18-month forward 3-month Treasury yield and the spot 3-month Treasury yield (Fed's forward measure) – have both flattened, consistent with rising recession risks (Figure 2). [4] The Fed's forward measure has flattened

1 See Deutsche Bank US Economic Perspectives (July 5, 2018), "Could external shocks trigger the Fed put?" and Adrian, Tobias, Nina Boyarchenko, Domenico Giannone (November 2017), "Vulnerable growth" , Federal Reserve Bank of New York Staff Report, no. 794.
2 See Deutsche Bank Fed Notes (October 11, 2018), "Pricing the Powell put"
3 See Deutsche Bank US Economic Perspectives (August 6, 2018), "What is the curve's recession signal? A principal component approach"
4 See (1) Engstrom, Eric and Steven Sharpe (June 28, 2018), " (Don't fear) the yield curve" , FEDS Notes. (2) Bauer, Michael D. and Thomas M. Mertens (August 27, 2018), "Information in the yield curve about future recessions" , FRBSF Economic Letter, 2018-20.



more than 15bp this month, reaching its lowest levels since May. Meanwhile, the 3m10s slope has flattened nearly 10bp in October. These trends mark a break from the experience over the majority of this year, in which the 2s10s slope relentlessly flattened since the February wides while the Fed's forward measure, for example, has remained range bound.

Figure 2: Divergent signals from curve metrics: Fed's preferred measures have flattened, 2s10s is steeper



Source: Bloomberg Finance LP, Deutsche Bank

In part because of the potential for discordant signals from different yield curve metrics, we recently used a PCA to distill the variety of signals from the yield curve into a few "factors." [5] The information contained in the spot yield curve can nearly fully be explained by three factors which have the intuitive interpretations of the level (first principal component, or PC1), slope (PC2), and curvature (PC3) of the yield curve. In this way, the first three PCA factors summarize nearly all of the information the yield curve can provide about recession risks.

Translating these four measures into implied recession probabilities over the next twelve months we find that recession risks have generally risen recently. Consistent with recent yield curve moves, the steeper 2s10s slope signals modestly lower recession risks while the flatter 3m10s slope and Fed's forward spread measure indicate a bit higher recession risks relative to the previous month. In level terms, the more traditional yield curve slope measures, i.e., the 2s10s and 3m10s, both signal recession risks near one-third over the next year, meaningfully above the historical unconditional probability of a recession near 15%. The Fed's forward measure indicates that recession risks are somewhat elevated over the next year, closer to one-in-five chances. While the recession signal from our PCA approach has risen in recent months, it is consistent with a 15% chance of a recession over the next year, in line with the historical unconditional probability (Figures 3 and 4).

5 A PCA extracts unobservable factors that explain the maximum percentage of variation of the variables in a dataset, while imposing that each of the factors is uncorrelated with each other. In other words, the first factor is an unobservable variable that explains the maximum percentage of the variance in the dataset while being uncorrelated with the remaining factors. The second factor explains the second highest percentage of the variance in the observable variables while being uncorrelated with all other factors, including the first factor, and so on.

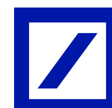


Figure 3: Curve recession signals have generally risen in recent months

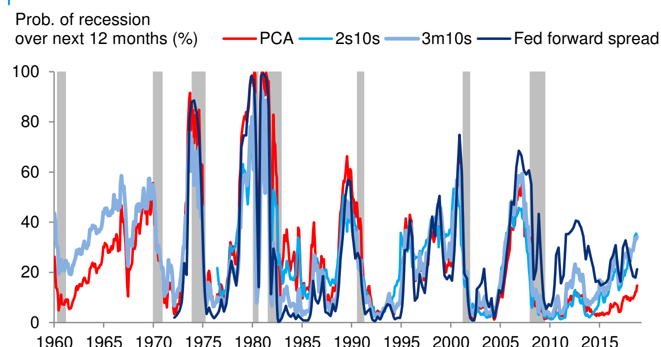


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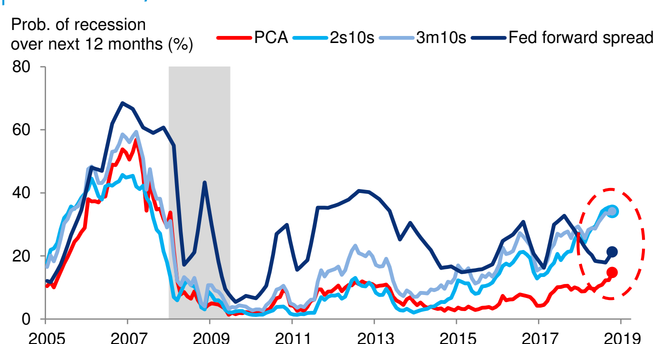
Figure 4: Recession signal from PCA remains considerably lower



Note: Dots represent estimates from the most recent daily values for the variables. Source: FRB, Bloomberg Finance LP, Haver Analytics, Deutsche Bank

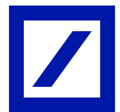
Taking our PCA as the most comprehensive measure of information for the spot yield curve, we conclude that recession risks have risen recently, but they are not elevated from a historical perspective and indeed are consistent with the unconditional probability of a recession. As we found in recent work though, there is additional information contained in forward rates. The Fed's forward measure is consistent with somewhat elevated recession risks over the next year, although this measure has been consistently elevated during this recovery. In summary, the yield curve is not signaling particularly elevated recession risks over the next year.

A more complete view on recession risks

Beyond the yield curve, there are useful signals about future growth from various other asset prices. Our more comprehensive recession probability model includes: (1) the first three factors from a yield curve PCA, (2) the Fed's policy stance (real fed funds rate minus neutral as measured by Holston, Laubach and Williams (2016)), (3) excess corporate bond risk premium, and (4) the Chicago Fed's adjusted national FCI. [6]

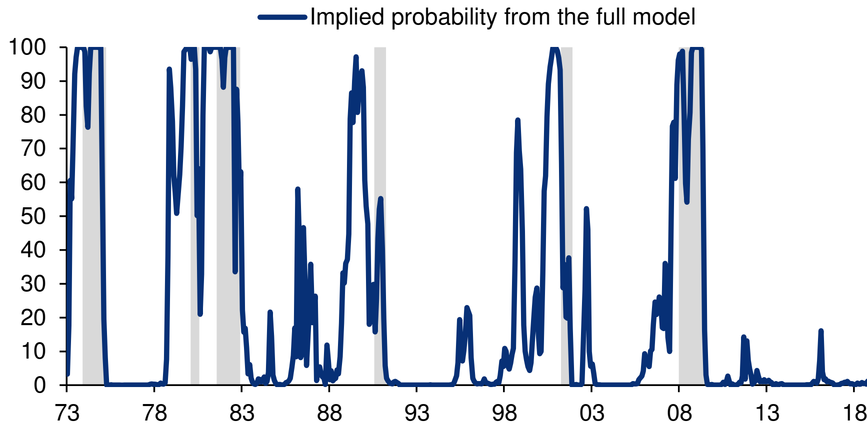
Recession risks over the next twelve months are even lower — around 1% — according to this more comprehensive view from financial conditions (Figure 5). This rosy view on recession prospects is driven by a few factors. First, as noted above, the yield curve is not signaling particularly elevated recession risks. Second, monetary policy remains accommodative as the fed funds rate is still below neutral. Third, even if we account for the recent rise in volatility, the excess corporate bond risk premium is not elevated. Fourth, the Chicago Fed FCI remains firmly in accommodative territory, at least through October 26, which is the last date for which data is available. Given that equities have recovered some and volatility has subsided, at least for the time being, this data should capture much of the recent tightening of financial conditions. It is notable that this FCI is slower moving and does not reflect all of the daily gyrations in financial markets. From

6 The excess corporate bond risk premium is a measure produced by the Fed which strips out default expectations from the corporate bond spread to isolate the risk premium component. See Favara et al. (April 8, 2016), "Recession risk and the excess bond premium" , FEDS Notes. We use the Chicago Fed FCI, rather than our own FCI, because it has a significantly longer time series.



a growth perspective, we think this is appropriate, as only sustained moves in financial conditions should impact the growth outlook.

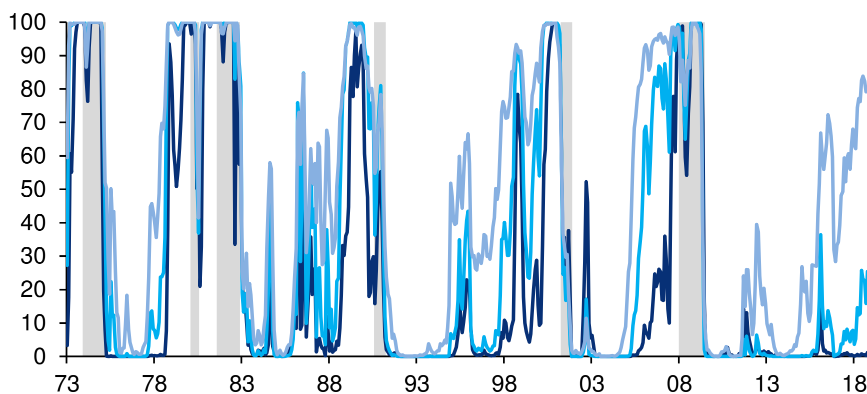
Figure 5: Comprehensive view of financial conditions suggest recession risks are low over next twelve months



Source: FRB, BEA, FRB Chicago, Haver Analytics, Deutsche bank

Beyond the next year, the current constellation of financial conditions suggest that recession risks are on the rise. This model suggests there is 25% chance of a recession at some point over the next two years (Figure 6). This is near the highest levels since the crisis. Over the next three years, there is nearly an 80% chance of a recession according to this model.

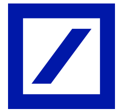
Figure 6: Recession risks rise further out: 25% over next two years, 80% over next three years



Source: FRB, BEA, FRB Chicago, Haver Analytics, Deutsche bank

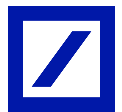
Conclusion

Despite the recent pessimistic turn in market sentiment, our suite of recession probability models indicate that near-term recession risks are not elevated. The signal from the spot and forward yield curves suggests that recession risks over



the next twelve months are near historical unconditional probabilities, and a more comprehensive view including broader financial conditions indicates that recession risks are even lower. These financial market signals are consistent with recent data and our fundamental outlook that growth prospects remain solid over the next year. Beyond that timeframe, our fundamental view also agrees with the signal from financial markets that recession risks should rise and will become elevated. With the fiscal impulse likely to provide less of a boost in 2020, at least under current law, and financial conditions set to tighten further as the Fed hikes rates, growth should slow and downside risks should rise.

In this environment, the Fed will have to be nimble as it tries to guide the unemployment rate back to full employment from below, without tipping the economy into a recession. As we noted recently (see "How the Powell Fed can make history"), we think the Powell Fed has a reasonable shot at pulling off this soft landing, but as is clear from this analysis, there are risks to this scenario.



Appendix 1

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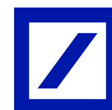

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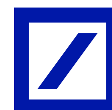

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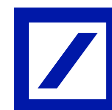

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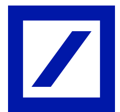

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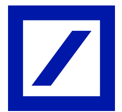

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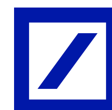

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