

Are Yield Curve/Monetary Cycles Approaches Enough to Predict Recessions?

Azhar Iqbal, Director and Econometrician

Sam Bullard, Managing Director and Senior Economist

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We present a new framework to predict recessions and asset prices bubbles

Predicting Recessions

- Predicting recessions is one of the most important elements of decision-making in the public and private sector.
- The inverted yield curve is thought to be a good predictor of recession. However, the yield curve (FFR/10-year spread) did not invert during the 1954-1965 period and that era experienced two recessions.
- One major challenge in this monetary cycle is a low fed funds rate relative to historic norms, which remains true even after the Fed has hiked rates. A low fed funds rate may block inversion of the yield curve and reduce effectiveness of the yield curve in predicting recessions.
- Therefore, we need a new tool with which to predict recessions accurately in different economic regimes.

The Focus of Our Study

- A new framework that identifies a threshold between the fed funds rate and the 10-year Treasury yield.
- Is this time different for the yield curve/monetary cycles approaches to predict recessions?
- Predicting assets prices bubbles with the new framework.

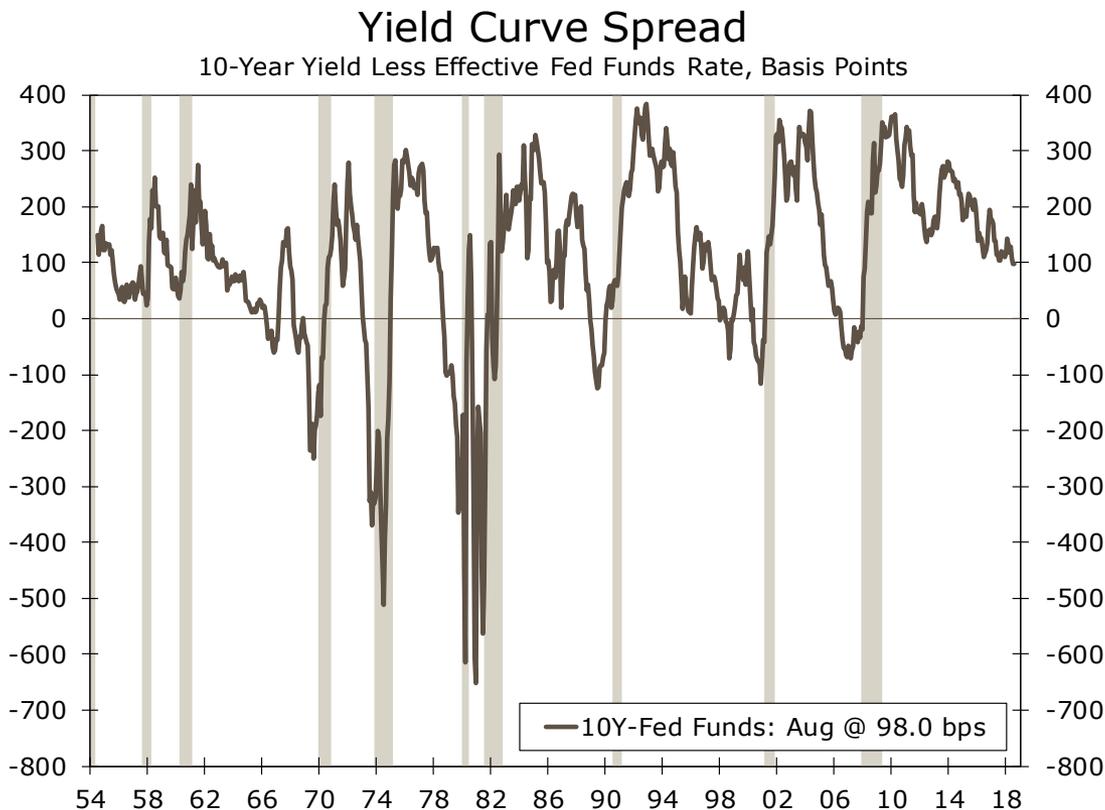
Not all recessions are created equal

- The yield curve is one of the most cited recession predictors.
- The yield curve has inverted before each of the past seven recessions (all recessions since the 1969-70 recession)
- However, the yield curve (FFR/10-year spread) did not invert prior to the 1957-1958 and 1960-1961 recessions.
- We believe that the yield curve may not invert before the next recession, in a repetition of the 1957-1958 and 1960-1961 experience. In this case, the yield curve would not be an effective recession predictor during the current cycle.

Potential factors to support our view:

- First, the fed funds rate is slowly rising from a low of 0-0.25% in December 2008, and remains low relative to historic norms. The next-lowest level on record was in July 1958 (0.68%).
- Second, the current economic outlook, in particular realized and expected inflation, is more in line with the 1954-1965 period than the past seven recessions (1969-2007 period).
- Historically, a low FFR prevented the inversion of the yield curve in the 1954-1965 period, although that period experienced two recessions.
- Therefore, we need to look for methods other than the yield curve to predict the emergence of the next recession.

The yield curve inverted before each of the past seven recessions (with a range of 8-23 months). However, the yield curve did not invert during the 1954-1965 period and missed two recessions.



Source: Wells Fargo Securities

Although the monetary cycles approach has predicted several recessions (but missed the 1957-1958 and 1980 recessions), the real-time effectiveness of the monetary cycles method is a big question mark

- Adrian and Estrella (2009) identify monetary cycles and suggest that monetary cycles are good predictors of economic activity. A monetary cycle ends when one of two criteria is met:
 - (1) the fed funds rate is higher than at any time in the prior 12 months and the subsequent 9 months and is at least 50 bps higher than at the beginning of this span.
 - (2) the fed funds rate is higher than at any time in the prior 6 months and the subsequent 6 months and is 150 bps higher than the average of these endpoints.
- Basically, the peaking of the fed funds rate is a predictor of an upcoming recession.
- However, using this method, we have to wait at least 6 months (2nd criterion) to confirm whether the fed funds rate peaked 6 months ago.
- We suggest that the lead time to predict recessions should be longer than the 6-9 months from the monetary cycles method.
- In real time analysis, monetary cycles are only able to predict recessions in the post-1990 era and missed all the recessions in the 1954-1989 period.

Adrian and Estrella (2009) concluded that there have been 14 monetary cycles since 1955, and that the end of a monetary cycle is an indication of an upcoming recession. According to the NBER, however, there have been 9 recessions since 1955, which indicates that not all monetary cycles are associated with recessions.

Monetary Cycles and Recessions

Recession Start Date*	Monetary Cycle End Date **	Months before/after the Recession Start Date***
August-57	October-57	+2
April-60	November-59	-5
December-69	August-69	-4
November-73	September-73	-2
January-80	April-80	+3
July-81	June-81	-1
July-90	March-89	-16
March-01	July-00	-8
December-07	September-06	-15

Source: Adrian and Estrella (2009) and Wells Fargo Securities

Why is our framework more effective?

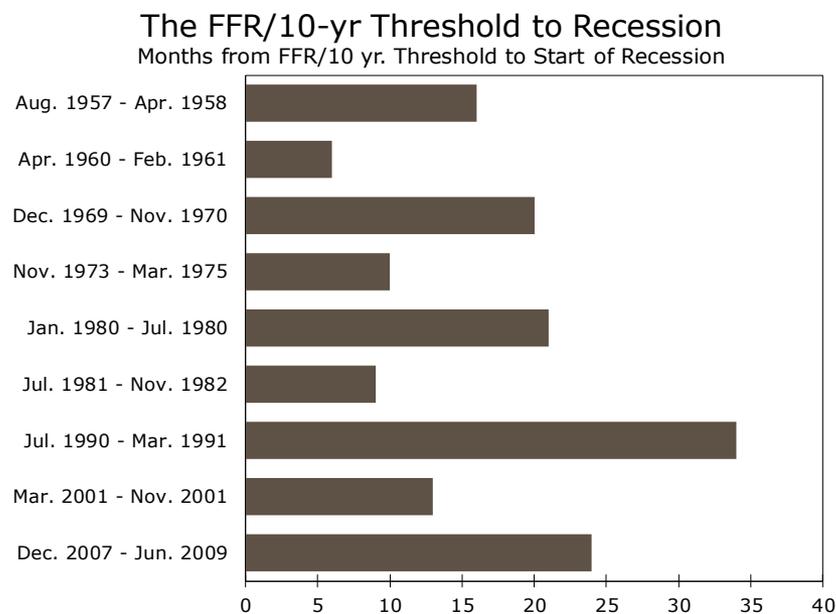
- We are looking for an approach that is able to predict recessions accurately in different economic regimes, such as lower inflation/FFR (e.g., 1954-1965 and post-Great Recession), higher inflation/FFR (e.g., the 1970 to mid-1980s time period) and moderate inflation/FFR regimes (e.g., 1990-2007).
- We believe that our proposed framework would predict recessions accurately in all of those economic regimes.
- Our framework identifies a threshold between the fed funds rate (FFR) and the 10-year Treasury yield (10-year). The crossing of the threshold is an indicator of an upcoming recession.
 - The threshold is best explained by the following description: **“in a rising fed funds rate period, when the fed funds rate crosses/touches the lowest level of the 10-year yield in that cycle, then that is a predictor of an upcoming recession.”**

What is the intuition behind the Threshold?

- Why 10-year Treasury?
- Why Fed funds rate?
- Why crossing is the benchmark? Why not a level of spread (negative value, etc.)?

Since 1954, our framework has predicted all recessions with an average lead time of 17 months and a range of 6-34 months. It is important to note that our method is the only approach discussed in this study that did not miss any recessions in the sample period. This means that it is more effective than the yield curve and monetary cycle approaches.

The FFR/10-yr Threshold and Recessions



Source: Wells Fargo Securities

Our framework has a longer lead time than the yield curve in predicting recessions for all recessions except the 1969-1970 and 1981-1982 recessions, where both approaches have the same lead time. Furthermore, our framework has a better accuracy and longer lead time to predict recessions than the monetary cycles approach during the 1954-2018 sample period.

The FFR/10-yr Threshold vs. the Inverted Yield Curve

Recession Start Date	Inverted Yield Curve Date/Months before Start of Recession	The FFR/10-yr Threshold's Recession Prediction, months in advance	The FFR/10-yr Threshold's Prediction of the Yield curve Inversion, months in advance
August-57	No Inverted Yield Curve	April 1956 (-16)	N/A
April-60	No Inverted Yield Curve	October 1959 (-6)	N/A
December-69	April 1968 (-20)	April 1968 (-20)	Same/zero
November-73	March 1973 (-8)	January 1973 (-10)	-2
January-80	September 1978 (-16)	April 1978 (-21)	-5
July-81	October 1980 (-9)	October 1980 (-9)	Same/zero
July-90	January 1989 (-18)	September 1987 (-34)	-16
March-01	April 2000 (-11)	February 2000 (-13)	-2
December-07	January 2006 (-23)	December 2005 (-24)	-1

Source: Wells Fargo Securities

The Exceptions to the Rule: No Recessions but Changes in the Monetary Policy Stance

Although four of the 13 calls are not associated with recessions, those four calls are connected with changes in the monetary policy stance (from raising/leaving unchanged the fed funds rate to cutting interest rates).

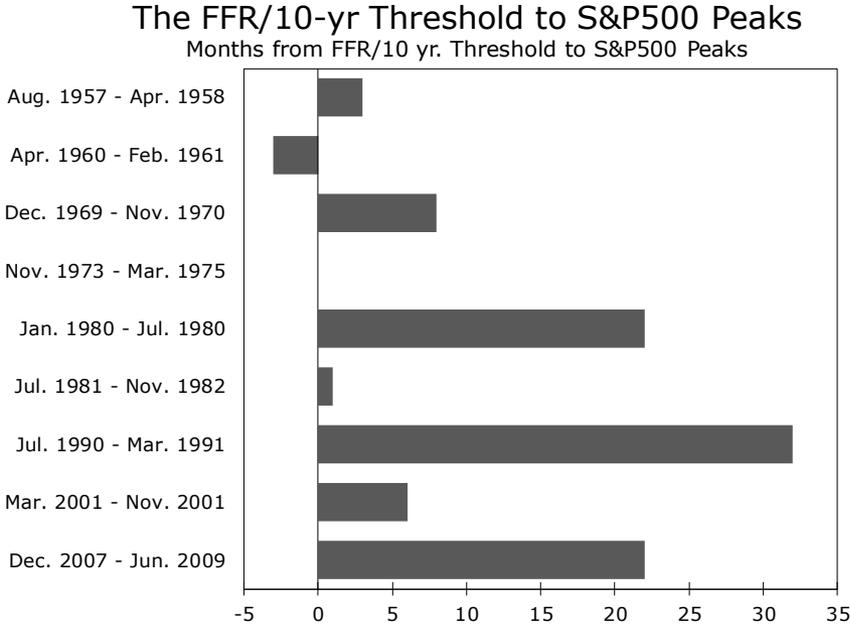
The Exceptions to the Rule

Monetary Cycle End Date *	Inverted Yield Curve Dates**	The FFR/10-yr Threshold's Date, months in advance***	Change in the Monetary Policy Stance Date****
November-66	No Inverted Yield Curve before the 1957-58 recession	12/1/1964 (-24)	Dec 66 (Reduced interest rate from 5.76% to 3.79% between Nov 66 and Jul 67)
August-71	No Inverted Yield Curve before the 1960-61 recession	8/1/1984 (-1)	Sep 84 (from 11.65% to 7.51% between Aug 84 and Jun85)
7/1/1974 (within a Recession)	May-66	2/1/1995 (-5)	Jul 95 (from 6.00% to 5.25% between Jun 95 and Jan 96, and maintain that stance until Feb97)
August-84	December 1986 (just one month of inverted yield)	7/1/1998 (-2)	Sep 98 (from 5.50% to 4.75% between Aug 98 and Nov 98, and maintain that stance until May 99)
April-95	July-98	N/A	N/A

Source: Wells Fargo Securities

Since 1954, our framework predicted has all peaks in the S&P 500 Index (except 1959) with an average lead time of 13 months and a range of 0-32 months. Therefore, the framework can be used to predict assets price bubbles (with the S&P 500 Index as a proxy).

The FFR/10-yr Threshold and Peaks in the S&P 500 Index

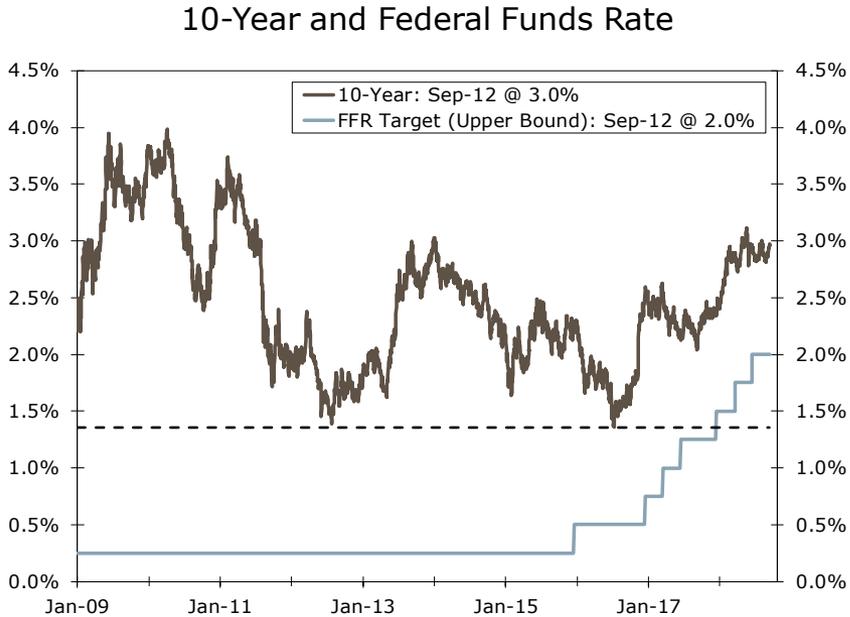


Source: Wells Fargo Securities

Should We Worry about a Recession in 2019-2020?

With the December 2017 rate hike by the FOMC, the fed funds rate hit 1.50% and, hence, the FFR/10-year threshold was met (the cycle low for the 10-year is 1.36%). This suggests that, starting in December 2017, there is a 69.2% chance of a recession during the next 17 months (average lead time). In other words, decision makers should be watching upcoming economic data to gauge signs of a turning point.

The FFR/10-yr Threshold's Breaching Point



Source: Wells Fargo Securities

Are there any major factors which could affect the recession call made by the proposed framework?

The 2018 Tax Cut

- We believe the tax cut would produce a dual effect on our recession call.
 - (1) The tax cut would boost after-tax personal income, which would boost spending at least in the short run. Similarly, corporations would enjoy higher after-tax profits. Therefore, the tax cut may “push” recession further in the future.
 - (2) On the other hand, the tax cut would affect the pace of monetary policy (in our view, it already has). A faster pace of rate hikes puts the fed funds rate closer to its peak, and the peaking of the fed funds rate is another indication of an upcoming recession.
- Given these offsetting effects, the cumulative effect of the tax cut on our recession call is insignificant.

Tariffs/Trade War Fear

- The tariffs could disrupt global supply chains and provoke a global trade war, which has potential to negatively effect the overall U.S. economy.
- In other words, tariffs/a trade war may favor the recession call made by our framework.

Our framework predicted several recessions before the yield curve inversion point (all recessions before the monetary cycles) and, therefore, serves as a more effective tool in predicting recessions.

- We have proposed a new framework using the fed funds rate and the 10-year yield to predict recessions.
- Our framework has predicted all recessions since 1954 with an average lead time of 17 months.
- In addition, our analysis shows that the proposed framework accurately forecasted asset prices bubbles (peaks in the S&P 500 index as a proxy) since 1954 with an average lead time of 13 months.
- We believe the 2018 tax cut will not affect these calls. One major reason is that the tax cut may have “pushed” the FOMC onto a faster fed funds rate hike path.
- The tariffs/a trade war would favor a recession call because of disruptions caused to global supply chains.
- Therefore, we suggest that decision makers carefully monitor upcoming data in the rest of 2018 and 2019 and watch for signs of a recession/S&P 500 peak.

Global Head of Research, Economics & Strategy

Diane Schumaker-Krieg diane.schumaker@wellsfargo.com
Global Head of Research, Economics & Strategy

Senior Economists

Jay H. Bryson, Global Economist jay.bryson@wellsfargo.com
Mark Vitner, Senior Economist mark.vitner@wellsfargo.com
Sam Bullard, Senior Economist sam.bullard@wellsfargo.com
Nick Bennenbroek, Currency Strategist nicholas.bennenbroek@wellsfargo.com
Azhar Iqbal, Econometrician azhar.iqbal@wellsfargo.com
Tim Quinlan, Senior Economist tim.quinlan@wellsfargo.com
Sarah House, Senior Economist sarah.house@wellsfargo.com

Economists

Charlie Dougherty, Economist charles.dougherty@wellsfargo.com
Erik Nelson, Currency Strategist erik.f.nelson@wellsfargo.com
Michael Pugliese, Economist michael.d.pugliese@wellsfargo.com

Economic Analysts

Ariana Vaisey, Economic Analyst ariana.b.vaisey@wellsfargo.com
Abigail Kinnaman, Economic Analyst abigail.kinnaman@wellsfargo.com
Shannon Seery, Economic Analyst shannon.seery@wellsfargo.com
Matthew Honnold, Economic Analyst matthew.honnold@wellsfargo.com

Administrative Assistants

Donna LaFleur, Executive Assistant donna.lafleur@wellsfargo.com
Dawne Howes, Administrative Assistant dawne.howes@wellsfargo.com

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