Yield Curve and Predicted GDP Growth, September 2017

Overview of the Latest Yield Curve Figures

As the fourth quarter begins and the Federal Open Market Committee (FOMC) commences balance sheet normalization, the yield curve has shifted upward in nearly parallel fashion. Both short and long rates rose, with the three-month (constant maturity) Treasury bill rate rising to 1.10 percent (for the week ending October 20), up from September’s 1.04 percent and August’s 1.01 percent. The 10-year rate (also constant maturity) increased by 7 basis points to 2.33 percent, up from September’s 2.26 percent, which itself was 7 basis points above August’s 2.19 percent. The shift in the long rate was enough to bump the slope up to 123 basis points, just above September’s 122 basis points and 5 basis points above August’s 118 basis points.

The minimal change in the slope meant only a small change in expectations of growth. Using past values of the spread and GDP growth suggests that real GDP will grow at about a 1.4 percentage rate over the next year, just up from the 1.3 percentage rate estimated in September and August. Although the time horizons do not match exactly, the forecast, like other forecasts, does show moderate growth.
The slightly steeper yield curve did lead to a slightly decreased probability of recession, but the change was minor. Using the yield curve to predict whether or not the economy will be in recession in the future, we estimate the expected chance of the economy being in a recession next October at 11.8 percent, just down from September’s 12.0 percent, which was a drop from August’s probability of 12.5 percent. So the yield curve is optimistic about the recovery continuing, even if it is somewhat pessimistic with regard to the pace of growth over the next year.

Sources: Bureau of Economic Analysis; Federal Reserve Board; authors’ calculations.
The Yield Curve as a Predictor of Economic Growth

The slope of the yield curve—the difference between the yields on short- and long-term maturity bonds—has achieved some notoriety as a simple forecaster of economic growth. The rule of thumb is that an inverted yield curve (short rates above long rates) indicates a recession in about a year, and yield curve inversions have preceded each of the last seven recessions (as defined by the NBER). One of the recessions predicted by the yield curve was the most recent one. The yield curve inverted in August 2006, a bit more than a year before the current recession started in December 2007. There have been two notable false positives: an inversion in late 1966 and a very flat curve in late 1998.

More generally, a flat curve indicates weak growth and, conversely, a steep curve indicates strong growth. One measure of slope, the spread between ten-year Treasury bonds and three-month Treasury bills, bears out this relation, particularly when real GDP growth is lagged a year to line up growth with the spread that predicts it.
Yield Curve Spread and Real GDP Growth

Note: Shaded bars indicate recessions.
Source: Bureau of Economic Analysis; Federal Reserve Board.
Predicting GDP Growth

We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

Predicting the Probability of Recession

While we can use the yield curve to predict whether future GDP growth will be above or below average, it does not do so well in predicting an actual number, especially in the case of recessions. Alternatively, we can employ features of the yield curve to predict whether or not the economy will be in a recession at a given point in the future. Typically, we calculate and post the probability of recession one year forward.

Of course, it might not be advisable to take these numbers quite so literally, for two reasons. First, this probability is itself subject to error, as is the case with all statistical estimates. Second, other researchers have postulated that the underlying determinants of the yield spread today are materially different from the determinants that generated yield spreads during prior decades. (For a recent example, see “Recessions Probabilities.”) Differences could arise from changes in international capital flows and inflation expectations, for example. The bottom line is that yield curves...
contain important information for business cycle analysis, but, like other indicators, should be interpreted with caution. For more detail on these and other issues related to using the yield curve to predict recessions, see the Commentary “Does the Yield Curve Signal Recession?” Our friends at the Federal Reserve Bank of New York also maintain a website with much useful information on the topic, including their own estimate of recession probabilities ➤.