

Economic Trends

June 2013: Supplement (June 5, 2013-June 7, 2013)

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FEDERAL RESERVE BANK
of CLEVELAND

Yield Curve and Predicted GDP Growth, May 2013

Covering April 16, 2012–May 20, 2013

by Joseph G. Haubrich and Patricia Waiwood

Highlights

	May	April	March
Three-month Treasury bill rate (percent)	0.04	0.06	0.10
Ten-year Treasury bond rate (percent)	1.93	1.73	2.04
Yield curve slope (basis points)	189	167	194
Prediction for GDP growth (percent)	0.3	0.5	0.5
Probability of recession in one year (percent)	6.1	8.1	5.9

Sources: Board of Governors of the Federal Reserve System; authors' calculations.

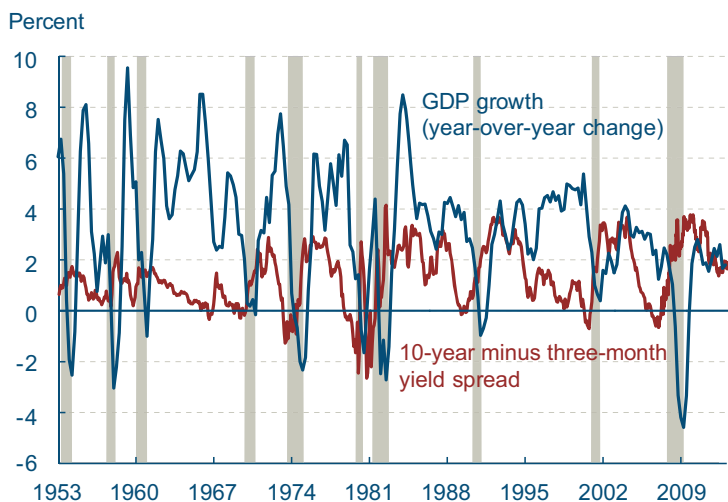
Overview of the Latest Yield Curve Figures

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.

The slope change had a bit more impact on the probability of a recession. Using the yield curve to predict whether or not the economy will be in recession in the future, we estimate that the expected chance of the economy being in a recession next May is 6.1 percent, down from April's 8.1 percent, though up a bit from March's 5.9 percent. So although our approach is somewhat pessimistic as regards the level of growth over the next year, it is quite optimistic about the recovery continuing.

Yield Curve Spread and Real GDP Growth



Note: Shaded bars indicate recessions.
Source: Bureau of Economic Analysis, Federal Reserve Board.

The Yield Curve as a Predictor of Economic Growth

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Predicting GDP Growth

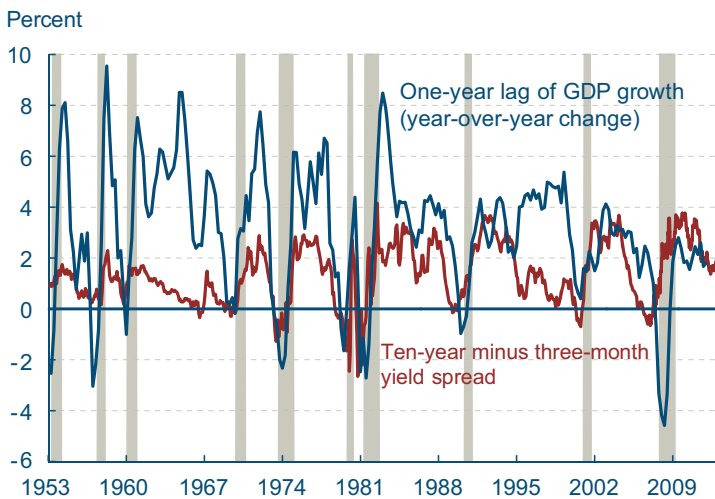
We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

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.

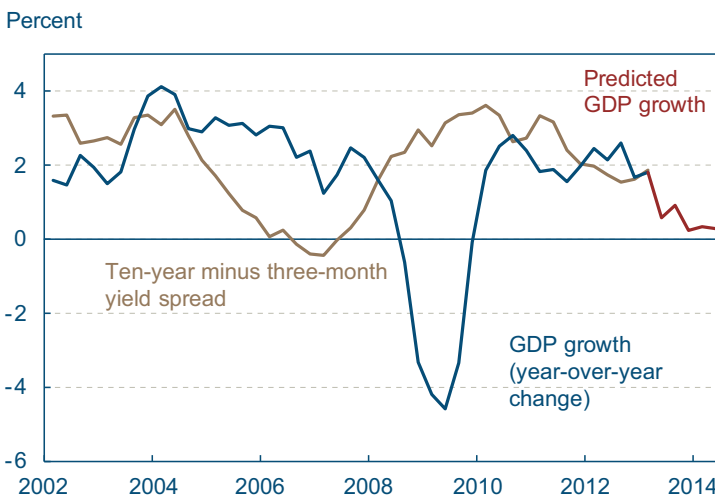
Of course, it might not be advisable to take these numbers quite so literally, for two reasons. First, this probability is itself subject to error, as is the case with all statistical estimates. Second, other researchers have postulated that the underlying determinants of the yield spread today are materially

Yield Spread and Lagged Real GDP Growth



Note: Shaded bars indicate recessions.
Sources: Bureau of Economic Analysis, Federal Reserve Board.

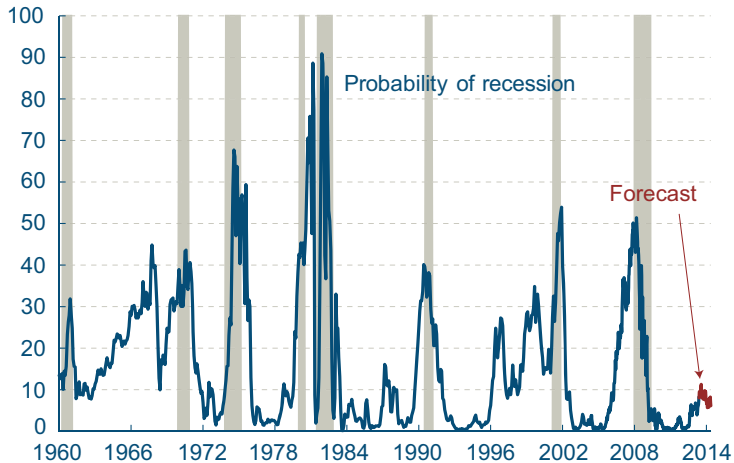
Yield Curve Predicted GDP Growth



Sources: Bureau of Economic Analysis, Federal Reserve Board, authors' calculations.

Recession Probability from Yield Curve

Percent probability, as predicted by a probit model



Note: Shaded bars indicate recessions.

Sources: Bureau of Economic Analysis, Federal Reserve Board, authors' calculations.

different from the determinants that generated yield spreads during prior decades. 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.

For more on the yield curve, read the *Economic Commentary* “Does the Yield Curve Signal Recession?” at <http://www.clevelandfed.org/Research/Commentary/2006/0415.pdf>.

For more on the Federal Reserve Bank of New York's estimate of recession, visit http://www.newyorkfed.org/research/capital_markets/ycfaq.html.

The Ever-Updated Personal Saving Rate

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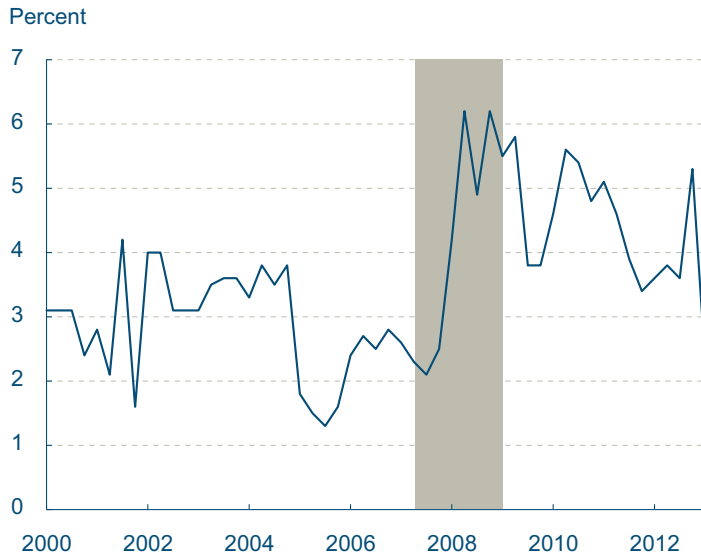
by Pedro Amaral and Sara Millington

The Bureau of Economic Analysis (BEA) estimates that the personal saving rate for the first quarter of 2013 was 2.3 percent—a five-year low, and a substantial drop from the fourth quarter of 2012, when it stood at 5.3 percent. Since many economists think a healthy household balance sheet is a necessary condition to fuel a stronger economic recovery, should we be worried about how low this estimate of the saving rate is?

We argue that the answer to this question is no, at least not yet. Quarterly saving rates are fairly volatile, and even though the first estimate for April came in at an equally paltry 2.5 percent, we should wait to see whether such low readings are confirmed in the next few months. More importantly, though, initial estimates for the personal saving rate normally end up being substantially revised. Moreover, these revisions are overwhelmingly on the positive side; that is, the final estimates are usually a lot higher than the initial ones. How much higher? The initial estimate for the personal saving rate has averaged 4.9 percent since World War II, while the final (current) estimate is 7 percent. So when we say revisions are substantial, we are not exaggerating.

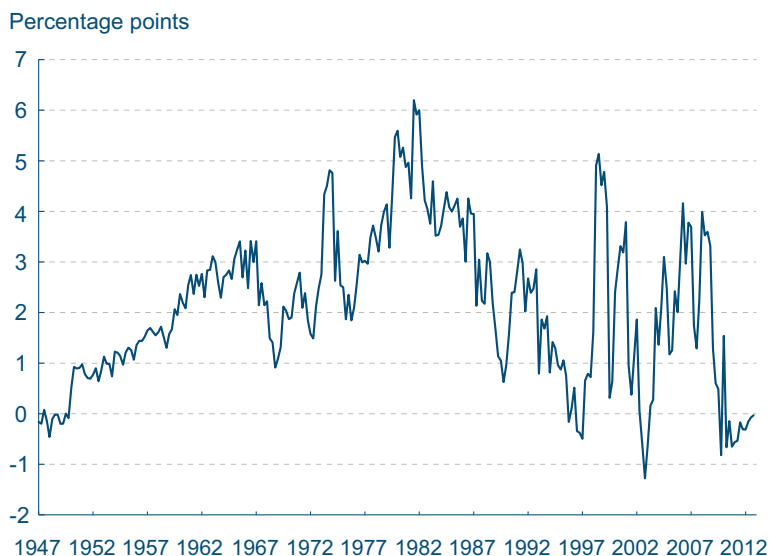
Why is the personal saving rate so hard to estimate? The BEA computes the personal saving rate as part of its National Income and Product Accounts (NIPA) and defines it as the ratio of personal savings to disposable income. Personal savings, in turn, are obtained by subtracting personal outlays (consumption expenditures, interest payments, and current transfer payments) from disposable personal income, which is personal income minus personal current taxes.

Personal Saving Rate



Note: Shaded bar indicates a recession.
Source: Bureau of Economic Analysis.

Difference between First and Current Estimates for the Personal Saving Rate



Sources: Bureau of Economic Analysis, Federal Reserve Bank of Philadelphia.

This is where things get tricky. While the BEA has a very good handle on personal outlays, disposable income is considerably harder to define and estimate. Here are its main components:

- Compensation of employees (wages and salaries plus employer contributions to pension plans and social insurance)
- Proprietors' income (the income of owners of nonincorporated businesses)
- Rental income
- Income receipts on assets (interest and dividend income)
- Current transfer receipts (from Social Security, Medicare, etc., but also from businesses) net of contributions

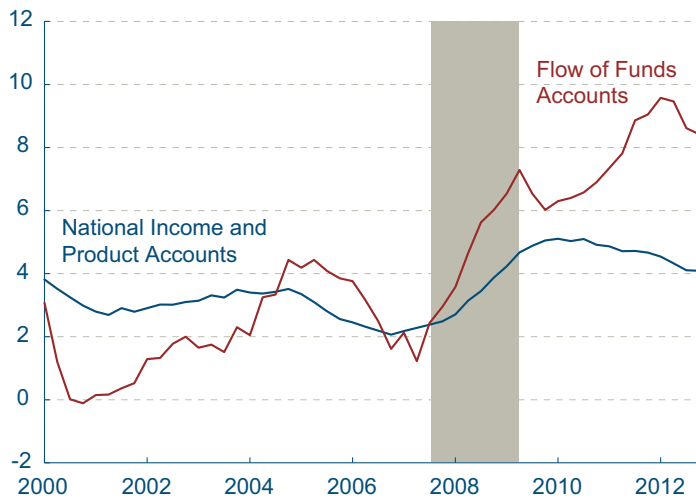
While some of these components are straightforward to estimate, particularly the ones involving government outlays and receipts, others are inherently hard to define. Moreover, some income sources that have become fairly important for households in the last 30 years, like capital gains on equity and real-estate, are excluded altogether.

The revision process is typically a lengthy one. Data for a given quarter are first published in an advance release late in the first month of the following quarter. After that, the second and third (aka final) estimates are published one and two months after that, respectively. Then, usually in the following summer, the latest three years of data are revised, so that the estimates typically undergo three rounds of annual summer revisions. After that, estimates are only revised in benchmark revisions, when the BEA reconsiders its definitions and classifications to more accurately portray an ever-evolving economy, and it introduces new and improved statistical methodologies. Such benchmark revisions are usually very substantial and occur every four years. One is coming up in July this year.

There is an alternative way of obtaining estimates for the personal saving rate using the Flow of Funds Accounts (FOFA) reported by the Federal Reserve Board. It is based on the fact that savings (income minus outlays) are simply changes in net worth. The FOFA and NIPA concepts of savings actually differ in that the former includes net

Measures of the Personal Saving Rate

Percent (eight-quarter moving average)



Note: Shaded bar indicates a recession.

Sources: Bureau of Economic Analysis, National Income and Product Accounts, Federal Reserve Board, Flow of Funds Accounts.

expenditures in consumer durables while the latter does not. Nonetheless, the FOFA also reports a NIPA-concept equivalent savings using FOFA data. The resulting saving rate is very noisy, so we show 8-quarter moving averages in the figure below. In contrast to the NIPA saving rate, the FOFA saving rate is not only higher, it has been increasing.

The lesson is that we should be careful when making inferences about household deleveraging based on the latest BEA estimates for the saving rate. Not only are these usually subject to substantial revision, but at this time alternative measures of the saving rate are pointing in a different direction.

Economic Trends is published by the Research Department of the Federal Reserve Bank of Cleveland.

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