

Economic Trends

March 2013: Supplemental (March 6, 2013-March 12, 2013)

In This Issue:

Growth and Production

- The Recession and Recovery from an Industry Perspective

Monetary Policy

- Yield Curve and Predicted GDP Growth, February 2013

FEDERAL RESERVE BANK
of CLEVELAND

The Recession and Recovery from an Industry Perspective

03.08.2013

by Pedro Amaral and Sara Millington

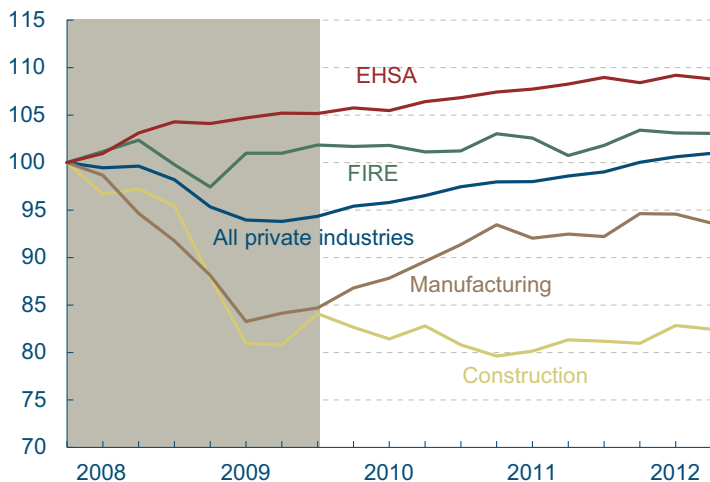
Real GDP grew at an annualized rate of 0.1 percent in the fourth quarter of 2012, according to the Bureau of Economic Analysis's revised estimate. Although this revision may confer the important psychological effect of keeping a streak of 14 consecutive quarters with positive growth alive (the BEA's first estimate indicated a 0.1 percent decrease in real GDP), the reality is that the U.S. economy stagnated in the last quarter of last year. This deceleration—growth in the third quarter of 2012 was a robust 3.1 percent—primarily reflected decreases in federal government spending, as military spending fell at an annualized rate of 22 percent, and private inventory investment.

If we compare the whole year of 2012 to 2011, the picture is only slightly rosier. While growth increased from 1.8 to 2.2 percent, this is very much on par with the average growth rate for the recovery, but well below that of previous ones. It is important to note that the acceleration in growth we experienced from 2011 to 2012 occurred even as the contribution of personal consumption expenditures, the most important component of GDP, actually diminished. Going forward, if we could only combine the sort of contribution we had from personal consumption expenditures in 2011 with the one we had from private domestic investment in 2012, maybe we could finally get a GDP growth rate in 2013 that would match a more normal recovery pace.

The overall growth rate of real GDP hides a fair amount of heterogeneity across industries. While the output of all U.S. domestic private industries just recently surpassed its 2007:Q4 peak, some industries remain well below that benchmark. Most notably, construction remains extremely depressed following the housing market collapse and has yet to see meaningful signs of a recovery. Another industry that still remains below the pre-recession peak is manufacturing. This industry has actually been staging a fairly speedy recovery, but it had a

Output

Index (2007:Q4=100)



Notes: Shaded bar indicates a recession. FIRE refers to finance, insurance, and real estate, and EHSA refers to education, health care, and social assistance.
Source: Bureau of Economic Analysis.

deeper hole to climb out of, having been battered more than the average during the recession.

On the other extreme there are industries that seemingly breezed through the recession, like education, health care, and social assistance (EHSA). This industry certainly benefited from the fact that a lot of people who became unemployed decided to go back to school and that medical expenditures stay fairly constant even when incomes decline. Curiously, an industry that came under a lot of pressure during the recession, finance, insurance and real estate (FIRE), has fared substantially better than average and hardly experienced a decline during the whole recession episode.

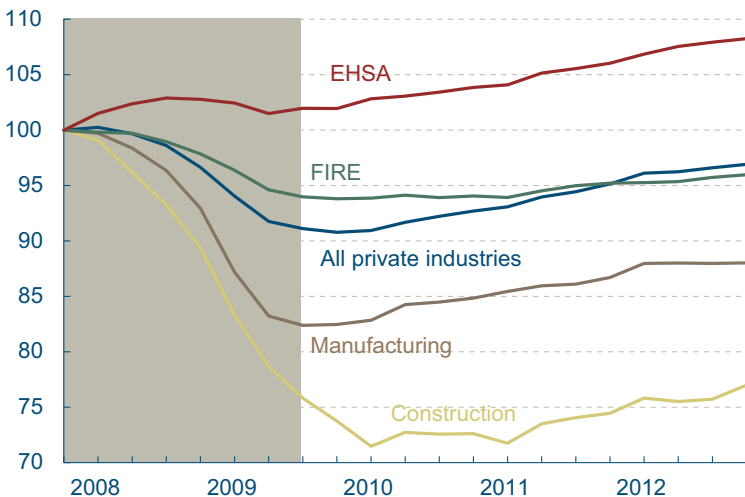
While both EHSA and FIRE have increased their production during the recovery, they have gone about it in slightly different ways. To see this, it helps to think of an industry's output as depending on the total hours of work it uses in production and how productive those hours are. In increasing its output, EHSA relied more on the former than on the latter. In contrast, FIRE was able to increase its output while reducing its total hours, achieving nearly 10 percent productivity gains.

Similarly, after being badly hit up until the recession's trough in the second quarter of 2009, manufacturing and construction have relied mostly on productivity gains to recover. In the case of manufacturing, productivity gains have helped the industry increase its output, while in the case of construction, they have helped to keep output constant in the face of a decline in total hours worked.

Total hours worked, in turn, are simply the product of the number of employees and the average hours each employee works: in economic jargon these are referred to as the extensive and intensive margin, respectively. In a typical recession, businesses make more use of the extensive margin than the intensive margin to adjust their labor input. That is, they let employees go rather than reduce hours. From peak to trough of the last recession, for example, businesses made only a 2 percent reduction in the average hours of their remaining employees. While by adjusting the intensive margin, employers economize on the hourly wage, they save on a variety

Total Hours

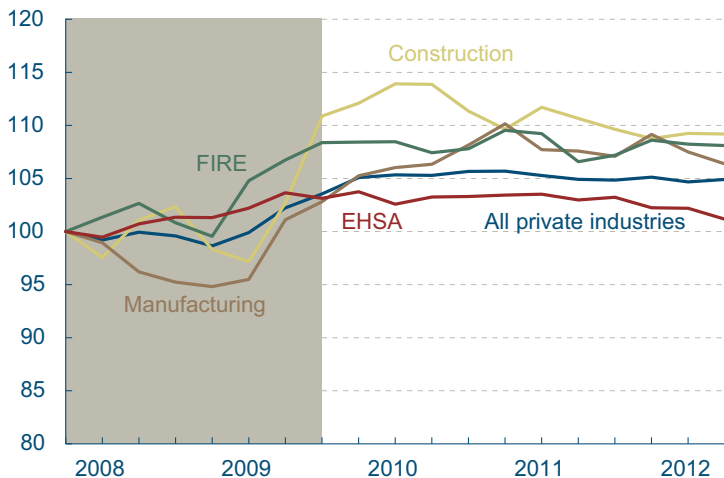
Index (2007:Q4=100)



Notes: Shaded bar indicates a recession. FIRE refers to finance, insurance, and real estate, and EHSA refers to education, health care, and social assistance. Sources: Bureau of Labor Statistics; Haver Analytics.

Productivity

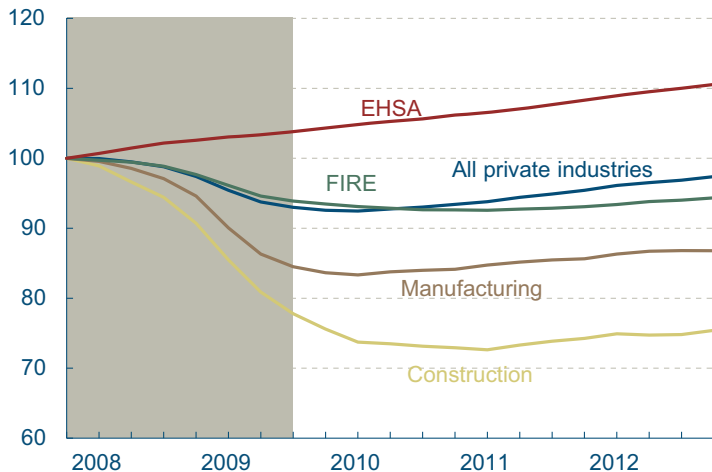
Index (2007:Q4=100)



Notes: Shaded bar indicates a recession. FIRE refers to finance, insurance, and real estate, and EHSA refers to education, health care, and social assistance. Sources: Bureau of Labor Statistics; Haver Analytics; author's calculations.

Total Number of Employees

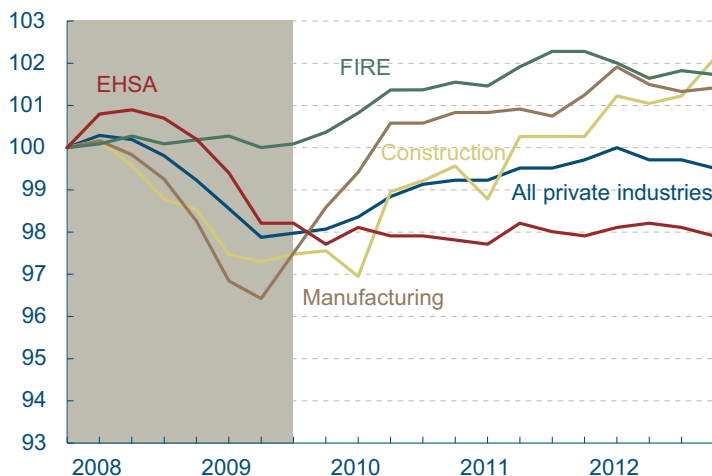
Index (2007:Q4=100)



Notes: Shaded bar indicates a recession. FIRE refers to finance, insurance, and real estate, and EHSA refers to education, health care, and social assistance.
Sources: Bureau of Labor Statistics; Haver Analytics.

Average Hours

Index (2007:Q4=100)



Notes: Shaded bar indicates a recession. FIRE refers to finance, insurance, and real estate, and EHSA refers to education, health care, and social assistance.
Sources: Bureau of Labor Statistics; Haver Analytics.

of fixed costs by firing an extra person. In the last recession, this tendency was mostly noticeable in FIRE, where average hours never fell.

A word of caution in interpreting these cross-industry differences: adjustments to labor input do not occur in a vacuum. They are ultimately a function of technological change and consumer preferences and depend (and in turn help determine) product and factor prices for each industry. Finally, they also depend on labor market conditions that are industry-specific. As an example, industries with higher unionization rates, everything else being the same, will tend to see relatively smaller decreases in the extensive margin, as firing costs are relatively higher.

The four industries we have highlighted here cover only 50 percent of total private production. But they serve to illustrate the different ways that U.S. industries adjusted their production and labor usage during the last recession.

Yield Curve and Predicted GDP Growth, February 2013

Covering January 19, 2012–February 22, 2013
by Joseph G. Haubrich and Patricia Waiwood

Highlights

	February	January	December
Three-month Treasury bill rate (percent)	0.13	0.08	0.07
Ten-year Treasury bond rate (percent)	2.00	1.87	1.69
Yield curve slope (basis points)	187	179	162
Prediction for GDP growth (percent)	0.4	0.6	0.6
Probability of recession in one year (percent)	6.4	7.1	8.6

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

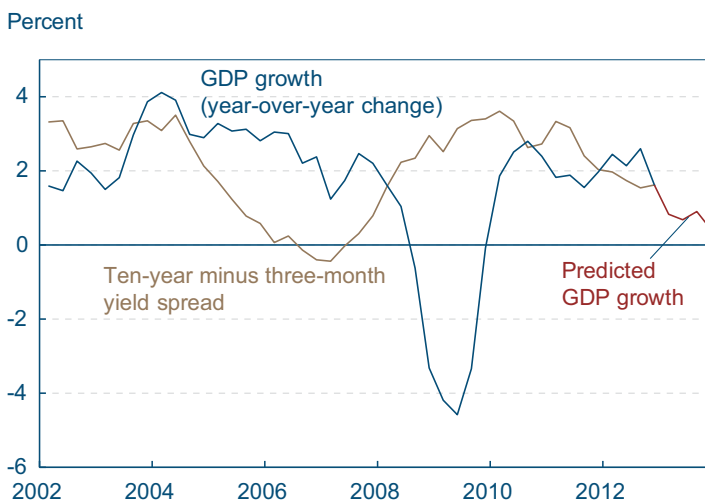
Overview of the Latest Yield Curve Figures

Over the past month, the yield curve has moved up, getting somewhat steeper in the process, as long rates moved more than short rates. The three-month Treasury bill rose to 0.13 percent (for the week ending February 22), up from January's 0.08 percent and nearly double December's 0.07 percent. The ten-year rate moved up to 2.00 percent, a rate not seen since last April, and was above January's 1.87 percent and December's 1.69 percent. The slope increased to 187 basis points, up from January's 179 basis points and December's 162 basis points.

The steeper slope was not enough to have an appreciable change in projected future growth, however. Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 0.4 percent rate over the next year, down a bit from January and December. The strong influence of the recent recession is still leading towards relatively low growth rates. Although the time horizons do not match exactly, the forecast comes in on the more pessimistic side of other predictions, but like them, it does show moderate growth for the year.

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 February is 6.4 percent, down from January's 7.1 percent, and below December's value of 8.6 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.

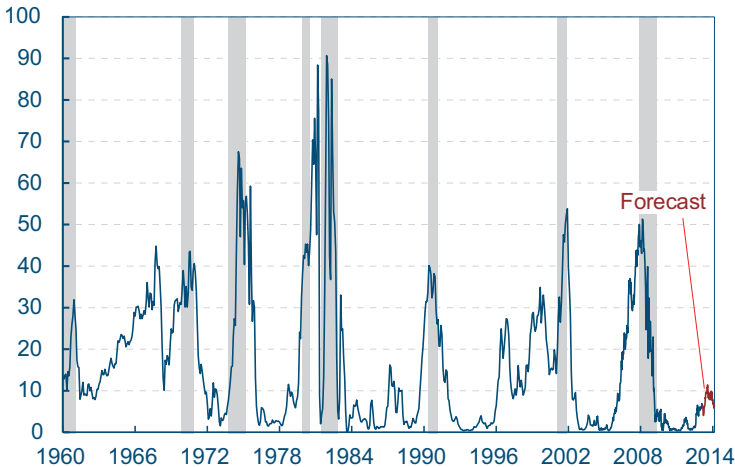
Yield Curve Predicted GDP Growth



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.

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.

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.

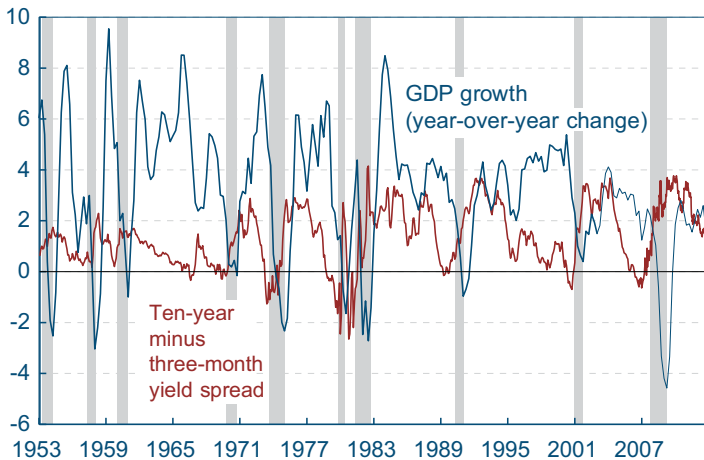
Predicting the Probability of Recession

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 materi-

Yield Curve Spread and Real GDP Growth

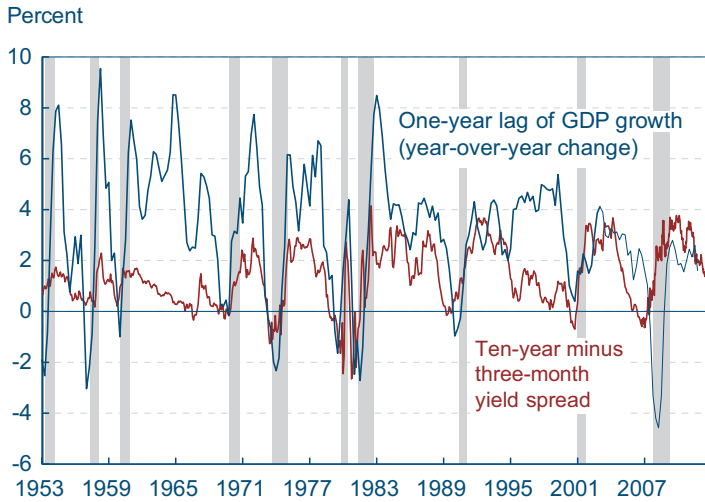
Percent



Note: Shaded bars indicate recessions.

Source: Bureau of Economic Analysis, Federal Reserve Board.

Yield Spread and Lagged Real GDP Growth



Sources: Bureau of Economic Analysis, Federal Reserve Board.

ally 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 for recession, visit http://www.newyorkfed.org/research/capital_markets/ycfaq.html.

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