Economic Trends

April 2015 (April 3 – May 4, 2015)

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FEDERAL RESERVE BANK
of CLEVELAND

FHA Lending Rebounds in Wake of Subprime Crisis

04.14.2015
by Yuliya Demyanyk and Daniel Kolliner

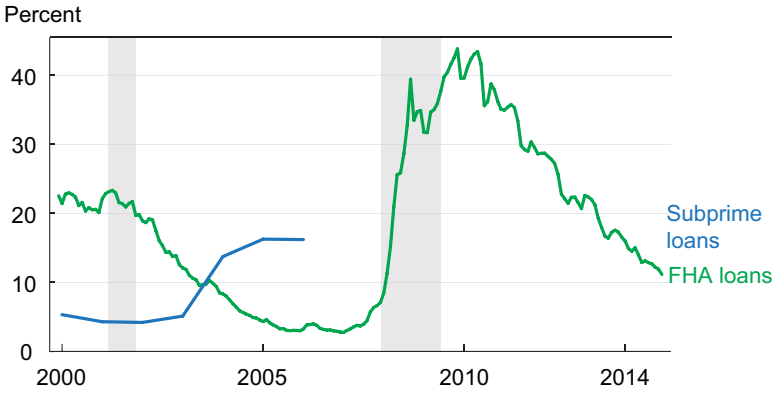
During the Great Recession, lending standards tightened, making it difficult for some borrowers to get or refinance their mortgages. Several indicators suggest that conditions have eased up, and credit may be more available now. But since the financial crisis was precipitated by lending standards that were so loose that credit was extended even to borrowers who did not have the ability to pay it back, there is heightened sensitivity to the possibility that we could go too far again. In light of that concern, we investigate the degree to which FHA lending is being extended to creditworthy borrowers.

The Federal Housing Administration (FHA) is a government agency that has been helping borrowers to obtain mortgage loans since 1934. The FHA makes mortgage loans more accessible chiefly by allowing qualified borrowers to provide lower down payments. Traditional loans require a down payment of up to 20 percent of a home's purchase price, while down payments for FHA-facilitated loans can be as low as 3.5 percent. For this service, the FHA charges a mortgage insurance premium (MIP), which is calculated in terms of basis points and is a percentage of the amount financed. The premium—which is often interpreted as a measure of housing affordability—was around 50 basis points before the crisis but rose steeply after it, hitting 135 in 2013. In January 2015, the MIP rate was lowered substantially, to 85 basis points.

Before the subprime mortgage boom, FHA loans were an important source of credit for first-time home buyers and borrowers with less than prime credit ratings. In 2001, for example, 21.6 percent of all new mortgage loans were backed by the FHA. But in 2003, subprime loans began to take off, and FHA lending began to decline. By 2005, subprime loans represented 16.3 percent of the mortgage market and FHA loans were down to 3.5 percent.

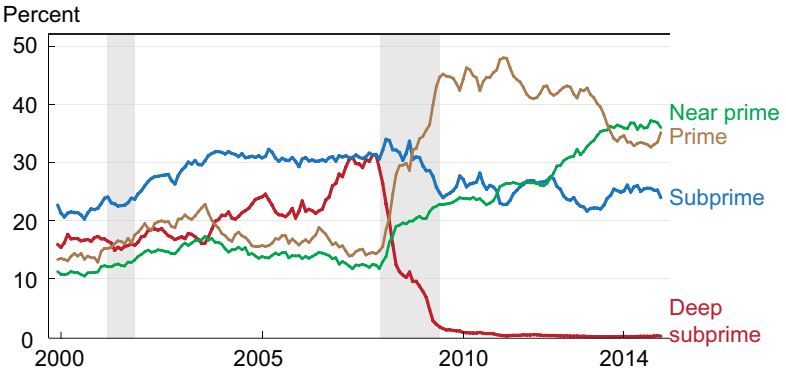
While the FHA was still offering favorable mortgage terms for qualified borrowers, subprime

Share of Originated Loans



Note: Shaded bars indicate recessions.
Sources: Black Knight Financial Services; 2007 Mortgage Market Statistical Annual; authors' calculations.

Share of Originated FHA Loans by FICO Score



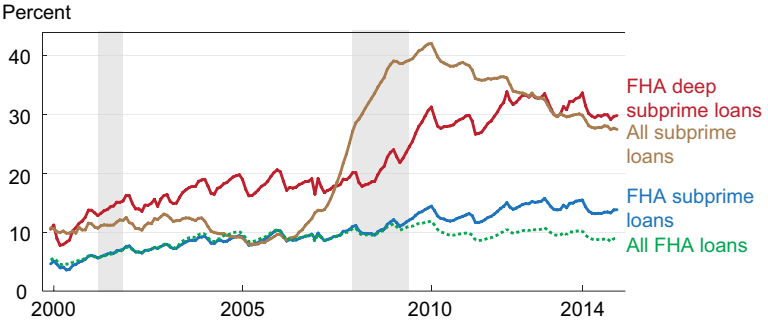
Note: Shaded bars indicate recessions.
Source: Black Knight Financial Services, authors' calculations.

lenders were offering a much easier and faster application process, at times with no down payment requirement. When lending standards tightened after the subprime market crashed in the middle of 2007, three types of potential borrowers could no longer obtain a mortgage loan: borrowers who would have gotten a subprime loan had the subprime market continued to exist, borrowers with subprime mortgages who needed to refinance into loans with better terms, and borrowers who could not afford large down payments but were otherwise creditworthy.

To assist some of these underserved people, the FHA began to increase its lending at the end of 2007, regaining market share which eventually peaked at 43.8 percent of mortgage market originations in November of 2009. During this timeframe, FHA-supported mortgage originations increased more than 500 percent. After the recession, FHA-supported lending steadily declined to around 11 percent of all purchase mortgage originations, where it remains.

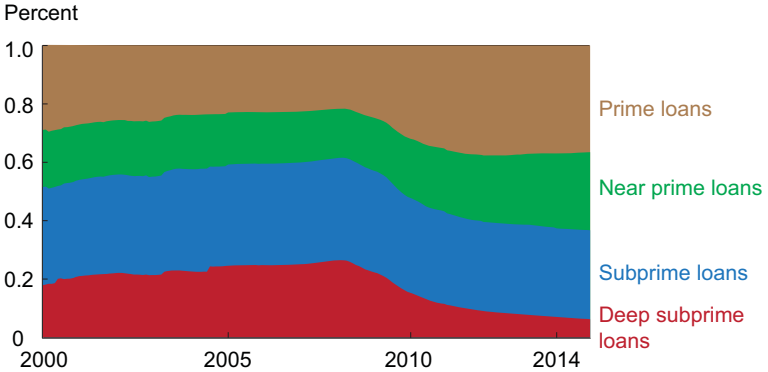
An open question is which of the three types of borrowers unable to get loans after 2007 is getting them now? Hopefully, credit conditions have relaxed to the point where underserved but creditworthy borrowers are getting credit, and bad credit risks are still being excluded. To answer this question, we check if the composition of after-crisis FHA originations resembles the pre-crisis subprime market in terms of borrowers' credit scores. We split all FHA originations into four groups by the borrowers' FICO score. We find that prior to the recession in November 2007, 62.8 percent of FHA borrowers were either deep subprime (scores less than 600) or subprime (scores between 601 and 660). However, when FHA loans began to increase at the end of 2007, FHA lending to deep subprime borrowers was in decline and ended completely by 2010. Since then, FHA loans have been going more often to prime (with scores above 700) and near-prime (with scores between 661 and 700) borrowers. Currently, 73.9 percent of FHA-originated loans go to prime or near-prime borrowers.

Share of Loans in Default, by FICO Score



Note: Shaded bars indicate recessions.
Sources: Black Knight Financial Services; CoreLogic ABS; authors' calculations.

Stock of FHA Loans by FICO Score at Origination



Sources: Black Knight Financial Services; authors' calculations.

We also compare the performance of subprime loans made by the FHA with that of subprime loans made by other lenders. We look at the rate of default, which is defined as a loan in any of the following conditions: those with more than two missed monthly payments, those in foreclosure, or those that are REO ("real estate owned," meaning the bank reposessed the home). We see that in the 2000s and prior to the recession, both the FHA's subprime and deep subprime loans performed about as badly as the subprime loans of non-FHA lenders: between 7.8 and 20.6 percent of the FHA's deep-subprime loans were in default, and between 3.6 and 10.5 percent of the FHA's subprime loans were in default, while between 7.9 to 25.2 percent of non-FHA lenders' total subprime loans defaulted.

Although the standards for FHA originations have improved substantially in that originations to the deep subprime segment stopped and originations to near-prime and prime segments increased, the performance of the overall FHA mortgage market has not improved. The default rate of all FHA loans combined is still higher than it was before the onset of the subprime boom in 2003.

The reason for the underperformance of the overall FHA market even with the improved standards is seen when analyzing the stock of outstanding FHA loans. Outstanding loans are those that were previously originated. Despite the fact that deep subprime loans ceased to be originated after 2010, they still represent 6.2 percent of all outstanding FHA loans. Likewise, subprime loans still constitute 30.5 percent. However, if the FHA continues to facilitate lending to more creditworthy borrowers, the performance of the overall FHA market is poised to improve in the future.

Did Core Deposits Hedge Loan-Commitment Risk during the Financial Crisis?

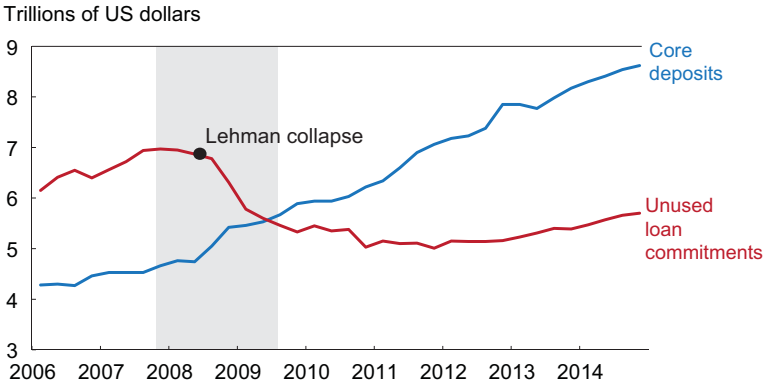
04.14.2015

by Mahmoud Elamin and Caitlin Treanor

A financial crisis is generally a time of great stress for banks, firms, and individuals all at once. Firms and banks might be cut off from funding options that just before the crisis were considered stable. At the same time, individuals and firms might be forced to draw down their credit lines to deal with unemployment, slower sales, and other expenses. Under such conditions, banks can find it challenging to provide funding to stressed borrowers, because they are stressed themselves.

Besides providing liquidity through loans, banks provide loan commitments. These represent a promise to fund future credit demand by borrowers. A familiar example of a loan commitment is a credit card. Your credit limit is the amount the bank promises to fund when you make purchases. If you have a $1,000 limit and you have spent $250, then $250 will show up on a bank's balance sheet as a loan and $750 will show up off the balance sheet as an unused loan commitment.

Total Core Deposits and Unused Commitments



Note: Shaded bar indicates a recession.
Source: Call Reports data.

During a crisis, banks might experience an unusually large drawdown on these unused commitments. The exposure to the demand for liquidity can leave banks scrounging for cash to cover their commitments. A number of research papers claim that banks should be able to meet these demands because funds from depositors should simultaneously be flowing in, as investors, scared by the market turmoil, seek the safe haven of deposits. If this relationship does in fact exist, we would expect to see core deposits and unused commitments moving in opposite directions during a crisis. Core deposits include total transaction accounts, savings deposits, and time deposits of less than $100,000, and they are generally considered a stable source of funds for a bank's lending base.

The relationship seems to hold in the aggregate during the most recent crisis. The aggregate amount of unused commitments declined, while total core de-

posits increased. But that might be misleading because the increase in deposits might be happening at banks with no decline in loan commitments. At the outset of the crisis, the level of unused commitments was significantly higher than the deposit base supporting these promises. As the crisis unfolded, the gap closed, and deposits overtook the level of unused commitments by the end of the crisis.

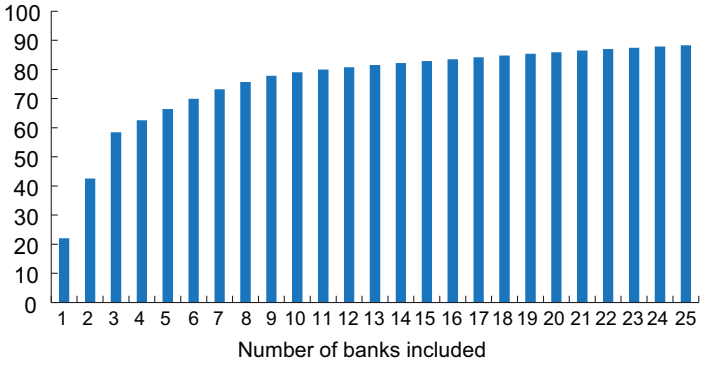
The decrease in unused commitments could have occurred for two main reasons: one, individuals and businesses made purchases and drew down their lines of credit; two, banks withdrew or reduced their previously extended lines of credit. Probably both factors were at play during the crisis, but we think the action we see is more due to drawdowns. It is generally hard for banks to back out of their promises, because they fear the consequences of loss of reputation. Firms would not buy these commitments in the future, unless they think it is very likely the bank would fulfill them in times of need.

The US banking industry is dominated by a few big bank holding companies, which usually behave differently than the rest of the pack, and it is no different here. The top ten bank holding companies hold the vast majority of unused loan commitments. In June of 2007, right as the crisis hit, the top ten held nearly 80 percent of unused loan commitments, while the top two had 43 percent.

The top ten bank holding companies' total unused commitments are significantly greater than their total core deposits. At the beginning of 2007, the top ten banks had in aggregate 2.6 times as many dollars promised in unused commitments as they had sitting in core deposits. By the end of 2009, this ratio had dropped to 1.5.

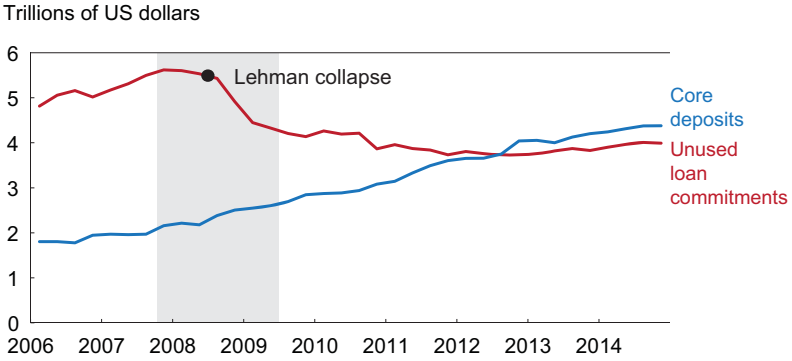
Core deposits increased during the crisis period by 35 percent, or $445 billion. Unused loan commitments, on the other hand, fell by $1.29 trillion between 2007:Q4 and 2009:Q2.This decline seems to have significantly accelerated after the Lehman collapse in September 2008. If the decrease in unused commitments was due to drawdowns, then the increase in deposits would have cushioned the blow. On the other hand, it was not nearly enough to cover the entire change in commitments, leaving a whopping shortfall of $845 billion.

Percent of Total Unused Loan Commitments, June 2007



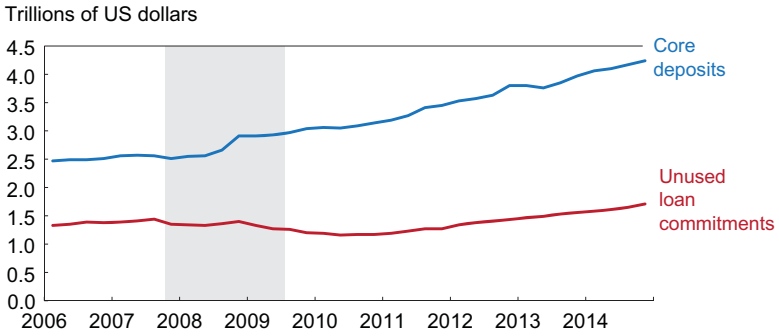
Source: Call Reports data.

Total Unused Loan Commitments and Core Deposits for the Top Ten BHCs



Note: Shaded bar indicates a recession.
Source: Call Reports data.

Total Unused Loan Commitments and Core Deposits, Excluding Top Ten BHCs



Note: Shaded bar indicates a recession.
Source: Call Reports data.

Banks below the top ten, conversely, live in an entirely different universe. Core deposits are much higher than their total unused commitments throughout. The increase in core deposits during the crisis seems to be significantly higher than the slight decline in unused commitments. At the beginning of 2007, banks below the top ten had in aggregate 1.8 times as many dollars sitting in core deposits as they had promised in unused commitments. By the end of 2009, this ratio was up to 2.5.

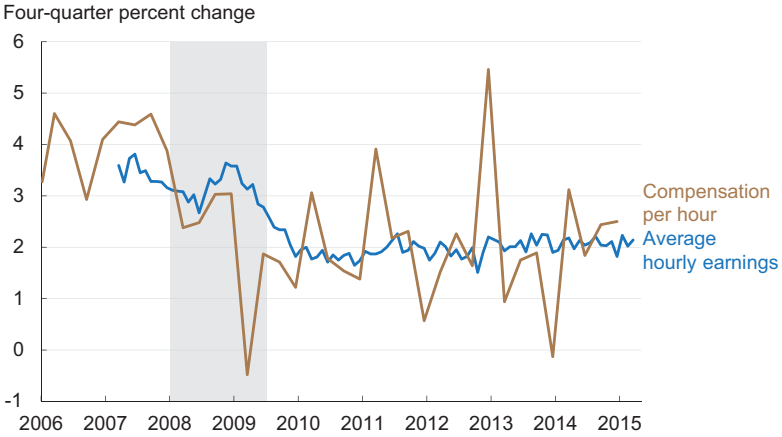
All in all, it seems that unused commitments experienced a significant decline in the top ten banks, with the increase in core deposits only slightly mitigating the demand for liquidity accompanying this decline. Banks below the top ten seem to have experienced little change in their unused commitments, with a significant increase in deposits. We conclude that some evidence in the crisis trends suggests that the increase in core deposits hedges to some degree the decline in unused commitments. But the aggregate picture is different from one that considers banks of different sizes, suggesting the actual situation is more complex.

Behind the Slow Pace of Wage Growth

04.09.2015
by Filippo Occhino and Timothy Stehulak

Despite continued progress in the labor market, wages have been rising slowly. In 2014, total nonfarm payroll employment rose by 3.1 million and the unemployment rate declined by 1.1 percentage points to 5.6 percent, indicating that the labor market was improving. Meanwhile, average hourly earnings and compensation per hour rose only by 1.8 percent and by 2.5 percent, respectively, a smaller increase than one might expect after 5 years of economic recovery. In this article, we look at some factors behind the slow pace of wage growth, including slow productivity growth and labor's declining share of income.

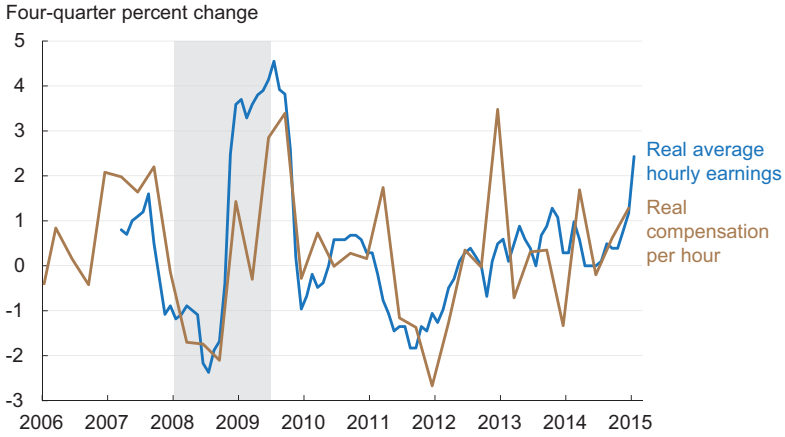
Wage Rate



Notes: Shaded bar indicates recession. Average hourly earnings is for all private industries. Compensation per hour is for the nonfarm business sector.
Source: Bureau of Labor Statistics.

One reason wages have been rising slowly is that prices have been rising slowly. Low inflation, however, does not explain the trend in wages completely. Even after subtracting the effect of inflation, wages have been rising slowly. In 2014, real average hourly earnings and real compensation per hour rose, respectively, by only 1.2 percent and 1.3 percent.

Real Wage Rate



Notes: Shaded bar indicates recession. Real average hourly earnings is for all private industries. Real compensation per hour is for the nonfarm business sector.
Source: Bureau of Labor Statistics.

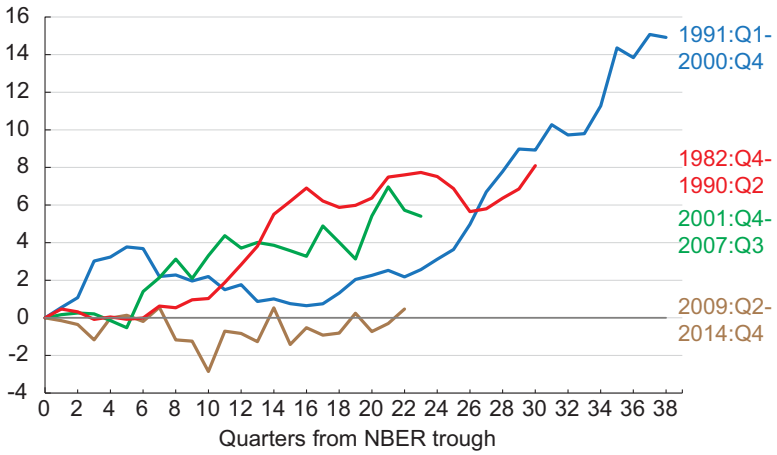
In fact, real wages have been rising slowly for several years. Measuring from the end of the Great Recession, real wages have barely risen—real compensation per hour has risen only by 0.5 percent, much less than at this point in past recoveries. The lack of strong wage growth has been one factor that has held down the growth of income, consumer spending, and the recovery.

Some temporary factors may explain, in part, weak real wage growth during the recovery. For instance, Daly and Hobijn (2015) suggest that many firms were not able to reduce wages during the Great Recession, so they compensated by not raising wages as fast during the recovery. This factor, however, became less and less important over time as the recovery continued to progress.

Another factor that may have held down wage growth during the recovery is a change in the composition of jobs and hours—a relative increase in

Real Compensation per Hour

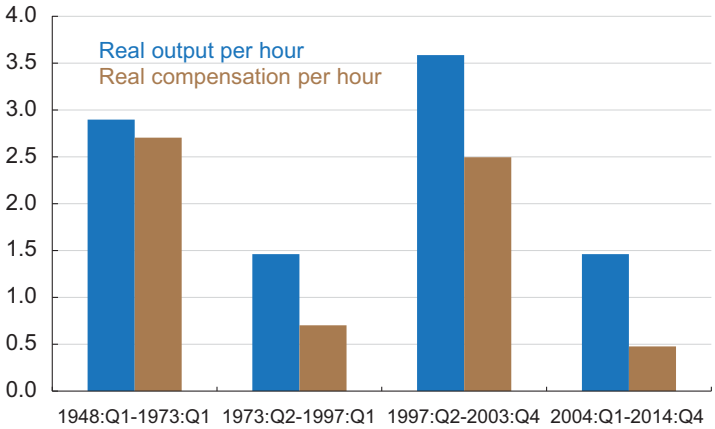
Percent change from business cycle trough



Note: Data are for the nonfarm business sector.
Source: Bureau of Labor Statistics.

Labor Productivity and Real Wage Rate

Average growth rates for select periods



Note: Data are for the nonfarm business sector.
Source: Bureau of Labor Statistics.

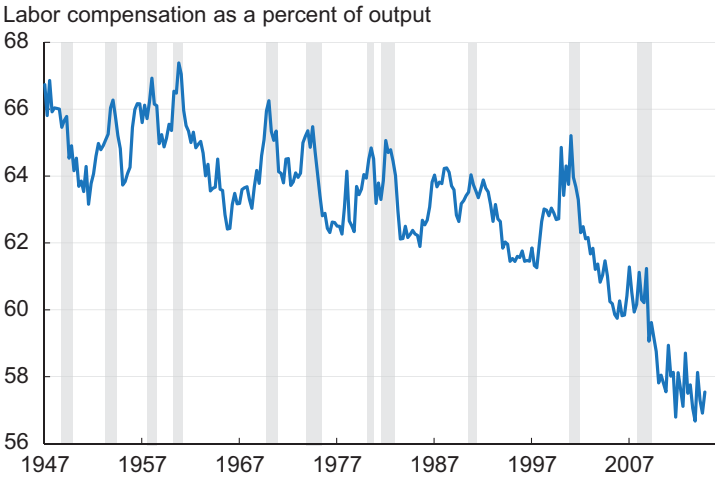
lower-paid jobs and hours may have depressed the average wage. Data, however, suggests that a change in the composition of occupations did not have a strong effect on the average wage: The employment cost index for total compensation—an index that tracks the cost of labor for a fixed composition of occupations—has risen by 11.5 percent during the recovery, which is similar to the growth in average hourly earnings and compensation per hour, which have risen, respectively, by 11.3 percent and by 11.5 percent. Also, Elvery and Vecchio (2015, Table 2) find that the effect of the change in the mix of occupations on the change in the average wage between 2010 and 2013 was small (and actually positive). Similarly, Mancuso (2015) finds that shifts in industry composition do not explain much of the weakness in wage growth during the recovery.

Some longer-term changes in the economy have likely played a larger role in depressing real wage growth. The first is the slowdown of labor productivity in the last decade. Productivity growth in the nonfarm business sector has averaged only 1.46 percent since 2004 and 0.85 percent since 2010. As the growth of labor productivity is a key determinant of real wage growth in the long run, the slowdown of productivity has probably helped to depress wage growth.

Other long-term changes in the economy, including the evolution of the technology used to produce goods and services, increased globalization and trade openness, and developments in labor market institutions and policies, have caused labor's share of income to decline at a faster pace since 2000 than in previous years, and in doing so they have likely held down real wage growth. After declining at an average rate of 0.1 percent per year from 1960 to 2000, the labor share has declined more rapidly since 2000, on average about 0.5 percent per year (see Jacobson and Occhino, 2012). In an accounting sense, the faster decline since 2000 has subtracted about 0.4 percentage points per year from average real wage growth relative to the period before 2000.

Going forward, wage growth will likely pick up in the short run, as inflation rises and labor market

Labor Share of Output



Notes: Shaded bars indicate recessions. The labor share is computed by scaling the labor share index so that the labor share is equal to 57.8 in 2010:Q3, consistent with Fleck, Glaser, and Sprague (2011, Figure 5).
Source: Bureau of Labor Statistics; authors' calculations.

conditions strengthen further. In the longer run, whether average real wage growth remains lower than in the past will depend on whether trend productivity growth continues to be low and whether other fundamental economic forces cause further declines in the labor share of income.

Reference:

Susan Fleck, John Glaser, and Shawn Sprague (2011). "The Compensation-Productivity Gap: A Visual Essay." Bureau of Labor Statistics, Monthly Labor Review.

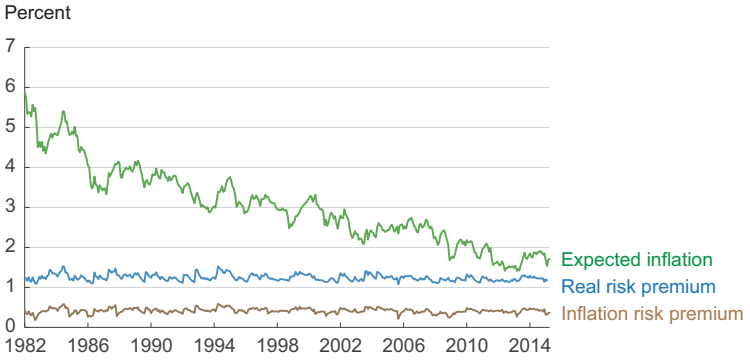
Cleveland Fed Estimates of Inflation Expectations, April 2015

News Release: April 17, 2015

The latest estimate of 10-year expected inflation is 1.70 percent, according to the Federal Reserve Bank of Cleveland. In other words, the public currently expects the inflation rate to be less than 2 percent on average over the next decade.

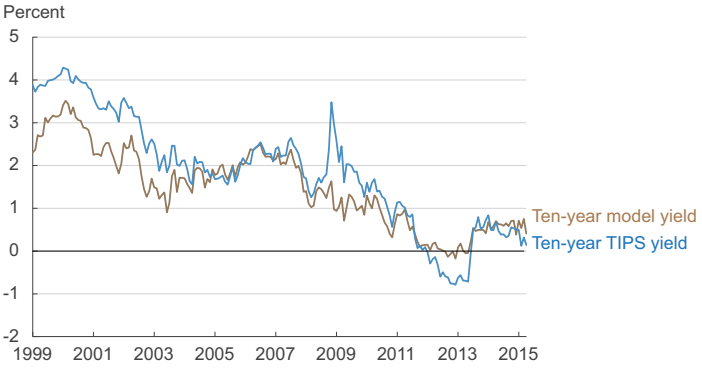
The Cleveland Fed's estimate of inflation expectations is based on a model that combines information from a number of sources to address the shortcomings of other, commonly used measures, such as the "break-even" rate derived from Treasury inflation protected securities (TIPS) or survey-based estimates. The Cleveland Fed model can produce estimates for many time horizons, and it isolates not only inflation expectations, but several other interesting variables, such as the real interest rate and the inflation risk premium.

Ten-Year Expected Inflation and Real and Nominal Risk Premia



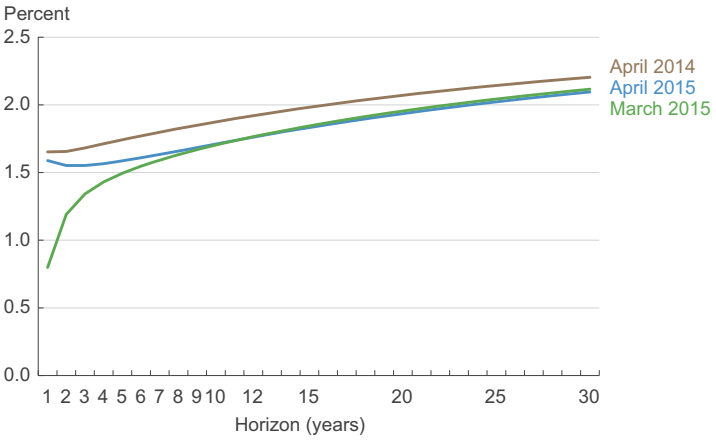
Source: Haubrich, Pennacchi, Ritchken (2012).

Ten-Year TIPS Yields versus Real Yields



Source: Haubrich, Pennacchi, Ritchken (2012).

Expected Inflation Yield Curve



Source: Haubrich, Pennacchi, Ritchken (2012).

Yield Curve and Predicted GDP Growth, April 2015

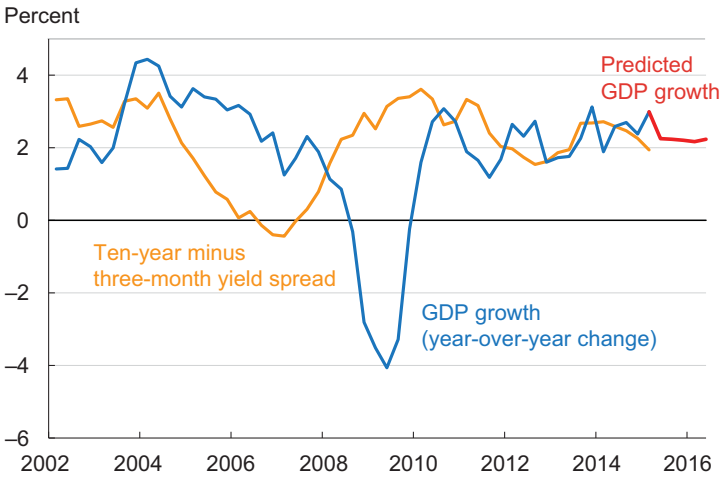
Covering March 21–April 24, 2015
by Joseph G. Haubrich and Sara Millington

Highlights

	April	March	February
Three-month Treasury bill rate (percent)	0.03	0.03	0.02
Ten-year Treasury bond rate (percent)	1.94	2.00	2.11
Yield curve slope (basis points)	191	197	209
Prediction for GDP growth (percent)	2.2	2.1	2.1
Probability of recession in one year (percent)	5.25	4.85	4.12

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

Yield Curve-Predicted GDP Growth



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

Overview of the Latest Yield Curve Figures

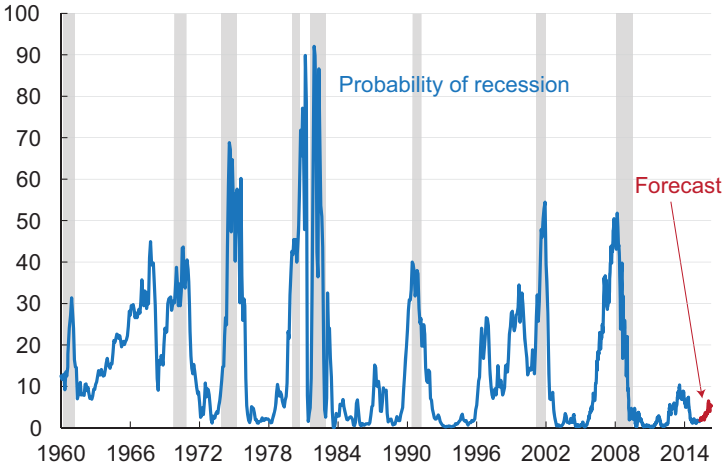
The yield curve moved flatter in April. As has been typical lately, most of the action was at the long end, while the short end inched upward with the three-month (constant maturity) Treasury bill rate staying constant at 0.03 percent (for the week ending April 24), even with March's number and up from February's 0.02 percent. The ten-year rate (also constant maturity) dropped 6 basis points to 1.94 percent, down from 2.00 percent in March and 20 basis points below February's 2.11 percent. These changes dropped the slope to 191 basis points, down from 197 basis points in March and further below February's 209 basis points.

The flatter slope did not have a large impact on predicted real GDP growth; expected growth stayed constant. Using past values of the spread and GDP growth suggests that real GDP will grow at about a 2.2 percent rate over the next year, barely up from last month, which was unchanged from February. The influence of the past recession continues to push towards relatively low growth rates, but recent year-over-year growth has been stronger (despite the weak performance 2015:Q1) and is counteracting that push. Although the time horizons do not match exactly, the forecast is slightly more pessimistic than some other predictions, but like them, it does show moderate growth for the year.

The flatter slope, however, did have the usual effect on the probability of a recession, which increased slightly. 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 April at 5.25 percent, up from March's estimate of 4.85 percent, which was itself up a bit from the February probability of 4.12 percent. Although our approach is somewhat pessimistic with regard to the level of growth over the next year, it is still quite optimistic about the recovery continuing.

Recession Probability from Yield Curve

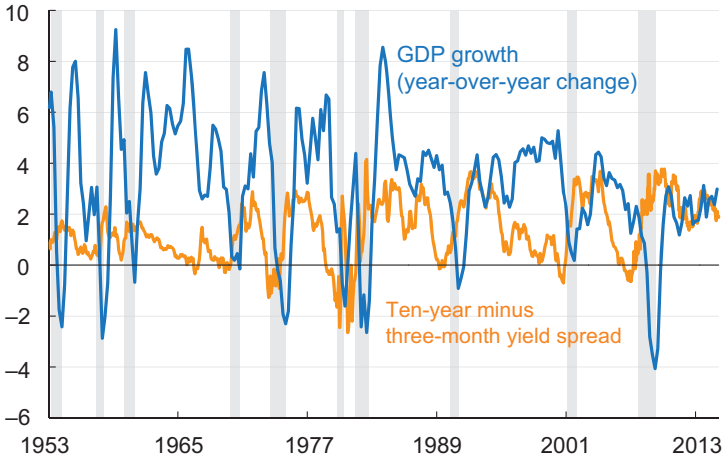
Percent probability, as predicted by a probit model



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

Yield Curve Spread and Real GDP Growth

Percent



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

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

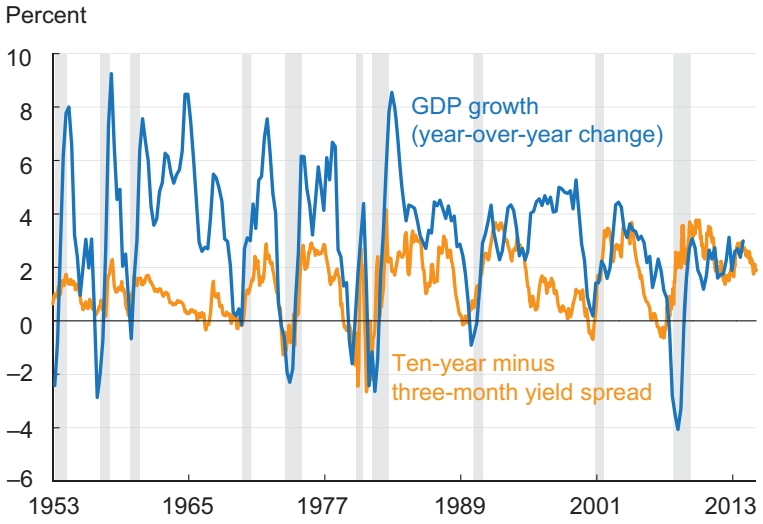
We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

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

Yield Spread and Lagged Real GDP Growth



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

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. 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.

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

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