

Economic Trends

November 2012 (October 12, 2012-November 14, 2012)

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FEDERAL RESERVE BANK
of CLEVELAND

Tracking Recent Levels of Financial Stress

11.01.2012

by Timothy Bianco

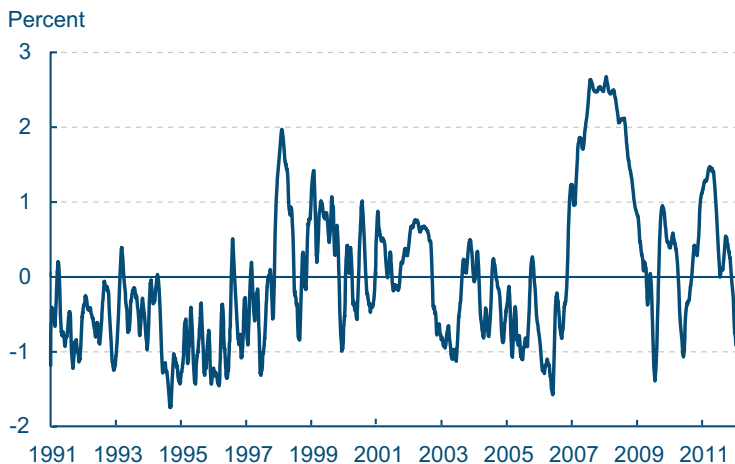
In early 2012, the Federal Reserve Bank of Cleveland began a monthly release of the Cleveland Financial Stress Index (CFSI). The CFSI was created to monitor stability and identify emerging risks in a complex and dynamic financial system. The monthly release can be found [here](#), and a further discussion of the index can be found [here](#).

In recent months, the CFSI has decreased considerably as conditions in key financial markets have improved. The CFSI in July was 0.37 but has subsequently fallen to -0.92 as of October 15, 2012. The index is down 2.13 points over the previous 12 months and nearly 3.5 points since the index's peak in October 2008.

The CFSI measures stress in four key financial markets (interbank, credit, equity, and foreign exchange). Together, these markets offer broad coverage of the financial system. Stress may originate in any of them, and though stresses in individual markets are not necessarily correlated, isolated stress in one may quickly spread to the broader financial market, with potentially devastating effects. Financial system supervisors are concerned with detecting systematic factors that could contribute to widespread stress.

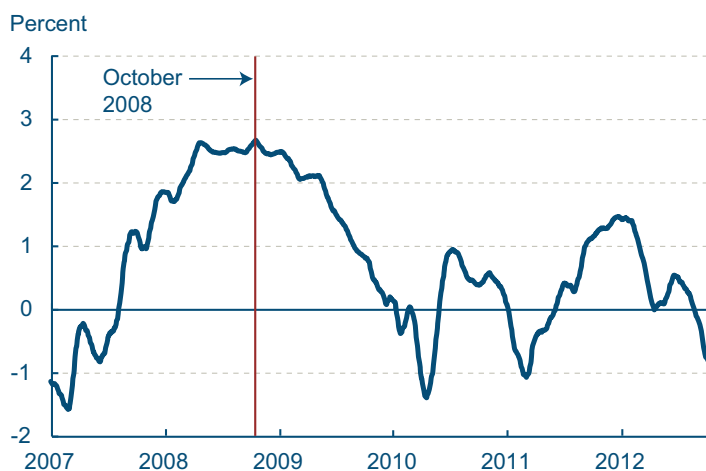
For example, since late 1991 there have been two periods of significant financial instability, one occurring after the collapse of Long Term Capital Management (LTCM) in 1998 and one being the more recent financial crisis. During these periods, multiple markets were experiencing elevated, nearly simultaneous stress, presumably caused by common factors. This can be seen by decomposing the CFSI into the contribution each market makes to the total level of system stress (more detail on the index's construction can be found [here](#)). To a lesser extent, more recent trends show that individual components of the CFSI were also increasing toward the end of 2011 and into the early part of 2012, though not to the same degree as during these two periods.

Cleveland Financial Stress Index



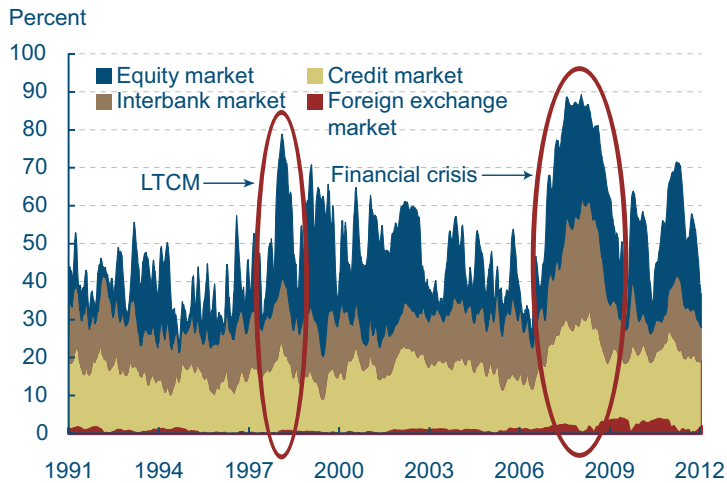
Source: Oet, Eiben, Bianco, Gramlich, and Ong (2011).

Cleveland Financial Stress Index



Source: Oet, Eiben, Bianco, Gramlich, and Ong (2011).

Components of CFSI



Source: Oet, Eiben, Bianco, Gramlich, and Ong (2011).

While stress was elevated through early 2012, the overall level of financial stress has abated significantly as the year has progressed. Stresses in all four markets have decreased, indicating that the potential for widespread stress has fallen relative to late 2011 and of course relative to the periods around the LTCM collapse and the recent financial crisis. The following table shows the decomposition of the CFSI over the previous months. The contribution from the equity market has most markedly decreased from August to October 2012, while strains in the credit market persist.

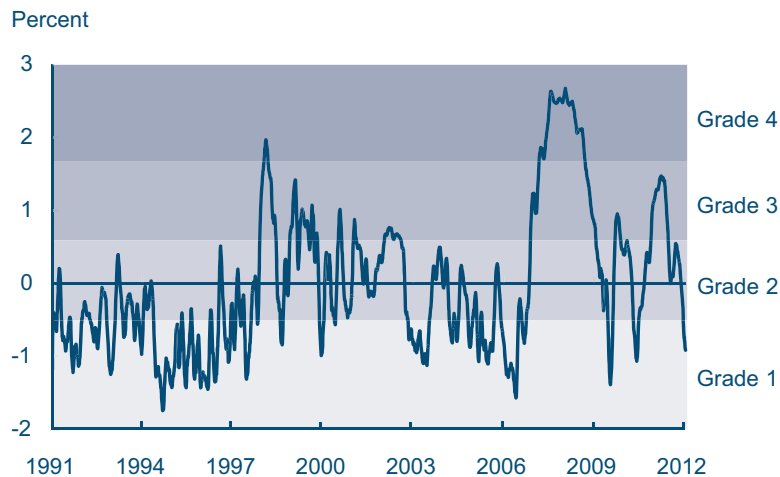
Decomposition of CFSI

	October 15, 2012	September 17, 2012	August 20, 2012
Equity market contribution to CFSI	8.39	12.35	19.55
Interbank market contribution to CFSI	8.80	10.02	10.95
Credit market contribution to CFSI	17.29	17.43	18.19
Foreign exchange contribution to CFSI	1.88	1.49	0.81

Note: These contributions refer to levels of stress, where a value of 0 indicates the least possible stress and a value of 100 indicates the most possible stress. The sum of these contributions is the level of the CFSI, but this differs from the actual CFSI, which is computed as the standardized distance from the mean, or the z-score.

Source: Federal Reserve Bank of Cleveland.

Cleveland Financial Stress Index



Source: Oet, Eiben, Bianco, Gramlich, and Ong (2011).

Private Fixed Investment: Not Rebounding as Fast This Time Around

11.02.12

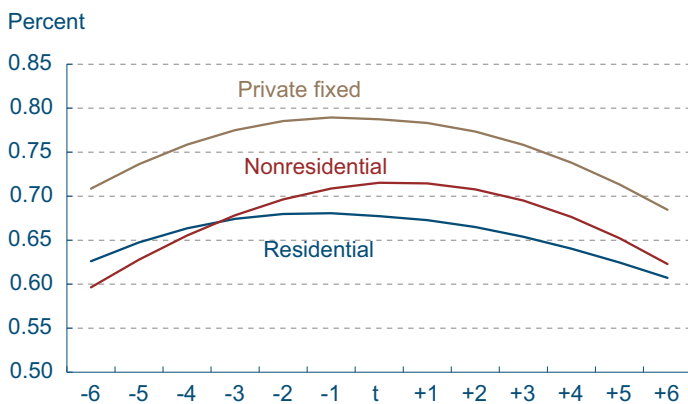
by Daniel Carroll and Samuel Chapman

Investment is a key factor influencing economic growth. Investments in factories and machines, houses and computer software, all increase the capital available for production and expand the frontier of goods and services that workers can supply to the economy. As evidence, consider that investment today is strongly, positively correlated with GDP in the future. More than just expanding GDP in the future, growth in the capital stock through investment puts upward force on wages by making workers more productive.

The graph below plots the cross correlations of GDP at a given point in time with private fixed, nonresidential, and residential investments at various lead and lag times relative to it. The horizontal axis represents the distance in quarters from a time t measurement of GDP, and the vertical axis represents the correlation of each series with GDP at time t . A large positive correlation, such as the ones below, indicates that, on average, when the series is above its trend at that lag or lead date, GDP at time t is also above its trend. This suggests that if investment is currently below its trend, GDP may also be below its trend as well.

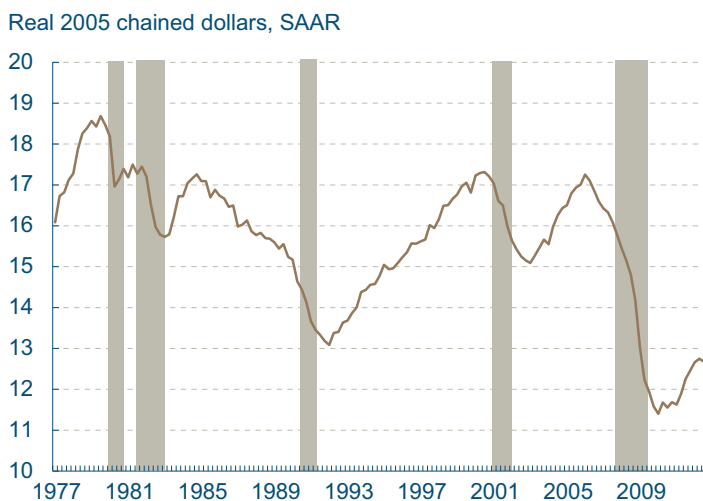
In the United States, private fixed investment has averaged about 15.3 percent of GDP over the postwar period; however, more recently it has run below this ratio. It crashed down to 10.5 percent in 2009 and has since hovered around 13 percent. This is unusual since investment is more volatile than income. Typically, investment will fall more than GDP during recessions, and it did in the last recession; but historically it then rebounds just as sharply. This gives the ratio of investment-to-GDP a “V-shape” over recessions. So far the most recent case has not displayed this same pattern. In contrast to previous downturns, investment has been especially slow to recover after this most recent recession.

Private Fixed Investment as a Percentage of GDP



Note: All series are quarterly, real (GDP deflated), and HP filtered.
Sources: Haver Analytics, Bureau of Economic Analysis, authors' calculations.

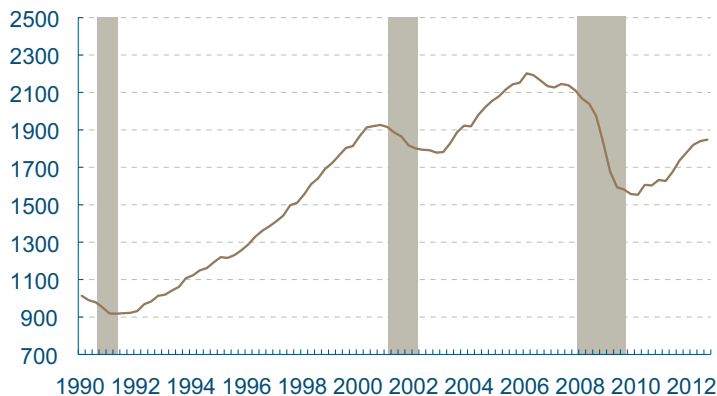
Private Fixed Investment: GDP



Notes: Shaded bars indicate recessions. SAAR is the seasonally adjusted annual rate.
Sources: Haver Analytics, Bureau of Economic Analysis.

Private Fixed Investment

SAAR, real, 2005 chained dollars



Notes: Shaded bars indicate recessions. SAAR is the seasonally adjusted annual rate.

Sources: Haver Analytics, Bureau of Economic Analysis.

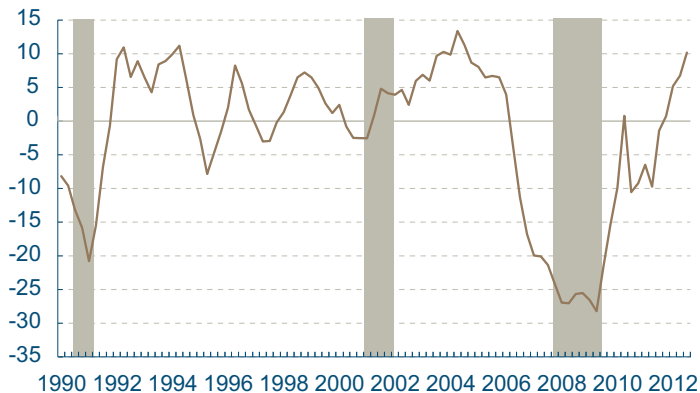
The primary reason for this is that residential investment is still well below its previous 2006 peak. This is not surprising given the trouble associated with the run-up in housing through 2007, the subsequent decline in home prices, and the tightening of household income and credit. Still, the magnitude of the fall is remarkable. After accounting for inflation, 2012:Q3 residential investment is 58 percent less than it was in 2006:Q1.

On a positive note, real residential investment is up 12.7 percent year-over-year, so the trajectory is improving. Nevertheless, even at this rate, it will still take years to get back to precrisis levels.

Nonresidential investment also crashed during the recession, but unlike residential investment, it followed the historical pattern and rebounded sharply through 2011. From 2010:Q4 to 2012:Q1, real nonresidential investment averaged 8.6 percent growth year-over-year. Recently though, the pace has fallen off. Since the first quarter of this year, real nonresidential investment is only 4.3 percent above its level last year, as headwinds like the European sovereign debt crisis and the fiscal cliff may be causing investors to hold off on capital purchases. Hopefully, low interest rates on mortgages, improvements in household income and credit, and reductions in the uncertainty associated with fiscal headwinds will lead to a turnaround in private fixed investment and a resumption of the V-shape pattern.

Private Residential Investment as a Percentage of GDP

Year-over-year percentage change

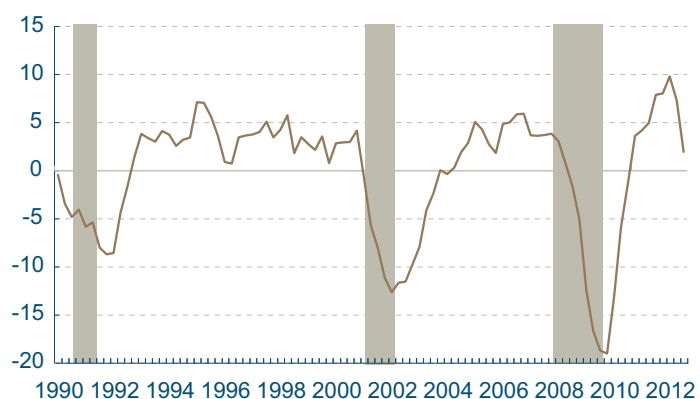


Note: Shaded bars indicate recessions.

Sources: Haver Analytics, Bureau of Economic Analysis.

Private Nonresidential Investment: GDP

Year-over-year percentage change



Note: Shaded bars indicate recessions.

Sources: Haver Analytics, Bureau of Economic Analysis.

Confidence and Consumption Show Signs of Life

11.14.12

by Yuliya Demyanyk and Samuel Chapman

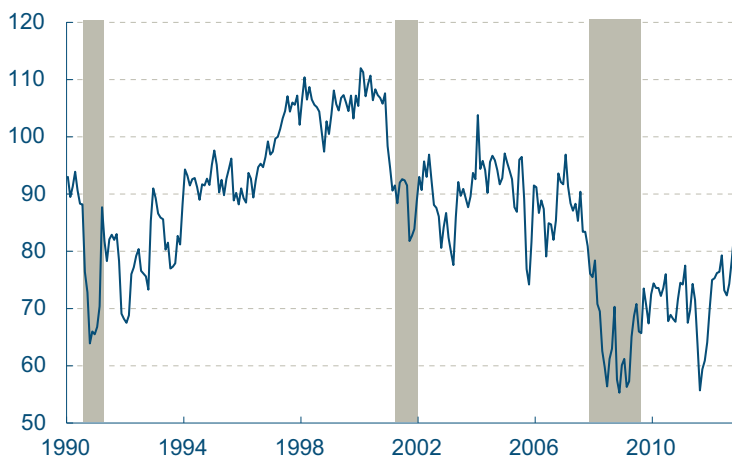
Since the end of the recent recession, the economy has been struggling to regain a solid footing and return to precrisis levels of employment and GDP. GDP has returned to positive growth, and despite an elevated unemployment rate, there are signs that the economy is slowly gaining traction and improving. One such indicator of positive growth is the University of Michigan's Consumer Sentiment index, which surveys consumers' level of optimism in the economy, and, theoretically, mirrors their level of willingness to consume.

Consumer sentiment clearly dropped during the recession, bottoming out at 55.3 in November 2008. Following this drop, however, it followed an upward trend and slowly returned to precrisis levels. There is one outlier in the upward postrecessionary trend, in August 2011, when consumer sentiment dropped to 55.7. This decrease was most likely caused by the U.S. debt ceiling debate and consequent downgrading of U.S. government securities. Currently, consumer sentiment is at 82.6 for the month of November, a level not seen since September 2007. Consumer sentiment is an important indicator of an improving economic landscape, as around 70 percent of GDP comes from personal consumption expenditures.

Given that consumer sentiment has improved since the recession, it is natural to wonder if this optimism has translated into increased consumption. Personal consumption expenditures can be analyzed by considering trends in durable consumption and nondurable consumption. Durable goods, as defined by the Bureau of Economic Analysis (BEA), include goods that have an average lifespan of at least three years, such as automobiles and household furnishings. Nondurable goods have an average lifespan of less than three years, such as clothing, food, and fuel. Consumption of both durable and nondurable goods decreased significantly during the recession, more so than during previous recessions. However, both have shown strong

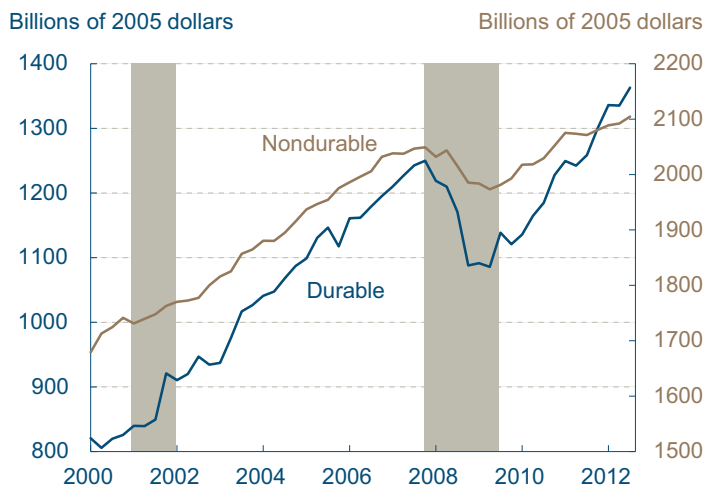
Consumer Sentiment

Index, 1966:Q1=100



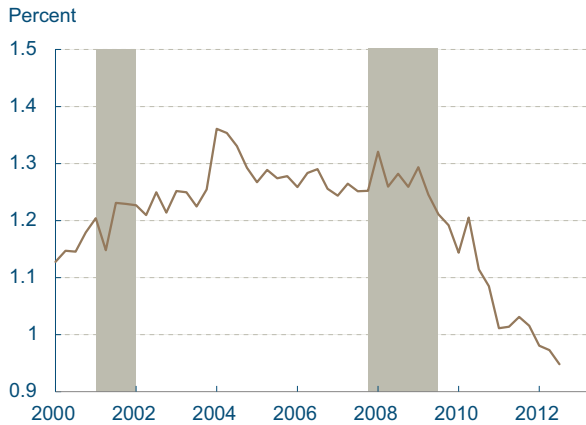
Note: The index is not seasonally adjusted.
Source: University of Michigan, Survey of Consumer Sentiment.

Real Personal Consumption Expenditures: Durable and Nondurable Goods



Notes: Both series are seasonally adjusted annual rates. Shaded bars indicate recessions.
Sources: Bureau of Economic Analysis, Haver Analytics.

Debt Burden: Payments as a Percent of Disposable Personal Income

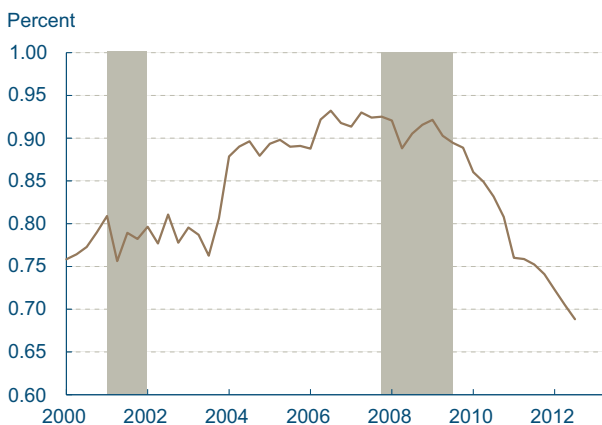


Notes: Debt burden is defined as the aggregated sum of all minimum payments that consumers are required to make on all of their debt obligations (excluding student loans), as a fraction of aggregate disposable income. Shaded bars indicate recessions.
Sources: Authors' calculations based on Federal Reserve Bank of New York's Equifax Consumer Credit Panel; Bureau of Economic Analysis.

signs of recovery. Durable consumption has grown around 26 percent from its low of \$1,086 billion in the second quarter of 2009, to \$1,363 billion in the third quarter of 2012. Nondurable consumption has increased approximately 7 percent from its low of \$1,973 billion in the second quarter of 2009, to \$2,105 billion in the third quarter of 2012. A question that naturally arises after noting this increase in consumption is how are consumers funding this additional spending?

To see if consumers are borrowing more, we construct a measure of the average consumer's debt burden using data from the Equifax Consumer Credit Panel and the BEA. The measure is the aggregated sum of all the minimum payments that consumers are required to make on all of their open accounts, excluding student loans, as a fraction of aggregate disposable income. As indicated in the chart below, the debt burden has been steadily decreasing since the last recession. The most recent data show that in the third quarter of 2012, the debt burden was 0.95 percent, down from its high of 1.36 percent in the first quarter of 2004. This decrease indicates that on average consumers are likely not borrowing to increase their consumption.

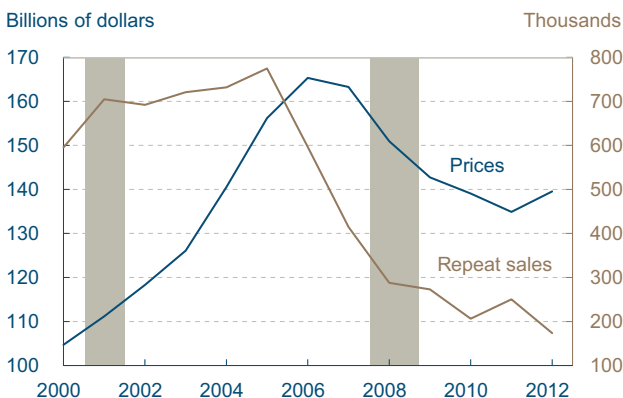
Mortgage Related Debt Payments as a Percent of Disposable Income



Note: Shaded bars indicate recessions.
Sources: Authors' calculations based on Federal Reserve Bank of New York's Equifax Consumer Credit Panel.

The trend is similar for mortgage debt. The chart below shows the aggregated required payments on all mortgage accounts (mortgages, home equity loans and lines of credit) relative to aggregated personal disposable income. It has also been steadily decreasing since the beginning of 2009.

National Home Price Index and Total Sales Count



Notes: Amount taken at August of each corresponding year. Shaded bars indicate recessions.
Source: CoreLogic.

Mortgage payments may be decreasing because there are fewer mortgage originations and thus fewer overall payments. Repeat home sales have fallen steadily from a high of around 775,000 sales in August 2005 to 174,000 sales in August 2012.

Displaced Workers and the Great Recession

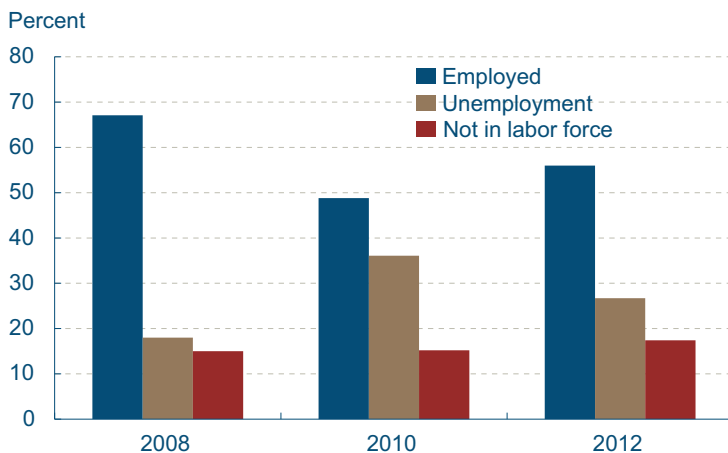
11.07.12

by Murat Tasci

The Great Recession lasted six quarters, from December 2007 through June 2009, and as we all know, it took a large toll on the labor market. During the course of the recession, about 7.5 million jobs were lost in the nonfarm business sector. Job losses did not end until February 2010, by which point total jobs lost stood at about 8.7 million. More than two years since then and after three years of growth in the aggregate economy, employment recovered by 4.5 million, still short of the sharp decline we experienced. These numbers, however, do not tell us the whole story about those workers who suffered the job losses. How many of them eventually found jobs, and if they did, at what wage level and in which industries?

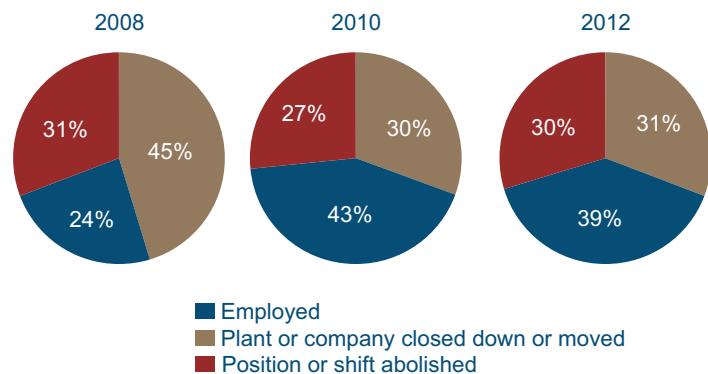
Fortunately, we have some information about the answers to these questions from the Displaced Workers Survey (DWS), a biennial supplement of the monthly Current Population Survey (CPS), which provides us with the official unemployment rate every month. Both surveys are sponsored by Bureau of Labor Statistics (BLS). The BLS defines displaced workers as workers 20 years of age and older who lost or left jobs because their plant or company closed down or moved, there was insufficient work for them to do, or their position or shift was abolished. The BLS recently reported the summary statistics from the last DWS, which covers information about workers who were displaced between January 2009 and December 2011, and their labor market outcomes as of January 2012. Along with this 2012 release, two preceding reports, in 2010 and 2008, provide us with a complete picture of the job-loss experience of the displaced workers. One can think of the 2008 release of the DWS (which covers the period from January 2005 to December 2007) as representing “normal” times, and the 2010 release (which covers January 2007 to December 2009) as summarizing the recessionary period. One additional advantage of the DWS survey is that we can track tenured workers, those with

Employment Status of Displaced Workers



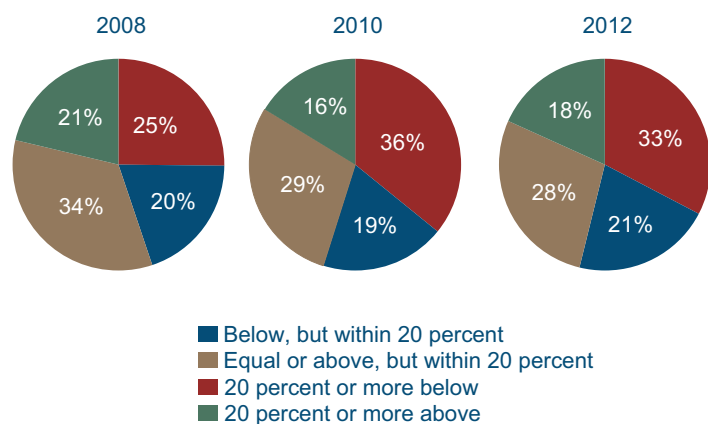
Source: Bureau of Labor Statistics.

Reason for Job Loss: Displaced Workers



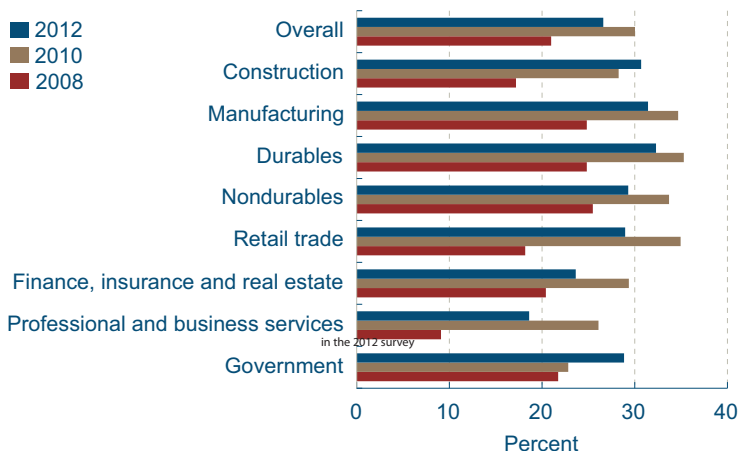
Source: Bureau of Labor Statistics.

Earnings of Displaced Workers



Source: Bureau of Labor Statistics.

Reemployment Wages: Significant Wage Loss



Note: Fraction of displaced workers with more than 20 percent loss on reemployment wages.

Source: Bureau of Labor Statistics.

at least three years of experience at their jobs before they were displaced. Arguably, these are the workers who will pay a higher price in terms of human capital loss than workers with very short tenure.

With this classification in mind, the effects of the recession in terms of job loss are very obvious in these data. There were only 3.6 million displaced workers in the 2008 survey, whereas the number jumped to 6.9 million in the 2010 survey. Even the latter half of the recession and the early part of the recovery, summarized in the 2012 survey, do not seem to be immune to job losses; during this period about 6.1 million workers were displaced from January 2009 through December 2011. Moreover, those who were displaced between January 2007 and December 2009 were the least likely of all the workers displaced during the three survey periods to be employed in the following January, 48.8 percent. In contrast, as of January 2008 two-thirds (67 percent) of the workers who were displaced in the prior three years were already employed. The odds improved somewhat in the 2012 survey, but at 56 percent, the reemployment probability was still lower than the level it was in 2008 survey. Note that most of these tenured displaced workers did not drop out of the labor force, even in 2010, due to their strong labor force attachment. Instead, they faced a higher likelihood of staying unemployed, 36 percent, double the 2008 level.

The nature of the job losses change across the three surveys, highlighting the effects of the business cycle. For instance, the bulk of displaced workers, 45 percent, reported plant shutdowns or relocations as the reason for displacement in 2008, whereas this reason was given by barely one-third of the pool in the next two cycles. It seems that the recession put the lack of demand for firms' products and services at the top of the reasons for displacement, as the fraction of those citing insufficient work topped 43 percent in 2010 and stayed at 39 percent in 2012.

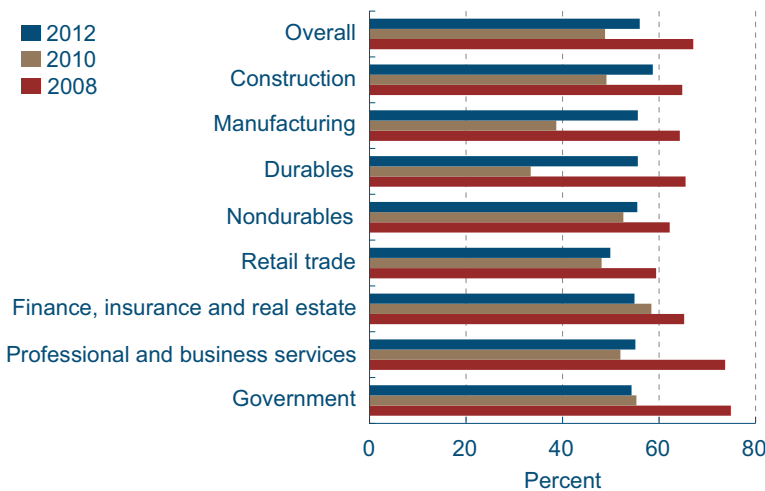
The cost of displacement can be quite large. Consider the experiences of displaced workers from the 2010 release, for instance. Those who were tenured had less than a 50 percent chance of finding a job by January of that year, but those who did find a job were more than likely (by 55 percent) to end up

with a job that paid less than their previous wage. An incredible 36 percent of those who found jobs suffered at least a 20 percent wage loss. Prior to the recession, not only were the odds of being reemployed higher (67 percent), but the odds of being paid more relative to the predisplacement wage were much higher too, 55 percent, as opposed to 45 percent in 2010 and 46 percent in 2012. Unfortunately, a significant fraction of the reemployed displaced workers, 33 percent, still reported having suffered at least a 20 percent wage loss in the 2012 survey.

Workers from every industry took a larger hit in terms of significant wage losses (more than 20 percent) in the 2010 survey relative to the prerecession survey in 2008. Some sectors, such as professional and business services and retail trade, took larger hits with the recession. However, they recovered a bit in the 2012 survey, whereas the depth of the wage loss worsened in construction and government. Nevertheless, workers who were displaced from manufacturing and construction industries are among those with the worst wage outcomes according to the 2012 survey, with slightly more than 30 percent suffering at least a 20 percent wage loss.

Reemployment rates are somewhat more uniformly distributed across industries in each survey year. For instance, with the exceptions of retail trade and construction, displaced workers from almost every industry had the same reemployment probability of more or less 55 percent in the 2012 survey. Displaced workers from the finance, insurance, and real estate and government sectors all had reemployment probabilities that are still below their prerecession levels. It is conceivable to think that, if those workers are looking for jobs in the same sectors they worked in before, the financial crisis and the resulting pressures on state and local government budgets are reducing their reemployment rates even two years after the recession.

Reemployment Rates: Industry of Lost Job



Source: Bureau of Labor Statistics.

The Burden of Public Debt

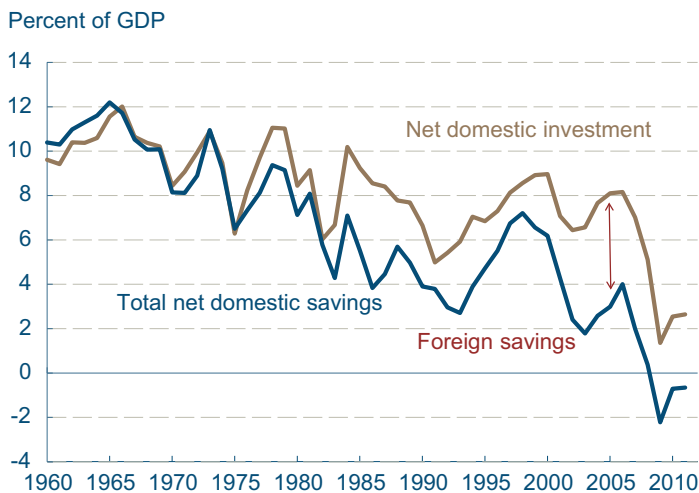
10.30.2012

by Owen F. Humpage and Margaret Jacobson

The overall public-debt burden of the world's most advanced countries is approaching levels not seen since the Second World War—levels that could damage their future growth prospects. According to International Monetary Fund (IMF) estimates (here and here), the average ratio of public debt to GDP among the advanced economies—their debt burden—will approach 111 percent this year, but then rise significantly above that percentage at least through 2017. The United States' public debt level is headed for the wrong side of that average. After breaching 107 percent of GDP this year, the U.S. public-debt burden will settle at 114 percent after 2015, according to the IMF's best guess. While much of the debt buildup stemmed from the ongoing global economic malaise, contingent liabilities associated with aging populations will keep pressure on many advanced countries' budgets. The outlook is still cloudy, but this much seems clear: To the extent that public debts absorb private savings that otherwise would support private investment, long-term economic growth will suffer.

To be sure, with the global economic recovery lagging and with accommodative monetary policies keeping interest rates unusually low, public and private borrowers are not currently squaring off over a scarce pool of funds. But as economic activity gains momentum and approaches its potential growth path, central banks will begin to back-peddle on monetary stimulus. Then, rising debt burdens will crowd out private investment and crimp economic growth. According to the IMF, countries that have high and increasing debt-to-GDP ratios experience significantly lower GDP growth rates than countries with low debt-to-GDP ratios or even those countries with high, but declining debt-to-GDP ratios. What constitutes a high ratio? Certainly debt burdens above 100 percent, but maybe those as low as 85 percent and possibly even as low as 40 percent, according to the IMF.

Investment and Saving



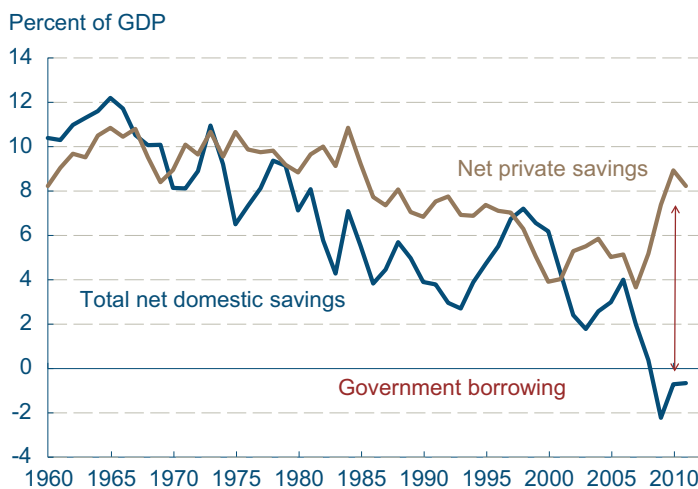
Source: Bureau of Economic Analysis.

Government budget deficits affect economic growth because they reduce the amount of private domestic and foreign savings available to support private investment. We outline the process here as a step-by-step progression, but the events that we describe unfold simultaneously: When a government issues debt to domestic households, businesses, and banks, it diminishes the amount of private savings available to finance private investment. Real—or inflation-adjusted—interest rates rise and might coax individuals to save a bit more, but, on balance, higher real interest rates will discourage businesses from investing in capital goods, which are crucial for economic growth. As domestic interest rates increase above interest rates elsewhere in the world, foreigners will likely channel more of their savings into the high-debt-burden country. This financial inflow will tend to mitigate the upward pressure on domestic interest rates. It will allow domestic investment to exceed domestic savings—the level that investment would obtain in the absence of globalized financial markets.

Still, while foreign financial flows might ease upward pressures on domestic interest rates, they come with other consequences. For one thing, the inflow of foreign funds will encourage an appreciation of the high-debt-burden country's currency. So while lower interest rates might encourage some investment in interest-sensitive sectors of the economy, a currency appreciation might place domestic businesses that compete in global markets at a competitive disadvantage. One sector gains while another loses. In addition, foreign savings are not free. Even if the inflow of foreign funds were to completely offset the domestic-interest-rate rise, the foreign savings must eventually be repaid with interest. While economic growth might rise, the consumption that is enjoyed from that growth will be lessened by the amount that must be repaid to the rest of the world.

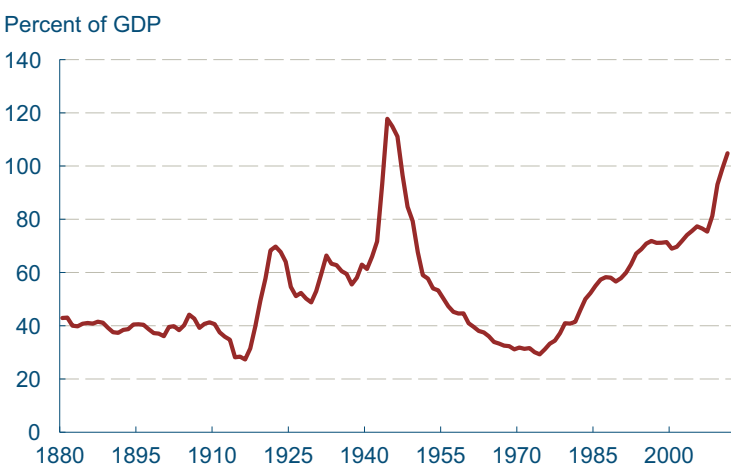
In the current environment, however, this global, debt-finance stop-gap might not work so smoothly. With advanced economies around the globe competing for domestic and foreign savings to finance their public debts, foreign financial inflows are likely to require substantially higher interest rate differentials to cross borders. Smaller financial

Net Savings



Source: Bureau of Economic Analysis.

Public Debt Levels in Advanced Economies



Note: GDP is calculated using a weighted average of 2011 U.S. dollars.
Source: IMF World Economic Outlook, October 2012.

inflows at high interest rates spell less domestic investment. Likewise, they are likely to initiate bigger exchange-rate movements.

The anticipated high public-debt burdens could also complicate central-bank efforts to reduce their balance sheets. High interest rates raise the costs of funding public debt. Their impact on government debt burdens can become profound if crowding out simultaneously slows economic growth. Under such circumstances, governments, intent on financing their debts at low costs, might exert pressures on central banks to keep monetary policy relatively easy. Inflation would then rise. The beneficial budget impacts, however, would only be transient because savvy financial markets would quickly demand interest rates to compensate for higher anticipated inflation. Nominal interest rates would eventually rise, leaving the real interest cost of financing the debt unchanged.

The IMF, like many economists, views the advanced world's fiscal prospects as "sobering." To be sure, countries—including the United States—have reduced heavy debt burdens successfully in the past. They did so by shifting the noninterest portions of their budgets to surpluses while maintaining relatively strong economic growth. Repeating such efforts while coming off of the worse economic collapse since the 1930s and facing adverse demographic trends does seem sobering—to say the least.

The Evolution of the FOMC's Economic Projections in 2012

10.30.12

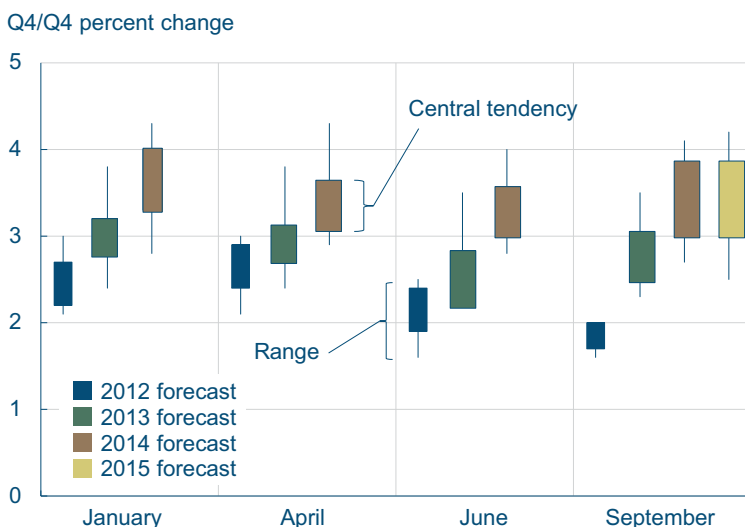
by William Bednar and John Carlson

Along with the September meeting statement, the Federal Open Market Committee (FOMC) also released its updated projections for key economic indicators. This is the fourth set of projections released this year, and by comparing the projections in each of the releases, we can gain an understanding of how FOMC participants' forecasts for both the near and long-term have changed over the past nine months. The next set of FOMC projections will be released after the December meeting, and beginning in 2013 projections will be released in the third month of every quarter.

The projections include expectations for GDP growth, unemployment, and inflation for the next few years as well as for the longer term. Beginning in January of 2012, each participant's projected path for monetary policy has also been included in order to provide some additional transparency around the FOMC's decision making. Projections are based on information available at the time the projections are released and each participant's assumptions about which factors affect movements in the variables. The data released for each projected variable include the range, which gives the highest and lowest values of all the forecasts submitted, as well as the central tendency, a measure that omits the three highest and lowest projections and provides a better general idea of the range for the majority of the policymakers' forecasts.

The forecast for real GDP growth is measured as the four-quarter percentage change in real GDP for the last quarter of each year presented. In September, projections for real GDP growth for 2012 had a central tendency of 1.7 percent to 2.0 percent, compared with 1.9 percent to 2.4 percent in the June forecasts, and 2.2 percent to 2.7 percent back in January. The outlook for next year is less optimistic than it was earlier in the year, as the central tendency of the projections for 2013 has come down from 2.8 percent to 3.2 percent in January to 2.5 percent to 3.0 percent in September.

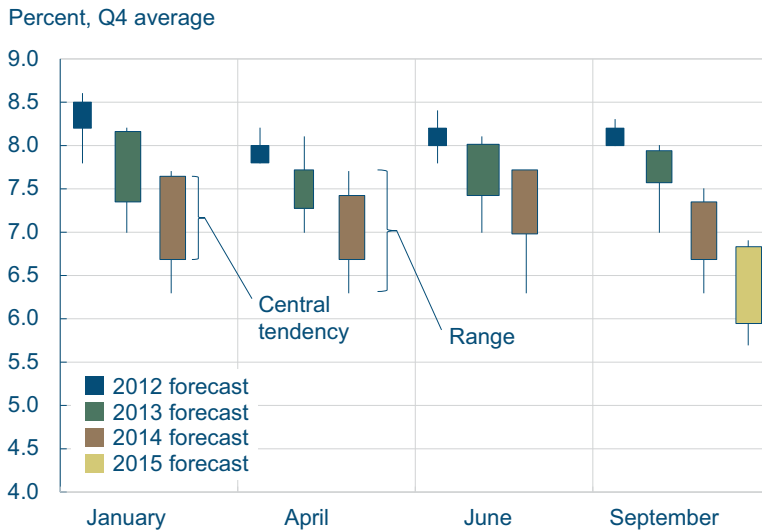
FOMC Projections: Real GDP



Source: Federal Reserve Board.

Forecasts for the 2012 unemployment rate, which is measured as the average unemployment rate for the fourth quarter, had a central tendency in September of 8.0 percent to 8.2 percent. These projections have slightly improved since January, when the central tendency was 8.2 percent to 8.5 percent. Participants' projections in September for the unemployment rate at the end of 2013 were generally in the range of 7.6 percent to 7.9 percent, which is similar to the central tendency in June and also January, but with a narrower range.

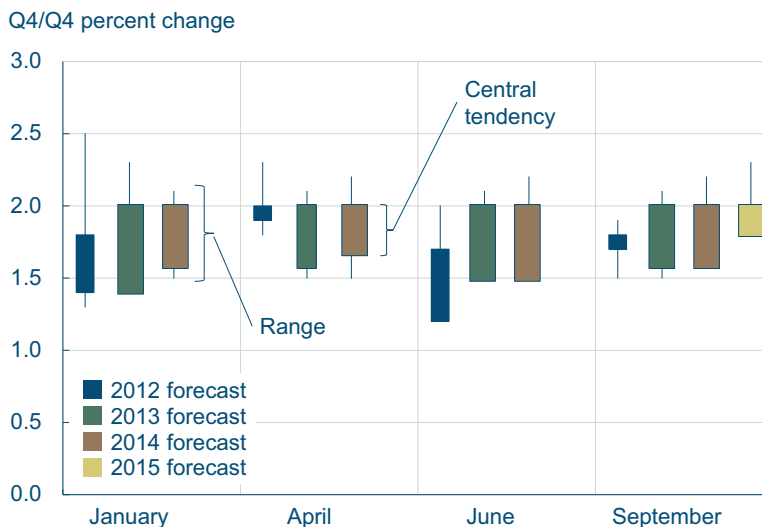
FOMC Projections: Unemployment Rate



Source: Federal Reserve Board.

The projections for inflation, measured as the four-quarter percentage change in PCE prices, have generally stayed within a range of 1.5 percent to 2.0 percent in both the next few years and the longer term. Since these projections assume appropriate monetary policy, it would be expected that the inflation forecast would move toward 2.0 percent over time, given that it is the current inflation target. This expectation seems to be generally represented in these projections. However, the near-term projection for the end of 2012 did vary quite a bit across the projection releases, reflecting in part the volatility of oil prices. The central tendency was at 1.4 percent to 1.8 percent in January, 1.9 percent to 2.0 percent in April, and 1.2 percent to 1.7 percent in June, and 1.7 percent to 1.8 percent in September.

FOMC Projections: PCE Inflation



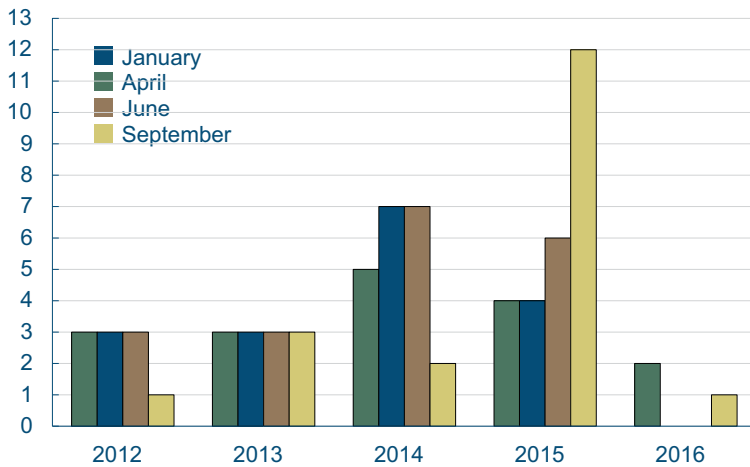
Source: Federal Reserve Board.

The Committee's longer-term projections are generally the values to which each FOMC participant expects the indicators to converge over an extended period of time, absent any unanticipated shocks to the economy. The range of longer-term projections remained pretty consistent across projection releases, with only some small deviations. One notable change was an expansion of the full range of long-term unemployment expectations, which widened from 5.0 percent to 6.0 percent in January to 5.0 percent to 6.3 percent in September.

Since the beginning of this year, FOMC participants have also submitted their expectations for the optimal path of future monetary policy given their projections of the other economic indicators. Specifically, they release their forecasts of the appropriate level of the target federal funds rate for the next few years and the long run, as well as their

FOMC Projections: Timing of Policy Firming

Number of participants



Source: Federal Reserve Board.

projections for the likely timing of the first increase in the target rate given their view of the economy. The participants' projections of the timing of policy firming have shifted throughout the course of the year. While a majority of participants expected that rates would need to be increased sometime in 2014 in the January, April, and June releases, most now expect that this should happen sometime in 2015 instead. This change coincides with the language in the most recent FOMC statement, which said that "exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015."

Yield Curve and Predicted GDP Growth, October 2012

Covering September 26, 2012–October 26, 2012
by Joseph G. Haubrich and Patricia Waiwood

Overview of the Latest Yield Curve Figures

Over the past month, the yield curve has gotten imperceptibly flatter, as both long and short rates crept down, nearly in parallel. The three-month Treasury bill fell back to 0.1 percent (for the week ending October 19), just down from September’s 0.11 percent and level with 0.10 percent seen in August. The ten-year rate dropped by a whopping 2 basis points, coming in at 1.79 percent, down from September’s 1.81 percent, but still a bit above August’s 1.76 percent. The twist decrease the slope to 169 basis points, a hair below September’s 170 basis points, but just a bit above August’s 166 basis points.

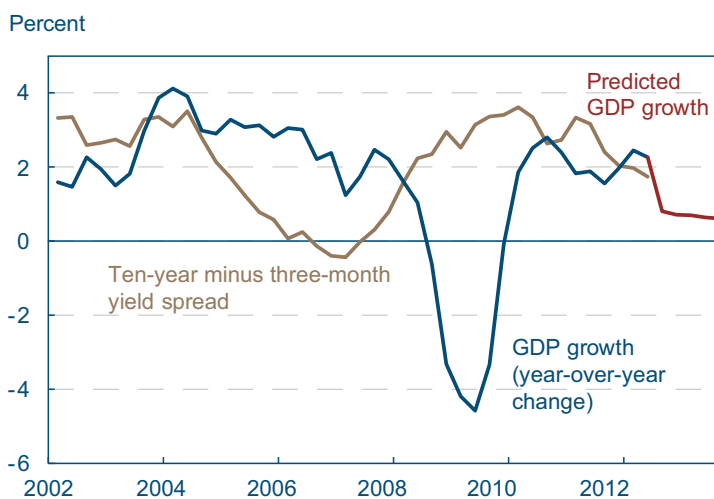
The steeper slope was not enough to have an appreciable change in projected future growth, however. Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 0.6 percent rate over the next year, even with both August and September. The strong influence 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 barely flatter slope did not lead to much of a change on the recession front, and you wouldn’t expect it to. 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 October is 8.2 percent, up just a bit from the September probability of 8.1 percent, down from August’s 8.5 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.

Highlights

	October	September	August
3-month Treasury bill rate (percent)	0.10	0.11	0.10
10-year Treasury bond rate (percent)	1.79	1.86	1.76
Yield curve slope (basis points)	169	170	166
Prediction for GDP growth (percent)	0.6	0.6	0.6
Probability of recession in 1 year (percent)	8.2	8.1	8.5

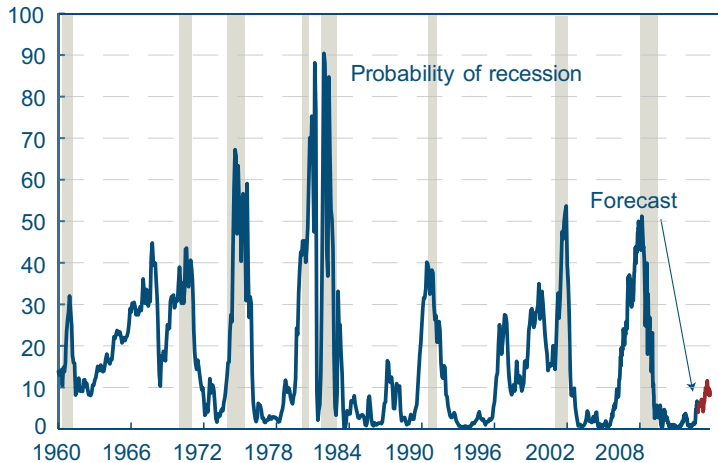
Yield Curve Predicted GDP Growth



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.

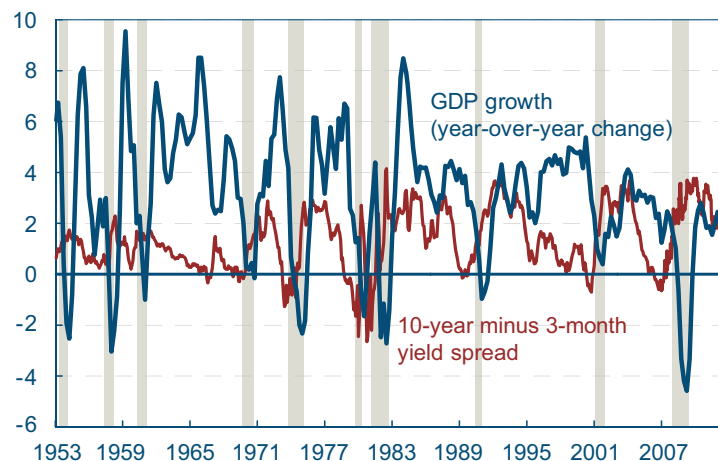
Predicting the Probability of Recession

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-

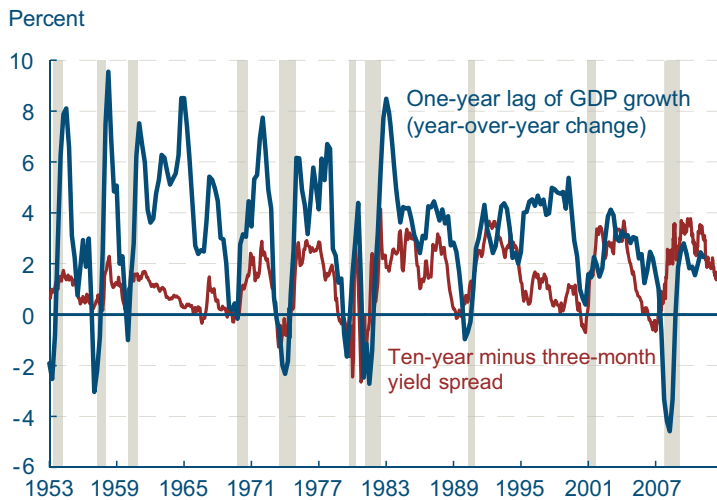
Yield Curve Spread and Real GDP Growth

Percent



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

Yield Spread and Lagged Real GDP Growth



Note: Shaded bars indicate recessions.

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.

Is the Housing Recovery Finally on a Solid Foundation?

10.30.2012

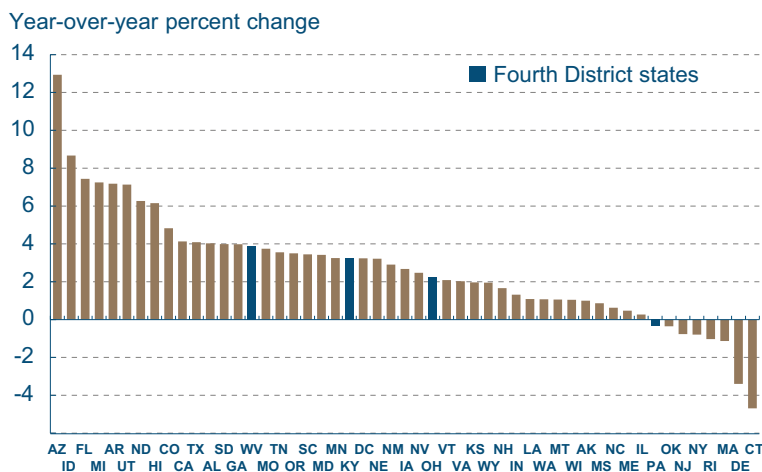
by Stephan Whitaker and Christopher Vecchio

After three years of temporary upturns and recurrent declines, housing prices appear to have finally entered a sustainable recovery. Nationally, home prices are up in year-over-year terms as measured by several indexes. The price increases are observed in most states, and they are generally larger in states that have also had above-average employment growth. The unprecedented accumulations of distressed properties appear to have peaked, so their downward pressure on housing markets should decline in the coming months.

Four national indexes of home prices have all increased in their most recent releases relative to a year ago. The National Association of Realtors' median sales price for homes sold in August 2012 was 9.46 percent higher than the median in August 2011. CoreLogic's house-price index was up 4.5 percent over the previous year in its August estimate. The Federal Housing Finance Agency's (FHFA) house-price index (seasonally adjusted, purchases only) was up 3.71 percent over the 12 months through July 2012. Finally, the closely watched Case-Shiller Composite 20 index was also up 2 percent through August.

If home-price appreciation were limited to a few large states such as Florida and California, it would be much less promising with regards to accelerating economic growth nationally. Fortunately, when we look at indexes that are available for smaller geographies, we find widespread appreciation. The FHFA house-price index was up in 42 states in the second quarter relative to a year before. Pennsylvania had a small decline in house prices, as did six other northeastern states and Oklahoma. Kentucky, Ohio, and West Virginia displayed price increases in the middle of the distribution, between 2 percent and 4 percent. Only Arizona posted an unusually high appreciation rate of approximately 13 percent. However, Arizona's contribution was not masking stagnation or declines in other regions.

FHFA House Price Index



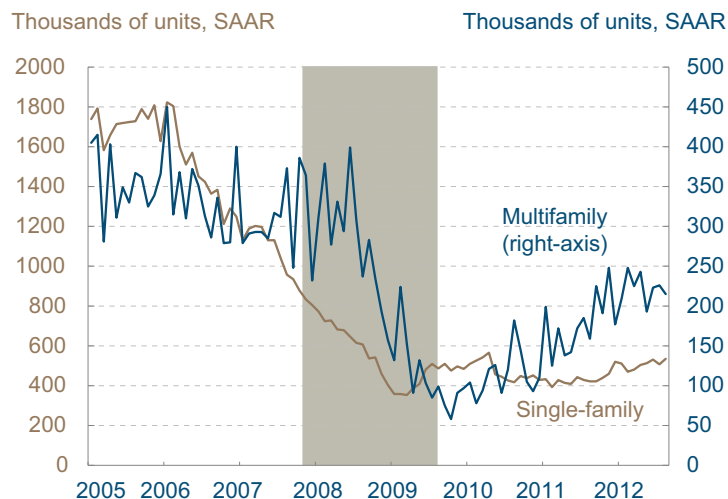
Source: Federal Housing Finance Agency.

Percent Change in House Prices, 2011:Q2–2012:Q2



Sources: Bureau of Labor Statistics; Federal Housing Finance Agency.

Housing Starts



Notes: SAAR means seasonally adjusted annual rate. Shaded bar indicates a recession.

Source: Census Bureau.

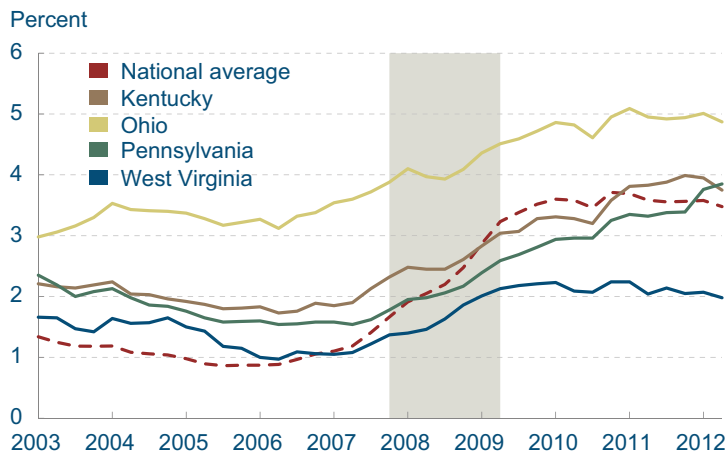
Interest in the recovery of housing is bolstered by its positive reinforcing relationships with employment. Between the second quarter of 2011 and the second quarter of this year, the states that experienced larger gains in employment generally experienced larger increases in their house-price indexes. The positive relationship can be connected in two ways. Growing employment gives households the ability and confidence to invest in homes. Also, housing demand drives demand for labor in fields including construction, remodeling, furnishing and fixtures retail, and lending services. The observed connection between employment and house prices suggests that the price appreciation is supported by households' ability to pay.

A direct link between housing markets and employment is found in the construction of new homes. When home prices are rising, more households will find new homes to be a viable alternative to existing homes. Starts of single-family homes have increased 27 percent over the previous year, and multifamily housing starts are up 35 percent.

Another crucial point in making the case that the housing recovery is really underway is that the tide of distressed properties is starting to recede. The Mortgage Bankers Association compiles and reports the percentage of mortgages outstanding that are in the foreclosure process, meaning a foreclosure has been filed with the courts, but the home has not yet been auctioned at a sheriff's sale. This percentage began rising before the recession and continued until the robo-signing lawsuits created a pause. A catch-up increase can be seen in the trend line for the second half of 2010, and the foreclosure inventories were steady through 2011. In Kentucky, Ohio, and West Virginia, the growth of the inventory slowed and turned negative in 2012. Only Pennsylvania is bucking the national trend with continued growth in its foreclosure inventory.

With a lag, the decline in foreclosures will lead to a decline in the supply of discounted properties on the market. Taking a step back in the process, we can look at the mortgages that are delinquent by 60 to 89 days, or more than 90 days. These series also

Mortgage Foreclosure Inventory

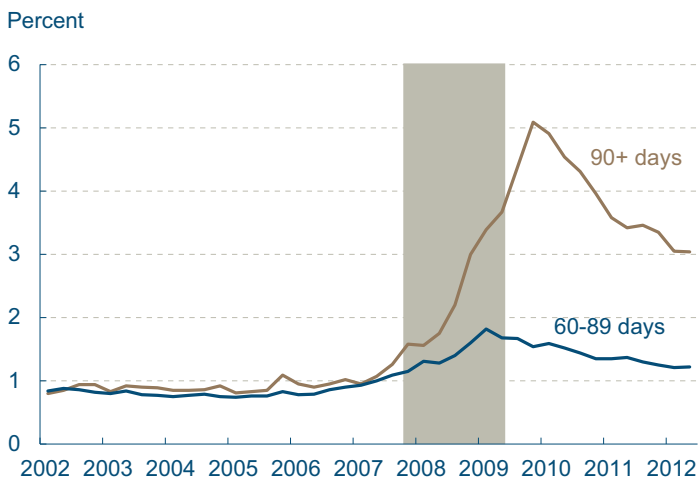


Note: Shaded bar indicates a recession.
Source: Mortgage Bankers Association.

display a steady decline, which, again with a lag, will draw down the flow of homes into foreclosure and bank-owned inventories.

In summary, the increase in house prices is evident in multiple measures and across most of the nation. The price increases are improving along with other critical economic measures, such as employment growth. As foreclosed homes' downward pressure eases, the housing recovery should be able to take hold and become a contributing sector, rather than a drag on the broader economic recovery.

Delinquent Mortgage Inventory



Note: Shaded bar indicates a recession.
Source: Mortgage Bankers Association.

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ISSN 0748-2922

