

# Economic Trends

October 2010 (September 10, 2010-October 14, 2010)

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FEDERAL RESERVE BANK  
*of* CLEVELAND

## Federal Home Loan Banks: The Housing GSE That Didn't Bark in the Night?

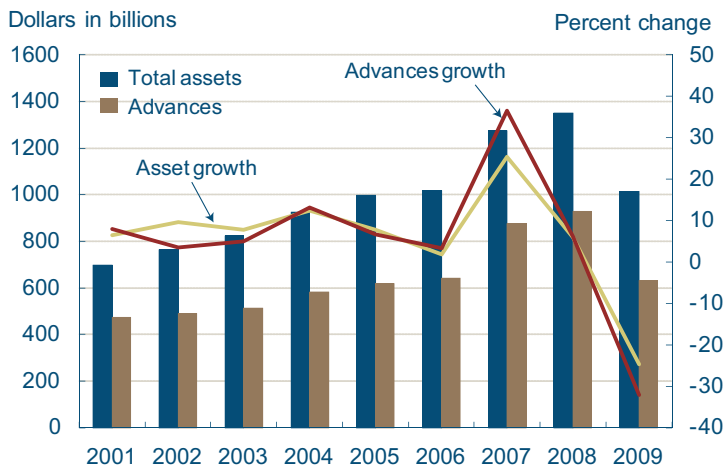
09.23.10

by James B. Thomson and Matthew Koepke

From the onset of the financial crisis to today, Fannie Mae and Freddie Mac have frequented the financial headlines. Since these two housing-related government sponsored enterprises (GSEs) were taken into conservatorship by the U.S. Treasury on September 7, 2008, they have required \$148 billion in taxpayer funds to cover the losses they incurred. Recent statements by the acting director of the Federal Housing Finance Agency suggest that the final bill to the U.S. taxpayer to resolve the insolvencies of Fannie and Freddie could exceed \$400 billion.

However, the Federal Home Loan Bank system, another housing GSE, has fared somewhat better during the financial crisis. Created as part of Depression-era reforms to the financial system, the 12 Federal Home Loan Banks provide liquidity and funding to the housing and small business loan markets primarily through loans known as advances. Advances are generally secured by housing-related assets and the small-business-loan portfolios of their member institutions and qualified nonmember housing agencies. Federal Home Loan Bank advances can carry a fixed or variable interest rate and range in maturity from overnight to 30 years. During the market turmoil in 2007 and 2008, advances from the Federal Home Loan Banks served as an important source of funds for depository institutions.

### Federal Home Loan Bank: Assets and Advances

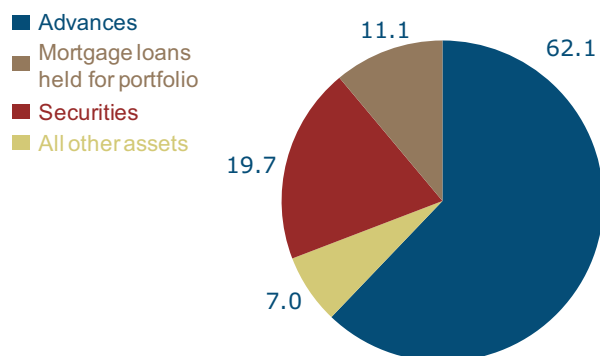


Source: "Federal Home Loan Bank System Annual Reports," 2000-2009.

From 2001 to 2005, the consolidated assets of the Federal Home Loan Banks increased on average 8.8 percent per year before they leveled off in 2006. This asset growth was driven by strong demand for Federal Home Bank advances, which grew at a rate of 7.3 percent over the period and accounted for 62.1 percent of Federal Home Loan Bank assets in 2009. As the financial crisis began to unfold in the summer of 2007, the volume of lending by the Federal Home Loan Banks took off, growing from just under \$641 billion at the end of 2006 to \$875

## Federal Home Loan Bank: Assets

Percent of total assets (2009)



Source: "Federal Home Loan Bank System Annual Reports", 2000-2009.

billion—an increase of approximately 38 percent. Advances accounted for most the growth in total assets for the Home Loan Banks in 2007—more than \$23 billion of almost \$26 billion. As financial markets returned to normalcy in 2008, both advances and total assets grew at around a 6.0 percent. They then declined sharply in 2009, and by the end of the year, total assets and advances outstanding had returned to 2006 pre-crisis levels. The decline was driven by a slowdown in advances; they fell 32 percent from 2008 to 2009.

Unlike Fannie Mae and Freddie Mac, the Federal Home Loan Banks hold less than 27 percent of their asset portfolio in the form of mortgages and mortgage-backed securities. The bulk of Federal Home Loan Bank assets consist of advances, which are secured by the collateral pledged against them and by a general lien, known as super lien authority, on all of the assets of the borrower. Consequently, the Home Loan Banks have faced noticeably less severe asset quality problems and credit losses than Fannie Mae and Freddie Mac.

The majority of funding for the Federal Home Loan Banks comes from the issuance of bonds known as consolidated obligations. The term consolidated obligations refers to the fact that when an individual Home Loan Bank issues debt, that debt is a joint obligation of the 12 Federal Home Loan Banks. In other words, consolidated obligations, irrespective of which Home Loan Bank issues them, are the collective liability of all of the Home Loan Banks. This feature of the debt reduces the risk associated with the default of any individual Home Loan Bank and contributes to the perception that the liabilities of the Federal Home Loan Banks have tacit government backing.

The rapid expansion of advances from 2007 to 2008 was financed with consolidated obligations, which grew more than 26 percent in 2007 and nearly 7 percent in 2008. Growth in total liabilities followed essentially the same pattern as consolidated obligations; however, over the same period, Federal Home Loan Bank capital grew at slightly lower rates. The inability of the Federal Home Loan Banks to accumulate capital as fast as their balance sheets were expanding in 2007 and 2008 put

## Federal Home Loan Bank: Liabilities

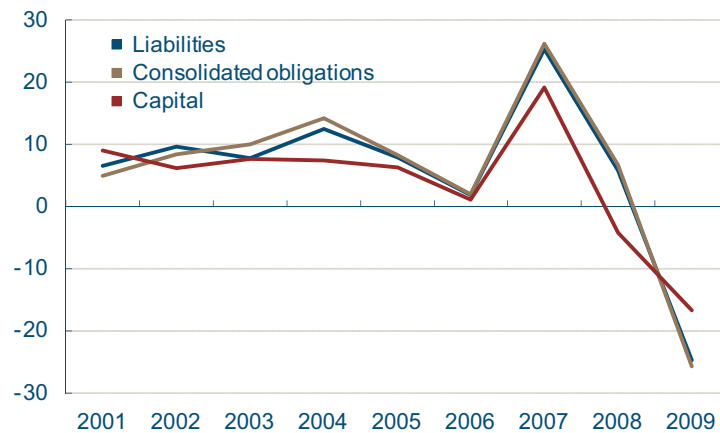
Dollars in billions



Source: "Federal Home Loan Bank System Annual Reports," 2000-2009.

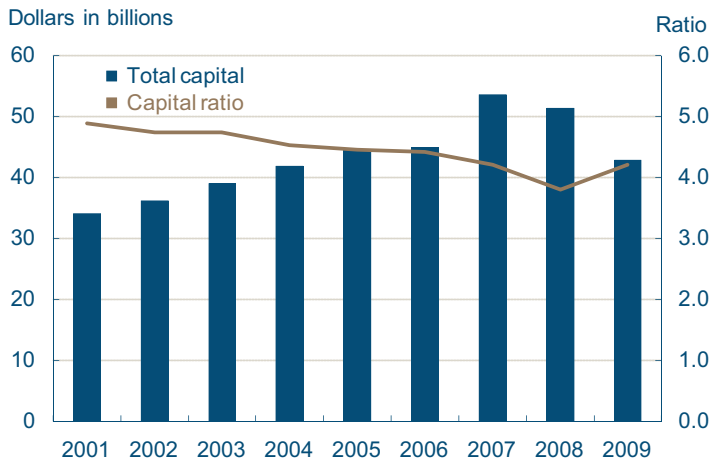
## Federal Home Loan Bank: Growth in Liabilities

Annual percent change



Source: "Federal Home Loan Bank System Annual Reports," 2000-2009.

## Federal Home Loan Bank: Capital Adequacy



Source: "Federal Home Loan Bank System Annual Reports," 2000-2009.

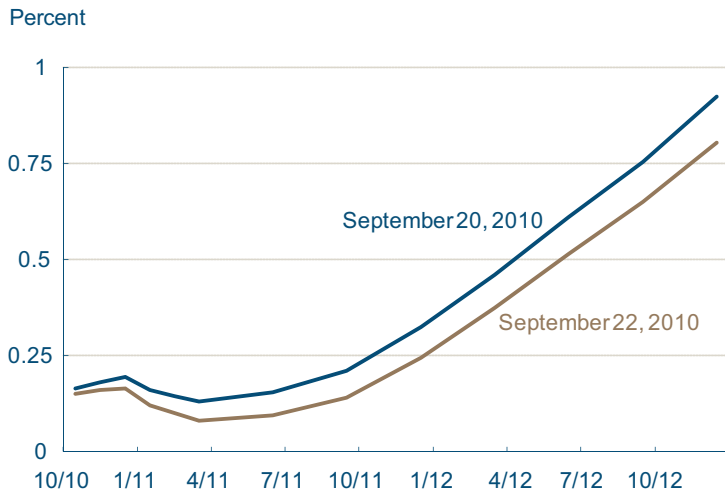
downward pressure on the system's capital ratio, which dropped from 4.4 percent at the end of 2006 to 3.8 percent at the end 2008. A capital ratio below 4 percent falls below the threshold of core capital to assets that a commercial bank is required to hold under current capital adequacy rules in the United States. The ratio rose above the threshold again in 2009 (to 4.2 percent), even though the level of capital fell nearly 17 percent, because the shrinkage in the system's balance sheet was large enough to offset the loss.

# FOMC Keeps It Steady Ahead

09.27.10

by Ben Craig and Matthew Koepke

## Eurodollar Forward Rate Curve



Source: Bloomberg.

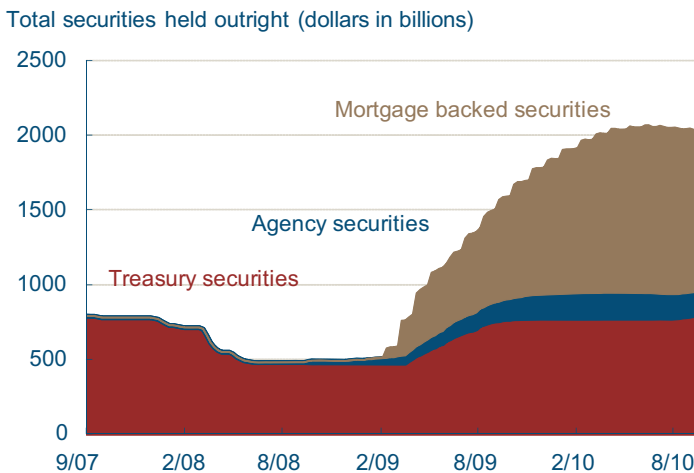
On September 21, the Federal Open Market Committee (FOMC) reaffirmed its commitment to keep the Federal Funds rate within the range 0 to 1/4 percent, as the economy continues with its fragile recovery. Though the National Bureau of Economic Research declared that the recession ended in June of 2009, the recovery has been hampered by pervasive unemployment and soft income growth. Moreover, as the Committee noted in its statement, underlying inflation is below the level it deems necessary, in the long term, to fulfill its mandate of maximum employment and price stability.

The market anticipated that the FOMC would maintain exceptionally low rates for an “extended period of time,” and these expectations are clearly reflected in Eurodollar futures. Eurodollar futures are forward rate agreements that allow market participants to speculate on or hedge against movements in short-term interest rates. In the case of Eurodollar futures, investors are betting on the risk associated with short-term changes in the Libor rate. The Libor rate is most associated with the cost of borrowing U.S. dollars for private, high-quality borrowers. By examining the Eurodollar forward rate curves, it is apparent that the FOMC’s policy decision did not dramatically impact the market’s expectations for interest rates going forward.

In addition to maintaining the federal funds rate at record lows, the Fed has sought to improve market function by purchasing longer-term securities. Since August 2007, total assets on the Federal Reserve’s balance sheet have expanded from \$869 billion to nearly 2.3 trillion. The expansion in the Federal Reserve’s balance sheet is the result of purchases of agency debt, mortgage-backed securities (MBS), and longer-term treasuries.

The Federal Reserve ceased purchasing agency securities at the end of the first quarter 2010. Additionally, as a result of lower mortgage interest rates, some of the principal of the MBS and agency

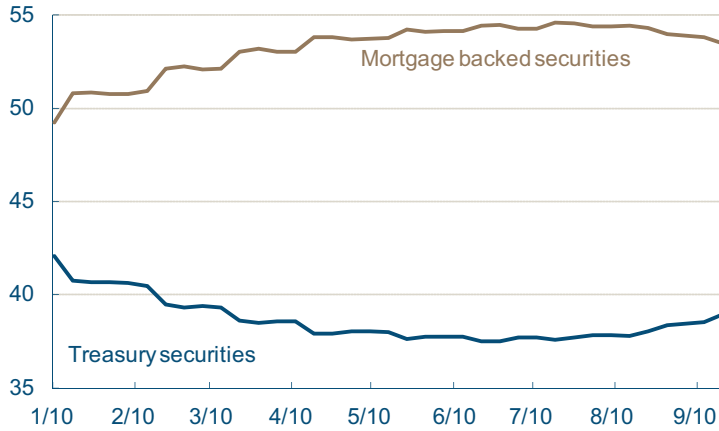
## Federal Reserve Balance Sheet



Sources: Board of Governors, Haver Analytics.

## Federal Reserve Balance Sheet

Percent of total securities held outright



Sources: Board of Governors, Haver Analytics.

securities held by the Federal Reserve had been repaid. As result, the level of agency and MBS debt on the Federal Reserve's balance sheet has declined modestly. In order to maintain an accommodative monetary policy, the Fed plans to reinvest payments of principal on agency and MBS securities into longer-term treasuries. Even with principal repayments on MBS and new purchases of long-term treasuries, MBS still account for nearly 54 percent of Federal Reserve's balance sheet.

## Recent Developments in Inflation Expectations

10.05.10

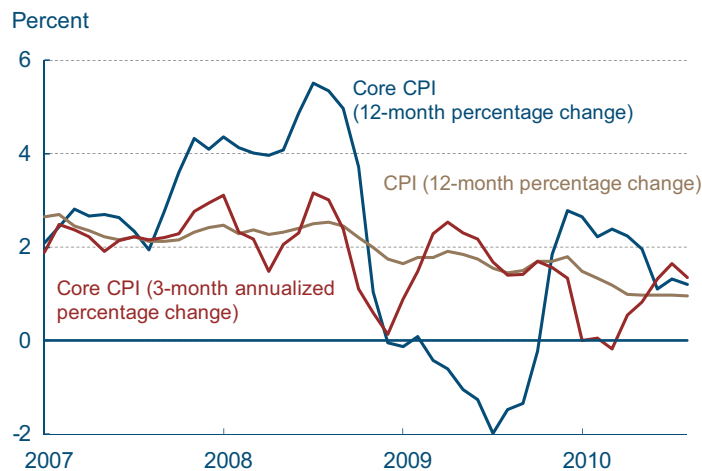
by Timothy Bianco and Mehmet Pasaogullari

A persistent downward trend in prices has created some concern about whether there will be further disinflation or even a deflation in the future. Here we review what inflation expectations foretell for the future inflation. Since people consider the future level of general prices when they set their own prices, inflation expectations reflect not only their perceptions about the future but they are also an important determinant of future inflation. In addition, there is some empirical evidence showing that the expectations are among the best predictors of future inflation.

One market-price-based measure of expected inflation is the inflation swap rate. An inflation swap is a financial instrument that allows one party to exchange a variable inflation rate for a fixed inflation rate, the swap rate, with another party. The variable rate of the swap we review here is the CPI rate. We also look at the Cleveland Fed's model-based inflation expectation measure, which utilizes the information in the term structure of nominal Treasuries that is, the distribution of yields on securities of different maturities. For further information about these measures, read Joe Haubrich's commentary. One-year inflation expectations from these measures started declining in the spring of 2010. Although there was an uptick in the Cleveland Fed's August estimate and a smaller uptick in the swap rates, they are pointing to a continued period of disinflation. As of the end of August 2010, these measures reflect an expectation of annual CPI inflation between 0.8 and 1.4 percent.

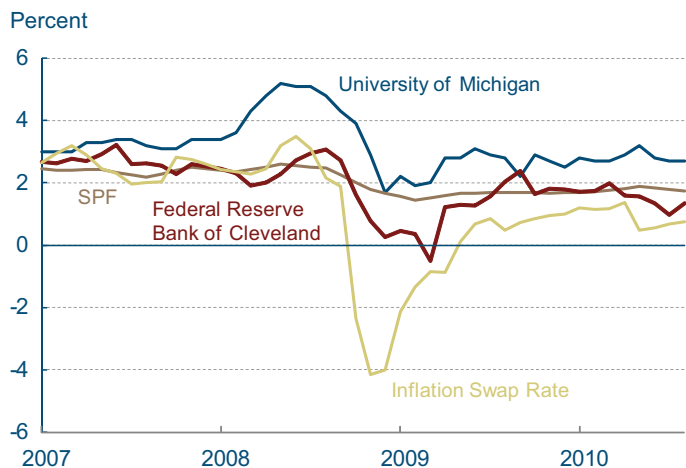
In addition to these measures, we reviewed estimates of inflation expectations derived from surveys. The first is the University of Michigan's Survey of Consumer Attitudes and Behavior (the U of M Survey, hereafter), which comes out monthly and asks consumers about the change in prices they expect over next 12 months, without specifying a consumption basket. The second measure is from the Survey of Professional Forecasters (SPF), which

### Headline CPI and Core CPI Inflation



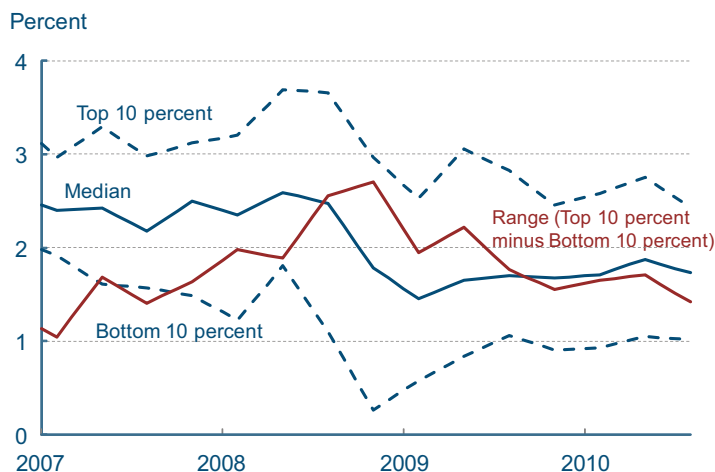
Source: Bureau of Labor Statistics.

## One-Year Inflation Expectations



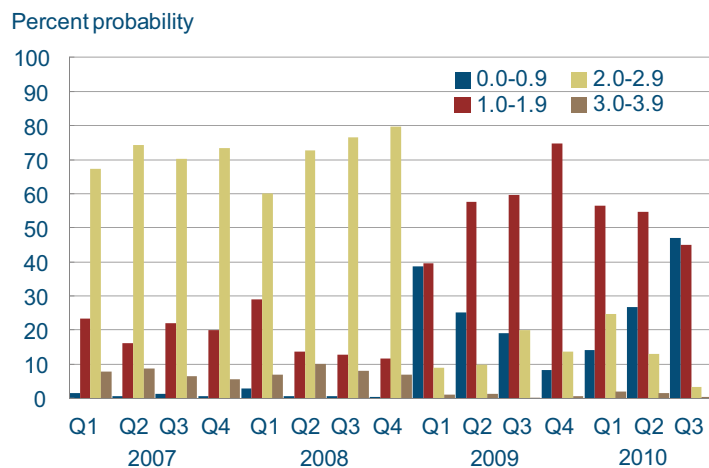
Sources: Federal Reserve Bank of Cleveland, Federal Reserve Bank of Philadelphia, Bloomberg, University of Michigan.

## SPF One-Year Expected Inflation



Source: Federal Reserve Bank of Philadelphia.

## SPF Probabilities for the Current Year CPI Inflation



Source: Federal Reserve Bank of Philadelphia.

is conducted quarterly by the Federal Reserve Bank of Philadelphia. We produce monthly figures by interpolating the quarterly figures. These survey measures have recently shown higher inflation expectations than market- and model-based measures. Further, they have been more stable this year. The median one-year inflation expectation from the U of M Survey is 2.7 percent (as of the end of August) and the one-year CPI inflation expectation from the SPF is 1.7 percent. Despite the fact that these are lower than their long-term average values, they nonetheless indicate that forecasters and consumers assign a very small likelihood of deflation next year.

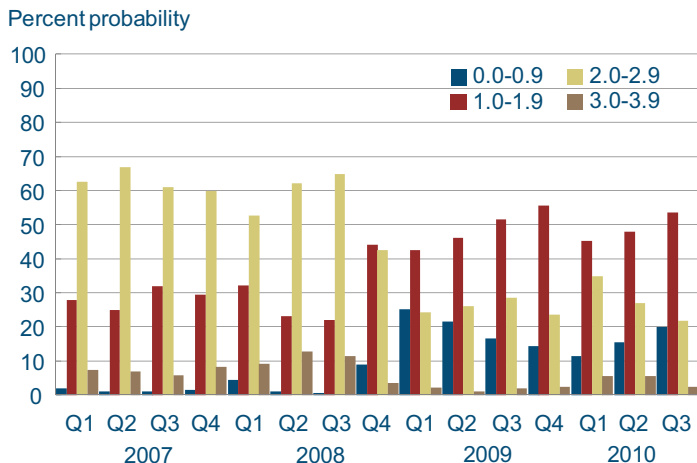
The SPF measure of one-year inflation expectations has become more uniform across the individual respondents. Furthermore, the lowest individual response for the one-year inflation expectation is 0.5 percent, indicating that none of the individual forecasters expects deflation by the third quarter of 2011.

In addition to asking forecasters for their individual inflation forecasts for different periods, in 2007 the SPF started asking them to assign probabilities to different ranges of inflation. In particular, SPF asks forecasters how likely they think it is that the annual core CPI inflation will be in a particular range in the fourth quarter of the current year and the next year. Their responses show that the average probabilities assigned to the lower ranges of 0.0–0.9 percent and 1.0–1.9 percent for the CPI inflation rate have increased in the last two quarters. The average probabilities obtained in the third-quarter survey for those two ranges for the current year are, for example, 47 percent and 45 percent, respectively.

Similarly, the average probabilities for those ranges for the annual core CPI for the fourth quarter of 2011 have increased throughout 2010. They reached 74 percent together in the third quarter. However, the average probability of the upper half of the 0.0-1.9 percent range is considered as almost two times more likely than the lower half of the range. In addition, although not shown in the chart below, the average deflation probability is 2 percent for this period.

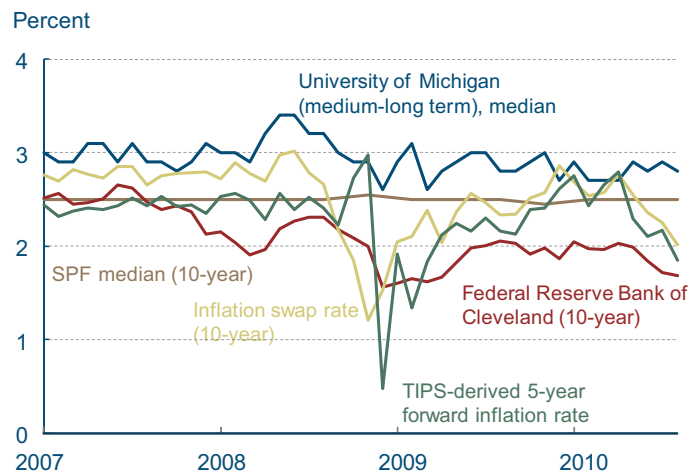


## SPF Probabilities for the Current Year CPI Inflation



Source: Federal Reserve Bank of Philadelphia.

## Long-Term Inflation Expectations



Source: Federal Reserve Bank of Cleveland, Federal Reserve Bank of Philadelphia, Bloomberg, University of Michigan, Federal Reserve Board.

What about long-term inflation expectations? Like short-term expectations, the market- and model-based figures are more volatile than survey-based expectations. They have been declining since April. For example, the five-year breakeven inflation rate declined from 2 percent to 1.2 percent, five-year forward breakeven inflation rate (computed from the five- and 10-year TIPS and nominal Treasuries) declined from 2.8 percent to 1.9 percent between the end of April and August 2010, and the 10-year expectations from Cleveland Fed model declined by 0.3 percent to 1.7 percent in the same period. On the other hand, the 10-year CPI inflation expectation from the SPF survey stayed at 2.5 percent in the same period. However, although not shown in the chart below, the market-based measures of inflation expectations have been steadily increasing since the end of August. For example, the 10-year inflation swap rate increased by 0.2 percent to 2.3 percent, and the five-year forward rate increased by more than 0.4 percent.

Overall, short-term inflation expectations have been lower than their long-term average values. However, they still do not reflect a significant short-term deflation risk. Market-based measures of long-term inflation expectations declined up through the end of August, but they have increased since. Long-term inflation expectations derived from surveys, meanwhile, have been more stable over the year.

For more information on Cleveland Fed estimates of inflation expectations, visit [http://www.clevelandfed.org/Research/data/inflation\\_expectations/index.cfm](http://www.clevelandfed.org/Research/data/inflation_expectations/index.cfm).

Joseph G. Haubrich "A New Approach to Gauging Inflation Expectations." *Economic Commentary*. <http://www.clevelandfed.org/research/commentary/2009/0809.cfm>.

## Job Churning in Regional Labor Markets

09.27.10

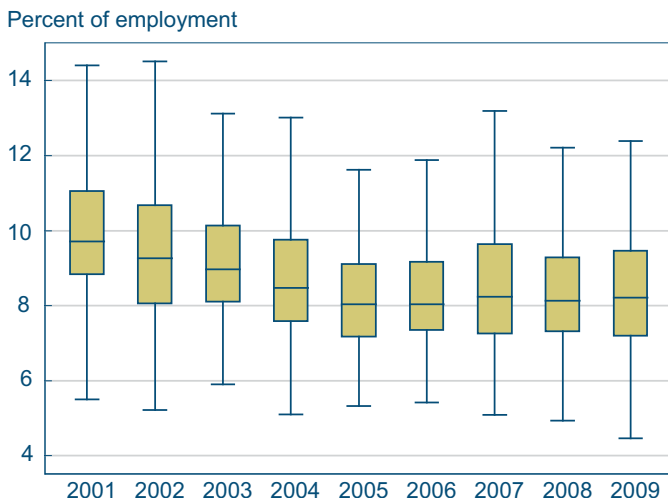
by Jayson Gerbec, Miriam Singer, and Adam Smith

A recently developed data source, the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) database, is providing new information on the dynamics of U.S. labor markets. The LEHD provides quarterly data on worker and employment flows and allows for a rich description of both worker and job turnover at relatively fine levels of geographic detail. A key feature of data on employment flows is that they show the amount of job creation and job destruction that occurs greatly exceeds the net employment change. That is, there is considerable job and worker "churning" that is hidden by reports that focus on net employment change.

The measurement of worker reallocation is important to economists for a number of reasons. In particular, unemployment rates are related to worker flows, and one key driver of worker flows is the underlying flows in jobs across employers. As employers change size, they shed and add workers, resulting in hirings and separations. As we'll show below, there has been some decline in excess reallocation in local labor markets, and this is consistent with the general trend in worker flows reported in research by the Cleveland Fed.

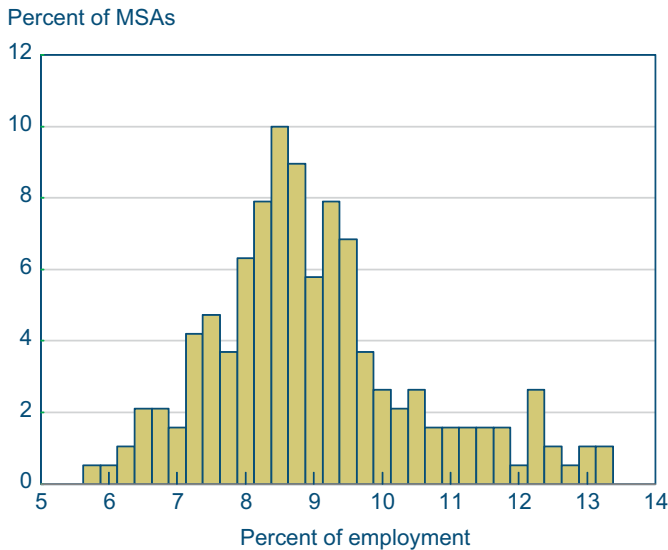
We measure the amount of job churning that has occurred in 190 of the largest metropolitan labor markets in the United States—the top quartile of U.S. labor markets with respect to size—since 2001. The measure we use is the excess job reallocation rate, which is calculated as job creation plus job destruction minus the absolute value of net employment change, all divided by the level of employment for the given time period. It reflects the amount of a metro area's employment flows that exceeds its overall employment growth. Net employment growth is often less than a percentage point annually for a location, while excess job reallocation is roughly 10 times as large.

### Excess Job Reallocation (Unweighted)



Sources: U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD); authors' calculations.

## Excess Reallocation in Metropolitan Areas



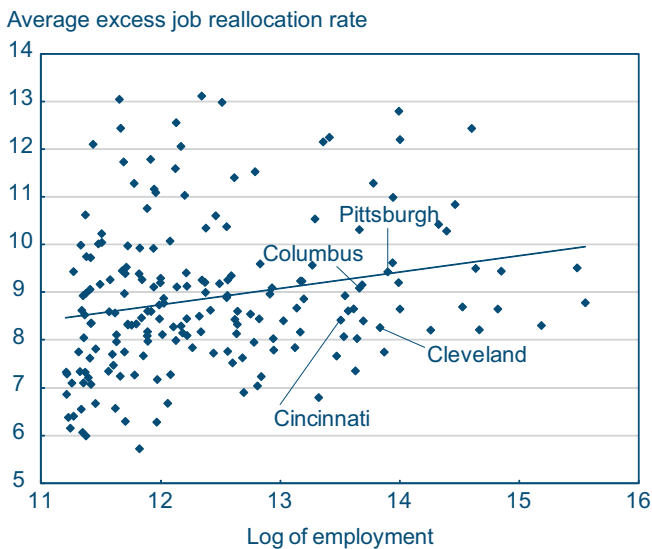
Notes: MSAs refers to metropolitan statistical areas. Averages were calculated using first-quarter rates between 2001–2009.

Sources: U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD); authors' calculations.

The figure below shows the distribution over time of excess employment flows across metropolitan areas. It shows the median, 25th and 75th percentiles, and the minimum and maximum values for the first quarter of each year from 2001 to 2009. Median excess job reallocation rates decline from 9.7 percent in 2001 to 8 percent in 2006, and then experience a slight uptick to 8.2 percent in 2009. The interquartile range is typically 2 to 2.5 percentage points with little discernible pattern either in the expansion or contraction of the range over time. However, there is considerable spread in excess reallocation rates across metropolitan areas, with some areas experiencing annual rates above 12 percent of employment and others below 6 percent.

There is also persistence in excess reallocation rates across metropolitan areas. That is, some metropolitan areas have a tendency to have higher reallocation rates while others have lower rates. The 8-year average excess job reallocation rates for the largest 190 MSAs go from a low of 5.7 percent to a high of 13.1 percent. The Fourth District's four largest MSAs (Pittsburgh, Cleveland, Cincinnati, and Columbus) have similar levels of excess job churning—they all fall within one standard deviation of the mean excess reallocation rate. Cleveland has the lowest reallocation rate of the four cities (8.3 percent), while Pittsburgh has the highest (9.6 percent).

## Reallocation and Labor Market Size



Notes: Averages were calculated using first-quarter rates between 2001–2009.

Sources: U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD); authors' calculations.

While the 190 metropolitan areas in our sample represent the largest labor markets in the nation, they differ quite a bit in size, ranging from 70,000 to 5.9 million workers. Excess reallocation is only moderately correlated with the size of the local labor market, with larger metropolitan areas having somewhat higher levels of reallocation.

What else could be behind these differences in metropolitan area reallocation rates? It is likely a combination of industry structure and firm heterogeneity. In particular, differences in both the size and age distributions of firms are likely sources of variation in the magnitude of employment flows across metropolitan areas.

For more information on how unemployment rates relate to worker flows, visit <http://www.clevelandfed.org/research/commentary/2010/2010-11.cfm>.

For more information on unemployment after the recession, visit <http://www.clevelandfed.org/research/commentary/2010/2010-11.cfm>.

## Yield Curve and Predicted GDP Growth: September 2010

Covering August 26, 2010–September 17, 2010  
by Joseph G. Haubrich and Timothy Bianco

### Overview of the Latest Yield Curve Figures

Long rates took a turn higher over the past month, adding a bit of steepness to the yield curve, as short rates stayed level. The three-month Treasury bill rate edged down to 0.15 percent from August’s (and July’s) 0.16 percent. The ten-year rate rose to 2.74 percent, up from August’s 2.61 percent, but still down from July’s 2.97. The slope rose 10 basis points to 255, up from August’s 245, down from July’s 281.

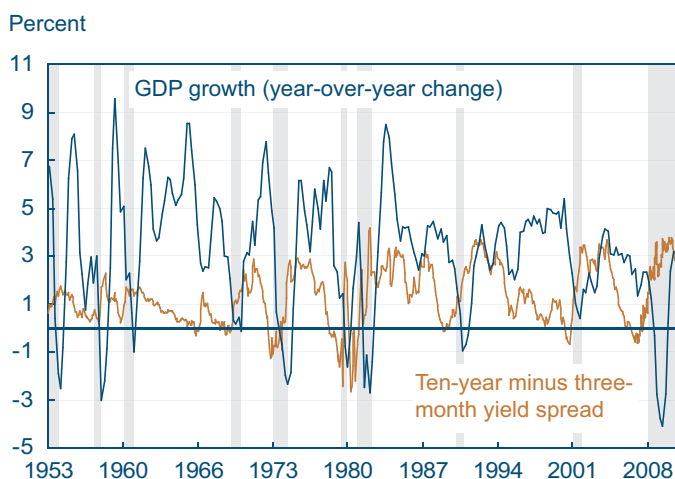
Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 1.0 percent rate over the next year, the same numbers as August and just down from July’s 1.14 percent. Although the time horizons do not match exactly, this comes in on the more pessimistic side of other forecasts, although, like them, it does show moderate growth for the year.

The NBER has declared an end to the recession, putting the trough at June 2009. Having this data has materially changed the recession probabilities coming from the model. 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 September stands at 2.9 percent, well below the August number of 18.5 percent, though the numbers are not strictly comparable. The change reflects the addition of another year of nonrecession data (as declared by the NBER), rather than any massive improvement in the economy.

### The Yield Curve as a Predictor of Economic Growth

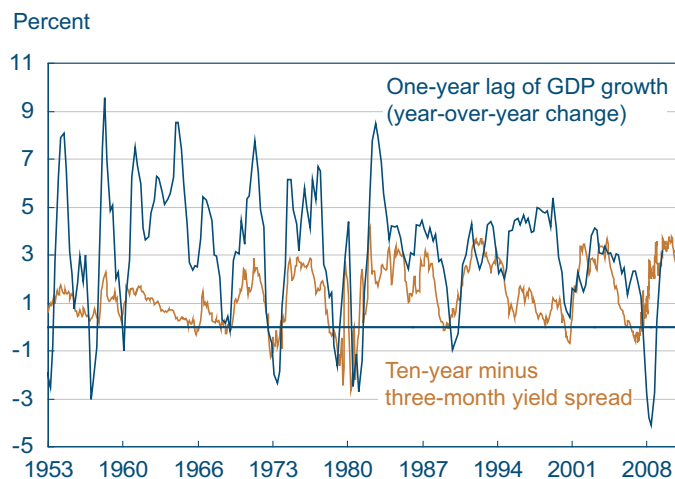
The slope of the yield curve—the difference between the yields on short- and long-term maturity bonds—has achieved some notoriety as a simple forecaster of economic growth. The rule of thumb is that an inverted yield curve (short rates above long rates) indicates a recession in about a year, and

### Yield Curve Spread and Real GDP Growth



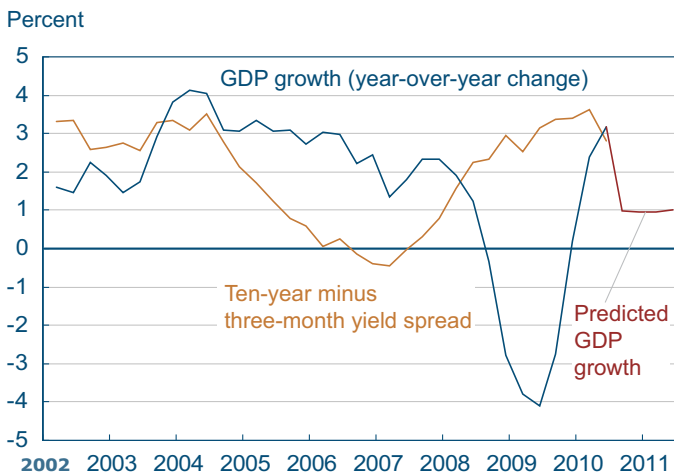
Note: Shaded bars indicate recessions.  
Source: Bureau of Economic Analysis; Federal Reserve Board.

### Yield Spread and Lagged Real GDP Growth



Source: Bureau of Economic Analysis; Federal Reserve Board.

## Yield-Curve-Predicted GDP Growth



Source: Bureau of Economic Analysis; Federal Reserve Board; authors' calculations.

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

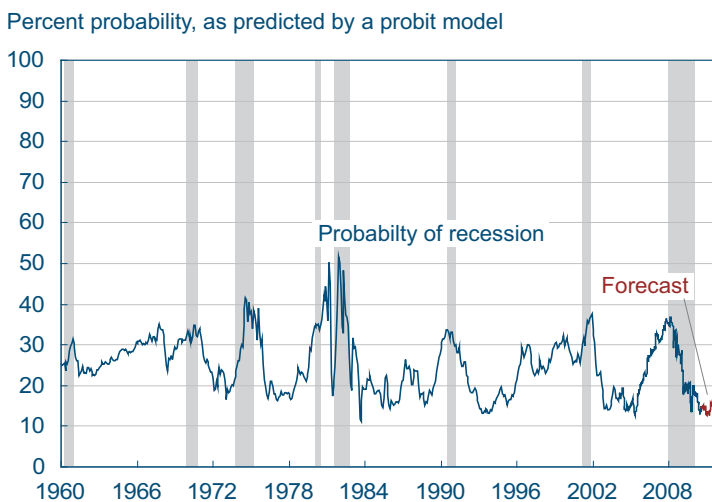
We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

## 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 number quite so literally, for two reasons. First, this probability is itself subject to error, as is the case with all statistical estimates. Second, other researchers have postulated that the underlying determinants of the yield spread today are materially different from the determinants that generated yield spreads during prior decades. 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 re

## Recession Probability from Yield Curve



Note: Shaded bars indicate recessions. Source: NBER; Federal Reserve Board; authors' calculations.

lated to using the yield curve to predict recessions, see the Commentary “Does the Yield Curve Signal Recession?” The Federal Reserve Bank of New York also maintains a website with much useful information on the topic, including its own estimate of recession probabilities.

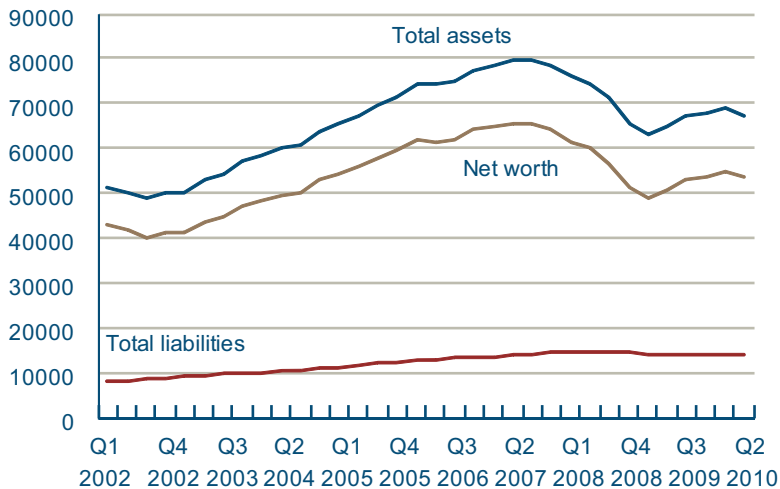
## Recent Changes in Household Net Worth

10.07.10

by Daniel Carroll

### Household Balance Sheet

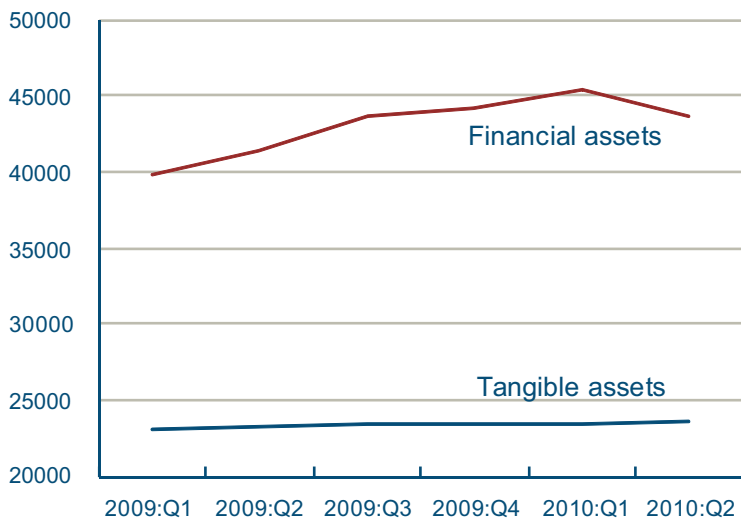
Billions of U.S. dollars



Source: Haver Analytics.

### Assets by Primary Subcategory

Billions of U.S. dollars



Source: Haver Analytics.

During the housing bubble, the nominal value of household assets grew rapidly, peaking in the third quarter of 2007 after rising 64 percent over the course of just five years. During that same time, total household liabilities grew by 66 percent. However, because liabilities were considerably smaller than total assets, households' net worth (the difference between total assets and liabilities) still grew by 63 percent. After peaking, the value of household assets fell precipitously. In the first quarter of 2009, household assets had lost 21 percent of their value from their peak. Total liabilities, on the other hand, remained relatively unchanged, causing household net worth to crash by almost 26 percent.

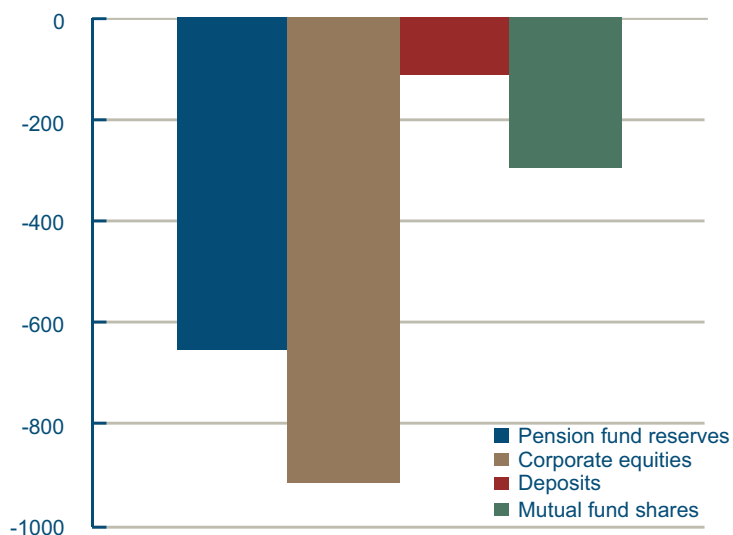
Since bottoming out in early 2009, household assets have grown again. At the same time, total liabilities have slowly declined, pulling household net worth up by 9.6 percent in the last year. In the second quarter, however, this trend changed, as both assets and net worth fell by approximately \$1.5 trillion. The decline in assets did not come from tangible assets. Both real estate and consumer durable goods, which comprise tangible assets, have been increasing steadily since the beginning of 2009. The decline in total assets was brought on instead by a very sharp decline in financial assets. This category dropped by \$1.7 trillion last quarter.

Decomposing financial assets, four of nine subcategories of financial assets declined last quarter: corporate equities, pension fund reserves, mutual fund shares, and deposits. The total loss from those four sources was \$1.97 trillion, with nearly 80 percent of the decline coming from corporate equities and pension fund reserves.

The fall in the stock market over the second quarter can account for the large movement in assets. From the beginning of April to the end of June, the S&P 500 Index fell by 7.1 percent. Since that period, the stock market has, despite some subsequent large swings, made up some of its lost ground, suggest

## Quarterly Change in Declining Components of Financial Assets

Billions of U.S. dollars

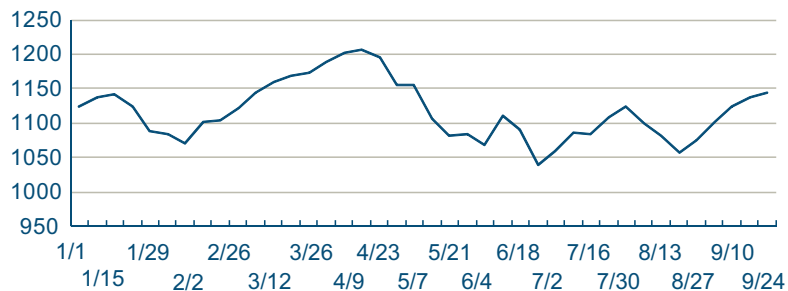


Source: Haver Analytics.

ing that household net worth will likely resume its upward trend when the third quarter balance sheet data becomes available.

## S&P 500 Weekly Average

Billions of U.S. dollars



Source: Haver Analytics.



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