

# Economic Trends

July 2010 (June 10, 2010–July 6, 2010)

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FEDERAL RESERVE BANK  
*of* CLEVELAND

## Recent Developments in Prices and Inflation Expectations

07.02.2010

by Mehmet Pasaogullari and Tim Bianco

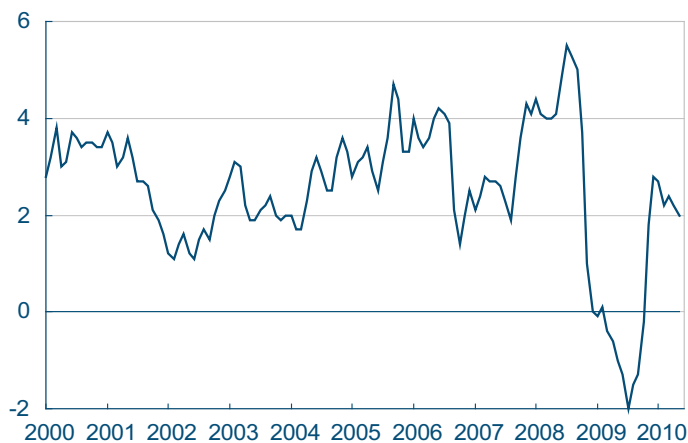
During the recent recession, the FOMC decreased the federal funds rates to a range between zero and 25 basis points. In addition, unconventional policy tools were used to provide further stimulus. As the economy recovers, there has been much interest about the strategy of exiting from this accommodative policy. Since the Fed conducts monetary policy to achieve its dual mandate of maximum sustainable employment and price stability, the exit strategy will depend on the developments in prices as well as the real economy. A look at recent developments in CPI and PPI inflation suggests we are in a period of disinflation (that is, prices are increasing at a slower rate than they were before). Short- and long-term inflation expectations reveal no significant threat of inflation is anticipated.

Headline CPI started to decline in the second half of 2008. Year-over-year CPI inflation stayed negative during most of 2009, mostly due to sharp monthly declines in the last quarter of 2008. The year-over-year rate picked up in early 2010 and was around 2 percent as of May 2010. The headline CPI measure includes volatile items such as food and energy prices, over which monetary policy has limited effect. For example, the monthly declines in the headline CPI during late 2008 arose in part from the sharp decline in energy prices.

For this reason, the Fed also pays attention to what economists call “core price indices,” which try to limit the effects of volatile items like food and energy on the indicators. Two such measures have been developed here at the Cleveland Fed (for further information about these measures, see end-note.). These measures, the trimmed-mean CPI and median CPI, as well as the CPI excluding food and energy prices, show that there has been a significant disinflation since the second half of 2008. The year-over-year inflation rates for all three measures are at or below 1 percent. Moreover, the recent trend as seen from the three-month changes of those indices also indicates a very disinflationary picture. That

### Consumer Price Index

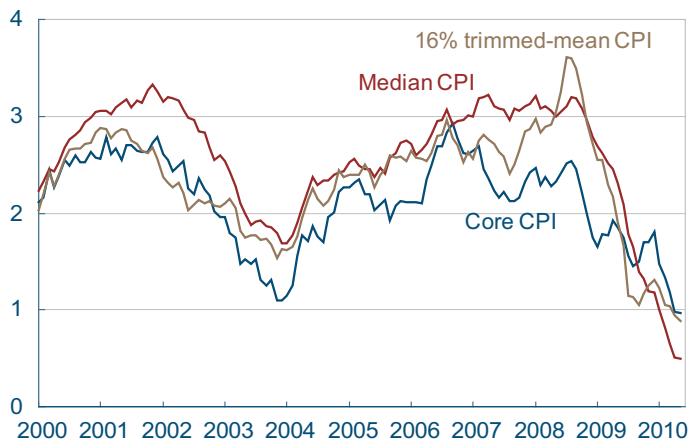
12-month percentage change



Source: Bureau of Labor Statistics.

## Consumer Price Index

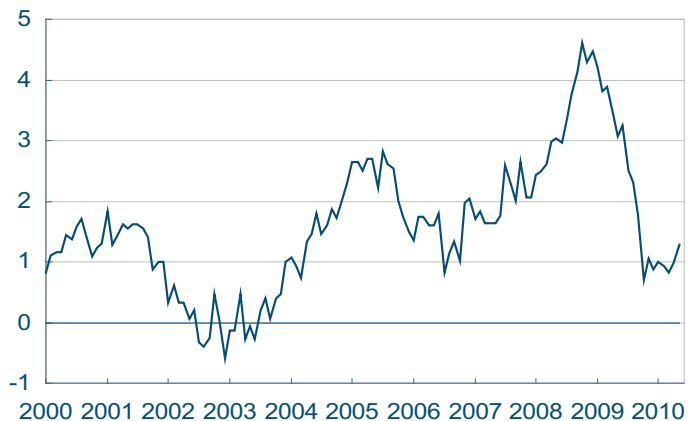
12-month percentage change



Sources: Bureau of Labor Statistics.  
Federal Reserve Bank of Cleveland.

## Producer Price Index: Finished Goods Less Food and Energy

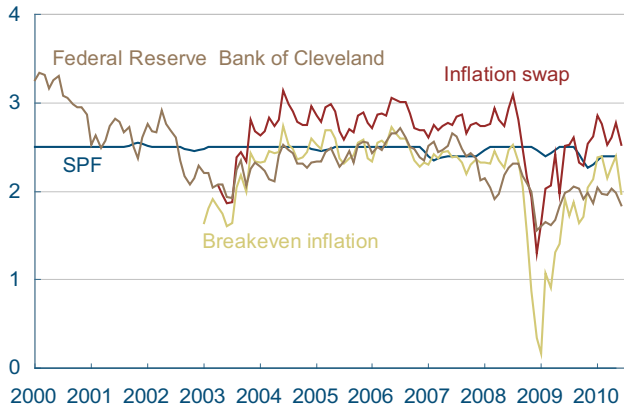
12-month percentage change



Source: Bureau of Labor Statistics.

## Ten-Year Expected Inflation

Percent



Sources: Federal Reserve Bank of Philadelphia, Federal Reserve Bank of Cleveland, Bloomberg, Federal Reserve Board.

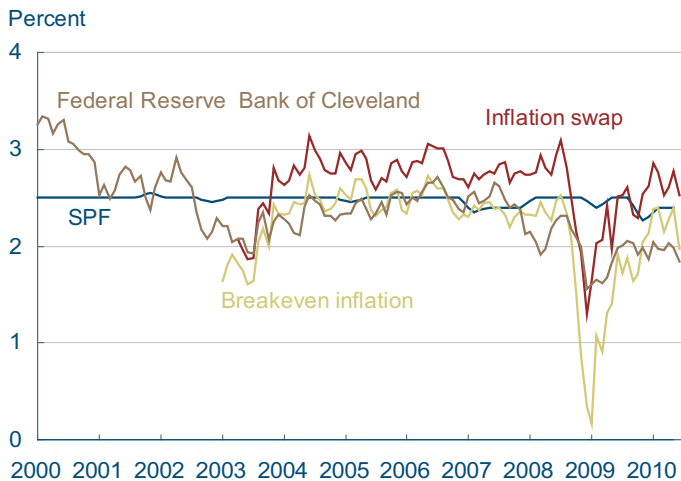
annualized rate is 0.1 percent for the median CPI, 0.3 percent for the trimmed-mean CPI and 0.8 percent for the CPI excluding food and energy.

There also seems to be a lack of inflationary pressure on producer prices. The year-over-year inflation rate for the PPI excluding food and energy prices has declined rapidly since late 2008 and hovered around 1 percent so far in 2010. Although there has been an increase in the PPI in the last two months, it still represents no significant inflationary threat. In sum, what we have seen in recent price developments can be labeled as a significant disinflation.

What about inflation expectations? Since people evaluate future general price levels when they set their own prices, inflation expectations not only reflect their perceptions about the future but also influence future inflation. Both survey-based inflation expectations and market-price-based measures give us a measure of these expectations. One commonly used survey-based measure comes from the Survey of Professional Forecasters (SPF), which is conducted quarterly by the Federal Reserve Bank of Philadelphia. We produce monthly figures for SPF inflation expectations by interpolating the quarterly figures. We report several market-price based measures. One is inflation swap rates. In an inflation swap, one counterparty exchanges a variable inflation rate for a fixed inflation rate, the swap rate, with another counterparty. For longer-term expectations we use the breakeven inflation rate, which is the spread between the yield of nominal Treasury and that of a TIPS security of the same maturity. We also use a model-based inflation expectation measure, which also utilizes the information in the term structure of nominal Treasuries in a coherent manner (for further information about these measures, read the *Economic Commentary*).

Short-term inflation expectations declined rapidly in the second half of 2008. For example, the two-year inflation swap rate became negative in November 2008 and stayed below zero until March 2009. This is most probably related to the liquidity premium, as market agents might use inflation swaps as a hedge for their TIPS-related investment strategies. TIPS breakeven rates also became

## Ten-Year Expected Inflation



Sources: Federal Reserve Bank of Philadelphia, Federal Reserve Bank of Cleveland, Bloomberg, Federal Reserve Board.

negative in this period. Nevertheless, survey-based measures such as SPF 1-year inflation expectation also declined significantly during this period. Since mid-2009, short-term inflation expectations bounced back from the very low levels. However, they still stay below two percent and signal little, if any danger for the near-term inflation.

Survey-based long-term inflation expectations seem to be much more stable than the other measures during the last few years. The market-price-based expectations, especially the breakeven inflation rate computed from TIPS and nominal Treasuries, and to some extent swap rates, experienced a significant decline shortly after the Lehman collapse. Parallel to the short-term expectation but to a lesser degree, they have bounced back since mid 2009. In recent months, these measures have hovered around 2.5 percent except for the Cleveland Fed measure, which is currently around 2 percent.

Overall, recent price movements indicate a period of disinflation, while both short-term and long-term inflation expectations point to no significant threat of rising inflation.

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For more information on U.S. inflation, please visit [http://www.clevelandfed.org/Research/data/US-Inflation/mcpi\\_qa.cfm](http://www.clevelandfed.org/Research/data/US-Inflation/mcpi_qa.cfm).

For more information on the Federal Reserve Bank of Cleveland's measures of inflation, please visit [http://www.clevelandfed.org/research/data/inflation\\_expectations/index.cfm?DCS.nav=Local](http://www.clevelandfed.org/research/data/inflation_expectations/index.cfm?DCS.nav=Local)

For more information on the Federal Reserve Bank of Cleveland's inflation measures in the Economic Commentary "A New Approach to Gauging Inflation Expectations," please visit <http://www.clevelandfed.org/research/commentary/2009/0809.cfm>.

## Market Expectations for Policy Rates

06.28.10

by John Carlson and John Lindner

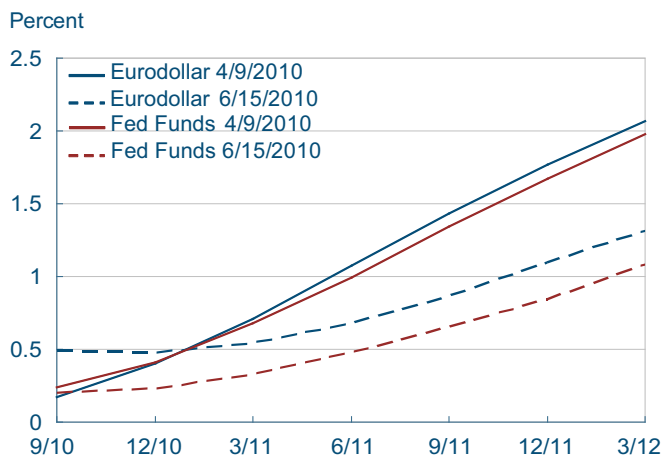
The recent financial turmoil in Europe has been associated with a general shift in market expectations about the future course of domestic and foreign monetary policy. Implied yields derived from the fed funds futures prices shifted out the predicted path for the fed funds rate since early April—just before the dramatic increase in the sovereign credit default swaps spreads. Many market participants are now expecting the federal funds rate to remain near the 0–25 basis point range through the early part of 2011.

A Eurodollar forward rate is also often used as an alternative means for estimating the market’s expected path for the fed funds rate, especially for horizons of 6 months or more. The interest rates on 90-day Eurodollar futures to be delivered between September 2010 and December 2012 show a different pattern. Following the course of events that have occurred in Europe, one could reasonably expect the curve to flatten as it has with the fed funds futures rate. In this case, however, a flattening of the curve is also coupled with an upward shift.

Is this a signal that the Fed is expected to raise rates within the next few months? Not quite. Another key factor affects the Eurodollar forward curve as well. Because the Eurodollar involves borrowing over a longer term, it will carry more credit risk than the fed funds rate. The Eurodollar futures contract settlement price is determined by the 3-month London interbank offer rate (libor). As larger fiscal events have played out abroad and risks have risen, dollar Libor rate spreads have jumped markedly and have passed along their shorter-term increases into the implied Eurodollar rates.

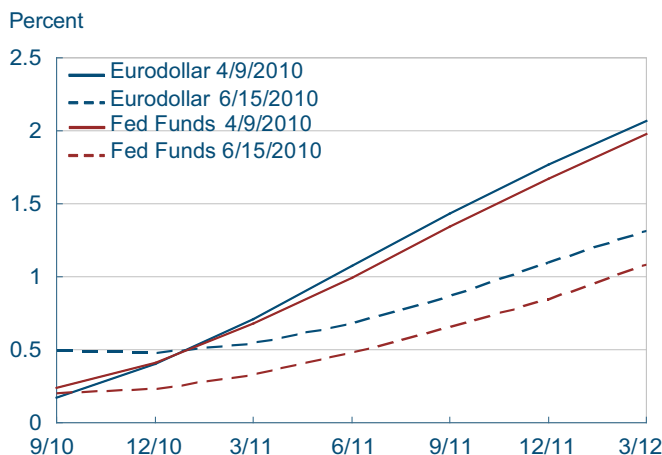
The rise in LIBOR rates largely reflects a dollar liquidity problem in Europe, as banks are searching for dollar funding for their dollar-denominated assets. The fact that this is specific to dollar funding

### Implied Yields and Eurodollar Forward Rates



Note: Derived from 3-month Eurodollar futures and Fed Funds futures.  
Sources: Bloomberg; CME Group.

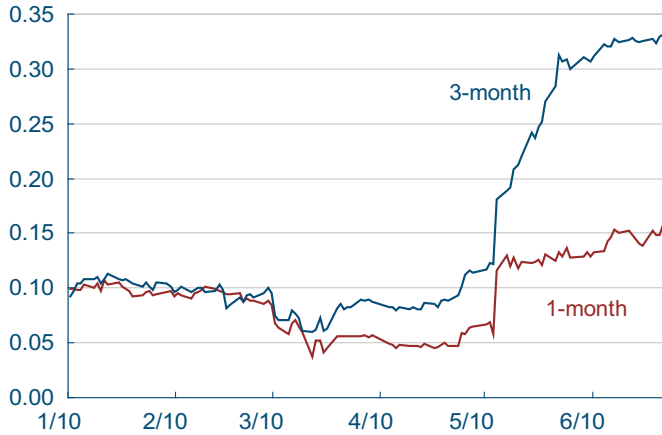
### Implied Yields and Eurodollar Forward Rates



Note: Derived from 3-month Eurodollar futures and Fed Funds futures.  
Sources: Bloomberg; CME Group.

## LIBOR-OIS Spread

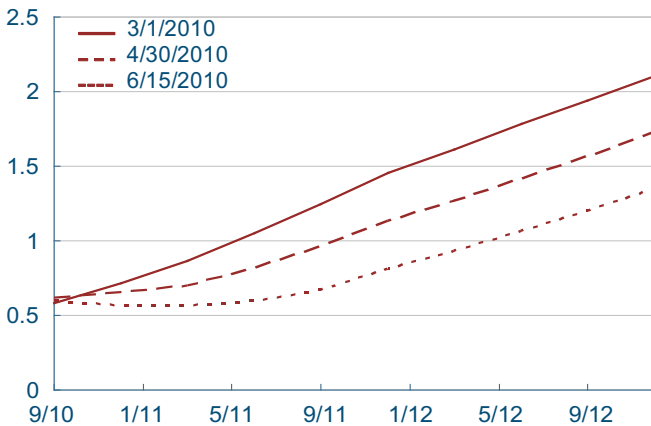
Percentage points, by tenor



Source: Bloomberg; *Financial Times*.

## Forward Rate Curves for Euribor

Percent



Note: Derived from 3-month Euribor futures.  
Source: Bloomberg.

issues is corroborated by the pattern in the euro-denominated borrowing contracts (Euribor).

The implied expectations for interbank euro lending rates have also gone under a transformation throughout the sovereign debt crisis. Similar to a Eurodollar forward curve, a Euribor forward curve looks at the expected rate path for the associated interest rate. As opposed to dollar-denominated interest rates, such as the fed funds rate in the Eurodollar market, the Euribor market looks at the euro-denominated interest rate markets, producing implied expectations for the European Central Bank policy rate. Forward curves hint that expectations for the policy rate have been gradually falling as the European lending markets have struggled. In the span of three and a half months, expected rates for the end of 2012 have dropped  $\frac{3}{4}$  percent.

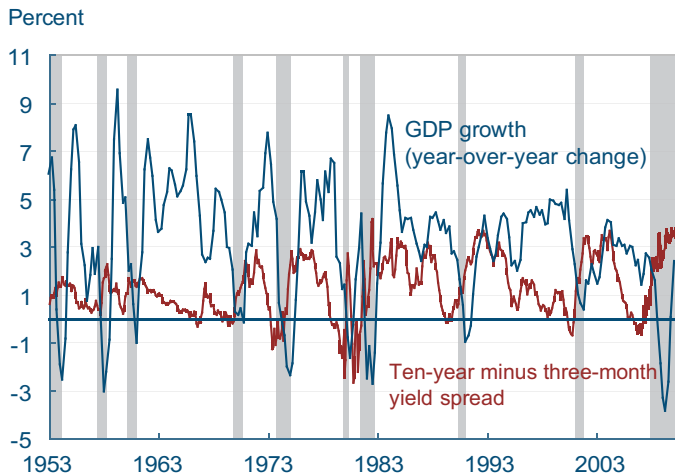
Unlike the Eurodollar market, though, Euribor rates have remained steady in the short-term. This suggests that the liquidity problem that has developed is unique to the dollar, and perhaps represents a flight to safety in dollar-denominated assets. Looking at credit default swap spreads on the debt of some troubled nations (such swaps are generally understood as a form of insurance against a sovereign debt default), one can see a dramatic rise in the market stresses. Since the beginning of March, the spreads on Greek debt have risen nearly three-fold, and spreads for Spain and Italy have doubled. Going forward, market anxieties will have to recede before forward rate curves can accurately portray policy expectations.

# The Yield Curve, June 2010

07.01.2010

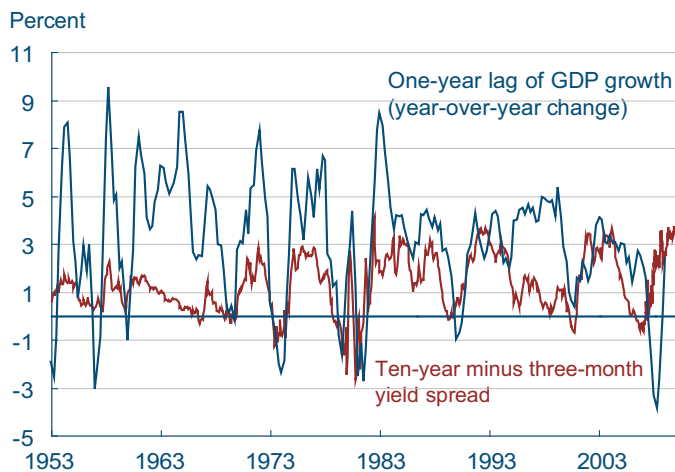
by Joseph G. Haubrich and Kent Cherny

## 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



Sources: Bureau of Economic Analysis, Federal Reserve Board.

Since last month, the yield curve has dropped slightly, with both long and short rates ticking down. The difference between these rates, the slope of the yield curve, 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). In particular, 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.

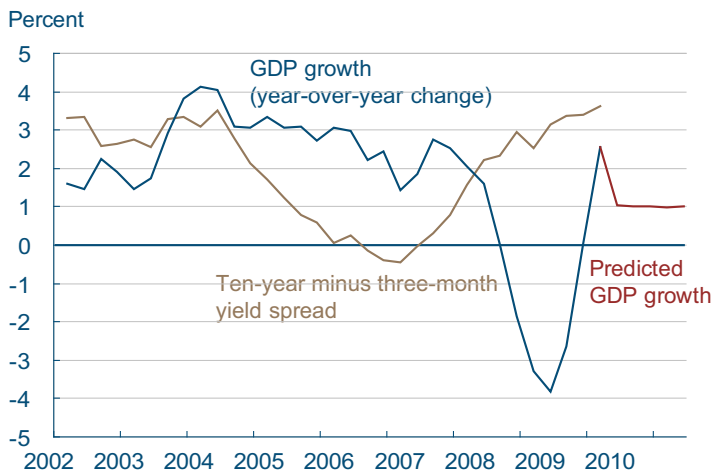
Since last month, the three-month rate has dropped to 0.09 percent (for the week ending June 18) from May's 0.17, and this also comes in below April's 0.16 percent. The ten-year rate dropped to 3.26 percent from May's 3.33 percent, also down from April's 3.85 percent. The slope increased a mere 1 basis point to 317 basis points, up from May's 316 basis points, but still below April's 369 basis points.

Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 1.00 percent rate over the next year, just up from May's prediction of 0.98 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.

While such an approach predicts when growth is above or below average, it does not do so well in predicting the actual number, especially in the case

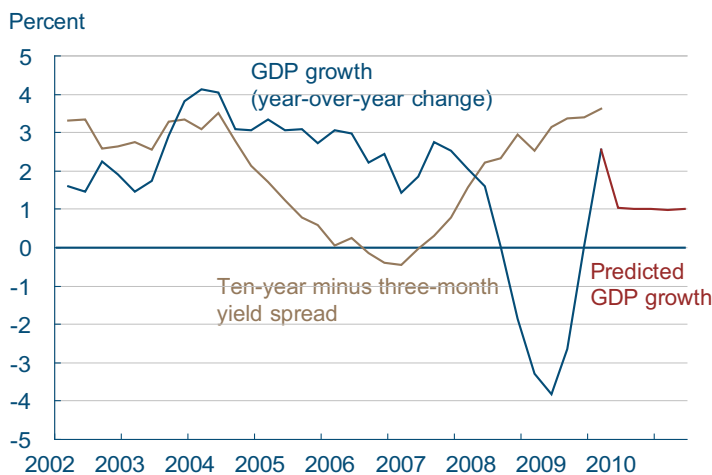


## Yield-Curve-Predicted GDP Growth



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

## Yield-Curve-Predicted GDP Growth



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

of recessions. Thus, it is sometimes preferable to focus on using the yield curve to predict a discrete event: whether or not the economy is in recession. Looking at that relationship, the expected chance of the economy being in a recession next June rises to 12.4 percent, up from May's 9.9 percent and April's 7.1 percent, despite the slight rise in the spread. Recent data has shifted the predicted value upward, though it still remains low.

Of course, it might not be advisable to take these number quite so literally, for two reasons. (Not even counting Paul Krugman's concerns.) 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 related to using the yield curve to predict recessions, see the *Commentary* "Does the Yield Curve Signal Recession?"

For more on dating recessions, please visit <http://www.nber.org/cycles/recessions.html>.

For more information on other forecasts, please visit <http://online.wsj.com/public/resources/documents/info-flash08.html?project=EFORECAST07>

For Paul Krugman's column, please visit <http://krugman.blogs.nytimes.com/2008/12/27/the-yield-curve-wonkish/>

"Does the Yield Curve Signal Recession?," by Joseph G. Haubrich. 2006. Federal Reserve Bank of Cleveland. *Economic Commentary* is available at <http://www.clevelandfed.org/Research/Commentary/2006/0415.pdf>.

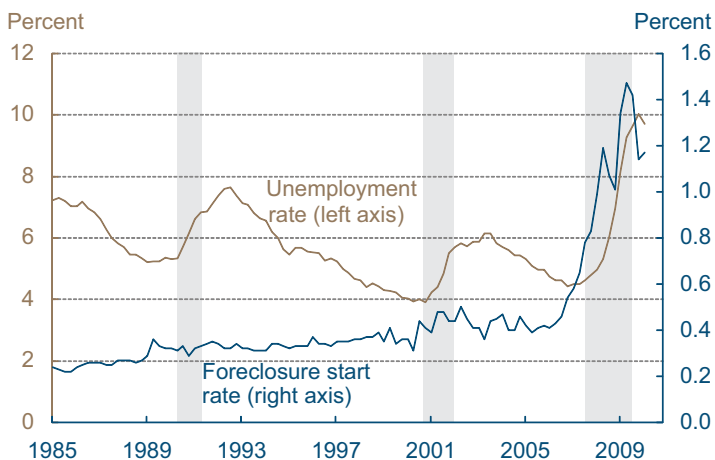


## Changes in Foreclosure and Unemployment across States

07.06.10

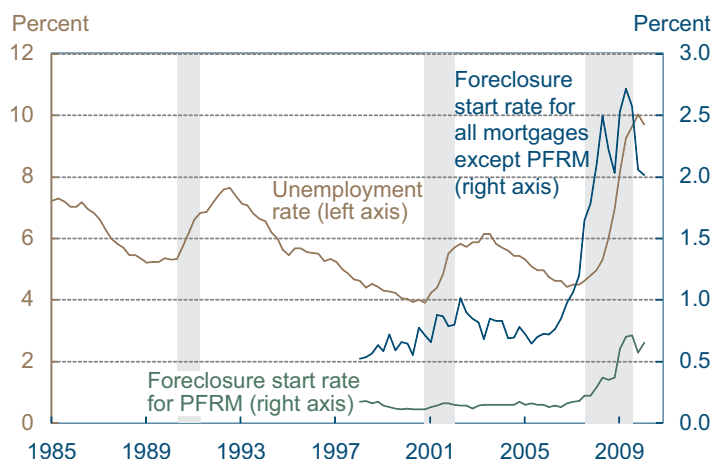
by Tim Dunne and Kyle Fee

### Unemployment Rate and Foreclosure Start Rate



Sources: Bureau of Labor Statistics; Mortgage Bankers Association.

### Unemployment Rate and Foreclosure Start Rate, 1980:Q1 to 1983:Q1



Sources: Bureau of Labor Statistics; Mortgage Bankers Association.

The most recent recession has left deep scars on both the housing and labor markets, with the unemployment rate more than doubling and the foreclosure start rate roughly tripling from pre-recession levels. However, the timing of the movements of the two series differs somewhat over the cycle. The overall foreclosure start rate began to rise sharply before the unemployment rate rose and well before the onset of the recession in December of 2007. This likely reflects a number of forces that were at work preceding the recession, including the decline in home prices and the weakening of loan quality, which occurred earlier in the decade.

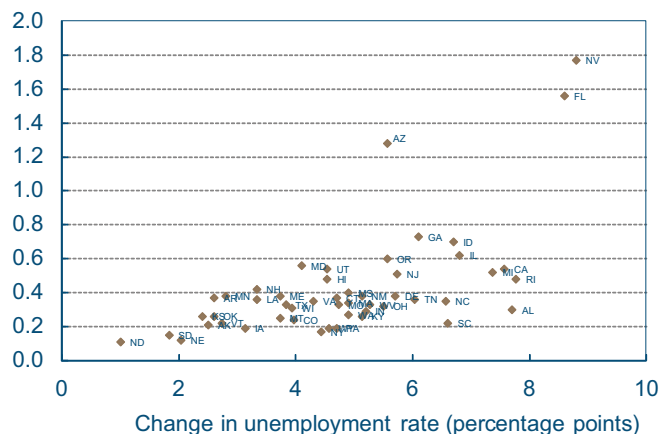
For traditional prime, fixed-rate mortgages, the rise in the foreclosure start rate moved later in the cycle and more closely in step with the rise in the unemployment rate. These loans represent about 53 percent of first-lien mortgages prior to the start of the housing crisis. For this group of loans, loan quality is generally higher, and the subsequent rise in the foreclosure start rate is more closely linked to economic weakness and job loss. Indeed, recent statistics from the Making Home Affordable Program indicate that 60 percent of the program's permanent mortgage loan modifications are the result of the loss of income. The joint movement of foreclosure starts and unemployment rates is particularly evident in this cycle.

The obvious corollary is that the foreclosure start rate for loans other than prime, fixed rate mortgages, including subprime loans, led the cycle. The foreclosure start rate in this all-other-mortgage category is much higher than that for prime, fixed-rate loans, and it began rising well before we saw a significant rise in the start rate on prime, fixed rate loans or the unemployment rate.

The positive relationship between unemployment and foreclosure can be seen across the 50 states. Looking at the change in unemployment rates and the change in foreclosure start rates in the three-

## Unemployment Rate and Foreclosure Start Rate: Prime Fixed Rate Mortgages

Change in foreclosure start rate (percentage points)



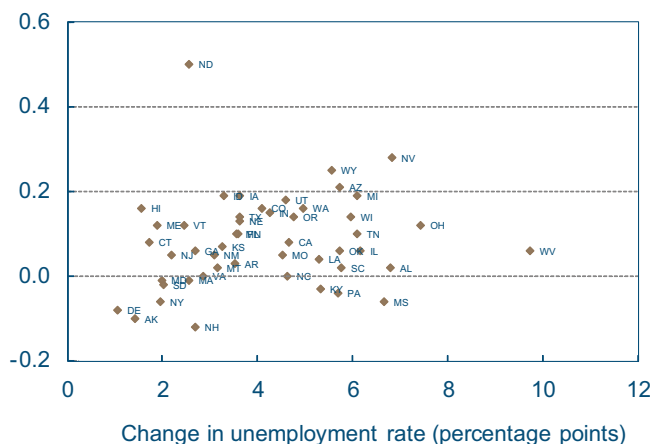
Notes: For the period 2007:Q1 to 2010:Q1.  
Sources: Bureau of Labor Statistics; Mortgage Bankers Association.

year period from 2007:Q1 to 2010:Q1, we see that states that experienced large increases in their unemployment rates tended to experience relatively large increases in foreclosure start rates. The pattern is largely similar for both all mortgage types and for prime, fixed-rate mortgages, though the correlation is a bit stronger for the latter.

To be sure, there is considerable dispersion in rates across states. For example, Ohio and Arizona have had similar rises in unemployment rates over the recession but very different changes in foreclosure start rates. Arizona has felt the full force of the housing boom-bust cycle, with very high increases in foreclosure start rates. On the other hand, Ohio already had a relatively high foreclosure start rate well before the recession began, and it has had a more modest increase thereafter. Florida and Nevada (as well as Arizona in terms of foreclosure starts) are the clear outliers, experiencing the highest increases in both foreclosure starts and unemployment rates.

## Unemployment Rate and Foreclosure Start Rate

Change in foreclosure start rate (percentage points)



Notes: For the period 1980:Q1 to 1983:Q1.  
Sources: Bureau of Labor Statistics; Mortgage Bankers Association.

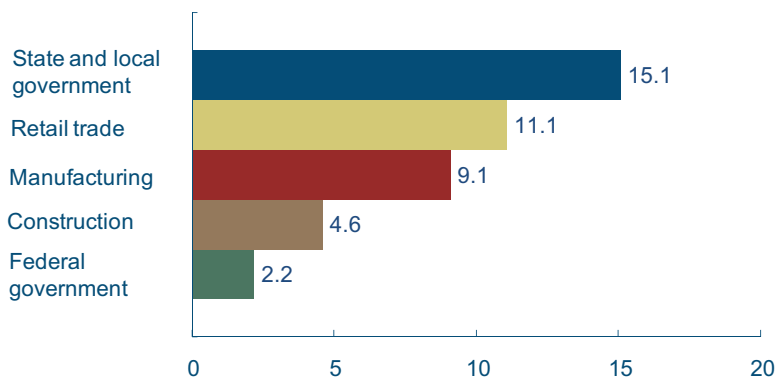
This relationship between foreclosure starts and unemployment at the state level is not seen in every cycle. In the early 1980s, when the U.S. economy experienced a double-dip recession and unemployment rates also above 10 percent, changes in state foreclosure and unemployment rates are basically uncorrelated. Alternatively, the correlation in the 2007:Q1–2010:Q1 period using all mortgage products is 0.55, indicating a reasonably strong, positive relationship. This highlights the fact that the key elements of this housing cycle—falling home prices and generally weaker loan quality—have interacted with job and income losses to reinforce the severity of foreclosures.

What should we think about the path of the foreclosure starts and unemployment going forward? With respect to unemployment rates, many commentators think that unemployment will fall slowly, as structural adjustments in the labor force take time [for example, see this Commentary]. Alternatively, if history is any guide, high foreclosure start rates are likely to persist, as well. This conjecture is based on the observation that states that experienced boom-bust housing cycles in the past (such as Texas, Oklahoma, Massachusetts, and

California) had elevated foreclosure starts for years after the peak in foreclosure starts and inventory, and these previous boom-bust cycles were small in comparison to the current cycle.

## Recession Shrinks State and Local Governments

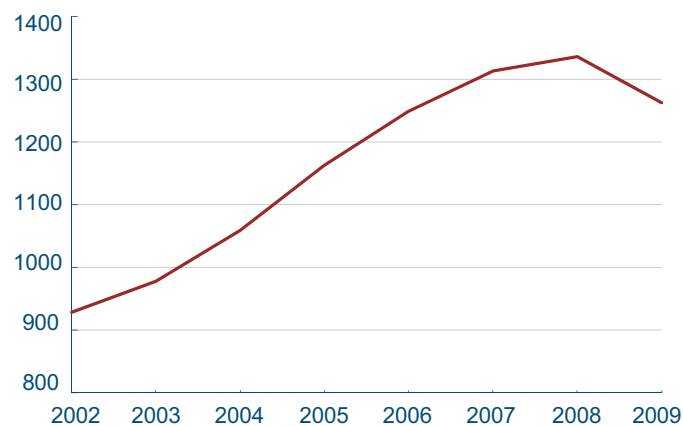
### Percentage of Nonfarm Labor Force in 2009



Source: Bureau of Labor Statistics.

### Tax Revenues

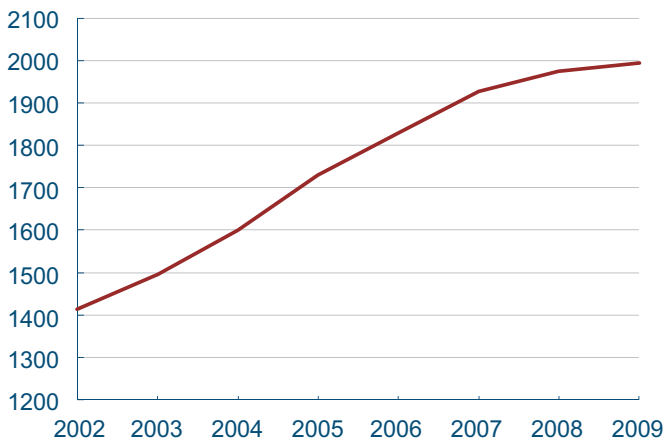
Billions of U.S. dollars



Source: Bureau of Economic Analysis.

### Total Receipts

Billions of U.S. dollars



Source: Bureau of Economic Analysis.

06.25.10

by Daniel Carroll

State and local governments make up a large portion of our economy, together accounting for 11.8 percent of GDP last year. State and local government employees represent roughly 15 percent of the total nonfarm labor force, a number seven times that of federal government employees and larger than the manufacturing and construction workforces combined. Because of its large relative size, changes in the state and local government sector can have a significant impact on the economy. For this reason, there may be reason for concern over the recent contracting trend in state and local budgets.

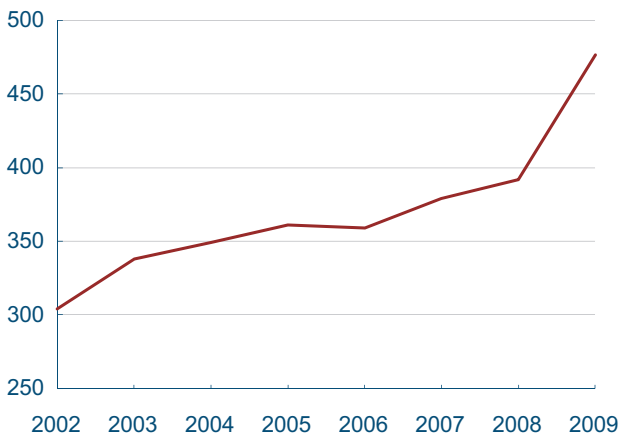
In 2008, growth in state and local tax revenues began to slow, and in 2009 it fell sharply (5.5 percent). Although a 22 percent increase in federal aid shored up this shortfall, it underscores the challenge facing state and local governments in the near future even as the national economy begins recovering from its most recent downturn.

Unlike the federal government, which can issue long-term debt during recessions to cover budget shortfalls, nearly every U.S. state has some sort of balanced budget amendment which requires that current revenues equal expenditures on operating budgets over some fixed, short horizon (usually one or two years). This makes a slow recovery especially problematic. Because state and local governments are not permitted to deficit finance these expenditures, they do not have time to wait for tax revenues to return to their pre-recession levels. Reluctant to lay off workers, state and local governments turned first to hiring freezes or restricting labor hours of employed workers through furloughs. Some reorganized their labor forces, cutting positions but offering laid-off workers a lower-paying job in another area.

These policies could account for the slow pace of decline in total jobs between mid-2008 and mid-2009. Since the second half of 2009, however, the

## Federal Aid

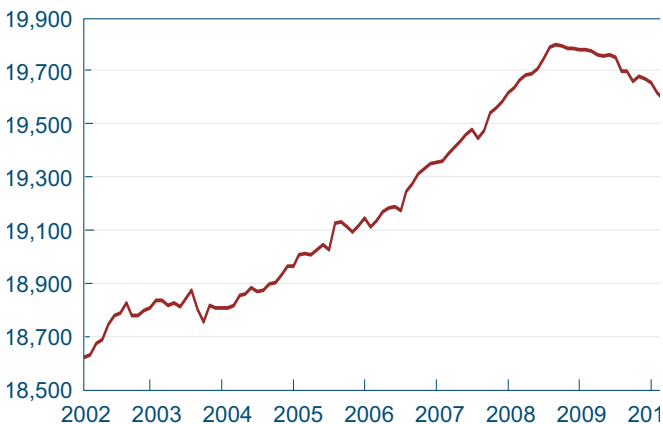
Billions of U.S. dollars



Source: Bureau of Economic Analysis.

## State and Local Employees

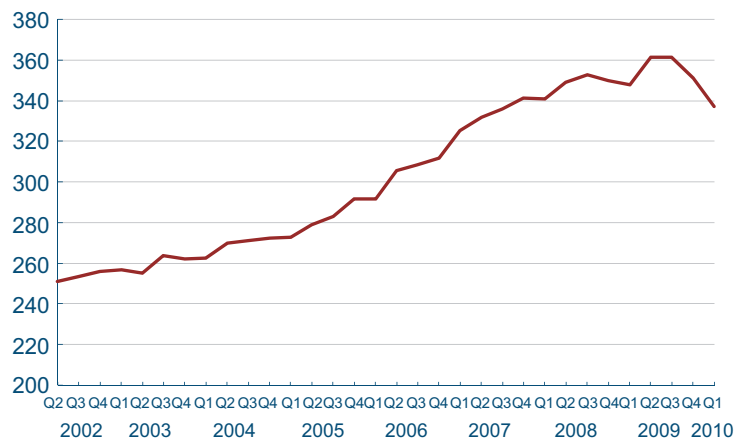
Thousands



Note: Data begin in February 2002.  
Source: Bureau of Labor Statistics.

## State and Local Government Gross Investment

Billions of U.S. dollars



Source: Bureau of Economic Analysis

number of state and local government jobs has been declining much more precipitously. Since its high in September 2008, the number of state and local government employees has fallen by more than 1 percent. Although this figure may seem small when compared to the national rate of nearly 10 percent, for the government sector this is a large movement. In fact, it is the largest decline within a two-year period since the series declined by 3.1 percent between December 1980 and August 1982. With tax revenues still far below trend level, state and local governments will continue to rely heavily on federal aid to avoid more layoffs.

Not only are state and local governments cutting jobs, but they are also decreasing capital investment. In the first quarter of 2010, gross investment by state and local governments fell by 5.4 percent from the previous quarter and reached its lowest level since the first quarter of 2007. This is remarkable given that capital expenditures are not usually constrained by balanced budget amendments and perhaps signals that state and local governments are anticipating tight tax revenues for a considerable period.

The cuts in labor and investment by state and local governments suggest that even as the economy and the private sector pull out of the recession, state and local government will lag behind and could act as a drag on the overall recovery.

## Could Low Educational Attainment Be Slowing the Recovery?

06.15.10

by Daniel Hartley and Beth Mowry

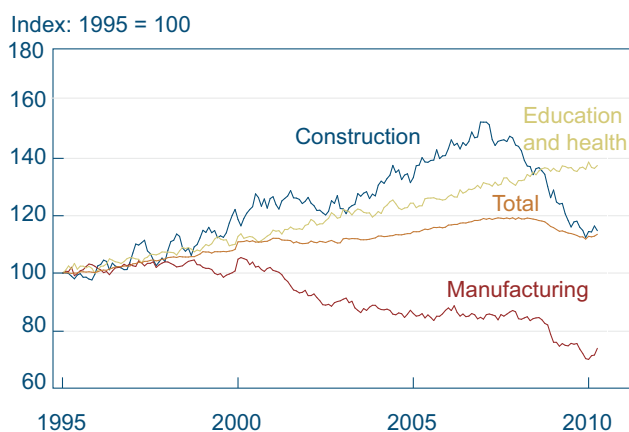
The employment numbers released by the Bureau of Labor Statistics on June 4, 2010, showed a large increase in temporary government employment due to the hiring of workers for the 2010 Census, but showed only a slight increase in private sector employment. The consensus view is that improvements in the labor market will lag the overall recovery, and the fear is that we could experience relatively anemic job growth similar to the two previous recession-recovery cycles. Could a mismatch between the skills and education of employees and the needs of employers be a contributing factor to the slow speed of the recovery in employment?

Manufacturing employment has been steadily declining since 2000 and is now down to about 75 percent of its level in 1995. Over this period, the housing boom fueled the growth of construction employment to a peak of 1.5 times its 1995 level. However, in the wake of the housing bust, construction employment has fallen back down; it is now only 1.15 times its 1995 level. In contrast, employment in the education and health industries has continued to grow through the beginning of 2010.

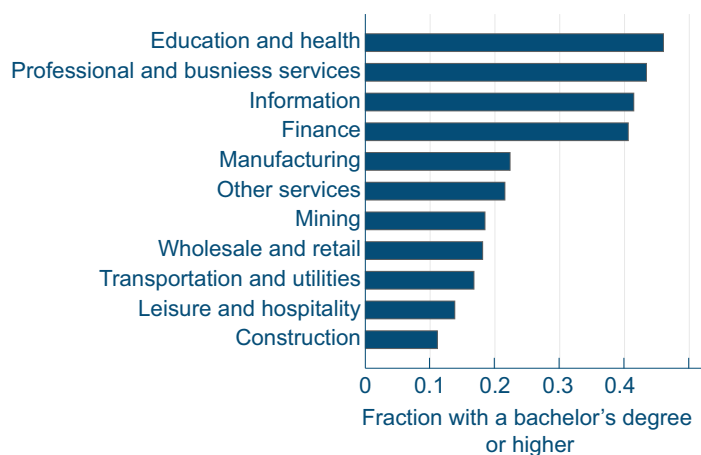
With respect to educational attainment, the data reveal substantial differences across industries. Workers in the education and health, professional and business services, information, and finance industries (which I will subsequently refer to as high-degree industries) are much more likely to have a bachelor's degree than workers in the other nonfarm nongovernmental industries (which I will subsequently refer to as low-degree industries).

While the accumulation of job- or industry-specific human capital may make it hard for workers to change jobs or industries as the industry structure of the nation changes, it seems that it will be particularly hard for workers without a bachelor's degree to move from the low-degree industries to the high-degree industries. It is possible that

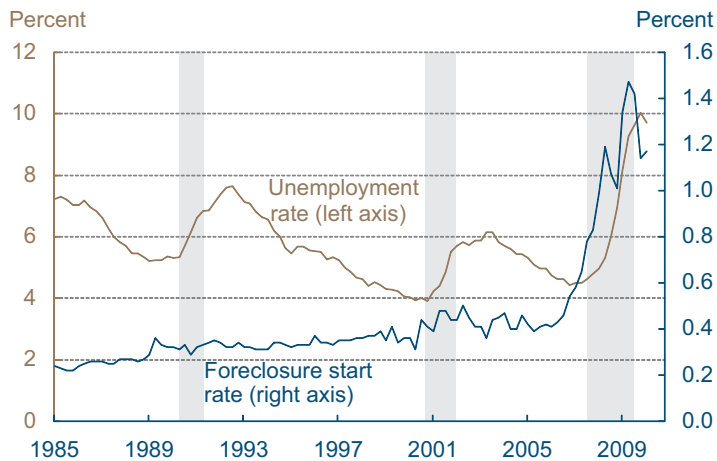
### Industry Employment Indices



### Educational Attainment by Industry

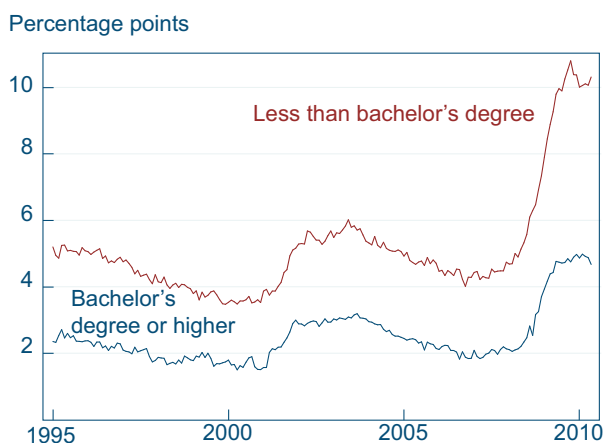


## Unemployment Rate and Foreclosure Start Rate



Sources: Bureau of Labor Statistics; Mortgage Bankers Association.

## Unemployment Rate



construction was absorbing some of the workers who lost their jobs as the manufacturing industry declined. However, once the housing market collapsed, construction began losing jobs quickly. In this way, the housing boom may have temporarily obscured the transition of the U.S. economy from low- to high-degree industries.

Consistent with this conjecture is the observation that the fraction of overall employment that is made up of the high-degree industries has increased throughout the past 15 years. The only exception is a plateau that coincides with the years of the housing boom.

While people without a bachelor's degree have experienced higher unemployment throughout the past 15 years, their rate of unemployment has typically been only about 2 percentage points higher than those with a degree. Currently, however, it stands at more than 5 percentage points higher.

So what does the changing makeup of U.S. industry mean for the unemployment rate and the economic recovery in general? Economic research shows that displaced workers who change industries end up with lower paying jobs on average. Furthermore, if a college degree is required for an increasing number of jobs in the U.S. then it may take some time before the labor supply responds to the increased incentives for education. In the meantime, we may be in for a period of lower productivity, lower wages, and higher unemployment.



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