

Economic Trends

April 2013 (March 15, 2013-April 12, 2013)

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FEDERAL RESERVE BANK
of CLEVELAND

What Shape Is Commercial Bank Capital In?

03.22.13

by Kristle Romero Cortés and Sara Millington

Regulators require banks to maintain a certain level of capital. Those requirements are put into place to ensure that banks will have enough of a cushion to maintain their daily activities in the event of an unforeseen shock. Due to the nature of bank debt, regulators focus on bank capital—the difference between a bank’s assets and its liabilities—when they are overseeing the safety and soundness of individual banks and the banking system overall.

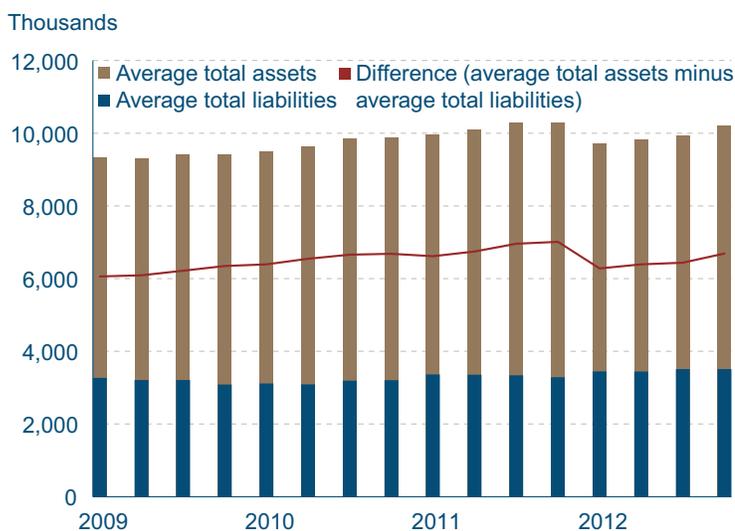
Bank debt differs from corporate debt because the U.S. government provides certain guarantees for people who hold bank debt. Programs such as the Federal Deposit Insurance Corporation (FDIC) reduce the incentives of debt holders to require higher interest rates from firms that partake in riskier behavior. So bank capital requirements are in place to provide adequate incentives to bank managers to manage the bank’s risk well.

Since 2009 the total liabilities of commercial banks have remained relatively steady, as total assets have slowly crept up over time. With the exception of the first quarter of 2012, the difference between total assets and liabilities has had an upward trend.

Bank capital is often defined in tiers or categories. Different tiers include shareholders’ equity, retained earnings, reserves, hybrid capital instruments, and subordinated term debt. The minimum capital required is specified as a percentage of the risk-weighted assets of the bank. Tier 1 capital is the book value of a bank’s stock plus its retained earnings. Tier 2 capital is loan-loss reserves, some preferred stock, and subordinated debt. Total capital is the sum of Tier 1 and Tier 2 capital. Assets such as cash and equivalents and government securities are assigned a risk weight of zero. Yet interbank loans have a 0.2 risk weight, and mortgage loans have a risk weight of 0.5. Ordinary loans have a risk weight of 1.

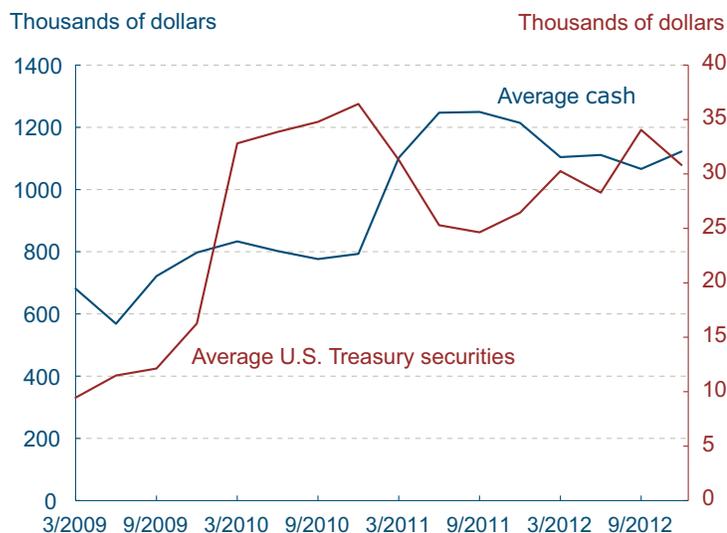
The Basel Committee on Banking Supervision, created in 1974 by the central banks of the G-10

Average Total Liabilities and Assets Breakdown



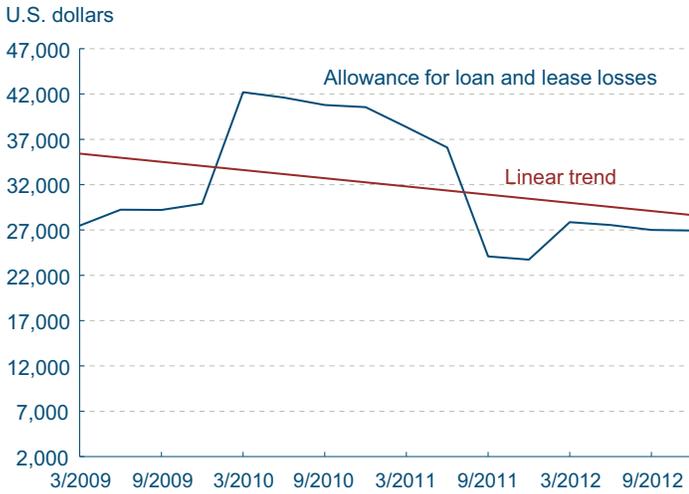
Note: Data comprise commercial banks with total assets of more than \$500 million. Source: Federal Reserve Board Call Reports.

Average Cash and U.S. Treasury Securities



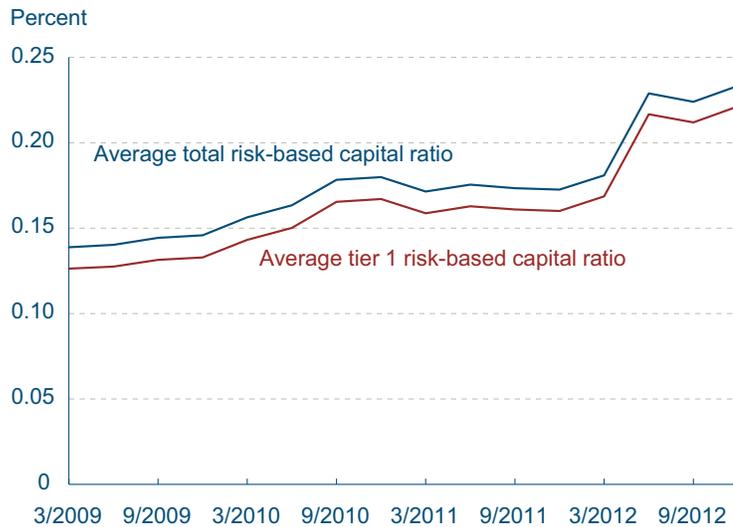
Note: Data comprise commercial banks with total assets of more than \$500 million. Source: Federal Reserve Board Call Reports.

Average Allowance for Loan and Lease Losses



Note: Data comprise commercial banks with total assets of more than \$500 million.
Source: Federal Reserve Board Call Reports.

Bank Capital Ratios



Note: Data comprise commercial banks with total assets of more than \$500 million.
Source: Federal Reserve Board Call Reports.

countries, sets capital ratio requirements to help standardize the banking sector worldwide. In 1989 the U.S. adopted these capital requirements (the so-called Basel I rules), established by the Bank for International Settlements. The Federal Reserve announced in December 2011 that it would implement substantially all of the more recent Basel III rules.

Basel III will require banks to hold 4.5 percent of common equity (up from 2 percent in Basel II) and 6 percent of Tier I capital (up from 4 percent in Basel II) of risk-weighted assets. It also introduces additional capital buffers, leverage ratios, and liquidity coverage ratios.

A bank's capital can be thought of as the margin to which creditors are covered if a bank liquidates its assets. Loan-loss reserves, or loan-loss provisions, are amounts set aside by banks to allow for any loss in the value of the loans they have on their books. Loan-loss reserves have been trending downward since the crisis. There is currently a debate about whether loan-loss reserves ought to be built up during boom years, the result of which could be an increase in future reserve requirements. Some policymakers are arguing that reserves typically fall during busts so that they are often too low during downturns. They see higher reserve requirements during recoveries as a way to give banks full coffers from which they could draw down during recessions.

Bank capital will be one of the most useful tools that regulators can use to avoid deep financial crises. The ongoing debate between the ability of banks to build capital while still extending credit will help shape the role of capital ratio requirements in the future.

Government Spending and Employment in Recoveries

04.08.13

by Daniel Carroll and Samuel Chapman

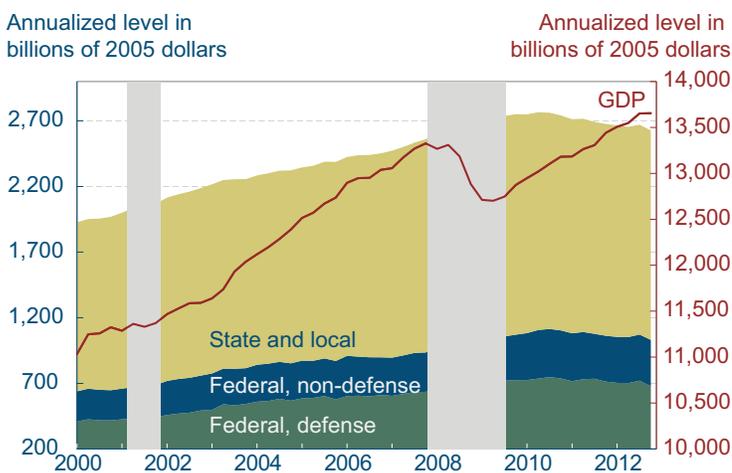
Federal spending and government employment have an intricate relationship to GDP growth. During a recession, government spending faces competing forces, as lower levels of economic activity result in lower revenues and, simultaneously, automatic stabilizers such as unemployment benefits begin to increase as the labor situation deteriorates. Government stimulus and bailouts may further accelerate spending, as the government tries to stimulate economic activity. A trend analysis of government spending and employment during past recessions shows how the most recent recession differs from others as well as how the government sector may evolve as the recovery continues.

Spending at all levels of government was steadily increasing between 2000 and 2010. Spending includes what is officially called “government consumption expenditures”—everything from salaries to bridges to social programs like Medicaid—and “gross investment”—which could be a new office building to house a government agency. Government spending reached its peak of about \$2.8 trillion half way through 2010, and then it started falling. By the fourth quarter of 2012, it had decreased to \$2.6 trillion (measured in deflated 2005 dollars). Real GDP was also rising over much of this period until the recession hit in the first quarter of 2008. Since the third quarter of 2009 it has been slowly growing and recouping the losses of the recession.

Over this same period, government employment at the local, state, and federal levels followed a pattern similar to government spending. Government employment had been steadily increasing since 2000, reaching nearly 23 million in the second quarter of 2010. Since then, it has been decreasing and is now below 22 million.

Looking at government spending and employment as a share of the country’s total spending and employment provides additional insight into the government’s role over the years as the economy has

Government Spending and GDP



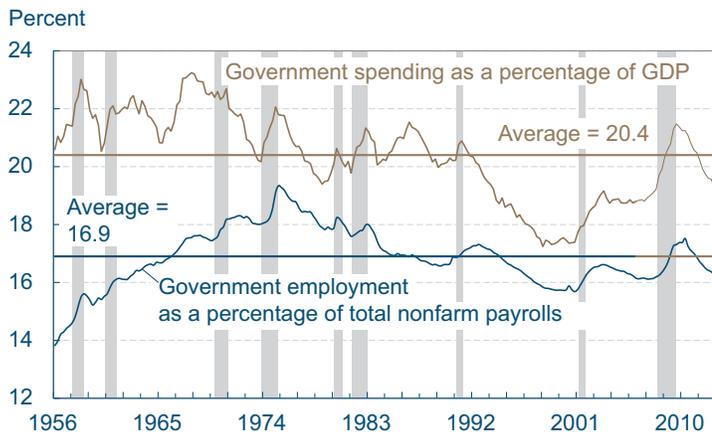
Notes: Government spending and GDP have been seasonally adjusted. Shaded bars indicate recession. Government spending includes government (“federal” and “state and local”) consumption expenditures, and gross investment.
Sources: Bureau of Labor Statistics; Bureau of Economic Analysis.

Government Employment



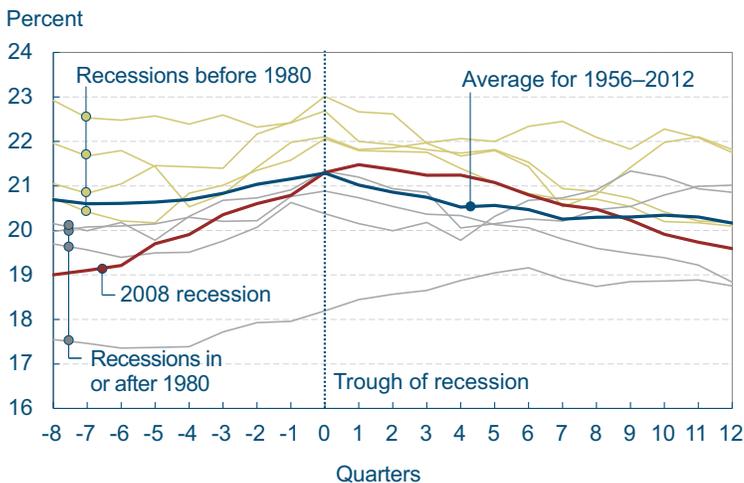
Note: The number of workers is seasonally adjusted.
Source: Bureau of Labor Statistics.

Government Share of GDP and Employment



Notes: Shaded bars indicate recession. Government spending includes government ("federal" and "state and local") consumption expenditures and gross investment.
Sources: Bureau of Labor Statistics; Bureau of Economic Analysis.

Government Share of GDP around Recession Troughs



Note: Government spending includes government ("federal" and "state and local") consumption expenditures and gross investment.
Source: Bureau of Economic Analysis.

grown. Government spending as a percentage of total GDP is currently below its historical average of 20.4 percent. As of the fourth quarter of 2012, it was 19.3 percent. Government employment as a percentage of total nonfarm payrolls is also currently below its historical average of 16.9 percent. As of the fourth quarter of 2012, it was 16.3 percent.

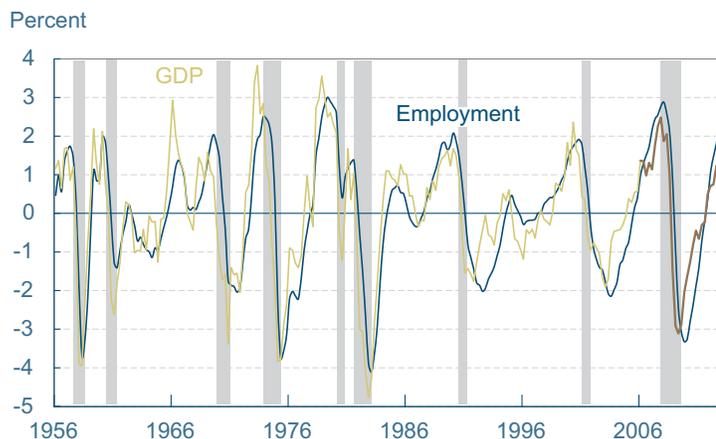
The chart below restricts our window of analysis to around the trough of each recession in order to more clearly compare government spending as a percentage of GDP. On average, a slight hump can be seen around the troughs, as the ratio increases up to the trough and then begins to decrease afterward. This is intuitive, as the denominator of the ratio—GDP—is naturally falling up to the trough of a recession. Furthermore, as the recession progresses, federal spending typically increases as the automatic stabilizers (unemployment insurance, progressive taxes) begin to kick in.

The clear trend in the government's share of GDP is a decrease over time. Compare, for example, shares during the 1957 and 2001 recessions (top line from the left in the figure above and the bottom-most line, respectively). The most recent recession (2008) began to deviate from this trend eight quarters before the trough of the recession, when the government spending ratio jumped above the trend and even above the average. This sharp increase may imply a higher level of government spending—such as stimulus bailouts—as opposed to just lower GDP, compared to previous recessions.

We are now almost four years into the recovery, but government spending and employment have not returned to levels typical of past recoveries. The current shares for both are still very low. One reason for their low levels may be that the shares typically take months to respond to increases in GDP. We found about a six to eight quarter lag for government spending and employment when we investigated the issue with a statistical analysis.

The analysis consists of finding the trend in a variable, computing the deviation of the variable from its trend over time, and then analyzing the deviation in various ways. Comparing a variable's deviations to deviations in GDP allows us to see the variable's typical cyclical behavior and its responsiveness

GDP and Employment: Percent Deviation from Their Trends

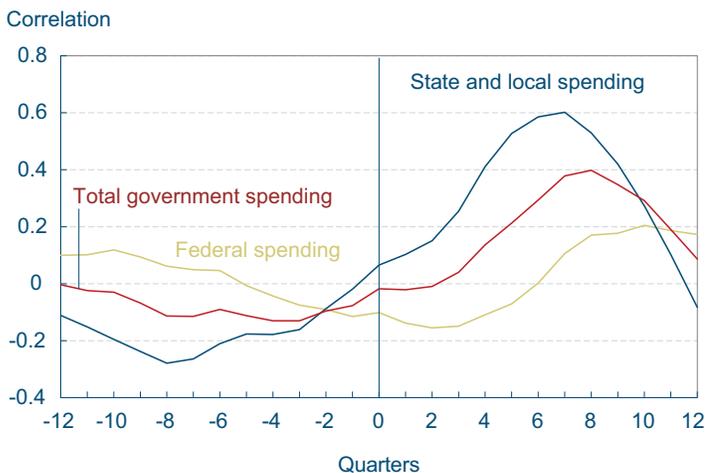


Notes: Trends were calculated using an HP filter. Shaded bars indicate recession. Government spending includes government ("Federal" and "State and Local") consumption expenditures and gross investment. Sources: Bureau of Labor Statistics; Bureau of Economic Analysis; authors' calculations.

to GDP. If a variable is very responsive to changes in GDP, then the deviations from its trend would show a strong correlation to the deviations of GDP from its trend. A large positive correlation indicates that, on average, when spending or employment is above its trend at that lag or lead date, GDP at the reference point was also above its trend.

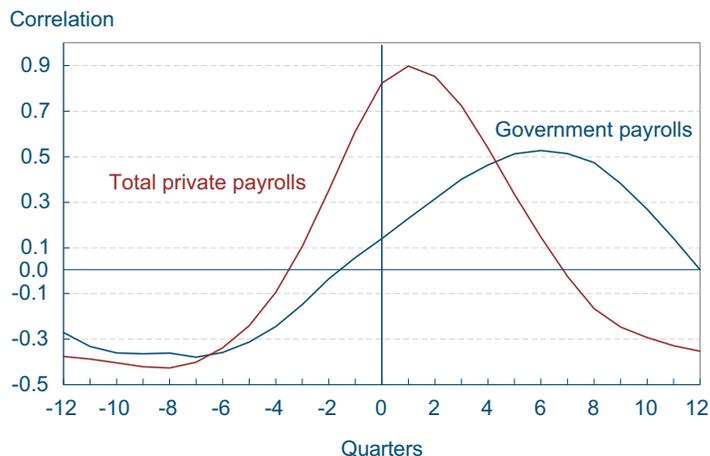
Private employment has the strongest correlation with GDP, coming just shy of 0.9 at the one-quarter lag. This is intuitive as the private market is more flexible in its ability to immediately adjust to changing conditions. Government employment, on the other hand, responds less nimbly to changes in GDP. We would expect such sluggishness because government employment includes services that must operate regardless of market conditions, such as police or airport security. In fact, government employment lags the recovery in GDP by about six quarters. Total government spending and state and local spending have fairly similar lags of about six to eight quarters out from a recovery in GDP. Federal spending has a lag of about 10 quarters out.

GDP and Government Spending: Correlation to Deviations from Trend



Notes: Trends were calculated using an HP filter. Total government spending includes "federal" and "state and local" combined. Federal as well as state and local spending implies consumption expenditures and gross investment combined. Sources: Bureau of Economic Analysis; Bureau of Labor Statistics; authors' calculations.

GDP and Employment: Correlation to Deviations from Trend



Note: Trends were calculated using an HP filter. Source: Bureau of Economic Analysis; Bureau of Labor Statistics; authors' calculations.

These findings suggest that once GDP is above its trend, government employment and government spending will begin to see an increase around a year and a half and two years later, respectively. GDP went above its trend around the third quarter of 2011, which would imply that government em-

ployment will rise above its trend about half way through 2013. This also implies that government spending may not rise above its trend until toward the end of 2013.

This analysis estimates that GDP went above its trend around the third quarter of 2011. Historical norms then suggest that government employment will rise above its trend about half way through 2013, and government spending will above its trend near the end of 2013. However, this may be optimistic, given that other measures of trends put current GDP and government spending and employment further below trend and continued downward pressures (such as federal sequestration) on government spending and employment are possible.

Household Financial Position

Households are paying down their debt, spending cautiously, and expecting the economy to get worse

03.26.13

by O. Emre Ergungor and Patricia Waiwood

In the years preceding the stock market and housing bubbles, household wealth grew faster than incomes, leading Americans to believe that they were getting richer. As the bubbles burst, the nation's wealth-to-income ratio took a dive and returned to its long-term trend.

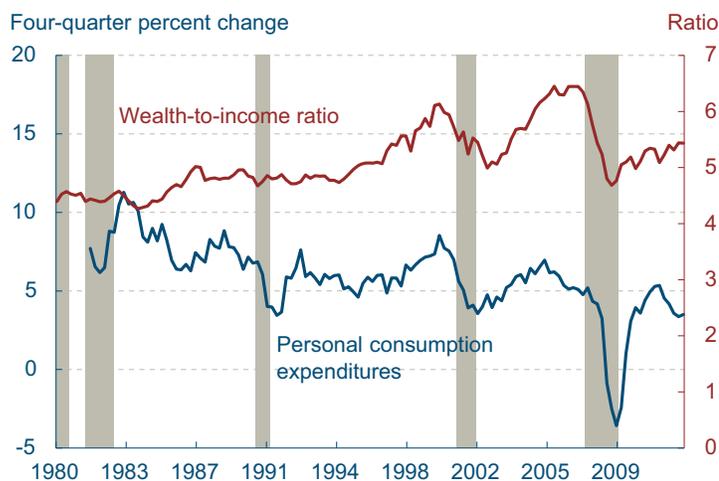
The adjustment took place as households constrained their spending and reduced their debt. Spending (consumption expenditures) peaked in 2008, and then hit their trough in 2009. Yet since then, the wealth ratio has oscillated along an upward-sloping path. Although consumption expenditures have rebounded since hitting the trough, growth has not been consistent.

While people often associate the word "savings" with money in the bank, an increase in the savings rate also means that people are paying down their debts. Before the downturn in April 2005, the personal savings rate had reached a record low of just 0.8 percent. The rate peaked at 8.3 percent during the recession, and since then, it has remained between 6 percent and 3 percent.

However, the savings rate behaved somewhat enigmatically during the last month of 2012 and the first of 2013: the savings rate rocketed to 6 percent from 3 percent, and then dropped to 2.4 percent. Personal savings, not personal income, is clearly the component more responsible for these movements. The reason for savings-rate volatility is skyrocketing dividend income before higher marginal taxes kicked in. The reason for this savings-rate volatility is that dividend income skyrocketed before higher marginal taxes kicked in.

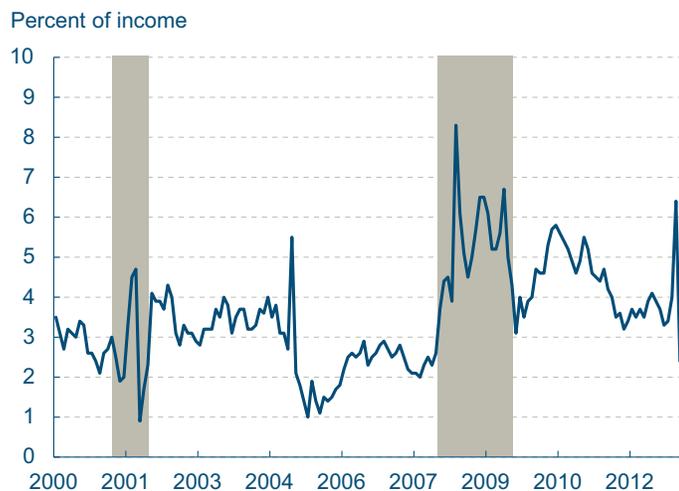
Revolving consumer credit, which includes credit card balances primarily, plummeted in 2008 and has been flat in real terms for more than a year. Nonrevolving consumer credit, which consists of the secured and unsecured credit for student loans,

Household Wealth and Consumption



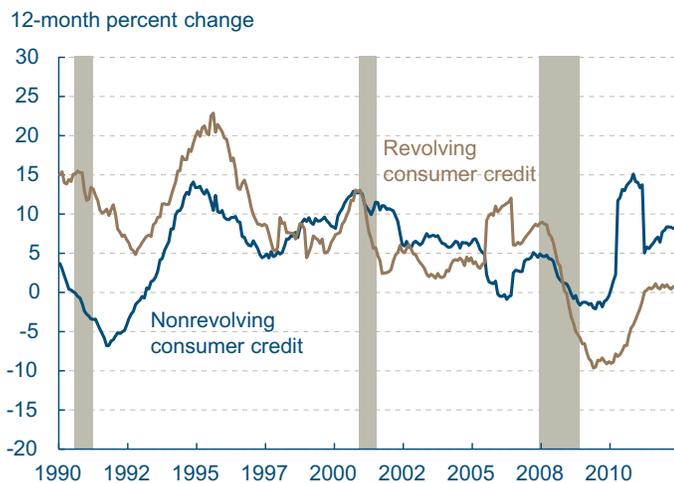
Notes: Wealth is defined as household net worth. Income is defined as personal disposable income. Shaded bars indicate recessions.
Sources: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System.

Personal Savings Rate



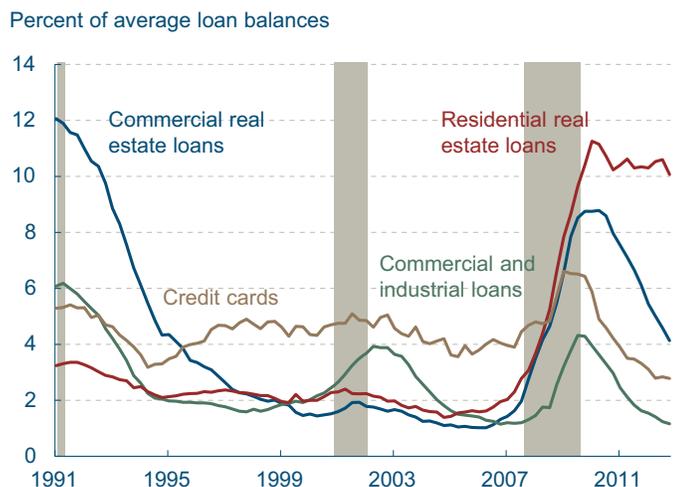
Note: Shaded bars indicate recessions.
Source: Bureau of Economic Analysis.

Outstanding Debt



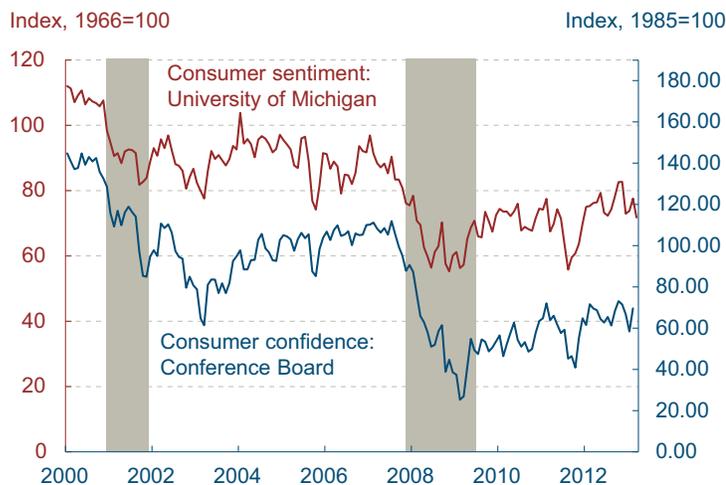
Note: Shaded bars indicate recessions.
Source: Board of Governors of the Federal Reserve System.

Delinquency Rates



Note: Shaded bars indicate recessions.
Source: Board of Governors of the Federal Reserve System.

Consumer Attitudes



Note: Shaded bars indicate recessions.
Source: University of Michigan, The Conference Board.

auto financing, durable goods, and other purposes, is actually 8.2 percent above year-ago levels. In the first month of 2013, total consumer credit increased at a seasonally adjusted annual rate of 7.0 percent to \$2,795 billion, adding a sixth month to a string of positive monthly increases. (The latest numbers are preliminary numbers from the Federal Reserve Board.)

Certain delinquency rates have dropped to their pre-crisis levels. As of the fourth quarter of 2012, this is true for commercial and industrial loan delinquency rates, as well as credit card loan delinquency rates. However, delinquency rates for residential real estate and commercial real estate loans remain elevated, extremely so in the case of residential real estate loan delinquencies. They stand a dizzying 7.3 percentage points above where they were at the start of the recession. Commercial real estate loan delinquency rates meanwhile stand 2.33 percentage points above where they were in late 2007.

Indexes of consumer sentiment and confidence have gained some traction since early 2009. Be that as it may, the indexes still have a ways to go before returning to pre-recession levels. The going looks tough, if we use as a gauge the University of Michigan's index (which leads the Conference Board's index by one month). Preliminary numbers show that the University of Michigan's index of consumer confidence dropped to 71.8 in early March from a slightly upwardly revised 77.6 in February. In March, according to the data release, the fewest consumers in decades anticipated that their finances would improve during the year ahead, as evidenced by an 11-point drop in the index's expected personal finances component.

Also, unlike the more favorable employment prospects that consumer held over 2012, they now expect net increases in the national unemployment rate. This is reflected in the drop in the economic outlook component from 87 to 70. In addition, just 20 percent of surveyed consumers expected their financial situation to improve during the year ahead. This was the lowest figure ever recorded, matching the lows first recorded in 1979 and 1980. When asked about the outlook for their finances over the next five years, just 33 percent of all consumers expected to be better off, the lowest level ever recorded.

Long-term Inflation Expectations

03.28.13

by Mehmet Pasaogullari and Patricia Waiwood

In February, the CPI stood at 2.0 percent year-over-year, and the core CPI, which is simply the headline CPI measure excluding food and energy prices, was also 2.0 percent over the same period. How can we predict what inflation will be in the more distant future, especially in light of the Fed's accommodative policies?

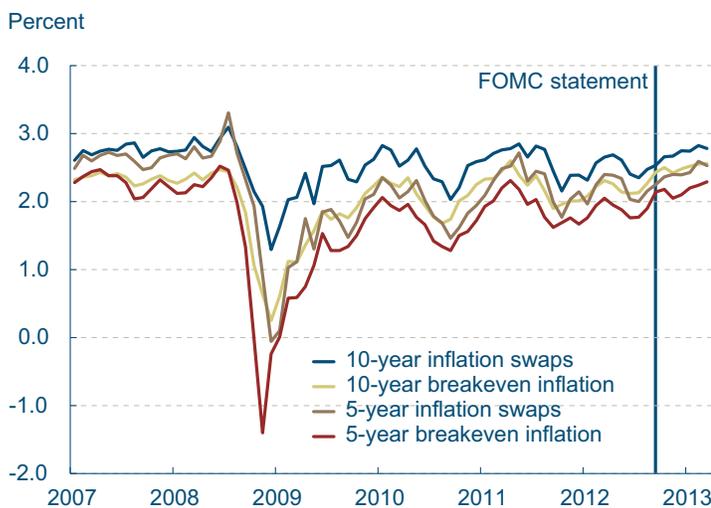
We look at several measures of inflation expectations to gauge where economic agents think inflation will go in the future. We report three measures, the first two being inputs in the third: market-based estimates, survey results, and estimates of the Cleveland Fed's model of inflation expectations. Further, we focus on longer-term measures (that is, measures of inflation five years in the future and beyond), because, being more immune than shorter-term measures to short-lived shocks, their paths are truer to more persistent drivers of inflation.

Market-based measures reflect the inflation expectations of investors. These measures rose in the days after September 13, 2012, when the Federal Reserve announced a third round of large-scale asset purchases and decided to keep the target range for the federal funds rate at an exceptionally low level at least through mid-2015. This round of asset purchases, unlike its predecessors, was open-ended, meaning it would continue until the outlook for the labor market improved substantially.

Between then and now, longer-term inflation expectations rose moderately and then tapered off slightly. As of March 2013, investors expected inflation to average about 2.4 percent over the next five years and 2.6 percent over the next 10 years. These numbers suggest that investors are not expecting the new Fed policy to boost inflation too far beyond the Fed's target over longer time horizons.

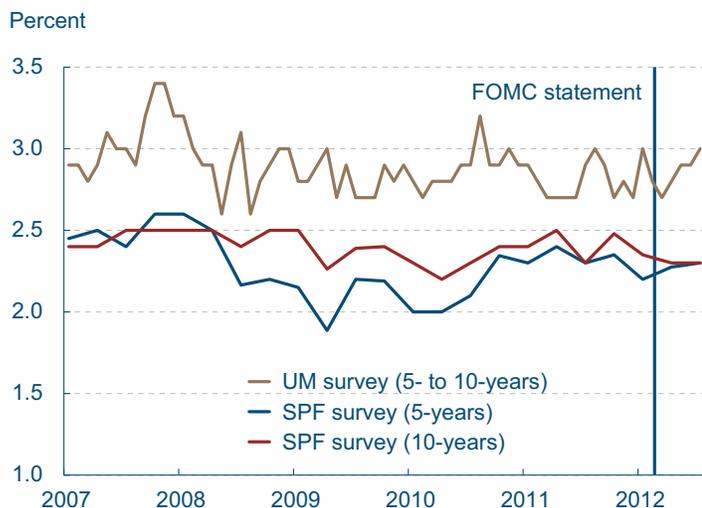
Two well-known surveys of inflation expectations reflect the views of consumers and professional forecasters. The University of Michigan's Survey of Consumer Attitudes and Behavior (UM Survey)

Market-Based Inflation Expectations



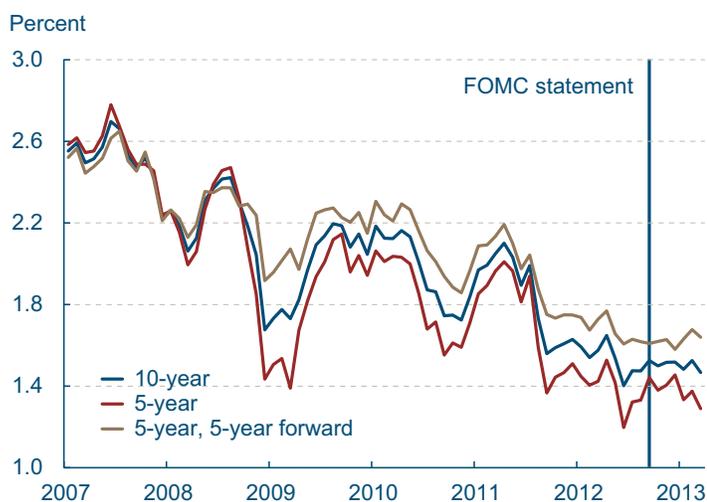
Source: Bloomberg.

Survey Measures of Inflation Expectations



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

Federal Reserve Bank of Cleveland's Model-Based Inflation Expectations



Source: Federal Reserve Bank of Cleveland.

reports its findings monthly, and the Philadelphia Fed's Survey of Professional Forecasters (SPF) is quarterly.

Both UM Survey (5- to 10-year) and SPF (5-year and 10-year) expectations were rather stable over 2012. The former hovered between 2.7 percent and 3 percent, ended the year at 2.9 percent, and have stood at 3 percent for the past two months. The 5-year SPF expectation fluctuated between 2.2 percent and 2.3 percent and ended the year at 2.28 percent. Ten-year SPF expectations stayed between 2.3 percent and 2.48 percent. Interestingly, SPF measures for both horizons currently stand at about 2.3 percent.

Estimates from the Cleveland Fed's model of inflation expectations paint a similar picture. Throughout 2012 and so far in 2013, longer-term measures from the model have remained quite stable, hovering comfortably between 1 percent and 2 percent.

Of course, we cannot associate all the swings in the measures with the Fed's policy announcements. Like any other macroeconomic variable, expectations are affected by other variables and beliefs about future economic conditions. It is very hard to disentangle the effects of such assessments from announcements of policy changes. However, looking at the data, it seems that agents do not see an inflationary threat on the horizon.

GDP Growth in U.S. Metropolitan Areas during the Recovery

04.01.13

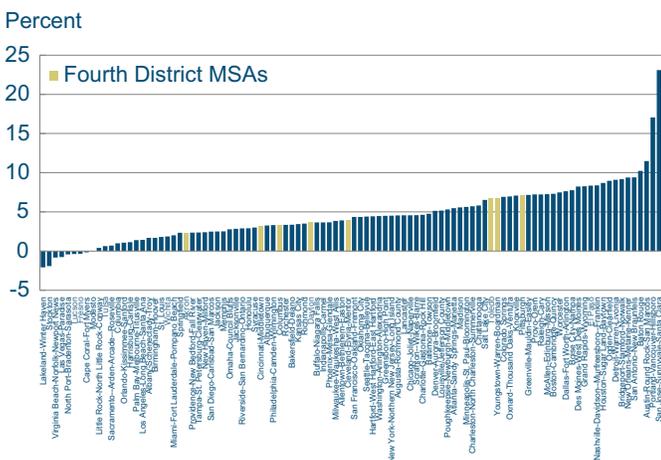
by Timothy Dunne and Kyle D. Fee

The Bureau of Economic Analysis recently released preliminary 2011 GDP data for all 366 metropolitan statistical areas (MSAs) in the nation. In general, these metropolitan areas account for 90 percent of the nation’s GDP. Metro-area real GDP increased 4.7 percent between 2009 and 2011—the first two years of the recovery. However, the growth of GDP during the recovery varies widely across metropolitan areas.

On one end of the distribution are MSAs that continued to struggle with the effects of the housing boom and the subsequent bust. Metropolitan areas in the “sand states” of Florida, Nevada, California, and Arizona populate this lower end of the growth distribution. The upper end of the GDP growth distribution tends toward MSAs associated with natural resource extraction or high-tech industries. In addition, several metros associated with automobile assembly also showed significant growth, as production of vehicles picked up markedly over this period.

One can disaggregate GDP growth at the metropolitan level into two components: the contribution due to changes in output-per-employee (labor productivity) and the contribution due to expansion in the number of employees. Both factors contribute to the changes that we observe in overall GDP growth. For the top 100 metros (by population), GDP grew on average by 4.4 percent from 2009 to 2011. About 43 percent of that growth was due to increases in GDP per employee and 57 percent was due to growth in employment. For the fastest-growing metros, output-per-employee accounts for the majority of GDP growth, with the exception of Austin, Texas, where employment growth exceeded output-per-employee growth. For slow-growing MSAs, there is actually a decline in output-per-employee over the 2009 to 2011 period. Combined with very slow (and sometimes negative)

MSA GDP Growth, 2009–2011



Note: Sample includes the top 100 metropolitan statistical areas (MSAs). Source: Bureau of Economic Analysis.

MSA Productivity, Employment, and GDP Growth, 2009–2011: Highest- and Lowest-Growth Metro Areas

	Productivity	+ Employment	= GDP
Top 100 MSA average	1.9	2.5	4.4
San Jose, CA	16.1	4.6	20.7
Portland, OR	12.1	3.7	15.8
Austin, TX	4.5	6.4	10.9
Baton Rouge, LA	8.2	1.5	9.7
San Antonio, TX	5.4	3.6	9.0
New Orleans, LA	6.5	2.4	8.9
Tucson, AZ	-1.0	0.7	-0.3
Sarasota, FL	-2.1	1.7	-0.4
Las Vegas, NV	-1.0	0.3	-0.7
Norfolk, VA	-1.3	0.5	-0.8
Stockton, CA	-1.3	-0.6	-1.9
Lakeland, FL	-1.2	-0.9	-2.1

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

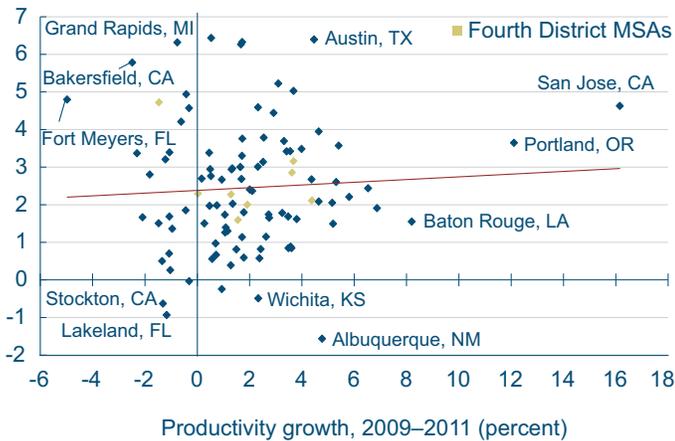
MSA Productivity, Employment, and GDP Growth, 2009–2011: Fourth District Metro Areas

	Productivity	+ Employment	= GDP
Pittsburgh, PA	3.7	3.1	6.8
Toledo, OH	3.6	2.9	6.5
Youngstown, OH	4.4	2.1	6.5
Cleveland, OH	1.9	2.0	3.9
Lexington, KY	0.6	3.3	3.9
Dayton, OH	1.3	2.3	3.6
Columbus, OH	-1.5	4.8	3.3
Cincinnati, OH	1.5	1.6	3.1
Akron, OH	0.0	2.3	2.3

Source: Bureau of Economic Analysis; Bureau of Labor Statistics.

Employment Growth versus Productivity Growth

Employment growth, 2009–2011 (percent)



Source: Bureau of Economic Analysis; Bureau of Labor Statistics.

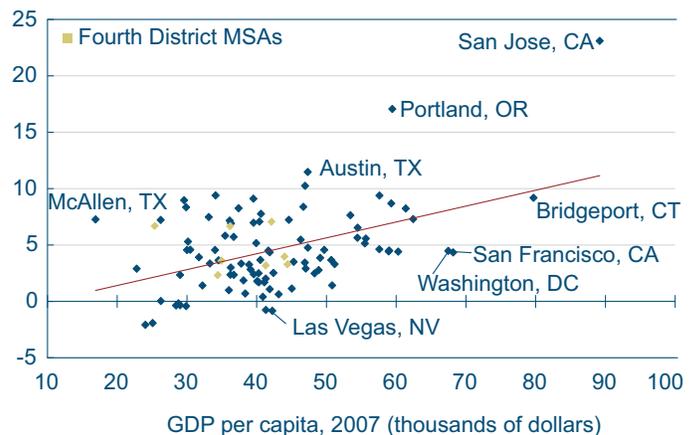
employment growth, this yields a set of metro areas where real GDP contracted over the early phases of the recovery.

Fourth District metro areas also experienced considerable variation in real GDP growth between 2009 and 2011. Pittsburgh had the highest growth rate over period, experiencing both solid growth in employment and labor productivity. Pittsburgh was followed closely by Toledo and Youngstown in terms of growth during the recovery. However, it is important to note that Toledo and Youngstown suffered severe contractions during the Great Recession, while Pittsburgh had a much milder recession. The net result is that Pittsburgh's real GDP in 2011 had risen above its pre-recession (2007) level, whereas Youngstown and Toledo's economic activity remained well below their 2007 levels.

Over the 2009–2011 period, there was little correlation between employment growth and growth in output-per-employee at the metropolitan level. The correlation is weakly positive. Fourth District metros are generally in the middle of the scatterplot, showing that the District's metros had pretty typical employment and labor productivity growth. The exception is Columbus, which experienced relatively high employment growth but negative productivity growth.

Real GDP Growth and Real GDP

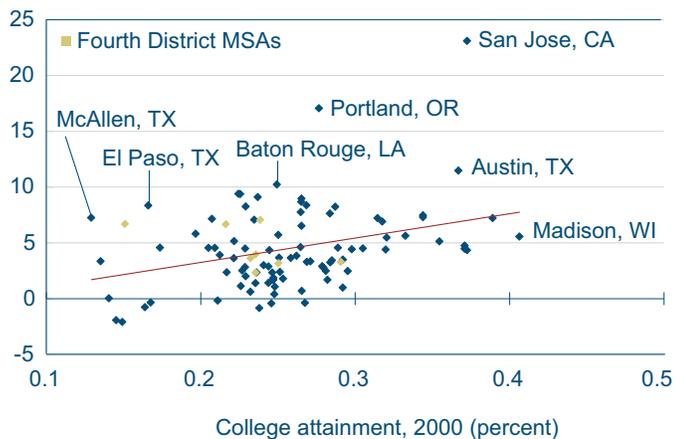
Real GDP growth per capita, 2009–2011 (percent)



Source: Bureau of Economic Analysis; American Community Survey.

Real GDP Growth and College Attainment

Real GDP growth, 2009–2011 (percent)

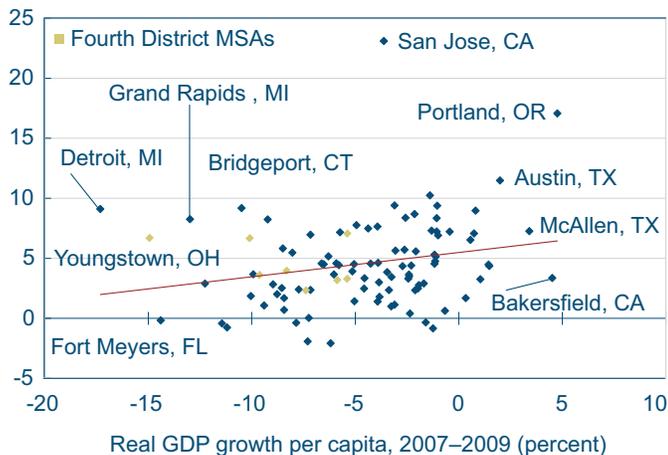


Source: Bureau of Economic Analysis, American Community Survey.

The growth in real GDP over 2009 to 2011 is related to a number of different attributes and measures of economic activity for metropolitan areas. Metropolitan areas that saw higher growth in real GDP over the period tended to be metropolitan areas that had higher GDP per capita prior to the recession (2007) and higher educational attainment. In the latter case, educational attainment is constructed as the share of the adult population with a four-year college degree (or college attainment). San Jose, California, and Portland, Oregon, are clearly outliers in the scatter diagrams with high growth, high per capita GDP, and high educational attainment. Even if such data points were omitted from the analysis, there would still remain a positive correlation between real GDP growth and per capita GDP and real GDP growth and college attainment.

Post-Recession versus Recession GDP Growth

Real GDP growth, 2009–2011 (percent)



Source: Bureau of Economic Analysis.

Yield Curve and Predicted GDP Growth, March 2013

Covering February 23, 2012–March 19, 2013
by Joseph G. Haubrich and Patricia Waiwood

Highlights

	March	February	January
Three-month Treasury bill rate (percent)	0.10	0.13	0.08
Ten-year Treasury bond rate (percent)	2.04	2.00	1.87
Yield curve slope (basis points)	194	187	179
Prediction for GDP growth (percent)	0.5	0.4	0.6
Probability of recession in one year (percent)	5.9	6.4	7.1

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

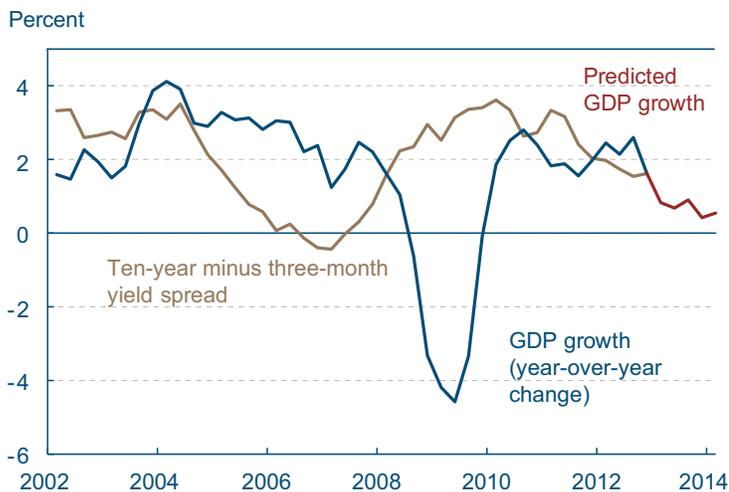
Overview of the Latest Yield Curve Figures

Over the past month, the yield curve has gotten somewhat steeper, as long rates rose and short rates fell (both slightly). The three-month Treasury bill fell to 0.10 percent (for the week ending March 15), down from February's 0.13 percent but above January's 0.08. The ten-year rate moved up to 2.04, up from February's 2.00 and well above January's 1.87 percent. The slope increased to 195 basis points, surpassing both February's 187 basis points and January's 179 basis points.

The steeper slope had a small impact on projected future growth, however. Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 0.5 percent rate over the next year, up just a bit from February's 0.4 percent rate over the next year, and just down a bit from January and December. The strong influence of the recent recession is still leading towards relatively low growth rates. Although the time horizons do not match exactly, the forecast comes in on the more pessimistic side of other predictions but like them, it does show moderate growth for the year.

The change in slope had a bit more impact on the probability of a recession. Using the yield curve to predict this, we estimate that the expected chance of the economy being in a recession next March at 5.9 percent, slightly less than the February prediction, which came in at 6.4 percent, and also less than January's 7.1 percent. So although our approach is somewhat pessimistic as regards the level of growth over the next year, it is quite optimistic about the recovery continuing.

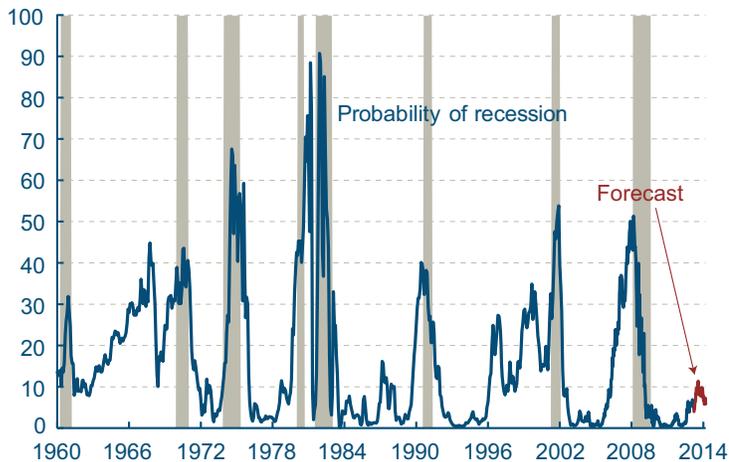
Yield Curve Predicted GDP Growth



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

Recession Probability from Yield Curve

Percent probability, as predicted by a probit model

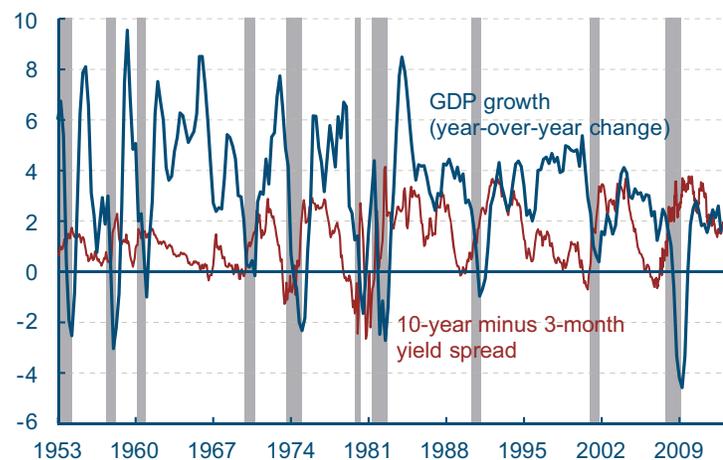


Note: Shaded bars indicate recessions.

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

Yield Curve Spread and Real GDP Growth

Percent



Note: Shaded bars indicate recessions.

Source: Bureau of Economic Analysis, Federal Reserve Board.

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

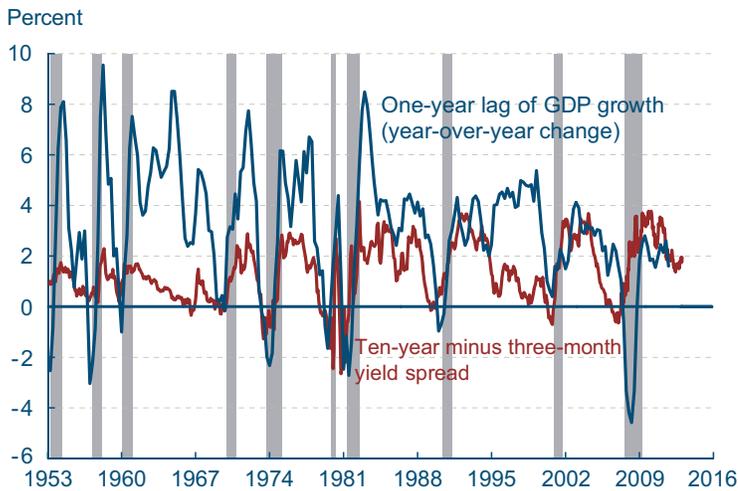
We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

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 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.

For more on the yield curve, read the *Economic Commentary* “Does the Yield Curve Signal Recession?” at <http://www.clevelandfed.org/Research/Commentary/2006/0415.pdf>.

For more on the Federal Reserve Bank of New York’s estimate for recession, visit http://www.newyorkfed.org/research/capital_markets/ycfaq.html.

Recent Changes in FOMC Communication and the Committee's Updated Projections

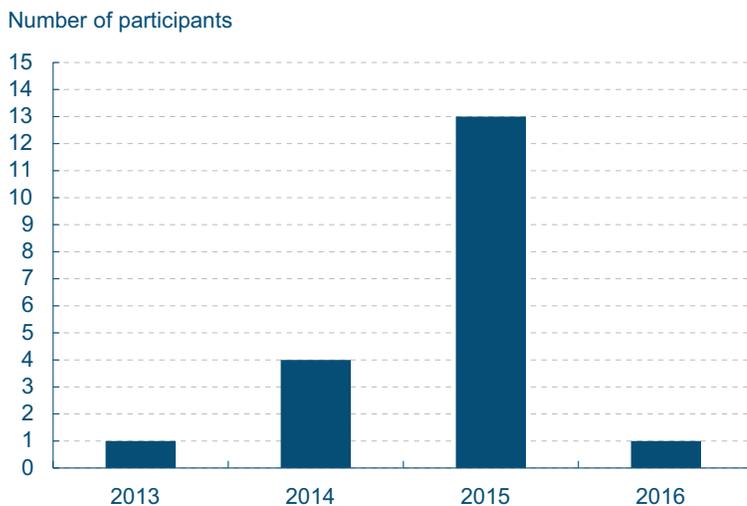
03.26.13

by Todd Clark and Bill Bednar

Over time, the Federal Open Market Committee (FOMC) has sought to improve its public communications by providing more guidance on the likely future path of monetary policy. That is, the FOMC has tried to better explain to the public the direction the Committee expects its target for the federal funds rate to take in the future. In one historic example, in August 2003, the Committee extended its usual post-meeting statement to provide unprecedented forward guidance about the future path of the federal funds rate, which the FOMC had lowered to 1 percent in June 2003: "...the Committee believes that policy accommodation can be maintained for a considerable period." In the last few years, the FOMC has taken several additional steps to extend the forward guidance on policy.

In the more recent set of enhancements, the FOMC gave its first new bit of forward guidance about the path of the federal funds rate in the beginning of 2009, when it stated that exceptionally low interest rate levels were expected to be warranted for "an extended period of time." In August 2011, the Committee replaced this initial qualitative guidance with a more explicit, date-based guidance approach, reporting in its post-meeting statement that exceptionally low levels of the federal funds rate were expected "at least through mid-2013." Arguably the biggest innovation, however, came in December 2012, when the Committee replaced the date-based guidance with specific thresholds related to economic activity. Since the Committee's December 2012 meeting, FOMC statements have indicated that exceptionally low federal funds rates "will be appropriate at least as long as the unemployment rate remains above 6.5 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored."

FOMC Projections: Timing of Policy Firming



Source: Federal Reserve Board.

The current threshold-based forward guidance allows the public to more easily relate the likely future path of the federal funds rate to the Committee's outlook for inflation and unemployment. From the most recent release of the FOMC's projections, a majority of participants see very low short-term interest rates extending into 2015. This makes sense considering their projected paths for GDP growth, the unemployment rate, and inflation.

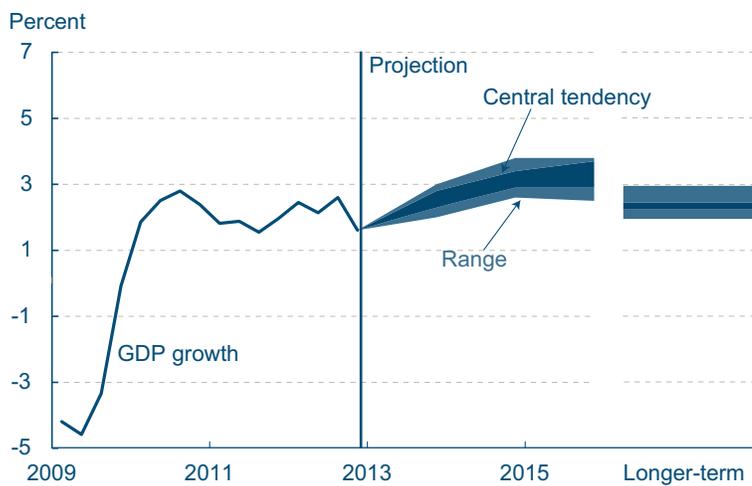
In terms of overall economic activity, most participants see GDP growth in the range of 2.3 percent to 2.8 percent over the next year, 2.9 percent to 3.4 percent in 2014, and 2.9 percent to 3.7 percent in 2015. These projections reflect an economy continuing to recover from the deep 2007-2009 recession, with GDP growing at a rate at or above the long-term growth rate of GDP, which most FOMC participants put at 2.3 percent to 2.5 percent.

The expectation of continued recovery is also reflected in the FOMC's most recent projections of unemployment, which show unemployment gradually declining over the next few years. While there is some variation among participants in terms of the expected length of time it will take to reach more normal employment levels, the central tendency of the unemployment rate projections for FOMC participants reaches the 6.5 percent threshold sometime during 2015. For the longer term, most participants expect an unemployment rate of between 5.0 percent and 6.0 percent.

Turning to inflation, most FOMC participants project PCE inflation rates below the 2.5 percent threshold mentioned in the statement. The top end of the central-tendency-projection range for PCE inflation is 1.7 percent in 2013 and 2.0 percent in 2014 and 2015.

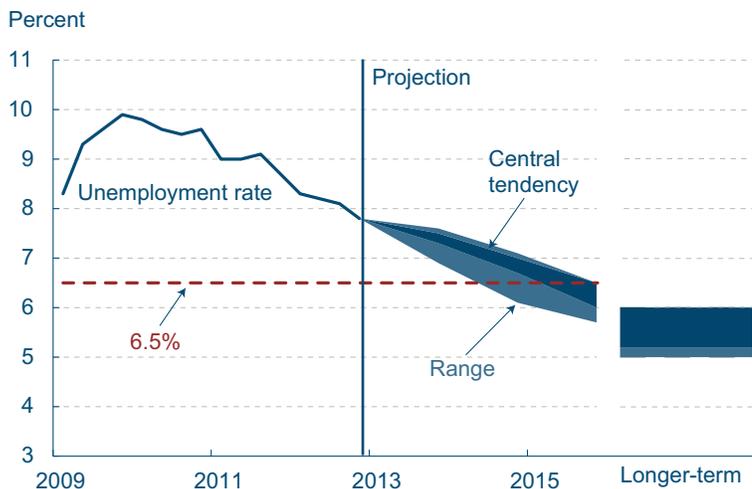
Consistent with these projections for GDP growth, unemployment, and inflation and with the sense that longer-term inflation expectations currently remain well anchored, the most recent Summary of Economic Projections indicates that most FOMC participants see the federal funds rate increasing above the current 0 to 0.25 percent target sometime during 2015. While most participants project

FOMC Projections: GDP Growth



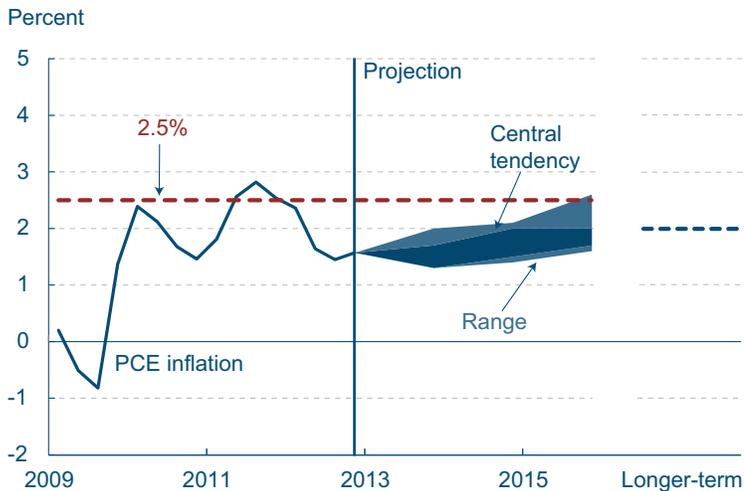
Source: Federal Reserve Board

FOMC Projections: Unemployment Rate



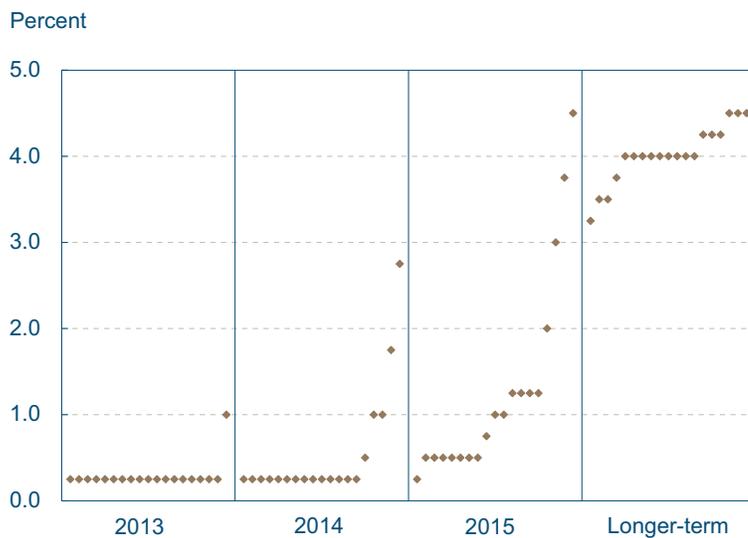
Source: Federal Reserve Board.

FOMC Projections: PCE Inflation



Source: Federal Reserve Board.

FOMC Projections: Fed Funds Rate



Source: Federal Reserve Board.

that inflation will remain lower than the 2.5 percent threshold in 2015, most also expect the unemployment rate to hit or fall below the 6.5 percent threshold.

Still, some caution about the importance of these unemployment and inflation thresholds is needed, as the FOMC has stated that they are not automatic triggers for action on the fed funds rate. For example, the most recent FOMC statement indicates that, “in determining how long to maintain a highly accommodative stance of monetary policy, the Committee will also consider other information, including additional measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial developments.

It is also important to note that the thresholds are intended for guidance on the path of the federal funds rate and not for guidance on asset purchases, the other main policy tool currently in use. However, what the thresholds do provide is a way of viewing the projected path of the fed funds rate in terms of the projected path of the overall economy, and they provide some context for the timing in which FOMC members expect that this target interest rate may begin to adjust toward a more normal long-term level.

The Impact of Sequestration on Federal Outlays in Fourth District Metropolitan Areas

03.26.13

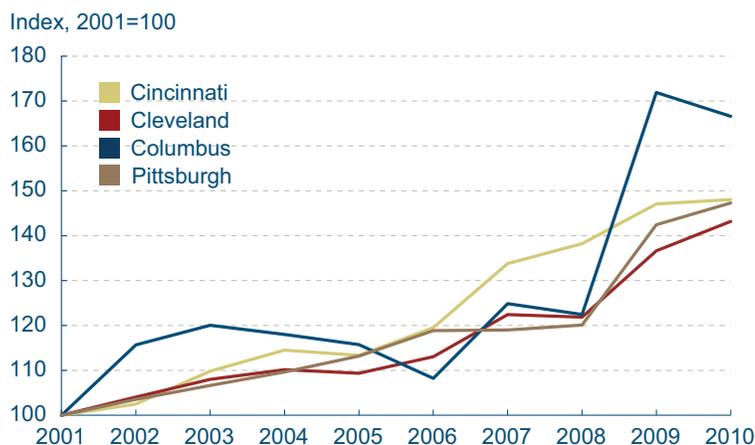
by Stephan Whitaker and Chris Vecchio

During the previous decade, federal expenditures and transfers flowing into the metro areas of the Fourth District rose by 48 percent. By 2010, nine of the district's ten largest metro areas were receiving inflows of federal funding larger than one-fifth of their gross metropolitan product. Federal money has helped smooth the district's economy through both the business cycle and structural changes. However, reliance on federal spending means the districts' metro areas will feel the impact of the sequestrations mandated by the Budget Control Act of 2011.

Federal expenditures include Social Security, Medicare, Medicaid, defense contracts, research grants, and all salaries of military and federal employees. Federal outlays in most Fourth District metros have increased between 37 percent and 55 percent over the decade. The Dayton area experienced the least growth at 29 percent. From 2008 to 2009, federal grants recorded for the Columbus metro area nearly doubled from \$3.75 billion to \$7.42 billion. These grants, which included stimulus spending, placed Columbus's federal outlay growth at 67 percent.

When federal inflows are considered relative to Gross Metropolitan Product (GMP), some pronounced differences are revealed across the Fourth District. In the Cleveland and Cincinnati areas, federal spending is just below the national average of 24.1 percent of gross domestic product. In Toledo, Pittsburgh, Columbus, and Akron, federal inflows are 0.75 to 1.5 percentage points higher than the average. Columbus is distinguished by receiving the most in grants—equivalent to 8.6 percent of its GMP—while its direct payments receipts, including Social Security and Medicare, are very low at 7.6 percent of GMP. In the Erie and Youngstown metro areas, direct payments equal 18.2 percent and 24.6 percent of the metros' GMPs, respectively. Dayton, Erie, and Youngstown receive federal in-

Growth of Total Federal Expenditures in Fourth District Metro Areas



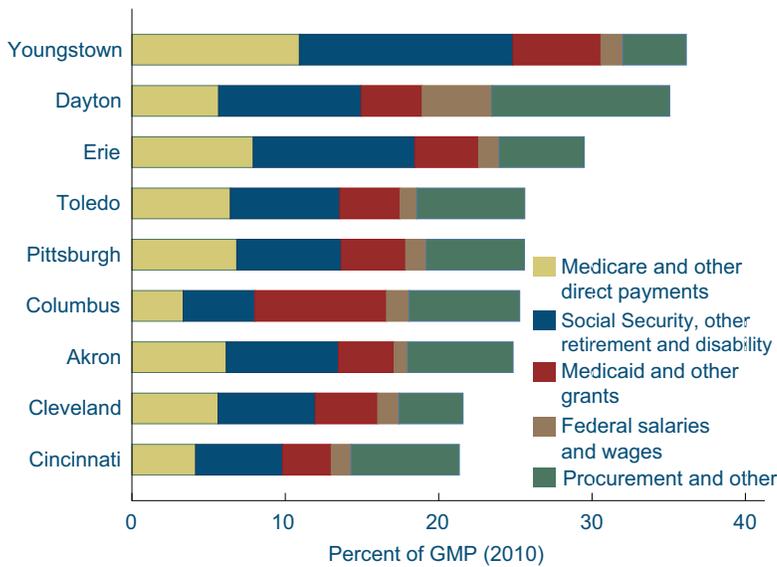
Sources: Consolidated Federal Funds Reports , U.S. Census Bureau; and authors' calculations.

Growth of Total Federal Expenditures in Fourth District Metro Areas



Sources: Consolidated Federal Funds Reports , U.S. Census Bureau; and authors' calculations.

Federal Funding by Type



Sources: Consolidated Federal Funds Reports , U.S. Census Bureau; and authors' calculations.

flows equal to more than 29 percent of their GMPs. In Dayton, a mid-sized metro (approximately 850,000 residents), the presence of a major military installation, Wright-Patterson Air Force Base, can be seen in the salaries and in the procurement category, which includes defense procurement.

The sequestration's cuts exempt Social Security, Medicaid, and military pay. Cuts of 7 percent to 10 percent will be imposed on nonmandatory spending, including defense spending other than military pay. Medicare was not entirely exempt, but the cut to Medicare was limited to 2 percent. In this round of cuts, Columbus and Dayton stand to lose the most because their receipts of grant, salary, and procurement income are the largest relative to their GMPs. An 8 percent decrease in grants (excluding Medicaid), salaries, and other expenditures would correspond to a loss of \$1.1 billion or 1.2 percent of the GMP for Columbus. For Dayton, an 8 percent cut would correspond to \$408 million, which is also approximately 1.2 percent of its GMP. This assumes a third of Dayton's federal salaries are drawn by military members, and thus would be exempt.

More recent data would help us understand the immediate impact of the sequestration, but the source of our data above, the Consolidated Federal Funds Reports (CFFR), was discontinued after reporting on the 2010 Fiscal Year. An alternative source of data is available from the Bureau of Economic Analysis (product CA35), though it is an incomplete substitute. The CFFR grouped Social Security, Medicare, and Medicaid payments into its "direct payment" and "grants" categories. These three large budget items are also reported in the "personal transfers" category of the BEA's product CA35. From the BEA's 2010 to 2011 figures, we can see that "personal transfers" from the federal government rose only modestly or declined for most metro areas after adjusting for inflation.

Metro Aggregate Flows Including Social Security, Medicare and Medicaid

	CFFR 2010	BEA CA35	BEA CA35	BEA CA35
	Direct payments and grants, 2010	Personal transfer receipts, 2010	Personal transfer receipts, 2011	Percent change, 2010 to 2011
Akron	4.68	5.44	5.43	-0.2
Cincinnati	12.90	14.50	14.44	-0.4
Cleveland	16.50	16.80	16.87	0.4
Columbus	15.10	11.70	11.83	1.1
Dayton	6.21	6.53	6.53	0.1
Erie	6.21	6.53	6.53	0.1
Lexington	1.01	2.90	2.89	-0.4
Pittsburgh	20.10	21.50	21.04	-2.2
Toledo	4.65	5.31	5.32	0.2
Youngstown	4.95	5.26	5.23	-0.7

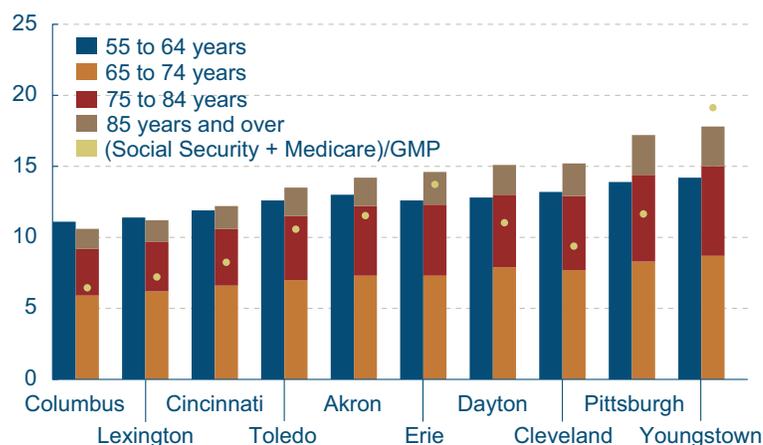
Notes: Figures are in billions of 2010 dollars. The CFFR, discontinued after reporting on the 2010 fiscal year, grouped Social Security, Medicare, and Medicaid payments into its "direct payment" and "grants" categories. The BEA's product CA35 groups these items in its "personal transfers" category.

Sources: Consolidated Federal Funds Reports, U.S. Census Bureau, Bureau of Economic Analysis (product CA35).

Despite the recent pause, personal transfers should be driven higher by two strong trends: the increase of health care costs and the aging of the population. Social Security and Medicare payments are positively related to the share of the population that is over 65. Over the next decade, the cohort of people currently aged 55 to 64 will become eligible to receive these benefits. This cohort is nearly as large as all cohorts over 65 combined.

Policymakers in every region of the Fourth District have pursued explicit policies of growing "Eds and Meds" sectors. These growth industries depend heavily on federal expenditures. If future entitlement reforms apply a sequestration-like cut (8 percent, for example) to Social Security and Medicare, this would reduce payment flows to Akron and Pittsburgh by the equivalent of nine-tenths of a percentage point of their GMP. The same cut would reduce funding to Erie and Youngstown, which rely heavily on Social Security and Medicare dollars flowing to their elderly, by 1.1 percent and 1.5 percent of their GMPs, respectively. To the extent that there is a multiplier effect of federal spending in a region, the cumulative impact of federal spending cuts could be worse than these direct impacts. Federal jobs, contracts, and pensions

Age Cohorts and Retirement Benefits



Sources: Consolidated Federal Funds Reports, U.S. Census Bureau; and authors' calculations.

used to be prized because they were stable through the business cycle and even countercyclical. The impending arrival of federal budget cuts reminds us that being dependent on politically-determined streams of revenue carries its own risks.

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