

Economic Trends

October 2014 (September 25, 2014-October 9, 2014)

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FEDERAL RESERVE BANK
of CLEVELAND

Banks' Ability to Generate Income after the Crisis

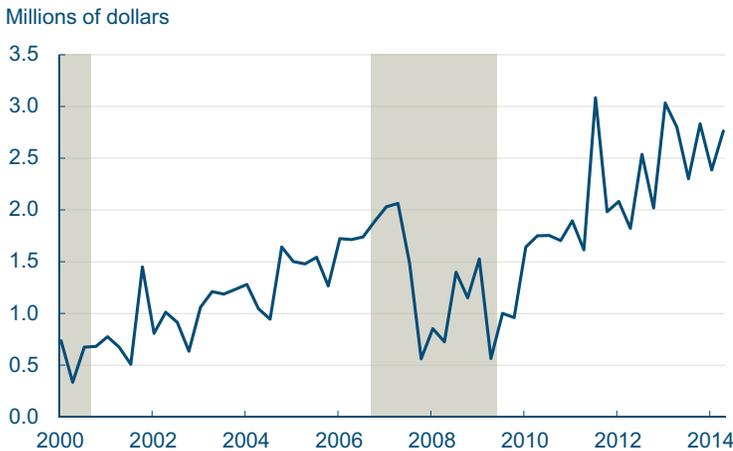
10.16.14

by Mahmoud Elamin

Has the financial crisis affected banks' ability to generate income? Has it forced them to generate income in new ways? To answer these questions, we look at banks' net income and two components of net income, net interest income and net noninterest income. We find that although net income has recovered and is now beyond where it was before the crisis, the crisis has affected the income-generating capacity of large and small banks differently.

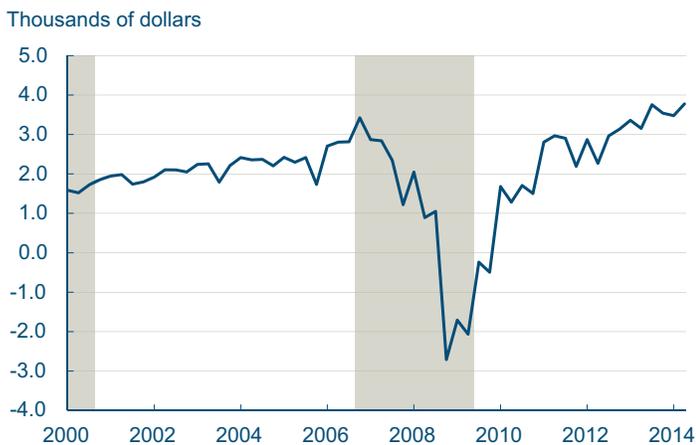
Net income (which economists call profit) has been increasing at banks both large and small since the end of the crisis. At large banks, net income had been on an upward trajectory since 2000, but after the crisis hit, it crashed. Around mid-2009, it began to recover and has now been higher on average than before the crisis. At small banks, the path of net income is similar. Before the crisis, it was slightly increasing, and during the crisis, it dipped severely. It is currently trending up and is now at a higher level than before the crisis.

Net Income for Large Banks



Notes: Data include the top 0.5 percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Net Income for Small Banks



Notes: Data include the lower 99.5th percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Net Noninterest Income for Large Banks



Notes: Data include the top 0.5 percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Net Noninterest Income for Small Banks



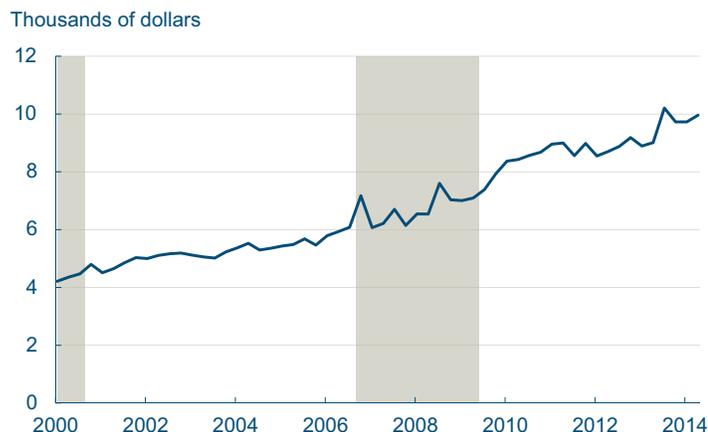
Notes: Data include the lower 99.5th percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Net Interest Income for Large Banks



Notes: Data include the top 0.5th percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Net Interest Income for Small Banks



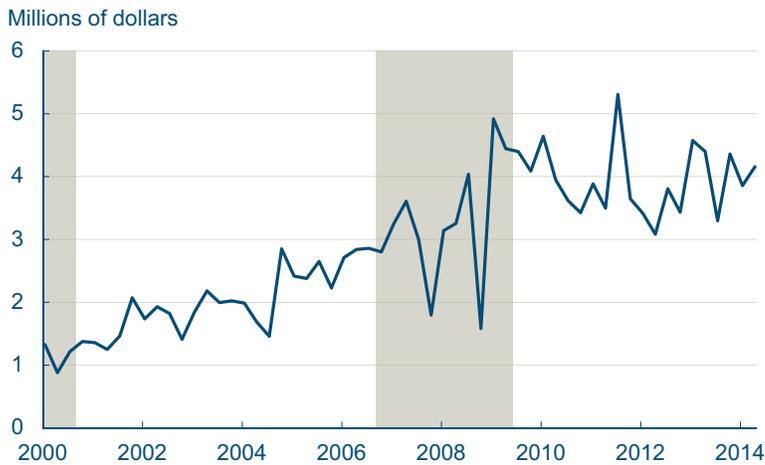
Notes: Data include the lower 99.5th percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Net noninterest income also looks similar at large and small banks since the crisis. Net noninterest income is income from banks' other revenue-generating activities, like trading and fees, minus non-interest costs, like salaries and benefits. Since the crisis, net noninterest income has transitioned to a lower level at banks both small and large.

Net interest income, on the other hand, has followed different trends at large and small banks since the crisis. Net interest income is roughly what the bank makes off the difference in interest between what it borrows and what it lends. At large banks, net interest income has plateaued, while at small banks, it continues on an upward trend uninterrupted by the crisis.

If we sum net interest and noninterest income, we get a measure of net income that excludes provisions for loan losses and other extraordinary items. Since banks can smooth out changes in net income by changing the provisioning for loan losses, this sum provides a less window-dressed measure of the ability to generate income. As expected, the crisis did not have as substantial an effect on this sum as on net income. It rose before the crisis, experienced high fluctuations during it, and has levelled off since then. In terms of levels, large banks are faring well relative to where they were before the crisis, but the absence of an upward trend shows a marked contrast with the experience of smaller banks. At small banks, the effect of the crisis is transient. Fluctuations increased around the trend, but the same upward trend continues after the crisis.

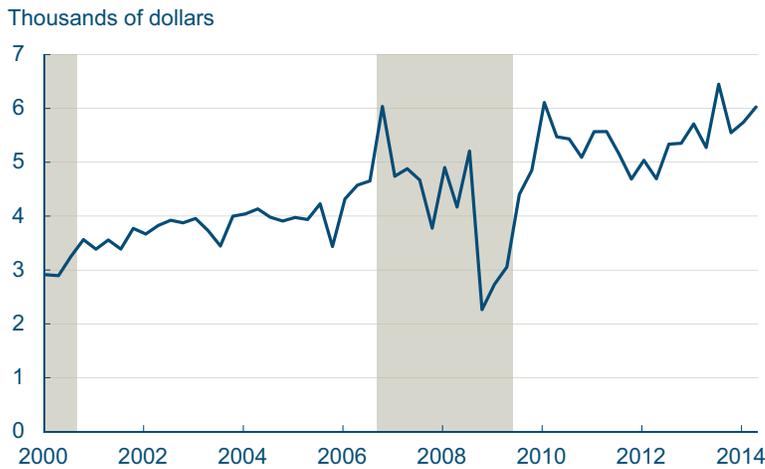
Sum of Net Interest and Noninterest Income for Large Banks



Notes: Data include the top 0.5th percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

From these upward trends in the sum of net interest and noninterest income, we deduce that the crisis did not have a material effect on the income-generating process of small banks, the decrease in net noninterest income notwithstanding. Large bank's income generation, however, seems to have stalled. Most of the action we see in net income is missing from the sum of net interest and noninterest income. This shows that transient changes in provisioning for loan losses may be the driver behind the net income increase at large banks.

Sum of Net Interest and Noninterest Income for Small Banks



Notes: Data include the lower 99.5th percentile banks in total assets. Shaded bars indicate recessions.
Source: FDIC Call Reports.

Regional Bank Health: Trends in Net Charge-Offs

10.14.14

by Vinod Venkiteshwaran and Patricia Waiwood

According to a survey by the American Bankers Association, regional banking organizations (RBOs) operate in all 50 states, and in 2012 they were responsible for more than \$1.7 trillion in lending to the communities in which they operated. RBOs not only generate a large amount of loans, lending also constitutes a significant segment of the RBOs' balance sheets—net loans and leases constitute over half of their total assets, according to a recent article in the Quarterly Journal of the Clearinghouse.org. Even though no one regional bank is likely to be so large as to be systemically important—RBOs are generally considered to be bank holding companies with between \$10 billion and \$50 billion in assets—their collective impact on the US economy could be substantial.

For this reason, we want to assess the health of RBOs' loan portfolios by analyzing their net charge-off behavior over the past two years. Net charge-offs are the difference between loans that have been deemed uncollectable and written off the bank's balance sheet—charge-offs—and any subsequent recovery of those loans. Net charge-offs are often used by researchers as a proxy for bank risk because they tend to increase with riskier lending activities. We use quarterly data from SNL Financial to analyze regional banks' net charge-offs over the past two years.

Net Charge-Offs as a Percentage of Total Loans and Leases

As a percent of total loans and leases, total net charge-offs have fallen from about 0.20 percent in the first quarter of 2012 to about 0.10 percent in the first quarter of 2014. In other words, the banks in our sample have been writing off increasingly smaller fractions of outstanding loans over the past couple of years. This is good news. This trend could result from either declining charge-offs or from increased recovery rates on previous charge-offs. A closer look at charge-offs and recoveries suggests a decline in charge-offs is more likely.

Net Charge-Offs as a Percent of Loans and Leases



Source: SNL Financial.

Charge-offs fell from \$1.4 billion to about \$800 million over the couple of years before 2014, which equals a decline from about 0.25 percent of total loans to about 0.10 percent. During the same period, recoveries hovered between \$200 million and \$400 million, or, as a percent of total loans, between 0.05 percent and 0.03 percent.

Decomposing Net Charge-Offs across Business Lines

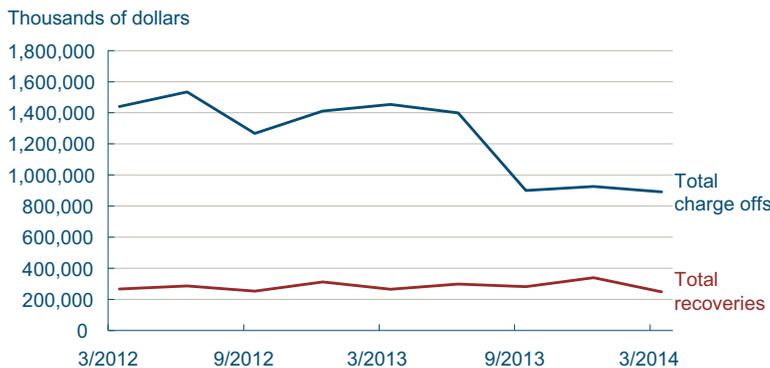
Now that we've drawn the big picture, let's take a closer look at the composition of net charge-offs across different business lines to see which, if any, loan type is driving the overall trend. We examine five broad business lines: real estate loans, agricultural production loans, commercial and industrial (C&I) loans, consumer loans, and all other loans.

In the context of this discussion, we should mention that banks follow different criteria when writing off different types of delinquent loans. In the case of consumer loans, banks generally follow a uniform charge-off policy set by the banks' regulators: open-end credit (such as a home equity line of credit) is written off at 180 days delinquency, and closed-end credit (such as an auto loan) is written off at 120 days delinquency. The criteria for other loans, such as C&I loans, are less stringent and more subject to standards that the bank's management sets.

The two loan categories that comprise the largest shares of total net charge-offs are consumer loans and real estate loans. In the most recent quarter for which we have data (2014:Q1), each of these categories comprised about 39 percent of net charge-offs, while C&I loans were at a distant third, with 19 percent. Net charge-offs of consumer loans have gained a greater share of total net charge-offs since 2012, while real estate's share has fallen by almost half. This is consistent with the expectation that charge-offs tend to follow growth in the bank's loan portfolios. That is, changes in the dollar value of charge-offs is typically proportional to the growth in the loan portfolios. In recent years, RBOs have experienced higher growth rates in their consumer lending than in their real estate lending.

Since the composition of net charge-offs tends to

Charge-Offs and Recoveries



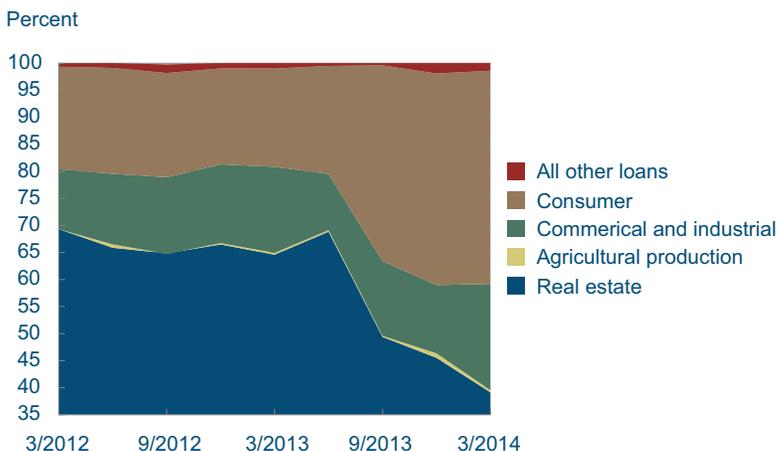
Source: SNL Financial.

Charge-Offs and Recoveries as a Percent of Loans and Leases



Source: SNL Financial.

Composition of Net Charge-Offs



Source: SNL Financial.

vary over time, we construct a quarterly charge-off concentration index akin to those used to measure market concentration. The index can be used to quickly assess concentrations of charge-offs across loan categories. We compute this concentration index as the sum of the squared share of each loan category's net charge-offs in each quarter. Concentration indices are typically bounded between 0 and 1, and higher values would indicate, in the present case, that charge-offs are being driven by a particular loan type. To illustrate the interpretation, two extreme examples of the calculation we made are provided below.

Our concentration index has been declining since 2012. From this, we can conclude that net charge-offs have become more dispersed across loan categories and that no one loan business line is driving the overall trend.

Regional Differences in Net Charge-Offs

Next we compare the composition of net charge-offs and loan portfolios across a few Federal Reserve Districts: New York, Richmond, Kansas City, and Cleveland. These four districts (along with Minneapolis, which we don't include because it has only one regional bank) had the highest average ratios of net charge-offs to total loans of the 12 districts, as of 2014:Q1. New York had the largest number of regional banks in its jurisdiction (10 RBOs) at the time, Richmond had three, Kansas City five, and Cleveland three.

The comparison of charge-offs and loan composition data is consistent with the expectation that charge-offs and loan growth tend to move in tandem (though we acknowledge that we are looking at only a single point in time). For example, in the case of RBOs in the Cleveland and Richmond Districts, real estate loans comprise a majority of the lending portfolio, 74 percent and 86 percent, respectively, and consistent with this, the charge-offs on real estate loans are indeed larger compared to other loan categories in these districts, 60 percent and 86 percent, respectively. The pattern of charge-offs at RBOs in the New York and Kansas City Districts is somewhat consistent with this expectation. While real estate loans do comprise a larger share of the lending portfolio at these banks, it appears that

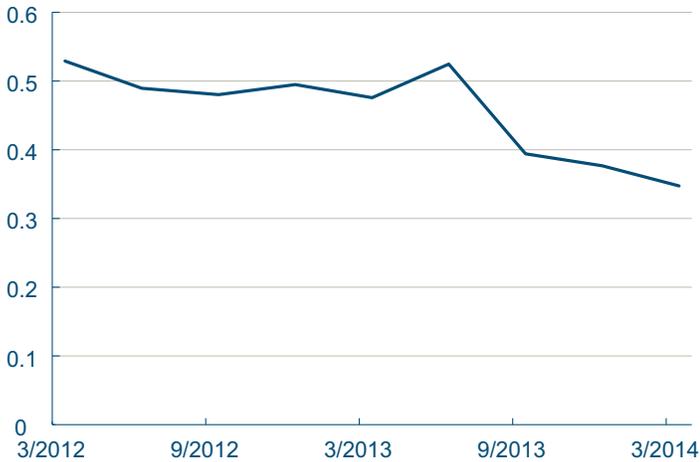
Net Charge-Offs Are Highly Concentrated

Loan category	Share of net charge-offs	Share of net charge-offs (squared)
Real estate loans	1	1
Consumer loans	0	0
C&I loans	0	0
Agricultural production loans	0	0
Other loans	0	0
Total		1

Net Charge-Offs Are Evenly Distributed

Loan category	Share of net charge-offs	Share of net charge-offs (squared)
Real estate loans	0.20	0.04
Consumer loans	0.20	0.04
C&I loans	0.20	0.04
Agricultural production loans	0.20	0.04
Other loans	0.20	0.04
Total		0.20

Concentration Index



Source: SNL Financial.

Aggregate Ratio of Net Charge-Offs to Loan Balances by Loan Category, 2014:Q1

District	Real Estate	C&I	Consumer	All Other
Cleveland	0.22	0.08	0.44	0.14
Kansas City	0.07	0.22	2.23	0.33
New York	0.68	4.28	3.22	0.08
Richmond	0.75	0.35	1.07	0.02

Source: SNL Financial.

the charge-offs on consumer loans are greater than that of real estate loans. In general, these patterns in charge-offs appear to be similar to those of recent quarters, according to transcripts of the earnings conference calls of some of the RBOs (the two publicly traded RBOs in the Cleveland District and two of the largest publicly traded RBOs in the New York District).

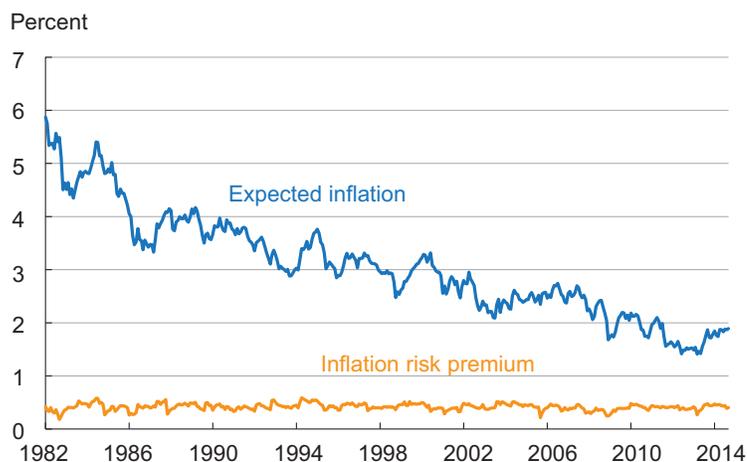
The table below shows the aggregated ratio of net charge-offs to loan balances by loan category in each of the four districts (excluding agricultural production loans, which comprise a very small proportion of total loans). The ratios in the four districts are in line with the aggregate trends discussed earlier. At the RBOs in these districts, charge-offs are higher for consumer loans than the other types of loans. In addition, the banks in the New York District are charging off proportionally greater amounts in their C&I portfolio compared to the other districts.

Our analysis has shown that regional banks have been writing off increasingly smaller amounts of loans over the past couple of years, and that these net charge-offs have become less concentrated in particular loan categories. By this one measure, at least, the evidence suggests that regional bank loan portfolios may have become less risky.

Cleveland Fed Estimates of Inflation Expectations, September 2014

News Release: September 17, 2014

Ten-Year Expected Inflation and Real and Nominal Risk Premia

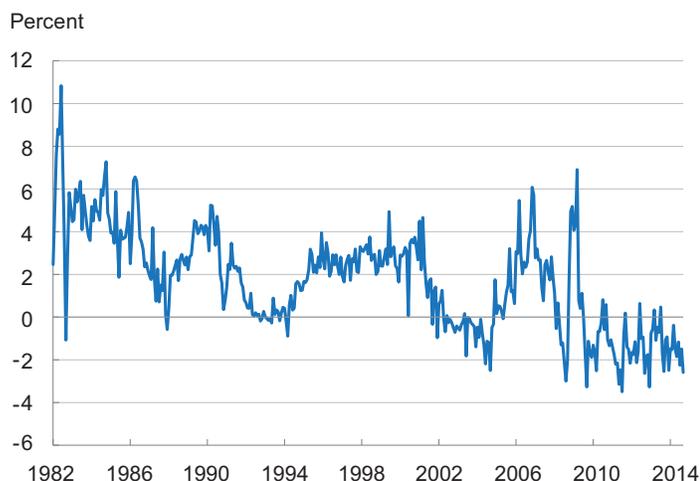


Source: Haubrich, Pennacchi, Ritchken (2012).

The latest estimate of 10-year expected inflation is 1.89 percent, according to the Federal Reserve Bank of Cleveland. In other words, the public currently expects the inflation rate to be less than 2 percent on average over the next decade.

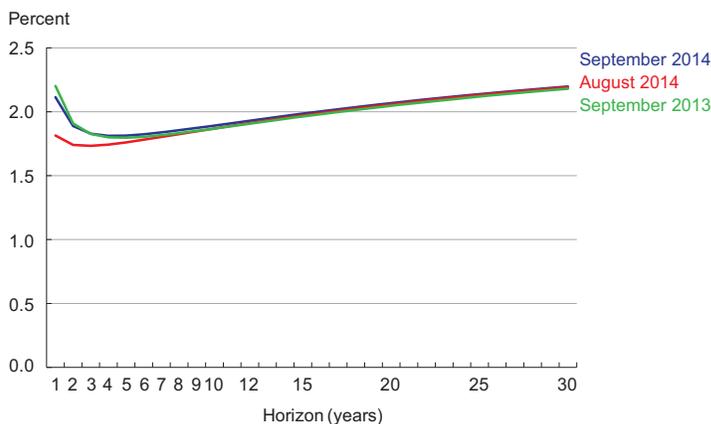
The Cleveland Fed’s estimate of inflation expectations is based on a model that combines information from a number of sources to address the shortcomings of other, commonly used measures, such as the “break-even” rate derived from Treasury inflation protected securities (TIPS) or survey-based estimates.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

Real Interest Rate



Source: Haubrich, Pennacchi, Ritchken (2012).

Expected Inflation Yield Curve



Source: Haubrich, Pennacchi, Ritchken (2012).

Global Factors and Domestic Inflation

09.25.14

by William Bednar and Edward S. Knotek II

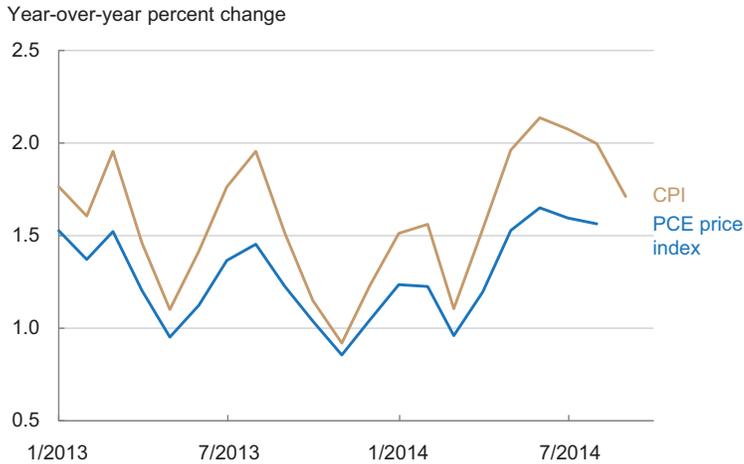
US inflation moved up this spring after subdued readings in late 2013 and at the start of 2014. Measured on a year-over-year basis, inflation was stable near 1.6 percent from April through July according to the price index for personal consumption expenditures (PCE). As is normally the case, inflation measured by the consumer price index (CPI) was somewhat higher, averaging 2 percent during that time, though it too was relatively stable.

The August CPI report broke this stable trend. The CPI declined 0.2 percent on the month, pulling the year-over-year CPI inflation rate down to 1.7 percent. While food inflation slowed during the month and gasoline prices fell, the bigger surprise was in the core CPI measure, which excludes food and energy prices. The core CPI was essentially unchanged in August, its weakest monthly reading since January 2010, which pulled the year-over-year core CPI inflation rate down to 1.7 percent as well. The Cleveland Fed’s median CPI tends to be more stable than either CPI or core CPI inflation, but it also edged lower in August.

Inflation is clearly volatile from one month to the next, so it is not necessarily a good idea to put too much weight onto a single month’s readings. And the Federal Open Market Committee, in its most recent Summary of Economic Projections, continues to expect that inflation will gradually rise over the next few years. But the persistently low inflation rates through much of the last year and a half suggest that inflation continues to be weighed down by a variety of forces, even as the recovery in the US economy progresses.

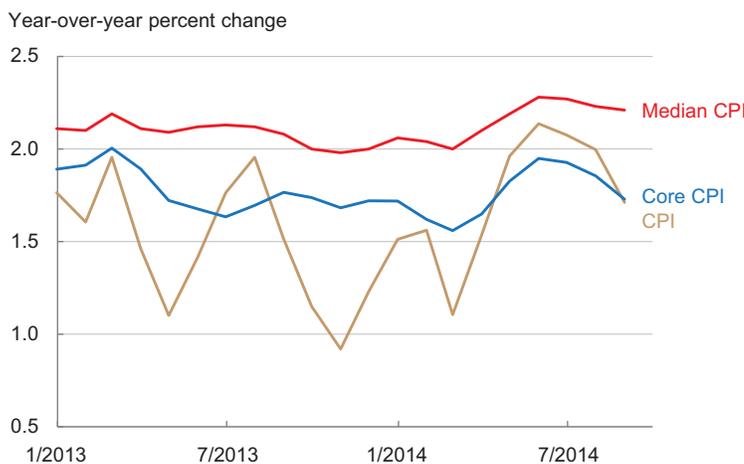
One potential factor that could be weighing on domestic inflation—and which might serve as a headwind to future increases in inflation—is recent international developments. For example, the economic recovery in the euro zone has been unsteady. Growth stalled in the second quarter,

Inflation Measures



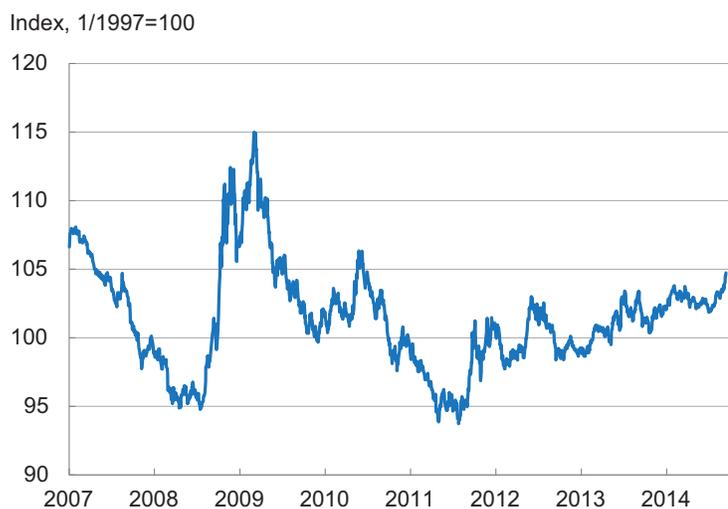
Sources: Bureau of Economic Analysis, Bureau of Labor Statistics.

Inflation Measures



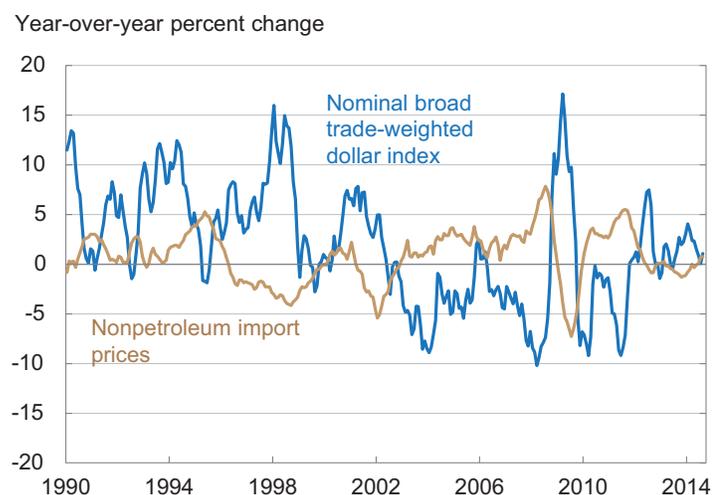
Sources: Bureau of Labor Statistics, Federal Reserve Bank of Cleveland.

Nominal Broad Trade-Weighted Dollar Index



Source: Board of Governors of the Federal Reserve System.

The Dollar and Import Prices



Sources: Board of Governors of the Federal Reserve System, Bureau of Labor Statistics.

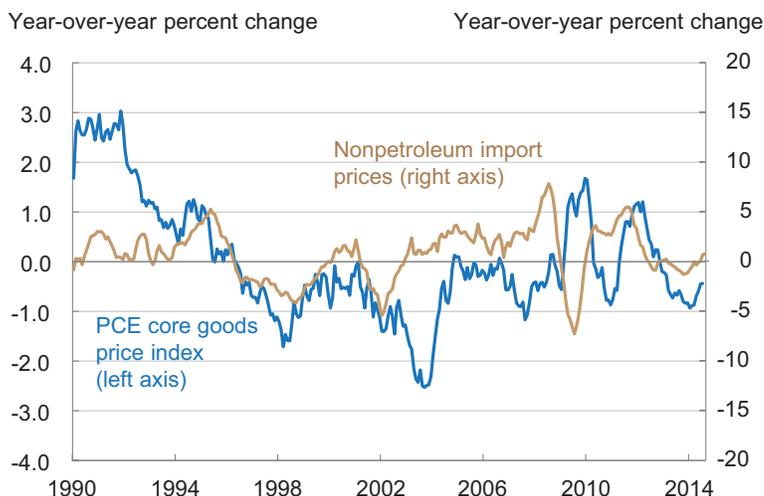
and year-over-year inflation through August came in at 0.4 percent, well below the European Central Bank's (ECB) objective. As a result of these developments and a worsening medium-term inflation outlook (including declines in measures of inflation expectations), the ECB recently implemented a more accommodative monetary policy. In addition, Japan's economy is working through the effects of a 3 percentage point increase in the value-added tax rate in April.

How might international developments such as these affect US domestic inflation? One potential channel is through lower import price inflation. A stronger US economy relative to other economies may result in a stronger dollar, which could make imports less expensive and put downward pressure on US inflation. Faced with weak demand at home, foreign companies may decide to reduce the prices of goods they sell to the US. The prices of commodities traded on global exchanges—many of which are priced in dollars—could also soften. The dollar has generally been strengthening since the European debt crisis first erupted in 2011, and it is up sharply over the last few months. The financial press has described the potential for further strengthening in the dollar if monetary policies diverge between the US and foreign economies.

While there is some evidence to support this pass-through channel, it is generally not very strong. The first requirement for such a channel is a link between the dollar and import prices, and this link does seem to exist. Since 1990, increases in the dollar have tended to coincide with declines in nonpetroleum import prices; the correlation is about -0.5 . The relationship has been about the same over the last five years or so. So a strengthening dollar could be a force weighing on import prices.

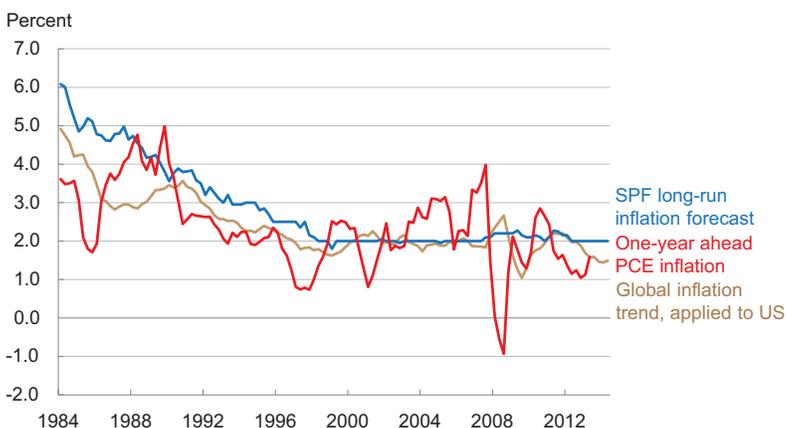
The second part of the equation is whether those declines in import prices pass through to the prices that consumers actually pay. We would expect to see a bigger impact from import prices on goods prices than services prices, because goods may have more imported content or be subject to more intense international competition. Since 1990, it has been the case that declines in nonpetroleum import prices have coincided with declines in core goods

Imports and Core Goods Prices



Sources: Board of Governors of the Federal Reserve System, Bureau of Economic Analysis, Bureau of Labor Statistics.

Global and Domestic Inflation Trends



Sources: Bureau of Economic Analysis, Federal Reserve Bank of Cleveland (global inflation trend), and Federal Reserve Bank of Philadelphia (SPF).

prices, but the relationship is weak—the correlation is only 0.2. In fact, over the last five years, the two series have shown little common movement.

While pass-through channels may not be very strong, is it possible that global inflation trends may still provide some useful signal for the US? Perhaps surprisingly, the answer appears to be “yes.” Our inflation conference earlier this year featured a paper suggesting that global inflation is a useful predictor of US inflation, despite weak measurable pass-through. Since 1984, the global inflation trend has actually done a bit better at predicting one-year-ahead inflation than the long-run inflation forecast from the Survey of Professional Forecasters (SPF), which is a typical measure of trend inflation. Since early 2013, this global inflation measure—mapped into US PCE inflation—has been running at only about a 1.5 percent level, a rather prescient forecast! To the extent that this global inflation trend continues to be a useful predictor of future domestic inflation, its ongoing low readings compared with the SPF’s long-run forecasts of 2 percent point to the potential for additional subdued US inflation ahead.

Yield Curve and Predicted GDP Growth, September 2014

Covering August 23, 2014–September 19, 2014
by Joseph G. Haubrich and Sara Millington

Overview of the Latest Yield Curve Figures

Since last month, the yield curve shifted sharply, steepening with long rates rising while the short end stayed (nearly) constant. The three-month (constant maturity) Treasury bill rate edged down to 0.02 percent (for the week ending September 19) from July’s and August’s levels of 0.03 percent. The ten-year rate (also constant maturity) increased to 2.61 percent, up a full 20 basis points from August’s 2.41 percent, nearly recovering previous drops from June’s 2.63 percent. The slope increased to 259 basis points, up from August’s 241 basis points, and only 1 basis point below June’s 260 basis points.

The steeper slope did not have an appreciable change on predicted future growth, even using the revised third estimate, which pushed the estimated growth from real GDP in the second quarter up to 4.6 percent from the previous estimate of 4.2 percent (both annualized). Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 1.5 percent-age rate over the next year, even with the forecasts from July and August (and just up from the 1.4 percent forecast in June). The influence of the past recession continues to push towards relatively low growth rates. Although the time horizons do not match exactly, the forecast comes in slightly more pessimistic than some other predictions, but like them, it does show moderate growth for the year.

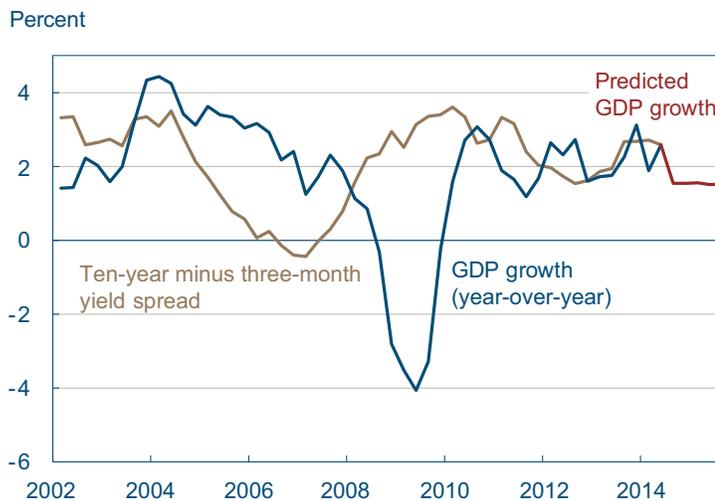
The steeper slope dropped the probability of a recession below 2 percent. Using the yield curve to predict whether or not the economy will be in a recession in the future, we estimate that the expected chance of the economy being in a recession next September at 1.99 percent, down from the August number of 2.76 percent, below July’s 2.46 percent, and returning to the level last seen in June. So although our approach is somewhat pessimistic with regard to the level of growth over the next year, it is quite optimistic about the recovery continuing.

Highlights

	September	August	July
Three-month Treasury bill rate (percent)	0.02	0.03	0.03
Ten-year Treasury bond rate (percent)	2.61	2.41	2.49
Yield curve slope (basis points)	259	238	246
Prediction for GDP growth (percent)	1.5	1.5	1.5
Probability of recession in one year (percent)	1.99	2.76	2.46

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

Yield Curve Predicted GDP Growth



Sources: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System, authors’ calculations.

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.

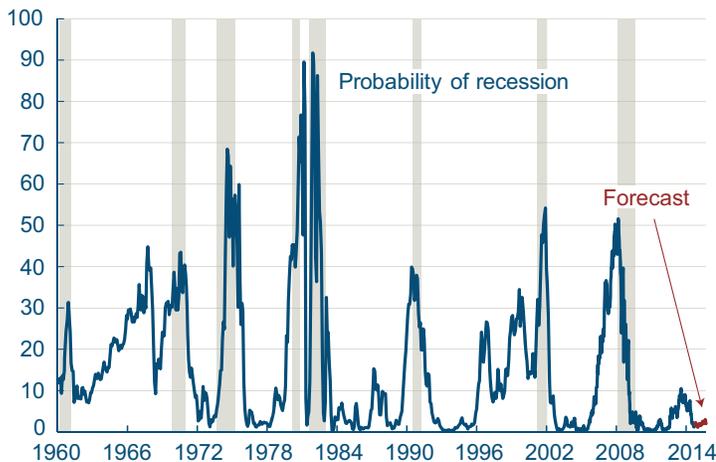
Predicting the Probability of Recession

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-

Recession Probability from Yield Curve

Percent probability, as predicted by a probit model

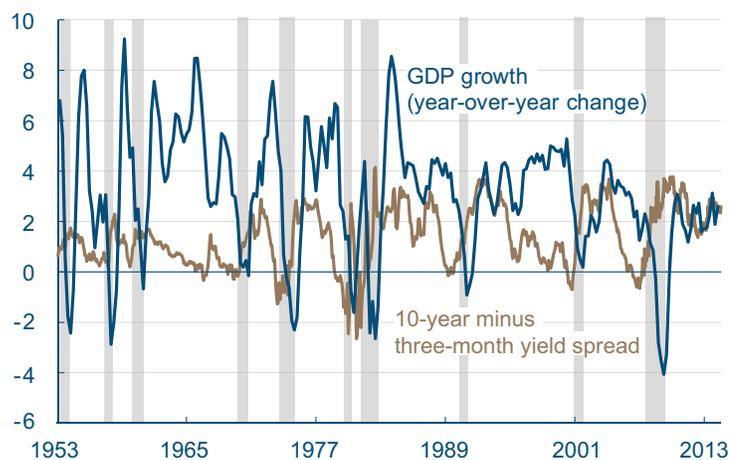


Note: Shaded bars indicate recessions.

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

Yield Curve Spread and Real GDP Growth

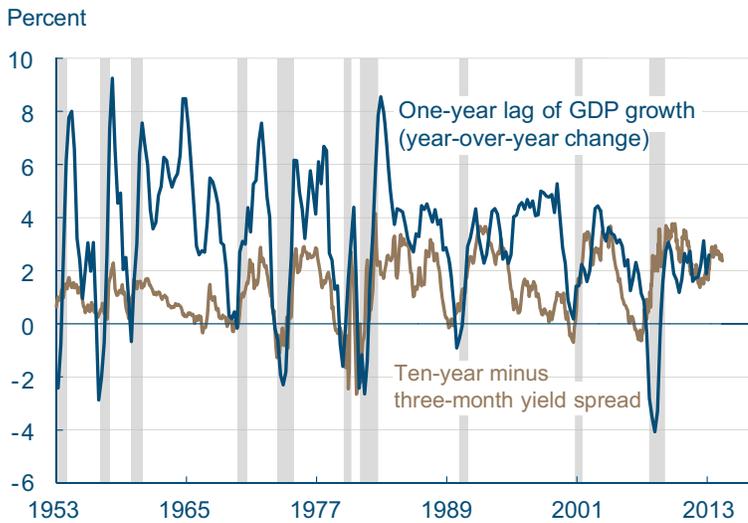
Percent



Note: Shaded bars indicate recessions.

Source: Bureau of Economic Analysis, Board of Governors of the Federal Reserve System.

Yield Spread and Lagged Real GDP Growth



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

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