Economic Trends

August 2011 (July 15, 2011-August 11, 2011)

In This Issue:

FEDERAL RESERVE BANK
of CLEVELAND

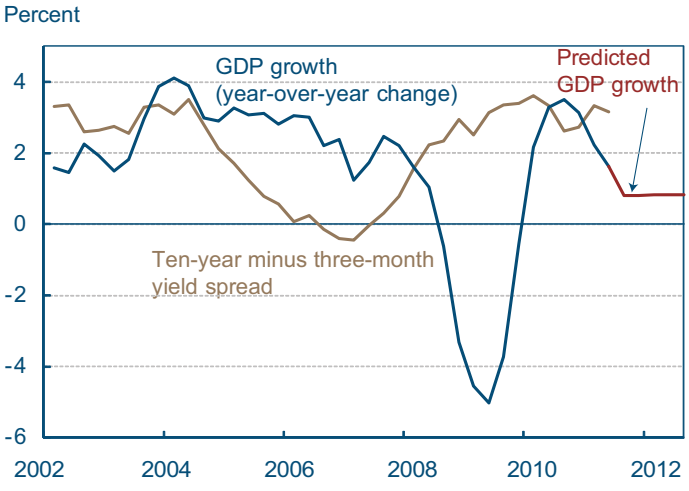
Yield Curve and Predicted GDP Growth, August 2011

Covering July 1, 2011–August 3, 2011
by Joseph G. Haubrich and Margaret Jacobson

Highlights

	July	June	May
3-month Treasury bill rate (percent)	0.03	0.02	0.05
10-year Treasury bond rate (percent)	2.97	2.96	3.15
Yield curve slope (basis points)	294	294	310
Prediction for GDP growth (percent)	0.82	1.1	1.1
Probabilty of recession in 1 year (percent)	1.7	1.7	1.3

Yield Curve Predicted GDP Growth



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

Overview of the Latest Yield Curve Figures

Over the past month, the yield curve barely moved, experiencing a small parallel upward shift as both short and long rates inched along. The three-month Treasury bill rate rose to 0.03 percent (for the week ending July 22), up from June's 0.02 percent though below May's 0.05 percent. The ten-year rate rose to 2.97, incrementally up from June's to 2.96 percent, but also below May's 3.15. The slope stayed constant at 294 basis points, remaining at its lowest level since last November.

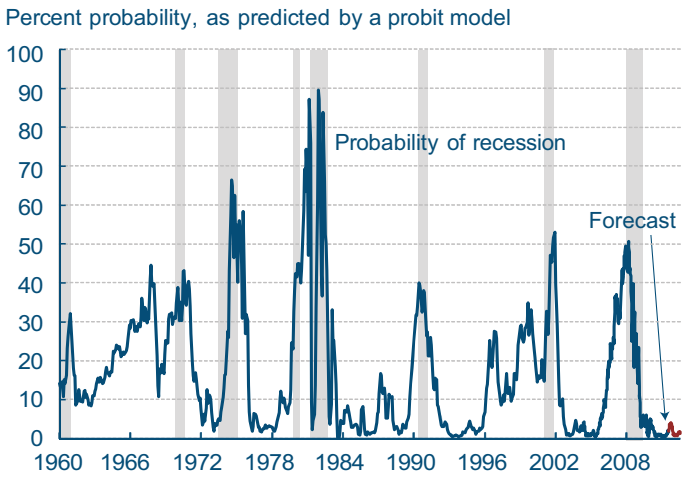
Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 0.8 percent rate over the next year, down slightly from June's 1.1 percent, most likely a reflection weak GDP numbers for the first two quarters of this year. The strong influence of the recent recession is leading toward relatively low growth rates. Although the time horizons do not match exactly, the forecast comes in on the more pessimistic side of other predictions, though like them, it does show moderate growth for the year.

Using the yield curve to predict whether or not the economy will be in recession in the future, we estimate that the expected chance of the economy being in a recession next July is 1.7 percent, even with June's prediction and up just a bit from May's 1.3 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.

The Yield Curve as a Predictor of Economic Growth

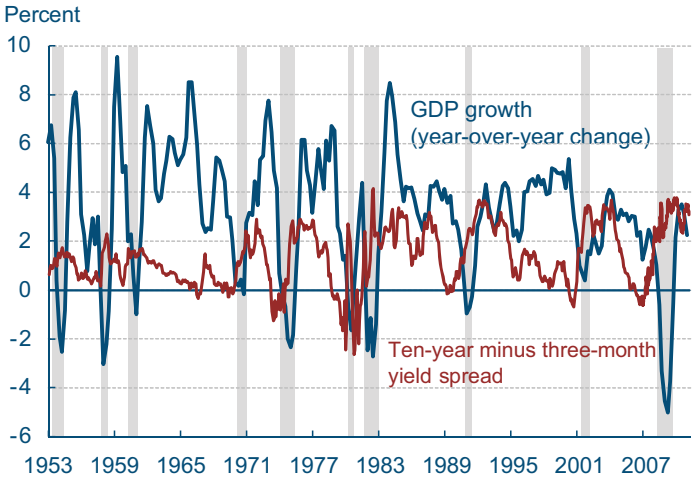
The slope of the yield curve—the difference between the yields on short- and long-term maturity bonds—has achieved some notoriety as a simple forecaster of economic growth. The rule of thumb is that an inverted yield curve (short rates above long rates) indicates a recession in about a year, and

Recession Probability from Yield Curve



Note: Shaded bars indicate recessions.
Sources: Bureau of Economic Analysis, Federal Reserve Board, authors' calculations.

Yield Curve Spread and Real GDP Growth



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

yield curve inversions have preceded each of the last seven recessions (as defined by the NBER). One of the recessions predicted by the yield curve was the most recent one. The yield curve inverted in August 2006, a bit more than a year before the current recession started in December 2007. There have been two notable false positives: an inversion in late 1966 and a very flat curve in late 1998.

More generally, a flat curve indicates weak growth, and conversely, a steep curve indicates strong growth. One measure of slope, the spread between ten-year Treasury bonds and three-month Treasury bills, bears out this relation, particularly when real GDP growth is lagged a year to line up growth with the spread that predicts it.

Predicting GDP Growth

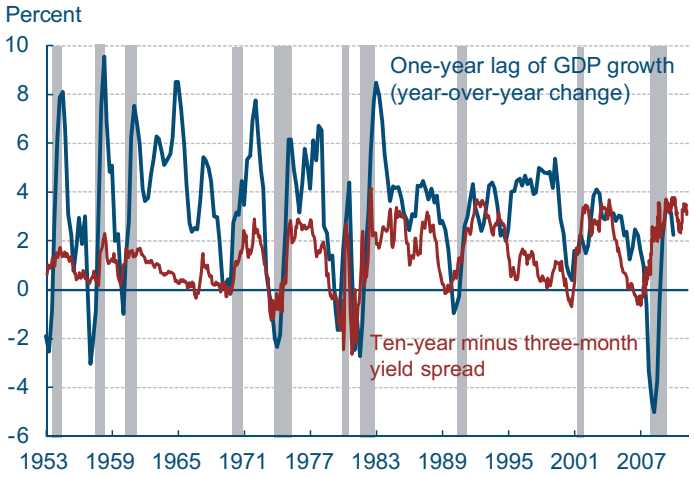
We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

Predicting the Probability of Recession

While we can use the yield curve to predict whether future GDP growth will be above or below average, it does not do so well in predicting an actual number, especially in the case of recessions. Alternatively, we can employ features of the yield curve to predict whether or not the economy will be in a recession at a given point in the future. Typically, we calculate and post the probability of recession one year forward.

Of course, it might not be advisable to take these number quite so literally, for two reasons. First, this probability is itself subject to error, as is the case with all statistical estimates. Second, other researchers have postulated that the underlying determinants of the yield spread today are materially different from the determinants that generated yield spreads during prior decades. Differences could arise from changes in international capital flows and inflation expectations, for example. The bottom line is that yield curves contain important information for business cycle analysis, but, like other indicators, should be interpreted with caution. For more detail on these and other issues re

Yield Spread and Lagged Real GDP Growth



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

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

A Subtle Shift in FOMC Policy

07.21.11
by John B. Carlson and John Lindner

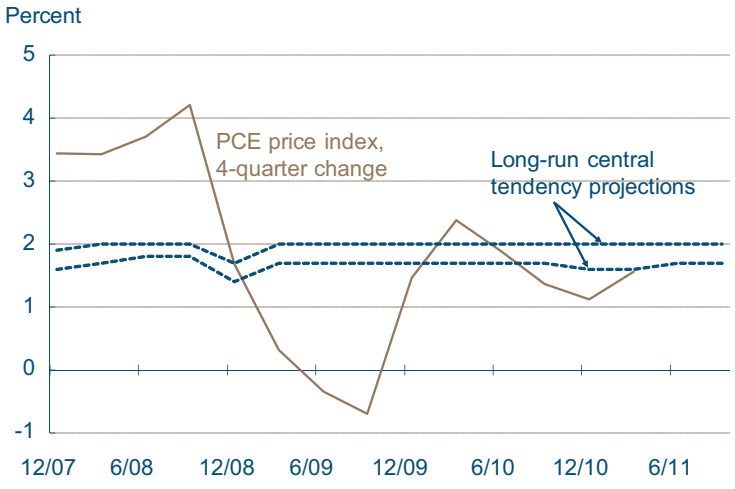
At his second press conference, Chairman Bernanke was asked whether the Fed would ever institute an explicit numerical inflation-targeting policy. In responding, he confessed he has always been a fan of that type of monetary policy. Recent adjustments in some of the Fed's communications suggest that the Chairman may be gaining a few more Federal Open Market Committee (FOMC) participants on his side. Adopting an inflation target is a topic that has gotten a lot of attention lately, and a review of the Committee's most recent minutes and the public discourse should help shed some light on why.

The minutes of recent FOMC meetings show that at least some FOMC members have been considering the costs and benefits of an explicit inflation target as an official policy goal. As expressed in the minutes, "a few participants noted that the adoption by the Committee of an explicit numerical inflation objective could help keep longer-term inflation expectations well anchored." This statement is not a new development, however, as it has appeared in each of the last three sets of minutes published. Perhaps more important was a change in the Chairman's interpretation of the Committee's inflation projections.

In the past, the Fed has argued that in order to maintain price stability—one half of its dual mandate—it must achieve a rate of inflation that is consistent with the mandate over the medium term. Until recently, this rate was not specified but was implicitly understood by market participants to be 2 percent, or just a little bit less. Because inflation is approaching that level and economic growth is still below its long-run trend, some contention has emerged as to whether the Fed will stick to that implicit, mandate-consistent target or let inflation rise to spur growth.

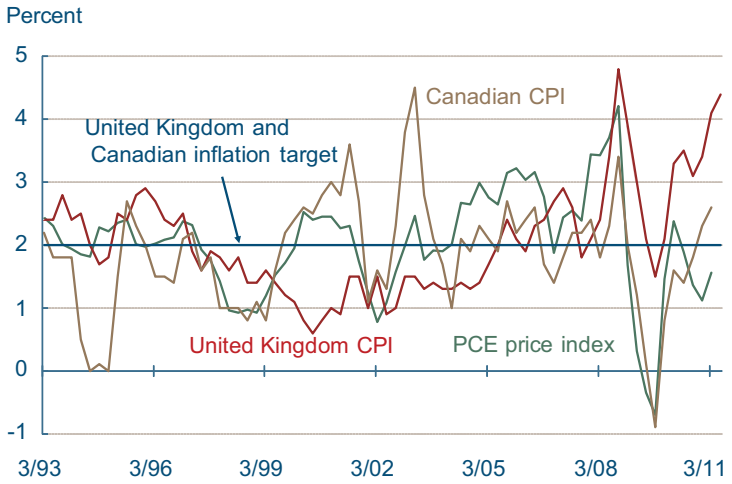
Speaking at his April press conference, Chairman Bernanke pointed out that the longer-run projection for inflation submitted by FOMC participants

PCE Prices and Long-Run Projections



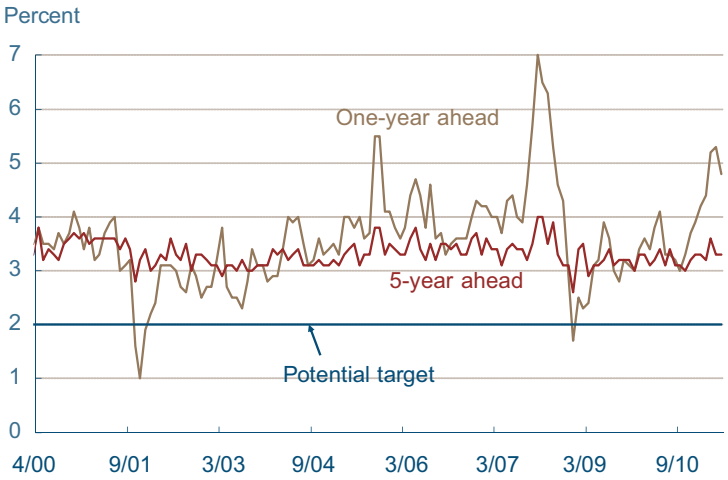
Sources: Bureau of Economic Analysis; Federal Reserve Board.

PCE Prices and Long-Run Projections



Sources: Bureau of Economic Analysis; Office of National Statistics; Bank of Canada.

University of Michigan Inflation Expectations



Source: University of Michigan.

for the April meeting was 1.7 percent to 2.0 percent. He went on to say that because the outlook for inflation is determined almost entirely by monetary policy, the projections could be interpreted as "the inflation rate that Committee members judge to be most consistent with the Federal Reserve's mandate." Those projections were dependent on the assumption of appropriate monetary policy, but in linking the FOMC's projections to its role in determining inflation, Chairman Bernanke gave an explicit definition of what was considered a mandate-consistent level of inflation at that time. Naturally, these longer-run projections are likely to change over time as economic conditions evolve. Still, here is a specific definition of where policy is trying to guide inflation rates in the medium term. Giving this type of policy guidance offers several advantages, one of which would be to anchor inflation expectations, which have been very volatile in the past few years.

With this recent development, it seems as if the Fed has very nearly adopted an unofficial inflation-targeting policy. Even though making it official would be a new policy for the Fed, it has been implemented in several other countries, largely with positive results. The 2010 Annual Report of the Cleveland Fed noted the advantages of instituting an explicit numerical target, and it also outlined some of the success stories in other countries. Although the Fed is currently doing about as well as other nations in stabilizing its price level (see chart below), other advantages might include more leeway in policy decisions with anchored inflation expectations and enhanced transparency and accountability.

One concern that has been raised about an explicit inflation target is that it seems to favor the price stability part of the Fed's mandate over the full employment part. This issue has been addressed in a number of different ways (see, for example, the Cleveland Fed's 2010 Annual Report and Chairman Bernanke's June press conference transcript). Ultimately, a more stable inflation trend will reduce uncertainty for businesses and consumers, and make the economy more conducive for employment growth.

A Few Bad Apples Spoil June's Price Statistics

07.20.11
by Brent Meyer

Until recently, the debate between the "inflation is too high" crowd and the "subdued" inflation adherents had centered on the use of headline and core measures of inflation. Core measures exclude food and energy prices, and energy prices had been rising sharply through the first four months of the year, pushing up the headline growth rate relative to the core. In June, however, energy prices reversed course, food prices posted modest gains, and the core CPI jumped up markedly, perhaps causing angst to some debaters. Fortunately at inflection points like these, we have a few alternative price change indicators that may shed some light on the underlying inflation trend.

The headline CPI fell at an annualized rate of 2.6 percent in June, due largely to a sizeable decline in gasoline prices, though declines in household energy prices helped as well. Food prices rose 2.4 percent in June, the smallest monthly increase in the series so far this year. But the unexpected (and perhaps somewhat worrisome) aspect of the recently released figures was that the core CPI (the CPI excluding food and energy prices) jumped up 3.1 percent, and has now risen at an annualized rate of 2.9 percent over the past three months. This is an entirely different signal (and more than 1.0 percentage point higher) than that of the median CPI (which increased just 1.7 percent in June, a slight deceleration from its 3- and 6-month growth rates). This raises the question: What gives?

Well, it appears that the core CPI was affected by a few usually large price increases in June. These "bad apples" were lodging away from home, auto prices, and apparel prices. The index for lodging away from home followed up a 40 percent spike up in May (its largest price increase since October 2005) by increasing 42.6 percent in June. Car and truck rental, a particularly noisy series, rose 51 percent in June, more than rebounding from a 42 percent decrease in May. New vehicle prices, which jumped up 14 percent in May, rose 7.5 percent in

June Price Statistics

	Percent change, last					
	1mo.[a]	3mo.[a]	6mo.[a]	12mo.	5yr.[a]	2010 average
Consumer Price Index						
All items	-2.6	1.5	3.8	3.6	2.2	1.4
Less food and energy	3.1	2.9	2.5	1.6	1.8	0.6
Median[b]	1.7	2.2	2.1	1.6	2.1	0.7
16% trimmed mean[b]	1.2	2.4	2.8	2.0	2.1	0.8
Sticky price[c]	1.0	1.5	1.8	1.4	2.0	0.9
Flexible price[c]	-11.4	1.0	8.7	8.6	2.5	3.5

a. Annualized.
b. Calculated by the Federal Reserve Bank of Cleveland.
c. Author's calculations.
Source: Bureau of Labor Statistics.

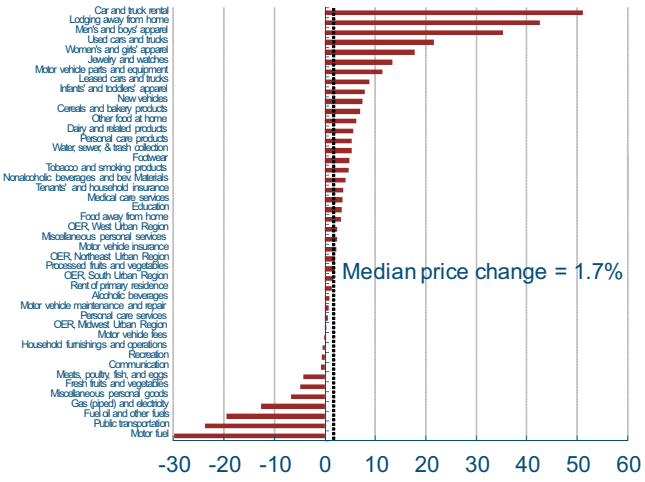
June and have risen 8.3 percent over the past six months. That compares to a growth rate of -0.5 percent over the prior six months. Also, used car prices jumped up 22 percent during the month, the largest monthly increase in the series since December 2009. Finally, apparel prices jumped up 18.3 percent in June (their largest monthly increase since mid-1990), in part because the seasonally adjusted index for men's apparel posted its largest one-month jump up in the history of the series (which dates back to 1947), rising 35.4 percent.

A few relative price changes of such a large magnitude most likely indicate idiosyncratic shocks, mismeasurement, or issues with the seasonal factors. Importantly, these relatively large price changes tend to impart noise into the underlying inflation measure and are not useful indicators of future inflation. Indeed, one might suspect that the recent increases in new auto prices are due to temporary supply chain disruptions. Used auto prices could have been buoyed by a dearth in supply stemming from a prolonged period of dampened production during the recession and the government's CARS program. The increase in apparel prices may reflect pass-through from earlier cotton price and other commodity price increases. If these rationales happen to be the root causes of these relative price increases, we could simply exclude these categories in June in an attempt to uncover underlying inflation. However, we don't know this for certain, and excluding the components on an ad hoc basis could easily yield a poor signal of future inflation.

Fortunately, trimmed-mean measures—such as the median CPI and the 16 percent trimmed-mean CPI—remove sources of noise in a way that does not rely on judgment and story-telling on a monthly basis. These measures trim the largest absolute relative price changes from the price statistic, lessening the amount of noise in the index. The only judgment involved, apart from how much to trim, is the decision to assume that large monthly price swings in either direction do not reflect the underlying inflation trend. (These measures say nothing about which component will impart the noise, unlike the core, which always excludes food and energy categories).

CPI Component Price Change Distribution

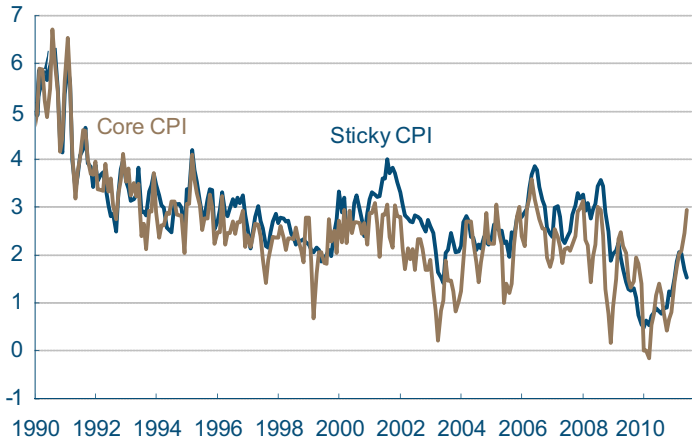
Annualized percentage change, June 2011



Sources: Bureau of Labor Statistics; author's calculations.

Core CPI Versus Sticky CPI

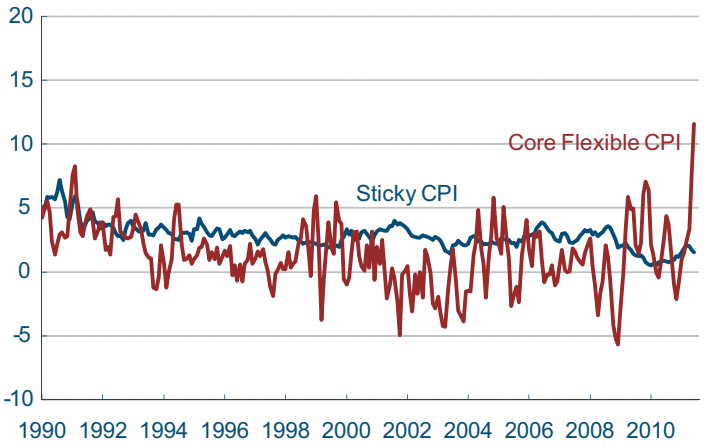
3-month annualized percent change



Sources: U.S. Department of Labor; Bureau of Labor Statistics; Federal Reserve Bank of Cleveland.

Sticky CPI Versus Core Flexible CPI

3-month annualized percent change



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

Perhaps adding credibility to the price signal stemming from the median and trimmed-mean measures, the sticky price CPI—which is a composite measure of prices in the consumers' market basket that change infrequently—rose just 1.0 percent during the month, marking a slight deceleration from its three-month growth rate (1.5 percent). Meanwhile, the three-month growth rate in the core CPI has continued to climb in recent months.

Interestingly, the upward impulse in the core CPI over the past few months appears to be flexible in nature and, according to Bryan and Meyer (2010), that suggests it has very little useful information on future inflation. The core flexible CPI—composed of items in the core CPI that change price frequently—has jumped up 11.6 percent over the past three months (the swiftest growth rate in the series since the early 1980s).

Incidentally, June's "bad apples" (lodging away from home, autos, and apparel) all happen to be flexible-price goods, which as a set, do not appear to be a useful predictor of future inflation. Also, these "bad apples" almost exclusively comprised the upper tail of the price-change distribution, and, as outliers, were trimmed out of the median CPI and the 16 percent trimmed-mean CPI for the most part. Together, these observations suggest that the snapback in core CPI over the past three months has likely been driven in part by noisy relative price movements, which are biasing up its signal on the underlying inflation trend.

The Fourth District: The Next Big Energy Producer?

08.04.11

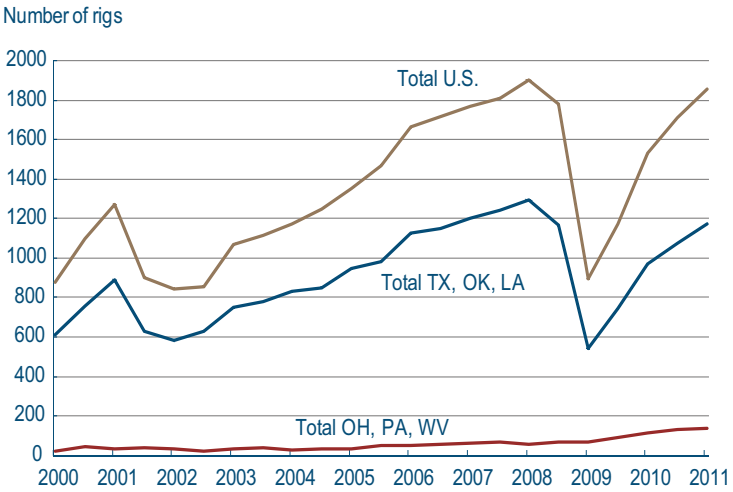
by Robert J. Sadowski and Margaret Jacobson

When asked about domestic oil and natural gas production and where most of it occurs, people will likely reply: the region surrounding the Gulf of Mexico. This response is correct. In fact, over the past decade, two-thirds of active drilling rigs in the United States were found in the states of Texas, Louisiana, and Oklahoma, Texas being the front-runner by a wide margin.

Historically, states in the Fourth District have also played an important role in oil and natural gas production. Crawford County, in the northwest corner of Pennsylvania, was the birthplace of the modern oil industry in 1859, and the surrounding region remained a major producer for the next 80 years. As the twentieth century dawned, Ohio was considered the "Middle East" of the oil- and gas-producing world. At its peak in 1896, Ohio produced 24 million barrels of oil, or 39 percent of the U.S. output during that year. To put these numbers into some perspective, the United States currently (2010) consumes 19.1 million barrels per day of refined petroleum product, according to the U.S. Energy Information Administration (EIA).

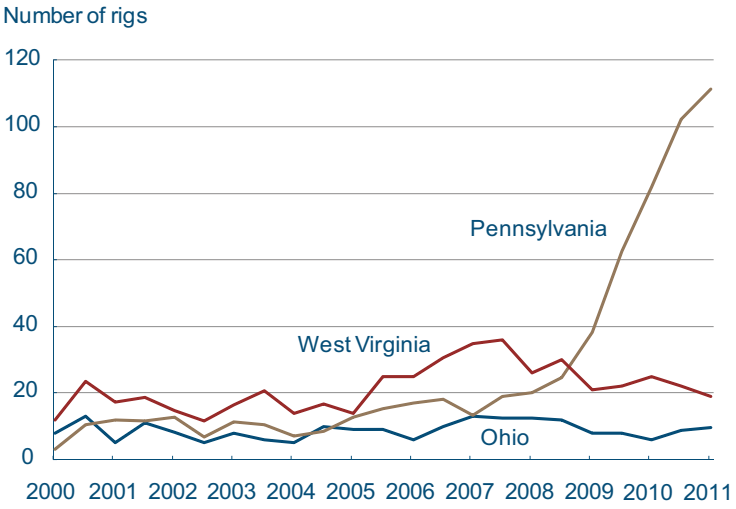
The Fourth District is now positioned to make a comeback as a major domestic energy producer due to exploration and production in the Marcellus and Utica shales. The Marcellus shale is a rock formation that underlies much of Pennsylvania and West Virginia and portions of New York and Ohio at a depth of 3,000 to 7,000 feet. Pennsylvania State University geoscientist Dr. Terry Engelder estimates that there are between 360 trillion and 450 trillion cubic feet of recoverable gas in the Marcellus shale, enough to supply all of the U.S.'s natural gas needs for almost 20 years at the current rate of usage. Likewise, the energy consulting firm, INTEK, Inc., came up with a similar figure when it was hired by the EIA to provide estimates of undeveloped technically recoverable shale gas (natural gas that is trapped within shale formations) in the lower 48 states. The firm estimated the potential output of

Active Drilling Rigs in the United States



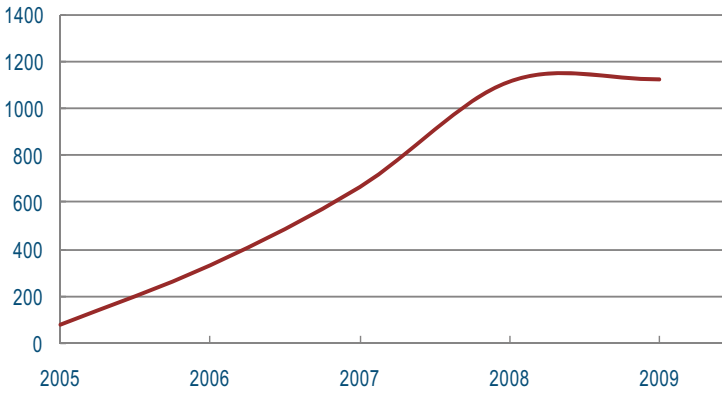
Source: Baker Hughes North America Rotary Rig Count.

Active Drilling Rigs in the Fourth District



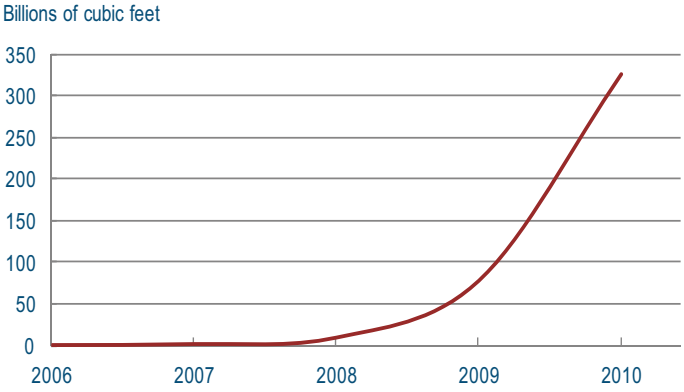
Source: Baker Hughes North America Rotary Rig Count.

Number of Shale Gas Wells: West Virginia



Source: West Virginia Office of Oil and Gas.

Shale Gas Production: Pennsylvania



Source: Pennsylvania Department of Environmental Protection.

the Marcellus shale to be 410.7 trillion cubic feet, making it the largest shale gas play in the United States. The next largest are Haynesville at 74.7 trillion cubic feet and the Barnett at 43.4 trillion cubic feet. Haynesville is located in northwest Louisiana and east Texas, while the Barnett is found around Fort Worth, Texas. Not only is the Marcellus big, but shale gas is expected to constitute 45 percent of the total U.S. natural gas supply by 2035, up from 14 percent in 2009, according to EIA estimates (Annual Energy Outlook, 2011).

At this time, a substantial share of the Marcellus drilling and production is concentrated in the state of Pennsylvania, mainly the southwest corner and the north central region. Additional activity is found along the central to western regions of West Virginia. Activity in Ohio is limited due to the thinning out of the Marcellus as it enters the state. As of June 2011, there were only 30 Marcellus producing wells in Ohio. Shale gas production has increased exponentially in Pennsylvania during the past few years, with output in 2010 estimated at 327 billion cubic feet. While that may seem like a sizeable amount, it is a tiny share of the total natural gas consumed in the United States on an annual basis. In fact, 327 billion cubic feet accounts for only 6.5 percent of residential usage during 2010. Nonetheless, the rate of growth in the extraction of gas from the Marcellus closely tracks early production results from the Barnett shale, which started in the late 1990s and by 2010 approached 2 trillion cubic feet.

Geologists have known about the existence of shale gas for decades. However, the technology to extract natural gas on a large scale from shale rock located a mile or more below the surface, and at an economically viable cost, has only been in existence for the past dozen years. The base technology, hydraulic fracturing or "fracking," has been in use since the 1940s. It involves the injection of a mixture of water, sand, and chemicals under high pressure into a well. The refinement of this technology augmented by the use of extended reach (horizontal) drilling gave impetus to the shale gas industry boom. Horizontal drilling is attractive because the production factor is 15 to 20 times that of a conventional vertical well, although the initial cost may be three

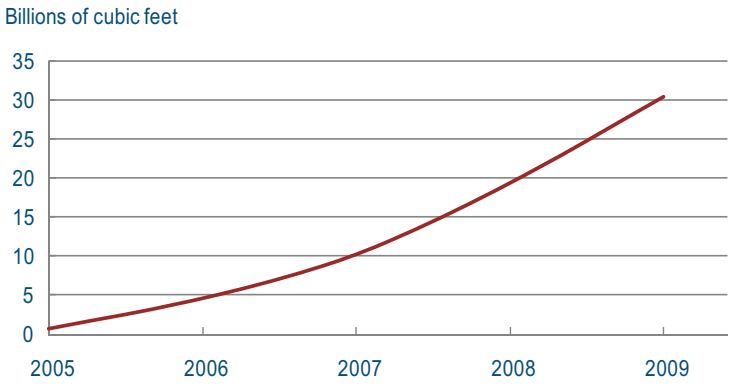
times greater. During 2010, horizontal drilling was used in just over half of the Marcellus production wells in Pennsylvania. Yet those wells accounted for almost 90 percent of the gas produced. Oil is also extracted from Marcellus shale. However, the amount on a yearly basis is minimal, typically no more than a half-million barrels from all the producing wells in Pennsylvania and West Virginia combined.

Utica shale is a rock formation generally located a few thousand feet below the Marcellus. It is concentrated in New York, Ohio, Pennsylvania, and West Virginia, although Utica extends into four adjacent states. It also lies beneath parts of Lake Erie, Lake Ontario, and Ontario. Geologists believe that Utica shale has the potential to become an enormous natural gas and oil resource. However, because of differences in mineralogy between the Marcellus and Utica shales, hydraulic fracturing methods used in the Marcellus might not produce as much fracturing in the Utica, and more research is needed to significantly improve the fracturing rate.

Eastern Ohio is currently the center of Utica activity in the Fourth District, primarily because the shale is less than a mile below the surface. Also, the productive portion of the Marcellus extends for only a relatively short distance into the state, making Utica a more attractive play. Data provided by the Ohio Department of Natural Resources indicate that 43 permits for Utica drilling have been issued, almost all within the past 12 months. As of June 2011, 16 wells have been drilled and four have been fractured. No production data are available.

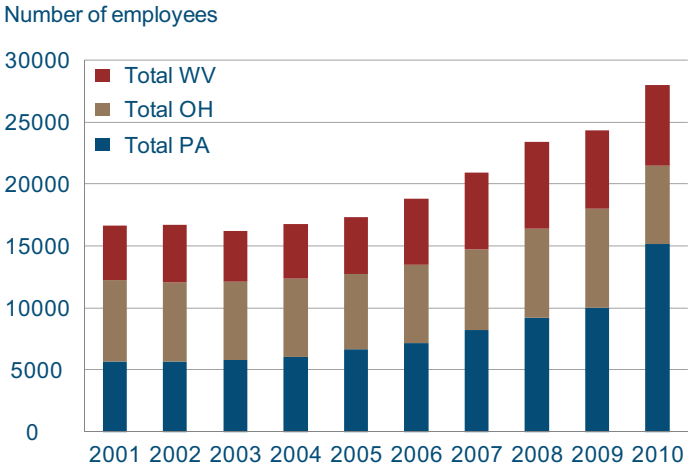
Investment in exploration and production of the Marcellus shale continues to grow. A study conducted by Pennsylvania State University researchers shows that investment spending by the private sector in Marcellus exploration and production in the state of Pennsylvania grew from an estimated $3.2 billion in 2008 to over $11 billion during 2011. Data made available by the Bureau of Labor Statistics provides insight into the direct employment impact. Between 2001 and 2010, employment in the oil and gas industry across Ohio, Pennsylvania, and West Virginia rose by almost 68 percent.

Shale Gas Production: West Virginia



Source: West Virginia Office of Oil and Gas.

Fourth District Oil and Gas Employment



Source: Bureau of Labor Statistics.

Growth in Pennsylvania was the highest, with payrolls rising by about 10,000, or 166 percent. Half of this growth was realized between 2009 and 2010, with an estimated employment rise in the oil and gas industry of just over 5,000 workers. During that same 12-month period, the net growth in total employment across Pennsylvania was 2,300 workers.

A possible impediment to continuing investment in the shale gas industry is the concern about contamination of drinking water from chemicals used in the fracking process. The state assembly in New York passed a bill in June 2011 that creates a one-year moratorium on hydraulic fracturing, both vertical and horizontal, across the state because of environmental concerns. This is the second consecutive year that a moratorium has been in place. Pennsylvania and Wyoming already require drilling companies to publicly disclose the chemicals they use and how they dispose of them. Texas recently passed a similar law. As investment in shale gas continues to grow, so does a regulatory environment that balances the concerns of residents living near drilling sites with the need for energy production.

Recent Population Trends in the Midwest

08.09.11

by Daniel Hartley and Kyle Fee

The release of the latest Census data reveals that Cleveland's population has fallen since the last census and dipped below the 400,000 mark. From 2000 to 2010, the city's population fell from around 478,000 to about 397,000 (a 17.1 percent drop). Cleveland's recent loss of population is not uncommon for cities in the Great Lakes region. Even the largest city in the region, Chicago, has shrunk over the past 10 years. Chicago's population fell to about 2.7 million in the latest census, a 6.9 percent drop from 2000. Interestingly, both cities experienced their peak population in 1950. Since then, Cleveland has lost over half of its population, while Chicago has lost slightly more than a quarter.

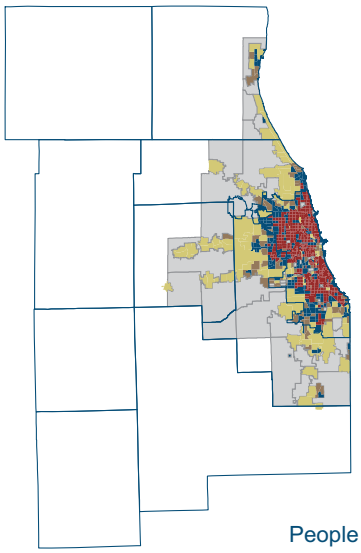
Things look a bit different when we expand beyond the city boundaries to the Metropolitan Statistical Area (MSA) or the Combined Metropolitan Statistical Area (CSA). While the five counties that make up Cleveland's MSA decreased in population by 3.3 percent, the eight counties that make up Chicago's MSA grew by 4.0 percent. Similarly, the eight counties in Cleveland's CSA shrank by 2.2 percent while the 14 counties in Chicago's CSA grew by 4.0 percent.

A different way to analyze the recent population data would be to convert it into density figures. Looking at population density allows one to examine the concentration of people in a given area. In general, denser areas have the potential to support a greater amount of economic activity than more diffuse ones. Mapping population density allows one to compare the spatial distribution of population over time, and sheds some light on population movement within a region.

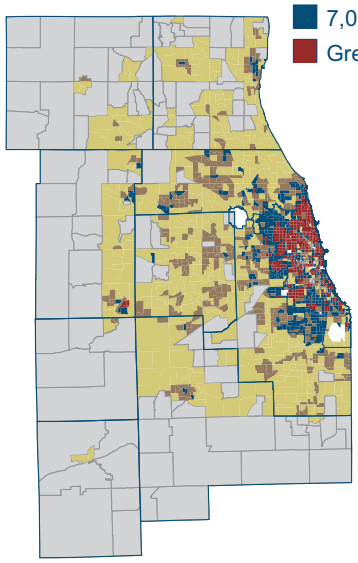
From 1950 to 2010 the city of Cleveland's population density fell from about 11,800 people per square mile to 5,100 people per square mile. Over the same period, the city of Chicago's population density fell from 15,900 people per square mile to 11,900 people per square mile.

Chicago Population Density

1950

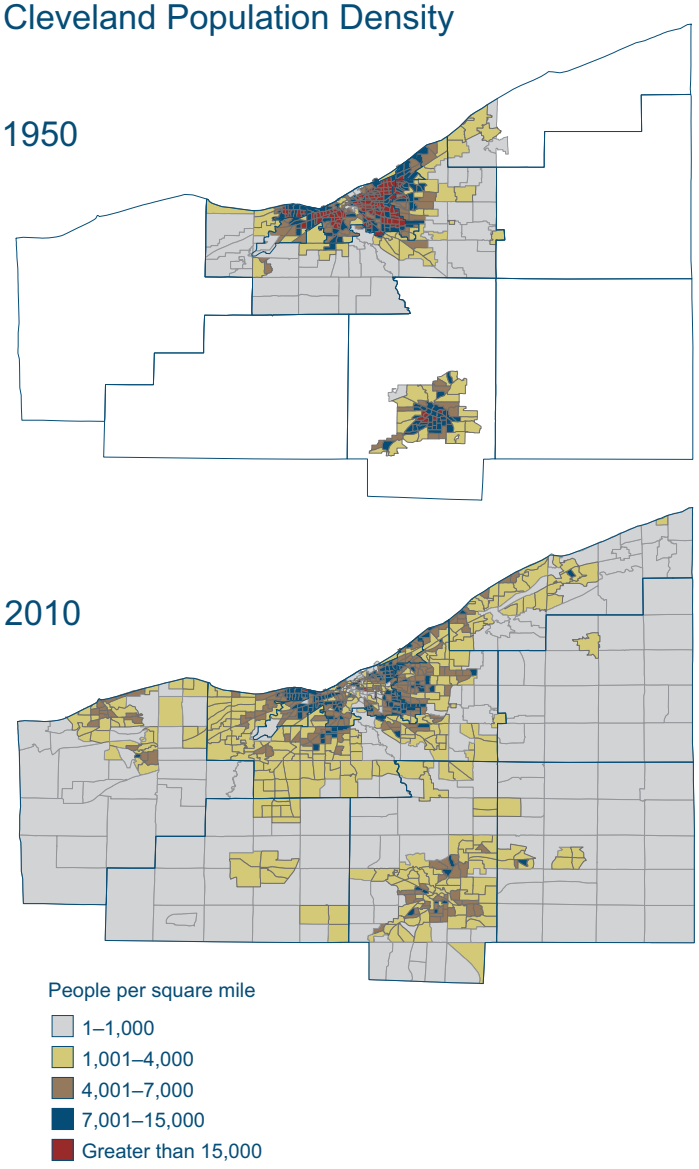


2010



Note: 1950 data was only available for the segments of the MSA.
Source: Census Bureau, National Historical Geographic Information System.

Cleveland Population Density



Note: 1950 data was only available for the segments of the MSA.
Source: Census Bureau, National Historical Geographic Information System.

Chicago's population has pushed outward since 1950, and much more of the surrounding area is now covered by low-density suburban development. At the same time, the north side of Chicago has remained densely populated, while parts of the south and west sides are a bit less densely populated now than they were in 1950. The other noteworthy change is that some parts of the downtown area, which had very light population density in 1950, are now densely populated.

Cleveland was similar to Chicago in 1950, in that population density exceeded 15,000 people per square mile across much of the city. But by 2010 almost nowhere in Cleveland or its MSA was the population that dense. Like Chicago, Cleveland has seen its population disburse into the surrounding suburbs over the last 60 years. However, Cleveland was unable to retain high levels of density in the central city.

The Cleveland pattern looks similar to Detroit's and Toledo's. All three have lost the population density in the core that they used to have in 1950. In contrast, some cities such as San Francisco are still about as dense as they were in 1950. Philadelphia and Chicago also have mostly kept the density that they had in 1950 and added other dense area in the suburbs. Other cities like Columbus and Pittsburgh are middle cases: They still have some core density, but not as much as they had in 1950.

Moving forward, the big question for Cleveland is to what degree population loss at its core is a cause or consequence of its overall population loss. Is an empty middle just a manifestation of population loss or is it a contributing factor?

Global Banking System Exposure to the Greek Sovereign Debt Crisis

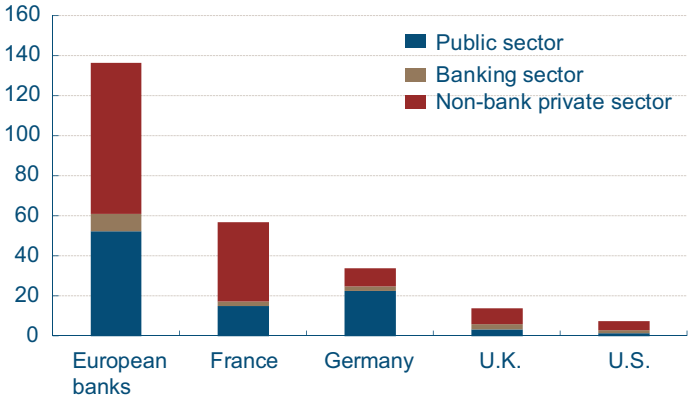
08.04.11

by Ben Craig and Matthew Koepke

In the past year, the Greek sovereign debt crisis has been the focus of much financial press. According to the Bank for International Settlements, 24 countries reported that their banking systems had foreign claims on Greek debt as of December 2010, representing a total debt exposure of $145.8 billion and additional exposures of $60.7 billion related to derivative contracts, guarantees, and credit commitments. Moreover, the total risk exposure is highly concentrated in the European banking system, representing nearly 94.0 percent of the total foreign claims on Greek debt. Given the European banking system's level of exposure to Greek debt, it is little wonder that European leaders have moved quickly to mitigate the risk of a potential Greek default.

Country Banking System Exposure to Greece by Sector

Dollars in billions

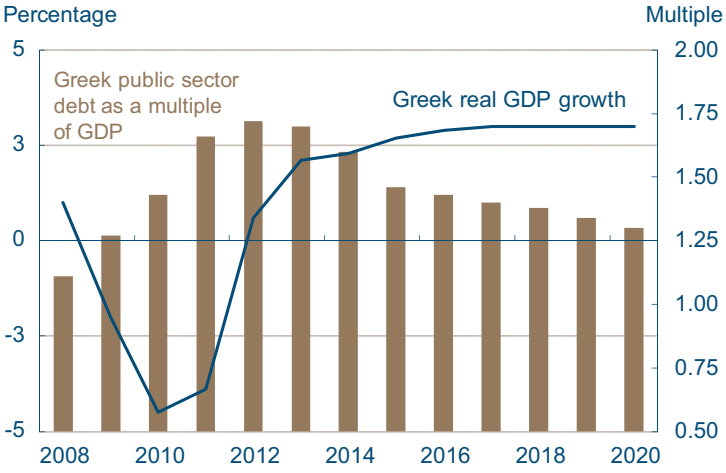


Source: Bank for International Settlements.

In order to reduce the systemic risk related to a potential Greek default, the European Union agreed to support a new program that would provide €109 billion to Greece to fully cover its financing gap. The program will provide the financing through loans that will be issued by the European Financial Stability Fund. The loans will have longer maturities (increased from 7.5 years to a minimum of 15 years) and lower interest rates at levels equivalent to the balance of payments facility (currently around 3.5 percent).

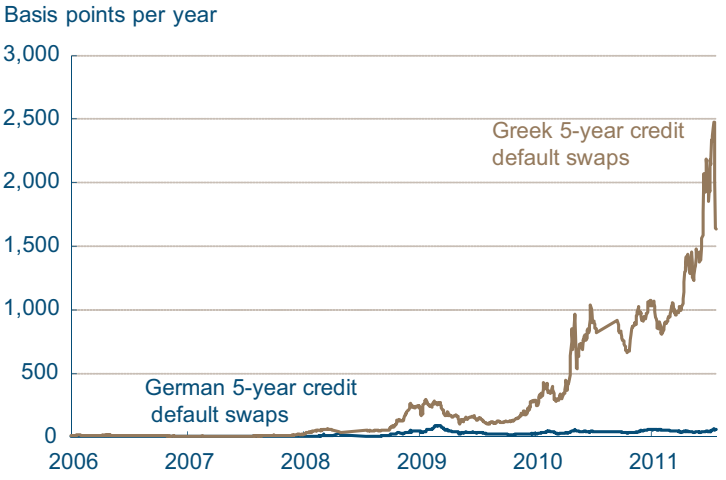
Additionally, the program will include voluntary private sector involvement, where private creditors can exchange their current Greek debt for new debt securities that are fully collateralized or partly collateralized and are priced to produce a 21.0 percent net present loss to the value of the current debt (assuming a 9.0 percent discount rate). Assuming a 90.0 percent participation rate from private investors, the Institute of International Finance (IIF) expects that private investors will contribute €135.0 billion in financing to Greece from mid-2011 till the end of 2020. Additionally, the IIF expects voluntary private sector involvement to significantly improve the maturity profile of Greek debt, increasing it from 6 years to 11. The implications of the

Greek Real GDP Growth and Public Sector Debt as a Percentage of GDP



Source: International Monetary Fund.

German and Greek Debt Default Expectations



Source: Bloomberg.

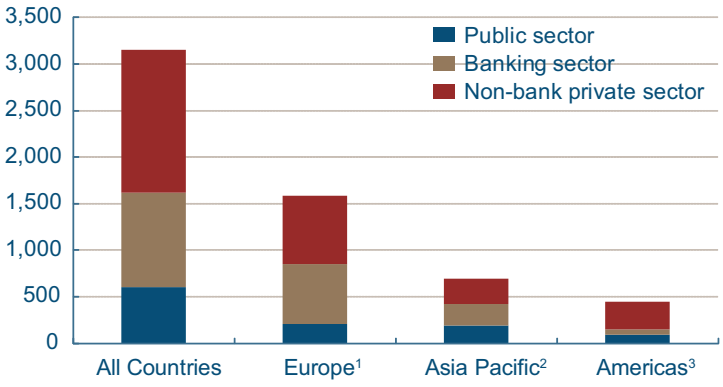
new financing program are that private creditors are now certain to sustain losses, and credit agencies are likely to view the exchange of debt at a loss as a default. Upon review of the new program, Moody's investor service downgraded Greek sovereign debt from Caa1 to Ca to reflect the potential default event.

Given its high debt-to-real GDP ratio and slow GDP growth, Greece was unlikely to be able to achieve healthy levels of debt without defaulting. A recent report by the International Monetary Fund (IMF) projected that Greece's public debt would peak from its current level of 143 percent of GDP to 172 percent of GDP in 2012 and remain above 130 percent through 2020. In its assumptions, the IMF assumed that Greece would be successful in fully implementing its fiscal adjustment plan and the transfer of government assets to the private sector. Consequently, any deviation would have significant implications in the reduction of Greece's debt going forward. The IMF estimated that if Greece is unsuccessful in implementing its fiscal program or if it fails to fully realize its planned privatizations, debt could remain at unsustainable levels at around 150 percent of GDP through 2020. Additionally, the IMF lowered its projections for Greek real GDP growth going forward, forecasting a decline of 3.8 percent in 2011, an improvement to 0.6 percent in 2012, and eventually a leveling off to 3.0 percent in 2017. The high levels of existing debt and slow real GDP growth suggest that some form of default is likely the only option for Greece, and additional future defaults are very possible.

A close examination of Greek credit default swaps shows that while investors have lowered their expectations of a Greek default, they still believe that the probability of a default remains very high. Since the announcement of the new financing plan, credit default swaps on Greek sovereign debt have fallen nearly 400 basis points. Credit default swaps are credit derivatives that function as an insurance policy that a creditor can purchase to hedge the risk associated with a borrower defaulting. The seller of the credit default swap would pay the difference between the original face value of the bond and the recovery value in the instance that the borrower fails to make a scheduled payment; however, the

U.S. Bank Exposure by Region

Dollars in billions



1. Austria, Belgium, Finland, Germany, Greece, Ireland, Italy, Netherland, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom.
2. China, Chinese Taipei, Hong Kong, India, Japan, New Zealand, Singapore.
3. Brazil, Canada, Cayman Islands, Mexico.
Source: Bank for International Settlements.

seller would not have to pay if a creditor voluntarily trades his current bonds in for new bonds valued at a discount, as is the case in the new Greek financing plan.

Currently, five-year Greek sovereign debt is trading at 1,635 basis points per year (the spread represents the premium the purchaser pays for the insurance policy). Comparatively, it only costs 62.2 basis points per year to insure $10 million in five-year German sovereign debt. Thus, despite the new financing plan proposed, investors still believe that there is a very high probability that Greece may default on its debt.

The direct effects of a Greek default would initially be concentrated within the European banking system. As of December 2010, the U.S. banking system's total risk exposure to Greece is only $7.3 billion, with other potential exposures related to derivative contracts, guarantees, and credit commitments summing to $34.1 billion (compared to the total risk exposure to Greece of $136.3 billion for European banks). However, given that Europe represents nearly 50.0 percent of the U.S. banking system's total risk exposure, any credit event that significantly affects the European economy will likely adversely affect the U.S. banking system as well.

Has the Over-the-Counter Derivatives Market Revived Yet?

08.11.11
by Jian Cai

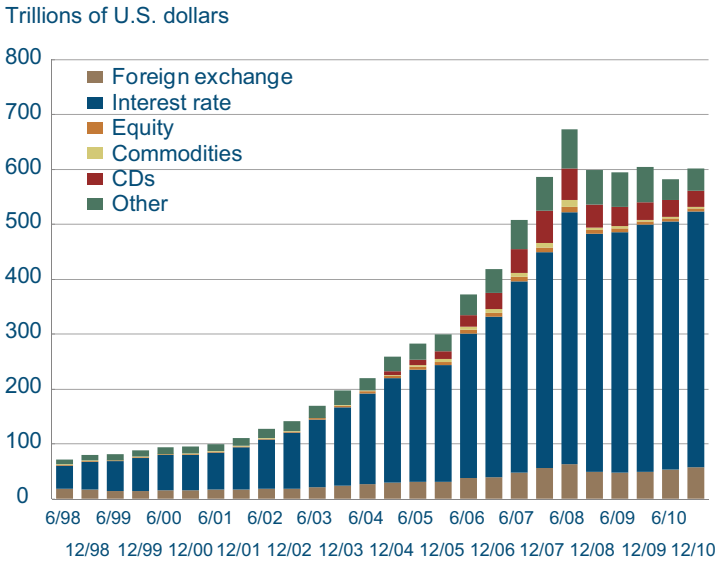
Derivatives are financial instruments whose values depend on the values of other assets such as stocks, bonds, and commodities. Firms, banks, and investors can use derivatives to hedge various kinds of risks. However, derivatives can also be used for speculation, and consequently they can magnify the degree of risk-taking that market participants engage in. Trading in derivatives reached tremendous levels before the recent financial crisis, and that burst of activity received a great deal of criticism later, reflecting perceptions that risk-taking by financial institutions was excessive and that derivatives helped to elevate considerably the severity of the crisis.

There are two major types of derivatives markets: exchange-traded and over-the-counter (OTC). In contrast to the heavily regulated exchange-traded market, the OTC market is bound by little regulation and offers customized derivative products. Those features enable it to provide greater flexibility in terms of meeting individual investors' hedging and speculation needs. As a result, the OTC market is much larger than the exchange-traded market. For example, as of December 2010, the notional amount outstanding (the gross nominal value of all deals) in the entire OTC market, excluding commodity contracts, was $598 trillion, nearly nine times the amount outstanding in the exchange-traded market ($68 trillion).

A look at recent trends in the global OTC derivatives market reveals that the market has stayed generally flat since trading volume fell significantly at the peak of the financial crisis. Although foreign currency derivative contracts have started to increase, and interest rate contracts have recovered to pre-crisis levels, trading in equity and commodity derivatives and credit default swaps continues to stay low and, in some cases, it has further declined.

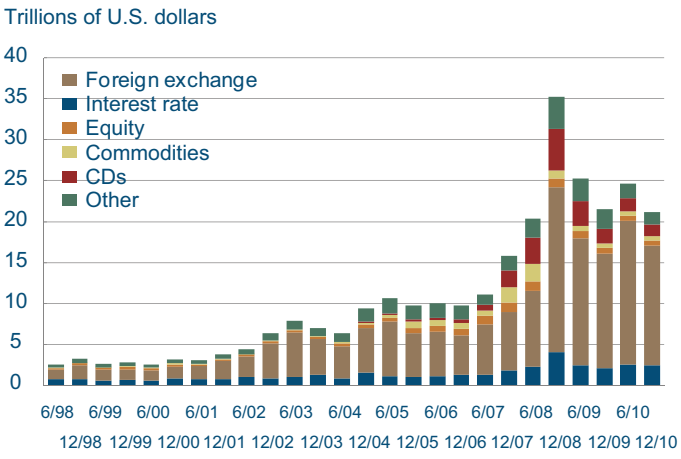
Prior to the financial crisis, the global OTC derivatives market grew strongly and persistently. Over

Global Over-the-Counter Derivatives Market: Notional Amounts Outstanding



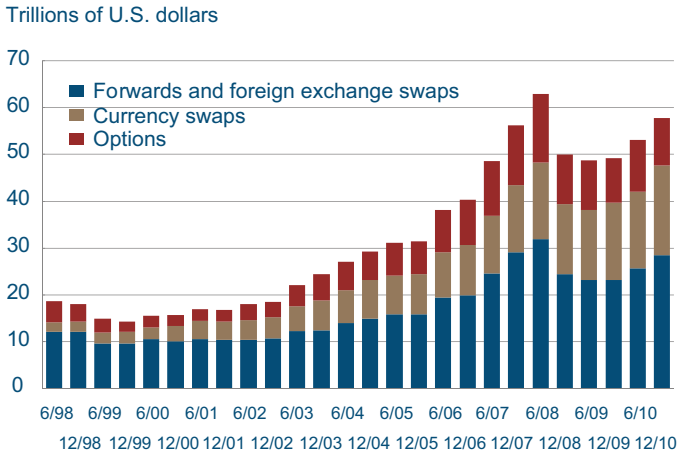
Source: Bank for International Settlements.

Global Over-the-Counter Derivatives Market: Gross Market Value



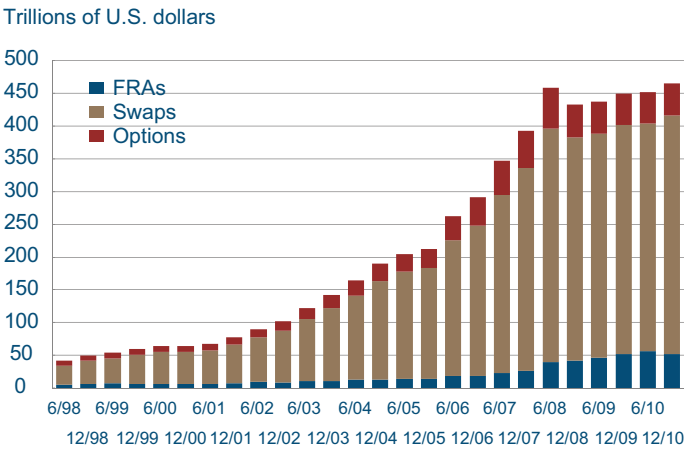
Source: Bank for International Settlements.

Foreign Exchange Contracts: Notional Amounts Outstanding



Source: Bank for International Settlements.

Interest Rate Contracts: Notional Amounts Outstanding



Source: Bank for International Settlements.

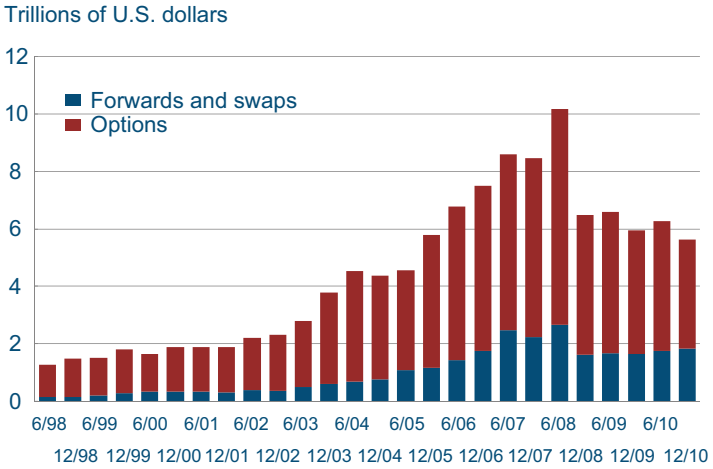
the ten-year period from June 1998 to June 2008, the market's compounded annual growth rate was 25 percent. The total notional amount outstanding reached its peak of $673 trillion in June 2008, but just six months later it had fallen to below $600 trillion in the wake of the financial crisis. Since then, the market has stayed about 10 percent-13 percent smaller than it was at its peak. In December 2010, the total notional amount outstanding was $601 trillion.

While the notional amount outstanding measures the size of the derivatives market, the gross market value provides an estimation of market risk, that is, the potential for gains or losses from derivative transactions. Gross market value had an upward trend over time until 2008: It stayed around $2 trillion-$3 trillion during 1998-2001, increased to $6 trillion-$7 trillion during 2002-2003, grew to around $10 trillion during 2004-2006, reached $16 trillion in 2007, and finally rose to $35 trillion at the end of 2008. As the derivatives market experienced its first and biggest drop in size in December 2008, the risk level ironically increased to its historical high, which indicated how vulnerable and dangerous the market was then. By December 2010, the gross market value came down to $21 trillion, 40 percent lower compared to two years before. Yet, as a risk measure, it still seems quite volatile, ranging from $21 trillion to $25 trillion during the past two years.

There are six main categories of derivatives: foreign exchange, interest rate, equity, commodity, credit default swap, and other.

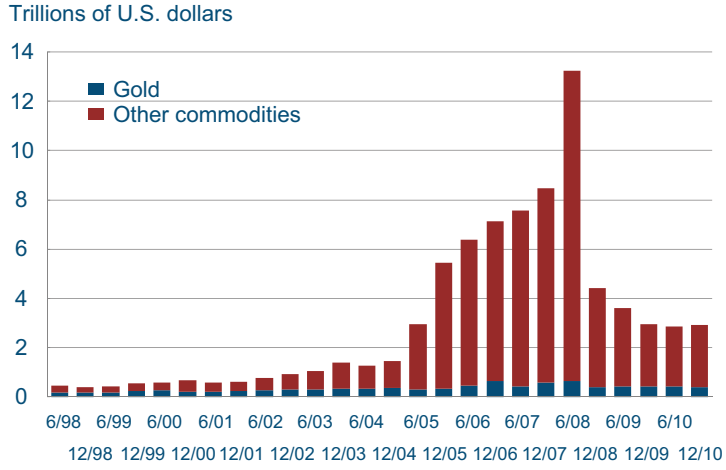
Foreign exchange contracts have the second-highest notional deal value among all types of derivative products. As of June 2008, they accounted for 9.4 percent of the entire derivatives market, with a notional amount outstanding of $63 trillion. Derivative trading in this category was down by 21 percent in December 2008. It stayed at that level in 2009 but started to recover in 2010. Its notional amount outstanding got back to $58 trillion in December 2010, which accounted for 9.6 percent of the derivatives market at that time. The recovery was mainly driven by an 18 percent increase in

Equity-Linked Contracts: Notional Amounts Outstanding



Source: Bank for International Settlements.

Commodity Contracts: Notional Amounts Outstanding



Source: Bank for International Settlements.

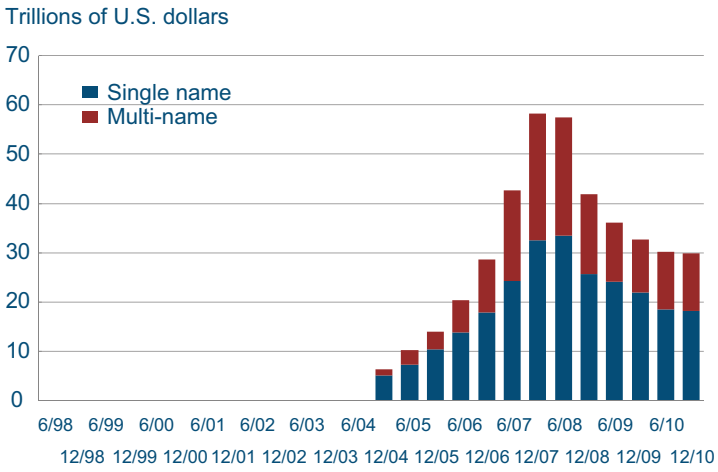
currency swaps, whereas the decline was the greatest in currency options (31 percent).

Interest rate contracts have the highest deal value, accounting for 68.1 percent of the derivatives market in June 2008, with a notional amount outstanding of $458 trillion. Trading in this category did not suffer as much as other categories, as it was down by only 4 percent-6 percent during the crisis. It reached $465 trillion in December 2010, even 1.5 percent higher compared to June 2008, and accounted for 77.4 percent of the entire derivatives market. An increase of 31 percent in forward rate agreements—contracts which lock in borrowing rates at a future time—is the main reason that this part of derivatives market has stayed strong. However, interest rate options experienced a 21 percent decline at the same time.

Although equity-linked contracts are one of the most commonly known types of derivatives, they account for only a tiny portion of the total derivatives market in terms of notional deal value. For example, in June 2008 the notional deal value was $10 trillion, which represented just 1.5 percent of the total market. After a 45 percent drop in the notional amount outstanding, the share of equity contracts further decreased to 0.9 percent ($5.6 trillion) in December 2010. All types of contracts on equity declined significantly: Options declined 49 percent and forward and futures declined 31 percent during this period.

Commodity derivatives are probably the category that experienced the most dramatic changes both prior to and after the crisis. The compounded annual growth rate of this type of derivative was 40 percent during the 10-year period from June 1998 to June 2008, or 65 percent during the three-year period from June 2005 to June 2008. Its notional amount outstanding was highest in June 2008 at $13 trillion, but it dropped by two-thirds six months later to $4.4 trillion. Since then, trading volume in commodities has continued to decline. In December 2010, the notional amount outstanding of commodity contracts was $2.9 trillion, accounting for only 0.5 percent of the total derivatives market. The notional value of gold contracts declined by nearly 40 percent during this period,

Credit Default Swaps: Notional Amounts Outstanding



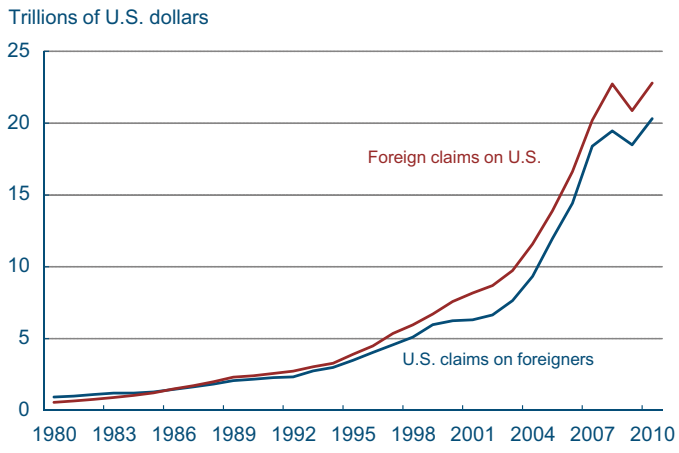
Source: Bank for International Settlements.

whereas the drop in nongold commodity contracts was a more drastic 80 percent.

Intended to help financial institutions better manage counterparty risk, the credit default swap is a relatively recent innovation in the derivatives market. After its trading statistics started to be released in December 2004, its notional amount outstanding increased eight times and reached $58 trillion within three years. However, it dropped to $42 trillion in December 2008 and continued to decline during the next two years. In December 2010, the notional value of credit default swaps was slightly below $30 trillion, accounting for 5 percent of the total derivatives market. Both single-name and multi-name instruments in this category decreased by about half.

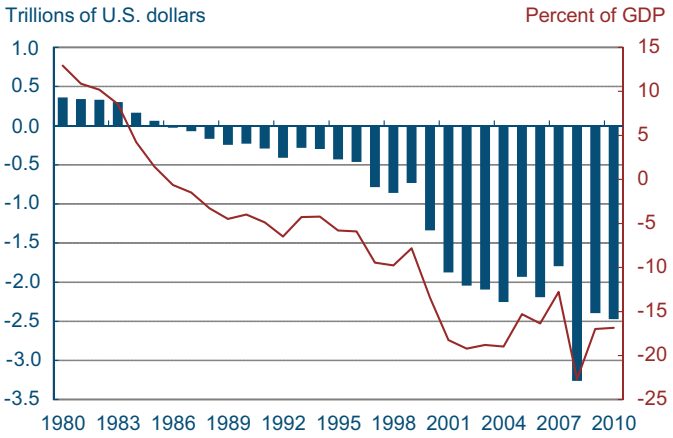
The Net International Investment Position

U.S. and Foreign Claims



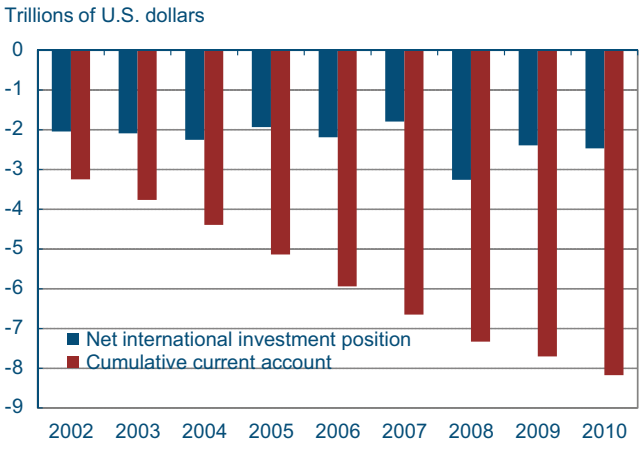
Source: Bureau of Economic Analysis.

Net International Investment Position



Source: Bureau of Economic Analysis

The Importance of Valuation Effects



Source: Bureau of Economic Analysis.

08.04.11

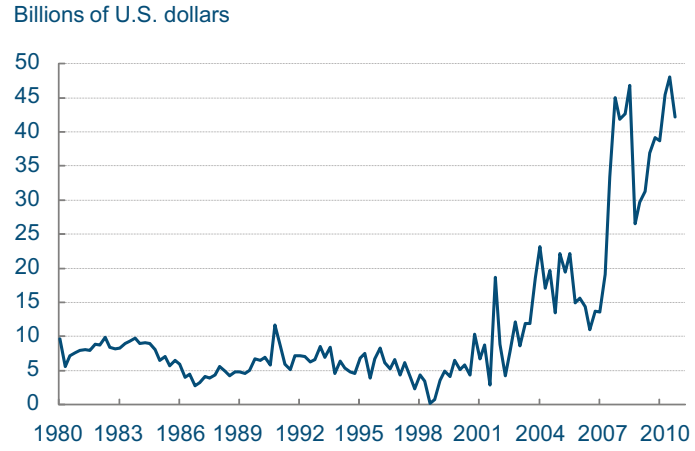
by Owen F. Humpage and Margaret Jacobson

The United States has run a current-account deficit almost every year since 1982, primarily because U.S. residents have imported more goods and services than they have exported. We finance this deficit by issuing financial claims—such things as stocks, bonds, and bank accounts—to the rest of the world. Since 1986, foreigners have held more claims on the United States than U.S. residents have held on the rest of the world, leaving the United States with—in econspeak—a negative net international investment position. These financial instruments give foreigners claims on future U.S. output, so economists often gauge them as a share of GDP. Last year, our negative net international investment position equaled 17 percent of GDP, the same as in 2009 but down from an all-time peak of nearly 23 percent of GDP in 2008.

The U.S. current-account deficit, which equaled 3 percent of GDP last year, has been narrowing from its peak of 6 percent of GDP in 2006. This has helped limit the growth in our negative net international investment position, but the current account is not the only factor in the mix. Besides the net issuances of new financial claims, year-to-year adjustments in the international investment position reflect changes in the valuation of previously issued, outstanding financial claims.

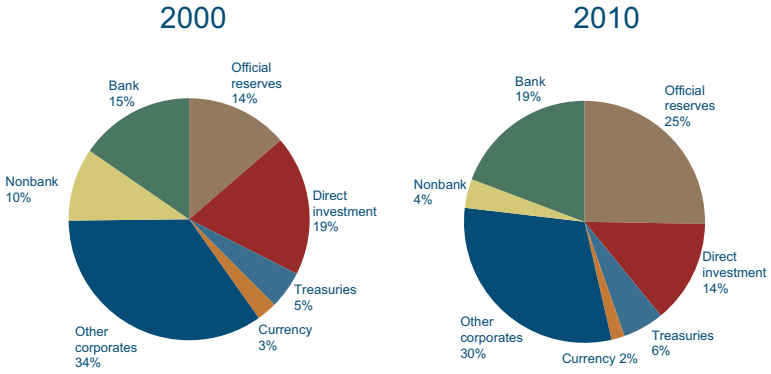
Valuation changes can result from movements in the market price of the underlying assets, but in recent years a substantial proportion of the valuation changes has also resulted from the dollar's depreciation. The dollar has depreciated since its recent peak early 2002 by approximately 30 percent on a trade-weighted basis against a broad array of our key trading partners. When the dollar depreciates, a given amount of foreign currency translates into a greater number of dollars. Because many U.S. claims on foreigners are denominated in foreign currencies, dollar depreciations increase the dollar value of U.S. claims on foreigners. On the other hand, dollar depreciations do little to affect the

Net International Income Receipts



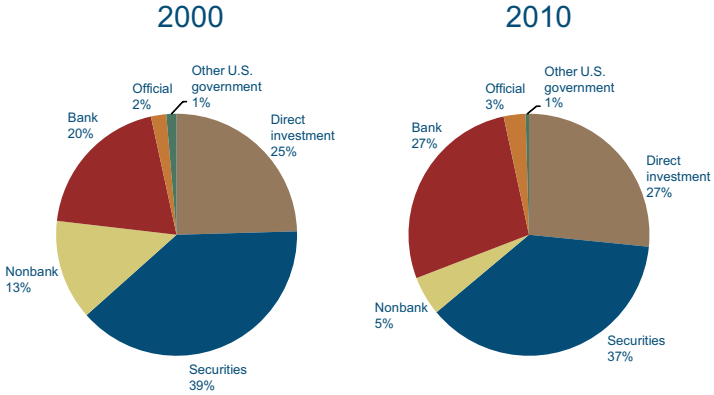
Note: Income receipts on U.S. assets abroad less income payments on foreign assets in the United States.
Source: Haver Analytics.

Foreign Claims on the United States



Source: Bureau of Economic Analysis

U.S. Claims on Foreigners



Source: Bureau of Economic Analysis

dollar value of foreign claims on the United States because these are typically denominated in dollars. Absent favorable valuation adjustments, our negative net international investment position would reflect only our cumulative current-account deficit and would be substantially larger than it is today.

Despite 18 years of near-persistent current-account deficits and an associated negative net international investment position, the United States has—surprisingly—continued to receive more income on assets held abroad than we have paid out on foreign assets held in the United States. U.S. claims on foreigners have a higher average return than foreign claims on the United States.

The dollar value of each type of foreign claim on the United States has increased over the past decade along with the total, but the composition of the overall foreign portfolio has changed as well. Most notably, the share of foreign official claims on the United States has increased 12 percentage points, notably squeezing down the share of direct foreign investment. Likewise the dollar value of each type of U.S. claim on foreigners has increased. The compositional changes are not as dramatic, but the United States has reduced the share of bank claims on foreigners and nonbank claims on unaffiliated foreigners that it holds in its overall portfolio.

Labor Market Remarkably Bad, but not So Unpredictable

08.09.11
by Murat Tasci and Mary Zenker

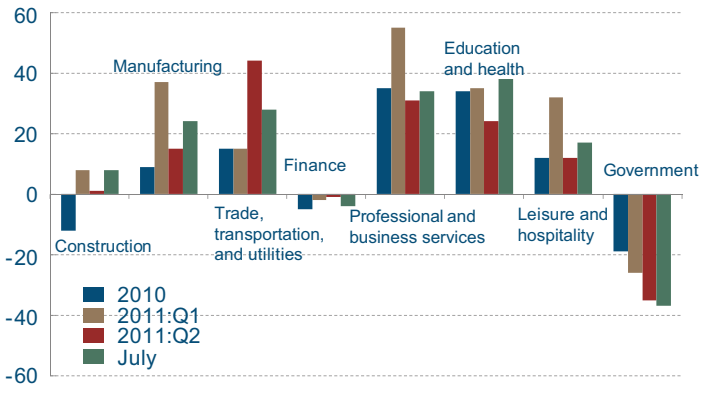
July's employment report was welcome news, especially after the slowdowns in payroll growth that had occurred over the previous two months. The U.S. economy added 117,000 new jobs, according to the Bureau of Labor Statistics report. That is slightly better than the average monthly gain of the second quarter (about 105,000), but definitely worse than that of the first quarter (about 165,000). Manufacturing, trade, professional and business services and education and health posted significant gains in July, as in recent months. Government payrolls, on the other hand, kept declining. July's decline was 37,000, most of it due to state and local governments (their payrolls declined –23,000 and –16,000, respectively). The temporary help services sector, which is thought of as a leading indicator for future payroll growth, was basically flat.

Separately, the household survey showed that the unemployment rate ticked down 0.1 percentage point to 9.1, partly due to a decline in the labor force of 193,000. However, among those who are unemployed, almost 45 percent have been unemployed more than six months, which is close to the all-time high reached in the midst of the last recession. So the news from the labor market is at best mixed: We do not see an all-out slowdown, but there are no robust improvements either.

Overall, the labor market has been adjusting very slowly during this recovery. Six months after the economy had started growing again, we were still losing jobs. In other words, employment, as measured through payroll survey, had experienced its largest decline (more than 6 percent) two years after the recession started. More troubling still is the slow pace at which employment is returning to normal. Three and a half years after the beginning of the recession, we are still 5 percent below the prerecession level of employment, almost 6.8 million jobs! This pattern of slow progress in the labor market was a key feature of the two recoveries that

Payroll Employment: Average Monthly Changes

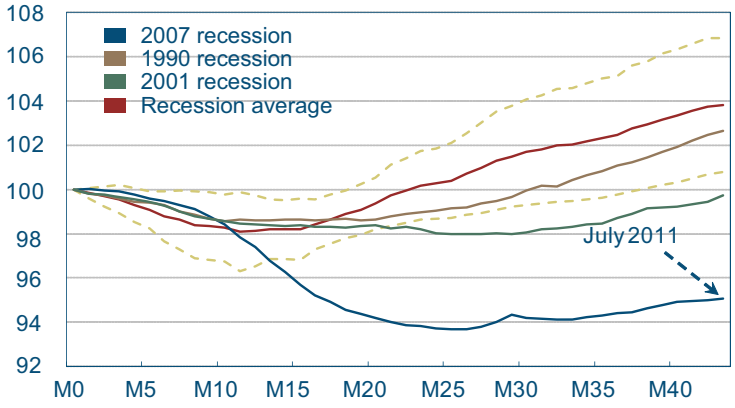
Seasonally adjusted, thousands



Source: Bureau of Labor Statistics.

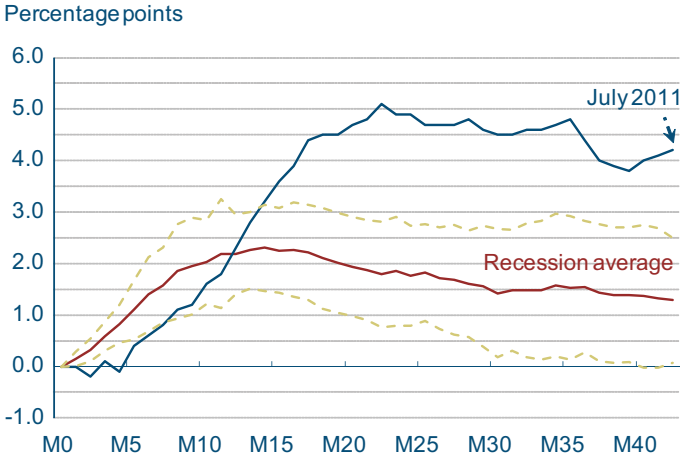
Cumulative Decline in Employment: Beginning of Recession to 43 Months Out

Index



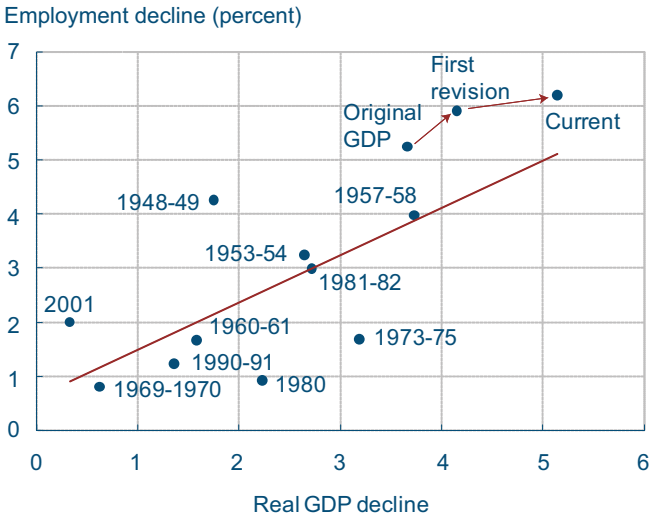
Notes: X-axis represents months from start of the recession. Recession start level of payroll employment is normalized to 100. Red line represents the average employment index progression for post-war recessions, and dotted lines are +/-one standard deviation.
Source: Bureau of Labor Statistics.

Cumulative Increase in Unemployment Rate: Beginning of Recession to 43 Months Out



Notes: X-axis represents months from start of the recession. Red line represents the average unemployment rate progression for post-war recessions, and dotted lines are +/-one standard deviation.
Source: Bureau of Labor Statistics.

Real GDP and Employment



Notes: Real GDP percent decline is measured peak to trough (2009:Q2 for thelast recession). Percent decline in employment is from start of recession to employment trough measured at quarterly frequency. Employment trough for the last recession is 2010:Q1.
Source: Bureau of Labor Statistics.

preceded the last one, and they were sometimes dubbed the "jobless recoveries" on account of it. The only difference between those two recoveries and the last one seems to be that this time around we suffered a much larger decline in employment.

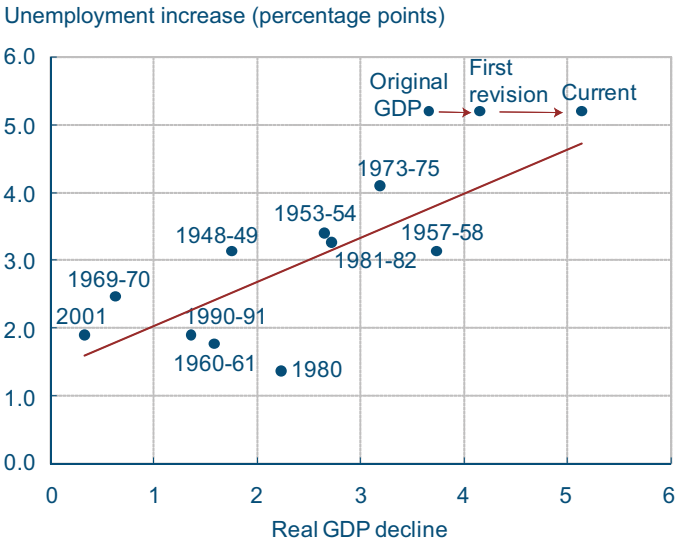
The unemployment rate does not paint a better picture. It increased more during the past recession than in any previous recession, and moreover, since it peaked over the 23 months ago, it has come down only 1 percentage point. There is always some persistence in the unemployment rate; that is, the unemployment rate does not necessarily return to pre-recession levels even three or four years after the start of the recession. But the degree of persistence at these levels is a significant exception by historical standards.

However, there is a hint of good news. Some perspective about the type of a recession we just experienced might help to see it. When one thinks of the impact of the recession on the labor market on its own, one gets a pretty bleak picture. However, in light of the recent revisions of estimates to gross domestic product (GDP), the recession's effects on the labor market don't seem to be so far from what we would expect.

The Bureau of Economic Analysis (BEA) occasionally revises its estimate of GDP to reflect new data as well as methodological improvements. One such revision recently showed that U.S GDP, the broadest measure of aggregate economic activity, declined more than 5 percent between the fourth quarter of 2007 and the second quarter of 2009, making it the largest ever decline in postwar history. There is nothing good about this news per se, but the fact that the recession was actually much worse than initially thought puts things in a different context.

Economic theory suggests that bigger contractions in GDP will have bigger impacts on the labor market; deeper recessions imply large losses in employment and greater rises in the unemployment rate. Consider this relationship between the decline in payroll employment and the decline in measured GDP, from peak to trough. If we had done this calculation for the last recession sometime in mid-2009, we would have found that a 3.7 percent decline in GDP was associated with more than a 5

Real GDP and Unemployment



Notes: Real GDP percent decline is measured peak to trough (2009:Q2 for the last recession) around NBER recessions. Rise in unemployment is from start of recession to unemployment peak measured at quarterly frequency. Unemployment peak for the last recession is 2009:Q4.
Source: Bureau of Labor Statistics.

percent decline in payrolls, and that response would have been somewhat of an outlier. Similarly, a year later, after one set of downward revisions to GDP, the last recession might have still looked a bit puzzling—4.1 percent decline in GDP associated with a 5.9 percent in payroll employment (the cumulative decline by that time). Since then, both the BLS and BEA have revised their estimates (payroll employment and GDP estimates). The bad news is that the overall declines in payroll and GDP, from their respective peaks to their respective troughs, are larger. However, in some sense, this makes this last episode much less puzzling.

The unemployment rate's behavior during this recovery also looks less mysterious after the GDP revisions. However, unlike the employment figures, the unemployment rate was not revised during this period. So every change we have seen over the last two years in the relationship between GDP and unemployment is due to changes in the GDP estimates. The 5.1 percent increase in the unemployment rate between December 2007 and October 2009 was exceptionally high relative to the first estimate of the GDP decline. However, as we got a better handle over time on how bad this recession really was, it became less of a puzzle.

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