Economic Trends

August 2014 (July 17, 2014-August 14, 2014)

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Bitcoin versus the Dollar

08.14.14
by Joseph G. Haubrich and Ashley Orr

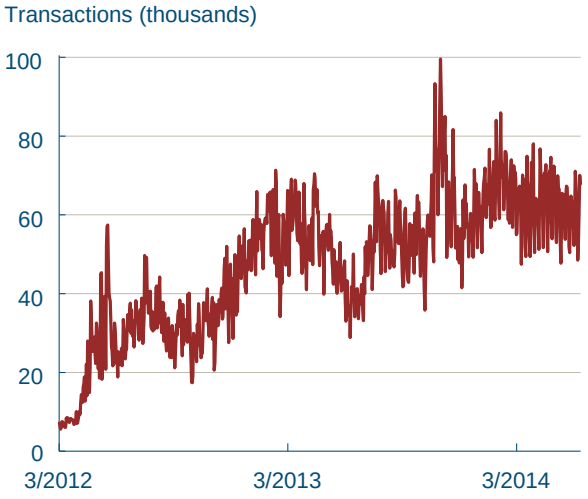
You can't hold a bitcoin in your hand, but you can spend one. Bitcoins are digital representations of value, a fiat currency based on cryptography—the use of encryption to store and transfer value securely. Transactions using bitcoins are decentralized in that they are validated and certified through a network of users rather than one central administrative site.

Though bitcoin has attracted a lot of attention, bitcoins are not widely accepted as a method of payment at most retailers, so the transaction volume associated with bitcoin is only a fraction of that of other forms of payment. Since its inception, daily transaction volume has varied from days with no transactions to over 100,000 transactions on November 28, 2013. The median number of transactions per day is 6,461, a tiny level of activity compared to credit cards and US currency. In 2011, for example, 20 billion credit card transactions were processed, according to one report, while fewer than 2 million Bitcoin transactions were confirmed during the same time period.

The price of one bitcoin in terms of the US dollar has varied from five cents to over $1,000 since its creation in 2009. As of July 2014, the price is around $650 per bitcoin. Bitcoin trades simultaneously for different prices on different exchanges, and the price is highly volatile.

This volatility is greater than that of the US dollar; another way to put it is that bitcoin prices are subject to high rates of inflation and deflation, whereas the Federal Reserve monitors the inflation rate in the United States and can adjust monetary policy to prevent hyperinflation or deflation. This allows the holder of a US dollar to have confidence that the value of his or her money will not be subject to great losses, an assurance bitcoin holders do not have.

Total Number of Bitcoin Transactions Since March 2012



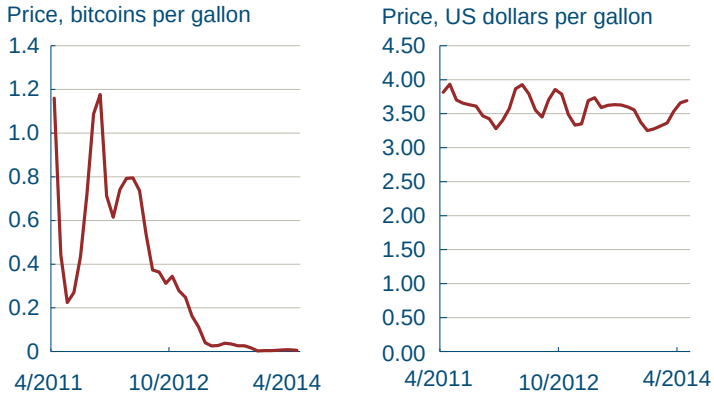
Sources: Blockchain; Quandl.

24-Hour Average Price of Bitcoin Since 2013

US dollars/bitcoin average daily price

Note: The aggregated bitcoin price index is calculated as a weighted average bitcoin price from multiple exchanges and given in terms of US dollars.
Source: Quandl.

Price of Gasoline Since April 2011, US Dollars and Bitcoins



Sources: Bureau of Labor Statistics; Quandl.

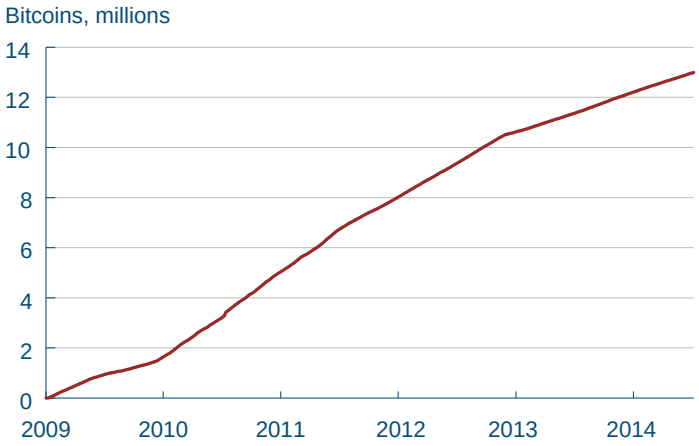
Another way to note the changing value of bitcoin is to look at what it will buy. The average monthly price of a gallon of gasoline in US dollars since 2011 has varied $0.69. In bitcoin, it has varied 1.17326 bitcoin—$734.37 in terms of the current exchange rate. One practical problem for merchants posting prices in bitcoin is that they must quote prices out to several decimal places, whereas prices in most other currencies are rounded to two. So for instance, if bitcoins were used to purchase a gallon of unleaded gasoline in June 2014, the price would have been 0.005994 bitcoin.

While the supply of US dollars is adjusted by actions of the Federal Reserve in the market for bank reserves, the supply of bitcoin increases as users of the system, or "miners," confirm transactions; this will continue until the total supply reaches 21 million bitcoin.

Another difference between dollars and bitcoins is the way they are produced. Bitcoins are created when people validate transactions by solving a difficult math problem—a process known as bitcoin "mining." The economic cost of producing bitcoins, the rate of seigniorage, is tied to the rigor of a mathematical problem, and each miner devotes computational power to confirming transactions and solving the problem. Once transactions are confirmed, the miner who confirmed the transaction receives bitcoin as a reward, that is, compensation for his or her work. In comparison, for dollars, the Federal Reserve determines the amount of high-powered money that is produced (currency plus bank reserves), which ultimately determines the total number of dollars in the world. Even ignoring bank accounts, there are a lot more dollars around than bitcoins: The current supply of bitcoin is nearly 13 million, whereas there are 34.5 billion US currency notes in circulation; or nearly 2,700 bills for each bitcoin.

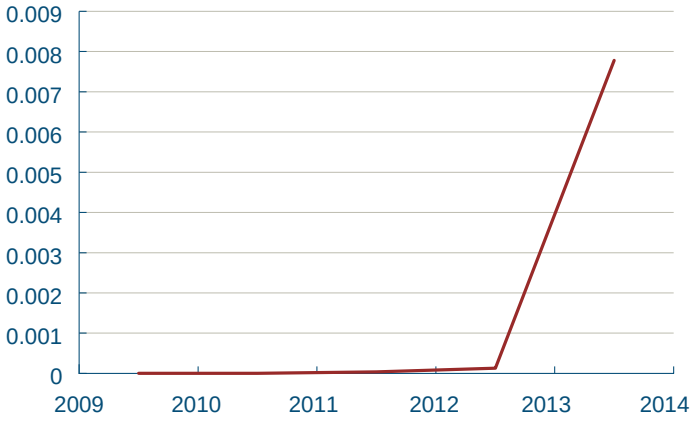
In terms of value, the differences are also large. As of January 2014, the amount of bitcoins in circulation valued in US dollars was around 9.3 billion; by comparison the total value of all US currency is nearly $1.2 trillion, or nearly 130 times the value of all bitcoins (and we're not counting bank accounts in this either). Once the entire supply of 21 million

Total Number of Bitcoins Mined



Note: All bitcoins mined prior to 2009 are included in data.
Sources: Blockchain; Quandl.

Bitcoin Value as a Fraction of the Total Value of US Currency



Note: Number of bitcoins in circulation multiplied by the current exchange rate, over total value of the US notes in circulation.
Sources: Board of Governors of the Federal Reserve System; Quandl.

bitcoins has been mined, their value (at the current exchange rate) will be barely over 1 percent of the value of US dollars (even assuming no growth in US currency). So bitcoins, despite their high profile and relatively high value, still make up only a small portion of the value of US currency. And as a fraction of all payments in the world, it is even less.

It's perhaps too early to assess the future of bitcoin, but in terms of number of transactions, total value, and even price stability, it is not currently a major competitor of the US dollar.

Peer-to-Peer Lending Is Poised to Grow

08.14.14

by Yuliya Demyanyk and Daniel Kolliner

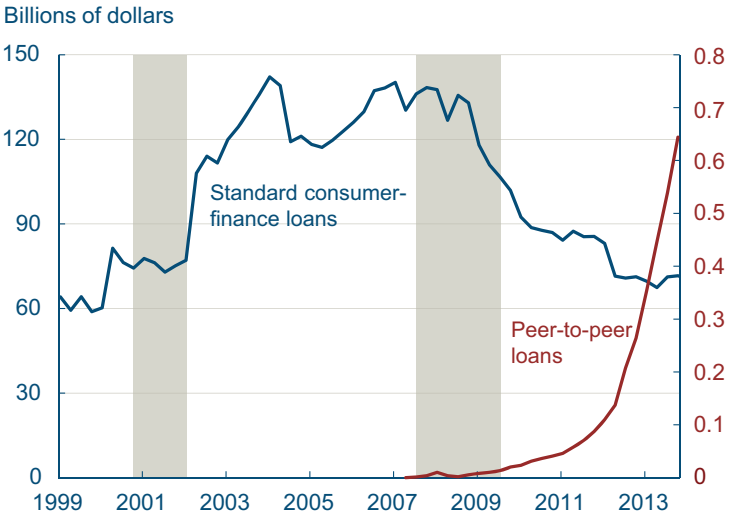
Peer-to-peer lending—a type of lending which matches individual borrowers with investors—is a recent innovation. But because it fills at least two gaps left by traditional lending sources, the peer-to-peer-lending market is likely to continue growing for some time.

Emerging first in the United Kingdom in 2005 and arriving in the United States a year later, the peer-to-peer market has been growing rapidly since its inception, while traditional consumer bank loans and credit-card lending have been declining. Since the second quarter of 2007, the total amount of money lent through bank-originated consumer-finance loans has been declining on average 2 percent per quarter and the total amount lent through bank-originated credit cards has been declining on average 0.7 percent per quarter. Meanwhile peer-to-peer lending has been growing rapidly at an average pace of 84 percent a quarter.

Peer-to-peer's rapid growth may be attributable to two of the benefits it provides. First, it can improve access to credit for individuals who have short credit histories. Second, it allows consumers to consolidate credit card debt and lower their interest rate more than they could by going through traditional lenders.

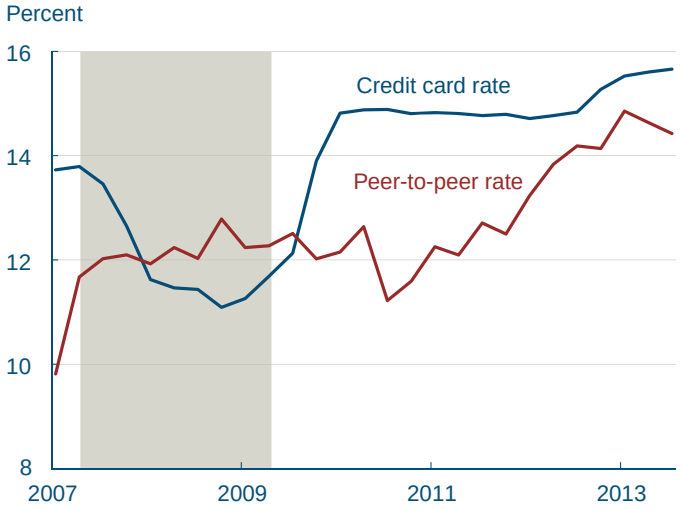
Peer-to-peer lenders use income, the type of employment, and even SAT scores in addition to credit scores and histories to assess the creditworthiness of borrowers. As a result, peer-to-peer lending could improve access to credit for consumers who, for example, are denied a loan by a bank because their credit histories are short, even if their credit scores are sufficiently high. A significant number of people fall into this category. According to data from Equifax, one of the three largest US credit bureaus, 39.8 percent of people with credit histories shorter than three years have credit scores higher

Peer-to-Peer Loan Originations Are Rising and Standard Consumer-Finance Loans Are Declining



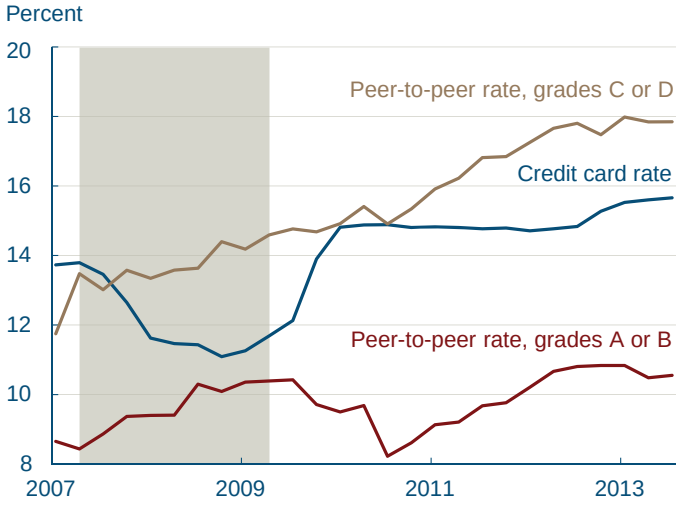
Notes: Standard Consumer Finance Loans is the total amount of loans outstanding. Peer-to-peer Loans is the total amount of loans originated. Shaded bars indicate recessions.
Sources: Equifax; Federal Reserve Bank of New York's Consumer Credit Panel; Lending Club.

Average Peer-to-Peer Interest Rates Have Been Lower than Credit Card Rates since 2010:Q1



Note: Shaded bar indicates a recession.
Sources: Bankrate.com; Lending Club.

Average Top-Grade Peer-to-Peer Interest Rates Have Always Been Lower than Credit Card Rates



Note: Shaded bar indicates a recession.
Sources: Bankrate.com; Lending Club.

than the subprime threshold, in other words, generally good enough to obtain a loan (Equifax, Federal Reserve Bank of New York's Consumer Credit Panel).

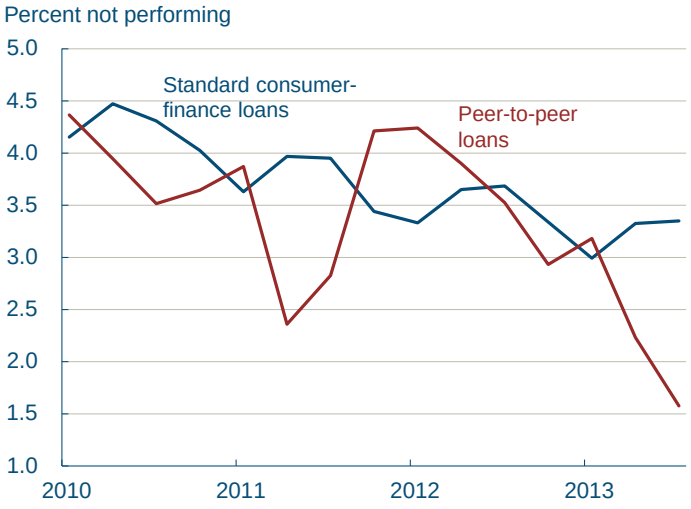
Most peer-to-peer loans are used to consolidate high-interest-rate credit card debt. Data provided by Lending Club, a company that arranges peer-to-peer loans, shows that 83.3 percent of peer-to-peer loans are personal one-time loans, most of which are put to use for this purpose. This may be explained by the fact that interest rates on peer-to-peer loans have been lower than those on credit cards since 2010:Q1.

Not every peer-to-peer borrower manages to obtain a better interest rate than a credit card rate. Peer-to-peer loans are categorized by grades A to D, reflecting the probability of default. On average, around 50 percent of loans are awarded a grade of "A" or "B." These consumers are considered the least risky borrowers, while borrowers with grades "C" or "D" tend to be riskier. Borrowers with loans graded "A" or "B" have consistently been getting better rates through peer-to-peer lending compared to credit cards. For borrowers with good scores, interest rates have a strong negative correlation with the credit card interest rates, meaning that when banks increase their interest rates, peer-to-peer lenders decrease theirs.

In comparison to bank-originated consumer-finance loans, peer-to-peer loans performed either similarly or slightly better. On average, between 2010:Q2 and 2014:Q1, 3.2 percent of peer-to-peer loans were past due compared to 3.7 percent of standard consumer finance loans. Over this period, peer-to-peer loans had a lower share of poorly performing loans in 10 of 16 quarters.

The peer-to-peer market is currently hundreds of times smaller than the consumer finance and credit card markets. However, the data suggest that the peer-to-peer lending market will continue to grow. One reason is that the supply of funds from investors for such lending has been increasing. Though peer-to-peer lending started as individual investors

Peer-to-Peer Loans and Credit Cards Perform Similarly



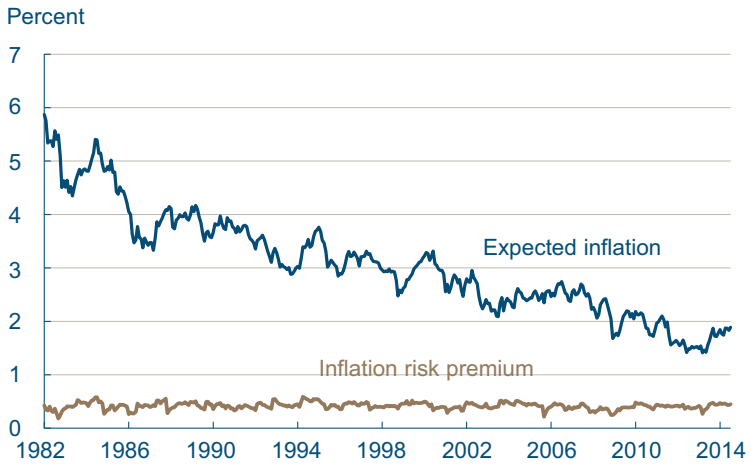
Note: Nonperforming loans from Equifax are defined as loans that are 30, 60, 90, or 120 days past due. Nonperforming loans from Lending Club are defined as loans that are 16-30 or 30-120 days past due.
Sources: Equifax; Federal Reserve Bank of New York's Concsumer Credit Panel; Lending Club.

lending to individual borrowers, institutional investors, such as community banks, have become involved over time. Another reason that peer-to-peer lending is poised to grow further is that demand for such loans has been increasing. Individuals who either cannot get loans from traditional banks or who wish to consolidate their credit card balances at lower interest rates find peer-to-peer lending an attractive alternative.

Cleveland Fed Estimates of Inflation Expectations, July 2014

News Release: July 22, 2014

Ten-Year Expected Inflation and Real and Nominal Risk Premia

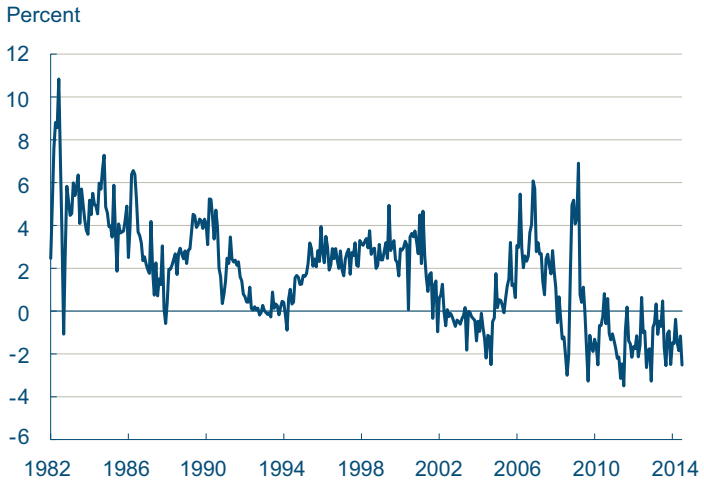


Source: Haubrich, Pennacchi, Ritchken (2012).

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.

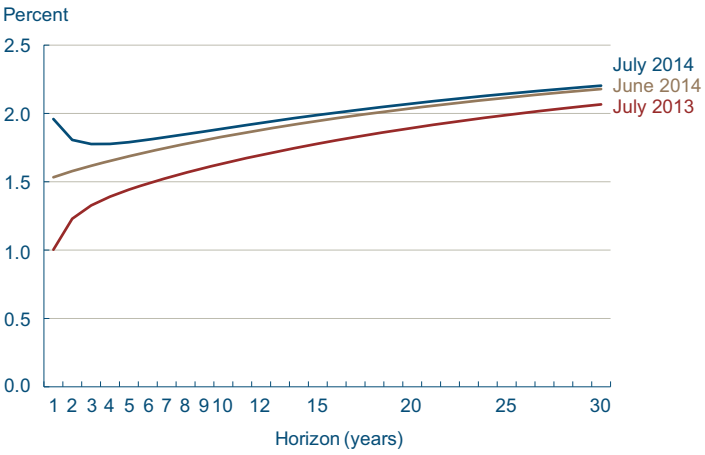
The Cleveland Fed's estimate of inflation expectations is based on a model that combines information from a number of sources to address the shortcomings of other, commonly used measures, such as the "break-even" rate derived from Treasury inflation protected securities (TIPS) or survey-based estimates. 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).

Recent Owners' Equivalent Rent Inflation Is Probably Not a Blip

08.11.14
by Amy Higgins and Randal Verbrugge

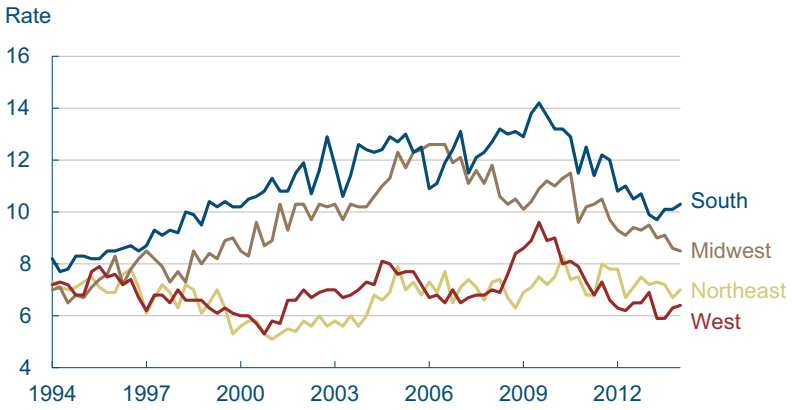
Recently, the overall rate of inflation has risen, owing partly to inflation in Owners' Equivalent Rent (OER). But many wonder if the current rate of OER inflation, which is now at levels not seen since 2009, is simply a blip. We apply a forecasting approach to estimate whether OER inflation will continue to be elevated going forward, or whether it will revert back to the lower levels that have been more typical over the last several years. We find that OER inflation is likely to remain elevated over the next year.

OER is used in the US and in many other countries to estimate inflation in homeowner housing costs. At its core, OER captures the implicit rent that a homeowner would have to pay if he or she were to rent instead of own the same home (or equivalently, the funds that the homeowner is sacrificing by living in the home instead of renting it to someone else). The OER of a particular home is the rent that the home would command under current market conditions. In practice, statistical agencies estimate OER inflation for homes in a particular part of a city using inflation in the market rents of nearby rental units. (For more details on how inflation is estimated in the US, go to www.bls.gov.)

OER plays a prominent role in both the Consumer Price Index (CPI) and the Personal Consumption Expenditures (PCE) price index because of how heavily it is weighted when all the individual components are aggregated into each index. In the CPI, it accounts for roughly 25 percent of the total index. In the PCE price index—the preferred inflation indicator of the Federal Open Market Committee—it accounts for approximately 12 percent. In core inflation measures, OER accounts for an even larger share. With such a large weight, the OER component can affect the overall rate of inflation significantly.

As for what is causing OER to rise, a number of factors have been proposed. Some financial writers have suggested that a shortage of rental housing is responsible, though not everyone agrees that such a shortage exists. Proponents of the rental-housing-shortage view point to historically low ratios of completed privately-owned housing units to population and a low ratio of private construction investment to GDP. However, if rental housing were in short supply, one would expect to see historically low rental vacancy rates. Yet these rates are not far from their levels in 1995, before the run-up in housing prices. Still, it is possible that declining vacancy rates could prompt some rent inflation. It is also possible that some cities could be experiencing historically low vacancy rates, though this is not true of the five cities we examine below.

Rental Vacancy Rates



Source: US Census Bureau.

Unemployment rates might also be expected to affect rent inflation, and they have been dropping steadily. High unemployment rates might be expected to dampen rent inflation, and declining unemployment rates might be expected to feed it.

One might also expect rents to rise when house prices rise, since higher home prices mean that real estate is more costly. Housing prices seem to have bottomed out in most regions of the country, and in some cities they have rebounded fairly briskly.

Finally, low interest rates obviously make it cheaper to buy a home, and we would expect that low rates would cause house prices to rise (since more buyers can now afford a given home), and rents to rise less than they would if interest rates were higher (since some households would decide to buy rather than rent). Low interest rates also reduce the costs that landlords face, hence might be expected to reduce market rents.

To forecast where OER inflation rates are headed over the next year, we construct a forecasting model that includes these four possible causes: vacancy rates, unemployment rates, house price changes, and interest rates. When we use data to estimate the model, we can also test whether OER inflation rates actually do respond to vacancy rates, unemployment rates, house prices, and interest rates.

And then, as long as the relationships that have prevailed in the past continue to hold in the future, we can use current data to give us an idea about future rent developments.

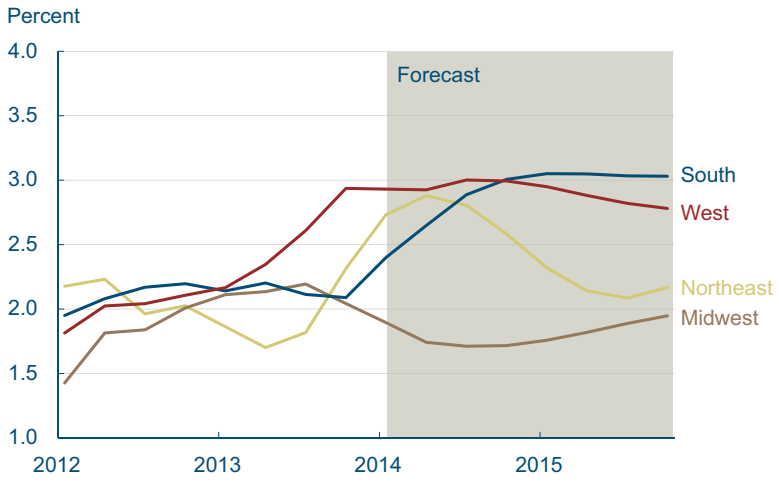
In our forecasting model, we also include two other variables which might help forecast OER inflation. The first is previous OER inflation. The second is the price/rent ratio, a measure of the "gap" between housing prices and rents. Like the price/earnings ratio associated with stocks, housing assets are sometimes evaluated through the lens of the price/rent ratio. Over long horizons, this ratio should be stable—although the ratio should also depend upon the real interest rate, with a low real interest rate causing the ratio to rise. When the price/rent ratio is high, we would expect adjustment: either house prices should fall, or rents should rise, or both.

The specific data we look at for the first four factors are the regional vacancy rate, the local unemployment rate, the local rate of year-over-year house price appreciation, and the real mortgage interest rate (i.e., the average 30-year fixed mortgage rate, adjusted for inflation by subtracting the expected inflation rate as reported in the Survey of Professional Forecasters). We examine the relationship of these variables plus the price/rent ratio to year-over-year OER inflation.

We look at the four Census regions (Northeast, Midwest, South, and West) and five cities: Cleveland, Los Angeles, Miami, New York, and Philadelphia. These cities were chosen because they are among the handful of cities for which we have monthly OER data, and because each Census region is represented by at least one city. We use quarterly data from 1990:1-2014:2 to gauge the strength of the relationships, and we then use our model as a forecasting model to forecast OER inflation in each region over the next year (2014:3-2015:2). (For an in-depth investigation of OER inflation versus rent inflation, see "Explaining the Rent–OER Divergence, 1999–2007".)

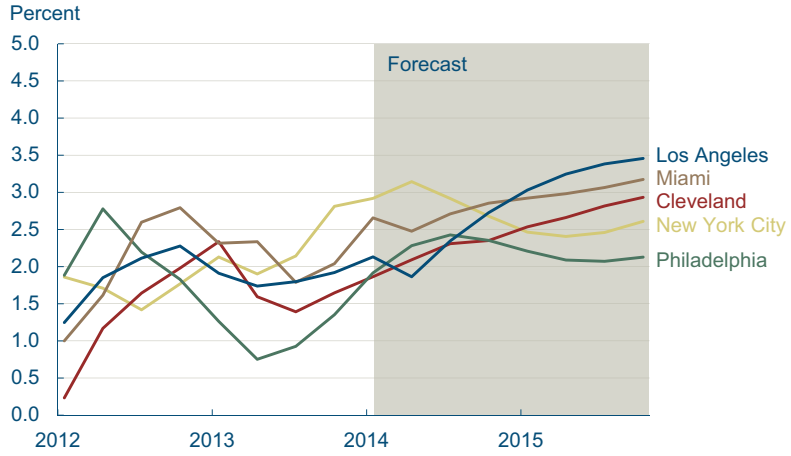
The estimation method used is a vector autoregression, estimated using Bayesian methods. This methodology often has excellent forecasting properties.

OER Year-over-Year Inflation Rates



Source: Bureau of Labor Statistics; authors' calculations.

OER Year-over-Year Inflation Rates



Source: Bureau of Labor Statistics; authors' calculations.

Our results are surprising. OER inflation does not appear to be influenced by vacancy rates, unemployment rates, the real interest rate, or our gap measure. Of the variables investigated, only lagged house price appreciation appears to have a statistically significant relationship to OER inflation (previous OER inflation is also statistically significant). In one sense, this is a conundrum, because it suggests that we "cannot explain" OER inflation using the "usual suspects." High vacancy rates do not appear to slow OER inflation down appreciably; neither do high unemployment rates, low interest rates, or a low price/rent ratio. The only usual suspect which appears to feed into OER inflation is lagged house price appreciation—and even then, it appears to be statistically significant in only about half of the cases investigated. The unemployment rate appeared to be statistically significant at the 10 percent level in two of the Census regions.

OER inflation has a considerable "momentum" component; that is, high OER inflation tends to be followed by high OER inflation. It is this momentum that dominates the OER forecasts below.

Our forecasting models suggest that, barring large unforeseen shocks, OER inflation is likely to slow somewhat in the Northeast, rise to about 3 percent in the South, remain at about 2.9 percent in the West, and rebound to about 2 percent in the Midwest. However, there is considerable uncertainty surrounding these forecasts.

In our model, lagged house price appreciation and recent OER inflation are the most important predictors of future OER inflation. Other commonly suggested influences of OER inflation—vacancy rates, unemployment rates, the price/rent gap, and interest rates—are generally not useful predictors.

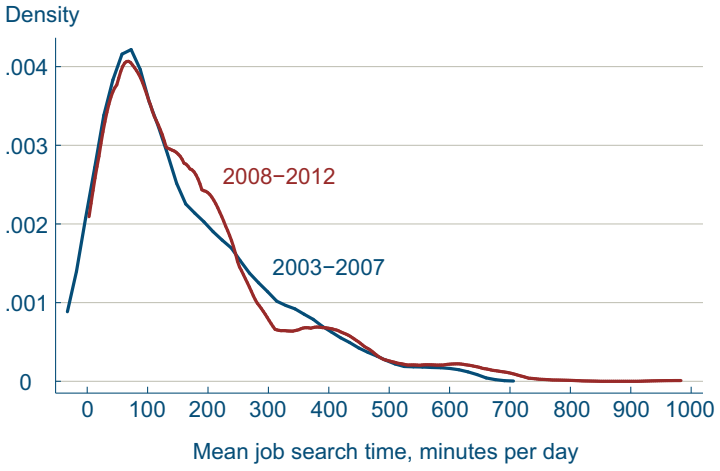
Job Search Before and After the Great Recession

08.12.14

by Dionissi Aliprantis, Anne Chen,
and Christopher Vecchio

Since the onset of the Great Recession, unemployment rates have been high and job-finding rates have been low. These persistent trends raise concerns that unemployed workers may have become discouraged by poor job prospects. To begin understanding the job searching behavior of the unemployed, we examine data from the American Time Use Survey (ATUS) and find that a greater proportion of the unemployed are spending time searching for a job after the Great Recession than before. We also find important differences in job search time by educational attainment, age, and gender—including decreases in search time for some groups.

Time Spent on Job Search (Conditional on Searching)



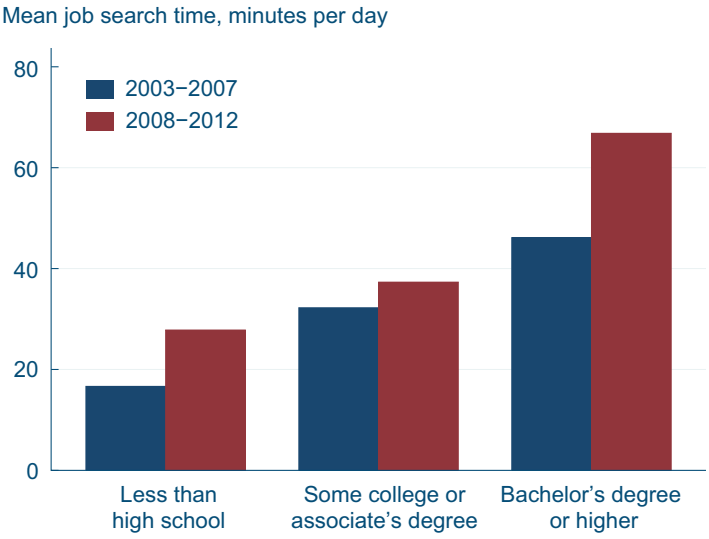
Notes: Survey weights were used to compute the kernel density.
Sources: American Time Use Survey, Bureau of Labor Statistics; authors' calculations.

To compare the amount of time the unemployed spend on their job search before and after the recession, we analyzed data from the ATUS, which asks respondents how much time they spent on various activities the previous day. Activities classified as job searching include sending out resumes, conducting interviews, commuting, asking for information, and looking for information on the internet or in the newspaper. We compared ATUS data on job searching before and after the Great Recession, combining the years 2003 to 2007 for the pre-recession period and the years 2008 to 2012 for the post-recession period.

As we would expect, the proportion of unemployed individuals who spent some time on an average day searching for a job increased from 20 percent to 24 percent after the recession. However, and perhaps surprisingly, among those unemployed who did search, the average time spent on job search looked very similar in the five years on either side of the Great Recession.

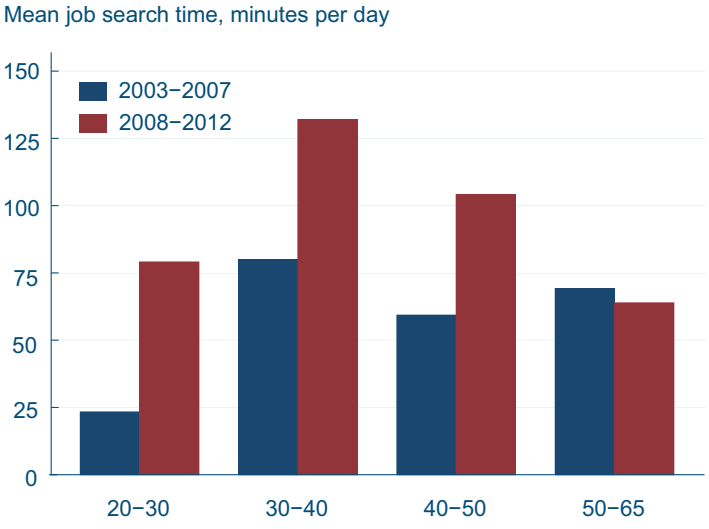
The proportion of unemployed persons spending time job searching varied dramatically by level of educational attainment over the past decade. Between 2008 and 2012, for example, 17 percent of those unemployed who were high school dropouts

Job Search Time across Educational Attainment Levels



Sources: American Time Use Survey, Bureau of Labor Statistics; authors' calculations.

Average Job Search Time: Unemployed Males with At Least a Bachelor's Degree



Sources: American Time Use Survey, Bureau of Labor Statistics; authors' calculations.

spent some of their day searching for a job, while for those with high school diplomas or associate's degrees the figure is 23 percent, and for those holding at least a bachelor's degree it is 35 percent.

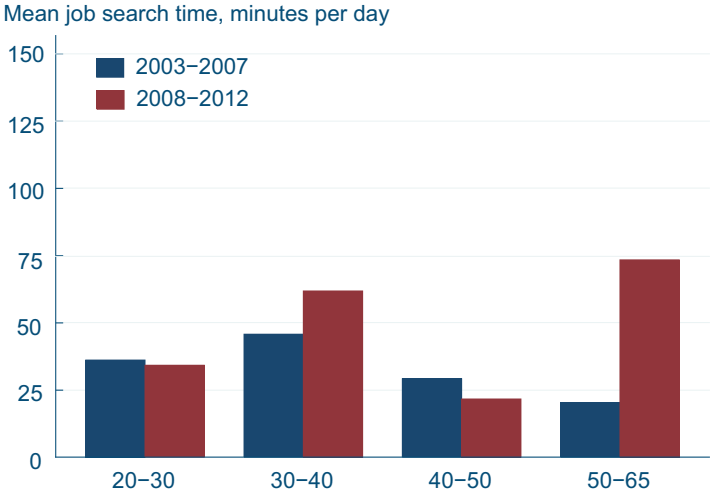
Although time spent by the unemployed on job searching increased across all educational attainment levels after the Great Recession, the increase was largest at the extremes. For unemployed high school graduates and those with an associate's degree, the average time spent searching increased from 32 minutes to 37 minutes a day. However, for unemployed high school dropouts the average search time increased from 17 minutes to 28 minutes, and for those with at least a bachelor's degree it increased by almost 50 percent from 46 minutes to 67.

For nearly all age categories, unemployed males with at least a bachelor's degree spent much more time searching for a job after the recession than before it. For males between 20 and 30 the average search time more than tripled, and for males between 30 and 40, and 40 and 50 the average search time increased by 65 and 76 percent, respectively. For males over 50, average job search time actually decreased slightly over this period.

Recent changes in the job search time of unemployed females with at least a bachelor's degree were different from males. For example, in contrast to males, job search time did not increase uniformly for females between 20 and 50. In fact, for most females in this age range, average job-search time actually decreased. So while the average job-search time of females 20 to 30 years of age with at least a bachelor's degree was higher than for males of the same age and education before the Great Recession, this pattern had reversed in the period of 2008 to 2012. Finally, and perhaps most interestingly, the job-search behavior of unemployed females over 50 with at least a bachelor's degree changed dramatically before and after the Great Recession.

While our findings do not rule out the existence of discouraged workers, we found that total job search time has increased in recent years. Our broader finding is that the job search patterns of the unemployed have changed in the aftermath of the Great

Average Job Search Time: Unemployed Females with At Least a Bachelor's Degree



Sources: American Time Use Survey, Bureau of Labor Statistics; authors' calculations.

Recession, with important differences by educational attainment, age, and gender, including decreases in search time for some groups. Understanding these differences could help us to understand not only recent changes in the labor market, but also in educational attainment, household formation, and other important processes driving our economy.

State Unemployment Insurance Policy Responses during the Great Recession

08.12.14

by Pedro Amaral, Jessica Ice, and Brad Kaplita

During the Great Recession, state unemployment insurance systems faced unequal burdens depending on how well their accounts within the federal Unemployment Trust Fund (UTF) were funded and how severely they were hit by the recession. This article describes the different ways that states responded to the effects of the recession on their unemployment insurance systems because of these factors.

Financing Unemployment Insurance

The US unemployment insurance (UI) system is jointly funded by federal and state payroll taxes. The federal share is financed by a federal tax, charged to employers, of 6.0 percent on the first $7,000 of wages of each employee. (However, the effective tax rate is often 0.6 percent because of a 5.4 percent rebate that most employers get for paying on time). Revenues from the federal tax are used to cover state and federal administrative costs, for loans to states with insolvent UTF accounts, and for the federal share of unemployment benefits. The states' share of UI claims is financed through a state tax, which is also levied on employers' payrolls, but both the statutory rate and the taxable wage base (the amount of an individual's income on which a tax is levied) varies from state to state.

When states have state tax revenues left over after paying their UI claims, they can supplement their UTF accounts. If they are unable to raise enough revenue to pay their UI claims, they can dip into their UTF accounts and obtain loans from the federal government. However, if a state is unable to repay its loans and its UTF account becomes insolvent for two consecutive Januaries, it will suffer a federal tax "credit reduction."[1] This means that the federal tax rebate that employers receive for paying their taxes on time will be reduced (usually by 0.3 percent per year, cumulatively, until the state is able

to repay its loan). These federal tax credit reductions place a higher tax burden on employers, who may react by reducing payrolls, in turn decreasing the tax base for state tax revenues and placing more stress on the state's unemployment agencies' finances.

Insolvency during the Great Recession

In the aftermath of the Great Recession, states were faced with higher-than-normal unemployment compensation costs. During this period, the federal government was funding the large majority of unemployment compensation payouts in the form of the extended benefits programs, which offered a maximum of 73 weeks of benefits. However, federal benefits could not be paid out until an individual had exhausted the fully-state-funded unemployment insurance benefits, usually lasting 26 weeks. As claims increased with the onset of the recession in 2008-2009, federal tax credit reductions began posing a problem for a large number of states in 2011, as by that time they had had insolvent accounts for two years.

To look at how states in different fiscal situations behaved, we start by dividing them into three distinct groups: states that were never insolvent, states that were insolvent but managed to pay back their federal loans and did not incur the federal tax credit reduction, and states that became insolvent and ended up incurring a federal tax credit reduction.

Unemployment Insurance Policy Responses

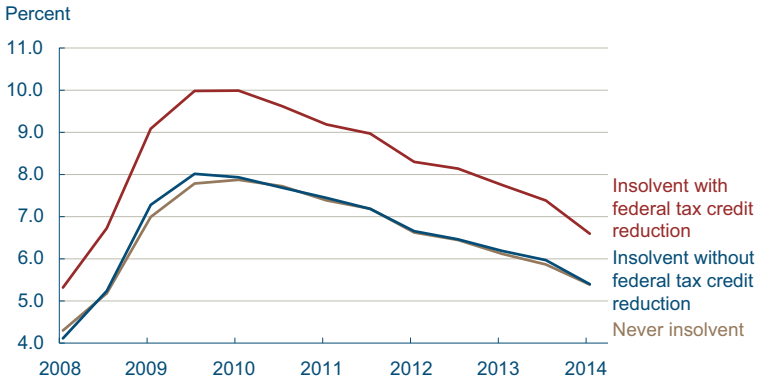
Unemployment rates were substantially higher in states that suffered federal tax credit reductions, while they were very similar in solvent states and states that were insolvent but managed to escape the federal tax credit reduction. Holding all things equal, states with higher unemployment rates need to spend more on unemployment claims and therefore will suffer more fiscal pressure. At the same time there may also be a feedback mechanism at work, creating a potentially vicious cycle: federal tax credit reductions increase the employers' effective tax rates, which may lead to less hiring and higher unemployment.

States by Solvency Status

Federal tax credit reductions	Insolvent without tax credit reductions	Never insolvent
Arizona	Alabama	Alaska
Arkansas	Colorado	District of Columbia
California	Hawaii	Iowa
Connecticut	Idaho	Louisiana
Delaware	Kansas	Maine
Florida	Massachusetts	Mississippi
Georgia	Maryland	Montana
Illinois	New Hampshire	North Dakota
Indiana	South Dakota	Nebraska
Kentucky	Tennessee	New Mexico
Michigan	Texas	Oklahoma
Minnesota		Oregon
Missouri		Utah
Nevada		Washington
New Jersey		West Virginia
New York		Wyoming
North Carolina		
Ohio		
Pennsylvania		
Rhode Island		
South Carolina		
Vermont		
Virginia		
Wisconsin		

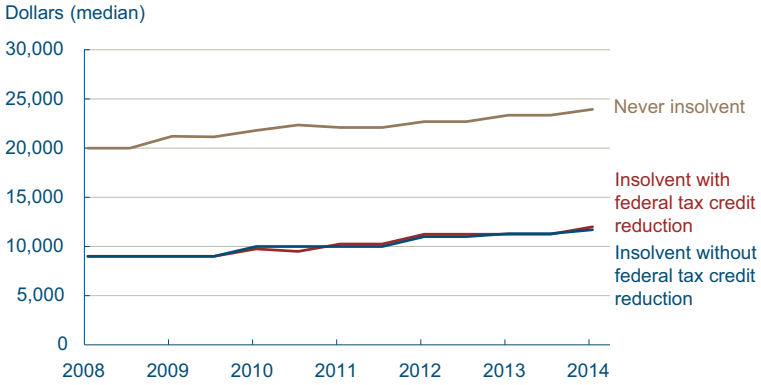
Sources: Department of Labor; Bivens, Smith, and Wilson (2014).

Unemployment Rate



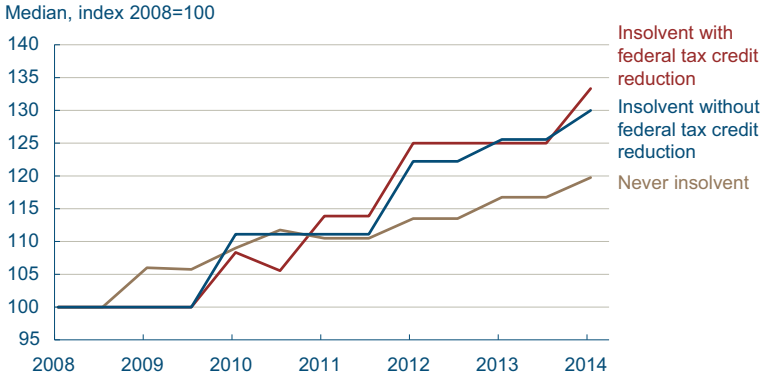
Source: US Department of Labor.

Statutory Taxable Wage Base



Source: US Department of Labor.

Growth in Statutory Taxable Wage Base



Source: US Department of Labor.

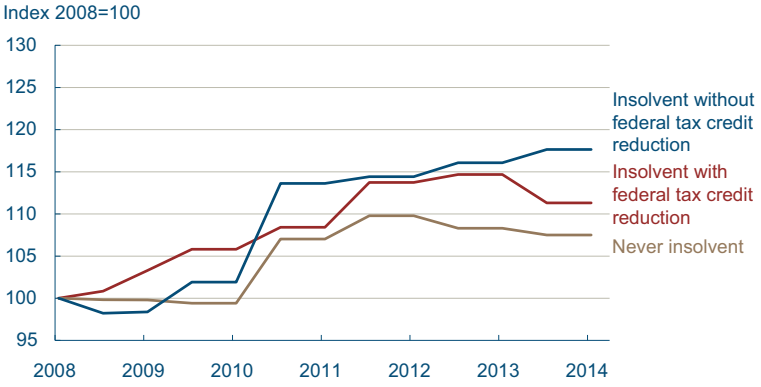
Although on average states that did not receive the federal tax credit reduction faced lower unemployment rates, some states faced insolvency while others did not. A striking difference between the solvent and insolvent groups is the size of their statutory taxable wage base (the dollar amount of wages that taxes are levied on in each state). The statutory taxable wage base for solvent states was almost double that of insolvent states (regardless of whether they received a federal tax credit reduction or not). Moreover, since employment levels also tended to be lower for insolvent states, the total taxable wage base (the statutory wage base times the number of employed people) was also lower there. Thus, the data indicate that solvency depends not only on a state's level of unemployment and the volume of claims it must pay, but also on how prudently it uses its fiscal instruments. In fact, one could make a strong argument that states with broad tax bases are precisely those that did not end up in insolvency.

The insolvent states eventually increased their statutory taxable wage base the most as a response to their fiscal woes. This policy response is unsurprising for two reasons: first, insolvent states began with a much lower taxable wage base and had much more room to grow it, and second, solvent states probably did not see any need to make increases, given their sounder fiscal situation.

States that went through insolvency also increased their maximum state payroll tax rate by more than both solvent states and states with federal credit reductions. Increasing the state tax perhaps contributed to the ability of some states to escape federal credit reductions by allowing them to repay federal loans while others did not.

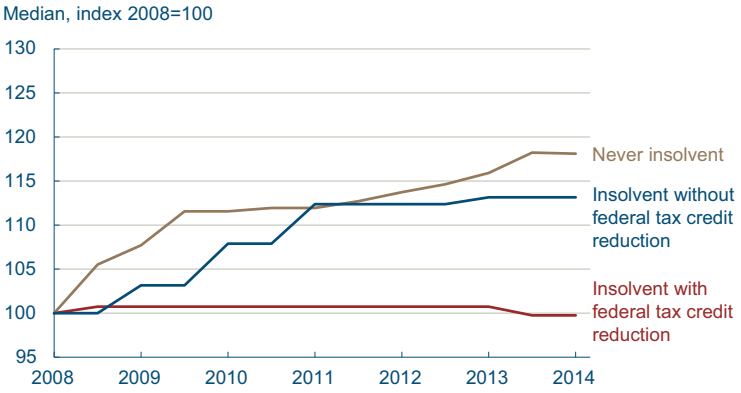
While the fiscal consolidation effort for states that became insolvent but escaped federal tax credit reductions was done largely by increasing revenues, states that suffered federal tax credit reductions attempted to balance their trust fund budgets through reductions in spending. States with federal tax credit reductions kept the maximum dollar amount of weekly UI benefits the unemployed could receive constant and reduced the maximum number of weeks that an individual could receive

State Maximum Statutory Unemployment Tax Rates



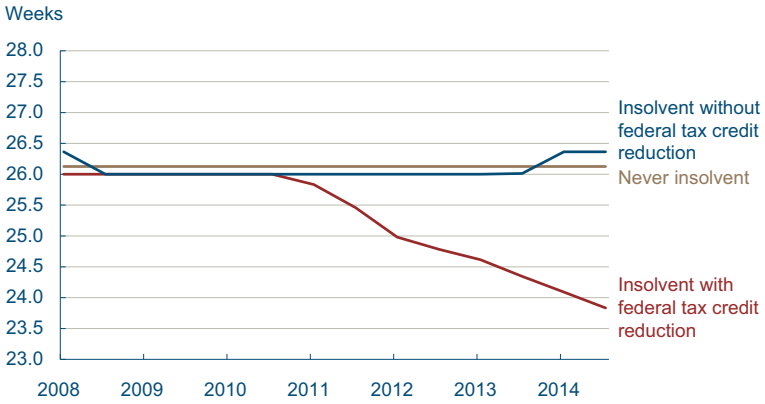
Source: US Department of Labor.

Statutory Maximum Weekly Dollar Benefits



Source: US Department of Labor.

State Maximum Weeks of Unemployment Insurance Benefits



Source: US Department of Labor.

state UI benefits. Note that this strategy does not necessarily mean they were able to cut overall spending, as unemployment rates, and therefore claims, were higher in these states.

To be sure, the way states have managed the funding of their UI programs in the past is as important a determinant of the current fiscal situation of those programs as the unemployment burden the state faces. Moreover, unemployment at the state level is also partly determined by past and current fiscal policies, so we are not claiming any causality, but merely pointing to some important, and suggestive, correlations. Based on this evidence, states that escaped a federal penalty were faced with a less severe unemployment burden and they also undertook some policy measures to increase their revenues by increasing their taxable wage base and state maximum tax. States that suffered federal tax credit reductions also experienced more adverse labor market outcomes and took additional measures to reduce deficits through attempts to reduce their spending on unemployment insurance programs.

1. These credit reductions are officially titled Federal Unemployment Tax Act or "FUTA" credit reductions.

The authors thank Lockhart Taylor at the North Carolina Department of Commerce for his contributions to this article.

Yield Curve and Predicted GDP Growth, July 2014

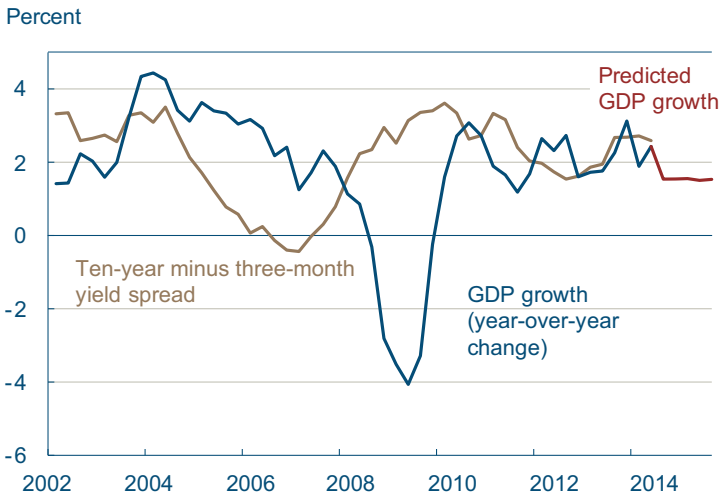
Covering June 24, 2014–July 25, 2014
by Joseph G. Haubrich and Sara Millington

Highlights

	July	June	May
Three-month Treasury bill rate (percent)	0.03	0.03	0.03
Ten-year Treasury bond rate (percent)	2.49	2.63	2.54
Yield curve slope (basis points)	246	260	251
Prediction for GDP growth (percent)	1.5	1.4	1.4
Probability of recession in one year (percent)	2.46	1.99	2.31

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.

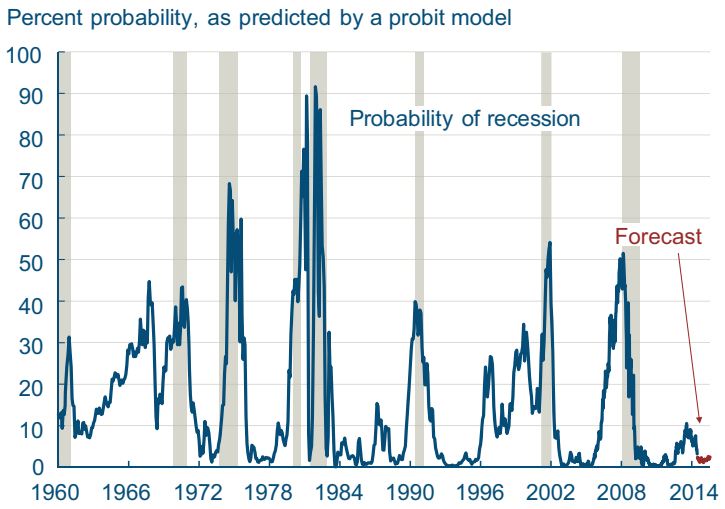
Overview of the Latest Yield Curve Figures

Since last month, the yield curve reversed it course, pivoting back downward around the short end. The three-month (constant maturity) Treasury bill rate stayed fixed at 0.03 percent (for the week ending July 25), even with June and May's levels of 0.03 percent. The ten-year rate (also constant maturity) decreased to 2.49, down from June's 2.63 percent and 5 basis points below May's level of 2.54 percent. The pivot dropped the slope to 246 basis points, below June's 260 basis points and May's 251 basis points. By recent standards, the yield curve remains steep, as the mean slope has been 193 basis points (median of 218) since 2000.

Despite the flatter slope, predicted future growth increased, albeit by a small amount. Projecting forward using past values of the spread and GDP growth suggests that real GDP will grow at about a 1.5 percentage rate over the next year, just up from the 1.4 percent forecasts in May and 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 is slightly more pessimistic than some other predictions, but like them, it does show moderate growth for the year..

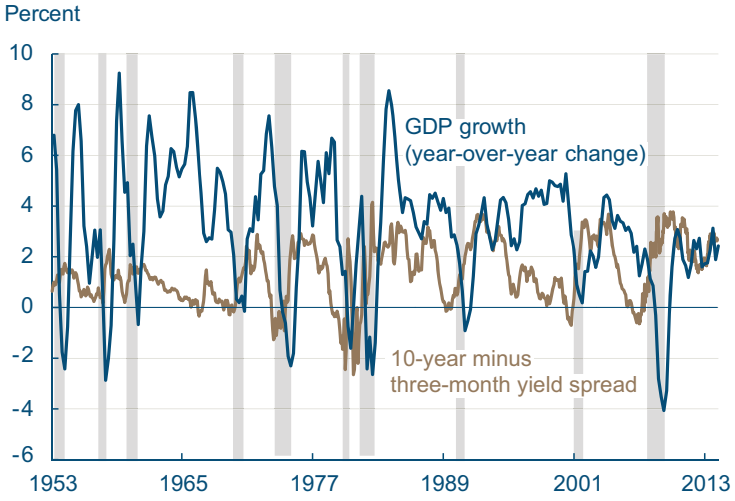
The flatter slope did slightly increase the probability of a recession, though only slightly. Using the yield curve to predict whether or not the economy will be in a recession in the future, we estimate that the expected chance of the economy being in a recession next July at 2.46 percent, up from June's reading of 1.99 percent and still above May's probability 2.31 percent. 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.

Recession Probability from Yield Curve



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



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

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 preceeded 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.

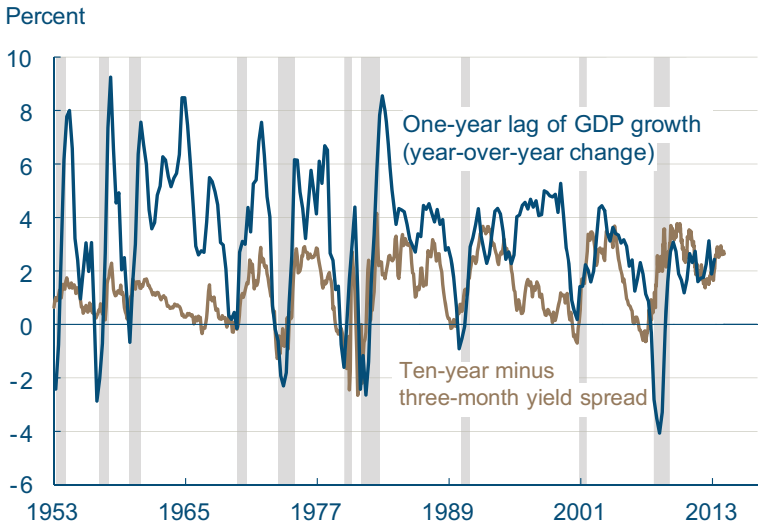
We use past values of the yield spread and GDP growth to project what real GDP will be in the future. We typically calculate and post the prediction for real GDP growth one year forward.

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 materially different from the determinants that generated yield spreads during prior decades. Differences could arise from changes in international capital flows and inflation expectations, for example. The bottom line is that yield curves contain important information for business cycle analysis, but, like other indicators, should be interpreted with caution. For more detail on these and other issues related to using the yield curve to predict recessions,

Yield Spread and Lagged Real GDP Growth



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.

The Youngstown-Warren-Boardman Metropolitan Statistical Area

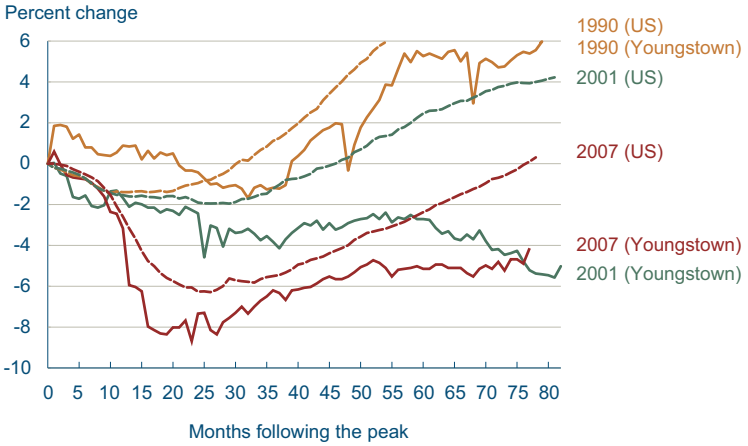
08.05.14
by Kyle Fee and Ashley Orr

Youngstown, Ohio, is at the center of a larger metropolitan statistical area (MSA) that includes the cities of Youngstown, Warren, and Boardman, Ohio, and the counties of Trumbull and Mahoning in Ohio and Mercer in Pennsylvania. The area, often referred to as the Mahoning Valley and once known as the Steel Valley, was home to a flourishing steel industry from the mid- 1800s to the 1970s. Back in the 1920s, the valley's steel production ranked second in nation, but today most of the steel mills have been closed down, sold, and scrapped. Now producing little steel, the area has experienced a vast population decline and has yet to regain employment lost from previous recessions.

Recent employment statistics for the Youngstown MSA are startling. Employment typically falls around recessions but picks back up once the recovery begins. The Youngstown MSA followed this pattern after the 1990 recession, but in the two subsequent recessions, employment did not bounce back. Since the business cycle peak in 2001, employment has fallen almost continuously. At the time the 2007 recession hit 81 months later, employment was nearly 6 percent lower than it was in 2001. During the 2007 recession, employment continued to decline until November 2009, where 23 months into this business cycle, the Youngstown MSA's job market had lost an aggregate 14 percent since its peak in 2001. As of May of 2014, the MSA's employment has expanded but still remains nearly 10 percent below where it was at the peak in 2001 and 4 percent below where it was at the start of the 2007 recession. By comparison, employment levels in the nation as a whole recovered after all three recessions.

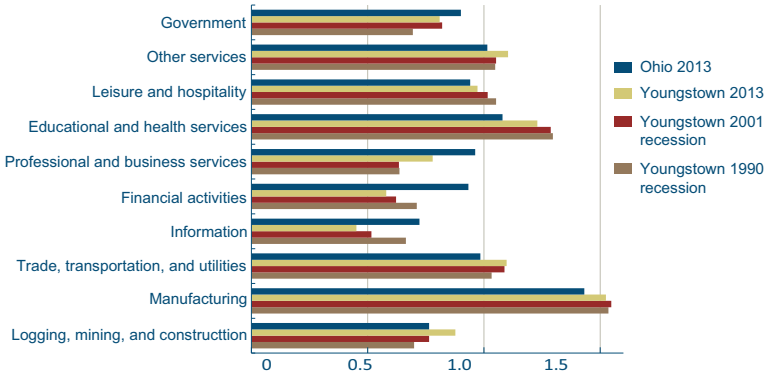
Even with the near absence of the steel industry, manufacturing still accounts for a significant share of employment in the Youngstown MSA. The share of employment in manufacturing has been higher in the Youngstown MSA than in both Ohio and the nation as a whole since 1990, even as the

Employment Recovery in Different Business Cycles



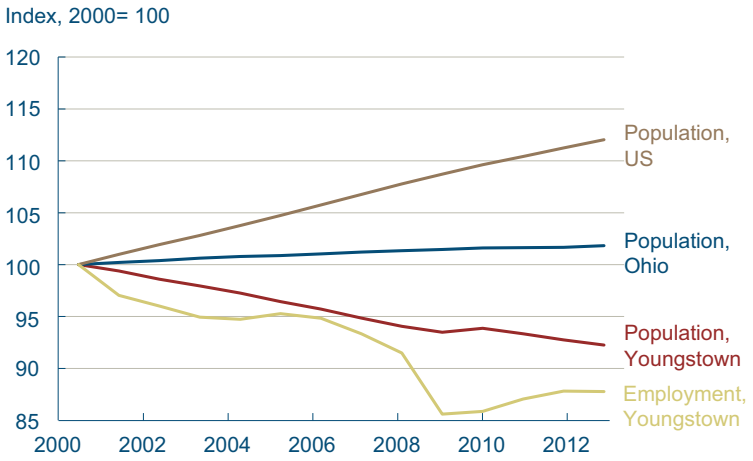
Sources: Bureau of Labor Statistics/Haver Analytics.

Location Quotients in 2013 and Two Recessions



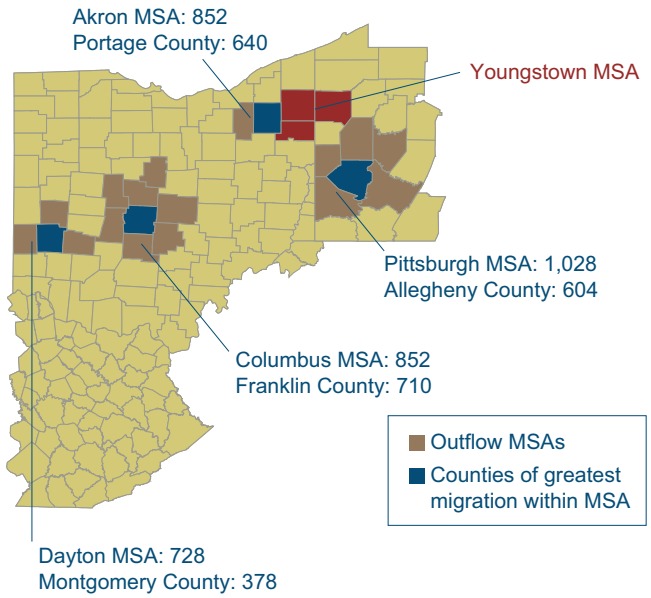
Note: The location quotient (LQ) is used to measure the degree to which an industry is concentrated in a region relative to a reference economy. An LQ greater than 1 indicates that a region (in this case, the Youngstown MSA) has a higher ratio of employment in a given industry in comparison to the reference economy (in this case, the United States).
Sources: Bureau of Labor Statistics/Haver Analytics.

Population and Employment



Sources: Census Bureau/Haver Analytics.

MSAs with the Greatest Net Migration from Youngstown (number of people)



Source: American Community Survey, 2007-2011 net migration data.

manufacturing sector has declined considerably over that time. Since 1990, manufacturing's share of total employment has declined from 24 percent to 13 percent in the MSA, while in the nation it has declined from 16 percent to 9 percent. The Youngstown MSA's employment shares also exceed Ohio's and the nation's in the trade, transportation, and utilities sector, other services sector, and the educational and health services sector.

Overall, the employment shares of most sectors in the Youngstown MSA relative to the nation have been fairly stable across business cycles. However, since 2001 the share of employment in the professional and business services sector has increased in Youngstown relative to the nation. This trend is encouraging, as the sector has accounted for roughly 30 percent of job growth nationally since 2010.

Mirroring the continuous declines in overall employment is a similar decline in Youngstown's population. Since 2000, the two series have both fallen significantly. However, employment has declined much more and at a quicker pace over the period. Recently, employment has started to increase, while population continues to decline.

Much of the population decline over the last several decades has been fueled by major migrations out of the MSA. In general, though, when people decide to leave Youngstown, they often stay fairly close to home. County-to-county migration data from the American Community Survey for 2007-2011 shows that 35 percent of residents left the Youngstown MSA for the South, 33 percent went to the Midwest, 22 went elsewhere in the Northeast, and 11 percent went to the West. However, the greatest outflows to cities were to Pittsburgh (1028 movers), Columbus (852), Akron (852), and Dayton (728). The most popular destinations farther afield were Salt Lake County, Utah (186 movers), and Sarasota County, Florida (167).

Per capita personal income is much lower in Youngstown than in the surrounding MSAs, Ohio, and the nation as a whole. On average over the last 20 years, annual per capita personal income in Youngstown has been $5,927 less than the national

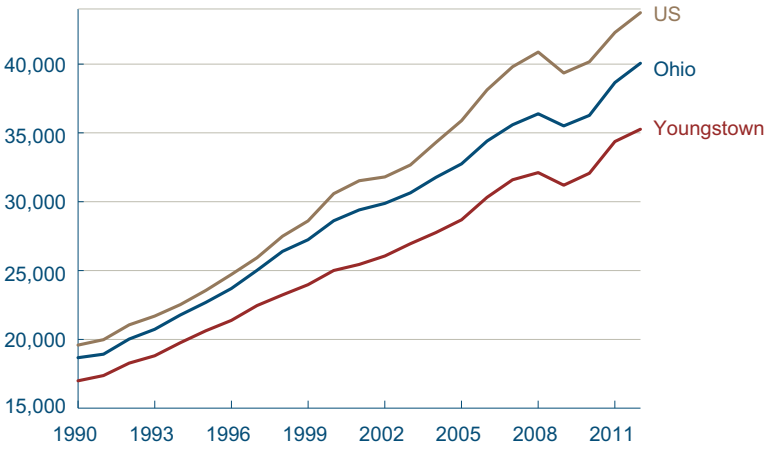
average. However, since 2009 income growth in Youngstown's MSA has outpaced the nation's (13 percent versus 11 percent).

Youngstown's MSA has an older and less educated population than the nation as a whole. The proportion of residents over 65 is nearly 5 percentage points higher in the MSA than in the nation (19 percent versus 14 percent), and whereas nationally 23 percent of those in this age bracket hold a bachelor's degree or higher, only 13 percent of those in the Youngstown MSA do. Worrisome is that this 10 percent differential in educational attainment occurs in younger cohorts as well. Only 23 percent of the Youngstown MSA residents aged 25 to 34 hold a bachelor's degree or higher, while the national average is 32 percent. The averages for the population as a whole are 19 percent with a bachelor's degree or higher in the Youngstown MSA versus nearly 30 percent for the nation.

Overall, statistics on the Youngstown MSA's economy indicate that although the Mahoning Valley may be down, it's definitely not out. There are a number of obstacles to overcome: the region's industries are undergoing restructuring, employment in the Youngstown MSA has yet to recover fully from the recent recessions, the population is declining, and educational attainment is lower than the national average. However, on the upside, per capita income growth is on par with and even slightly better than the nation, and shares of employment are rising in the professional and business services sector, one of the sectors cited for leading the national recovery.

Additionally, ongoing growth of the shale industry is likely to provide a boost to the regional economy. While the full effect remains to be seen, we expect the industry to provide more jobs and contribute to the region's share of employment and GDP, given the early indicators. With nearly 140 producing wells in neighboring Carroll County, the supply needs of the drilling sector are just beginning to affect the MSA. For example, a $1 billion steel pipe plant recently opened in Youngstown, creating 350 jobs.

Per Capita Personal Income



Sources: Bureau of Economic Analysis/Haver Analytics.

Selected Demographics, 2012

	Youngstown MSA	Ohio	US
Total population	558,206	11,544,225	313,914,040
Percent by race			
White	85.9%	82.7%	73.9%
Black	11.0%	12.2%	12.6%
Other	3.1%	5.1%	13.5%
Percent by age			
Under 18	21.1%	23.0%	23.5%
18 to 64	60.3%	62.2%	62.8%
65 and older	18.6%	14.8%	13.7%
Percent with a bachelor's degree or high (25 and older)	18.80%	25.3%	29.1%
Median age	43.5	39.3	37.4

Sources: The American FactFinder, US Census Bureau.

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