

THE REGIONAL ECONOMIST

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Economic Conditions*

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The Ups and Downs of Inflation

By Diana A. Cooke and William T. Gavin

This look at interest rates and inflation in the U.S. over the past 50 years helps to clarify ideas about the Fed's monetary policy and its own credibility. The authors examine three periods corresponding to three different policies: when the Fed operated *without* credibility, when it was *earning* credibility and when it was operating *with* credibility.



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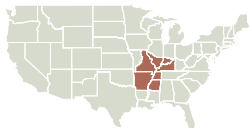
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Youth Unemployment: A Global Comparison

By James D. Eubanks and David G. Wiczer

Unemployment since the Great Recession has hit young people much harder than others. In the U.S., the unemployment rate for this group hovers around 14 percent. In some European countries, the rate is three times higher.

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The Rise and Fall of Labor Force Participation in the U.S.

The labor force participation rate—a measure of the number of people actively involved in labor markets—has generally been a secondary concern in macroeconomics over the past several decades. However, the sharp declines in the participation rate that followed the financial crisis and recession of 2007-09 have put the topic front and center. In this column, I will offer my own perspectives on the issue.¹

Labor market performance is at the heart of the debate over how to characterize the state of the U.S. economy. While unemployment hit 10 percent in the fall of 2009, it was down to 6.7 percent this past February. The unemployment rate has generally declined faster than many forecasters anticipated. In tandem with this rosy development, however, labor force participation (LFP) has declined substantially.

There are two main interpretations of these data. The “bad omen” view interprets the recent declines in LFP as suggestive of a very weak labor market and discounts the signal coming from recent faster-than-expected declines in unemployment. The “demographics” view interprets recent declines in LFP as more benign and takes the signal coming from recent faster-than-expected declines in unemployment at face

value. Since the Federal Open Market Committee has explicitly tied monetary policy choices to labor market performance, it is of considerable importance which view is more nearly correct.


Some background on the LFP data is in order. Participation rose in the 1970s, 1980s and 1990s; it peaked in 2000 and has been in decline since. (See the chart.) Current projections from the Bureau of Labor Statistics suggest that this decline will continue over the coming decade. The rise in LFP is often attributed in part to the maturing of the baby boomers, as well as to the increase in the number of women in the workforce. The decline has often been attributed to the aging of the labor force.

A satisfactory model has to account for the rise and fall over many decades. A demographically based model—which assumes that certain demographic groups have a certain propensity to participate in market work—would seem to have a good chance of success in explaining these data. Based on some of the available literature on this topic, my view is that carefully constructed empirical models of the trend in the U.S. LFP rate indeed do a good job of explaining the data.² These models suggest that the current participation rate is not far



from the predicted trend. This means, in turn, that the cyclical component in LFP is likely to be relatively small.

To the extent these models are correct, then, the observed unemployment rate remains as good an indicator of overall labor market health as it has been historically. In particular, the recent, relatively rapid declines in unemployment can be understood as representing an improving labor market. This is the judgment that should inform monetary policy going forward.

The literature is not completely satisfactory, however. Simply saying that people in certain demographic groups tend to make the participation decision one way or another does not do enough to analyze the incentives of household labor supply decisions. The more we know about the details of the household labor supply choices, the better we can predict the impact of policy on LFP. Furthermore, including more detailed household decision-making in economic models would allow us to better understand what motivates or deters participation in labor markets. I look forward to seeing future research pushing in this direction. 

James Bullard, President and CEO
Federal Reserve Bank of St. Louis



ENDNOTES

¹ This column is based on my speech on Feb. 19, 2014, and my article in the First Quarter 2014 issue of the Federal Reserve Bank of St. Louis *Review*. Links to both can be found at <http://research.stlouisfed.org/econ/bullard/the-rise-and-fall-of-labor-force-participation-in-the-u-s/>.

² For details on the literature, see my related speech and *Review* article.



The Ups and Downs of Inflation and the Role of Fed Credibility

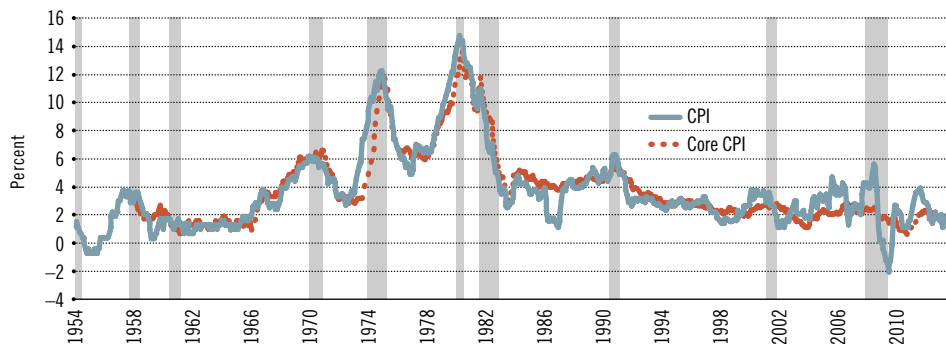
By Diana A. Cooke and William T. Gavin

“With inflation running below many central banks’ targets, we see rising risks of deflation, which could prove disastrous for the recovery. If inflation is the genie, then deflation is the ogre that must be fought decisively.”

—**Christine Lagarde**, managing director of the International Monetary Fund,
in a speech Jan. 15, 2014, to the National Press Club in Washington, D.C.

In this speech, Christine Lagarde urged central banks in major developed nations to stick with low interest policies in order to fight off the threat of deflation. Expectations of deflation are detrimental to recovering economies. If consumers know prices will drop in the future, they will hold back spending in the present, further depressing the economy. But what should central banks do if the low interest rate policies are actually causing inflation that is so low it raises the specter of deflation?

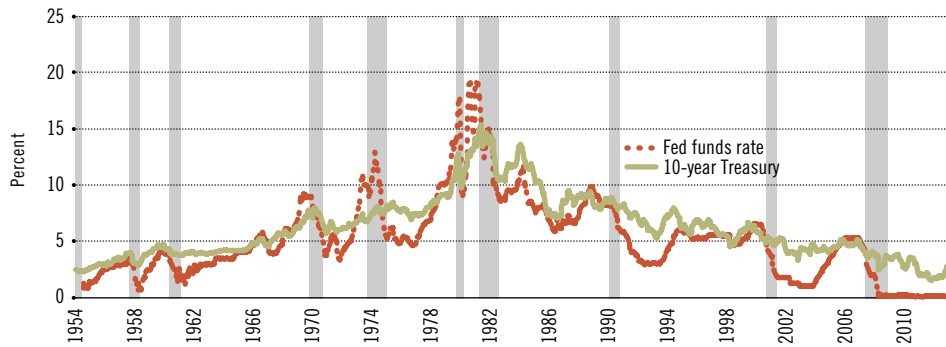
FIGURE 1
Inflation Trends



SOURCE: U.S. Bureau of Labor Statistics.

NOTE: The consumer price index (CPI) measures monthly changes in the prices paid for a representative basket of goods and services. The core CPI excludes food and energy. The gray bars indicate recessions.

FIGURE 2
The Relationship between the Fed Funds Rate and 10-Year Treasury Bond Yield



SOURCES: Federal Reserve Board and U.S. Treasury.

NOTE: The changing nature of the relationship between the fed funds rate (short-term rate) and the 10-year Treasury bond yield (long-term rate) is indicative of three distinctly different eras associated with U.S. monetary policy: pre-1980, 1980-1986 and 1987-today. The gray bars indicate recessions.

There are two ways that a central bank can cause low interest rates to be associated with low inflation. The first is if a central bank pursues a lower inflation target, whether by design or indirectly; in this case, people's expectations of lower inflation may lead to both lower interest rates and lower inflation. The second way is by targeting the key policymaking interest rate (such as the federal funds rate in the U.S.) to a level that is too low for too long to be consistent with the central bank's inflation target. The fed funds rate, which is the overnight interest rate at which a depository institution lends funds at the Federal Reserve to another institution, currently has a target of 0 to 0.25 percent. But the Fed's inflation target is 2 percent. Since the Fed set that inflation target in January 2012, the inflation rate has generally been below the target.

Understanding the cause of unusually low inflation is necessary to forming a policy to fix it. The conventional wisdom, that lower interest rates today will cause higher inflation tomorrow, comes from historical experience with a monetary policy that was not credible. By credible monetary policy, we mean that the public believes that the central bank will do whatever is necessary to achieve long-run price stability. When a central bank is not credible, it is always fighting inflation—as the Fed had to do in the 1970s.

Earning credibility can be very costly. The recessionary period from early 1980 through 1982 was associated with policies that were adopted to control inflation and earn credibility. The benign period of growth that began in the mid-1980s is often attributed to the fact that monetary policy had gained credibility.

In this article, we look at the history of interest rates and inflation in the U.S. to clarify ideas about monetary policy and credibility. We examine three periods corresponding to three distinctly different policies associated with monetary policy: 1) operating *without* credibility, 2) earning credibility and 3) operating *with* credibility. After clarifying how credibility matters for interest rates and inflation in these three episodes, we turn to current events to discuss why low interest rates may now be putting downward pressure on inflation rates.

Pre-1980: No Credibility

During the 1970s, the U.S. experienced a period of accelerating inflation that came to be known as the Great Inflation.¹ Figure 1 shows that inflation rose in fits and starts from just under 2 percent in 1965 to 14.4 percent in June 1980. This period was often characterized as an era of stop-go monetary policy. When inflation rose, the Fed's chief monetary policymaking body, the Federal Open Market Committee (FOMC), would react by raising the fed funds rate high enough to slow inflation. The relatively high interest rate would lower aggregate spending, reduce the demand for labor and lead to a recession. The FOMC would then switch gears, lowering the fed funds rate sharply to stimulate spending and job growth. The stop-go nature of this policy before 1980 is evident in Figure 2, which shows the fed

funds rate (a short-term rate) and the yield on 10-year Treasury bonds (a long-term rate) from 1954 through 2013.

The relationship between the fed funds rate and the 10-year Treasury rate during the period before 1980 displays three distinct features. First, both interest rates display rising trends and have roughly equal average rates; the fed funds rate averaged just 0.6 percent less than the 10-year rate. Second, the fed funds rate was sometimes as much as 2 percentage points higher than the 10-year rate, which signaled a poor long-term outlook. Third, periods of relatively low interest rates were followed by higher inflation and inflation expectations, reflected in rising 10-year bond yields.

The lack of credibility also made setting the fed funds rate above the 10-year rate necessary in order to slow inflation expectations. When the FOMC raised interest rates too slowly, inflation expectations would rise to match the rise in interest rates, and there was no dampening effect on either the economy or inflation. The lack of credibility meant that to succeed in lowering inflation, the FOMC had to raise the fed funds rate high enough to slow the economy. This led to a belief that stabilizing inflation would likely lead to high unemployment. A corollary to this idea was that low interest rates would raise inflation and, at the same time, lower the unemployment rate. What has not been generally recognized is that these dynamic relationships came to be part of conventional wisdom in macroeconomics when we were looking at data generated in a period without credibility.

The lack of credibility caused inflation to rise when interest rates were low. In the stop-go policy, the FOMC adjusted interest rates in response to both unemployment and inflation. Gaining credibility would require a period of prioritizing low inflation over low unemployment. Only then would long-run inflation expectations be set in a way that did not fluctuate with short-term interest rate policy.

1980-86: Earning Credibility

In late 1979, the U.S. dollar was in crisis and European central bankers called on Fed Chairman Paul Volcker to find a way to end this period of high and rising inflation.² On Oct. 6, 1979, the FOMC announced that it

was adopting a new procedure for monetary policy. Policymakers switched from targeting a narrow range for the fed funds rate to targeting a narrow range for bank reserves. Money demand—and, therefore, bank reserve demand—is highly volatile in the short run. By targeting the interest rate, the Fed allows money demand fluctuations to be absorbed by accommodating fluctuations in money supply. On a month-to-month basis before Oct. 6, 1979, the FOMC was setting the interest rate while the market was setting the quantity of reserves. As part of its new policy to end inflation, the FOMC announced that it would no longer set the interest rate, but rather would set the supply of reserves consistent with a target path for the money supply. This meant that the market would set the interest rate. Highly volatile money demand then created highly volatile interest rates.

The effect on interest rates of switching from an interest rate target to a target for bank reserves shows up in Figure 2 as a dramatic increase in both their level and volatility. Between January 1979 and December 1982, the standard deviation of monthly changes in the fed funds rate was 1.92 percentage points, while pre-Volcker, the monthly standard deviation was just 0.4 percentage points. In January 1981, the fed funds rate peaked at just over 20 percent on a weekly average basis. (Figure 2 shows monthly averages that dampen this weekly variation.)

After the recession ended in 1982, the FOMC was still worried about building credibility and once again raised interest rates in response to rising inflation. Figure 2 shows that the fed funds rate rose from 8.6 percent in May 1983 to 11.6 percent in August of 1984. This tightening occurred during a major banking crisis, which saw Continental Illinois National Bank and Trust Co., at one time the seventh-largest bank in the U.S. as measured by deposits, go into bankruptcy. During the crisis, the unemployment rate never fell below 7.2 percent. But the tighter policy was aimed at preserving the progress made on lowering inflation.

Keeping the policy rate high, despite high unemployment rates, convinced the public that the Fed would do whatever was necessary to maintain low inflation. The policy worked: Inflation fell sharply to a low of

1.1 percent in December 1986. The Fed gained credibility for its inflation expectations, although not without causing a severe recession and double-digit unemployment rates. What's most worrisome about the loss of credibility—at least in the eyes of those who lived and worked through this period—is the high cost of regaining it.

1987-2007: Operating with Credibility

Alan Greenspan became Fed chairman in June 1987. Soon after—on Oct. 19, 1987—the stock market crashed. The Fed flooded the market with about \$600 million in excess reserves (which were withdrawn after a few weeks).³ The economy weathered the crisis, and the Fed continued to raise the fed funds rate target to just under 10 percent in reaction to an inflation scare that was associated with the rise in the 10-year rate.⁴ This uptick was only temporary, however, and marked the highest peak in inflation and interest rates from then until the present.

This period of low inflation and credible monetary policy was accompanied by dramatic changes in the relationship between the fed funds rate and the yield on 10-year Treasury bonds. Notice the contrast from the earlier period, as evident in both Figures 1 and 2. As inflation stabilizes at about 2 or 3 percent, interest rates continue to trend lower. Also, the fed funds rate is never much higher than the 10-year rate. Since January 1987, the fed funds rate has been, on average, 1.6 percentage points below the 10-year Treasury rate.

Perhaps the most surprising result occurred after Sept. 2, 1992. This was when the FOMC decided to set the fed funds rate target at 3 percent, a rate approximately equal to the perceived trend in inflation. The rate was held at this level for 16 months. It was felt that such a low interest rate for so long would cause higher inflation and, in October 1993, the 10-year rate began to rise from a low of 5.3 percent to a peak just under 8 percent in November 1994. But the FOMC did not have to raise the federal funds rate above the 10-year rate to end this brief inflation scare. The FOMC began to raise the fed funds rate target in February 1994. It was raised rather sharply to 6 percent in early 1995, but, by then, the 10-year rate had already begun to retreat. On a 12-month moving average basis, the

During the Great Inflation, when the Fed did not have credibility, it was difficult for the Fed to stop the rise of inflation. Now, when credibility is deeply rooted, it seems just as difficult to stop inflation from falling.

consumer price index (CPI) inflation rate peaked at 2.9 percent in August 1994.

2008-13: The Financial Crisis and Unexpectedly Low Inflation

The Greenspan chairmanship ended in 2006. President George W. Bush appointed Ben Bernanke to replace Greenspan on Feb. 1, 2006. The Great Moderation of the Greenspan era began to fade almost immediately.

The housing boom began to cause serious financial distress in the summer of 2007 and eventually led to an all-out crisis with the bankruptcy of Lehman Brothers Inc. on Sept. 15, 2008. The FOMC flooded the market with bank reserves to prevent a worldwide collapse of financial markets. The flood of excess reserves drove the fed funds rate to 0; the FOMC followed on Dec. 16, 2008, by setting a target range for the fed funds rate at 0 to 0.25 percent.

This range has been held there for five years, and FOMC members expect it will stay there until sometime in 2015. As has been the case since Greenspan's experience with a low fed funds rate in 1992, the exceptionally low fed funds rate of today has not led to higher inflation. Indeed, the opposite has occurred, as inflation and inflation forecasts continue to track below the 2 percent target of the FOMC.

During the Great Inflation, when the Fed did not have credibility, it was difficult for the Fed to stop the rise of inflation. Now, when credibility is deeply rooted, it seems just as difficult to stop inflation from falling. Long-run inflation expectations appear to have stabilized at about 2 percent in this period; so, it seems highly unlikely that expectations about the Fed's target are the cause of low interest rates and below-target inflation today. To understand why low interest may be causing low inflation, we turn to the Fisher equation.

The Fisher Equation

Irving Fisher (1867-1947) is one of America's greatest monetary economists. An important reason for his fame is the Fisher equation, which links the nominal interest rate to the real interest rate through inflation expectations:

$$\text{nominal interest rate} = \text{real interest rate} + \text{expected inflation rate}$$

The Fisher equation is an accounting identity. The equation also helps us to think about how the Fed's interest rate policy may influence inflation. Nominal interest rates are the interest rates that people pay to borrow or that they earn on their savings accounts or bond holdings. The fed funds rate is an example of a nominal interest rate—it is the *reported* rate at which depository institutions (such as banks) lend funds on deposit at the Fed to other banks that also have accounts at the Fed. This rate is not adjusted for inflation. The real interest rate, on the other hand, is the rate of return that is earned after adjusting for inflation. When borrowers and lenders agree on the nominal interest rate, they do not know what inflation rates will be in the future. Instead, they set the interest rate based on their *expectations* of inflation. For example, suppose your price for lending \$100 is a 3 percent increase in real purchasing power. Because you expect inflation to rise by 2 percent over the year, you and the borrower agree upon a nominal interest rate of 5 percent. If the actual rate of inflation was 3 percent, then the real interest rate would be only 2 percent.

After the fact, it's simple to calculate what the real rate of return of the loan was. Since the FOMC set the fed funds target at 0 to 0.25 percent, the Fed has paid 0.25 percent on bank deposits held as reserves; so, no bank with an account at the Fed has an incentive to lend funds at less than this rate. Since December 2008, inflation in the CPI has averaged 1.6 percent. This means the average real return on bank deposits at the Fed has been -1.35 percent.

Before the fact, the real interest rate is not as easy to measure. Except for the indexed bonds issued by the U.S. government, we do not have direct measures of the real interest rate.⁵ Gross domestic product (GDP) growth adjusted for inflation, however, is a good indicator of real interest rate trends. When the economy is doing well, there is a higher return to a given amount of capital and labor; thus, real interest rates are higher. Between 2010:Q4 and 2013:Q4, year-over-year change in GDP averaged 2.21 percent. This positive growth is in stark contrast to the decline of 0.03 percent between 2007:Q4 and 2010:Q4. Since real output is increasing, real interest rates must be on the rise, as well. If the real interest rate is moving


up and the nominal interest rate is being pegged near 0 by the Fed, then the Fisher equation predicts that there will be downward pressure on inflation.

Monetary policy has been much in the news because the 2007-09 recession was exceptionally deep, monetary policy was exceptionally easy and, yet, the recovery has been unusually tepid. Why has the Fed been keeping the policy rate low? Because the common belief is that low nominal rates will stimulate spending and push the economy toward recovery. However, the consistently low inflation forecasts across all major countries are disconcerting and make us suspect the Fisher equation is making itself felt in the data more than predicted. As major economies are recovering, we would expect real returns to rise. Therefore, according to the Fisher equation, with the fed funds rate near 0, the inflation rate would have to be negative. The low rates set by the Fed could actually be contributing to low inflation and low inflation expectations.

Looking Forward

There is a great deal of uncertainty about future monetary policy because the outlook for interest rates, inflation and real economic growth is inconsistent with the Fisher equation. The low interest rate outlook is inconsistent with 2 percent inflation expectations and a normal recovery. A normal recovery will lead to rising real interest rates and should make the nominal interest rate higher than the 2 percent coming from the inflation objective. The uncertainty arises because there are dramatically different ways that the inconsistency can be resolved. Consider three alternative scenarios:

1. The Fed loses credibility, and we return to 1970s-style inflation. This is the concern of some FOMC members who have dissented on a regular basis. In this scenario, real interest rates continue to be low, but inflation expectations and the 10-year rate begin to rise rapidly. The Fed is forced to raise the fed funds rate as inflation accelerates. This seems an unlikely outcome, at least in the next year or two.
2. The Fed maintains credibility, and people expect 2 percent inflation to continue indefinitely. The Fed is successful in engineering a recovery with a gradual rise in interest rates. Interest rates rise enough to prevent a loss of credibility, but not so much as to cause another recession. This is the outcome that is considered most likely by private and government economic forecasters.
3. The Fed decides to keep rates exceptionally low until the economic data clearly demonstrate that the economy is at full employment. The problem with this scenario is that neither the Fed nor private-sector economists are able to predict turning points. The economy is likely to be well beyond ordinary measures of full employment before the data reveal that the threshold has been met. The Fisher equation suggests that keeping nominal rates low while the economy recovers will put downward pressure on inflation. In this scenario, interest rates and inflation stay well below normal for a long time. This outcome is more likely if forward guidance sets a lower threshold on the inflation target.

The reason it is so hard to predict which of these scenarios might play out is that the result depends so much on what people think will happen. Inflation expectations are the key. A surge in inflation expectations leads to the first scenario above. Expectations anchored at 2 percent will support the second scenario. Expectations of falling inflation or even of deflation are likely to lead to the third outcome, which is a concern because it looks so much like the Japanese economy from 1995 to the present. 

William T. Gavin is an economist and Diana A. Cooke is a research analyst, both at the Federal Reserve Bank of St. Louis. For more on Gavin's work, see <http://research.stlouisfed.org/econ/gavin/>.

ENDNOTES

- ¹ See Nelson, who explains why, during this period, many economists and policymakers did not feel that it was important for the Fed to focus sharply on price stability.
- ² See Lindsey, Orphanides and Rasche for a description of events and policy actions taken at this time.
- ³ See Neely for a description of the Fed's reactions to crises in financial markets.
- ⁴ See Goodfriend for a description of inflation scares and the Fed's response to them.
- ⁵ See Fleming and Krishnan for a description of Treasury inflation-protected securities (TIPS).

REFERENCES

- Fleming, Michael J.; and Krishnan, Neel. "The Microstructure of the TIPS Market." Federal Reserve Bank of New York *Economic Policy Review*, March 2012, Vol. 18, No. 1, pp. 27-45.
- Goodfriend, Marvin. "Interest Rate Policy and the Inflation Scare Problem: 1979-1992." Federal Reserve Bank of Richmond's *Economic Quarterly*, Winter 1993, Vol. 79, No. 1, pp. 1-23.
- Lindsey, David E.; Orphanides, Athanasios; and Rasche, Robert H. "The Reform of October 1979: How It Happened and Why." Federal Reserve Bank of St. Louis' *Review*, November/December 2013, Vol. 95, No. 6, pp. 487-542.
- Neely, Christopher J. "The Federal Reserve Responds to Crises: September 11th Was Not the First." Federal Reserve Bank of St. Louis' *Review*, March/April 2004, Vol. 86, No. 2, pp. 27-42.
- Nelson, Edward. "The Great Inflation of the Seventies: What Really Happened?" Federal Reserve Bank of St. Louis, Working Paper 2004-001.

The Liquidity Trap: An Alternative Explanation for Today's Low Inflation

By Maria A. Arias and Yi Wen



From January 2009 to December 2013, the Federal Reserve's balance sheet grew by approximately \$3.5 trillion due to the large-scale asset purchase (LSAP) policies implemented to aid the ailing economy after the Great Recession. These unconventional monetary policies, also known as quantitative easing (QE), increased credit availability in the private lending markets and put downward pressure on real interest rates.

During normal times, for each 1 percent increase in the growth of money, inflation increases by 0.54 percent, based on a

reduced to a range between 0 and 25 basis points. The media and some Fed officials expressed concern about inflation becoming rampant because of the large amount of money that was being injected into the economy. But those fears have not materialized. On the contrary, it wasn't long before policymakers' anxiety focused on the possibility of falling into a Japanese-style deflation.³ (See figure.)

Several reasons have been provided for the persistently low inflation. For example, Fed Chair Janet Yellen said in 2009 when

money is chasing after the same amount of goods available. During a liquidity trap, however, increases in money supply are fully absorbed by excess demand for money (liquidity); investors hoard the increased money instead of spending it because the opportunity cost of holding cash—the forgone earnings from interest—is zero when the nominal interest rate is zero. Even worse, if the increased money supply is through LSAPs on long-term debts (as is the case under QE), investors are prompted to further shift their portfolio holdings from interest-bearing assets to cash.

Investors hoard the increased money instead of spending it because the opportunity cost of holding cash—the forgone earnings from interest—is zero when the nominal interest rate is zero.

linear regression of the inflation rate on money growth for the precrisis period.¹ Money supply (M0) increased 40.29 percent between December 2008 and December 2013, or about 8 percent per year on average. Under this pace of annual money growth, we would have seen inflation of 4.3 percent per year, or a price level increase of at least 40 percent in 2013 compared with the price level in 2008.² But this did not happen.

Thus, in contrast with many people's expectations, the injection of \$3.5 trillion into the economy has not caused any significant inflation or increases in the price level. Why?

Inflation Expectations

From their first implementation, LSAPs were declared by the Fed's Federal Open Market Committee (FOMC) to be a new policy tool to boost the economy after the target federal funds rate had already been

she was still president of the Federal Reserve Bank of San Francisco that inflation would not take hold during a recession because of little pressure for prices and wages to increase given that resources through the economy were underused.⁴ Others say the unusually low inflation stems from the weakening of the money multiplier, as banks continue to hold excess reserves instead of extending more credit through loans.⁵ Still others point to the FOMC's increased communications and forward guidance in anchoring future inflation expectations, as well as to the knowledge that the LSAPs will eventually be reversed.⁶

There also exists an alternative explanation for the generally unanticipated disinflation or low inflation levels—the liquidity trap.⁷

Excess Liquidity

Conventionally, the expansion of the money supply will generate inflation as more

On one hand, if the increase in money demand is proportional to the increase in money supply, inflation remains stable. On the other hand, if money demand increases more than proportionally to the change in money supply due to the downward pressure LSAPs exert on the interest rate, the price level must fall to absorb the difference between the supply and demand of money. That is, the increase in aggregate demand for real money balances then has to be accommodated by an overall decrease in the price level for any given money supply in the goods market. Therefore, the lower the interest rate through LSAPs, the lower the price level (due to the disproportionately higher money demand). The Fed's policy to pay positive interest rates on reserves can only reinforce the problem by making cash more attractive as a store of value.⁸

Economist Yi Wen (the co-author of this article) showed last year that large-scale asset purchases by the Fed at the current pace could reduce the real interest rate by 2 percentage points, but would have an insignificant effect on aggregate employment and fixed capital investment, would

reduce the aggregate price level significantly, and would put severe downward pressure on the inflation rate—thanks to firms’ portfolio adjustments between cash and financial assets in a liquidity trap.⁹

Risks of Declining Inflation

Not only high inflation, but low inflation can be bad for the economy. Low inflation makes cash more attractive to investors as a store of value, everything else equal. This makes the liquidity trap easier to occur and gives the Fed less room to reduce the real interest rate as desired during a recession. Furthermore, quantitative easing through LSAPs can reinforce the liquidity trap by further reducing the long-term interest rate. In other words, more monetary injections during a liquidity trap can only reinforce the liquidity trap by keeping the inflation rate low (or the real return to money high).


Therefore, the correct monetary policy during a liquidity trap is not to further increase money supply or reduce the interest rate but to raise inflation expectations by raising the nominal interest rate. If LSAP policies are reversed and the money supply decreases as the Fed sells assets in the marketplace, the nominal interest rate will increase and investors will be more likely to shift their portfolios away from cash toward interest-bearing assets. If demand for money decreases more than proportional to the decrease in money supply due to upward pressure on the interest rate, inflation will increase. In other words, only when financial assets become more attractive than cash can the aggregate price level increase.

Of course, this type of policy-reinforced liquidity trap would take place only if the

economy is in a deep recession in the first place. If the economy is not in a recession, monetary injections should lead to more inflation instead of less inflation because a lower interest rate generally reduces people’s incentive to save and increases their incentive to spend.

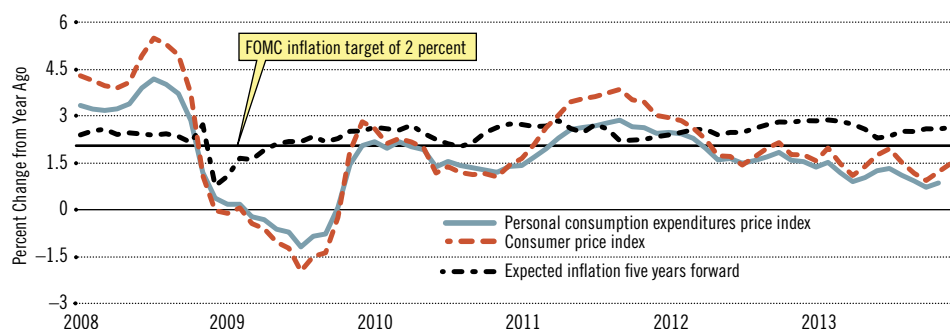
The irony is that expansionary monetary policy is often called for only when the economy is in a recession. This policy dilemma makes economics a dismal science. One way to escape from it is to use expansionary fiscal policy (as suggested by the economist John Maynard Keynes). However, with the already high level of government debt across industrial countries, it takes courage and vision to implement bold expansionary fiscal policies.¹⁰

Inflation Expectations and LSAPs

Inflation started declining in early 2012 and was significantly below FOMC members’ forecasts in 2013. Since the beginning of this year, the committee has slowed the pace of LSAPs as broad economic activity has improved, but the target federal funds rate will remain near the zero lower bound for a longer period. Inflation is expected to continue being stable and move toward the 2 percent target rate of the FOMC as the economy improves, but it will not increase much until the demand for money decreases and the effects of the liquidity trap wane. 

Yi Wen is an economist and Maria A. Arias is a research associate, both at the Federal Reserve Bank of St. Louis. For more on Wen’s work, see <http://research.stlouisfed.org/econ/wen/>.

Headline Inflation



SOURCES: Bureau of Economic Analysis, Bureau of Labor Statistics, Federal Reserve Board and Haver Analytics.

ENDNOTES

- ¹ “Normal times” refers to the postwar period prior to the Great Recession (1960–2007). The effect of changes in the money supply (M0) on headline consumer price index (CPI) inflation during this time frame was calculated using a linear regression model.
- ² The implications are similar if we use the total monetary base (M0 + bank reserves) instead of M0. During normal times, inflation increases 0.26 percent for every 1 percent increase in money base growth. So, since the money base grew 123 percent during the five-year period from December 2008 to December 2013, inflation would have been 6.3 percent per year on average.
- ³ See Bullard.
- ⁴ See Yellen.
- ⁵ See Fawley and Wen on the decline of the money multiplier and monetary aggregates.
- ⁶ As Andolfatto and Li note when describing the effect of QE in Japan during the 2000s, “even large changes in the monetary base are not likely to have any inflationary consequences if people generally believe the program will be reversed at some future date.”
- ⁷ For related discussion on this alternative, see Haltom and Krugman.
- ⁸ Ricketts and Waller describe the Fed’s policy tools to avoid runaway inflation, including paying a positive interest rate on excess reserves.
- ⁹ See Wen.
- ¹⁰ See Wen and Wu for an empirical study of the powerful effects of fiscal policies in China that helped China to escape the Great Recession after the financial crisis in 2007–08.

REFERENCES

- Andolfatto, David; and Li, Li. “Quantitative Easing in Japan: Past and Present.” Federal Reserve Bank of St. Louis *Economic Synopses*, 2014, No. 1, Jan. 10, 2014. See <http://research.stlouisfed.org/publications/es/article/10024>.
- Bullard, James. “Seven Faces of ‘The Peril.’” Federal Reserve Bank of St. Louis *Review*, September/October 2010, Vol. 92, No. 5, pp. 339–52.
- Fawley, Brett; and Wen, Yi. “Low Inflation in a World of Securitization.” Federal Reserve Bank of St. Louis *Economic Synopses*, 2013, No. 15, May 31, 2013. See <http://research.stlouisfed.org/publications/es/article/9801>.
- Haltom, Renee. “Liquidity Trap.” Federal Reserve Bank of Richmond *Region Focus*, First Quarter 2012, p. 10. See www.richmondfed.org/publications/research/region_focus/2012/q1/pdf/jargon_alert.pdf.
- Krugman, Paul. “Monetary Policy in a Liquidity Trap.” *The New York Times*, Opinion Pages, April 11, 2013. Blog post. See <http://nyti.ms/19ONWJZ>.
- Ricketts, Lowell R.; and Waller, Christopher J. “The Rise and (Eventual) Fall in the Fed’s Balance Sheet.” Federal Reserve Bank of St. Louis *The Regional Economist*, January 2014, Vol. 22, No. 1. See www.stlouisfed.org/publications/re/articles/?id=2464.
- Wen, Yi. “Evaluating Unconventional Monetary Policies—Why Aren’t They More Effective?” Working Paper 2013–028B, Federal Reserve Bank of St. Louis, 2013. See <http://research.stlouisfed.org/wp/2013/2013-028.pdf>.
- Wen, Yi; and Wu, Jing. “Withstanding Great Recession like China.” Federal Reserve Bank of St. Louis Working Paper 2014–007A.
- Yellen, Janet. “A View of the Economic Crisis and the Federal Reserve’s Response.” Presentation to The Commonwealth Club of California in San Francisco on June 30, 2009.

Paying Down Credit Card Debt: A Breakdown by Income and Age

By Juan M. Sánchez

U.S. households started a deleveraging process as soon as the Great Recession began, which was in late 2007. They continued along this path until mid-2010. Among the different types of consumer debt (auto loans, credit card, student loans), this trend of paying down debt was particularly striking for credit card debt. Research on the reasons behind this trend is ongoing.¹ The increased risk during the crisis could have motivated financial institutions to extend

According to the Survey of Consumer Finances, mean credit card debt decreased 24 percent between 2007 and 2010, from \$3,538 to \$2,791.

less credit, but households also could have had a reduced willingness to borrow. This article documents how the deleveraging process regarding credit card debt varies across households with different backgrounds. It also decomposes changes across the variations in the share of people in debt (called “the extensive margin”) and changes in the amounts of debt held by borrowers (“intensive margin”).

Figure 1 shows that, measured as a percentage of disposable personal income, scheduled consumer debt payments decreased from 6 percent at the beginning of the recession to about 5 percent in mid-2010. Since then, the rate has remained about 5 percent.

Consumer debt includes outstanding credit extended to individuals for household, family and other personal expenditures, excluding loans secured by real estate.

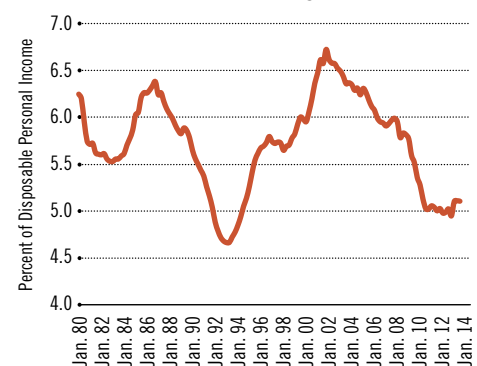
Figure 2 shows the evolution of the main components: credit card debt, auto loans and student loans. The balances on auto loans, represented by the blue dashed line, decreased during 2008-2009 but recovered quickly, starting early in 2010. Student loans, represented by the green dashed line, increased continuously from 2003 until 2013. Credit card debt, represented by the red solid line, is the component that shows the clearest negative trend since the financial crisis. As a consequence, the rest of the article is focused on credit card debt.

The Federal Reserve’s Survey of Consumer Finances (SCF) asks households about their outstanding obligations. The survey asks not just about the outstanding credit card debt but also about income and age of the head of households. In what follows, the changes in credit card debt are broken down by income and age. The focus will be on the years 2007 and 2010 because those years are the closest to the period of deleveraging in credit card debt for which SCF data are available. The definition of credit card debt is the amount of debt outstanding after the last payment; so, it does not contain the debt of those who pay the full amount every month.

Notice that changes in the mean level of debt of a group may be because the share of households with debt in that group changed or because the mean debt of those in debt changed. In economics, these changes are referred to as extensive and intensive, respectively. According to the SCF, mean credit card debt decreased 24 percent between 2007 and 2010, from \$3,538 to \$2,791.² Of this percentage drop, one-third (8 percent) was due to the intensive margin and two-thirds (16 percent) was due to the extensive margin. This decomposition is used below

FIGURE 1

Consumer Debt Service Payments

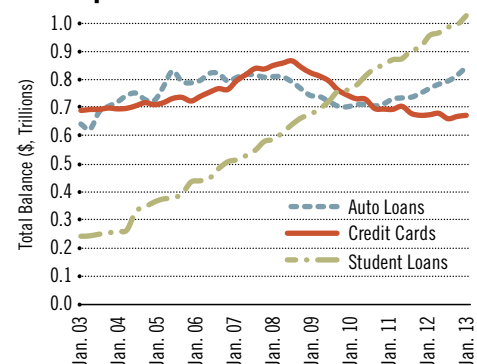


SOURCE: Federal Reserve Board.

NOTE: Income in this case refers to disposable personal income. Consumer debt includes outstanding credit extended to individuals for household, family and other personal expenditures, excluding loans secured by real estate. Data are seasonally adjusted.

FIGURE 2

Decomposition of Consumer Debt



SOURCE: Federal Reserve Bank of New York, Quarterly Report on Household and Credit, November 2013.

to characterize the borrowing behavior of different income and age groups.

Table 1 shows credit card debt for the years 2007 and 2010 by income groups. Each group contains 25 percent of the households.

The first group, the poorest, had mean credit card debt of \$1,013 in 2007. In the same year, the richest group had mean credit card debt of \$6,103.

Not only is the dollar amount of debt for each group different in both 2007 and 2010, but the percentage change for each group between those two years is different. The middle groups, sometimes referred to as the middle class, are responsible for most of the deleveraging. While the first and fourth quartiles decreased debt by about 14 percent, the second and third income quartiles decreased credit card debt by 28 and 38 percent, respectively.

Except for the third income quartile, changes in debt are mainly due to the fact that fewer households are in debt. For instance, the richest households in debt decreased their mean debt by only 0.4 percent; so, most of the 14.6 percent decrease is due to the fact that fewer households in this group are in debt.


Table 2 shows credit card debt levels and changes between 2007 and 2010 for different age groups. There is a hump-shape profile of debt over the life cycle. For instance, in 2007 households in the age groups 18 to 37 and 63 to 95 had about half of the mean credit card debt of those in the age groups 38 to 49 and 50 to 62.

The changes in borrowing are very heterogeneous across different age groups. Households with a head of household ages 38 to 49 decreased borrowing by only 13 percent. In contrast, households headed by someone 18 to 37 decreased credit card debt by 28 percent, and households headed by someone older than 62 decreased credit card debt by 33 percent.

The relative importance of the intensive and extensive margins for households deleveraging varies across households of different ages, too. The extensive margin is more important for young households, for whom it accounts for more than 80 percent of the change. In contrast, for the oldest households, it is the intensive margin that accounts for more than 80 percent of the variation.

The data analyzed here reveal that although the deleveraging of U.S. households after the financial crisis was present across all types of households, it was actually more important for households with middle income that are younger than 38 or older

than 62. In addition, the analysis shows that, except for some groups, most of the change in outstanding credit card debt is accounted for by changes in the share of households in debt—the extensive margin—and not by the amounts borrowed by those in debt—the intensive margin.

The findings in this article suggest that several factors may be behind the deleveraging. The worsening of labor market conditions, in particular the higher risk of unemployment, may account for some of the changes, especially those of young households with lower income. However, this factor is unlikely to account for the deleveraging by richer households headed by those older than 62. This seems to indicate that other factors, like shocks that increase the desire by older/ richer households to save, may be necessary to understand the deleveraging. 

Juan M. Sánchez is an economist at the Federal Reserve Bank of St. Louis. For more on his work, see <http://research.stlouisfed.org/econ/sanchez/>. Research assistance was provided by Emircan Yurdagul, a technical research associate at the Bank.

TABLE 1
Credit Card Balances by Income Groups

Income Quartile	2007	2010	Change	Margin Adjusted	
	Dollars	Dollars		Intensive	Extensive
1st, poorest	1,013	889	–13.1	–3.6%	–9.5%
2nd	2,407	1,828	–27.5	–8.5%	–19.0%
3rd	4,732	3,232	–38.1	–20.7%	–17.4%
4th, richest	6,103	5,276	–14.6	–0.4%	–14.2%
Overall	3,538	2,791	–23.7	–8.1%	–15.6%

SOURCE: Survey of Consumer Finances (SCF).

NOTE: In this case, “intensive” refers to the mean debt of those in debt, and “extensive” refers to the share of households with debt.

TABLE 2
Credit Card Balances by Age Groups

Age of Head of Household	2007	2010	Change	Margin Adjusted	
	Dollars	Dollars		Intensive	Extensive
18-37	2,744	2,077	–27.8	–4.7%	–23.1%
38-49	4,525	3,973	–13.0	–2.7%	–10.4%
50-62	4,695	3,580	–27.1	–9.3%	–17.8%
63-95	2,231	1,609	–32.7	–27.6%	–5.1%
Overall	3,538	2,791	–23.7	–8.1%	–15.6%

SOURCE: SCF.

ENDNOTES

¹ See Athreya et al.

² Notice that this change does not take inflation into account. Thus, in real terms, the decline in borrowing was even larger.

REFERENCES

- Athreya, Kartik; Sánchez, Juan M.; Tam, Xuan S.; and Young, Eric R. “Labor Market Upheaval, Default Regulations, and Consumer Debt.” Working Paper No. 2014-002A, Federal Reserve Bank of St. Louis, January 2014. See <http://research.stlouisfed.org/wp/2014/2014-002.pdf>.

Debt Crisis in Europe Is Easing, but Stability Remains a Long Way Off

By Silvio Contessi and Li Li



Several historical examples show that financial crises generate large increases in private and public debt that take many years and sometimes drastic measures to be worked out. The recent global financial crisis was no different. In the wake of the crisis, which began in 2007, the public debt of the affected countries increased to levels not seen since the years after World War II. Also rising was the perceived risk of default on this debt.

The initial worries lay with four peripheral countries of the European Union (Greece, Ireland, Portugal and Spain, sometimes referred to by the acronym of GIPS or PIGS) but soon extended to Italy (thus becoming GIIPS or PIIGS) in the summer of 2011 and later to Cyprus, Slovenia and even France. As a consequence, financial markets and investors demanded higher yields to keep buying the debt issued by this group of countries; some countries, such as Portugal and Ireland, stopped issuing debt almost entirely and turned to borrowing from the European Union (EU) and the International Monetary Fund (IMF).¹

Thanks to intervention by the European Central Bank (ECB), to fiscal packages in various countries and to the restructuring of the Greek debt, the yields of many of these countries' government debt started trending down in 2012, causing a softening of the debt crisis. That softening has continued to date but may heat up again in the near future.

In this article, we explain how the concepts of government debts and deficit are relevant in the Economic and Monetary Union (EMU) in Europe and how they evolved after the beginning of the financial crisis in a group of countries. Finally, we briefly discuss possible paths that countries can follow to adjust from the debt overhang.

EU and EMU

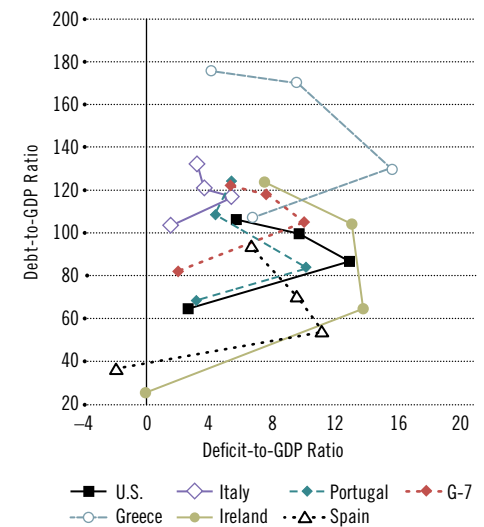
The process of European integration led to the creation of the EU when the Treaty of Maastricht came into force in 1993. The EU is an unusual political and economic partnership that resembles a confederation; it currently comprises 28 countries. Countries can join if they meet the so-called Copenhagen criteria. In 1999, a subset of 11 EU countries formed the EMU, also known as the euro zone or euro area. The EMU adopted a common currency, the euro, and its members relinquished monetary policy to the ECB, based in Frankfurt.

In order to access the EMU, countries must comply with a series of criteria, including two regarding fiscal positions. The Treaty of Maastricht requires that a member government's annual budget deficit not exceed 3 percent of its gross domestic product (GDP) and that the gross government debt to GDP not exceed 60 percent of the country's GDP. In exceptional circumstances, countries are allowed to exceed these limits temporarily, but such deviations are monitored under the EU's Stability and Growth Pact. As of this year, 18 countries belong to the EMU.

What Happened after the Financial Crisis?

The figure illustrates the ratios of debt and deficit to GDP for the GIIPS (and for the U.S. and the Group of 7 for comparison purposes) at four points in time: 2007, 2009, 2011 and 2013. (Only projections are available at this time for 2013.) The changes in the two ratios are more marked than what one would see in plain vanilla recessions that are not associated with financial crises.

The Evolution of Debt and Deficit Ratios



SOURCE: International Monetary Fund, World Economic Outlook, October 2013.

NOTE: The ratios are plotted four times on each country's line, each symbol along the line represents a year, starting on the bottom with 2007 and then moving along the line to 2009, 2011 and 2013. (Data for 2013 are projected.) For example, in Ireland in 2009, the deficit-to-GDP ratio was about 13 percent and the debt-to-GDP ratio was about 62 percent. The G-7 is composed of Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

During a recession, governments increase spending while tax revenue falls due to the contraction of GDP. The combination of these two forces increases deficits, which can potentially quickly raise the debt-to-GDP ratios.

This effect can be seen very clearly in the figure, not only for the GIIPS countries but for the U.S. and the Group of 7. From 2007 until 2009 (roughly, the recession period for most of these countries), both the deficit and debt ratios rose. As the recession ended, the deficit ratios started to decline because tax revenue grew and primary deficits (excluding interest) contracted. But the debt ratios kept rising, in part because primary balances are

still negative and in part because the burden of interest is now larger.

The most dramatic jump in debt- and deficit-to-GDP ratios in our sample of countries is certainly Ireland. In addition to the cyclical factors affecting these ratios, Ireland witnessed the failure and subsequent bailout by the government of the country's large banks. The deficit-to-GDP ratio jumped to about 13.8 percent in 2009, before retreating to about 13.1 percent in 2011 and then to an estimated 7.6 percent in 2013. While Ireland entered the financial crisis with an overall *surplus* and small debt-to-GDP ratio, it faced a debt-to-GDP ratio of more than 123 percent in 2013, clearly beyond the limit set in the Treaty of Maastricht.

How do these debt increases compare with historical experiences? Economists Carmen M. Reinhart and Kenneth S. Rogoff, well-known for their 2009 book "This Time Is Different: Eight Centuries of Financial Folly," looked at a large sample of crises before 2007. They found that real public debt increased by 86.3 percent on average within three years of the crisis.² Between 2007 and 2010, the U.S. initially had a relatively large debt-to-GDP ratio that increased by about 48 percent, while for the G-7 this increase was about 38 percent and for the GIIPS the increase averaged 86 percent. Between 2007 and 2012, these percentages were about 60 percent, 50 percent and 132 percent.

How Can Debt Overhangs Be Worked Out?

The monetary stance in many countries has kept interest rates at favorably low levels for the past few years and will perhaps do so for the near future. Thus, interest payments on debt are at a moderate level, particularly on new debt issued by each country. But how will these large debt-to-GDP ratios be worked out?


There are five ways in which large government debts, or debt overhangs, have been worked out historically: **1) Inflation surprises**, i.e., realized inflation rates higher than those expected by consumers and firms (and therefore not built into existing contracts); high inflation rates can help reduce the real burden of repaying the principal of the outstanding debt; **2) GDP growth**, which reduces the debt-to-GDP ratio (if it's larger than the growth rate of the debt

outstanding) and increases tax revenue; **3) debt restructuring**, which consists of partial or total default on outstanding debt; **4) fiscal consolidation**, through a combination of higher taxes and lower spending, sometimes referred to as fiscal-adjustment austerity; and **5) financial repression**, such as directed lending to governments by captive domestic audiences (for example, pension funds), explicit or implicit limits on interest rates, regulation of international capital movements, and similar measures.³

Recent data show that inflation and growth measures do not bode well for European countries. Inflation is trending downward, below the 2 percent target set by the ECB for the year-over-year harmonized index of consumer prices. The growth rate of GDP is projected to be very modest in the near future. In January 2014, the IMF forecast meager real GDP growth rates of 1 percent for the euro area as a whole.

Debt restructuring was experimented with in Greece in 2012. The Greek government and private holders of Greek government bonds struck an agreement in which private creditors accepted a haircut of 53.5 percent on the face value of Greek government bonds and could choose to swap their high-rate bonds with short maturity for low-rate bonds with long maturity. Although debt restructuring is generally shunned by European governments, more debt restructuring could occur in the coming years.

European countries are currently proceeding with a mix of fiscal austerity and financial repression, both of which lead to a very slow adjustment of debt-to-GDP ratios. While such ratios keep rising in Europe in the aftermath of the crisis, some countries are making slow progress in regaining their national debt sustainability. For example, Ireland and Portugal returned in 2013 to issuing treasury bonds and borrowing directly from financial markets.

Whichever route is taken by each government, the road to sounder fiscal stability will probably be long and difficult. 

Silvio Contessi is an economist and Li Li is a senior research associate, both at the Federal Reserve Bank of St. Louis. For more on Contessi's work, see <http://research.stlouisfed.org/econ/contessi>.

ENDNOTES

¹ For Portugal, the bailout loan was split among the European Financial Stability Mechanism (EFSM), the European Financial Stability Facility (EFSF) and the IMF. For Ireland, the bailout was from EFSM, EFSF, IMF, the National Pension Reserve Fund and bilateral loans from the United Kingdom, Denmark and Sweden.

² See Reinhart and Rogoff (2009).

³ See Reinhart and Rogoff (2013).

REFERENCES

- Contessi, Silvio. "An Application of Conventional Sovereign Debt Sustainability Analysis to the Current Debt Crises." Federal Reserve Bank of St. Louis *Review*, May/June 2012, Vol. 94, No. 3, pp. 197-220.
- Reinhart, Carmen M.; and Rogoff, Kenneth S. "The Aftermath of Financial Crises." National Bureau of Economic Research Working Paper Series, No. 14656, 2009.
- Reinhart, Carmen M.; and Rogoff, Kenneth S. "Financial and Sovereign Debt Crises: Some Lessons Learned and Those Forgotten." International Monetary Fund Working Paper, No. WP/13/266, 2013.

After Stalling, Recovery Resumes in St. Louis

By Diana A. Cooke and Charles S. Gascon



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The St. Louis metropolitan statistical area (MSA) spans the Mississippi River, taking in parts of Missouri on the west and Illinois on the east. It is the largest MSA in Missouri and in the Federal Reserve's Eighth District. In 2012, the St. Louis MSA had a population of 2,795,794 and a labor force of 1,403,773. Per capita income was \$44,625, roughly 2 percent above the national average. Gross metropolitan product (GMP) was \$116.5 billion in 2012, equivalent to just over 50 percent of the gross state product (GSP) in Missouri.

French fur traders Pierre Laclède and Auguste Chouteau founded St. Louis 250 years ago, in February 1764. Their small trading village would soon blossom into a thriving metropolis. Following the Lewis and Clark exploration, entrepreneurs made fortunes in St. Louis, selling supplies to adventurers traveling west. Later in the 19th century, St. Louis became a major industrial center and home to the largest

Strong health care and financial services sectors have been key in helping the local economy through the Great Recession of 2007-09 and the recovery.

brewery in the U.S. The high volume of trade attracted many banks and financial firms. Financial services remain an important growth sector to this day. In the past several decades, St. Louis has emerged as a leader in the health care industry, too.

The MSA has struggled to retain population: During the 1970s and early 1980s, it

lost an average of roughly 3,000 people per year. Since then, it has grown slower than the national average, although the population has increased every year since 1982. Between 2002 and 2012, the population increased by 95,673.

Population growth in Missouri and Illinois counties was roughly proportional to the size of their population; counties in Missouri accounted for 76 percent of the growth between 2002 and 2012, while those in Illinois accounted for 24 percent. The greatest percentage change in population occurred in three Missouri counties—St. Charles, Lincoln and Warren—all located in the northwestern portion of the MSA. At the other extreme, four counties lost population: St. Louis city (which is in Missouri and is considered legally a county unto itself), St. Louis County (Missouri), and Macoupin and Bond counties (Illinois).

Economic Drivers

The financial services sector has long been a major driver of the economy in the MSA. About 90,000 people (or 6.7 percent of the area's workers) are employed by financial services firms, much higher than the national average of 5.7 percent. Although the sector



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The St. Louis MSA has about 14 percent more workers in the health care sector, compared with national averages.

employs a relatively small share of workers, financial activities accounted for almost 20 percent of St. Louis' GMP in 2012.

St. Louis' health care sector employs just under 200,000 workers (about 15 percent of total employment), of which about 70,000 are employed by the region's hospitals. Three health care firms in the metro area—BJC HealthCare, SSM Health Care and Mercy—rank among the top 10 largest employers and, as of June 2013, collectively employed 47,883 workers. BJC is the largest employer in the area.

Hospital employment has been a bright spot for St. Louis. Over the past decade, regional hospital employment grew 13.9 percentage

points faster than did such employment in the nation overall. Relative to national averages, the St. Louis MSA has about 14 percent more workers in the health care sector and 60 percent more hospital workers.¹ In 2012, output from the health care sector accounted for about 9 percent of St. Louis' GMP.²

Strong health care and financial services sectors have been key in helping the local economy through the Great Recession of 2007-09 and the recovery. During the recession, the metro area lost about 90,000 jobs; the health care sector added about 11,000 jobs. The local financial services sector lost about 1.5 percent of its workforce (1,200 jobs), which was only a quarter of the national rate.

The importance of these sectors for job growth after the recession has been even more pronounced. Combined, these two sectors have added almost 20,000 jobs, more than twice as many jobs as the rest of the local economy. Moreover, these sectors added jobs faster than the national rate, with financial services adding jobs five times as fast as the financial services sector did nationwide.

A Stalled Recovery

After the Great Recession ended in 2009, St. Louis firms began to hire workers at a pace that generally mimicked the national trend; the local economy added almost 20,000 jobs in the first 18 months of the recovery, and employment growth was positive in most industries. In the spring of 2011, however, the recovery in the MSA stalled. In the year that followed, the metro area lost about 4,000 jobs, while the national economy continued to add jobs at its previous pace. The job losses in the St. Louis area were not evenly distributed across industries or across the counties. Rather, the majority of the jobs were in sectors particularly sensitive to local conditions: construction, retail trade, and professional and business services. Geographically, the Illinois portion of the MSA appeared to have been most affected.

Continuing struggles in the local housing market are one potential factor of the stalled recovery in the MSA. Although housing prices did not fall locally as much as they did nationally, the recovery in the St. Louis area lagged the nation's gains. Year over

year, housing prices in St. Louis continued to decline through the end of 2012, while prices nationally turned back up six months earlier. Moreover, the local construction industry lost almost 7,000 jobs between the spring of 2011 and 2012. This decline is in stark contrast with the national trend, where construction employment increased by almost 3 percent.

The stalled recovery is also evident in the local services sector, specifically professional and business services and retail, which together employ a quarter of the region's workforce. Professional and business services include accounting, law, waste management and security services, as well as other businesses typically driven by local demand. Between the spring of 2011 and 2012, the industry shed over 1,000 jobs, or 0.6 percent of its workforce. During the same period, the retail sector—which includes local grocers, small retailers and big-box stores—eliminated 1,400 jobs, almost 1 percent of its workforce. Nationally, the professional and business services sector and the retail sector increased their payrolls by 3.5 percent and 1.2 percent, respectively.

Across the region, the stalled recovery is most evident in Illinois. Labor department data indicate that the pace of hiring in Illinois was faster than in both Missouri and the nation before the spring of 2011. Between the spring of 2011 and 2012, firms on the Illinois side of the MSA reduced employment by 600 workers a month, resulting in an employment drop of 3.5 percent. In the Missouri counties of the MSA, employers continued to add about 350 workers per month. Since the spring of 2012, employment growth in Missouri outpaced growth in Illinois. The diverging trend continued in 2013. In the Illinois counties, employment declined by over 2,500 jobs in the first half of the year. In the Missouri counties, employment increased by more than 5,000 jobs. Both sides of the MSA have total employment levels about 4 percent below their prerecession peaks.

Changing Trends

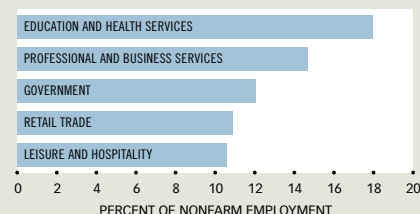
Despite the temporary standstill, the current economic outlook in the MSA is somewhat encouraging: 2013 employment growth showed positive momentum, the financial services sector continued to add jobs faster than the national rate, and the

MSA Snapshot

St. Louis, Mo.

Population	2,795,794
Labor Force	1,403,773
Unemployment Rate	6.9%
Personal Income (per capita)	\$44,625
Gross Metropolitan Product	\$116.5 billion

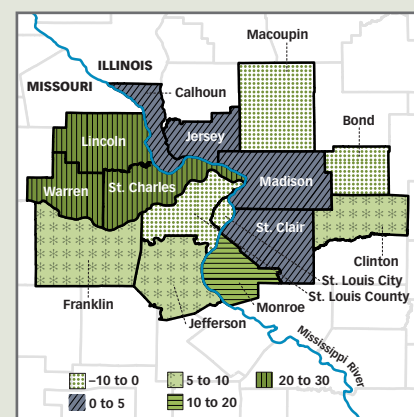
LARGEST SECTORS BY EMPLOYMENT



LARGEST LOCAL EMPLOYERS

1. BJC HealthCare
2. Boeing Defense, Space & Security
3. Washington University in St. Louis
4. Scott Air Force Base
5. SSM Health Care

ST. LOUIS MSA POPULATION GROWTH (PERCENT) BY COUNTY 2002-2012



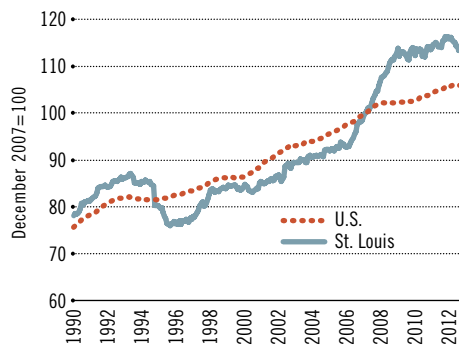
NOTES: Population, employment, personal income per capita and gross metropolitan product data are from the Census Bureau, Bureau of Labor Statistics and Bureau of Economic Analysis. These MSA-level data series are easily accessible in the St. Louis Fed's economic database, FRED (Federal Reserve Economic Data), which can be accessed at <http://research.stlouisfed.org/fred2>. For the panels and maps, see these FRED series (IDs in parentheses): population (STLPOP); labor force (STLLF); unemployment rate (STLUR); personal income (STLPCPI); leisure and hospitality (STLLEIH); retail trade (SMU2941180420000001SA); government (STLGOVT); professional and business services (STLPBSV); and education and health (STLEDUH).



© FUSE, THINKSTOCK

The financial services sector continues to be a major economic driver in the St. Louis MSA. Financial activities accounted for almost 20 percent of St. Louis' GMP in 2010.

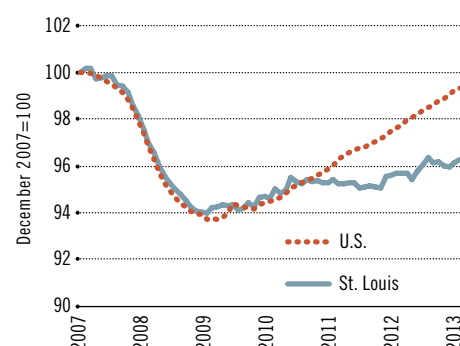
FIGURE 1
Hospital Employment



SOURCE: Bureau of Labor Statistics

NOTE: Data are easily accessible in the St. Louis Fed's economic database, FRED, using these series IDs: St. Louis (SMU29411806562200001SA) and U.S. (CES6562200001).

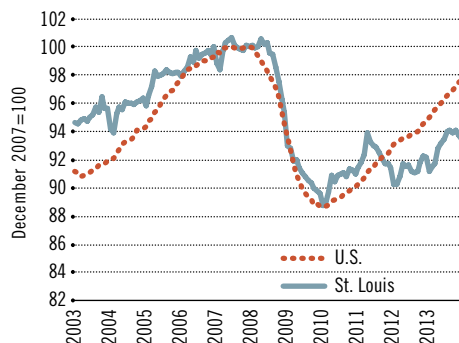
FIGURE 3
Nonfarm Payroll Employment



SOURCE: Bureau of Labor Statistics

NOTE: Data are easily accessible in the St. Louis Fed's economic database, FRED, using these series IDs: St. Louis (STLNA) and U.S. (PAYEMS).

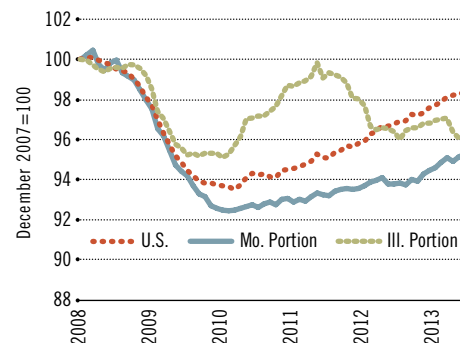
FIGURE 2
Professional Business Services, Logging, Mining, Retail, Construction Employment



SOURCE: Bureau of Labor Statistics.

NOTE: Data are easily accessible in the St. Louis Fed's economic database, FRED, using these series IDs: St. Louis Professional and Business Services (STLPBSV), St. Louis Construction, Mining, and Logging (STLNRMN), St. Louis Retail Trade (SMU29411804200000001SA), U.S. Professional and Business Services (USPBS), U.S. Construction (USCONS), U.S. Mining and Logging (USMINE), and U.S. Retail Trade (USTRADE).

FIGURE 4
St. Louis Metro Employment, by State



SOURCE: Bureau of Labor Statistics

NOTE: Data from the BLS' Quarterly Census of Employment and Wages cover 98 percent of all nonfarm payroll jobs. Illinois data were adjusted to account for a spike in January 2011 employment due to reclassification of workers.

professional and business services sector displayed strong growth. Moreover, some long-term population trends started to reverse. On the other hand, employment growth in the health care sector was relatively flat in 2013, and policy changes pose new challenges to that industry

The retail sector showed signs of improvement: Two new outlet malls opened in the far western suburb of Chesterfield last summer, and one has already begun planning an expansion. Promising projects are on the horizon for the city of St. Louis: Ikea and Whole Foods have finalized plans to open new stores in the fall of 2015, for example.

Recoveries in construction and other services sectors resulted in about 7,000 new jobs in 2013, up from 2,000 new jobs in 2012.

Growth of the health care industry showed signs of slowing in 2013. Over the past five years, the local health care sector added an average of 3,500 jobs per year. In 2013, the sector lost over 2,000 jobs. Nonetheless, anecdotal information suggests the long-term outlook remains somewhat promising, with projects such as BJC's \$1 billion campus renewal contributing to the turnaround of the construction industry. Many construction and contracting firms expect a growing portion of their revenue

ECONOMY AT A GLANCE

to come from these health care construction projects. Nationally, the outlook for the health care industry is also strong: Data from the Bureau of Labor Statistics project the health care industry to generate the largest job growth over the next 10 years.

Another notable shift over the past few years has been the relative convergence of population growth rates: The rates of the MSA's counties are converging, and the population growth of the MSA itself is converging with that of the nation.

Over the past decade, the Missouri counties of St. Charles, Warren and Lincoln led the region's population growth, averaging upward of 3 percent growth per year during the early 2000s. At the same time, the city of St. Louis and St. Louis County reported population losses, with declines of 1.2 percent and 0.2 percent, respectively. Over the past few years, these growth rates have converged, with the outlying counties' growth slowing to 1 percent or less per year. Population growth in St. Louis city and county have moved in the opposite direction, both reporting virtually no change in population during 2012.³

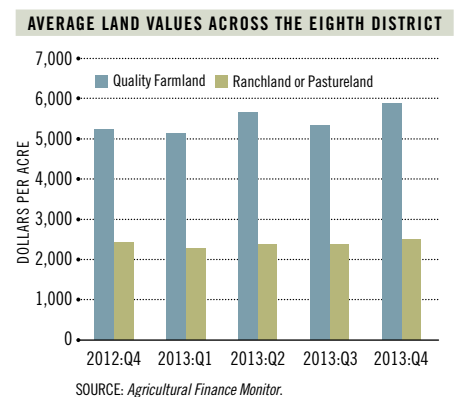
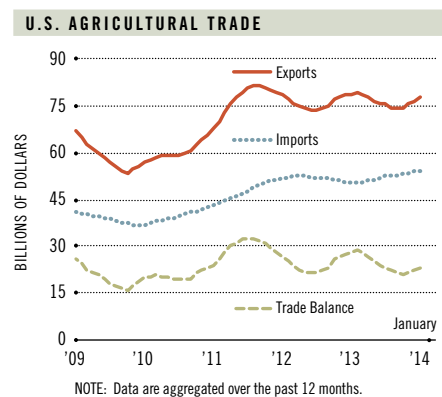
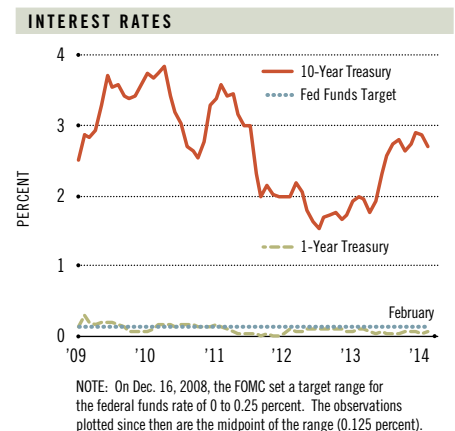
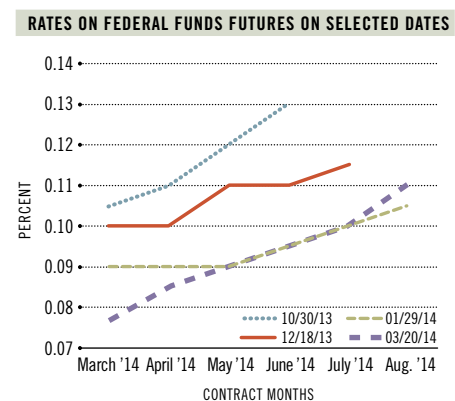
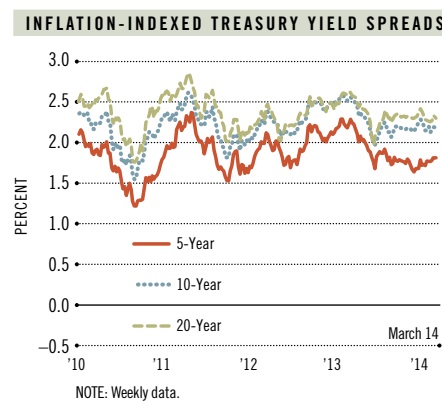
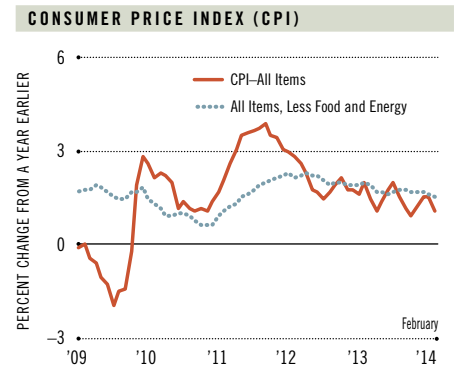
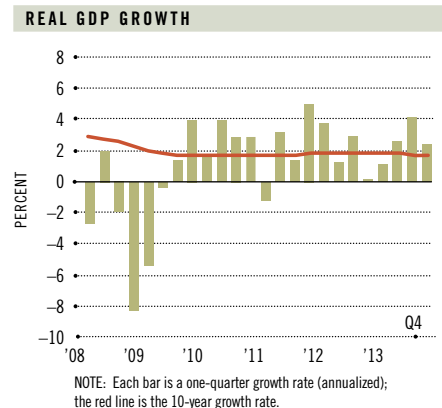
The region's population growth has also converged with the national rate. In the 1970s and '80s, the St. Louis metro population grew roughly 1 percent slower than the national rate. In recent years, the difference in population growth has declined to about 0.5 percent. Albeit below the national rate as a whole, the Missouri counties in the MSA have converged with national trends, while the Illinois counties still have about a 1 percent gap between the 2012 population growth rates and national averages. [Q](#)

Charles S. Gascon is a regional economist and Diana A. Cooke is a research analyst, both at the Federal Reserve Bank of St. Louis.

ENDNOTES

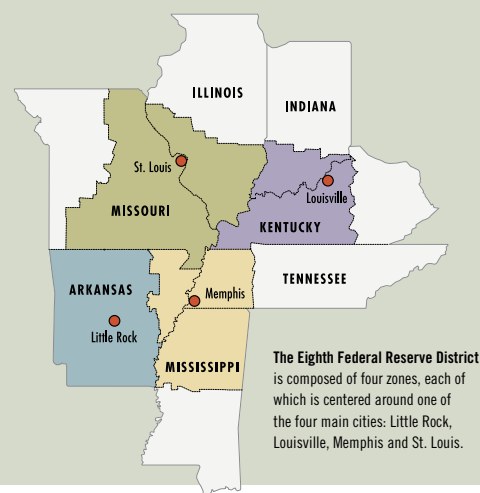
- 1 About 13 percent of the nation's workforce is employed in the health care sector and 3.5 percent in hospitals. Of St. Louis' workforce, 14.8 percent is employed in the health care sector and 5.5 percent in hospitals. Hospital employment is included in health care figures.
- 2 Health care sector output is not available for the MSA, only "health and education" is. Missouri sector-level GSP was used to decompose the data.
- 3 St. Louis city (-0.12%), St. Louis County (+0.11%).

Eleven more charts are available on the web version of this issue. Among the areas they cover are agriculture, commercial banking, housing permits, income and jobs. Much of the data are specific to the Eighth District. To see these charts, go to www.stlouisfed.org/economyataglance.



Measured Economic Mobility in the District Is Below the U.S. Average

By Alejandro Badel and Julia Maues



Is intergenerational economic mobility high or low in the Eighth District? Are there areas with extremely high or extremely low mobility? In this District Overview, we provide answers to these questions, using results from a 2014 study by economists Raj Chetty, Nathaniel Hendren, Patrick Kline and Emmanuel Saez (CHKS hereafter).

The CHKS study has attracted a great deal of interest, in large part because it measures mobility using a comprehensive data set that contains the incomes of more than 40 million people and their parents between 1996 and 2012. The data set is constructed from anonymized federal tax returns.

The measures of intergenerational economic mobility in CHKS are computed by taking the group of people who were born in 1980-82 and comparing the income of their parents in 1996-2000 (when they were between 14 and 20 years old) with their own family income in 2011-12 (when they were between 29 and 32 years old).

Each of the mobility measures in CHKS is calculated for each group of people growing up in the same “town” (regardless of whether they moved afterward). CHKS used the Census Bureau’s commuting zones as the geographical definition of a “town.” Each commuting zone consists of several adjacent counties that are chosen according to observed commuting patterns. A person is assigned to a particular commuting zone if his or her family was living there in 1980-82.

While the CHKS study presents several indicators of intergenerational economic mobility, we focus on a particular one: the probability of moving up in one generation. CHKS obtains this indicator by considering,

for each commuting zone, the group of 14- to 20-year-olds whose family income was in the bottom 20 percent of the national income distribution in 1996-2000. The indicator is the fraction of that group that, as grown-ups (i.e., by ages 29-32), had a family income in the top 20 percent of the national income distribution.

Let’s now look at economic mobility in the Eighth District. To do so, we look at the mobility indicator in all of the commuting zones that contain at least one county belonging to the Eighth District.

Best and Worst in the District

The Eighth District is composed of 339 counties in all or parts of seven states: Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee. These counties are covered by 81 commuting zones.

Averaging the mobility indicator across these counties, we calculate that the probability of moving from the bottom 20 percent of the income distribution to the top 20 percent of the income distribution in one generation was 6.4 percent in the Eighth District.¹

This probability is comparable to that faced by those growing up in Tampa, Fla. (6 percent), Baltimore (6.4 percent), and Chicago (6.49 percent). However, it is much lower than the probability of moving up for those growing up in Salt Lake City (10.8 percent), and San Jose, Calif. (12.9 percent). The probability of moving up for those growing up in the Eighth District was also 1.7 percentage points lower than the national average (8.1 percent).²

Panel A in the table presents the probability of moving up for people growing up in

the 10 largest commuting zones (as measured by population in 2000) that contain at least one county of the Eighth District. Those growing up in Memphis had the lowest probability of moving up (2.8 percent), followed by St. Louis and Cincinnati (both at 5.1 percent). The highest probability was measured for Fayetteville, Ark. (9.2 percent), followed by Edwardsville, Ill. (8.7 percent). The differences in chances of moving up are striking: The probability of moving up was 1.8 times larger for those who grew up in St. Louis than for those who grew up in Memphis, while it was 1.8 times larger for those who grew up in Fayetteville than for those who grew up in St. Louis.

The second column of Panel A presents the ranking of each commuting zone (in terms of probability of moving up) among all the commuting zones in the nation. This column shows that for the 10 largest commuting zones that contain at least one county of the Eighth District, the probability of moving up is pretty much in the bottom half of the national distribution.

Panel B displays the four commuting zones in the District where people had the greatest chances to jump up the income ladder, as well as the four zones where people had the worst chances of making this leap. The probability of moving up in one generation ranges from 2.2 percent for those growing up in Greenville, Miss., to 11.7 percent for those growing up in Olney, Ill. The bottom four commuting zones all rank in the bottom 1 percent of the national distribution. At the other extreme, there are no areas of the District with mobility in the top 1 percent of the national distribution. The highest-ranked commuting zone in the District ranks at the 73rd percentile of the national distribution.

Probability of Moving Up in One Generation, by Commuting Zone

A. 10 Largest Commuting Zones in the Eighth District		
	Probability of moving up (%)	Percentile in national ranking (with 0 being lowest)
Fayetteville, Ark.	9.2	52.1
Edwardsville, Ill.	8.7	47.9
Evansville, Ind.	7.9	38.4
Springfield, Mo.	7.1	31.3
Lexington-Fayette, Ky.	5.4	15.2
Little Rock, Ark.	5.4	15.0
Louisville, Ky.	5.2	13.6
Cincinnati	5.1	12.3
St. Louis	5.1	11.9
Memphis, Tenn.	2.8	1.0

B. Top and Bottom Four in the Eighth District		
	Probability of moving up (%)	Percentile in national ranking (with 0 being lowest)
Top 4		
Olney, Ill.	11.7	73.7
Kirksville, Mo.	11.3	70.9
Harrisburg, Ill.	11.2	69.7
Vincennes, Ind.	11.0	68.0
Bottom 4		
Memphis, Tenn.	2.8	1.0
Clarksdale, Miss.	2.7	0.7
Yazoo City, Miss.	2.5	0.5
Greenville, Miss.	2.2	0.1

C. Top and Bottom Four in the Nation		
	Probability of moving up (%)	Percentile in national ranking (with 0 being lowest)
Top 4		
Bowman, N.D.	47.0	100.0
Lemmon, N.D.	35.7	99.9
Williston, N.D.	33.8	99.7
Carrington, N.D.	33.3	99.6
Bottom 4		
Yazoo City, Miss.	2.5	0.5
Mission, S.D.	2.4	0.4
Eufaula, Ga.	2.3	0.3
Greenville, Miss.	2.2	0.1

SOURCE: See www.equality-of-opportunity.org/.

NOTE: Some of the cities that are listed as being in the District (such as Cincinnati) are not actually within the borders of the District; however, at least one county in their commuting zone (as defined by the Census Bureau) is part of the District.

Commuting zones carry the name of the main town covered by the commuting zone. Since some commuting zones may cross state borders, the state assigned to the commuting zone may not correspond to the state where the main town is located.

Panel C displays the probability of moving up and the percentile in the national distribution for the top four and bottom four commuting zones in the nation. Two commuting zones in the Eighth District rank in the nation's bottom four: Yazoo City, Miss., and Greenville, Miss. Not shown in this panel is the Memphis commuting zone, which ranks 722 among 729 commuting zones in the CHKS report.

Comparing the top four commuting zones in Panel B with those in Panel C shows that the District does not have areas with extremely high income mobility. Such mobility in the nation's top commuting zone is more than four times higher than in the District's top commuting zone. On the other hand, the District contains areas with extremely low income mobility. Why? In the next District Overview, in the July issue of *The Regional Economist*, we will provide a quick introduction to the factors that may be part of an explanation for these differences in income mobility. However, we leave a more complete investigation of the forces behind these patterns to future research on the economy of the Eighth District.

In summary, the probability of moving up for people born in the Eighth District taken as a whole is only somewhat lower than the national average. However, the District contains pockets where the probability of moving up is extremely low, and it contains no areas with remarkably high income mobility. [Q](#)

Alejandro Badel is an economist and Julia Maues is the economic content manager in Public Affairs, both at the Federal Reserve Bank of St. Louis. For more on Badel's work, see <http://research.stlouisfed.org/econ/badel>.

ENDNOTES

- ¹ This figure is obtained by assigning to each county the probability of moving up in its commuting zone and then taking a weighted average (with the weights being equal to the counties' population in 2012) across counties. This allows an exact estimate of the probability of moving up in the Eighth District.
- ² This figure is obtained as a weighted average across all commuting zones with weights equal to the population of each commuting zone in 2000. An identical result would be obtained using a county-by-county weighting strategy as we did for the Eighth District, but is not necessary here.

REFERENCE

Chetty, Raj; Hendren, Nathaniel; Kline, Patrick; and Saez, Emmanuel. "Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." National Bureau of Economic Research, January 2014, Working Paper 19843.

Weather Throws a Cold Blanket on the U.S. Economy

By Kevin L. Kliesen

The U.S. economy exhibited considerable strength over the second half of 2013. After increasing at a 1.8 percent annual rate over the first half, the advanced estimate showed that real gross domestic product (GDP) increased at a brisk 3.7 percent annual rate over the second half. In response, nonfarm payrolls rose by an average of 204,500 per month from June to November, and the unemployment rate dropped from 7.5 percent to 7 percent. Meanwhile, inflation and inflation expectations remained relatively low and stable and below the 2-percent long-run inflation target of the Federal Open Market Committee (FOMC). Given the spate of good news over the second half of 2013, most private-sector forecasters and FOMC policymakers began to raise their expectations for the economy's performance in 2014.

Well, the U.S. economy's sprint toward a gold medal in 2014 suddenly looks rather shaky. First, a significant percentage of the data measuring economic activity in December 2013 and January 2014 has been unexpectedly soft. Foremost among them, nonfarm payrolls saw an average gain of only about 106,000 in December and January—about half as much as market expectations. Next, many of the major housing reports were markedly weaker than expected. Although construction spending inched up in January, housing starts and permits plunged that month, and sales of existing homes in January were at their lowest level since July 2012. Retailers and manufacturers also experienced significant weakness in January: Retail sales posted their largest decline since June 2012, while output at manufacturers registered its largest percentage decline since May 2009.

Weaker-than-expected data flows resulted in a marked downward revision to real GDP

The FOMC's March 2014 Economic Projections for 2014-15



NOTE: Projections are the mid-points of the central tendencies. The projections for real GDP growth and inflation are the percentage change from the fourth quarter of the previous year to the fourth quarter of the indicated year. Inflation is measured by the personal consumption expenditures chain-price index. The projection for the unemployment rate is the average for the fourth quarter of the year indicated.


growth in the fourth quarter of 2013, from an annual rate of 3.2 percent to a 2.6 percent rate. Less momentum heading into 2014, compounded by some softer data in January and February, has spurred professional forecasters to mark down their estimates for growth of real GDP in the first quarter of 2014. The February 2014 Survey of Professional Forecasters now projects that real GDP will increase at a 2 percent annual rate in the first quarter, 0.5 percentage points less than three months earlier.

What's going on out there?! Is the U.S. economic expansion in the early stages of its demise, or is this merely a lull related to the harsh winter weather that gripped a significant portion of the nation in December, January and early February?

Weather or ... Not?

At this point, the evidence suggests that weather considerations may be responsible for much of the emerging weakness in the first quarter. This tentative conclusion is based on the following factors. First, many of the economic data releases—for example, those issued by the government, the Federal Reserve and private organizations—have specifically mentioned that adverse weather affected the statistics reported in the release. In particular, the Fed's *Beige Book* noted that severe weather contributed to weaker-than-expected economic conditions in many areas in January and early February. Compounding this problem is that many key monthly data series, such as retail sales and factory orders, tend to be highly volatile from month to month. Second, other key data do not indicate a looming demise of

the business expansion. Important in this regard are the continued low levels of weekly initial claims for state unemployment insurance benefits. Initial claims data tend to be very sensitive to the state of the economy, particularly near peaks and troughs of the business cycle. The larger-than-expected rebound in payroll employment and manufacturing production in February was heartening in this regard, providing further evidence of the temporary nature of the first-quarter lull in activity. Third, financial markets—which are also sensitive to changes in economic data and expectations of future growth—show few signs of stress, and stock prices continue to increase. Fourth, the FOMC and the majority of professional forecasters continue to expect that the economy will perform solidly this year: real GDP growth of about 3 percent, further declines in the unemployment rate and an inflation rate modestly less than 2 percent.

A point of caution is in order, though: It is often extremely difficult to gauge the underlying strength of the economy even in the best of times; so, we'll just have to wait and see if the emerging slowdown in the first quarter was a weather-related short-lived economic disturbance, a worrisome return to the pattern of slower-than-normal growth seen during this expansion or something worse. 

Kevin L. Kliesen is an economist at the Federal Reserve Bank of St. Louis. Lowell R. Ricketts, a senior research associate at the Bank, provided research assistance. See <http://research.stlouisfed.org/econ/kliesen/> for more on Kliesen's work.

ASK AN ECONOMIST

Kevin L. Kliesen is a business economist and Research officer at the Federal Reserve Bank of St. Louis. His main areas of interest are monetary and fiscal policy and macroeconomic forecasting. Kliesen co-developed the St. Louis Fed's Financial Stress Index with a former colleague. He initially went to college to be a farmer, but then fell in love with economics. Every spring and summer, he returns to his roots to try to make his plants and flowers thrive in the St. Louis summer. For more on Kliesen's work, see <http://research.stlouisfed.org/econ/kliesen>.



Kliesen in front of the Banca d'Italia while vacationing in Rome.

Q: *As the city of St. Louis turns 250, how well is it positioned in terms of employment growth? What are some of the opportunities out there for the area?*

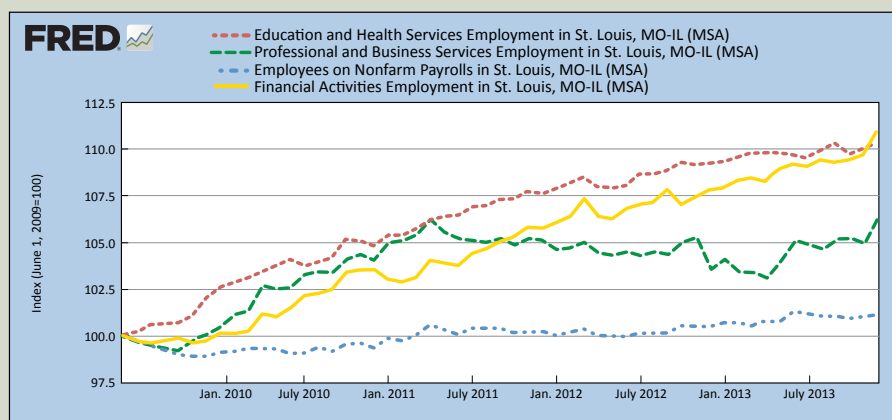
A: St. Louis is a service-based economy, much like the U.S. is as a whole. In the St. Louis metro area, the sectors with the largest growth rates are the education and health care sector, the professional and business services sector, and the financial activities sector.

Over the longer term, St. Louis is fairly well-positioned in terms of employment growth, given the area's concentration in health care, technology and financial services. The Bureau of Labor Statistics recently published employment projections for the next 10 years. The top two occupations when it comes to job growth are health-care related. Due to the aging of the baby boomers, there is more demand for health-care services. Also, as people get older and accumulate wealth, demand for financial services typically increases.

Employment in manufacturing has been relatively flat recently. Many people believe that manufacturing has large spillovers to the local economy. However, recent research by Enrico Moretti, an economist at the University of California at Berkeley, shows that jobs in the innovation sector—such as computer companies and biotechnology firms—have a much higher multiplier effect.¹ Using data on 9 million workers in 320 U.S. metropolitan areas, Moretti found that the multiplier effect for the innovation sector is about three times as large as that of extractive industries and traditional manufacturing. In other words, the most important effect of high-tech companies on local economies is outside high tech. Additionally, because innovation jobs are typically higher paying, the service jobs that are created as spillovers pay more, too. St. Louis would benefit from more growth in this area. In this vein, recent entrepreneurial efforts in St. Louis at the so-called T-Rex new-firm incubator are promising.²

ENDNOTES

- 1 Moretti, Enrico. *The New Geography of Jobs*. New York: Houghton Mifflin Harcourt, 2012.
- 2 See <http://downtowntrex.com>.



REGISTER NOW FOR SYMPOSIUM ON BALANCE SHEETS OF YOUNGER AMERICANS

Registration is open until May 2 for a research symposium May 8-9 at the Federal Reserve Bank of St. Louis. New and cutting-edge research from leading academics nationwide on a wide range of topics will be presented at the event, titled "The Balance Sheets of Younger Americans: Is the American Dream at Risk?" These topics include: student loans, economic mobility, homeownership, savings and balance-sheet portfolio allocation, and child development accounts and parental expectations.

The cost to attend is \$100 (\$20 for students). For more information, see www.stlouisfed.org/americandream.

APRIL IS NATIONAL FINANCIAL LITERACY MONTH

The Federal Reserve Bank of St. Louis offers a myriad of free resources to help those who want to learn about personal finance and basic economics—or for those who want to teach others about these important life skills.

Our menu includes videos and podcasts, short essays and exercises. There are tried-and-true tools, such as flash cards and glossaries, as well as up-to-date technologies, such as online chats and mobile apps. Many of the resources are available in Spanish, too.

For teachers—from kindergarten through college—there are lesson plans, webinars, audioconferences and in-person workshops. The award-winning classroom materials are used in every state, as well as in many other countries.

To get started teaching yourself or to teach others, go to www.stlouisfed.org/education_resources.

CATCH UP ON DIALOGUE WITH THE FED

Since 2011, the Federal Reserve Bank of St. Louis has held a dozen public discussions in its series titled *Dialogue with the Fed: Beyond Today's Financial Headlines*. To see video highlights of these presentations by our economists and other experts, go to www.stlouisfed.org/dialogue-with-the-fed. Check back soon for highlights from the March 31 Dialogue about bitcoin and other virtual currencies.

We welcome letters to the editor, as well as questions for "Ask an Economist." You can submit them online at www.stlouisfed.org/re/letter or mail them to Subhayu Bandyopadhyay, editor, *The Regional Economist*, Federal Reserve Bank of St. Louis, P.O. Box 442, St. Louis, MO 63166-0442.



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N E X T I S S U E

Educators: Register Now for Global Economic Forum

The St. Louis Fed will host a free conference June 30 and July 1 for teachers about globalization and its impact on the U.S. economy. Economists with expertise on China and India will be among the speakers. Lesson plans will be provided, and there will be a videoconference on the second day with teachers who are gathering in five other Reserve bank cities across the country at the same time. Registration deadline is June 16. Go to <http://www.stlouisfed.org/newsroom/events/?id=552>.



Challenges and Opportunities for the U.S. in Latin America

In the July issue of *The Regional Economist*, I read about the key issues facing U.S. business interests in their dealings with Latin American economies these days. The article will focus in particular on matters related to trade, immigration and investment. There is no “one size fits all” approach to doing business in Latin America, given the wide-ranging level of development among the countries south of the Rio Grande.

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