THE REGIONAL ECONOMIST

A Quarterly Review of Business and Economic Conditions

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January 2014

THE FEDERAL RESERVE BANK OF ST. LOUIS

CENTRAL TO AMERICA'S ECONOMY®

Finding a Job
Nonparticipants Take A Different Path

Disability Insurance
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A Look at Japan's Slowdown and Its Turnaround Plan

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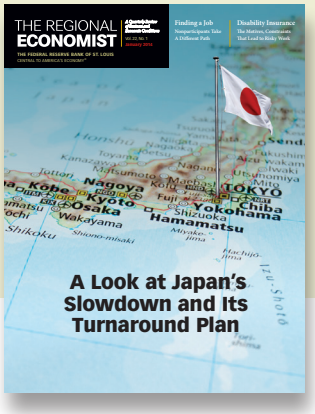
A Look at Japan's Slowdown and Its Turnaround Plan

By Juan M. Sánchez and Emircan Yurdagul

For years, perhaps even decades, Japan's economy has struggled with low growth and low inflation. A year ago, new policies were put into place to turn around the economy. Although there are similarities between Japan's experience and that of other developed countries (including the U.S.), there are also many differences.



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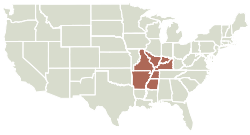

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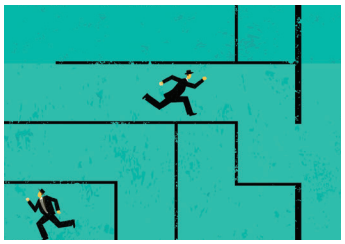

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Quantitative easing has led to the largest expansion of the Fed's balance sheet since World War II. While this, naturally, leads to concern about inflation, the Fed has the tools to unwind the balance sheet once the economy builds steam.

Job-Search Methods in Good, Bad Times

By James D. Eubanks and David G. Wiczer

Is one method of searching for a job better than another? Do job-seekers change their approach when a recession hits?

Some Perspectives on the Notorious Summer of 2008

In late 2008, the U.S. economy was suffering in the aftermath of a financial panic that was sparked by the collapse of Lehman Brothers and American International Group (AIG). The summer of 2008 has developed a notorious reputation because it preceded Lehman-AIG. In this column, I provide my perspective on some features of the macroeconomic situation during that period.[1]

While many think that the financial crisis began in 2008, in fact conventional dating puts the beginning of the financial crisis in August 2007. Therefore, the crisis had been continuing for more than a year by the time of Lehman-AIG, and the Fed had been responding to the situation. In particular, the Federal Open Market Committee (FOMC) had lowered the federal funds rate target substantially between September 2007 and March 2008—from 5.25 percent to 2.25 percent. Because monetary policy operates with a lag, a widely held expectation during the first half of 2008 was that this aggressive easing would help the economy considerably throughout the rest of the year. This expectation turned out to be wrong, or at least naïve, in the fall of 2008.

We now know that a recession started in December 2007 and ended in June 2009. During the summer of 2008, however, it was not readily apparent that the U.S. was actually in recession. According to initial estimates, real U.S. gross domestic product (GDP) growth was positive for the fourth quarter of 2007 and the first and second quarters of 2008.[2] If one defines recession as two consecutive quarters of declining GDP, then the U.S. was not in recession based on those figures. Also, in early July 2008, forecasts for the second half of the year were still for modest growth. Therefore, as of August 2008 there was a good case to be made that the U.S. economy would continue to muddle through the financial crisis, as it had seemingly been doing for many months.

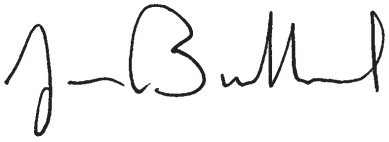
In reality, the economy contracted during the second half of 2008. Rather than preventing the financial panic, the Fed's substantial lowering of the policy rate may have had a counterproductive effect by feeding into another development during this period: the global commodity price boom during the second half of 2007 and the first half of 2008. The boom was especially pronounced in oil prices. The lower interest rates may have encouraged troubled financial firms to borrow cheaply and attempt to profit in commodities. This sort of "doubling down" behavior is common during financial panics. As of mid-June 2008, the price of crude oil had nearly doubled in the span of about 10 months (whereas the year-over-year increase was near zero as of August 2007). The commodity price shock slowed down auto sales and other parts of the economy that are sensitive to such prices. The slower economic growth, in turn, worsened the financial crisis and led to multiple financial firm failures during the fall of 2008.

While the Bear Stearns event occurred in March 2008, it had implications for events during the second half of the year. Bear Stearns was ranked 34th by revenue among financial firms in the U.S. during 2007. When JPMorgan Chase & Co. purchased the failing firm with assistance from the Fed, this suggested that the 33 financial firms that were even larger than Bear Stearns had some form of implicit insurance from the Fed. The Fed, however, was not in a position to give assistance to that many firms.

As of September 2008, investors had already known for a year that Lehman Brothers was in deep trouble. As such, the Lehman failure, while notable, was not particularly surprising, and the U.S. economy could have handled this single event. The fact that AIG, which was one of only a handful of triple-A-rated firms in the U.S., was also in deep trouble did come as a surprise. Moreover, the financial problems of AIG, especially because of its linkages with other firms as a provider of insurance, spilled over and worsened the financial situations of other firms. As a result, the Lehman-AIG event brought all financial firms under vastly increased suspicion, driving the financial crisis from mid-September 2008 onward.[3]

Following the Lehman-AIG event, the FOMC changed the target policy rate to a range of 0 to 0.25 percent in December 2008, and the policy rate remains there more than five years later. In my view, the debate at the time of the decision did not take sufficient account of the experience in Japan. The Bank of Japan changed its policy rate to near zero in the 1990s, and short-term rates are still at zero today. The FOMC decision in December 2008 may have unwittingly committed the U.S. to an extremely long period of near-zero rates similar to the situation in Japan, with unknown consequences for the macroeconomy.[4]

The events of 2008 are likely to be studied for decades to come. The features of the macroeconomic situation that I have discussed here must be addressed in any comprehensive accounting of what happened during that period. Ω



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

ENDNOTES

1 For more details, see my presentation on Nov. 21, 2013, "The Notorious Summer of 2008," at http://research.stlouisfed.org/econ/bullard/pdf/Bullard_NWArkansas_2013November21_Final.pdf.

2 The current data instead show negative GDP growth in the first quarter of 2008. To see data revisions over time, visit the St. Louis Fed's real-time database, ALFRED (ArchivaL Federal Reserve Economic Data), at http://alfred.stlouisfed.org/.

3 For more discussion on the largest financial firms during this period, see my presentation on Nov. 18, 2009, "The First Phase of the U.S. Recovery," at http://research.stlouisfed.org/econ/bullard/BullardCommerceFinal.pdf.

4 See my 2010 *Review* article, "Seven Faces of 'The Peril,'" at http://research.stlouisfed.org/publications/review/10/09/Bullard.pdf.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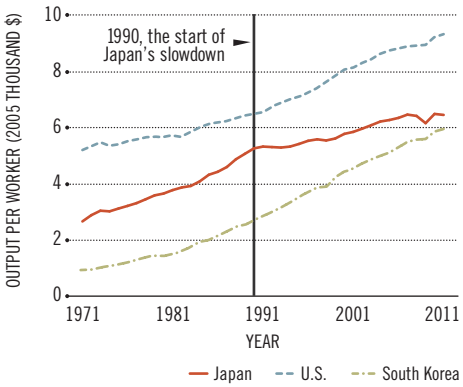
A Look at Japan's Slowdown and Its Turnaround Plan

By Juan M. Sánchez and Emircan Yurdagul

The Japanese economy has been struggling with low growth and low inflation for several years (or even decades). These two symptoms are present in several developed economies, including the U.S.[1] In this article, we analyze the Japanese economic experience, reviewing the headwinds and the recent policies implemented. We show the main differences and similarities that Japan has with the U.S. and also compare Japan's performance with South Korea's. The case of South Korea is interesting because the growth experience is similar to Japan's between 1970 and 1990, but South Korea didn't suffer a slowdown in the years after that, as Japan did.

FIGURE 1

Output Comparison with U.S. and South Korea



SOURCE: Penn World Table 8.0.

The economic history of Japan over the past 40 years can be divided into two subintervals: before and after 1990. In the first period, gross domestic product (GDP) grew at an annual rate of about 4.5 percent, and the growth was persistent. This trend stopped abruptly in the 1990s, after which the economy grew at an annual rate of less than 1 percent until 2011.

This break in the growth experience of Japan can also be seen in terms of output per worker. Figure 1 compares the patterns in output per worker in Japan with those in the U.S. and South Korea. For the period between 1971 and 2011, the case of Japan is clearly different from that of the U.S. and South Korea. Until 1990, Japan was growing fast and catching up with the U.S. However, starting in 1990 the Japanese growth rate slowed down and its gap with the U.S. widened. During the same period, South Korea sustained fast growth and narrowed its gap with Japan and the U.S. In particular, between 1970 and 1990, Japan's output per worker grew at an annual rate of about 3.6 percent, whereas corresponding rates for the U.S. and South Korea were 1.3 and 5.6 percent. From 1990 to 2011, Japan's output per worker rose at a rate less than 1 percent; in comparison, the annual rate of growth in the U.S. was 1.7 percent and in South Korea was 3.8 percent.

What caused in Japan such a striking change in the trend that was dominant for at least two decades? It's only logical to think that the causes are connected to the three main drivers of growth: capital, labor and total factor productivity (TFP). Capital captures the machinery and equipment that are used by businesses in their operations. Labor captures workers' input in production operations and is measured as the average hours worked by people engaged in production as well as their skill level. TFP measures the efficiency of a country in producing output with given levels of capital and labor. If Country A and Country B have the same amount of capital and (quality-adjusted) labor, but Country A produces more, then it must be that Country A has higher TFP. With that framework in mind, we can compute how much of the Japanese growth (or lack thereof) was accounted for by the changing patterns in capital, labor and TFP.

Growth Accounting

Let's look at the changes in total output, capital and labor in the intervals 1970-1990, 1990-2007 and 2007-2011.[2] Capital is an estimate of the stock of accumulated investments. Labor is the total labor force, adjusted by the number of hours worked and education. The growth rate of each factor is adjusted, using a measure of its importance in the aggregate economy, such that the sum of the growth rates of capital, labor and TFP is equal to the growth rate of output.

As a result of this exercise, we should expect that, if TFP had no effect on the growth rate of output, the growth rate of the economy must be made up of the contribution of the growth rate in capital plus the contribution of the growth rate in labor. Needless to say, such equality does not hold in general, giving economists an idea of how important TFP is in accounting for the growth experience of the economy. The top panel of the table gives the results of this exercise for Japan.[3] The middle and bottom panels show the results for the U.S. and South Korea, respectively.

Total output grew rapidly in Japan from 1970 to 1990, on average 4.5 percent a year. In the same interval, the output growth due to capital accumulation was 2.4 percent a year, accounting for more than 50 percent of the output growth. On the other hand, the contribution of labor growth was much smaller, 0.73 percent, or about 20 percent of the total growth in output. The remaining 30 percent of the total growth in total output is attributed to the growth in TFP, which grew at a yearly rate of 1.4 percent during this period.

The middle row in the top panel of the table shows the same exercise for the period 1990-2007. Looking at the factors' growth, the drop in the output growth is not surprising. The growth rates in capital, labor and TFP were all smaller than in the earlier period. However, the extent of output growth that capital accounts for increased, suggesting that this factor was not the primary explanation for the slowdown in growth. Strikingly, the change in the labor input of production is now slightly negative; this shows a potential direction to look at in assessing the slowdown in the Japanese economy.

Discontinued increase in labor force participation, diminishing returns in

TABLE 1

Growth Accounting

YEARLY GROWTH RATE				
	Total output	Capital stock	Labor input	Total factor productivity
Japan				
1970-1990	4.45	2.35	0.73	1.37
1990-2007	1.24	0.85	–0.06	0.44
2007-2011	–0.79	0.13	–1.24	0.33
U.S.				
1970-1990	3.18	0.98	1.45	0.75
1990-2007	2.95	0.87	0.90	1.18
2007-2011	0.15	0.32	–0.62	0.46
South Korea				
1970-1990	8.93	3.43	3.43	2.07
1990-2007	5.60	2.72	0.99	1.89
2007-2011	3.07	1.42	0.15	1.51

SOURCE: Penn World Table 8.0.

NOTE: The human capital variable used to adjust labor is from the Penn World Table and is a function of average years of schooling in a country.

higher education and decreasing hours all may have contributed to the slowdown of the Japanese economy during this period. We can also see from the middle row that TFP growth slowed down substantially, too. There may be different explanations for this observation. Perhaps, Japanese corporations lost their edge in innovation, or the institutions affecting the allocation of resources (e.g., government and the financial sector) may be doing a worse job of allocating the resources to the best producers. In fact, in their 2008 work, economists Ricardo J. Caballero, Takeo Hoshi and Anil K. Kashyap argued that the continued lending by the Japanese financial sector to the otherwise insolvent, inefficient firms kept the Japanese market congested, affected the profitability of more-efficient firms and prevented the economy from reaching the optimal level of firm entry and exit.

Qualitatively, the changes from the 1990-2007 interval to the 2007-2011 interval are in the same direction with the changes from the 1970-1990 interval to the 1990-2007 interval. Capital, labor and TFP all have growth rates lower than before, making the output growth for 2007-2011 negative.

The U.S. Experience

One could argue that what happened in Japan is natural for a rich, mature economy. If that is the case, we should expect that the U.S. would experience a similar slowdown—and it has, but only to some extent. The experience of Japan may be useful to understanding the slow recovery of the U.S. after the financial crisis. To evaluate that hypothesis, the same exercise that was performed for Japan was undertaken for the U.S., as well as for South Korea.

We found that the performance of labor in Japan was a more-extreme version of what happened in the U.S. and South Korea. From the 1970-1990 interval to the 1990-2007 interval, growth in labor input decreased, both in the U.S. and in South Korea, though changes were milder than in Japan. This suggests that economies might grow less as they develop because the growth of labor slows down.

In terms of the contribution of TFP, changes in Japan from the 1970-1990 interval to the 1990-2007 interval were more distinct from the ones observed in the U.S. and South Korea. For the U.S., TFP growth increased between the two intervals and the contribution of TFP to output growth increased much faster than in Japan. In South Korea, the growth rate in the later interval was very similar to the growth rate in the earlier one, suggesting that TFP was not a cause for the slowdown in output growth.

Why was the decline in the growth rate of labor much more dramatic in Japan than in the U.S. and South Korea? Why did TFP growth slow down in Japan, in a fashion not seen in the other two countries? An analysis of the contemporaneous issues of Japan might help to answer these questions.

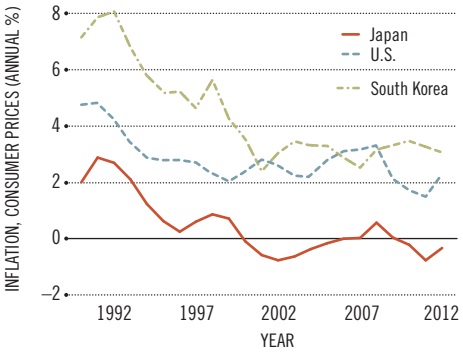
Headwinds

Japan is facing headwinds that are arguably relevant, if not causes, for the slowdown in its economy. The three challenges that have received the most attention are the aging population, low inflation and growing public debt.

The aging of the population is strongly connected to the stagnant labor input illustrated in the table. Japan has the highest life expectancy among countries in the Organization for Economic Cooperation and Development—and Japan's population is aging rapidly. Since 1990, the ratio of the population that is older than the working age (i.e., older than 64) to that of the

FIGURE 2

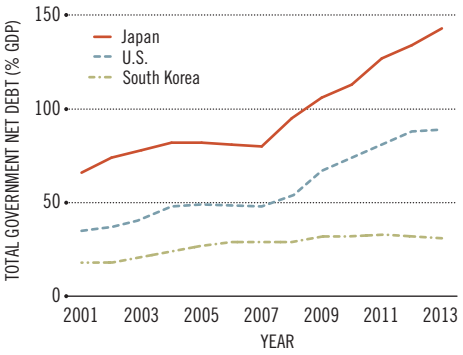
Inflation Comparison



SOURCE: World Bank.

FIGURE 3

Debt Comparison



SOURCE: International Monetary Fund.

working age (i.e., between 15 and 64) has increased at an annual rate of about 4 percent. In 2012, this ratio reached an astonishing 39 percent. In comparison, the ratio in the U.S. was 20 percent, and the ratio in South Korea was 16 percent. The aging population not only puts a dent in the labor force, but it also affects the hours worked by the working-age population, which must spend time taking care of the elderly. If this trend continues, the labor contribution to the growth of output will continue to be negative in the future.

The second potential problem is low inflation (and deflation). Figure 2 shows inflation in Japan, the U.S. and South Korea, measured as the average annual percentage change in the consumer price index for the last three years. Notice that the fall in inflation coincides with the slowdown in the output documented above. Inflation in Japan was about 3 percent in the beginning of the 1990s and fell to negative values by the end of the decade; it has never really recovered. The U.S. and South Korea also saw inflation fall until the early 2000s; however, the decline was substantially worse in Japan.

The most prevalent argument against deflation is that it induces households to hold cash, dampening consumption. Another argument is that deflation is the consequence of strong demand for the Japanese currency. This strong demand appreciates the Japanese exchange rate, and exporters lose their competitive edge in the international market. This may lead to less innovation, which in turn would affect TFP growth.

Finally, Japan has a very high public debt relative to GDP. Figure 3 shows the total government net debt of Japan, the U.S. and South Korea relative to GDP. [4] In Japan, the ratio surpassed 140 percent by 2013 after an annual growth rate of more than 6.4 percent since 2001. These levels of debt together with deflation put even more pressure on the government as the amount to be repaid grows even more in real terms.

"Abenomics"

In order to mitigate the ongoing low inflation, boost economic growth and reduce the public debt, Japanese Prime Minister Shinzo Abe launched a comprehensive package of initiatives in 2012. The first initiative is aimed at monetary easing, with the goal of increasing inflation to 2 percent. As part of this effort, the Bank of Japan pledged to increase the monetary base. In a speech last October in New York, the governor of the Bank of Japan, Haruhiko Kuroda, said that the monetary base in Japan would double in two years to the equivalent of $2.78 trillion—56 percent of nominal GDP. (For the U.S., the corresponding rate is about 20 percent.)[5]

The second initiative involves fiscal stimulus. The government is planning on spending more money on the infrastructure of the economy not only to help future economic growth but to create short-run domestic demand for Japanese firms. Since these policies will increase an already high public debt, the government is starting, among other things, to increase the consumption tax.

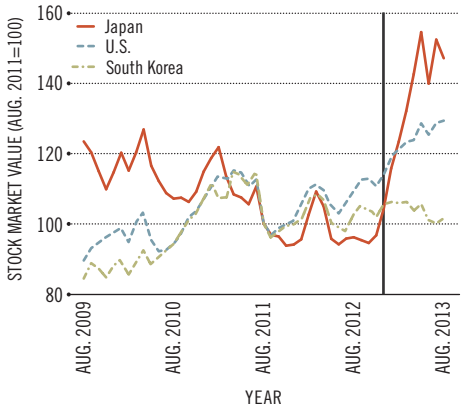
The final initiative of the so-called Abenomics pertains to structural reforms. The plan includes the deregulation of several industries. Measures will be taken to increase the labor force participation rate of the younger portion of the population. Trade partnerships within the region will be improved.

While fiscal stimulus and structural reforms are likely to take several years to produce an impact, we can already analyze the effects of the first initiative, monetary easing, by looking at the evolution of nominal variables in Japan. Using monthly data, we focused on three indicators. First, we looked at the total value of shares of publicly traded corporations in Japan. An increase in this indicator for Japan on the heels of the announcement of the new set of policies would signal a positive response in the market to Abenomics. That's exactly what happened, as shown in Figure 4. The vertical line in this figure (and in Figures 5 and 6) corresponds with the December 2012 announcement of the prime minister's initiatives. Figure 4 shows that after late 2012, the value of shares increased by a large percentage, with a slope much larger than in the U.S. and South Korea. Such an increase in the share prices can be attributed to exchange rate depreciation,[6] or just to better forecasts on profits.

Another way of measuring the impact of Abe's policies is to look at the exchange rate, showing the value of one U.S. dollar in terms

FIGURE 4

Stock Market Value Comparison

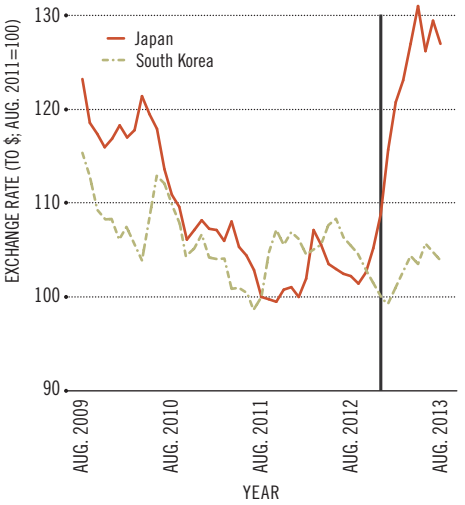


SOURCE: Organization for Economic Cooperation and Development's Main Economic Indicators.

NOTE: The vertical rule marks the December 2012 announcement by the Japanese prime minister of major initiatives to improve the economy.

FIGURE 5

Exchange Rate Comparison (against the U.S. Dollar)



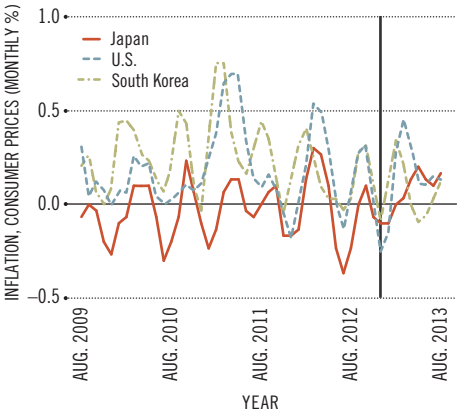
SOURCE: Board of Governors of the Federal Reserve System.

NOTE: The vertical rule marks the December 2012 announcement by the Japanese prime minister of major initiatives to improve the economy.

of the Japanese yen in recent years. A weaker yen relative to the dollar after the introduction of the prime minister's new policies would raise the exchange rate from 2013 on. Figure 5 shows the exchange rate for Japan and compares it with South Korea's exchange rate with the dollar. The value of the yen relative to the dollar decreased sharply in the post-Abenomics period.

FIGURE 6

Monthly Inflation Comparison



SOURCE: OECD's Main Economic Indicators.

NOTES: Inflation rates are the averages of the last three observations. The vertical rule marks the December 2012 announcement by the Japanese prime minister of major initiatives to improve the economy.

Did inflation increase? Figure 6 shows the monthly inflation pattern, measured as the average percentage increase in consumer prices for the last three months. Although the changes are very small, notice that monthly inflation started increasing after December 2012 and kept increasing even as the U.S. and South Korea experienced decreasing inflation.

In the short run, Abenomics is showing certain success with changing the course of nominal variables. To what extent the new policies will help the Japanese economy overcome more-structural and longer-term issues—such as the shrinking labor force and low growth of productivity—remains to be seen.

Japan's long-lasting issues with low inflation and low growth, and its recent attempts to overcome them, certainly provide an invaluable experiment for the U.S. economy. However, this article shows that during the past 20 years these two economies have had very different demographic trends that affected economic growth. Hence, the Japanese experience should be approached with caution for guiding U.S. policy.

Juan M. Sánchez is an economist and Emircan Yurdagul is a technical research associate, both at the Federal Reserve Bank of St. Louis. For more on Sánchez's work, see http://research.stlouisfed.org/econ/sanchez.

DATA NOTE

Output, capital, number of workers, average hours and human capital variables are from Penn World Table, version 8.0.[7] Total factor productivity (TFP) is calculated by dividing output by capital and labor, weighting each factor by its share in output. The age dependency ratio and yearly inflation data are provided by the World Bank. Total share prices and monthly consumer prices are from the Organization for Economic Cooperation and Development's Main Economic Indicators, and exchange rates are from the Board of Governors of the Federal Reserve System, all three accessible via FRED (Federal Reserve Economic Data), the main economic database of the Federal Reserve Bank of St. Louis. (See http://research.stlouisfed.org/fred2.) The source for total government net debt data is the International Monetary Fund, which is accessible through EconomyWatch.com.

ENDNOTES

1 For instance, in his 2010 paper, James Bullard, president of the Federal Reserve Bank of St. Louis, considered Japan's experiences as a potential scenario for the U.S.

2 The reason for studying 2007-2011 separately is to isolate the potential effects of the financial crisis, which started in 2007.

3 See Hayashi and Prescott, and Kobayashi for similar exercises.

4 To get the net debt, debt instruments such as monetary gold and SDRs (special drawing rights), currency and deposits, debt securities, loans, insurance, pensions, standardized guarantee schemes, and other accounts receivables are subtracted from the gross amount.

5 See Kuroda.

6 For instance, firms that make transactions mostly in U.S. dollars may see their (yen-denominated) share prices increase even if the profits (in terms of the U.S. dollars) are not expected to change.

7 For the Penn World Table, see Feenstra, Inklaar and Timmer.

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Around the World, Gender Gaps Ebb and Flow

By Silvio Contessi and Li Li

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Labor market dynamics are different for men and women. In the United States during the 2007-09 recession, men took a particularly hard hit and experienced a stronger recovery from the trough—two phenomena sometimes labeled "man-cession" and "he-covery." Although these differences appeared unusual during the crisis, recent research suggests that these patterns were by no means unique to the Great Recession but were similar to the labor market dynamics for men and women observed over the past 30 years.

But what about in other countries? This article compares these phenomena in more-recent years across advanced economies in the Organization for Economic Cooperation and Development (OECD) with a focus on the Group of Seven (G-7) countries: Canada, France, Germany, Italy, Japan, the U.K. and the U.S.

Labor Force Participation Rates

The labor force participation rate is defined as the ratio of the labor force to the working-age population.[1] As of 2011, the last year for which we have comparable data for all countries, the participation rates for men and women were 70.1 percent and 57.5 percent in the U.S. and 69.5 percent and 50.9 percent in the OECD.[2] The U.S. labor participation rate for women steadily increased after World War II but started to flatten out in the early 1990s; the rate for men constantly declined. In the OECD, for which data are available only since 1990, the trends were perhaps less marked but similar, in the sense that they showed a convergence between the two genders.

Naturally, there were differences across countries even within this relatively homogeneous group. Figure 1 compares the evolution of the gender gap in labor force participation—the difference of labor force participation rates for men and for women—in the U.S., OECD countries as a group and individual G-7 countries from 1991 to 2011.

Two facts stand out: 1) in the long run, female labor participation increased in all countries; 2) while these countries shared a similar trend, there were considerable differences. The U.K., the U.S., France and Canada had relatively smaller gender gaps, which became smaller over time. Germany, Italy and the U.K. showed the largest improvements in the gap, while Japan's was relatively static. These diverse changes depended both on initial conditions (some countries had small gender gaps at the beginning of this period) and on labor market incentives, human capital accumulation and cultural attitudes.

Unemployment Rates

What about unemployment rates? Here, we considered the difference between the unemployment rate for male and female workers since 2007 and its relationship with labor force participation.

In the U.S., both genders experienced severe labor market adjustments, with a contraction of total labor participation and a sharp increase in unemployment rates. The contraction of total labor participation is due mostly to the fact that the male participation rate dropped by 1.1 percent, while the female participation rate remained stable, two facts consistent with long-term trends. The larger number of jobs lost by men in 2008-09 quickly caused the male unemployment rate to peak at 11.2 percent in October 2009, a stark increase of 6.4 percentage points relative to November 2007, while the female unemployment rate increased less, from 4.6 percent to 8.7 percent (a difference of 4.1 percentage points) over the same period. Finally, the recovery brought faster job growth for men than for women.

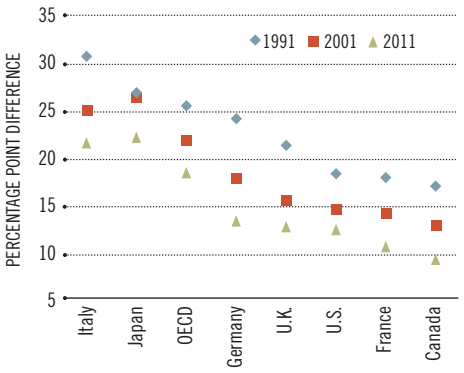
The initial widening followed by a narrowing of the gender unemployment gap is not unique to the recent recession but a more general feature of the labor market in the U.S. in recession times.

What happened in other countries during the same period? OECD and G-7 countries showed similar labor market adjustments. Figure 2 shows the unemployment rate differences between men and women by country.[3] In all countries, the men's unemployment rate increased greater than the women's, which is reflected by the upward trend in the unemployment gap during the recession. In other words, men were impacted more severely during the recession than women. Afterward, some countries rebounded while others maintained their relatively large gaps, particularly the countries that had a slow recovery, if any.

Why are changes in the unemployment rate different for men and women during recessions? The roles played by men and women in the labor force help to explain these facts. Theories of brain-based technological change suggest that men and women are not perfect substitutes in all occupations. Although men are endowed with the same brain abilities (used for mental labor) as women are, men have the advantage in brawn abilities (used for physical labor). When technological change is biased in favor of brain-intensive activity—as it arguably has been over the past 50 years—and labor market institutions favor entry of women into the labor force, there tend to be more women in brain-intensive occupations and industries in which women can specialize according to their comparative advantage. Although this

FIGURE 1

Gender Gap in Labor Force Participation, 1991-2011

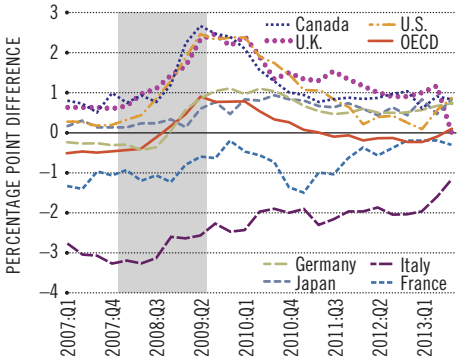


SOURCE: World Bank.

NOTE: The gap in labor force participation rates between men and women has been shrinking, in general. In Italy, for example, the participation rate was more than 30 percentage points higher for men than for women in 1991; by 2011, that gap had shrunk by about 10 percentage points.

FIGURE 2

Gender Gap in Unemployment Rate by Country



SOURCE: Organization for Economic Cooperation and Development (OECD).

NOTE: The data points correspond to the difference in men's unemployment rate and women's unemployment rate in each country (men's minus women's). Any line above the 0 line indicates that men had a higher unemployment rate; below 0 indicates that women had a higher unemployment rate. For example, in Canada in 2009:Q2, the men's unemployment rate was 2.7 percentage points higher than the women's. In Italy in 2007:Q4, the women's rate was more than 3 percentage points higher than the men's. The gray bar denotes the latest recession.

bias did contribute to increased female labor participation, it also sustained a large heterogeneity in female-to-male worker ratios across occupations and sectors, as different sectors mix various occupations differently.

In the U.S., the male labor force was hit harder during the recent recession because more jobs were lost in occupations and sectors that traditionally employ more men and are cyclically sensitive, particularly manufacturing and construction.[4] Women, on the other hand, tend to occupy a large share of employment in industries that are largely resistant to downturns, industries such as education and health care. This explains a large part of the difference between the unemployment rates of men and women in the U.S. since 2007 and also in other countries. Within the G-7, the countries that had the smallest gender participation gaps also experienced larger unemployment increases for men than for women because the two genders are more likely to work in industries in which they can exploit their comparative advantage.

English-speaking countries (the U.K., the U.S. and Canada) and, to a lesser extent, France and Germany, experienced a simultaneous increase in unemployment that affected men disproportionately. But after the peak of the crisis, these differences were at least partly reduced. In France, the unemployment rate has been consistently larger for women, though there was some cyclical variation consistent with what was happening in the other countries. In Italy and Japan, we did not observe the inverted U-shaped curve of the unemployment rate gender gap during recessions, perhaps because in these countries the relatively low participation rate of women did not allow them to specialize in relatively acyclical industries (such as health care and education) as much as women did in other countries.

Why is this cross-country evidence important? Some of the cross-country differences in unemployment rates are explained by differences in women's unemployment rate, and this is affected by labor force participation. Therefore, policies that affect female labor participation (such as maternity leave regulation or the marginal taxation of second earners) affect the way women select into certain occupations and sectors, which in turn affects the unemployment rates of the two genders. Although these policies tend to reflect societal and cultural preferences, in several countries there may be room for changes. More generally, economic theory and recent evidence suggest that allowing specialization according to comparative advantage by gender may bring quantitatively important welfare gains, as it has in the U.S. since the 1960s. Ω

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ENDNOTES

[1] Although the working-age population is considered to be 16 and older in the U.S., 15 and older is used in many other countries and is used by the OECD. Therefore, 15 was used as the cutoff for all countries' data in this article so that like comparisons could be made.

[2] The OECD is made up of 34 countries.

[3] The unemployment rate for men minus the unemployment rate for women.

[4] Data from the Bureau of Labor Statistics (BLS) show that in 2007 the female labor share in the manufacturing, transportation and utilities, mining, and construction sectors was about 30 percent, 24.5 percent, 13.7 percent and 9.4 percent, respectively. Female labor shares in other sectors are above 40 percent. The total employment of these four sectors accounts for about one-third of total nonfarm employment, and the drop in employment in these four sectors during the recent recession was significant: 14.7 percent, 6.8 percent, 7.4 percent and 19.8 percent, respectively.

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Understanding the Motives and Constraints That Lead People to Risky Occupations

By Amanda M. Michaud and David G. Wiczer

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Some occupations take a heavier toll on workers' bodies than others. For example, a production-line worker's back endures considerably more stress than that of an office worker in an ergonomic chair. Such differences in activities at work over a career culminate in striking differences in disability outcomes for older Americans. A group of occupations representing about one-third of the labor force has twice the risk of disability that others have. People in these occupations are demographically different from the rest of the population. They also earn less and save less than other people do. These differences should not be overlooked in discussing the merits of Social Security Disability Insurance (SSDI), a public insurance program that is designed to provide income to those unable to work.

With 8.9 million people receiving SSDI payments[1] in October 2013, there justifiably have been concern and discussion about the program's size, almost 6 percent of the size of the labor force. Many economists have discussed reasons for the program's size and recent expansion[2]—the number receiving benefits grew by more than 50 percent in the past 10 years—but few have studied the connection between the type of work one performs and the risk one faces of a physically limiting disability. This is an important aspect that should probably be part of any discussion about changing the disability insurance program. It's too late for old people on disability to change their career choice, but any reform of the disability policy may affect young people still choosing an occupation. Policymakers also need to be aware of the incentives—intended or not—in the program, both as it stands now and as it might be restructured in the future.

Receipt of disability insurance depends both on health and vocational factors. To measure the connection between occupation and health, we looked at the limitations to Activities of Daily Living (ADL), such as dressing and walking across a room. The data are from the University of Michigan Health and Retirement Study,[3] which surveys about 15,000 people over the age of 50 about their health, income, savings and personal characteristics. Workers' jobs are categorized into 17 occupations, and these survey respondents also report their primary occupation over their lifetime.[4]

Disability across Occupations

Table 1 shows a sample of occupations and their disability risk. To construct these estimates, we grouped workers by their primary lifetime occupation, then computed the fraction who reported some difficulty with one of the ADLs during their working life before 65. Occupations' disability rates were disparate and bimodal; a large group had very low rates, while those in another large group were more than twice as likely to have experienced some disability. The picture looked quite similar when we assigned each occupation a score based on how many and how severe were the disabilities, rather than just tallying any incidence.

What are these "high-risk" occupations, representing about one-third of the labor force? In the top tail, with rates 175 percent or more of the median, were the heavily physical occupations, as expected. The largest group was machine operators. Those who work with industrial machines and those who work with transportation equipment, such as truck drivers, were about equally at risk and comprised 42 percent of the population in high-risk occupations. Workers in construction, extraction and agriculture accounted for an additional 22 percent.

TABLE 1

A Sample of Risky and Safe Occupations

Occupation	Percent with an ADL Limitation
Construction and Extraction	10.9
Machine Operators	10.7
Farming, Forestry, Fishing	10.6
Transport Operators	9.9
Administration	5.9
Sales	5.8
Management	4.3
Professionals	3.6

SOURCES: University of Michigan Health and Retirement Study and authors' calculations.

NOTE: The percentages refer to those with an Activities of Daily Living (ADL) limitation, such as trouble in dressing or walking across the room. The risky occupations have roughly twice the probability of disability before the age of 65.

Workers from these occupations were, understandably, much more likely to apply for and receive SSDI. In our sample, they accounted for about 46 percent of the recipients of SSDI, despite being only about 33 percent of the population. To put this another way, 21 percent of workers in the riskier occupations received benefits from SSDI, whereas only 12 percent from the rest of the occupations did.[5]

Different Demographics

Workers in the riskier occupations also differed in demographic characteristics from those in other occupations. By analyzing these tendencies, we might gain some insights as to why some people choose riskier occupations and some choose safer ones. Table 2 outlines some crucial differences.

For one, those in riskier occupations were less-educated than those in safer occupations. The former were half as likely to have a high school diploma and less than half as likely to have any college experience. Yet, workers in riskier occupations were paid relatively well. Though the average earnings were lower among this group, that was partly an effect of educational differences. When we controlled for their education and other demographics,[6] they made just about the same as their counterparts and, compared with workers with similar education and demographic characteristics, workers in risky occupations made $5,000 more a year.

The relatively high pay in riskier occupations is consistent with the classical theory of "compensating differentials."[7] By this theory, wages should be higher than otherwise expected as compensation for the potential of physical harm. Assuming some additional risk of disability might be one way for less-educated workers to increase their salaries.

Those in riskier occupations also had lower savings than those in safer occupations. This observation holds when we controlled for earnings and demographics via a regression, excluded housing and pension wealth or used the wealth-to-earnings ratio instead of raw wealth. From the perspective of a simple theory of precautionary savings, this was puzzling: If workers in certain occupations faced a much higher risk of disability, with its corresponding loss of income and increased expenses, we would expect them to save a larger fraction of their income. Economists sometimes explain differences in saving behavior by differences in time preferences: If some people put a relatively higher value on their current welfare, they will save less of their income than those with more interest in future rewards. Interestingly, this same difference in preferences might explain why some people take on riskier jobs, in which they trade higher pay today for potentially greater problems later in life. If these differences exist, the compensating differential could actually be lower than otherwise because a person who chooses a risky occupation is less concerned with future injury and, hence, demands less compensation.

Understanding the motives and constraints that push some people into riskier occupations is quite important for the design and assessment of the SSDI program. People's underlying differences may be enough to allow them to efficiently choose their occupations. On the other hand, SSDI transfers money to riskier occupations, and this may alter people's calculus when they decide. To what extent does disability insurance encourage people to work in riskier occupations, and is that desirable? Machine operators incur considerable bodily risk, but the products of their work are vital. Although the rolls of those receiving disability benefits have been rising quickly, we do not have a good benchmark for what should be their optimal size, nor do we know the effects of the availability of disability insurance on individuals in the job market. Ω

TABLE 2

Characteristics of Those Who Work in Risky and Safe Jobs

	Risky	Safe
Male	60%	43%
No High School	47%	23%
Some College	18%	48%
Earnings	$25,000	$32,000
Residual Earnings	$36,516	$38,346
Total Household Wealth	$122,000	$169,000
Liquid Household Wealth	$11,000	$25,000
Ratio of Household Wealth to Earnings	1.23	1.40
Ratio of Household Wealth to Residual Earnings	0.84	1.44

SOURCES: University of Michigan Health and Retirement Study and authors' calculations.

NOTE: To obtain residual earnings, we used a regression to adjust earnings for educational and demographic differences between safer and riskier occupations. Total household wealth is the total value of all assets owned by the household. Liquid household wealth excludes illiquid assets such as housing and pensions but includes liquid assets such as cash, savings and stocks. The ratio of household wealth to earnings is the ratio of household assets to raw income. Household wealth to residual earnings is the ratio of household assets to adjusted income. A higher ratio indicates that a larger fraction of income is saved. Wealth and earnings variables are medians.

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ENDNOTES

1 Data on coverage come from the Social Security Administration. See www.ssa.gov/OACT/STATS/dibStat.html.
2 See, for example, Autor and Duggan; Golosov and Tsyvinski.
3 We used the extract with contributions from the RAND Center for the Study of Aging, available at http://hrsonline.isr.umich.edu/modules/meta/rand/index.html.
4 Respondents are asked about their longest-held occupation over their lifetime.
5 These rates of receiving SSDI in our sample are a bit high. Autor and Duggan, using administrative Social Security data, calculate that 10.9 percent of men and 8.3 percent of women between the ages of 55 and 64 are enrolled in SSDI. However, rather than a single-year cross section, we looked at whether an individual ever receives benefits after the age of 50, which should increase the figure somewhat.
6 To control for this variation, we took residuals from a regression on education level, a quadratic in work life, gender and self-employment. We regressed separately for respondents and their spouses for each wave of data.
7 See Rosen.

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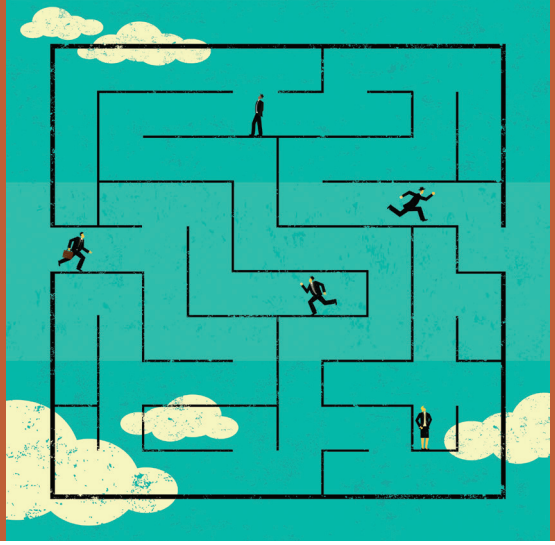
Not Everyone Who Joins the Ranks of the Employed Was "Unemployed"

By Maria Canon, Marianna Kudlyak and Marisa Reed



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The labor market is comprised of employed and unemployed workers. The former have jobs. The latter do not but are able to work and are actively seeking jobs. In contrast, labor market nonparticipants are neither working nor searching for jobs. Transitions into and out of labor force nonparticipation have been noted in recent studies to aid understanding of labor market dynamics.[1] In particular, the flows between nonparticipation and *unemployment* have attracted attention in explaining the dynamics of unemployment during the 2007-09 recession and its aftermath. However, the flows between nonparticipation and *employment* have received considerably less attention.

The number of workers transitioning from nonparticipation to employment is substantial—almost 3.7 million each month on average between 2003 and 2013, according to the Bureau of Labor Statistics.[2] Given this magnitude, this flow's contribution to understanding labor market dynamics is nontrivial.

For this article, we studied the behavior of nonparticipation-to-employment (N-E) flows from January 2003 to August 2013. We first compared aggregate flows from nonparticipation to employment (N-E) with the flows from unemployment to employment (U-E). Importantly, we found that the former was, on average, higher than the latter by a factor of 1.6, that is, N-E flows were on average 60 percent higher than U-E flows.

We then examined the ratio of these flows by occupation and industry. We found that there existed substantial heterogeneity by occupation and industry. For example, workers in services, management and professional occupations were more likely to come from nonparticipation than from unemployment; conversely, the unemployed were more likely to end up with jobs in physically demanding occupations, such as construction, than were the nonparticipants.

Analysis

The gross flow from N-E is the number of individuals who are not in the labor force in one month and are employed in the following month. These people are bypassing the unemployment status. Consequently, nonparticipating workers who become employed are not receiving unemployment benefits or actively searching for jobs in the month preceding the start of their jobs.

For this analysis, we used Current Population Survey (CPS) data. We matched individuals in two consecutive months. To calculate the N-E gross flow, we counted employed workers in the current month who were out of the labor force in the previous month. We did the same for the U-E gross flow, which counts currently employed workers who were unemployed in the previous month.

We found that the ratio of N-E to U-E aggregate flows declined during the 2007-09 recession.[3] (See Figure 1.) The figure also shows that the ratio did not fall below 1, indicating that newly employed workers are more likely to come from nonparticipation than from unemployment even in a slack labor market. (Conversely, a reading below 1 would indicate that newly employed workers are more likely to come from the ranks of the unemployed than from the ranks of labor force nonparticipants.)

Next, we analyzed the ratio of N-E flows to U-E flows by occupation and industry. (See Figures 2 and 3.) The differences were substantial. Although there was less pronounced cyclicality within each occupation and industry, the ratio of N-E to U-E consistently fell between the end of 2007 and mid-2009 across all sectors.

The ratios within the major occupations formed two distinct patterns. N-E flows were larger in services, management and professional occupations. For example, the average ratio of professional and related occupations was 2.32. This ratio indicates that more than twice as many employed workers in these occupations came from nonparticipation than from unemployment. Physically intensive occupations, such as construction workers and miners, showed the opposite pattern. Workers in construction had an average ratio of 0.68 and theirs was the only occupation to have an average lower than 1, indicating that new construction workers were more likely to come from unemployment than from nonparticipation. This suggests that recent job experience may be more important for these types of jobs.

Heterogeneity also existed across industries. For example, manufacturing had an average monthly ratio of 1.19, while the educational and health services sector had an average monthly ratio of 2.51. The industries with higher ratios had more recent hires from nonparticipation, which could be partly driven by the hiring of recent graduates. Compared with the occupation ratios, the industry ratios of N-E to U-E were more volatile. This volatility shows that there were more differences between their reactions to the same economic conditions. For example, hiring in mining changed more dramatically than in professional and business services, which had a more constant ratio of N-E to U-E flows. This difference suggests that industries had different levels of sensitivity to changes in the economy.

Implications

First, our findings imply that the transitions from nonparticipation to jobs are important in understanding the bigger question of how nonemployed workers find jobs. In particular, the findings put the spotlight on the question of whether there is a conceptual difference between the two nonemployment statuses—unemployment and nonparticipation—in the CPS data.

In the labor literature, there is currently no widely accepted definition of the role of nonparticipation in labor market dynamics. For example, a study by economists Olivier Blanchard and Peter Diamond and one by David Andolfatto and Paul Gomme do not distinguish between unemployment and nonparticipation as separate labor market states in their models. They studied the gross flow as calculated by nonemployment-to-employment, where nonemployment is the sum of nonparticipating and unemployed workers. If nonemployment flows told the entire story of individuals joining employment, we would expect to see a constant ratio of N-E to U-E flows, rather than one that changes with the business cycle.

Because the ratio of N-E flows to U-E flows changes, it is likely that nonparticipation and unemployment describe different populations of nonemployed individuals who react differently to labor market conditions. Another study documented different subgroups coming from nonparticipating workers.[4] The authors suggested the existence of a "waiting" group, whose members are more likely than the rest of the nonparticipants to take a job if wages and conditions are satisfactory. The people in the waiting group are, thus, similar to unemployed workers, though the former do not actively search for work. This difference between nonparticipating workers suggests a high variability of N-E flows in response to business conditions, which is consistent with our findings of a procyclical (moving in the same direction as the economy) pattern in the N-E to U-E ratio in the CPS data.

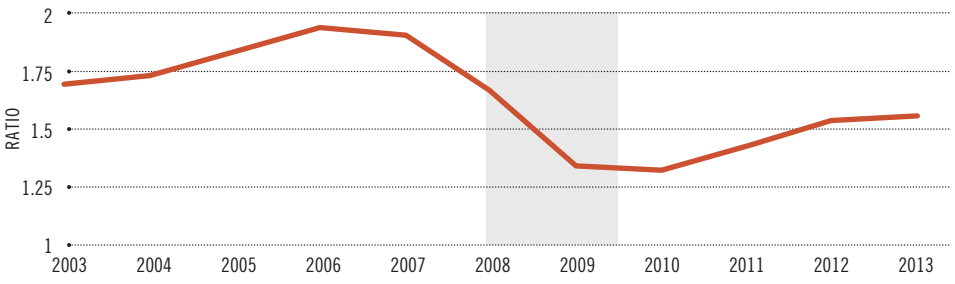
Second, our findings uncovered heterogeneity by occupation and industry; this difference creates challenges for studies of mismatch between vacancies and job seekers in the economy. When these studies define job seekers, they typically consider only unemployed workers.[5] If the ratio of N-E transitions relative to U-E transitions were the same across all sectors, then omitting the job seekers within the nonparticipating population would not substantially affect the calculation of mismatch indexes. However, since the ratios differ by sector, the difference between indexes using all job seekers and those using only unemployment might be significant.

Consequently, understanding the transitions into jobs from unemployment and from

continued on Page 16

FIGURE 1

Hires from Nonparticipation Relative to Hires from Unemployment

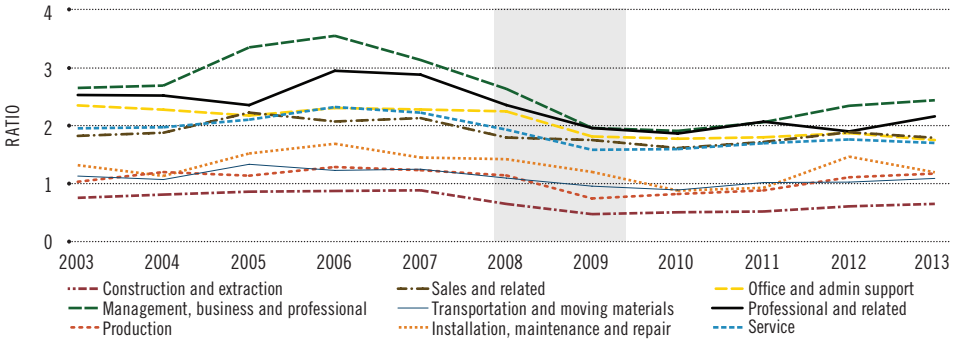


SOURCE: Current Population Survey (CPS).

NOTE: The figure shows the ratio of N-E (nonparticipation to employment) to U-E (unemployment to employment). The data are annual averages of monthly series constructed from matched month-to-month CPS data, January 2003-August 2013. To calculate the N-E gross flow, we counted employed workers in the current month who were out of the labor force in the previous month. We did the same for the U-E gross flow, which counts currently employed workers who were unemployed in the previous month. The gray bar corresponds to a recession period from the peak to the trough in the business cycle.

FIGURE 2

Hires from Nonparticipation Relative to Hires from Unemployment, by Major Occupation

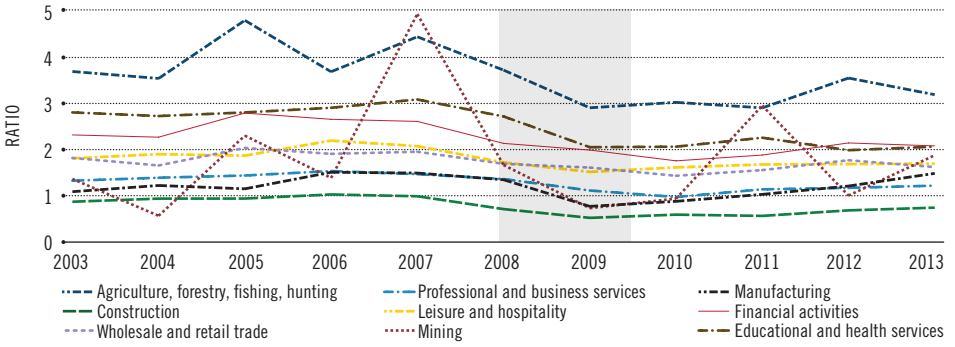


SOURCE: Current Population Survey.

NOTE: See note from Figure 1. The lines display hires from nonparticipation (N-E) divided by hires from unemployment (U-E) within selected occupations. All major occupations are included except armed forces and farming, fishing, and forestry.

FIGURE 3

Hires from Nonparticipation Relative to Hires from Unemployment, by Major Industry



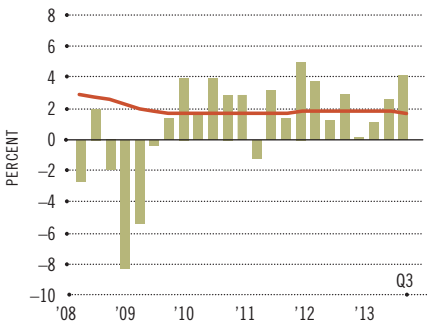
SOURCE: Current Population Survey.

NOTE: See note from Figure 1. The lines display hires from nonparticipation (N-E) divided by hires from unemployment (U-E) within selected major industries.

ECONOMY AT A GLANCE

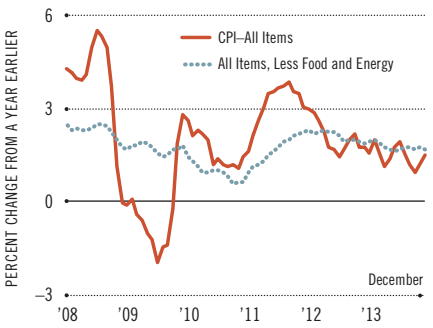
Eleven more charts are available on the web version of this issue. Among the areas they cover are agriculture, commercial banking, housing permits, income and jobs. Much of the data are specific to the Eighth District. To see these charts, go to www.stlouisfed.org/economyataglance.

REAL GDP GROWTH

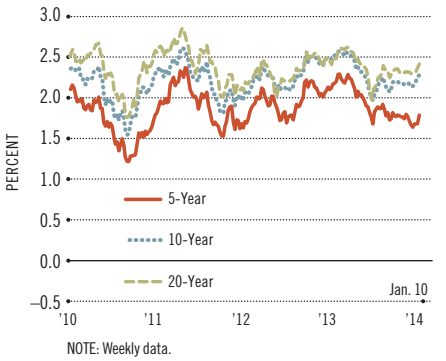


NOTE: Each bar is a one-quarter growth rate (annualized); the red line is the 10-year growth rate.

CONSUMER PRICE INDEX (CPI)

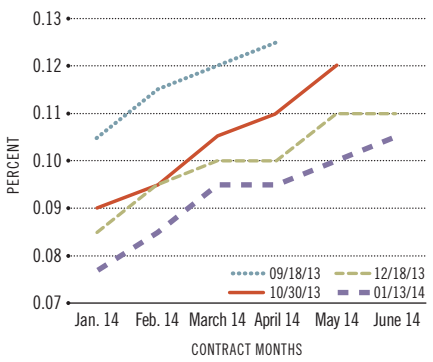


INFLATION-INDEXED TREASURY YIELD SPREADS

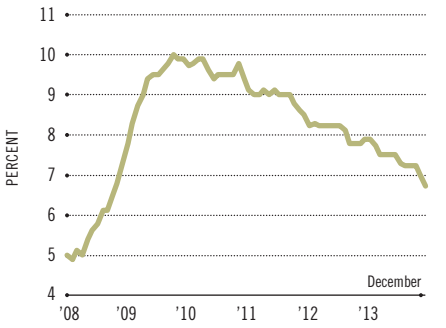


NOTE: Weekly data.

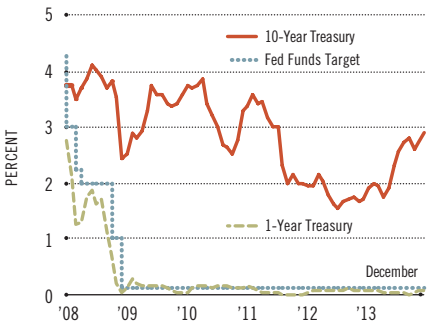
RATES ON FEDERAL FUNDS FUTURES ON SELECTED DATES



CIVILIAN UNEMPLOYMENT RATE

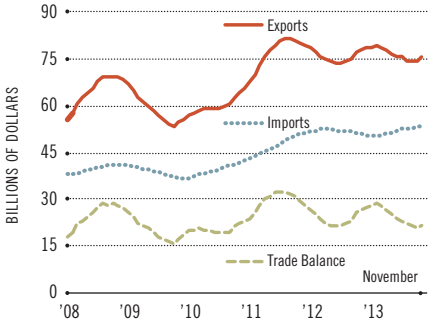


INTEREST RATES



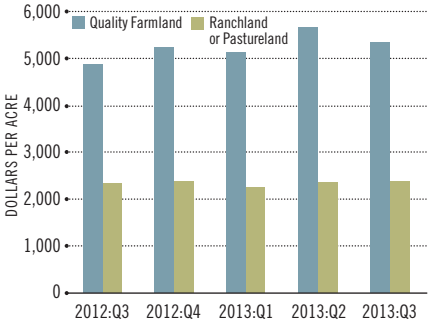
NOTE: On Dec. 16, 2008, the FOMC set a target range for the federal funds rate of 0 to 0.25 percent. The observations plotted since then are the midpoint of the range (0.125 percent).

U.S. AGRICULTURAL TRADE



NOTE: Data are aggregated over the past 12 months.

AVERAGE LAND VALUES ACROSS THE EIGHTH DISTRICT



SOURCE: *Agricultural Finance Monitor.*

continued from Page 15

nonparticipation and the differences across sectors will help reveal trends in employment and will help explain how the labor market changes in recessions and recoveries. Ω

Maria Canon is an economist at the Federal Reserve Bank of St. Louis. Marianna Kudlyak is an economist and Marisa Reed is a research associate, both at the Federal Reserve Bank of Richmond. For more on Canon's work, see http://research.stlouisfed.org/econ/canon.

ENDNOTES

[1] See, for example, Diamond, as well as Kudlyak and Schwartzman. See also references to recent works on the developments in labor force participation in Canon, Debbaut and Kudlyak.
[2] Data available at www.bls.gov/webapps/legacy/cpsflowstab.htm.
[3] For additional analysis, see Canon, Kudlyak and Reed.
[4] See Jones and Riddell.
[5] See Canon, Chen and Marifian.

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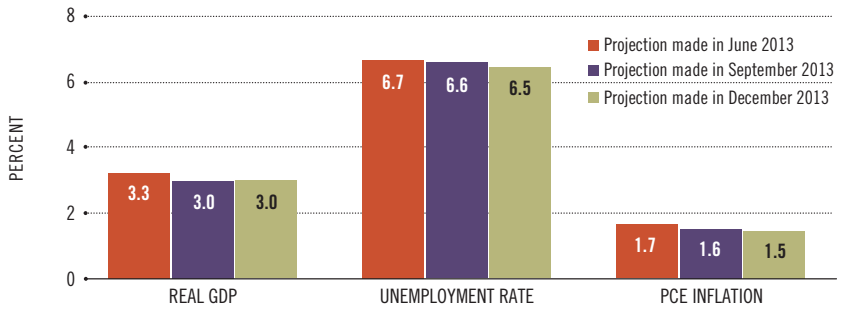
A Spring-Loaded Economy?

By Kevin L. Kliesen

2014 could be a watershed year for the U.S. economy. If the headwinds that have plagued the economy the past few years finally begin to wane, as many forecasters and financial market participants expect, then the economy could grow somewhere close to 3 percent. If so, real GDP growth in 2014 would be the best since 2005—and it would also likely generate continued improvement in labor market conditions. This outcome, though, depends crucially on the Fed's ability to keep inflation and inflation expectations stable at a time when the growth of the monetary base was on pace to increase by between 40 and 50 percent in 2013.

A Timeline of the FOMC's Economic Projections for 2014



NOTE: Projections are the midpoints of the central tendencies. The projections for real GDP and inflation are for the percentage change from the fourth quarter of 2013 to the fourth quarter of 2014. Inflation is measured by the personal consumption expenditures chain-price index. The projection for the unemployment rate in 2014 is for the average of the monthly rates in the fourth quarter of 2014.

A Look Back at 2013

A year ago, the consensus of Blue Chip forecasters was that U.S. real gross domestic product (GDP) would increase by 2.2 percent in 2013, that headline consumer price index (CPI) inflation would be 1.9 percent and that the unemployment rate would average 7.5 percent during the fourth quarter of 2013.[1] Although fourth-quarter GDP data will not be published until late January 2014, some data in December has surprised to the upside. For example, the unemployment rate dropped below 7 percent in December, and some forecasters have raised their estimate of real GDP growth in the fourth quarter above 3 percent. However, forecasters did not foresee the sharp slowing in CPI inflation, which may end up about 1.25 percent in 2013.

After several years of forecasts that were generally too optimistic, the economy's actual performance was pretty close to expectations. Still, the economy faced several headwinds last year that have imparted a drag on growth.

Key Headwinds in 2013

Despite an extremely accommodative monetary policy and robust gains in housing construction and home sales, the economy struggled to build consistent momentum in 2013. Although the relatively weak growth of real GDP reflected many factors, three stood out. First, the pace of real personal consumption expenditures (PCE) steadily downshifted throughout the year. Although consumer outlays on durable goods like autos and household furnishings have been strong, expenditures on nondurables and services—together comprising nearly 90 percent of household expenditures—have been especially weak. This outcome is perhaps more puzzling considering the huge increase in household wealth during this business expansion. The slowdown in consumer spending in 2013 could have partly reflected the payroll tax increase in January 2013, which helped to reduce real after-tax income.

A second key reason for the economy's weaker-than-expected performance in 2013 was the exceedingly weak growth of real nonresidential (business) fixed investment. Through the first three quarters of 2013, real business fixed investment (BFI) in equipment and structures had only increased at a 1.5 percent annual rate. That puts it on track to be the weakest since 1986, excluding recession years. This development is all the more confusing given the backdrop of healthy profit margins and relatively low levels of financial market stress. Anecdotal evidence regularly reported in the minutes of the Federal Open Market Committee (FOMC) meetings suggests that many firms have been reluctant to commit to large capital outlays in the face of higher-than-usual amounts of uncertainty about economic policy or the growth of the economy.

A third reason for the relatively weak growth in real GDP has been the retrenchment in real federal government expenditures; those cutbacks reduced real GDP growth by an average of 0.3 percentage points per quarter for the first three quarters of 2013.

The Outlook for 2014

FOMC participants see in the coming year faster growth of real GDP, further declines in the unemployment rate and continued modest inflation. (See chart.) This outcome seems reasonable given the following developments. First, real after-tax wages and salaries have started to increase from year-earlier levels. Further gains, bolstered by continued solid employment growth and stable gasoline prices, will help boost consumer spending, which appears to have been strong in the fourth quarter. Second, state and local finances have improved, and their expenditures are on pace to increase in 2013 for the first time in four years. Third, commercial and industrial construction activity is beginning to pick up, and the housing recovery shows few signs of faltering. Fourth, an improving global economy, continued healthy profit margins and waning levels of uncertainty should begin to boost business capital spending. Finally, continued confidence in the Fed's ability to manage its exit from unconventional policies will help to keep financial markets stable and, more importantly, inflation and inflation expectations in check. This outcome will be a further boost to business and household confidence. Ω

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.

ENDNOTE

[1] The forecasts for real GDP growth and CPI inflation are for the period from the fourth quarter of 2012 to the fourth quarter of 2013.

Engines of Growth Vary in Four Largest Cities

By Maria A. Arias and Charles S. Gascon

The Eighth Federal Reserve District is composed of four zones, each of which is centered around one of the four main cities: Little Rock, Louisville, Memphis and St. Louis.

Since the recession officially ended in June 2009, the U.S. economy has experienced steady growth in jobs at a pace of about 1.5 percent per year. However, the recovery has not been uniform across sectors of the economy or across regions. Take, for example, the four major metropolitan statistical areas (MSAs) in the Eighth District: St. Louis; Little Rock, Ark.; Louisville, Ky.; and Memphis, Tenn. Employment growth in the Louisville MSA has been the fastest, with the manufacturing sector contributing the most jobs. Growth in the three other MSAs has been slightly below the national rate. Which sectors are driving the recoveries in these four MSAs? An examination of common performance metrics helps to identify them.

Two Important Metrics

One of the most popular metrics used by economists to identify key industries within a region is location quotients (LQs) for each sector. An LQ is a way to measure how concentrated an MSA's employment is within a sector relative to the nation's. It is calculated by dividing the share of employment in a given sector within a region by the sector's share of national employment over a given period.[1] If an LQ has a value of 1, the regional and national shares are the same; values less than 1 indicate the region employs relatively fewer workers; values greater than 1 indicate the region employs relatively more workers than the nation does. For example, the LQ for Memphis' transportation and utilities sector is 3.2, indicating that Memphis employs 3.2 times as many workers in this sector than the national average. In this case, 10.6 percent of Memphis' workers are employed in the transportation and utilities sector, compared with the national average of 3.3 percent.

A second metric is the difference between an industry's employment growth rate regionally and its growth rate nationally. Just as we compare overall growth of a region to a national benchmark, comparing the regional growth of industries to a national benchmark can help identify the sectors generating local growth or leading a national trend. For example, in the St. Louis MSA, employment growth in the financial activities sector has increased by about 9.6 percent since the recession ended; nationally, employment in this sector has increased by 1.5 percent, for a relative growth rate 8.1 percentage points above the national average. Relatively stronger employment growth may be an indication that: (1) factors specific to the region are generating growth in this sector; (2) major employers are hiring and/or relocating workers to the region; or (3) firms belonging to that sector are expanding in the region.

Combining these two metrics is one way to identify the sectors that have been important to a region's growth. The figure plots the industry LQs for each metro area on the horizontal axis and the relative growth rate for the industry on the vertical axis. One way to interpret the figure is to cluster the industries based on their quadrant in the graph.

Industries in the upper-left quadrant employ relatively fewer workers regionally compared with the nation, but the growth rates of these industries have been faster than their national averages. These sectors may be considered "emerging" industries for the region. In Memphis, the education and health services sector is one of these industries; the sector has an LQ of 0.9 and a growth rate that is 3 percentage points higher than the national rate.

Industries in the bottom-left quadrant employ relatively fewer workers regionally and are growing at slower rates than the corresponding industries at the national level; these may be considered "noncompetitive" sectors.

The industries in the bottom-right quadrant of the graph employ a relatively larger share of workers but are growing slower than the national average. These industries may have significant importance to the region. For example, in Memphis, the transportation sector stands out among the rest, with an LQ of more than 3 and a growth rate just below the national rate.

The upper-right quadrant is the most likely place for a region's important growth industries to be located. These sectors employ a relatively larger share of workers than the national average, and their employment growth rates exceed the national rates. In St. Louis, the financial activities sector stands out in the graph. The sector employs about 6.6 percent of the region's workers, versus 5.8 percent nationally (with an LQ of 1.1), and the relative growth rate was more than 8 percentage points higher than the national rate. The education and health services sector is also in the upper-right quadrant, with an LQ of 1.2 and a growth rate that is 1.7 percentage points higher than the national average.

In Louisville, the manufacturing and wholesale trade sectors are in the upper-right quadrant. Louisville's manufacturing sector has grown 13.1 percentage points faster than the national rate, which is five times as fast (16 percent locally versus 2.9 percent nationally).

Little Rock, as the state capital, employs a relatively larger share of state government workers, with an LQ of 2.5 and the relative growth rate of 0.7 percentage points. Unlike in the other MSAs, all three levels of government employment in Little Rock (federal, state and local) have relative growth rates above zero.

Another metric, the standard deviation of each region's LQs, is used to determine the relative level of specialization. By this metric, the St. Louis MSA may be considered the most diversified across sectors: Its largest LQ is 1.2 and its smallest is 0.3, with a standard deviation of 0.2. Memphis may be the most specialized of the four MSAs, with LQs ranging from 3.2 to 0.5.

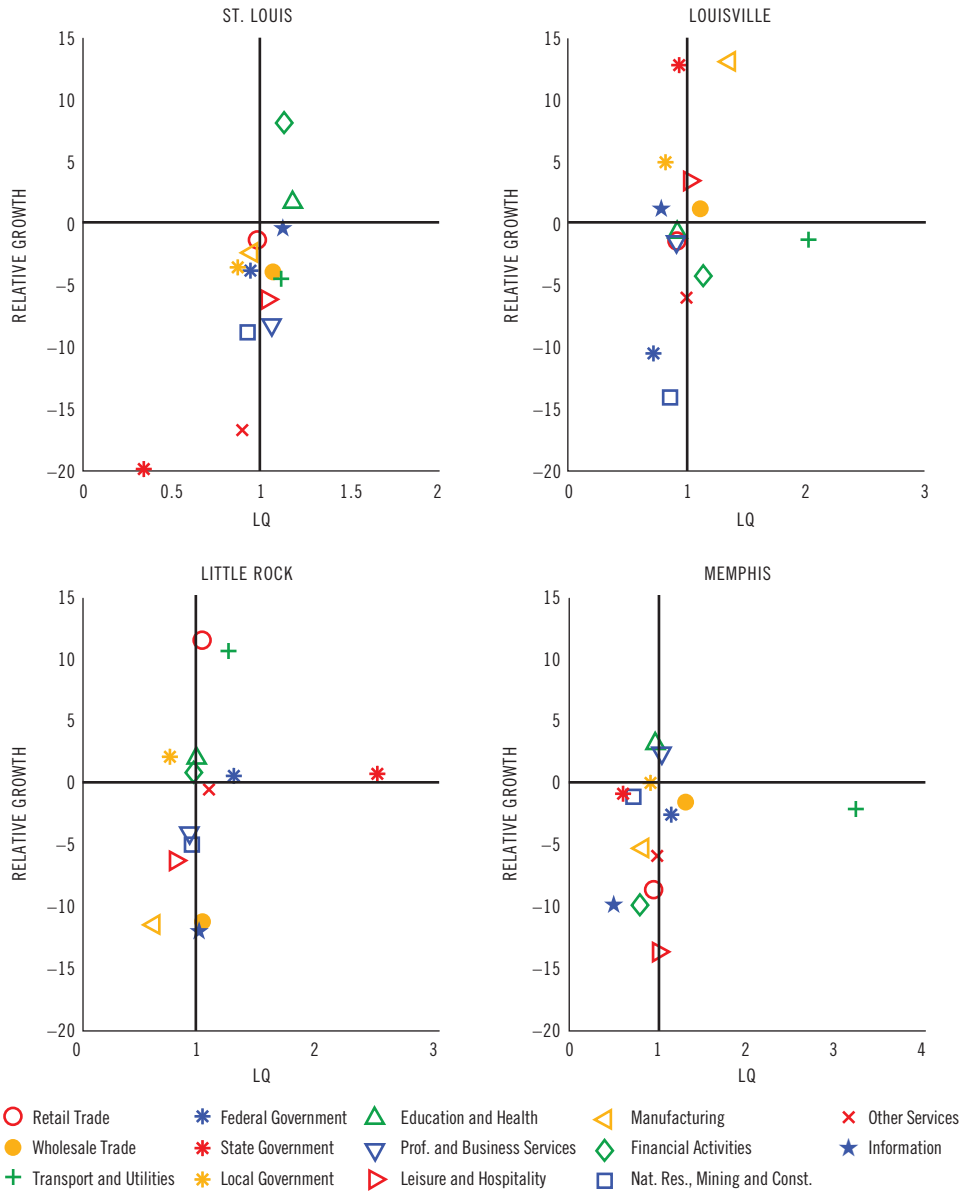
Metrics beyond Employment

While most regional analysis tends to focus on employment metrics—in part due to their availability, long history and timely release—many other metrics may be used. For example, since 2007 the Bureau of Economic Analysis has reported gross metropolitan product (GMP) and has disaggregated the data by sector. These data reinforce some of the trends noted above: Between 2009 and 2012, financial activities in St. Louis were the largest reported contributor to GMP growth (0.64 percentage points of the total 3.62 percent growth). Over the same period in Memphis, the transportation and utilities sector was the largest contributor to growth (1.38 percentage points of the total 3.78 percent growth).

The trade in goods (imports and exports) for each metro area is another useful metric for identifying important sectors. The data are collected by the Census Bureau and are organized and repackaged by the Brookings Institution.[2] Regional trade data show the flows of products internationally and domestically. If a region is a net exporter of a good, the region is thought to be producing more of a product than it needs for local consumption. On the other hand, a region may be a net importer of products that are used as inputs into a production process. Of the four major MSAs in the District, Memphis was the only net exporter of goods in 2010, with a trade surplus of $29.3 billion, driven by exports of chemicals and plastics ($32 billion). The MSA with the largest trade deficit was Louisville, with a net balance of $24.4 billion in imports, $10.5 billion of which were imports of chemicals and plastics.

Future investigation into regional trade flows data may provide additional insights into the sectors that are driving growth in the District's largest metro areas.

Employment Shares and Job Growth by Industry Relative to the U.S.



SOURCES: Bureau of Labor Statistics and authors' calculations.

NOTE: The figure plots the location quotients (LQs) and relative growth rates for each two-digit North American Industry Classification System (NAICS) industry within the metro area calculated using data between 2009:Q3 (the start of the recovery) and 2013:Q3. An LQ of 1 means the regional and national shares are the same; values less than 1 indicate the region employs relatively fewer workers, and values higher than 1 indicate the opposite. "Relative growth" measures the difference between local growth and national growth in percentage points, with 0 marking the national average.

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

ENDNOTES

1 All of the calculations in this article use data from 2009:Q3 through 2013:Q3 unless otherwise noted.
2 See Tomer et al.

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METRO PROFILE

Long-Resilient Little Rock Faces Uncertain Pace of Recovery

By Charles S. Gascon and Peter B. McCrory

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In 1722, French explorer Jean-Baptiste Bénard de La Harpe identified a rock jutting out along the bank of the Arkansas River as *la petite roche*, or "the little rock." It signified the geographic transition from the alluvial plains formed by the Mississippi River to the east and the Ouachita Mountain foothills to the west. Over the past century, Little Rock has transitioned from an economy that produced lumber and cottonseed to one that predominantly provides services—the lion's share of which is in health, education and state government.

The Little Rock-North Little Rock-Conway metropolitan statistical area (henceforth, Little Rock) is the largest metro area in Arkansas, with an estimated population of 717,666. All counties in this area experienced growth in population between 2002 and 2012, aside from Perry County, which declined by a marginal 0.2 percent. In aggregate, the Little Rock metropolitan statistical area (MSA) grew in population by nearly 15 percent, faster than Arkansas and the nation (9.0 percent and 9.3 percent, respectively). Pulaski County—home to almost half of the area's population, including the city of Little Rock—grew by 6.8 percent. The bulk of the MSA's growth came from the outlying area; all counties, except Perry in the northwestern corner of the MSA, grew faster than Pulaski.

This population expansion was accompanied by similar, though less uniform, trends in personal income growth. In real terms, personal income per capita increased in all counties in the metro area. Pulaski County, which has the highest per capita income, saw its income grow in real terms by 9.1 percent over the past decade, a rate that was outpaced by Faulkner (11.2 percent), Perry (16.5 percent), Lonoke (9.5 percent) and Saline (24.8 percent) counties. (Per capita income growth in the nation grew 11.4 percent over the same period.) Thus, incomes for most of the counties in the metro area are converging.

Resiliency during the Recession

Prior to the recession, the unemployment rate in Little Rock tracked the national average; since then, the metro area's economy has proved to be more resilient than the nation's. From peak to trough, the U.S. shed 6.3 percent of its payroll employment, whereas Little Rock lost 4.7 percent. As for the unemployment rate, Little Rock's rose at a slower pace than the nation's and peaked at 7.1 percent. The unemployment rate stood at 6.8 percent in November in Little Rock. Some of the differences in the unemployment rate can be accounted for by changes in labor force participation. Immediately prior to the recession, the participation rate in Little Rock mirrored the national rate. During the course of the recession, labor force participation in Little Rock is estimated to have declined faster than—and remained below—the national participation rate.[1]

Little Rock's resilience during and throughout the recession can be attributed to the confluence of three factors: (1) the metro area was less exposed to the housing crisis; (2) a substantial portion of employees work for state and local governments; and (3) the health and education services sector continued to grow along a prerecession trend. It is worthwhile to note that both state government and health and education services experienced sustained year-over-year growth throughout the recession and currently account for about one out of every four jobs in Little Rock.

A key feature of the recession was the steep decline of housing prices across the nation. In Little Rock, house prices rose before the financial crisis at a slower pace than they did nationwide and declined temperately during the ensuing crisis. Little Rock, and Arkansas more generally, was less exposed to the cyclical volatility and risk inherent in the prerecession real estate buildup. U.S. house prices rose by nearly 50 percent between 2002 and 2007; in Little Rock, they rose by about 30 percent. As house prices collapsed, the nation's house price index dropped considerably, bottoming out in the second quarter of 2011 after declining by about 20 percent. The house price index in Little

Rock declined by only 3 percent from its prerecession maximum.

The Arkansas state government is the largest single employer in the Little Rock area, employing 9.4 percent of the area's workers and contributing, along with local government, about 13 percent to the metro area's gross output. The rest of the Little Rock economy declined significantly throughout the recession even as the state and local government employment grew year over year.

Across the country, growth in state tax revenue experienced an earlier, deeper decline during the recession and rebounded at a later point than did Arkansas tax revenue. In Arkansas, the muted decline in revenue and the relatively fast rebound helped to insulate the Little Rock economy because large portions of the workforce were employed by the state.

Health and education services expanded along prerecession trends throughout and beyond the recession. In 2007, just before the economic downturn, this sector employed 13.6 percent of the workforce though it only contributed 8.2 percent to regional production. While the economy was officially in recession, this sector *added* more than 1,500 jobs even as the rest of Little Rock *shed* just over 14,000 jobs. The net downward effect on employment was dampened by the well-established health and education services sector in the region.

Current Conditions

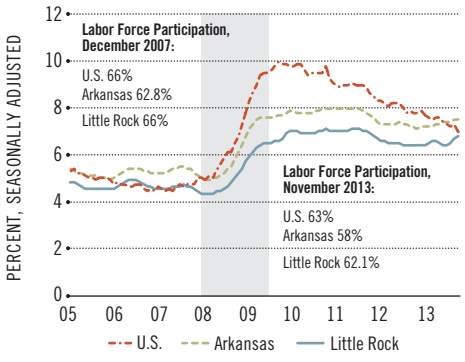
Since January 2012, employment in state and local governments has steadily declined by an average of 0.65 percent year over year, possibly reflecting the end of federal stimulus money as well as the lagged effect of lower state tax revenue in recent years.[2] In recent months, the shutdown of the federal government revealed how reliant Arkansas state employees are on federal funding. During the shutdown, Gov. Mike Beebe suspended all state programs that depend upon federal funding, directly affecting 673 state employees already on furlough.[3] Although political brinkmanship concerning the federal budget subsided at the end of the year, the Little Rock economy remains exposed to such budgetary crises in Washington.

Of the 55 largest hospitals and medical centers in Arkansas, 14 are located in the Little Rock MSA.[4] About one-third of all jobs in the health and education services sector across the state are in Little Rock. Although this industry has seen large payroll growth in recent years, much like the state and local governments, the health-care sector still faces significant economic and regulatory challenges.

With the implementation of the Affordable Care Act, Little Rock has found itself on the national stage: Late in September, the federal government approved a plan to allow Medicaid funding to be used to purchase private insurance in Arkansas—the first state to

FIGURE 1

Unemployment Rate: U.S., Arkansas, Little Rock

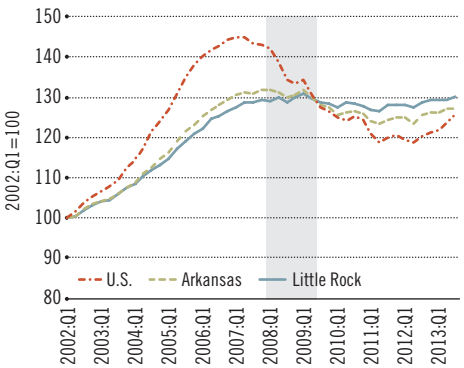


SOURCE: Bureau of Labor Statistics.

NOTE: The shaded area indicates a U.S. recession. Data are easily accessible in the St. Louis Fed's economic database, FRED, using these series IDs: Little Rock (LRSUR), Arkansas (ARUR) and U.S. (UNRATE).

FIGURE 2

Federal Housing Finance Agency House Price Index: U.S., Arkansas, Little Rock



SOURCE: Federal Housing Finance Agency.

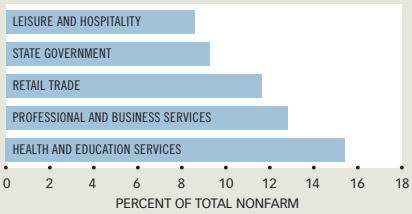
NOTE: The shaded area indicates a U.S. recession. Data are easily accessible in the St. Louis Fed's economic database, FRED, using these series IDs: Little Rock (ATNHPIUS20780Q), Arkansas (ARSTHPI) and U.S. (USSTHPI).

MSA Snapshot

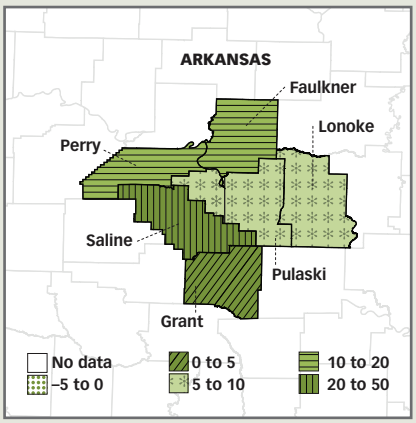
Little Rock-North Little Rock-Conway, Ark.

Population	717,666
Labor Force	341,098
Unemployment Rate	6.8%
Personal Income (per capita)	$41,662

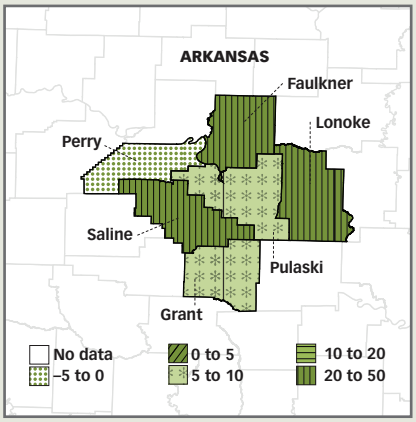
LARGEST SECTORS BY EMPLOYMENT



GROWTH IN PER CAPITA INCOME BY COUNTY 2002-2012



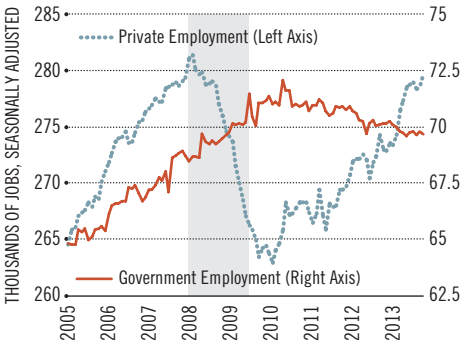
GROWTH IN POPULATION BY COUNTY 2002-2012



NOTES: Population, employment and personal income per capita 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). For the panels and maps, see these FRED series (IDs in parentheses): population (LRSPOP); labor force (LRSLF); unemployment rate (LRSUR); personal income (LRSPCPI); leisure and hospitality (LRSLEIH); professional and business (LRSPBSV); and education and health (LRSEDUH). State government and retail trade employment data are contained within the following aggregate data series, which are also available on FRED: government (LRSGOVT) and trade, transportation and utilities (LRSTRAD).

FIGURE 3

Private versus Government Payroll Employment in Little Rock

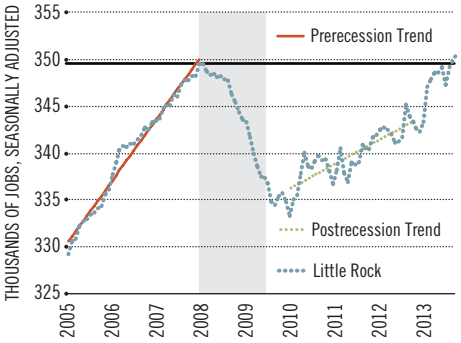


SOURCE: Bureau of Labor Statistics.

NOTE: The shaded area indicates a U.S. recession. Data are easily accessible in the St. Louis Fed's economic database, FRED, using these series IDs: Government Employment in Little Rock MSA (LRSGOVT), and Private Employment can be calculated as Nonfarm Payroll (LRSNA) less Government Employment (LRSGOVT).

FIGURE 4

Employment in Little Rock



SOURCE: Bureau of Labor Statistics.

NOTE: The shaded area indicates a U.S. recession. The black horizontal line is the prerecession seasonally adjusted peak of 349,600 nonfarm jobs. The prerecession trend line is estimated from data from January 2005 through January 2008 (slope: 541 jobs per month); the postrecession trend line is estimated with data from January 2010 through December 2012 (slope: 212 jobs per month). Data are easily accessible in the St. Louis Fed's economic database, FRED, using the following series ID: Little Rock (LRSNA).

win such approval. The fiscal impact of this approach is unclear at this point; nonetheless, this sector may benefit from the uptick in demand for services and the ability to pay from the newly insured population. As of late October, more than 66,000 Arkansans statewide have applied for health insurance under this Medicaid expansion plan.[5]

Little Rock's ability to weather the recession better than the nation and the state was, in large part, dependent upon consistent employment growth at all levels of government, mostly state government. However, this is the only sector that has fared worse since

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Health care is a major driver of the economy in the Little Rock area. Fourteen of the state's 55 largest hospitals and medical centers are in the Little Rock MSA. About one-third of all jobs in the health and education services sector across the state are in Little Rock.

the rebound in employment began in early 2010 when compared with its performance during the recession. This trend reversal in Little Rock follows patterns seen across the nation for government employment.

Though faring relatively well during the recession, employment continued to decline in Little Rock for eight months beyond June 2009—when the nation officially emerged from the recession. Nearly all industries in Little Rock were affected by this period of enduring contraction. In early 2010, employment in Little Rock hit its trough and began to recover, though at a slower pace when compared with the nation and with the metro area's prerecession growth patterns.

Between 2010 and 2012, Little Rock added approximately 3,500 jobs per year—far less than the approximately 6,000 jobs its economy was adding per year prior to the recession. These total figures do not fully capture sector-level dynamics. Despite bolstering the Little Rock economy during the recession, the government sector experienced flat-line growth during this nascent stage of the recovery. Countervailing this slowdown was growth in the private sector, which added jobs at nearly the same rate as before the recession. Relative to the nation, however, most industries outside of the government sector grew at a slower rate.

Since 2013, payroll employment growth has picked up. For the first 11 months of 2013, Little Rock's payroll employment was up by an annualized 2.0 percent, at pace with the nation. In aggregate, Little Rock outstripped its prerecession pace of job creation and was on pace to add roughly 7,000 jobs by the end of 2013—driven primarily by growth in professional and business services, retail trade, and health and education services. Professional and business services jobs alone accounted for half of all jobs created in 2013; another 30 percent of the new jobs were in health and education services. Total employment grew at such a pace that the Little Rock economy breached the prerecession peak in late 2013; as of November, employment exceeded that peak by 500 jobs.

So, the signals on the economy in Little Rock continue to be mixed. Government payroll employment not only continued to decline in 2013, but it shed jobs at a quickening pace. On the other hand, broad improvements in the real estate sector have led to the creation of construction jobs at a rate not seen since before the recession. Overall, it is still unclear whether the uptick in growth in the MSA is yet another intimation of the region's economic resiliency observed during the recession or simply a transitory divergence along a slower expansionary trend. Ω

Charles S. Gascon is a regional economist and Peter B. McCrory is a research analyst, both at the Federal Reserve Bank of St. Louis.

ENDNOTES

1 Authors' calculations of labor force participation rates in Little Rock.

2 By Sept. 30, 2010, 70 percent of the stimulus money had been doled out; by Sept. 15, 2011, nearly 85 percent of the stimulus package had been paid out and the large majority of the remaining funds were already obligated for use in upcoming projects. See "Memorandum for the Heads of Executive Departments and Agencies," at www.whitehouse.gov/sites/default/files/omb/memoranda/2011/m11-34.pdf.

3 Demillo, Andrew. Associated Press, Oct. 9, 2013, "Mike Beebe: No More State Money for Federal Programs." *Arkansas Business*. See www.arkansasbusiness.com/article/95113/mike-beebe-no-more-state-money-for-federal-programs.

4 *Arkansas Book of Lists 2013: The Ultimate Guide to Who's Who in Arkansas Business*, Vol. 29, No. 53, Dec. 31, 2012, to Jan. 6, 2013. Most hospitals and medical centers reported as of the end of the 2012 fiscal year. Reported values were compared to the average nonfarm payroll in 2011. Jobs reported by hospitals are full-time employees.

5 Associated Press, Oct. 24, 2013, "Arkansas Signs 62K People for State Health Insurance."

ASK AN ECONOMIST

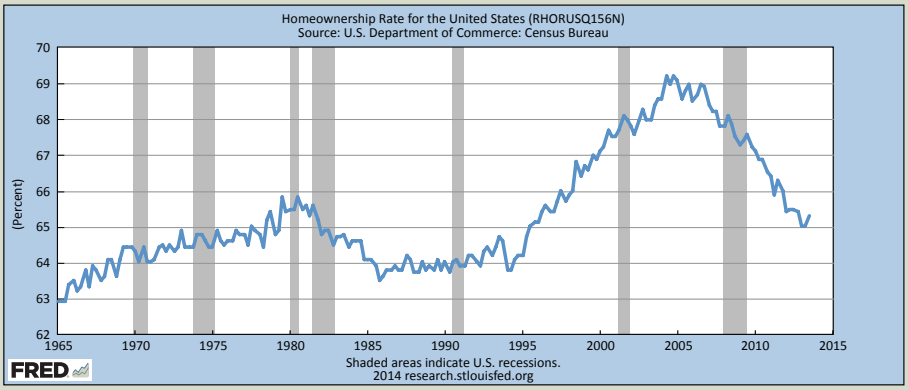
Carlos Garriga has been an economist in the Research division of the Federal Reserve Bank of St. Louis since 2007. His main areas of interest are macroeconomics, public finance and financial economics. Garriga has studied the effects of mortgage innovations in the housing boom and the role of the housing market in the financial crisis. In his free time, he enjoys spending time with his family and any outdoor activity. See http://research.stlouisfed.org/econ/garriga for more on his work.

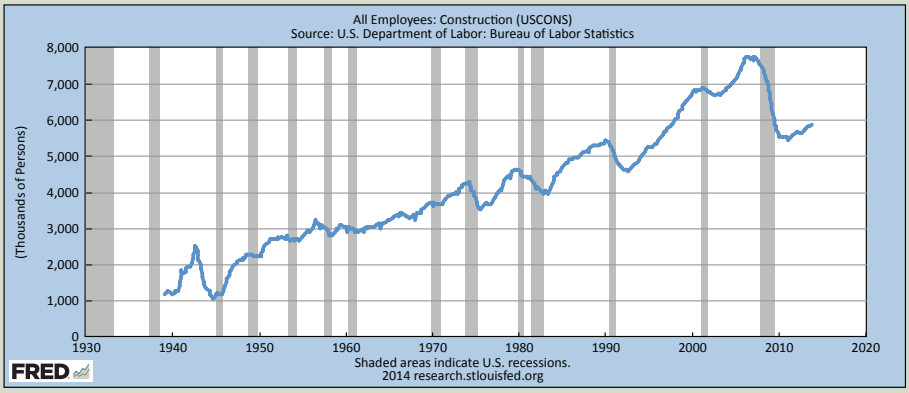
Garriga hiking in Utah.

Q: What were some of the lasting effects caused by the recent housing crisis?

A: There are changes in regard to how people view the purchase of a home. In the past, people had this idea that you should try to buy a house as soon as possible. People had this idea that the price of a house could only go up. Today, people don't want to rush such an important decision, perhaps because of the fear of a decline in prices. Young households, in particular, are more reluctant to get into housing. In general, homeownership might not be a value for young people in the long run; if so, its reputation as a safe investment may be dramatically changing. Indeed, the rate of homeownership in the U.S. fell in 2013 to a level not seen since the 1990s. (See top chart.)

Another important effect is that the contribution of the construction sector to the rest of the economy is being reduced. This is more likely a short-term or medium-term effect. Construction is not employing as many people as in the past 10 years (see bottom chart), and that has a broader impact on the economy than many people realize. People in the construction sector buy a lot of resources from other sectors. When construction is down, other sectors suffer, and the effects can be quite sizable and enduring.





GET TO KNOW FRED

What is FRED? Short for Federal Reserve Economic Data, FRED is an online database consisting of more than **156,000 economic data time series** from 61 national, international, public and private sources. FRED, created and maintained by the Research division at the St. Louis Fed, goes far beyond simply providing data. FRED combines data with **a mix of tools** to help the user understand, interact with, display and disseminate the data. In essence, FRED helps users tell their data stories. See more at http://research.stlouisfed.org/fred2.

WATCH VIDEOS FROM CONFERENCE ABOUT STUDENT LOANS AND DEBT

More than 20 video clips from the Nov. 18 symposium at the St. Louis Fed on student loan debt are now available for viewing on our web site. **"Generation Debt: The Promise, Perils and Future of Student Loans"** was a sold-out event.

Among the speakers was Rohit Chopra, who oversees student loans on behalf of the Consumer Financial Protection Bureau. Others were national higher education expert Sandy Baum of George Washington University; William Elliott of the University of Kansas; Jen Mishory of Young Invincibles; Gary Ransdell, president of Western Kentucky University; Caroline Ratcliffe of the Urban Institute; and leading researchers from the Federal Reserve System.

To watch the videos, go to www.stlouisfed.org/household-financial-stability/multimedia/video.cfm.

STUDENT BOARD OF DIRECTORS

In February, the Federal Reserve Bank of St. Louis will begin accepting nominations for its 2014-2015 Student Board of Directors. Students must be nominated by one of their teachers. During their year on the board, the high school students will meet bimonthly at the St. Louis Fed; they will discuss issues related to **economics and personal finance**, listen to speakers on topics ranging from career planning to **leadership development**, and compete for two summer internships. After Feb. 1, teachers who wish to nominate students should visit www.stlouisfed.org/education_resources/student-board/. Nominees must be seniors at St. Louis-area high schools during the 2014-2015 academic year.

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. To read letters to the editor, see www.stlouisfed.org/publications/re/letters/index.cfm.

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NEXT ISSUE

Interest Rates and Inflation over the Past 60 Years

In the April issue of *The Regional Economist,* read about inflation, interest rates and monetary policy in the U.S. over the past six decades.

The history will show how the dynamics of interest rates and inflation have changed with changes in the Federal Reserve's objectives, implementation strategies and credibility of monetary policy.

Read about Some of the Memorable Leaders, as well as the Milestones, in Fed History

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FEDERAL RESERVE SYSTEM

Customers of the St. Louis Fed line up in the mid-1920s at the tellers' windows in the lobby to conduct financial transactions, such as redeeming U.S. savings bonds.

To begin its observance of the Federal Reserve's centennial, the St. Louis Fed has published a special issue of the *Review*, its research journal. This collection of previously published articles reflects significant historical themes and perspectives—some related to the Fed System and others focused on the legacy of the St. Louis Fed. The articles include Milton Friedman's 1976 reminiscence of Homer Jones, an influential research director of the St. Louis Fed. Another article focuses on former St. Louis Fed President Darryl Francis, a leading critic of U.S. monetary policy in the '60s and '70s. Other topics include government-sponsored enterprises, the monetary policy reform of 1979 and "Seven Faces of 'The Peril,'" a 2010 paper by current St. Louis Fed President James Bullard.

To read this issue of the *Review* online, go to http://research.stlouisfed.org/publications/review/. For more on the Fed centennial, check our web site periodically throughout the year: http://fraser.stlouisfed.org/centennial/.

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