The Economic Recovery Five Years after the Financial Crisis

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This week marks the fifth anniversary of the collapse of Lehman and the financial crisis, which in turn led to our deepest recession since the Great Depression. I am going to take this opportunity to provide a retrospective analysis of the recovery that started in June 2009, and will focus on two aspects. First, although the private sector has added jobs in each of the past 42 months and GDP per capita has effectively re-achieved its pre-recession peak, we are still not fully satisfied with the pace of growth. The question I will address, however, is whether this recovery has been slower than would have been *expected*, given the magnitude of the recession, historical patterns, and long-term changes in the U.S. economy and labor force. My answer will be that, from the perspective of growth of GDP, growth of employment, and the decline of the unemployment rate, this recovery has in fact been typical of the post-1960 experience, given the underlying trends and the nature of the shocks we have faced. Specifically, while the growth of GDP and employment has not been as fast in this recovery as it was on average following previous post-1960 recessions, those comparisons neglect changes in underlying demographics that affect the long-term potential growth rates of the labor force and thus of potential GDP growth. Once those underlying, supply-side factors are explicitly accounted for, the differences between the current recovery and previous post-1960 recoveries is relatively small and is readily accounted for by factors related to the financial crisis.

The second topic I will focus on is an aspect of this recovery which has received a lot of attention, the decline in the labor force participation rate. Understanding the extent to which the behavior of labor force participation in this recovery has been consistent with historical cyclical experience, or has been unusual, is complicated because of the changing demographic trends in

labor force participation. I will therefore spend some time reviewing some factors influencing the trend and cyclical components of labor force participation.

Before turning to those two topics, let me start with a brief overview of the recovery and the current situation. Since peaking at 10% in October 2009, the unemployment rate has fallen to 7.3%. Over the past 24 months the economy has added, on average, approximately 180,000 jobs per month. Indeed, as Figure 1 shows, 12-month employment growth has hovered just above 2 million jobs per year for the past two years, whether measured by establishment employment or by household survey employment. Although we all focus on establishment employment because its survey sample size is so much larger, this figure also includes the 12-month growth of the BLS-adjusted household employment series, where the BLS adjustment puts household employment on a conceptually comparable basis to the establishment employment series. Both series provide the same picture, albeit with much more noise in the household survey.

On the output side, real GDP has continued to grow at a moderate but steady pace, with average GDP growth over the first half of the year coming in at 1.8%. Based on the July GDP revisions, the level of real GDP per capita has essentially returned to its value at the cyclical peak of the fourth quarter of 2007.

This growth in GDP comes despite substantial fiscal contraction over 2012 and especially over 2013 so far, a contraction that has come about in part because of the failure of Congress to address the sequester or to pass the additional jobs measures proposed by the President. Figure 2 shows the deficit as a fraction of GDP since 2000, including its ten-year projection by the CBO under current law and under the President's proposed Budget. The deficit as a fraction of GDP fell from 8.7% in fiscal year 2011 to 7.0% in fiscal year 2012, for a total of 1.7 percentage points of fiscal drag. This fiscal drag partly came from reductions in automatic stabilizers in the budget as the economy recovered, but mainly came from the wind-down of spending from the Recovery Act. Indeed, from 2009 to 2012 the deficit fell by 3.1 percentage points of GDP, the largest three-year decline since 1949. According to the CBO's most recent projections, under current law the FY13 deficit is projected to be 4.0% of GDP, which means that FY13 will have experienced another 3.0 percentage points of fiscal drag. Some of this fiscal drag arises from

automatic stabilizers as the economy recovers, but much of it is attributable to the end of the temporary payroll tax holiday at the start of this year, and from the imposition of the sequester, which CBO estimates will have reduced government outlays by $42 billion over FY13.

The growth of GDP has been achieved by solid private sector growth offsetting this Federal fiscal drag. As Figure 3 shows, growth of real private domestic final purchases, that is, consumption plus investment excluding inventory investment, has been solid, with quarterly growth averaging 2.6% at an annual rate over 2012 and 2013, and coming in at an average of 2.0% in the first half of this year. Because the bulk of the fiscal contraction under CBO's current law scenario will have occurred by the end of this fiscal year, I am optimistic about next year's growth potential. This will be particularly true if Congress acts, as it should, to provide relief to the sequester so that the Federal government can properly carry out its many important functions that are hamstrung by the across-the-board sequester cutbacks.

With this brief overview as backdrop, let me now turn to the first of the two topics I advertised at the outset, which is the pace of the recovery. We have seen 42 months of added jobs in the private sector and have seen the unemployment rate drop from 9.0% to 7.3% over the past 24 months, but unemployment remains elevated. Economic growth in this recovery has, in fact, fallen below the historical norm. The average growth of real GDP during the first 12 quarters of the seven recoveries from 1960-2007 was 4.2% per year, whereas the corresponding average GDP growth during the current recovery was 2.0 percentage points less, at 2.2% per year. After three years of recovery, the cumulative growth of real GDP was 6.3 percentage points lower than its average value for the earlier post-1960 recoveries. This comparison raises the question, why has the current recovery in GDP not matched the post-1960 average?

There has been a moderate amount of research on this question, and we reviewed this research in the 2013 *Economic Report of the President*. What I want to stress today is that the main conclusion from this research is that most – in the vicinity two-thirds when we look across studies – of the gap in 12-quarter GDP growth is accounted for by changes in the long-term dynamics of the U.S. labor forced and economy, mainly long-term demographic shifts. These demographic shifts also help to explain why the 1991 and 2001 recoveries were slower than the

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post-1960 average. These changes manifest themselves in the low-frequency growth rate of employment, which is shown in Figure 4. Specifically, this chart shows the four-quarter change in employment and a cyclically adjusted estimated trend growth rate of employment. This cyclically-adjusted trend is estimated using a partially linear semiparametric estimator with a moving biweight filter, with a bandwidth of 60 quarters.

Using this estimate, the trend annual employment growth rate rose slightly from 2.2% in 1965 to 2.3% in 1975, but then declined steadily to 2.0% in 1985 and just 0.8% in 2005. The high growth rate of employment in the 1970s reflected the historic surge of women into the U.S. labor force. The trend decline in employment growth since the late 1990s has been largely associated with demographics, in particular the plateau of female labor force participation during the late 1990s, the steady multi-decade trend decline in male labor force participation, the downward trend in youth labor force participation, and, starting in the 2000s, the entry of the baby-boom generation into retirement.

I will return to these trends in labor force participation in a few minutes, but for now I will focus on the consequences of these trends for the long-term growth of GDP. At the long-run frequencies under consideration here, the growth rate of potential GDP equals the growth rate of employment – that is, workers – plus the growth rate of productivity – that is, output per worker-hour – plus some other factors, such as the growth rate of hours per worker. Thus a slower long-run growth rate of the labor force translates one-for-one into a slower growth rate of potential GDP. The net effect of these demographic changes, combined with long-term trends in productivity and weekly hours, has been an ongoing decline in the long-run mean growth rate of GDP over the past 50 years. Figure 5 shows the four-quarter growth rate of GDP since 1960 and its estimated cyclically adjusted mean. This trend growth rate is a reasonable statistical proxy for the time-varying growth rate of potential GDP. You can see the decline in this long-run mean growth rate of GDP. Indeed, the cyclically-adjusted long-term annual growth rate of real GDP fell from 3.8% in 1965 to 3.0% in 1985 and 2.3% in 2005.

Figure 6 illustrates this slowdown in a different way. The main dark line is the logarithm of real GDP. The straight lines are linear trend projections fit by ordinary least squares to the log-level

of GDP using data for a full NBER peak-to-peak business cycle. For this plot, I have merged the two business cycles of the early 1980s so that there are enough observations to estimate a trend. Thus the straight line projections represent a projected trend-stationary potential GDP path, estimated from GDP over the previous business cycle. As some have noted, in this recovery the economy has not re-achieved this previous potential line. But this has been true following every recession since 1960! In fact, this chart shows that the slope of each of these potential lines is decreasing. The core reason for these decreasing potential slopes is the decline in trend GDP due in part to low frequency fluctuations in productivity, but mainly to changes in demographics.

Recall that I said that during the first three years of this recovery, GDP grew 2.0 percentage points less than it did during the first three years of the previous post-1960 recoveries, and that I also said that trend GDP growth fell from 3.8% in 1965 to 2.3% in 2005. When you do the addition properly, the decline in trend GDP growth accounts for approximately two-thirds of the differential in growth in GDP during this recovery. This finding is consistent with a November 2012 study by the Congressional Budget Office, with a spring 2012 Brookings paper by myself and Mark Watson, and with separate estimates reported in the 2013 *Economic Report of the President*.

What, then, is the source of the remaining one-third of the differential in growth between the current recovery and the postwar average? In the Brookings paper I mentioned, Mark Watson and I used a six-factor, 200-variable dynamic factor model to look at this differential in cyclical components. We did not find any structural breaks associated with the recession or recovery. Rather, the cyclical differential in growth in this recovery was largely accounted for by the nature of the financial shocks that occurred. While we were unable to separately identify econometrically liquidity, wealth, and uncertainty shocks, these shocks arising from the financial crisis accounted for the rest of the slowdown. In its November 2012 study, the CBO pointed to such factors, but also pointed to the unusually large contraction of state and local government purchases. This contraction can, in turn, be linked in part to the decline in real estate tax receipts and thus has its roots in the bursting of the housing bubble and the financial crisis.

A number of other studies, including work at the Fed discussed in speeches by Ben Bernanke and by Janet Yellen, along with work by Bob Hall, also point to the unusually stiff headwinds arising from the fallout of the financial crisis as a source of the cyclical component of the differential in growth. Although these studies produced different numerical estimates of this cyclical differential, they all point to a common understanding of why the cyclical component of the current expansion was slow relative to previous recessions: a financial crisis that led to reductions in the ability of households and small businesses to borrow, spend, and invest; a delayed recovery of the housing sector as a result of the excess inventory of vacant, foreclosed, and distressed properties; a decline in State and local spending and employment; monetary policy restrained by the zero lower bound; and in more recent stages of the recovery, the detrimental effects of a global slowdown on U.S. economic activity. Against all of these headwinds, the expansion from Federal fiscal policy actions and aggressive unconventional monetary policy contributed positively to the cyclical component of the recovery.

This conclusion that the recovery has in fact been in line with historical patterns, once one accounts for the changing demographics of the U.S. workforce, is also reflected in an analogous decomposition of employment growth that parallels the GDP decomposition I have gone through here. In the interest of time, I won't go through those numbers here, but I would like to show you one figure from the labor market which I find striking. Figure 7 plots the monthly unemployment rate. Using these data from 1984 through October 2009, the month of the peak in the unemployment rate, I fit a sixth order autoregression, which is a standard time series model. I then used that model, fit through October 2009, to forecast the unemployment rate through August 2013. The red line thus is the forecast of the unemployment rate you would have made using this univariate time series model, standing in the first week of November 2009, except that the model is estimated using revised data. The dashed lines show one standard deviation forecast bands around the mean. As you can see, the unemployment rate has fallen over this recovery largely in line with historically expected unemployment rate dynamics. As full disclosure, the forecast path is somewhat sensitive to the jumping off point, and the prediction is actually better using the CBO unemployment gap than the unemployment rate used here. But the fact that the unemployment rate over the past four years tracks this November 2009 univariate forecast is another indication that the recovery in the labor market, while slower than any of us would

desire, has not been unusual; rather, it has simply taken a long time to dig out of the very big hole we were in as a result of the financial crisis.

This discussion of long-term trends leads me to my second topic, the labor force participation rate. As Figure 8 shows, the overall labor force participation rate for workers ages 16 and over has undergone large movements over the past four decades, rising in the 1970s through 1990s and declining since then. Indeed, the 2001 recovery was never able to re-achieve the rates of labor force participation experienced prior to that recession. Figure 8 also shows the patterns for men and women, which are quite different. The figure shows the surge of women into the labor force in the 1970s and 1980s, the plateau of female participation in the late 1990s, and the decline since then. In contrast, the male labor force participation rate has been declining steadily since the 1950s. Since 2000, the long-term trend declines in the male and female labor force participation rates are more or less parallel.

There is a vast literature studying the labor force participation rate, notably including Aaronson, Fallick, Figura, Pingle, and Wascher (2006) and Moffitt (2012), which focuses on the closely-related employment-to-population ratio. A recent paper with a complete recent reference list is Erceg and Levin (2013). Speaking very broadly, this literature has two types of papers. One type examines the structural reasons for the decline in the labor force participation rate. One straightforward and well-understood structural reason is the current and future retirement of the baby boom generation. Indeed, 2008 was the year in which the first baby-boomers, those born in 1946, turned 62 and thus became eligible for early retirement under Social Security, and they reached their normal retirement age in 2012. On the other hand, as Moffitt's paper makes clear, some of the reasons for these trend shifts in labor force participation are not well understood, although there is a recognition that they have persistent structural roots. The other type of paper in this literature provides statistical models of the labor force participation rate, in which these structural changes are captured in part by age and cohort binary indicators, in some cases along with additional variables that capture persistent effects such as increasing SSDI enrollment and increasing college enrollment rates over time. These latter papers provide a framework for projections of trends that incorporate changing demographics. In this statistical sense, the

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declining trend in the labor force participation rate is arguably well-modeled, if not necessarily fully understood.

What is perhaps less well understood is the cyclical component of the labor force participation rate. Indeed, the line of research that builds on the Aaronson et. al. family of models points to large structural trend declines in the labor force participation rate since 2007. In contrast, Erceg and Levin argue that most of the decline since 2007 has been cyclical, and they point to several recent papers that reach a similar conclusion. Among other things, these two assessments lead to different forecasts. The econometric problem of sorting out trend, cyclical, and idiosyncratic movements in the labor force participation rate is an important one that is technically challenging, is unresolved, and merits additional research.

Let me return to the big picture of the recovery and talk about three implications of this assessment for policy. First, we should always be looking at what we can do to increase the rate of growth of potential GDP through increasing productivity and the efficiency of the economy. Such policies include but are not limited to supporting education at all levels and supporting fundamental research and experimentation.

Second, while there are many reasons to support immigration reform, from a macroeconomic perspective a top reason is that it will provide an increasing population of eager workers. It is this channel that led CBO in June to conclude that passing immigration reform would provide a significant boost to long-term GDP growth and would be a significant benefit to our multiyear fiscal outlook.

Third, as I have stressed throughout, the recovery is not over, and we must continue to support it through fiscal policy while maintaining our focus on medium- and long-term deficit reduction. Indeed, as Figure 2 shows, the President's budget does precisely that. Over fiscal years 2014 and 2015, the President's budget supports the economy with less fiscal drag than the sequester, but by fiscal year 2017 the deficit-GDP ratio is less under the President's budget than under the current-law, sequester scenario. By the end of the ten-year budget window, the deficit-GDP ratio is significantly lower under the President's budget than under current law, with reductions which

are financed through tax and entitlement reform. The result is a less rapid pace of fiscal contraction in the short run, but a lower and more sustainable deficit over the medium run, setting the stage for stronger growth in both the short and medium run.

References

Aaronson, Stephanie, Fallick, Bruce, Figura, Andrew, Pingle, Jonathan F., and Wascher, William L. 2006. "The Recent Decline in the Labor Force Participation Rate and Its Implications for Potential Labor Supply." *Brookings Papers on Economic Activity,* 2006.

Erceg, Christopher J., & Levin, Andrew T., 2013. "Labor Force Participation and Monetary Policy in the Wake of the Great Recession." *Federal Reserve Bank of Boston,* April 2013

Moffitt, Robert. 2012. "The U.S. Employment-Population Reversal in the 2000s: Facts and Explanations." *Brookings Panel on Economic Activity*, Fall 2012.
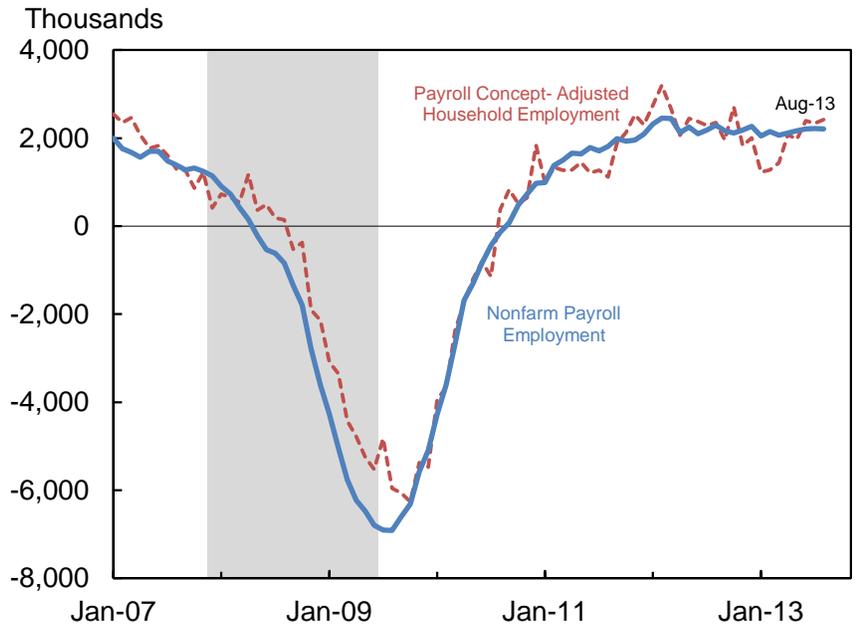
Thousands

Payroll Concept- Adjusted
Household Employment

Aug-13

Nonfarm Payroll
Employment

Source: Bureau of Labor Statistics

Figure 1: Twelve-Month Change in Employment

Percent of GDP (Fiscal Year)

FY 2023

Actual

CBO's Current
Law Baseline

CBO's Estimate of Administration's
FY2014 Budget

Source: U.S. Department of Treasury, Congressional Budget Office
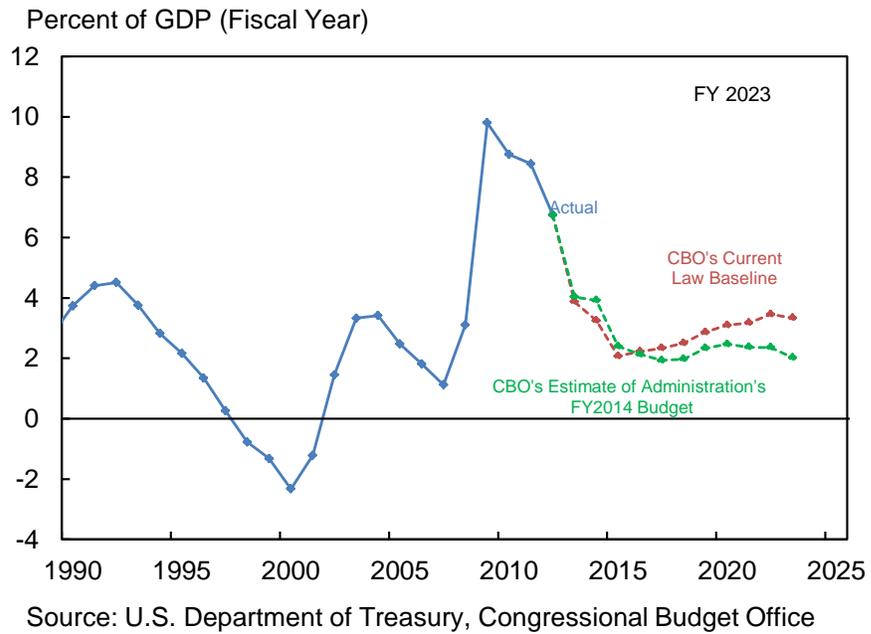
Figure 2: Federal Budget Deficit

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Annualized Quarterly Percent Change

Source: Bureau of Economic Analysis
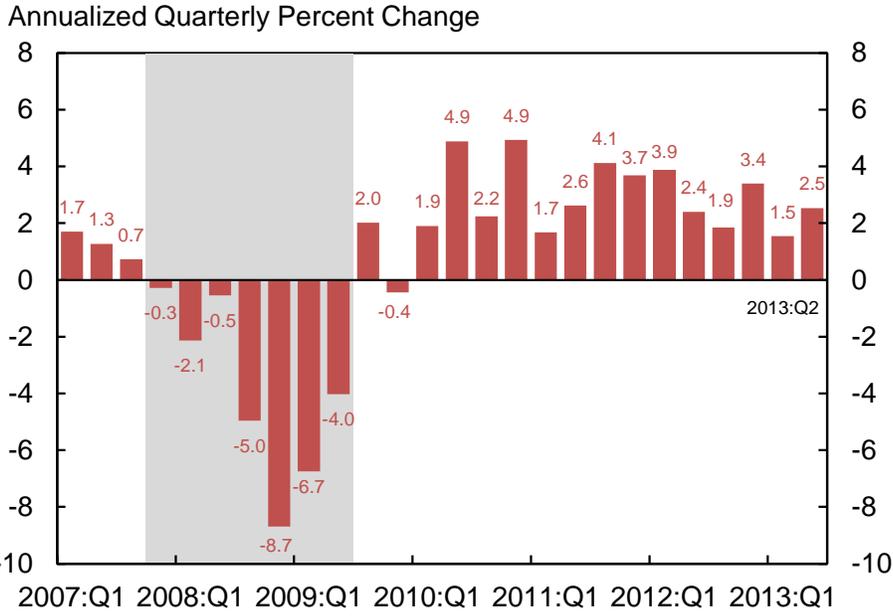
Figure 3: Real Private Domestic Final Purchases Growth
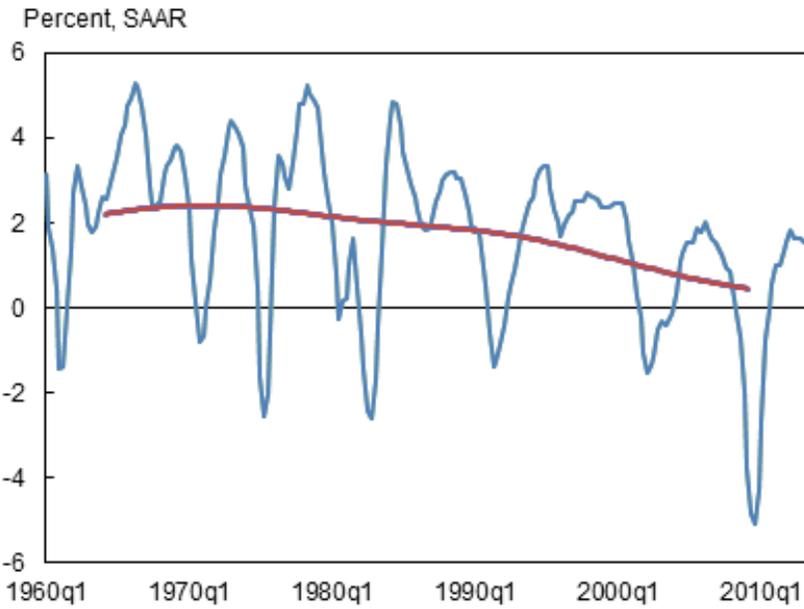

Source: Bureau of Labor Statistcs and CEA calculations

Figure 4: Four-Quarter Growth of Establishment Employment (percent, SAAR)
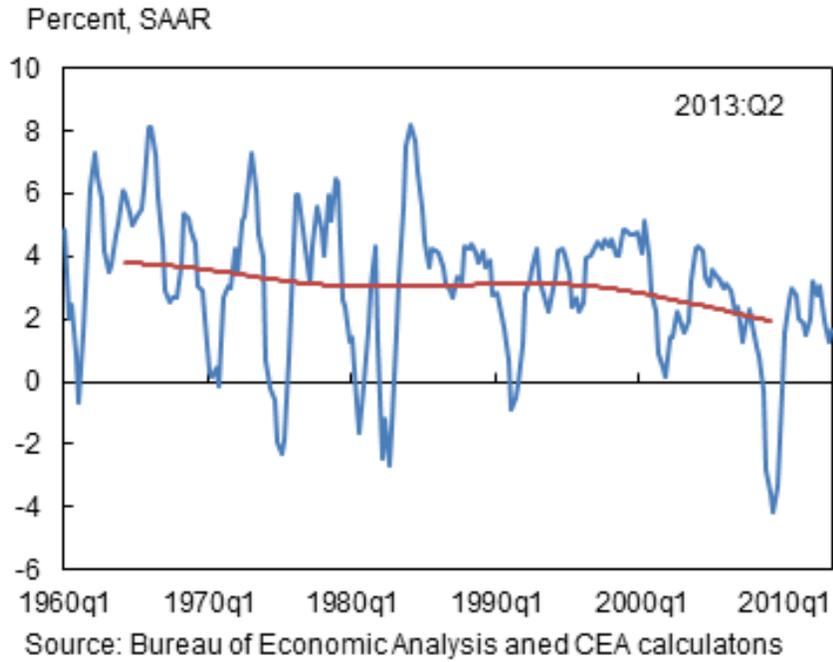and its Cyclically Adjusted Running Mean

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Percent, SAAR

Source: Bureau of Economic Analysis aned CEA calculatons

Figure 5: Four-Quarter Growth of GDP (percent, SAAR)
and its Cyclically Adjusted Running Mean

Source: Bureau of Economic Analysis adn CEA calculations.
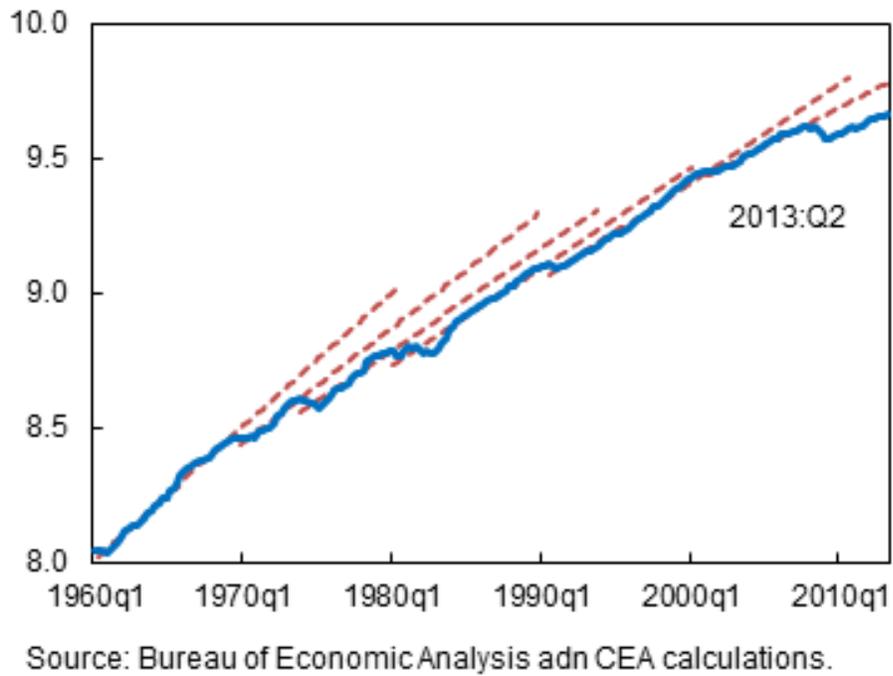
Figure 6: Log Real GDP and Linear Trends Computed over NBER peak-to-peak cycles.

Percent

Source: Bureau of Labor Statistics and CEA calculations
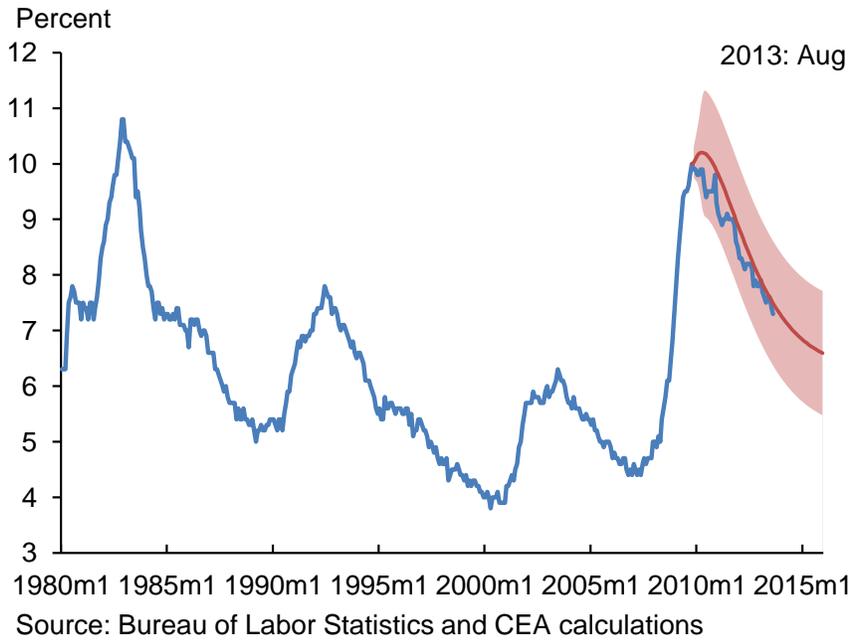
Figure 7: Monthly Unemployment Rate, AR(6) forecast,
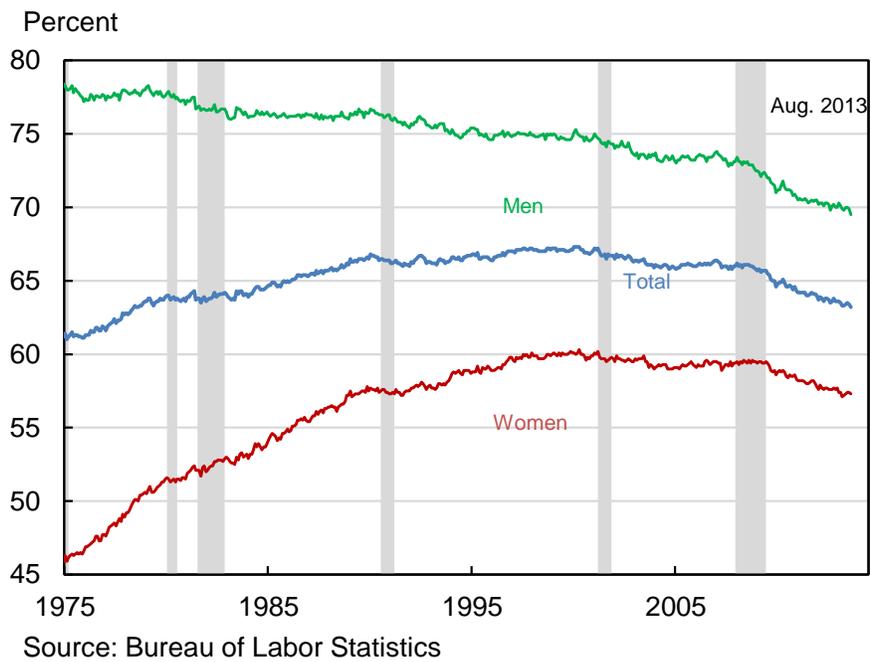and one-standard deviation forecast band

Percent

Source: Bureau of Labor Statistics

Figure 8: Civilian Labor Force Participation: Men, Women, and Total