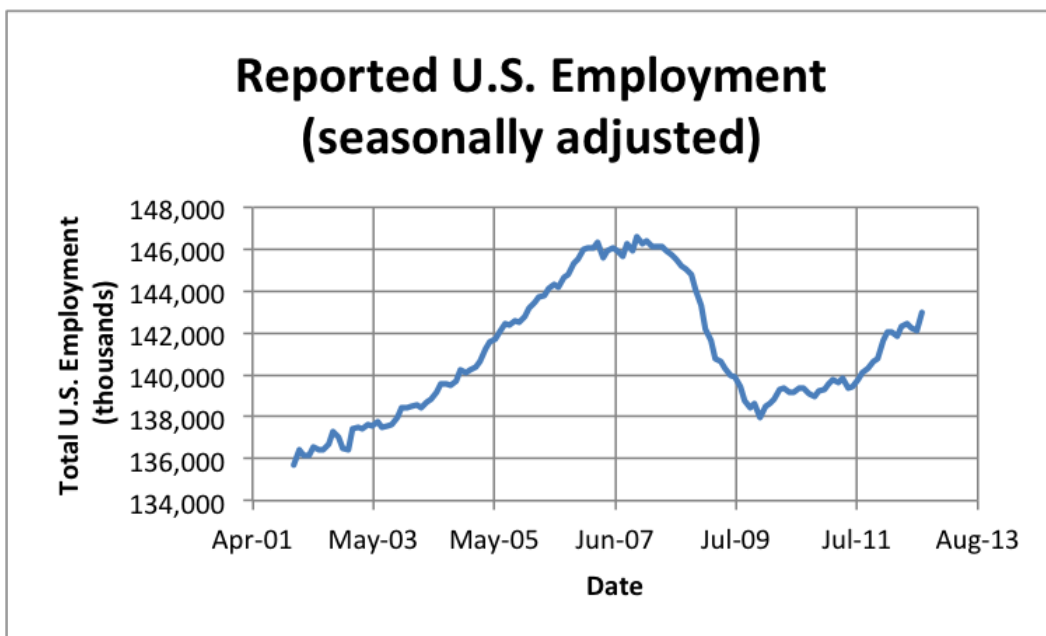


# The September Jobs Report

It's been nine days since the September jobs report was released by the Bureau of Labor Statistics. I've been working on a much longer article, but decided to post this abbreviated version to pull together some analysis.

## Introduction

Did the U.S. economy really gain 873,000 jobs in September, 2012? Was the unemployment rate really 7.8%? Economists have reacted to these numbers with a peculiar mixture of disbelief and defensiveness. No sane economist believes these numbers represent the current state of the U.S. economy. A quick-and-dirty estimate says that real GDP would have to grow at a 4 – 5% annual rate to add that many jobs. Actual GDP growth in recent quarters has been below 2.5%.



## U.S. Employment

But, at the same time, we economists are vehemently defending the statisticians and economists at the Bureau of Labor Statistics (BLS). (Technical note: we should also be defending the Census Bureau because those folks conduct the

“household survey” under contract from BLS. Technically the household survey is called the current population survey, CPS, while the establishment survey is called current employment statistics, CES.)

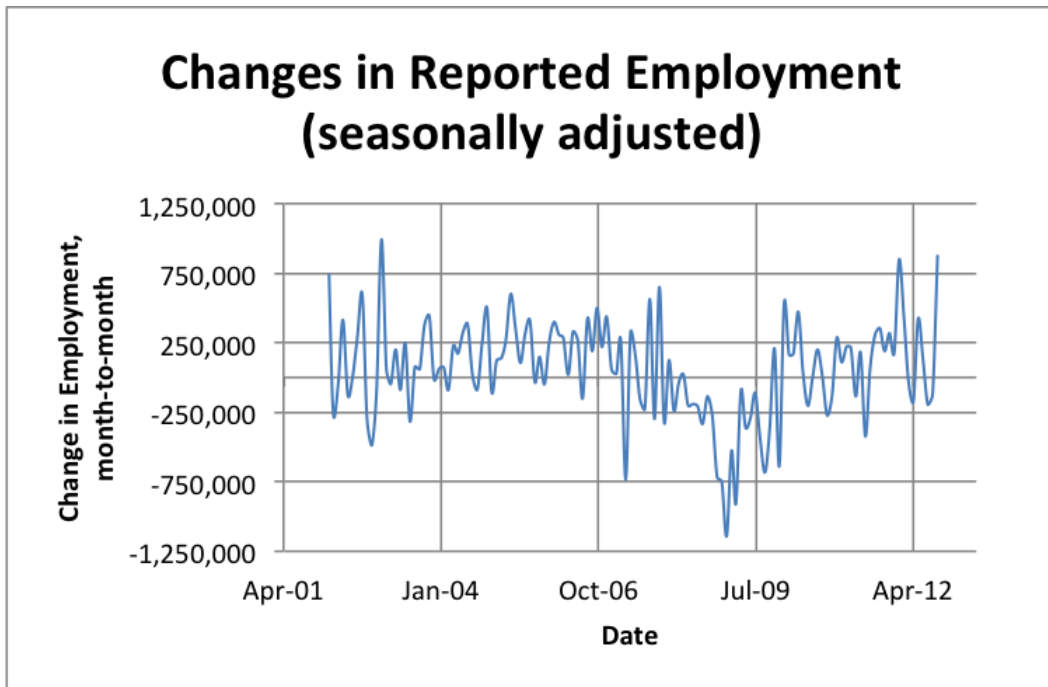
Before going any further, I have to say that **there’s a good chance that the 873,000 increase in jobs is simply a statistical fluke. Remember, total employment is estimated using a sample of 60,000 households. There is a large margin of error.** More details are in the next section of this paper where I look at the numbers and analyze this possibility.

The purpose of this report is to reconcile those two conflicting viewpoints: **the jobs number seems unbelievable, but I remain fully confident in the integrity of the number wonks at BLS.** And there is also a contribution from the vagaries of the seasonal adjustment process the BLS uses, specifically the treatment of those between ages 20 and 24. (For those who are interested, [Catherine Rampell has an excellent discussion in her blog at the New York Times website](#) (may be behind a paywall). I have included Ms. Rampell’s numbers with a few additions as the last worksheet in the Excel workbook for this report.)

## **A Quick Look at the Numbers**

Before heading into the analysis, I have to mention a few facts about the data. Since January, 2002 the month-to-month change in employment has had a standard deviation of 356,510 and a mean of only 56,820. This is a very imprecise number with huge month-to-month volatility. It has been alleged that the 853,000 employment increase in September, 2012 was the largest increase in 29 years. Not according to the data: since January, 2002 (and including September, 2012) there have been nine months when employment increased by more than 500,000 and three months in which employment gained more than 750,000 (January, 2012, +847,000 and January, 2003 with a whopping +991,000). At best, this is the largest increase in

108 months. The point is that this number moves all over the place. We shouldn't take the +873,000 figure any more seriously than, say, the job loss of 1,141,000 in January, 2009.



Month-to-Month Change in U.S. Employment

If you want to stop reading right now, that's fine with me. But I think you may find parts of this revealing and/or instructive. Some parts may even be mildly entertaining.

## Statistical Issues and Seasonal Adjustment: Half the Gain

There have been steady changes in the number of people ages 20 – 24 who are employed each September. According to Ms. Rampell, since 1948 employment in this group fell by an average of 398,000 in September. In September, 2012, employment of these folks *increased* by 101,000. After processing with the standard seasonal adjustment software, **the actual seasonally adjusted increase was 368,000, about 42% of the total increase in September.** That leaves  $853,000 - 368,000 = 485,000$  new jobs still to be

explained. Read on.

Note, however, that the 485,000 figure is well within 1.5 standard deviations of the mean since 2002. That's a bit more evidence that the number is simply a statistical fluke.

Before going further, it's important to understand how things are measured. Much of the following is from the [Bureau of Labor Statistics' Handbook of Methods](#). (On the BLS website, the handbook is available chapter-by-chapter as separate web links. [Click here](#) to download a copy as a single pdf file. And, as always, my methodology is transparent. [Click here](#) to download the Excel workbook with the gruesome details. This is an Excel 2011 workbook.)

## **Definitions**

An individual in the CPS sample is *employed* if, “during the reference week, (1) did any work at all as paid employees, worked in their own business or profession or on their own farm, or worked 15 hours or more as unpaid workers in a family-operated enterprise; and (2) all those who did not work but had jobs or businesses from which they were temporarily absent due to illness, bad weather, vacation, childcare problems, labor dispute, maternity or paternity leave, or other family or personal obligations—whether or not they were paid by their employers for the time off and whether or not they were seeking other jobs. Each employed person is counted only once, even if he or she holds more than one job. Included in the total are employed citizens of foreign countries who are residing in the United States, but who are not living on the premises of an embassy. Excluded are persons whose only activity consisted of work around their own home (such as housework, painting, repairing, and so forth) or volunteer work for religious, charitable, and similar organizations.”  
(*BLS Handbook of Methods*, chapter 1, p. 6)

**An individual who did one hour of work for pay during the**

reference week counts as employed. The “reference week” is the week of the month that includes the 12th day.

Individuals in the sample are *unemployed* if they “1) had no employment during the reference week; 2) were available for work, except for temporary illness; and 3) had made specific efforts, such as contacting employers, to find employment sometime during the 4-week period ending with the reference week. Persons who were waiting to be recalled to a job from which they had been laid off need not have been looking for work to be classified as unemployed.”

This definition, of course, creates the “discouraged worker” phenomenon, along with its impact on the unemployment rate. (Those interested should read my blog post about the labor force participation rate.)

The *labor force* is the sum of the number of people employed and the number of people unemployed. The *unemployment rate* is the number unemployed divided by the labor force. So simple, yet with much hidden complexity.

Now that you understand who is employed, who is unemployed, and who is not in the labor force, let’s turn our attention to sampling methodology.

## **BLS – Census Methodology**

There are 60,000 households surveyed each month by the Census Bureau for the Current Population Survey (CPS, usually called the “household survey.”) That translates into 155,400 individuals using the Census figure of 2.59 people per household. Of those 155,400 individuals, 78.79% will be age 16 or over. Even though Census questions those age 15, the only data reported for purposes of the jobs report is on those 16 and over. With an unemployment rate of 8.11%, we expect 9,932 individuals in the household survey to be unemployed.

Now set a target unemployment rate, say 7.8%. That implies

9,551 of those surveyed need to be unemployed, **a decrease of only 381 people compared to the 7.11% unemployment rate.** **Scary, isn't it?** Such are the vagaries of projecting a relatively small sample onto a large population. (BLS and Census know this. There are warnings all over their websites and in the *BLS Handbook*.)

Census conducts the survey during the week of the month that contains the 19th of that month. Respondents are asked about their employment status for the preceding week, the week that includes the 12th. There is a rather complicated pattern of rotation in and out of the sample.

*“Rotation of sample.* Part of the sample is changed each month. Each monthly sample is divided into eight representative subsamples or rotation groups. A given rotation group is interviewed for a total of 8 months, divided into two equal periods. The group is in the sample for 4 consecutive months, leaves the sample during the following 8 months, and then returns for another 4 consecutive months. **In each monthly sample, 1 of the 8 rotation groups is in the first month of enumeration,** another rotation group is in the second month, and so on. (The rotation group in the fifth month of enumeration is returning after an 8-month break.) Under this system, 75 percent of the sample is common from month to month and 50 percent is common from year to year for the same month. This procedure provides a substantial amount of month-to-month and year-to-year overlap in the sample, thus yielding better estimates of change and reducing discontinuities in the series of data without burdening sampled households with an unduly long period of inquiry.” (*BLS Handbook of Methods*, chapter 1, p. 7)

## **Conclusion**

There's a reason economists like me make a fairly good living. We're willing to dig into the numbers and the underlying assumptions. **If you found this persuasive and/or**

interesting, you may have the economist gene.

---

## Yet Another Downward Revision

As predicted [here](#), the “third” estimate of third-quarter U.S. GDP saw yet another downward revision. Recall the “advance” estimate was 2.5% growth, while the “second” estimate was 2.0%. (Translation: the “advance” estimate is the preliminary estimate, the “second” is the revised estimate, and the “third” is the final estimate.)

A growth of 2.5% is about what it takes to keep the unemployment rate constant. A 2.0% growth rate is all right, but pretty anemic. The 1.8% growth announced today is very anemic.

Given the very low rate of real growth, why did the unemployment rate drop in November? The answer I posted three weeks ago was the decrease in the size of the labor force as discouraged workers stop looking for work, reducing the number of unemployed. That explanation looks even more plausible in light of the slow growth of the third quarter GDP.

This is from the BEA website (edited slightly and put into a real table for easy pasting into Excel).

### “Revisions

The third estimate of the third-quarter increase in real GDP is 0.2 percentage point, or \$6.2 billion, lower than the second estimate issued last month, primarily reflecting a downward revision to personal consumption expenditures that was partly offset by an upward revision to private inventory investment. (Figures are percent change from preceding

quarter.)

	Advance Estimate	Second Estimate	Third Estimate
Real GDP	2.5	2.0	1.8
Current-dollar GDP	5.0	4.6	4.4
Gross domestic purchases price index	2.0	1.9	2.0"

Source:

<http://www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm>

---

## GDP Growth Was Revised Down

The second estimate is in for the third quarter and – no surprise – GDP growth was revised down. The preliminary estimate had been 2.5 percent, but the revised estimate is 2.0 percent. Remember, you read it [here](#) first.

---

## It's the Advance GDP Estimate, Stupid!

Happy talk media today are whooping it up because real GDP grew by 2.5% in the third quarter. News flash: it's the advance GDP estimate, stupid!



Don't take my word for it. Read the first two paragraphs of the press release from the [Bureau of Economic Analysis](#):

"Real gross domestic product – the output of goods and services produced by labor and property located in the United States – increased at an annual rate of 2.5 percent in the third quarter of 2011 (that is, from the second quarter to the third quarter) according to the "advance" estimate released by the Bureau of Economic Analysis. In the second quarter, real GDP increased 1.3 percent.

The Bureau emphasized that the third-quarter advance estimate released today is based on source data that are incomplete or subject to further revision by the source agency (see the box on page 3). The "second" estimate for the third quarter, based on more complete data, will be released on November 22, 2011."

Prediction: this estimate will be revised downward twice – once at the end of November and a second time just as we're about to welcome in 2012.