The Anomaly of U-3:
Why the Unemployment Rate is Overstating the Strength of Today's Labor Market

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Acknowledgements

Introduction

In October 2009, the unemployment rate peaked at 10.0 percent. Since then it has been falling at a steady pace, reaching a seven-year low of 5.0 percent in October 2015.[1]

This low unemployment rate has led some observers to ask whether the labor market may be nearing "full employment." "Full employment" is a term referring to the lowest rate of unemployment consistent with stable inflation. Correctly estimating the Full Employment Unemployment Rate — or FEUR — is important because of how the FEUR affects monetary policy.[2] The Federal Reserve typically raises interest rates when it believes the economy is approaching full employment. While this has the benefit of holding down inflation, higher interest rates also lead to slower job growth and reduced wages for American workers. This means that if the Federal Reserve overestimates the FEUR, it may raise interest rates prematurely and throw Americans out of work even when inflation poses no risk to the broader economy.

Estimates of the FEUR by most public agencies indicate that the U.S. labor market is close to full employment. The Congressional Budget Office (CBO) estimates that the FEUR is currently 5.05 percent, slightly higher than October's unemployment rate of 5.04 percent.[3] Economists at the Federal Reserve estimate that the FEUR is between 4.7 and 5.8 percent, with their central estimate being 4.9 percent.[4] With the unemployment rate so close to prominent estimates of the FEUR, the Federal Reserve may choose to raise interest rates as early as December.

However, there are good reasons for thinking that current estimates of the FEUR are too high. To see this it is necessary to have an understanding of the concepts of economic slack and labor market slack. Economic slack refers to the gap between the economy's potential level of output and its actual output. An economy that has many potentially useful resources sitting idle has a large degree of economic slack. When these idle resources are jobless workers — people who could be producing output for the economy but are currently out of a job — the economy experiences labor market slack. Since unemployment never falls to zero percent, there is always *some* level of slack in the labor

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1   Bureau of Labor Statistics (2015).
2   Another abbreviation for the FEUR is "NAIRU," meaning Non-Accelerating Inflation Rate of Unemployment.
3   Federal Reserve Bank of St. Louis (2015). The CBO predicts that over the long term the FEUR will fall to 5.00 percent.
4   See Board of Governors of the Federal Reserve System (2015) or http://www.federalreserve.gov/faqs/money_12848.htm.

market. "Full employment" is achieved when the labor market has moved to such a low level of slack that the economy experiences rising inflation.

Unfortunately, there is no singular measure of labor market slack. For this reason, economists often use the unemployment rate as a proxy for the level of slack in the labor market. This is only reasonable if the unemployment rate is a reliable indicator of slack.

This paper questions this assumption. By examining the historical relationship between the unemployment rate and alternative measures of labor market slack, it is determined that today's labor market has far more slack than is typically associated with an unemployment rate of 5.0 percent. It is therefore unlikely that the economy is at or near full employment.

The Official Unemployment Rate and Alternative Measures of Unemployment

The official unemployment rate is one of just six unemployment rates published by the Bureau of Labor Statistics (BLS). These six rates are called U-1, U-2, U-3, U-4, U-5, and U-6, respectively; the official unemployment rate is the U-3 rate.

The U-3 unemployment rate only counts workers as unemployed if they are out of a job, want to work, and have actively searched for a job within the past four weeks. The last requirement — that workers must have searched for a job within the past four weeks — can prove problematic in the context of a depressed labor market. If the economy is weak and jobless workers become so depressed with their job prospects that they completely give up the search for work, they will no longer be counted as unemployed. This causes the U-3 unemployment rate to fall. There is considerable reason to think that this phenomenon explains at least part of the drop in unemployment between October 2009 and October 2015. Most notably, the civilian labor force participation rate declined 2.6 percentage points during this time.[5] For persons aged 25 to 54, the participation rate declined 1.8 percentage points, indicating that fewer Americans of prime working age were actively seeking jobs.

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5   The civilian labor force participation rate (CLFPR) is defined as the percentage of the civilian population that is either employed or unemployed. The percentage of people without a job who are not actively searching for work is equal to 100 minus the CLFPR.

As stated earlier, the U-3 rate is one of many unemployment rates. To determine whether the U-3 rate is understating the level of slack in the labor market, one can examine the historical relationships between the U-3 rate and the BLS's other measures of unemployment. If the U-3 rate appears abnormally low, it is likely overstating the strength of the labor market, meaning that the labor market is further from full employment than the U-3 rate would suggest.

The BLS's five alternative measures of unemployment are described below. The U-1 and U-2 measures maintain the restriction that prospective workers must have searched for a job within the past four weeks in order to be counted as unemployed.

- *The U-1 unemployment rate* estimates the percentage of the civilian labor force that has been unemployed 15 weeks or longer.

- *The U-2 unemployment rate* limits its definition of unemployment to workers who have been laid off. Workers who quit their jobs, begin searching for work after a leave of absence from the labor market, or start searching for their first job are not counted as unemployed in the U-2 measure.

- *The U-4 unemployment rate* takes the U-3 rate and adds in "discouraged workers." These are prospective workers who have searched for employment in the last 12 months, but haven't searched within the past four weeks *specifically for the reason* that they didn't think any jobs were available. Discouraged workers must want a job and be available to work.

- *The U-5 unemployment rate* takes the U-3 rate and adds in "marginally attached workers." Like discouraged workers, marginally attached workers have searched for jobs within the past 12 months but not the past four weeks. However, they can give *any* reason for having dropped their search for work. (Discouraged workers are a subset of marginally attached workers.) Marginally attached workers must desire a job and be available to work immediately.

- *The U-6 unemployment rate* is the same as the U-5 unemployment rate except that it counts involuntary part-time workers as unemployed. "Involuntary part-time workers" are those who would like a full-time job but are working less than 35 hours per week.

Finally, six other measures have been created for the purposes of this paper; for convenience, they are referred to as the U-7, U-8, U-9, U-10, U-11, and U-12 unemployment rates. They are described

in full below. The U-7 and U-10 rates only include workers who have searched for a job within the past four weeks.

- *The U-7 unemployment rate* is the same as the U-3 rate, but it doesn't count prospective workers as unemployed if they quit their last job. This is because such workers had access to a job and *chose* to become unemployed. All other unemployed workers did not previously have access to a job and are thus counted as unemployed in the U-7 measure.

- *The U-8 unemployment rate* takes the U-3 rate and adds in people who say they want a job but have not searched for one within the past four weeks.

- *The U-9 unemployment rate* is the same as the U-8 rate except that it counts involuntary part-time workers as unemployed.

- *The U-10 unemployment rate* only counts workers as unemployed if they have been out of work 27 weeks or longer.[6]

- *The U-11 unemployment rate* measures unemployment purely in terms of unworked hours. It is determined through the following formula:

$$\frac{Hours\ Not\ Worked}{(Hours\ Worked + Hours\ Not\ Worked)}$$

The Hours Worked and Hours Not Worked are determined as follows:

- *Hours Worked*: This is determined by multiplying the number of persons employed by the average hours worked per week. For example, in October 2015, the number of hours worked was equal to:

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6 While the U-10 unemployment rate may appear similar to the U-1 rate, there is an important distinction beyond just what qualifies as long-term unemployment. Because the U-1 unemployment rate is calculated by dividing the number of workers unemployed 15 weeks or longer by the civilian labor force, it is not a "true" unemployment rate. The formula for the U-1 unemployment rate is: (Workers Unemployed 15+ Weeks) / (Employed Workers + Workers Unemployed 14 Weeks or Less + Workers Unemployed 15+ Weeks). By contrast, the formula for the U-10 unemployment rate is: (Workers Unemployed 27+ Weeks) / (Employed Workers + Workers Unemployed 27+ Weeks). With the exceptions of the U-1 and U-2 unemployment rates, all unemployment rates presented in this paper, including the U-3 rate, measure unemployment according to the following formula: (Persons Counted as Unemployed in the Given Measure) / (Employed Persons + Persons Counted as Unemployed in the Given Measure).

$$149.1 \; million \; workers \times 38.8 \; average \; hours \; worked \; per \; week$$
$$= 5.8 \; billion \; hours \; worked \; per \; week$$

o *Hours Not Worked by Unemployed Full-Time Workers*: This calculation involves multiplying the number of unemployed workers seeking full-time jobs by the average weekly hours of full-time workers. In October 2015, the hours not worked by unemployed full-time workers were:

$$6.6 \; million \; unemployed \; workers \; seeking \; full\text{-}time \; jobs$$
$$\times \; 42.5 \; hours \; worked \; per \; week \; by \; full\text{-}time \; workers$$
$$= 281.2 \; million \; hours \; not \; worked \; by \; unemployed \; full\text{-}time \; workers$$

o *Hours Not Worked by Unemployed Part-Time Workers*: This is determined by multiplying the number of unemployed workers seeking part-time jobs by the average weekly hours of voluntary part-time workers. "Voluntary part-time workers" are those who work part-time by choice. In October 2015, the hours not worked by unemployed part time workers consisted of:

$$1.3 \; million \; unemployed \; workers \; seeking \; part\text{-}time \; jobs$$
$$\times \; 19.8 \; hours \; workerd \; per \; week \; by \; voluntary \; part\text{-}time \; workers$$
$$= 26.3 \; million \; hours \; not \; worked \; by \; unemployed \; part\text{-}time \; workers$$

o *Hours Not Worked by Involuntary Part-Time Workers*: As stated on pg. 3, involuntary part-time workers are those who would like to work full-time but end up working part-time because they cannot find a full-time job. This calculation consists of multiplying the number of involuntary part-time workers by the difference in hours between full-time workers and involuntary part-time workers. In October, full-time employees worked an average of 42.5 hours per week, while involuntary part-time workers worked an average of 23.3 hours per week.[7] The number of hours not worked by involuntary part-time workers was therefore:

$$5.8 \; million \; involuntary \; part\text{-}time \; workers$$
$$\times \; (42.5 \; hours \; per \; week - 23.3 \; hours \; per \; week)$$
$$= 110.7 \; million \; hours \; not \; worked \; by \; involuntary \; part\text{-}time \; workers$$

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7   Note that involuntary part-time workers typically work slightly more hours than voluntary part-time workers.

The three measures of unworked hours are then added together for each month. In October, there were a total of 418.2 million unworked hours. The U-11 unemployment rate in October was:

$$\frac{418.2 \; million \; hours \; not \; worked}{5{,}785.9 \; million \; hours \; worked + 418.2 \; million \; hours \; not \; worked} = 6.7 \; percent \; unemployment$$

- *The U-12 unemployment rate* also measures unemployment in terms of unworked hours, though it incorporates the unworked hours of people not in the labor force who say they want a job. The civilian labor force consists of everyone who is either *employed* or *unemployed* as defined by the U-3 measure. However, there are millions of Americans *not* in the labor force who say they want a job; these people will henceforth be referred to as "Job Wanters." Unfortunately, the BLS doesn't ask Job Wanters whether they are seeking full-time jobs or part-time jobs; for the purposes of the U-12 measure, it is assumed that Job Wanters desire the same types of jobs as people in the civilian labor force. In October 2015, about 86.2 percent of the civilian labor force wanted a full-time job[8]; the remaining 13.8 percent preferred part-time work.[9] The October 2015 estimate of the U-12 rate assumes that 86.2 percent of Job Wanters hope to work 42.5 hours per week, while 13.8 percent hope to work 19.8 hours per week.

We are left with eleven measures of unemployment other than the U-3 rate. To determine whether the alternative unemployment rates have historically moved in tandem with the U-3 rate, this paper draws on regressions comparing the alternative measures to the U-3 rate from 1994 to 2006, before the most recent recession began.[10] As one example, **Figure 1** compares the U-11 unemployment rate from each month between 1994 and 2006 with the U-3 unemployment rate from the same month. The U-11 unemployment rate was clearly a very strong predictor of the U-3 unemployment rate over this period. In general, the U-3 unemployment rate could be accurately predicted using the formula presented in Figure 1:

$$U\text{-}3 \; unemployment \; rate = (0.7812 \times U\text{-}11 \; unemployment \; rate) + (0.0763)$$

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8   This consists of employed full-time workers, unemployed full-time workers, and involuntary part-time workers.
9   This consists of voluntary part-time workers and unemployed part-time workers.
10 The regressions go back to 1994 for three reasons. First, the BLS only began producing the U-4, U-5, and U-6 measures in 1994. Second, various data used in the other unemployment rates were either modified or first added in 1994. For example, the BLS drastically changed how it measures voluntary and involuntary part-time employment in 1994. The pre-1994 part-time employment data cannot be compared to the data from 1994 and after. Third, the labor market in the 1960s, 1970s, etc., may not be as directly comparable to the current labor market as the labor market in the 1990s and 2000s.

FIGURE 1

Correlation Between the Monthly U-11 and U-3 Unemployment Rates, 1994−2006

$$y = 0.7812x + 0.0763$$
$$R^2 = 0.9889$$
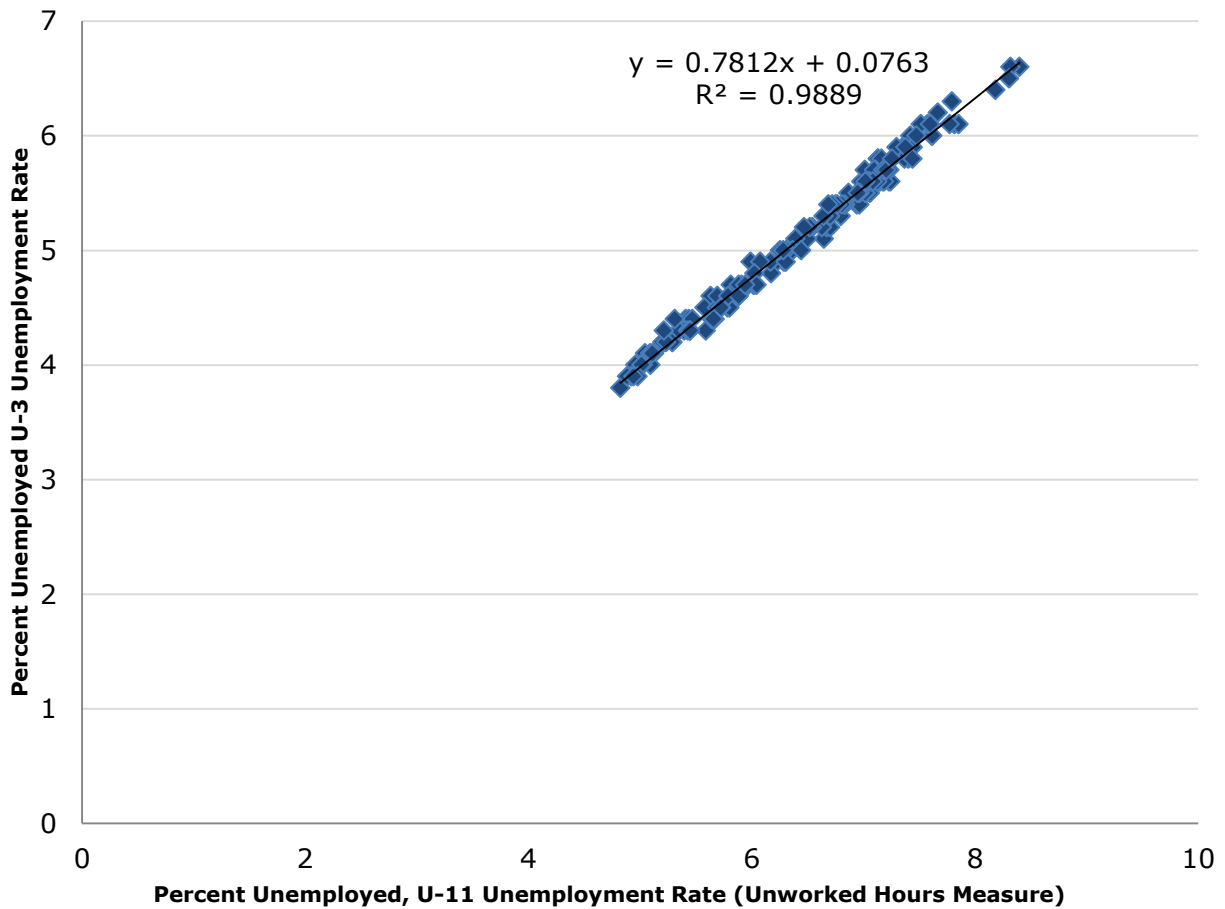
Source and notes: Bureau of Labor Statistics and author's calculations.

The r-squared value for the regression in Figure 1 is 0.99. This suggests that changes in the U-11 unemployment rate correlate strongly with changes in the U-3 unemployment rate. This is true of the regressions for all eleven alternative measures; the regressions' r-squared values range from 0.85 to 1.00 and average 0.92. This means that before the most recent recession, the U-1, U-2, and U-4 through U-12 unemployment rates were all accurate predictors of the U-3 rate.

To determine whether the U-3 unemployment rate is currently understating the amount of slack in the labor market, this paper applies the 1994−2006 formulas to the present-day labor market. The paper asks: *given today's U-1, U-2, and U-4 through U-12 unemployment rates, what should we expect the current U-3 unemployment rate to be?* If the other measures of unemployment indicate that the U-3 rate should be higher, there is reason to think that the labor market is weaker than October's 5.0 percent unemployment rate indicates. This would in turn suggest that the labor market is farther from full employment than the U-3 rate implies.

One caveat should be kept in mind when examining the results presented in the next section: unemployment rates closer to the U-3 rate are less likely to have their predicted U-3 rates show a significant degree of divergence from the actual U-3 rate. Consider, for example, the U-4 rate. The U-4 rate in October was 5.4 percent. Because the U-4 rate is a more expansive measure than the U-3 rate, the U-3 rate predicted by the U-4 rate must remain between 5.0 and 5.4 percent. Even a small amount of variation in this range — say, today's U-4 rate predicting a U-3 rate 0.1 or 0.2 percentage points higher than the actual U-3 rate — is substantial given the closeness of the definitions. As the alternative unemployment rates move further away from the U-3 rate — with the U-9 rate being the highest unemployment rate and the U-10 rate being the lowest — there is more room for the predicted U-3 rate to deviate from the actual U-3 rate. The U-3 rate predicted by the U-4 rate is not directly comparable to the U-3 rates predicted by the U-9 or U-10 rates.

The most important question to keep in mind is the *direction* that each alternative measure points; that is, do the other eleven measures generally suggest that the U-3 unemployment rate should be *higher* or *lower* than it currently is? The next section provides an answer to this question.

Results: The U-3 Unemployment Rate Is Understating Labor Market Slack

Tables 1 through 4 below show the U-1 through U-12 unemployment rates for the last four months. The third column shows what we would expect the U-3 unemployment rate to be given the specified alternative unemployment rate. The last column shows the percentage-point discrepancy between the predicted U-3 unemployment rate and the actual U-3 unemployment rate. If the predicted rate is higher than the actual rate, the cell in the last column is highlighted in blue; if the predicted rate is lower than the actual rate, it is highlighted in green. Over the last three months, all eleven alternative unemployment rates show that the U-3 unemployment rate is understating the level of slack in the labor market.

TABLE 1

October 2015, U-3 Unemployment Rate: 5.04			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.1	5.80	+0.76
U-2	2.5	5.13	+0.09
U-4**	5.4	5.16	+0.12
U-5**	6.2	5.24	+0.20
U-6**	9.8	5.62	+0.58
U-7	4.6	5.11	+0.07
U-8	8.6	5.25	+0.21
U-9**	12.1	5.57	+0.53
U-10**	1.4	6.16	+1.12
U-11**	6.7	5.34	+0.30
U-12	10.2	5.42	+0.38

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE 2

September 2015, U-3 Unemployment Rate: 5.05			
Unemployment Rate	Percent Unemployed	Predicted U-3 Rate	Over/Under Actual U-3
U-1**	2.1	5.80	+0.75
U-2	2.5	5.13	+0.08
U-4**	5.4	5.16	+0.11
U-5**	6.2	5.24	+0.19
U-6**	10.0	5.74	+0.69
U-7*	4.6	5.13	+0.08
U-8	8.5	5.23	+0.18
U-9**	12.2	5.63	+0.58
U-10**	1.4	6.11	+1.06
U-11**	6.9	5.47	+0.42
U-12*	10.3	5.48	+0.43

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE 3

August 2015, U-3 Unemployment Rate: 5.11			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.2	5.95	+0.84
U-2	2.6	5.26	+0.15
U-4**	5.5	5.26	+0.15
U-5	6.2	5.24	+0.13
U-6**	10.3	5.92	+0.81
U-7*	4.6	5.18	+0.07
U-8	8.6	5.25	+0.14
U-9**	12.5	5.78	+0.67
U-10**	1.4	6.22	+1.11
U-11**	7.0	5.55	+0.44
U-12	10.4	5.53	+0.42

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE 4

July 2015, U-3 Unemployment Rate: 5.26			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.1	5.80	+0.54
U-2	2.6	5.26	*Same*
U-4**	5.7	5.45	+0.19
U-5*	6.4	5.41	+0.15
U-6**	10.4	5.98	+0.72
U-7	4.8	5.31	+0.05
U-8	8.8	5.42	+0.16
U-9**	12.7	5.86	+0.60
U-10**	1.4	6.22	+0.96
U-11**	7.2	5.67	+0.41
U-12	10.7	5.68	+0.42

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

Comparable tables for the first six months of 2015 have been placed in the Appendix.[11] With ten months' worth of estimates based on eleven alternative unemployment rates, we are provided with 110 point-in-time estimates of the predicted U-3 unemployment rate. Of these 110 estimates, 103 indicate that the U-3 unemployment rate should be higher; 6 indicate that it should be lower; and 1 suggests that the U-3 rate was accurate for the given month. Ten of the alternative unemployment rates suggest that the U-3 rate should have been higher for *every* month of 2015. The only measure which shows that the U-3 rate should have been *lower* at any time is the U-2 rate. However, over the past three months, even the U-2 rate has indicated that the U-3 rate should be higher. Of the 33 most recent point-in-time estimates, all 33 indicate that the U-3 unemployment rate is understating the level of slack in today's labor market.

The U-2 and U-7 unemployment rates, which are based on the *reasons* why people slip into unemployment, indicate that the U-3 unemployment rate should be about 0.1 percentage points higher than it currently is. Unemployed workers are less likely to have voluntarily left their jobs and are more likely to have been laid off than we would expect given recent rates of unemployment.

The U-4, U-5, U-6, U-8, and U-9 measures provide more expansive definitions of unemployment. The U-4, U-5, and U-8 measures, which count as unemployed some number of people who want jobs but are not in the labor force, indicate that the U-3 unemployment rate should be about 0.1−0.2 percentage points higher than it currently is. Much larger discrepancies emerge from the U-6 and U-9 measures, both of which count involuntary part-time workers as "unemployed." Over the past three months, the U-6 and U-9 measures indicate that the U-3 rate should have been 0.7 and 0.6

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11   See Tables A1 through A6.

percentage points higher, respectively. This means that there are far more involuntary part-time workers than we should expect given an unemployment rate of 5.0 or 5.1 percent.

Large discrepancies can be observed when looking at the frequency of long-term unemployment. The U-1 unemployment rate, defined as the number of workers unemployed 15 weeks or longer as a share of the civilian labor force, implies that the U-3 rate should be 0.7−0.9 percentage points higher than it currently is. The U-10 unemployment rate, which only accounts for workers who have been unemployed 27 weeks or more, suggests that the U-3 unemployment rate should be over 1.0 percentage point higher. Today's unemployed Americans have been out of work far longer than the U-3 unemployment rate suggests.

Finally, the U-11 and U-12 unemployment rates, which measure unemployment in terms of unworked hours, show substantial divergence from the U-3 rate. This is predominantly due to the high incidence of involuntary part-time employment in today's economy. Although involuntary part-time workers are effectively "half-unemployed," they do not show up at all in the U-3 unemployment rate. Since the beginning of the year, both the U-11 rate and the U-12 rate have been indicating that the U-3 rate should be about 0.4 percentage points higher than it actually is. The gap between the actual U-3 rate and the U-3 rate predicted by the U-11 rate fell 0.1 percentage points in October due to a large decline in involuntary part-time employment. Between September and October, involuntary part-time employment fell from 4.1 to 3.9 percent of total employment even though the unemployment rate barely moved. If the October decrease represents the beginning of a trend, the discrepancy between the U-11 and U-3 rates may begin to disappear. This would eliminate a tremendous source of labor market slack not being picked up by the U-3 rate. However, the October decrease may reverse itself in future months; since one month's data is of little informational value, it is hard to know whether or not the sudden drop will continue. Measures of unemployment based on unworked hours from the rest of 2015 show that the U-3 rate should be about 0.4 percentage points higher than it currently is.

Labor Market Slack and More Expansive Unemployment Rates

The unemployment rate through the first ten months of 2015 has averaged 5.3 percent.[12] This means that 5.3 percent of the civilian labor force is out of a job and has searched for work within the past four weeks.

The four week cutoff is somewhat arbitrary. If we were to count people as unemployed if they had searched within the past five weeks, the unemployment rate would be higher. The unemployment rate would go higher still if we counted people who had searched within the past six weeks, the past seven weeks, the past eight weeks, etc.

The U-4 and U-5 unemployment rates expand upon the search term by counting people as unemployed if they have applied for a job within the past year. Yet while the U-4 and U-5 rates will be higher than the U-3 rate, they should generally move in line with the U-3 rate. The same goes for the U-8 rate, which counts anyone who wants a job as unemployed.

It is therefore telling that the U-4, U-5, and U-8 unemployment rates were all higher over the past four months than for any other interval with a comparable U-3 rate. **Figure 2** shows the U-4, U-5, and U-8 unemployment rates for every four-month period since 1994 with a U-3 unemployment rate of 5.1 percent.[13,14] The highest U-4, U-5, and U-8 unemployment rates all come from 2015.

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12 It does not matter whether we take a weighted or unweighted average, as both have been 5.34 percent.
13 Because Figure 2 includes data on all periods with a U-3 unemployment rate of 5.1 percent and the U-4, U-5, and U-8 unemployment rates must by definition be higher than the U-3 rate, the minimum value for the y-axis is 5.1 percent.
14 Between July and November 2001, the monthly U-3 unemployment rates were 4.6, 4.9, 5.0, 5.3, and 5.5 percent, respectively. The four-month average unemployment rate was 4.9 percent from July to October and was 5.2 percent from August to November. In order to obtain a 5.1 percent unemployment rate from late 2001, a three-month average from August to October was used in place of a four-month average.

FIGURE 2

Expanded Unemployment Rates, U-3 Unemployment Rate of 5.1 Percent
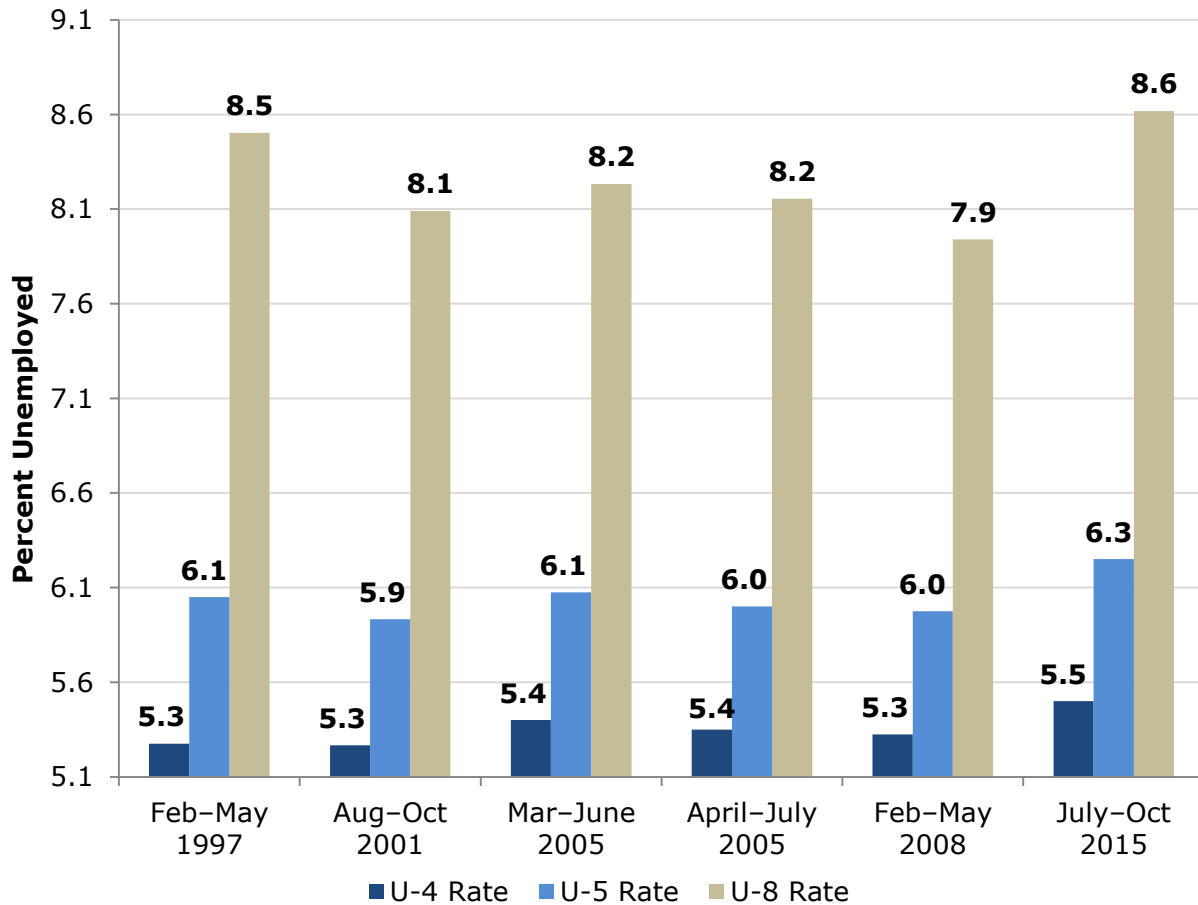
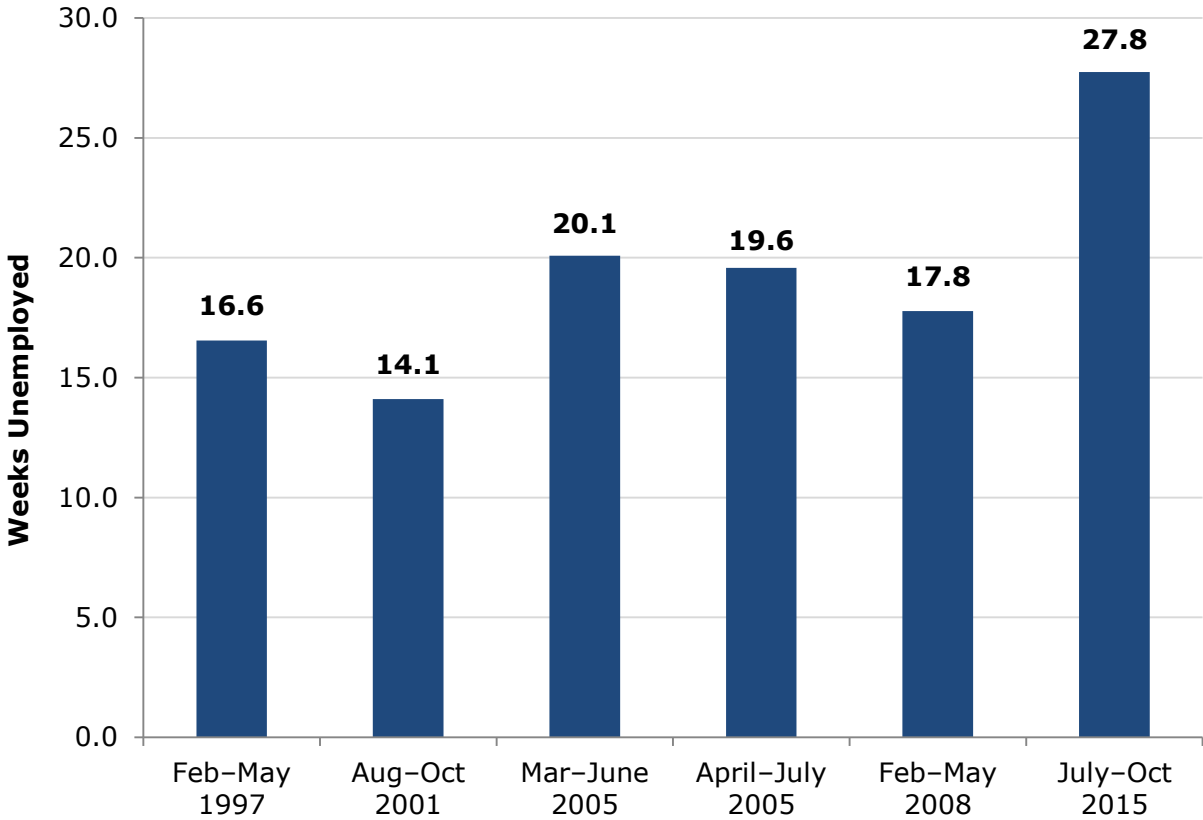Source and notes: Bureau of Labor Statistics and author's calculations.

This indicates that the U-3 unemployment rate is failing to capture a significant portion of the slack in today's labor market. Normally a far higher percentage of all jobless workers would be counted as *unemployed* according to the U-3 rate.

The U-3 unemployment rate is low not because the labor market has been good at providing workers with jobs, but rather because many prospective workers have not searched for work within the past four weeks.

Labor Market Slack and the Duration of Unemployment

Another sign pointing towards the weakness of today's labor market is the average duration of unemployment. The average duration of unemployment is a useful measure because it tells us how long the unemployed have to look for work before they either find a job or give up their search. Over the past four months, the unemployed have been out of work an average of 27.8 weeks. Between 1994 and 2008, the average duration of unemployment typically associated with a 5.1 percent unemployment rate was 17.6 weeks.[15] This can be observed in **Figure 3** below.

Average Duration of Unemployment, U-3 Unemployment Rate of 5.1 Percent

Source: Bureau of Labor Statistics.

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15 The BLS changed how it measures the average duration of unemployment in January 2011. The new methodology increased the estimated average duration of unemployment by a little over 6 percent. Figure 3 and all pre-2011 average durations of unemployment cited in this section have been adjusted accordingly. The BLS's adjustments in no way affect the U-1 and U-10 unemployment rates.

This indicates that unemployed workers are having more trouble finding jobs than today's 5.0 percent unemployment rate would suggest.

Labor Market Slack and Unworked Hours

Finally, one important aspect of labor market slack not captured by the unemployment rate is the degree of *under*employment. **Figures A1 and A2** in the Appendix show that there has been very little variation historically in the number of hours worked by full-time and involuntary part-time workers; as such, the gap in hours between the two groups of workers has remained quite constant over time. Variation in the level of underemployment is therefore driven predominantly by changes in the *incidence* of involuntary part-time employment.

There was a noticeable decline in involuntary part-time employment between September and October. Through the first nine months of 2015, the U-11 unemployment rate suggested that the U-3 unemployment rate should be over 0.4 percentage points higher than it actually was. The difference fell to 0.3 percentage points in October. It is not clear that the discrepancy will remain at 0.3 percentage points in future months.

The BLS has incorporated involuntary part-time workers into one of its unemployment rates by classifying involuntary part-time workers as "unemployed" in its U-6 measure. This was also done for the U-9 rate created for this paper. One flaw with this methodology is that it counts involuntary part-time employment the same as unemployment; yet while unemployed workers aren't working *at all*, involuntary part-time workers on average work about half as many hours as full-time workers. Involuntary part-time employment would obviously be an improvement over unemployment for someone seeking a full-time job.

Figure A3 in the appendix shows that unemployment increased more amongst full-time workers than amongst part-time workers during the recession. However, as shown in **Table 5** below, the single characteristic of underemployment that has increased the most since 2007 is actually involuntary part-time employment.

TABLE 5

Changes in the Rates of Unemployment and Underemployment Since 2007				
	Average Rate, First 10 Months of 2007	Average Rate, First 10 Months of 2015	Percentage-Point Change from 2007	Ratio of 2015 Rate to 2007 Rate
Part-Time Unemployment Rate[16]	6.02	6.62	+0.61	1.10
Full-Time Unemployment Rate	4.52	5.43	+0.91	1.20
Unemployment Rate	4.58	5.34	+0.77	1.17
Involuntary Part-Time Employment Rate[17]	3.49	5.05	+1.56	1.45
Source: Bureau of Labor Statistics and author's calculations.				

To determine how this increase in involuntary part-time employment affects labor market slack, it is necessary to look at measures that don't count involuntary part-time employment the same as unemployment (as the U-6 and U-9 rates do). We can do this by converting the total hours not worked by involuntary part-time workers to Full-Time Equivalent (FTE) Unemployment. If the average full-time workweek is 40 hours, and two involuntary part-time workers are employed just 20 hours per week, their combined underemployment is equivalent to the unemployment of a single full-time worker.

Figure 4 shows the FTE unemployment attributed to involuntary part-time employment for all four-month periods with a U-3 unemployment rate of 5.1 percent. Given this unemployment rate, involuntary part-time employment would normally account for 1.3−1.4 percentage points of FTE unemployment. However, between July and October, it accounted for 1.8 percentage points.

Figure 5 shows the combined rates of unemployment and FTE unemployment for the same time periods given in Figure 4.[18] While incorporating the unworked hours of involuntary part-time workers *always* leads to higher unemployment, the increase is about 0.4−0.5 percentage points greater than usual in today's labor market.

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16 Note that the rate presented here is calculated differently than the part-time unemployment rate presented by the BLS. See Figure A3 in the appendix for further discussion.

17 The Involuntary Part-Time Employment Rate is measured as a share of all employed persons seeking a full-time job. It is calculated as follows: (Involuntary Part-Time Workers) / (Full-Time Workers + Involuntary Part-Time Workers).

18 Figure 5 has a y-axis minimum of 3.8 percent, the lowest monthly unemployment rate since 1994. That rate was achieved in April 2000.
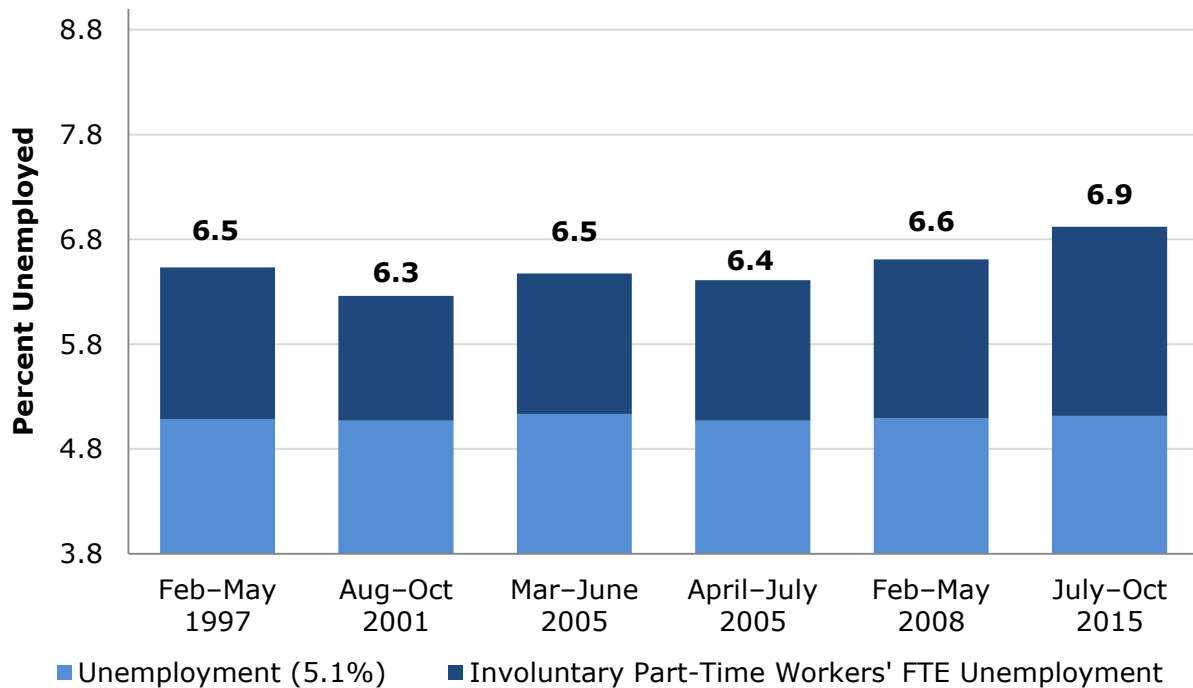
Involuntary Part-Time Workers' FTE Unemployment, U-3 Unemployment Rate of 5.1 Percent
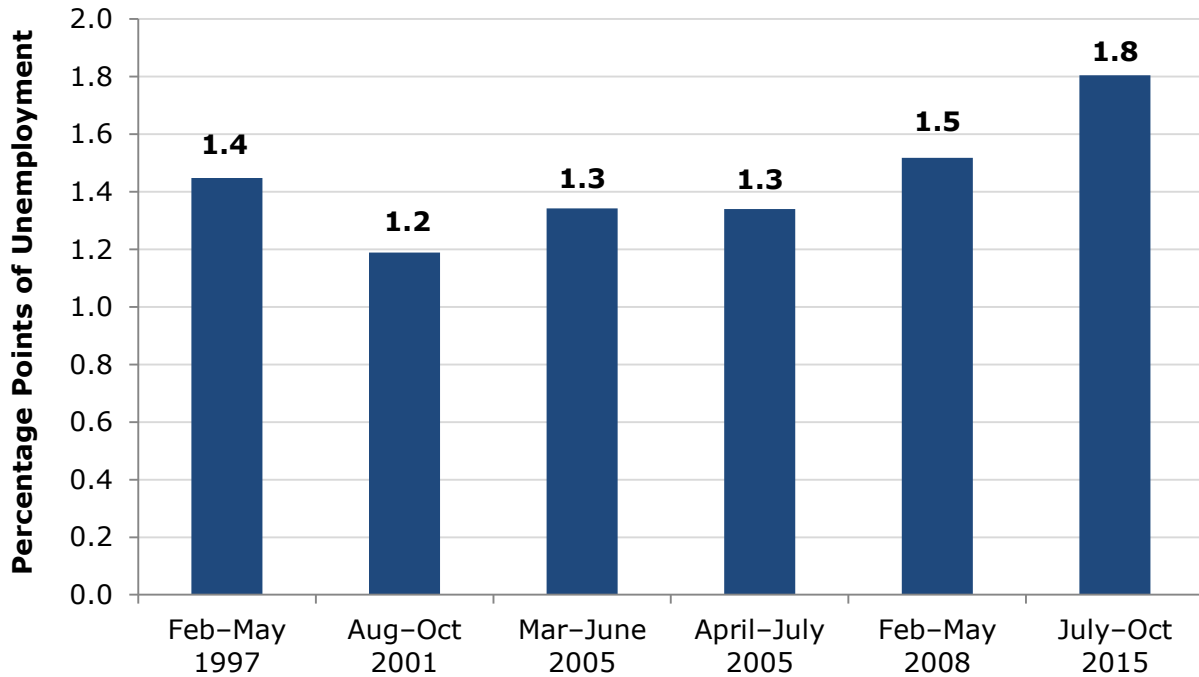
Source: Bureau of Labor Statistics and author's calculations.

**Combined Rate of Unemployment and Involuntary Part-Time Workers' FTE Unemployment**

■ Unemployment (5.1%)   ■ Involuntary Part-Time Workers' FTE Unemployment

Source: Bureau of Labor Statistics and author's calculations.

This is consistent with the predicted estimates of the U-3 rate based on the U-11 rate, which measures unemployment in terms of hours worked. **Figure 6** shows the actual U-3 unemployment rate for each month of 2015 compared to the rate predicted by the U-11 measure. The U-11 rate has consistently overestimated the U-3 rate by about 0.4 percentage points.

Unemployment Rate vs. Unemployment Rate Predicted by Unworked Hours
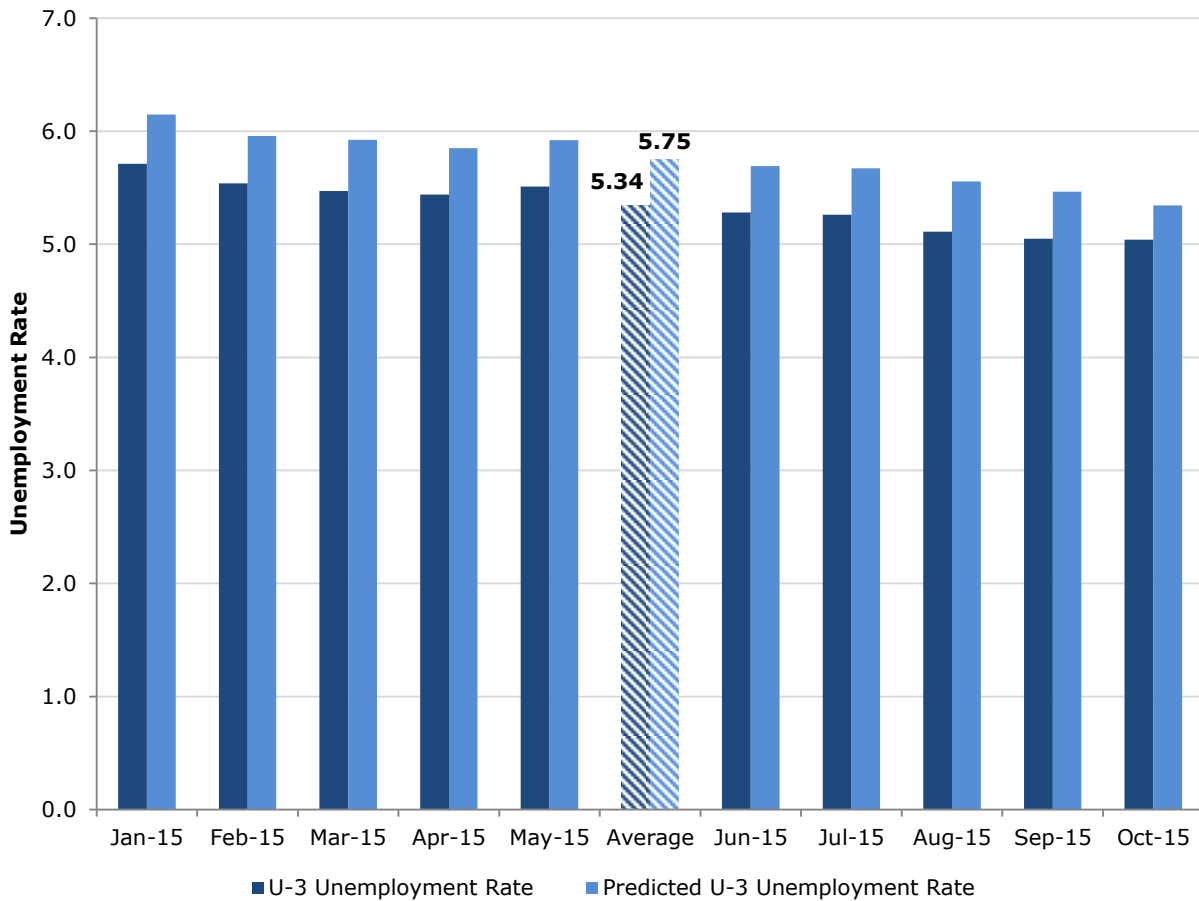
Source: Bureau of Labor Statistics and author's calculations.

All estimates incorporating the additional unemployment caused by unworked hours indicate that the U-3 unemployment rate should be about 0.4−0.5 percentage points higher.

Conclusion

The evidence overwhelmingly indicates that the U-3 unemployment rate is understating the level of slack in today's labor market. Over the past three months, all eleven alternative unemployment rates have shown that the official unemployment rate should be higher than it actually is.

The eleven alternative measures incorporate information on the reasons for unemployment, the duration of unemployment, more expansive definitions of unemployment, and the degree of *under*employment. The eleven measures show that:

- Unemployed workers are more likely to have been fired and are less likely to have quit their jobs than we would expect given 5.0 percent unemployment;

- Based on the average duration of unemployment and the high incidence of long-term unemployment, the unemployed are still having significant trouble finding jobs;

- Broader measures of unemployment which count people as unemployed if they want a job or have searched for work within the past year indicate that the U-3 rate is lower than it should be. In other words, the U-3 unemployment rate is low not because the labor market has been good at providing workers with jobs, but rather because most jobless workers haven't searched for work in the past month; and

- There are far more involuntary part-time workers than we'd normally expect given 5.0 percent unemployment. While the unemployment rate may have normalized, *underemployment* is still abnormally high.

The economy is weaker than the unemployment rate implies. If the Federal Reserve raises interest rates in the near future, it will likely cost workers their jobs at a time when there is still significant slack in the labor market. The obvious policy response is that the Federal Reserve should keep interest rates low until measures other than the official unemployment rate show an improving economy.

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Appendix

TABLE A1

June 2015, U-3 Unemployment Rate: 5.28 percent			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.2	5.95	+0.67
U-2	2.6	5.26	-0.02
U-4**	5.7	5.45	+0.17
U-5	6.4	5.41	+0.13
U-6**	10.5	6.04	+0.76
U-7**	4.8	5.37	+0.09
U-8	8.8	5.42	+0.14
U-9**	12.8	5.91	+0.63
U-10**	1.4	6.14	+0.86
U-11**	7.2	5.69	+0.41
U-12	10.6	5.67	+0.39

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE A2

May 2015, U-3 Unemployment Rate: 5.51 percent			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.4	6.24	+0.73
U-2	2.7	5.39	-0.12
U-4	5.8	5.55	+0.04
U-5	6.6	5.58	+0.07
U-6**	10.8	6.21	+0.70
U-7	5.0	5.57	+0.06
U-8	9.0	5.55	+0.04
U-9**	13.1	6.05	+0.54
U-10**	1.7	6.66	+1.15
U-11**	7.5	5.92	+0.41
U-12	10.9	5.82	+0.31

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE A3

April 2015, U-3 Unemployment Rate: 5.44 percent			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.3	6.10	+0.66
U-2	2.6	5.26	-0.18
U-4**	5.9	5.64	+0.20
U-5**	6.7	5.67	+0.23
U-6**	10.8	6.21	+0.77
U-7	4.9	5.50	+0.06
U-8	9.1	5.58	+0.14
U-9**	13.1	6.23	+0.79
U-10**	1.7	6.70	+1.26
U-11**	7.4	5.85	+0.41
U-12	10.9	5.84	+0.40

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE A4

March 2015, U-3 Unemployment Rate: 5.47 percent			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.4	6.24	+0.77
U-2	2.7	5.39	-0.08
U-4**	5.9	5.64	+0.17
U-5**	6.7	5.67	+0.20
U-6**	10.9	6.27	+0.80
U-7	4.9	5.50	+0.03
U-8	9.2	5.64	+0.17
U-9**	13.3	6.13	+0.66
U-10**	1.7	6.76	+1.29
U-11**	7.5	5.92	+0.45
U-12*	11.1	5.92	+0.45

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE A5

February 2015, U-3 Unemployment Rate: 5.54			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.6	6.54	+1.00
U-2	2.7	5.39	-0.15
U-4**	6.0	5.74	+0.20
U-5**	6.8	5.76	+0.22
U-6**	11.0	6.33	+0.79
U-7	5.0	5.57	+0.03
U-8	9.3	5.75	+0.21
U-9**	13.4	6.19	+0.65
U-10**	1.8	6.96	+1.42
U-11**	7.5	5.96	+0.42
U-12*	11.2	5.99	+0.45

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.

TABLE A6

January 2015, U-3 Unemployment Rate: 5.71			
Unemployment Rate	**Percent Unemployed**	**Predicted U-3 Rate**	**Over/Under Actual U-3**
U-1**	2.7	6.69	+0.98
U-2	2.7	5.39	-0.32
U-4**	6.1	5.83	+0.12
U-5**	7.0	5.93	+0.22
U-6**	11.3	6.51	+0.80
U-7	5.2	5.77	+0.06
U-8	9.4	5.79	+0.08
U-9**	13.5	6.27	+0.56
U-10**	1.9	7.09	+1.38
U-11**	7.8	6.15	+0.44
U-12	11.4	6.07	+0.36

Source and notes: Bureau of Labor Statistics and author's calculations. **Actual U-3 unemployment rate is outside the 95 percent confidence interval for the predicted U-3 rate. *Actual U-3 unemployment rate is outside the 90 percent confidence interval for the predicted U-3 rate.
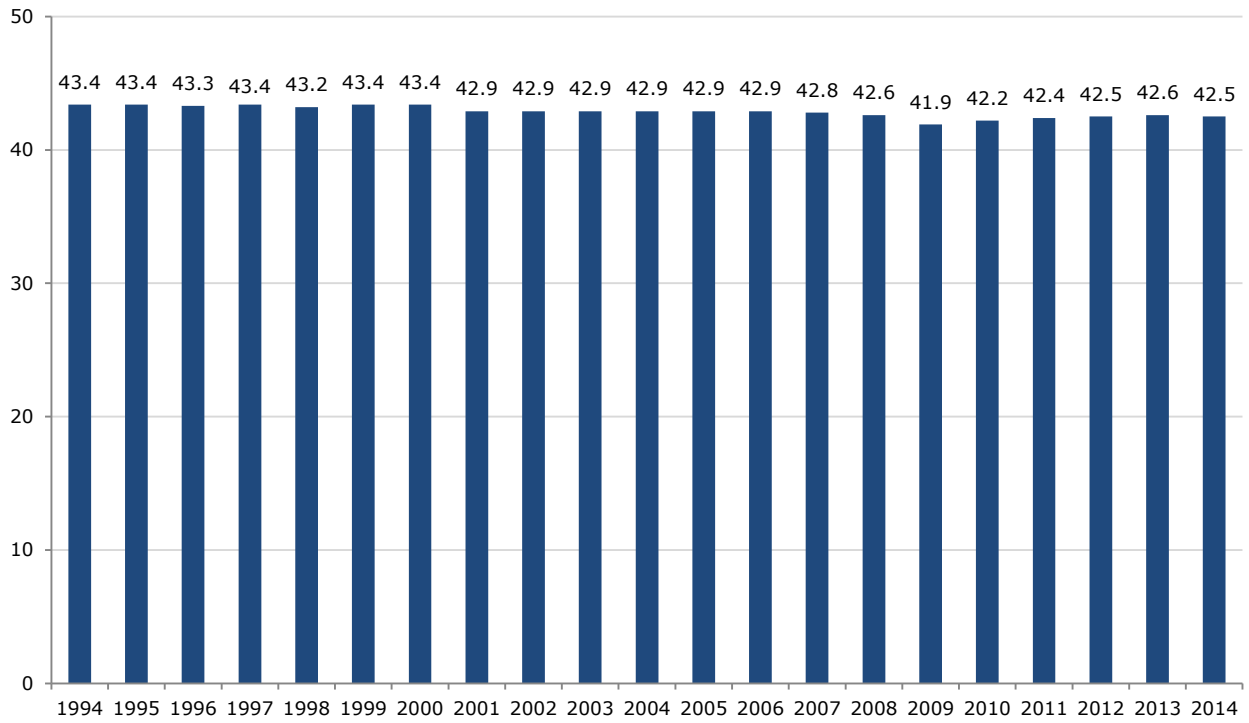
FIGURE A1

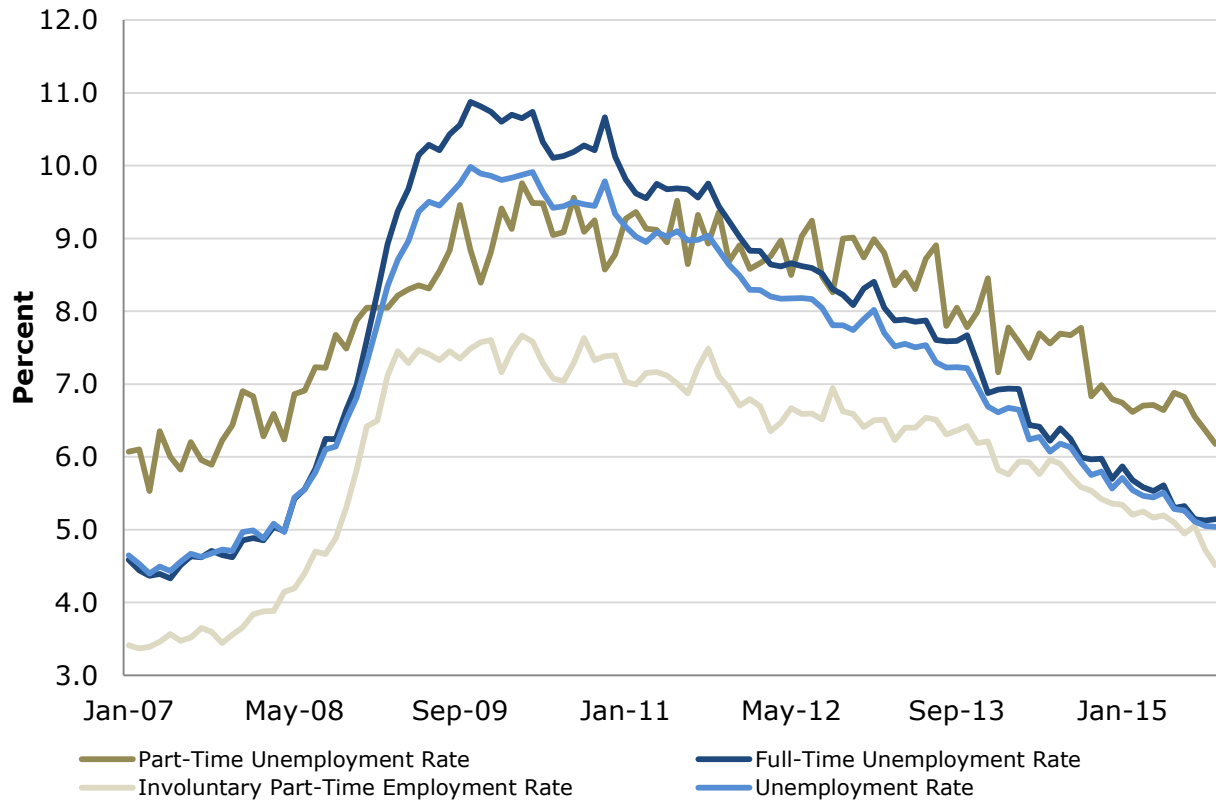| Weekly Hours Worked by Involuntary Part-Time Workers |
|---|
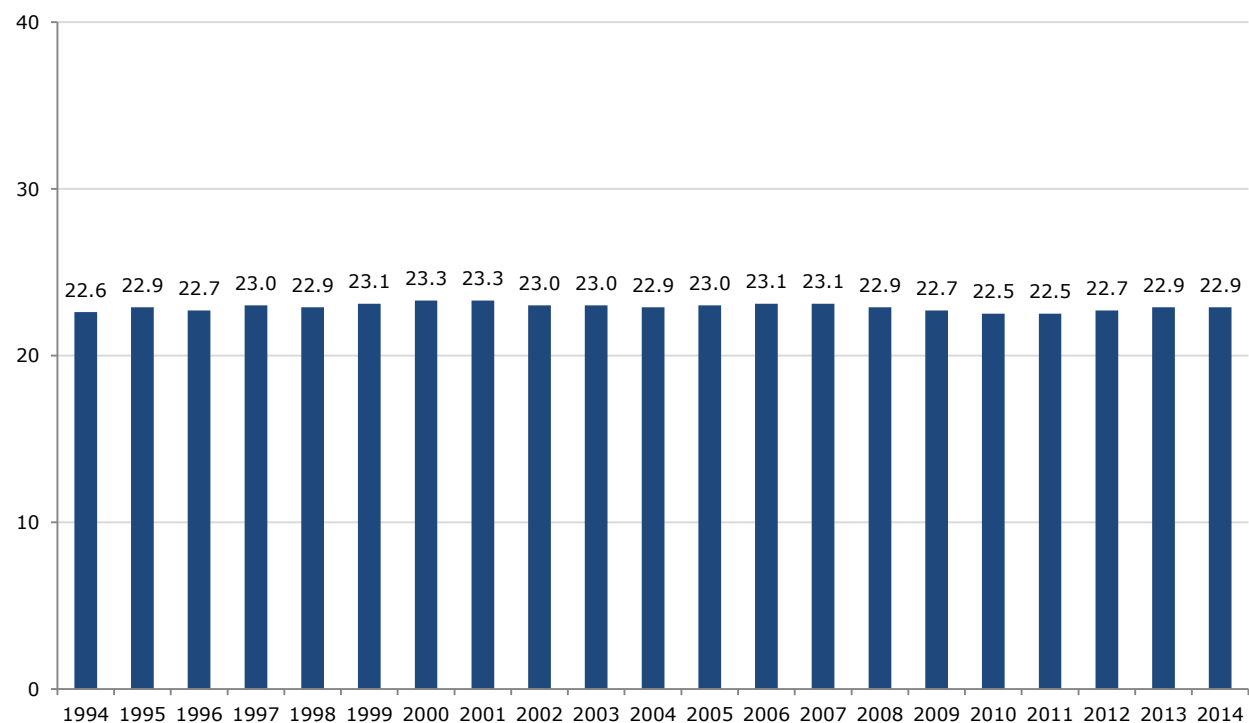
Source: Bureau of Labor Statistics.

Weekly Hours Worked by Full-Time Workers

Source: Bureau of Labor Statistics.

Unemployment and Underemployment by Desired Hours of Work

Source and notes: Bureau of Labor Statistics and author's calculations.

Note: The part-time unemployment rate presented in this figure is different from the part-time unemployment rate calculated by the BLS. The BLS calculates its part-time unemployment rate as follows: (Unemployed Part-Time Workers) / (Unemployed Part-Time Workers + Employed Voluntary Part-Time Workers + Employed Involuntary Part-Time Workers). The part-time unemployment rate presented in Figure A3 is limited to workers who want part-time jobs. As such, the rate is calculated according to the following formula: (Unemployed Part-Time Workers) / (Unemployed Part-Time Workers + Employed Voluntary Part-Time Workers).

Note: The Involuntary Part-Time Employment Rate measures the percentage of workers involuntarily working part-time as a share of all employed persons who want full-time jobs. It is calculated according to the formula: (Involuntary Part-Time Workers) / (Full-Time Workers + Involuntary Part-Time Workers).