

A New Measure of Resource Utilization in the Labor Market

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The U.S. unemployment rate increased substantially following the Great Recession, reaching close to 10 percent in the fourth quarter of 2009. Since then the unemployment rate has declined by about 3 percentage points at the same time that the labor force participation rate has declined by about 2 percentage points. For many observers of the U.S. economy the unemployment rate declined faster than originally expected and, together with the concurrent decline of the labor force participation rate, has led them to doubt that the unemployment rate alone accurately reflects the state of resource utilization in the labor market. These observers now suggest that broader measures of unemployment provide a better indication of labor market slack than the standard unemployment rate.²

In this paper, we briefly review these extended measures of unemployment that attempt to capture ‘discouraged’ individuals not usually counted as unemployed. We then go on to construct an alternative measure of labor non-utilization that is based on recent advances in our understanding of how individuals transition between labor market states. Our measure is more comprehensive than most of the usual measures of extended unemployment, but it also accounts for the substantial differences in the employability of non-employed individuals. The qualitative findings based on our index of non-employment are very similar to those of the standard unemployment rate. In particular, our index does

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²See, for example, Appelbaum (2014).

not suggest that the standard unemployment rate understates how much slack there is in the current labor market.

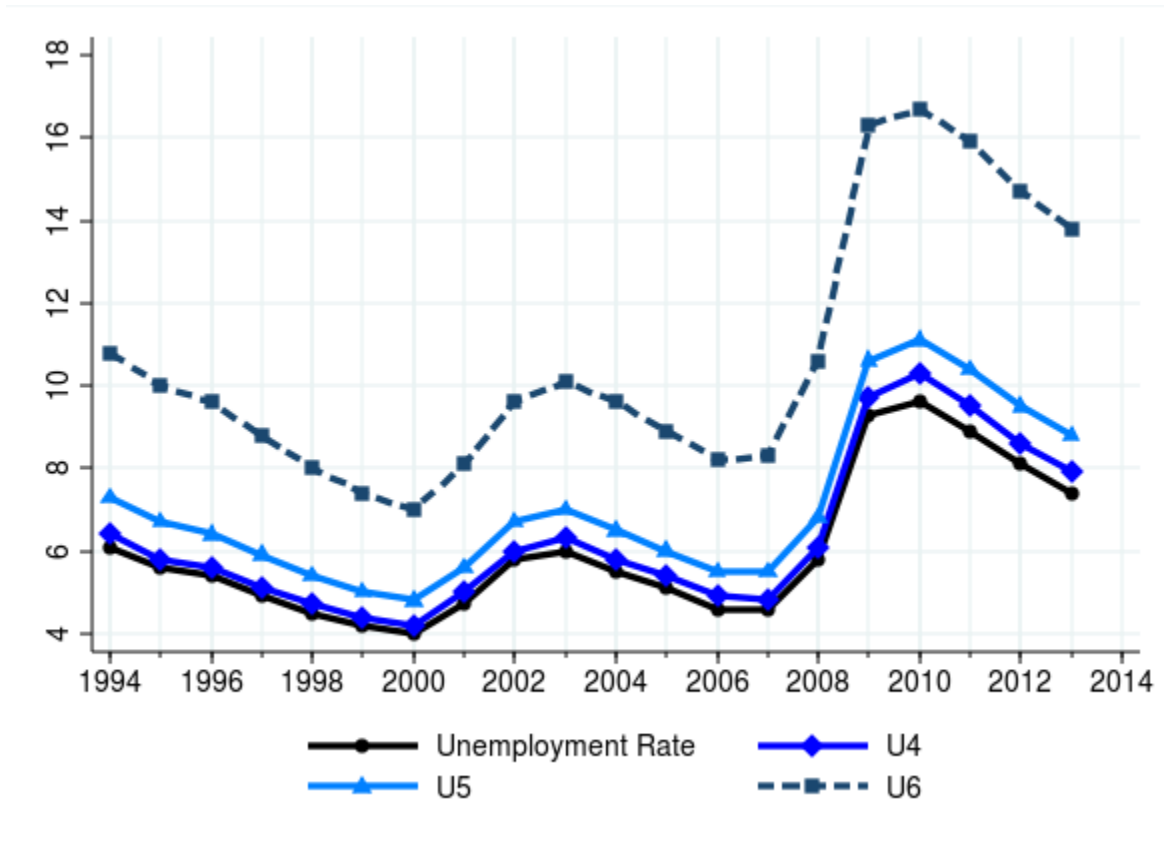
Classifications of Non-Employment

Among the most widely reported statistics from the Bureau of Labor Statistics (BLS) are the shares of the working age population currently employed, currently unemployed, and out of the labor force (OLF). These shares are estimated using responses from the monthly Current Population Survey (CPS). To count as unemployed, a respondent needs to indicate that she has been actively looking for work during the survey week. Those neither employed nor actively looking for work are classified as OLF.

The unemployed can be further subdivided based on their length of unemployment. Short-term unemployment (STU) refers to unemployment with a reported duration of 26 or fewer weeks. Long-term unemployment (LTU) indicates that an individual has been unemployed more than 26 weeks. Those OLF do not make up a homogenous group either. Based on responses to the CPS questionnaire, we distinguish between those who want a job and those who do not want a job. Among those who want a job we distinguish between marginally attached (i.e., those individuals who want a job, searched for work in the previous year, are available for work, but did not actively search for a job during the survey week) and others (i.e., those individuals who want a job, but did not search for work in the previous year or are not available for work). Among marginally attached individuals, we further distinguish discouraged workers (i.e., those who are not actively searching for a job in the survey week because they are discouraged over job prospects) and other marginally attached (i.e., those who are not searching for a job in the survey week due to family or personal reasons). A large group among those OLF report that they do not currently want a job. These are made up of retirees, the disabled, others currently in school, and others not in school.

The BLS constructs extended measures of unemployment that include sub-groups from OLF in unemployed (Figure 1). In particular, the U4 rate adds discouraged workers, and the U5 rate includes the marginally attached. The U6 rate is even more comprehensive than U5, in that it adds employed who are working part-time for economic reasons.

Figure 1. Unemployment Rate Definitions from the BLS



Note: The figure shows annual series. Source: HAVER. U4 includes unemployed and discouraged workers. U5 includes unemployed and marginally attached workers. U6 includes unemployed and marginally attached and those working part-time economic reasons.

Through the analysis, we accept that due to frictions in the labor market there is always some unemployment in the economy, no matter how well the economy is doing. In other words, there is some natural rate of unemployment below which we do not expect the unemployment rate to fall. By construction, the extended unemployment rates are higher than the standard unemployment rate, but similar to the standard unemployment rate, we would expect that there is a natural rate for each of the extended unemployment rates.

Thus, we describe the slack in the labor market by the cyclical movements of the various unemployment rates around their natural rates. This cyclical variation can be captured using the deviation from a trend or the increase from the previous trough following a recession. In either case, from Figure 1 it does not appear that the extended unemployment rates increased more than the standard unemployment rates over the recent cycle, with the possible exception of U6, which includes those who work part time for economic reasons. But even for the U6 index we should note that this rate also increased more than the other rates following the 2001 recession.

In interpreting Figure 1, it is however important to note that all of the extended unemployment definitions give equal weight to the unemployed and the various segments of the OLF. For instance, labor market slack as measured by U5 treats an unemployed individual the same way it treats an individual who is marginally attached to the labor force.

The motivation to examine broader unemployment concepts comes from the observation that the distinction between unemployment and OLF is not as sharp as one would like to think. For example, in the CPS we observe substantial gross flows from OLF

straight to employment. Nevertheless, the rates at which people make the transition to employment are lower for those who are not actively looking for work.³

Figure 2 on the following page shows the probabilities of becoming employed for the two unemployment segments and seven OLF segments in 2007 and 2010. Note first, that the probability of becoming employed differs substantially among these groups. The probability is highest for the short-term unemployed. Next come the long-term unemployed and the individuals out of the labor force who want a job, who are about half as likely to become employed as are the STU.⁴ Then come those who do not want a job but are neither retired nor disabled, who are only one-fourth as likely to become employed as are the STU.⁵ Finally, the retired or disabled are less than one-tenth as likely to become employed as are the STU.⁵ Second, note that in a recession the employment probabilities tend to fall for all groups. Nevertheless, the ranking of the different groups in terms of their probabilities of finding employment remain the same over the business cycle.⁶

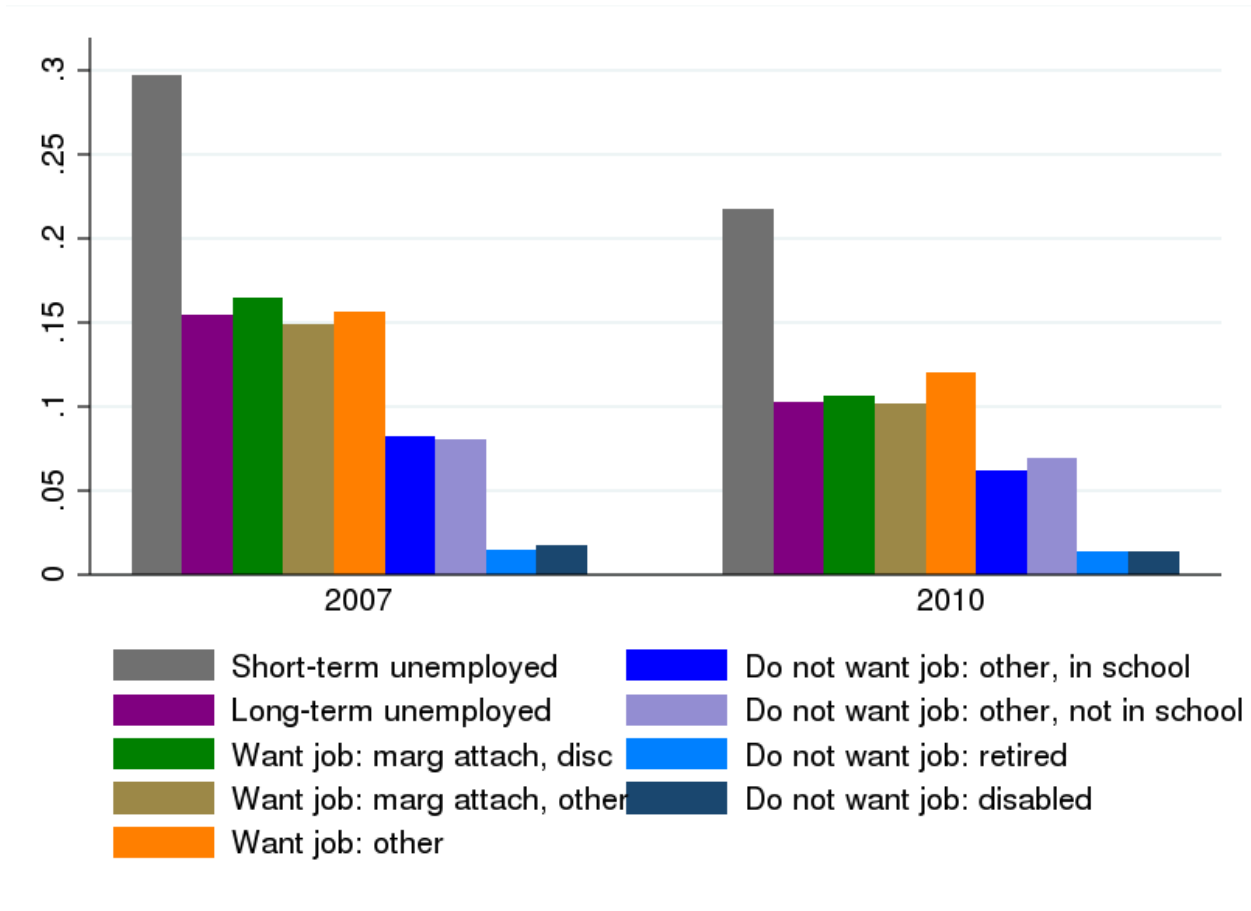
³ See Flinn and Heckman (1983) for an early discussion of the distinction between unemployment and OLF, and Elsby et al (2013) for a recent analysis of the non-participation margin.

⁴ See Krueger et al (2014) for the analysis of the long-term unemployed.

⁵ See also Fujita (2014).

⁶ Figure A1 in the appendix shows annual averages of monthly job finding rates for the years 1994 to 2013.

Figure 2. Transition Probabilities to Employment, 2007 and 2010



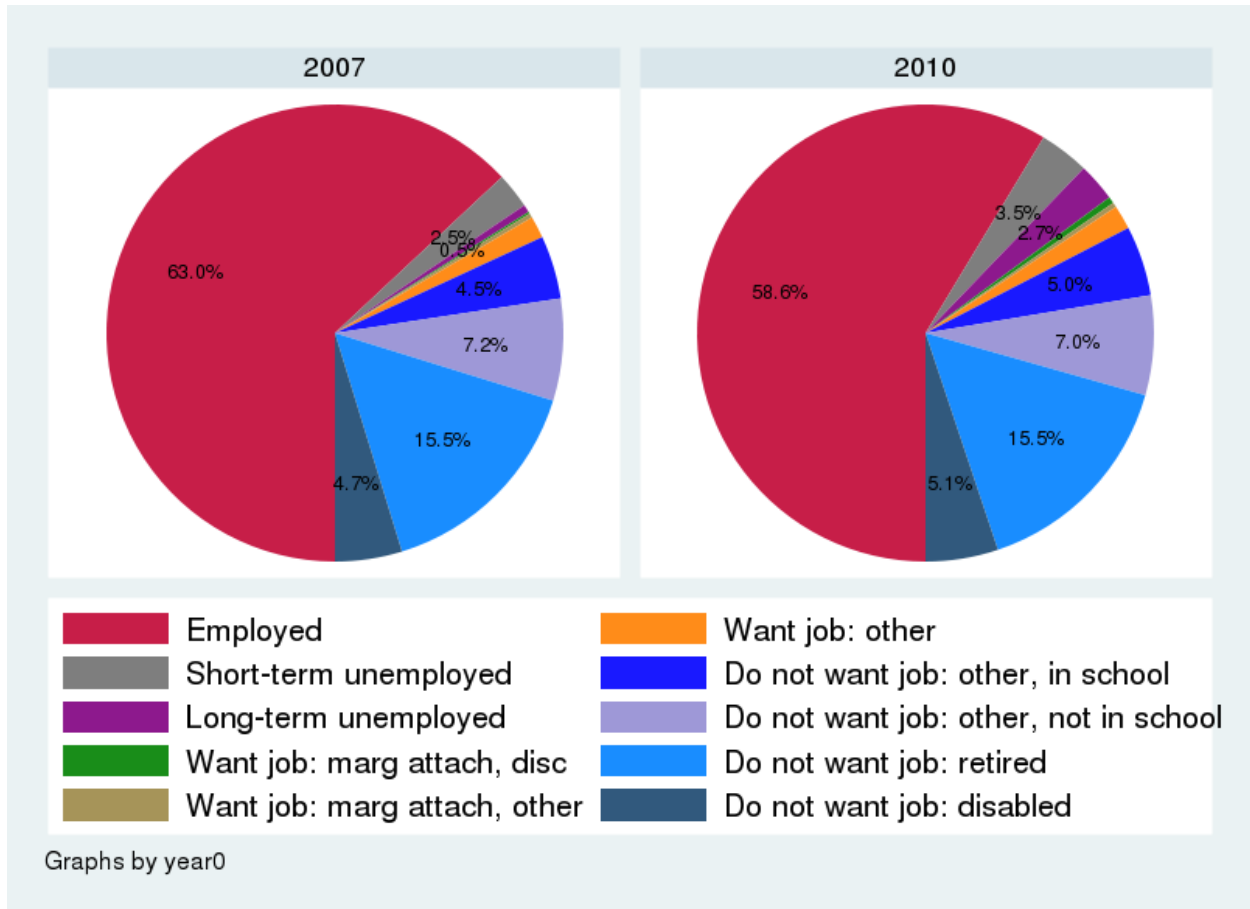
Note: The figure shows annual averages of monthly series, NSA. Authors' calculations from the CPS micro-data.

Figure 3 on the following page shows the shares of the employed, short-term unemployed, long-term unemployed and the seven OLF segments in the civilian non-institutionalized working age population in 2007 and in 2010.⁷ First, even though total unemployment increased in the Great Recession, its combined share with the employed declined, that is, the labor force participation rate declined. Second, the majority of those OLF do not want a job and are retired or disabled. Third, the OLF share is much larger than the unemployment share. Thus, even though the OLF segments have much lower

⁷ See Figure A2 in the appendix for the annual averages of shares for the years 1994-2013.

chances of becoming employed, they still contribute significantly to gross flows into employment.

Figure 3. Composition of the Working Age Population, 2007 and 2010



Note: The figure shows annual averages of monthly series, NSA. Authors' calculations from the CPS micro-data.

Non-Employment Index

We now construct a non-employment index that is more comprehensive than the unemployment rate, but also recognizes the fact discernible in Figure 2 that the different OLF segments are less closely connected to the labor market than those classified as unemployed. Our proposed non-employment index is a weighted average of the various subgroups among the unemployed and OLF where the weight for each subgroup is given by

sample average of its job finding rate relative to the job finding rate of the short-term unemployed. Our index thus measures the total availability of labor in units of short-term unemployed. We use sample averages of the job finding rates over the entire time period to ensure that the variation in the index over time is not driven by cyclical changes in relative job finding rates.

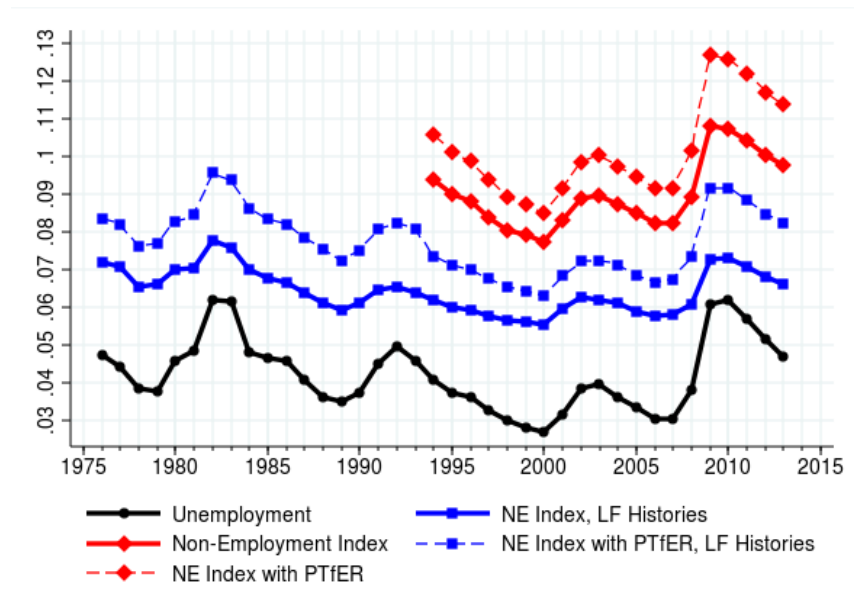
The relative job finding rate reflects the relative availability of non-employed segments for employment. We can look at the non-employment index as a ‘quality’ adjusted measure of labor resources available for employment. Our concept is similar to quality adjusted employment measures, where one uses relative wages as measures of relative labor efficiency.⁸

Figure 4 on the following page shows standard unemployment (black line) and the non-employment index (red line) as shares of the working age population. The qualitative features of our non-employment index and standard unemployment are the same: they rise and fall together, and both increase more following the Great Recession than they did during the 2001 recession. Our non-employment index is, however, smoother than is unemployment, but after increasing in the Great Recession, both indices are now almost halfway back to their respective troughs in 2007.

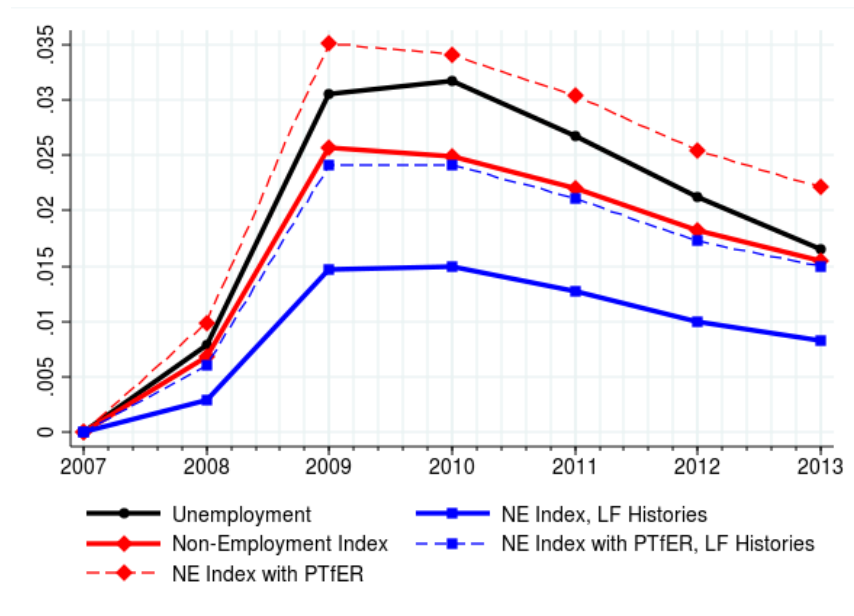
⁸ Such indices have a long tradition in economics. Consider for example Katz and Murphy (1992) who use such indices to generate efficiency units of labor supply by education group.

Figure 4. Unemployment Rate and Non-Employment Index, 1976-2013

A. Levels



B. Deviations from the 2007 Values



Note: The blue line shows the index constructed as described in Kudlyak and Lange (2014). All indexes are reported as shares of the civilian non-institutionalized population. The series of working part time for economic reasons and unemployment are from HAVER.

Unlike the BLS U6 index, our non-employment index does not incorporate those working part time for economic reasons. To include this segment into our index, we have to make a decision on what weight to attach to those working part time. Since workers in this segment are already employed for up to 35 hours per week, we cannot use their probability of becoming employed. As a first pass, we simply assign a weight of one-half to these workers, that is, this segment is already 50 percent utilized. Admittedly, this is arbitrary, but it also seems to be on the conservative side. This index is shown in Figure 4 (dashed red line). Similar to the U6 index, including those working part-time for economic reasons in our non-employment index implies a larger increase of the index after 2007 and less of a recovery since 2010. But then again, the same pattern seems to hold for the 2001 recession as it does for the U6 index.

It is only possible to calculate the exit rates to employment for the OLF segments by desire to work since 1994 when the CPS was comprehensively revised.⁹ For the period before 1994, Kudlyak and Lange (2014) have used the panel feature of the CPS to construct labor market segments based on respondents' labor force history for the last three months, that is, their status as employed, unemployed or OLF in the last three months. They find significant and persistent differences in the employment probabilities for these segments. Using the same procedure that we have just discussed above, we can construct a non-employment index that is a weighted average of the non-employed with different labor force histories. Again, for weights we use the sample average of the relative employment probabilities of the different segments. We use the job finding rate of the unemployed with some employment in the previous three months to anchor the relative employment probabilities, since this group is the most likely to become employed. Figure 4 shows the

⁹ Prior to 1994 the question about the desire to work was only asked of the individuals in interview months 4 and 8 and thus the transition probabilities for the OLF segments by desire to work cannot be constructed prior to 1994.

non-employment index constructed from labor market segments based on respondents' labor force history (blue line) and the index that also incorporates the measure of those working part time for economic reasons, assuming a 50 percent utilization rate (dashed blue line). Similarly to the non-employment index above, the index based on the labor force status history in 2013 is almost halfway toward its 2007 trough. For the longer sample, we can also see that including those working part time for economic reasons makes the non-employment index more volatile in all recessions.

Conclusion

We find that in 2013 resource utilization in the labor market is still at a lower level than in 2007, prior to the Great Recession. However, the official unemployment rate and our alternative measures of recourse utilization that take into account all non-employed in the labor market and their relative employment rates are now almost halfway back to their respective troughs in 2007.

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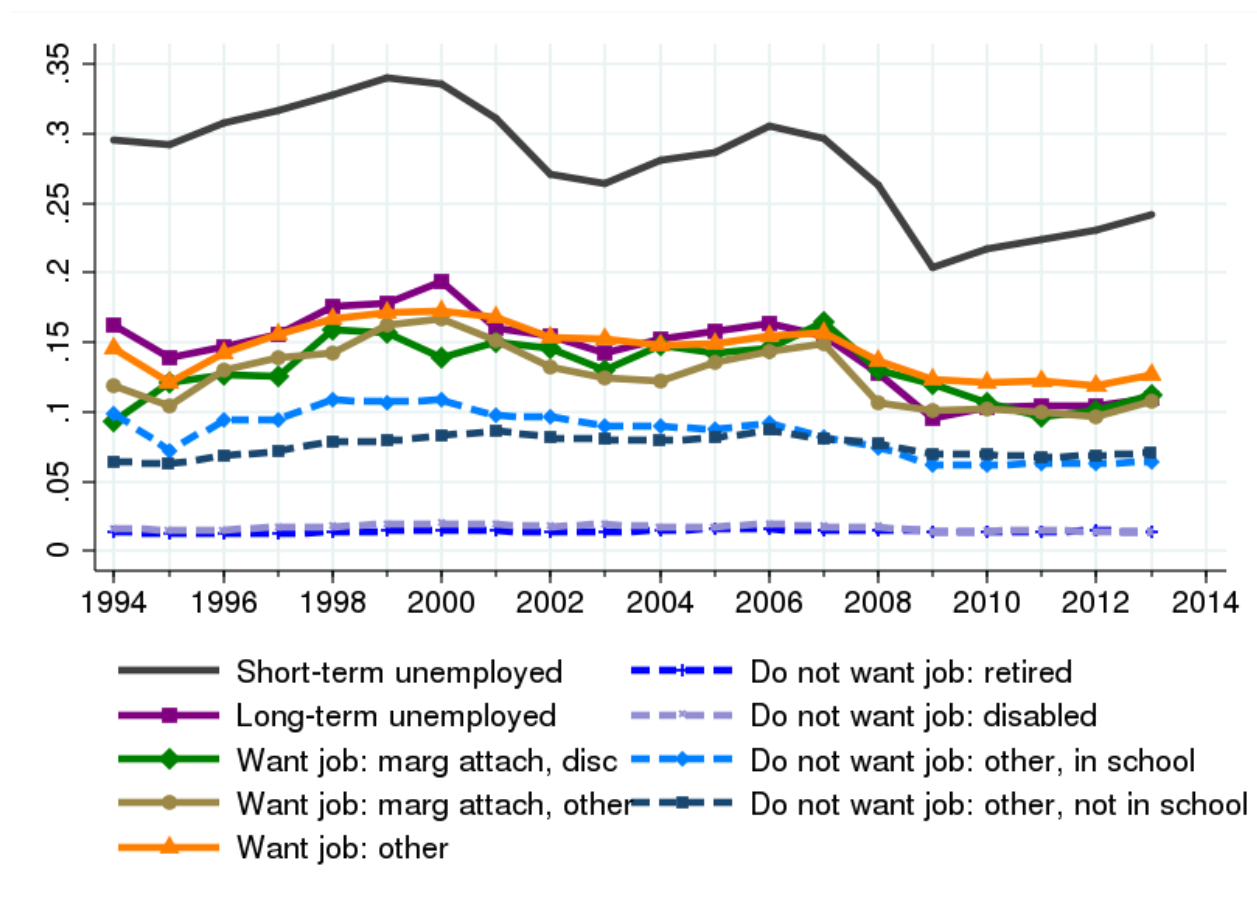
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Appendix

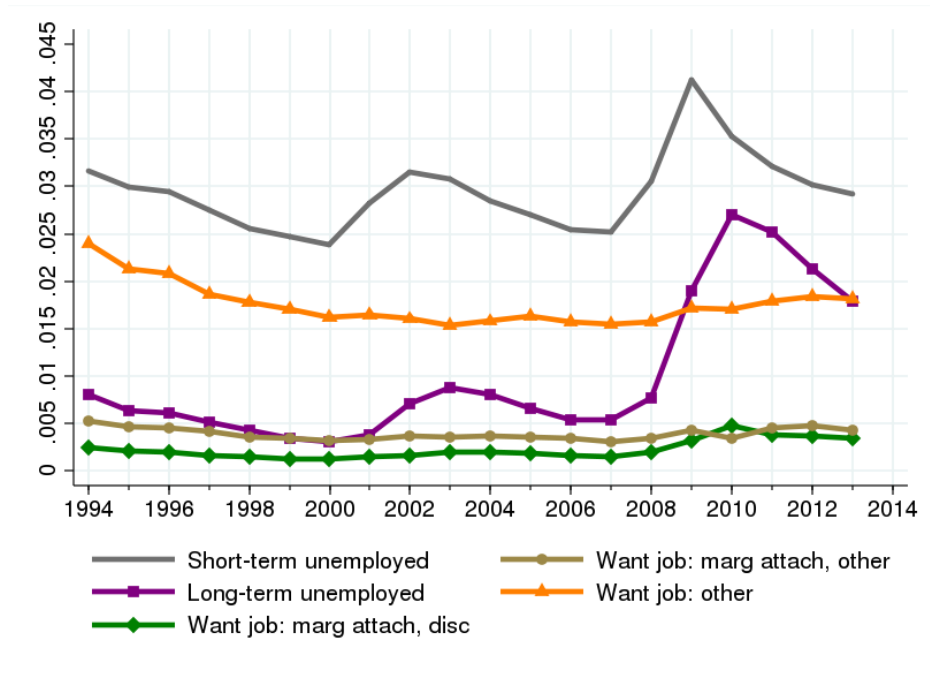
Figure A1. Transition Probabilities from Non-Employment to Employment



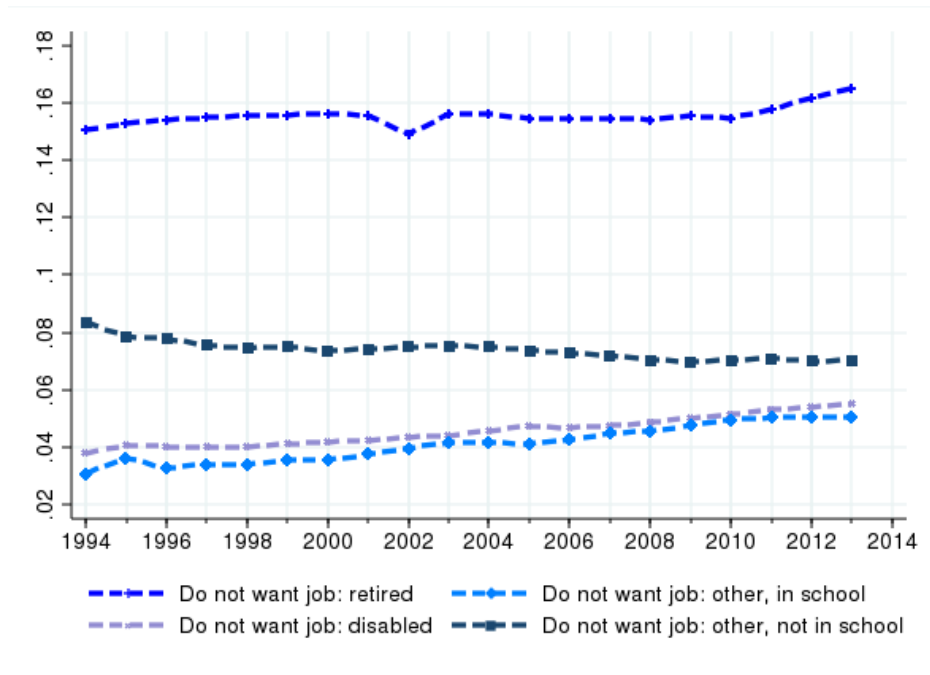
Note: The figure shows annual averages of monthly NSA series.

Figure A2. Categories of Non-Employment, population shares

A. Unemployment and OLF(Want Job)

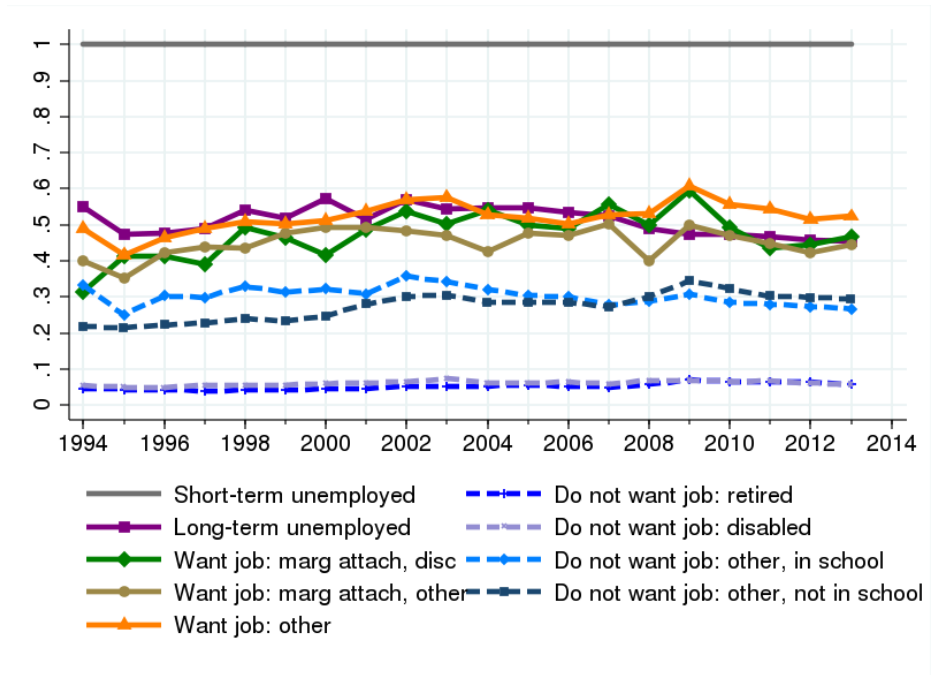


B. OLF(Do Not Want Job)



Note: The figure shows annual averages of monthly series, NSA.

Figure A3. Ratios of the Transition Probabilities to Employment from a Particular Category of OLF to the Transition Probability to Employment from Unemployment



Note: Authors' calculations from the CPS micro data. The figure shows annual averages of monthly series, NSA.