Economic Brief

The Increased Role of Flows between Nonparticipation and Unemployment During the Great Recession and Recovery

By Marianna Kudlyak and David A. Price

Labor market research often focuses on transition rates between employment and unemployment without analyzing the effects of transition rates into and out of the labor force. Current Population Survey data permit analysis of transition rates among all three labor force statuses. A study at the Richmond Fed examines the role of labor force participation in the dynamics of the aggregate unemployment rate across the four most recent recessions. This research finds an increased role for transition rates between nonparticipation and unemployment during the Great Recession and recovery.

One approach to studying unemployment in U.S. business cycles is to look at worker inflows and outflows using time-series data on individuals.[1] Such research typically analyzes only two labor force statuses: employment and unemployment. Adding a third status, nonparticipation in the labor force, may allow richer accounts of worker behavior. Research by one of the co-authors of this article (Kudlyak) explores the importance of labor force nonparticipation in the dynamics of the aggregate unemployment rate across the recessions of 1982–83, 1990–91, 2001, and 2007–09. This research suggests an increased role of the flows between nonparticipation and unemployment in driving the changes in the aggregate unemployment rate during the 2007–09 recession.[2]

The distinction between unemployment and nonparticipation hinges on whether the individual is considered to be actively seeking employment. Under the definition used by the

Bureau of Labor Statistics (BLS), a jobless adult (at least 16 years old) is unemployed in a given week if he or she was available for work and "made specific efforts to find employment" during that week or the preceding three weeks. Otherwise, a jobless adult is considered a nonparticipant; some examples include students, stay-at-home parents, and those who have stopped actively searching for a job.

Using the flows between employment, unemployment, and nonparticipation, one can express changes in the number of unemployed workers and the number of employed workers as a function of six transition rates: employment to unemployment, unemployment to employment, nonparticipation to employment, employment to nonparticipation, unemployment to nonparticipation, and nonparticipation to unemployment. (In this context, the transition rate between a state "A" and a state "B" represents the number of workers who changed status from A to B from

one month to another divided by the total number of workers who were in state A in the first month.) Then, setting the net changes in the numbers of unemployed and employed workers to zero, one can derive the steady state unemployment rate as a function of the six rates. This steady state unemployment rate is considered a good approximation of the actual unemployment rate. One can use this relationship to perform counterfactuals to determine the importance of each of the six transition rates.

The data in the analysis come from the Current Population Survey (CPS), a monthly survey administered by the BLS that covers a rotating panel of approximately 60,000 households. Each household is surveyed during four consecutive months, then dropped from the survey for eight months, then surveyed again for four months. By matching CPS records of individuals across consecutive interview months, Kudlyak constructed monthly gross flows between nonparticipation, unemployment, and employment; she then applied a correction for time-aggregation and seasonality following Shimer (2011). Simple averaging then converted the resulting monthly series into quarterly series.

To carry out the analysis, Kudlyak first fixed the four rates that involve transitions into or out of nonparticipation and varied just the remaining two—between unemployment and employment. The results are shown in Figure 1. The broken lines in the figure show the change in the aggregate unemployment rate for each of the four most recent recessions, measured against the quarter when the unemployment rate began to rise. Each line continues through eight quarters after the unemployment peak.[3] (The start and end dates thus differ slightly from NBER-determined recession dates.) The solid lines show counterfactual unemployment rates in which the contributions of transitions into and out of nonparticipation are held constant at their levels at the beginning of the rise in the aggregate unemployment rate.[4] The gap between the two lines represents the change in the aggregate unemployment rate not accounted for by transitions between unemployment and employment.

All four recessions begin with a period in which the aggregate unemployment rate and the counterfactual unemployment rate generally track each other closely, except for the period close to the peak of

Figure 1: The Increased Role of Flows into and out of the Labor Force during Recessions

The gap between the solid and broken lines represents the change in the aggregate unemployment rate due to workers moving into and out of the labor force.

Change due to transitions between employment and unemployment
- - - Change in the steady state aggregate unemployment rate

Note: Changes are shown for each recession from the first quarter of increase in the aggregate unemployment rate through eight quarters following the rate's peak.
Sources: Current Population Survey data from the Bureau of Labor Statistics and analysis by Kudlyak and Felipe Schwartzman

the actual unemployment rate. For the 2007–09 recession, however, starting in 2009, the gap quickly climbs to 50 percent of the change in the aggregate rate. Eight quarters after the unemployment peak, the gap is still 50 percent, while in the previous recessions, it was almost nonexistent.

To analyze the individual contributions of each of the four transition rates, Kudlyak then created additional counterfactuals, varying one transition rate and keeping the other five at their starting levels. The resulting counterfactuals are shown in Figure 2. As in Figure 1, each period begins with the quarter when the unemployment rate started to rise and continues through eight quarters after the unemployment peak. Within each period, each of the six lines shows counterfactual unemployment rates corresponding to one of the six possible transitions. The figure shows an increased role of nonparticipation to unemployment and unemployment to nonparticipation transition rates.

The next level of analysis is the individual transition rates that underlie these counterfactuals. Inflow rates into unemployment, from both employment and nonparticipation, increase during recessions and decrease during recoveries. The opposite is true for outflow rates. This might seem counterintuitive

because one often hears that discouraged workers leave unemployment in large numbers during recessions. The difference is that the latter involves gross flow, which indeed increases in recession, while the former involves the transition rate; the nonparticipation to unemployment transition rate decreases in recession on account of increases in the base.

Transition rates from employment to unemployment increased by 30.7 percent during 2007–09, compared to 20.2 percent during 1981–82; eight quarters after the unemployment peak, they declined by 12.6 percent, compared to 20.2 percent following 1981–82 and 2.2 percent during the "jobless recovery" following 1990–91. Transition rates from unemployment to employment decreased by 46 percent during 2007–09, compared to 28.3 percent during 1981–82; the aggregate job finding rate in 2007–09 reached its lowest level since 1976.

Particularly striking is that transition rates from nonparticipation to unemployment increased by 49.6 percent during 2007–09, compared to 10.5 percent during 1981–82; the increases around recessions were progressively larger during the 1990–91 and 2001 recessions, but the increase during the 2001 recession was still only 19.6 percent. Even eight

Figure 2: Change in the Aggregate Unemployment Rate Due to Transitions between Worker Statuses
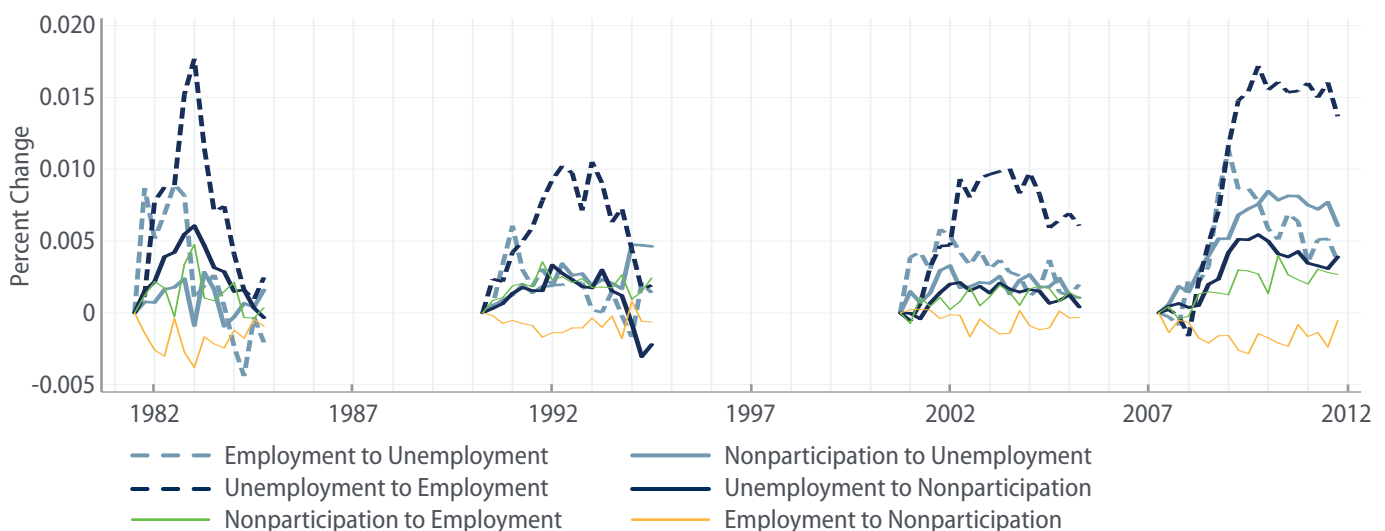
Note: Changes are shown for each recession from the first quarter of increase in the aggregate unemployment rate through eight quarters following the rate's peak.
Sources: Current Population Survey data from the Bureau of Labor Statistics and analysis by Kudlyak and Felipe Schwartzman

quarters after the 2009 unemployment peak, transition rates from unemployment to nonparticipation increased by 11.5 percent, compared to 34.2 percent after 1981–82.

Further analysis considers whether any demographic groups are disproportionately responsible for the phenomena described above or whether they are spread across all groups. Nonparticipation to unemployment transition rates changed more for men than women during the recession (rising 41.1 percent for women and 59 percent for men). The movement was particularly concentrated among men ages 25 to 54, for whom the transition rates increased 86.1 percent. The corresponding figures for men in this age category in earlier recessions are 33.2 percent for 2001, 16.4 percent for 1990–91, and 17.9 percent for 1981–82.

Summary

The transition rates between nonparticipation and the labor force are important in understanding the dynamics of the aggregate unemployment rate in the 2007–09 recession and its subsequent recovery. If these rates are held constant at their levels at the start of the rise in unemployment, then in the 2007–09 recession, the counterfactual aggregate unemployment rate increases by 3 percentage points, while the actual unemployment rate increases by 5.5 percentage points. Two years after the peak of unemployment, the counterfactual aggregate unemployment rate is 2 percentage points higher than at the start of the rise, while the actual unemployment rate is 4 percentage points higher. In contrast, in the 1981–82 recession, the counterfactual aggregate unemployment rate increases by 2.5 percentage points, while the actual unemployment rate increases by 3.75 percentage points. Two years after the peak of unemployment, the counterfactual aggregate unemployment rate and the actual unemployment rate are equal to the rate at the start of the rise.

During the most recent period, one of the main contributors to the discrepancy between the actual unemployment rate and the unemployment rate driven only by the job separation and job finding rates is a relatively large increase in the transition rate from nonparticipation to unemployment during 2007–09. Another is a failure of the outflow rate from unemployment to nonparticipation to pick up as fast after the 2009 peak in unemployment as would be expected on the basis of past recessions.

What accounts for the increased role of transition rates between nonparticipation and unemployment during the Great Recession and afterward? One interpretation is that the increase reflects a real change in labor markets. With regard to transition rates from nonparticipation to unemployment, possible reasons could include the depletion of household assets, including home equity and retirement savings, as well as unemployed workers dropping out of the labor force and then joining again.[5] The fact that the transition rate from unemployment to nonparticipation has not picked up in a similar manner could be due to the extension of unemployment benefit eligibility. A second interpretation is that the increase in the measured role of transition rates between nonparticipation and unemployment primarily reflects measurement error. Poterba and Summers (1986) and others have argued that in any given month, a significant number of unemployed workers are misclassified as nonparticipants.[6] If true, this would introduce spurious transitions into employment-status data; the more people who are unemployed, the greater the measurement problem. Ongoing research at the Richmond Fed investigates this issue.[7] ∎

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Endnotes

[1] Michael W. L. Elsby, Ryan Michaels, and Gary Solon, "The Ins and Outs of Cyclical Unemployment," *American Economic Journal: Microeconomics*, January 2009, vol. 1, no. 1, pp. 84–110; Shigeru Fujita and Garey Ramey, "The Cyclicality of Separation and Job Finding Rates," *International Economic Review*, May 2009, vol. 50, no. 2, pp. 415–430; Michael R. Darby, John C. Haltiwanger, and Mark W. Plant, "The Ins and Outs of Unemployment: The Ins Win," NBER Working Paper No. 1997, August 1986.

[2] Marianna Kudlyak and Felipe Schwartzman, "Accounting for Unemployment in the Great Recession: Nonparticipation Matters," June 2012, Working Paper No. 12-04, Federal Reserve Bank of Richmond.

[3] The latest data point available at the time of research was the fourth quarter of 2011.

[4] Because the relationship between the counterfactual aggregate unemployment rate and the six transition rates is nonlinear, the value of the counterfactual aggregate unemployment rate and the magnitude of the gap depend in part on the point in time when the fixed rates are set.

[5] See Şahin, Song, and Hobijn (2010), who first noted the increased transition rate of nonparticipation to unemployment among men aged 25 to 54. Ayşegül Şahin, Joseph Song, and Bart Hobijn, "The Unemployment Gender Gap during the 2007 Recession," Federal Reserve Bank of New York *Current Issues in Economics and Finance*, February 2010, vol. 16, no. 2.

[6] James M. Poterba and Lawrence H. Summers, "Reporting Errors and Labor Market Dynamics," *Econometrica*, November 1986, vol. 54, no. 6, pp. 1319–1338.

[7] Andreas Hornstein, "Spurious Transitions: The Impact of Classification Error on Measured Labor Market Dynamics," Manuscript, 2012, Federal Reserve Bank of Richmond.