

Preliminary and Incomplete
(Additional References to Follow)
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Job Loss and Unemployment in the 21st Century: The Great Recession in Labor Market Perspective.¹

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Abstract

I present summary evidence on the state of the labor market in the recession of 2008-2009 using data from the base Current Population Survey (CPS) from 1976-2010 and the Displaced Workers Surveys (DWS) from 1984-2010. Using the CPS, I examine movement in unemployment rates and employment-population ratios, part-time employment rates, and durations of unemployment. By any of these measures the current labor market is weaker than at any point since the mid-1970s. I also examine employment rates at the household level and reach the same conclusion. Next I examine labor force flows since 1995 in order to shed some light on the stubbornly high unemployment rate and long unemployment durations. I find that both E-U and U-U flows reached a peak in early 2009 and remain at very high levels while U-N flows reached a trough in early 2009 and remain low. I present some preliminary results on geographic mobility of unemployed workers and find that unemployed workers, who generally have relatively high rates of mobility, are less mobile in the current labor market. However, evidence on changes in the relative mobility of unemployed home-owners and renters suggests that this lower mobility is not due to the collapse of the housing market. Finally, I use the DWS to examine the post-job-loss employment status of job losers, and I find, consistent with the results from the basic CPS, that relative to earlier recessions, reemployment rates of job losers are substantially lower and unemployment rates are substantially higher in the recent recession.

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1 Introduction

The “Great Recession” of 2008-2009 continues in the labor market. By any reasonable metric, there is more unemployment and unemployment spells are more severe than at any time since the Great Depression. In this study, I present a summary of current conditions in the labor market in historical perspective based on analysis of micro-data from the Current Population Survey (CPS) from 1976 through 2010q3. I then examine transition rates of workers between labor force states from 1995 through 2010q3 to help pinpoint the sources of persistent unemployment. Not surprisingly, there have been elevated transition rates between employment and unemployment. But what is driving the long durations of unemployment are depressed rates of transition from unemployment to employment reinforced by low rates of transition from unemployment to not-in-labor-force (NILF).

I present some evidence from matched CPSs on the rate of geographic mobility and find that it is lower in the current recession than in earlier periods. Some might argue that this is evidence that the current unemployment problem is at least in part structural, with workers not moving to take new jobs, perhaps because of problems in the housing market. However, it is equally plausible that unemployed workers are not moving because the weak labor market is geographically broad based and employment opportunities elsewhere are not available. This would imply that deficient demand is an important factor in the current labor market. I present evidence from the CPS and the Displaced Workers Survey (DWS) that the lower mobility of the unemployed in the current period is *not* a structural problem related to the housing market.

In order to study the experiences of job losers, I examine data from the January 2010 DWS and contrast these data with information from earlier DWSs since 1984. I find that the rate of job loss (fraction of workers who reported at least one job loss in the previous three years) was substantially higher in the 2007-2009 period than in any earlier period (which includes deep recession in the 1981-1983 period). I also find that, relative to earlier recessions, reemployment rates of job losers are substantially lower and unemployment rates are substantially higher in the recent recession. I do not find support for the view that, because of the sharp decline in financial markets that reduced values of pension wealth, older job losers are less likely to leave the labor force than in earlier periods.

2 Basic Labor Force Statistics from the CPS

I created a database of all observations in every monthly CPS from January 1976 - September 2010. This database contains 44,466,301 observations with information on the usual CPS labor force items, and it serves as the basic resource for my analysis of employment and

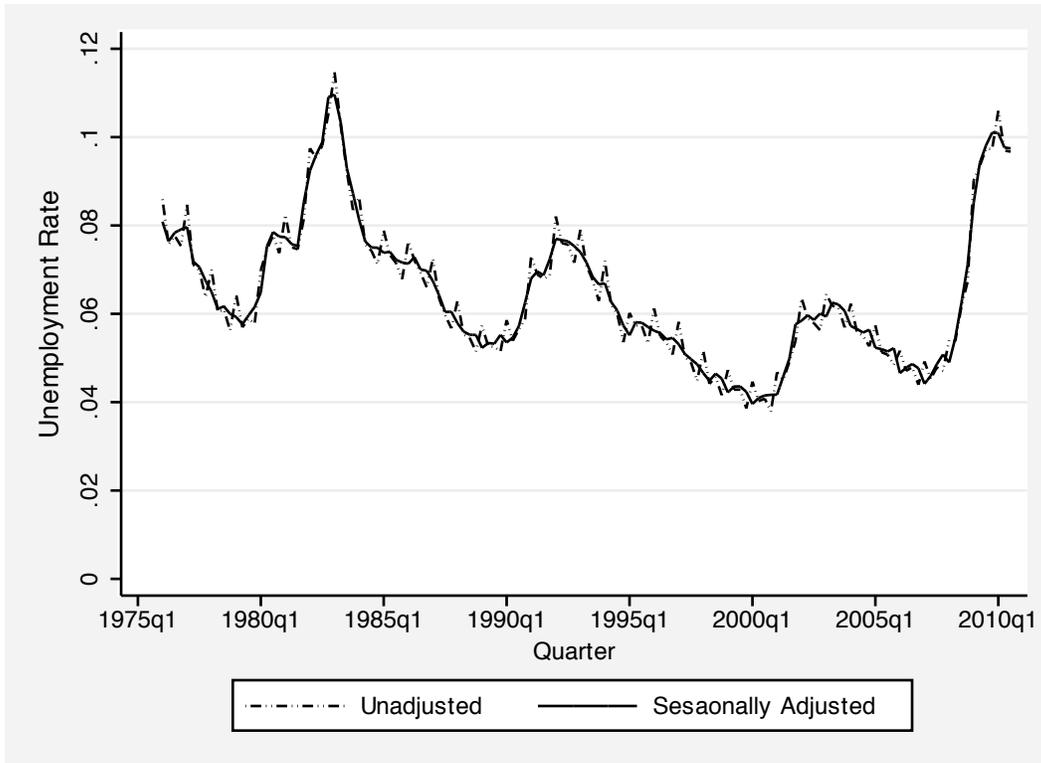


Figure 1: Quarterly Unemployment Rate, 1976q1-2010q3

unemployment status.

2.1 The Unemployment Rate

Figure 1 presents the seasonally adjusted aggregate unemployment rate (U3) quarterly from 1976q1-2010q3. These are based on my own calculations using the individual level CPS data available for this period. I weight by the CPS final sampling weights, and I seasonally adjust using a very simple model.¹ Figure 1 also presents the seasonally unadjusted series for comparison. This figure shows the very high level of the unemployment rate since early 2009.

The standard unemployment rate, presented in figure 1 and called U3 by the Bureau of Labor Statistics (BLS), is one of several measures the BLS produces.² Some others include

¹ In order to seasonally adjust a series Y_t with overall mean \bar{Y} , I regress Y_t on a complete set of seasonal dummy variables and calculate the residuals, e_t . I then compute the seasonally adjusted series as $Y_t^{sa} = \bar{Y} + e_t$.

² See United States Department of Labor, Bureau of Labor Statistics (2008) for a summary of the BLS measures of unemployment.

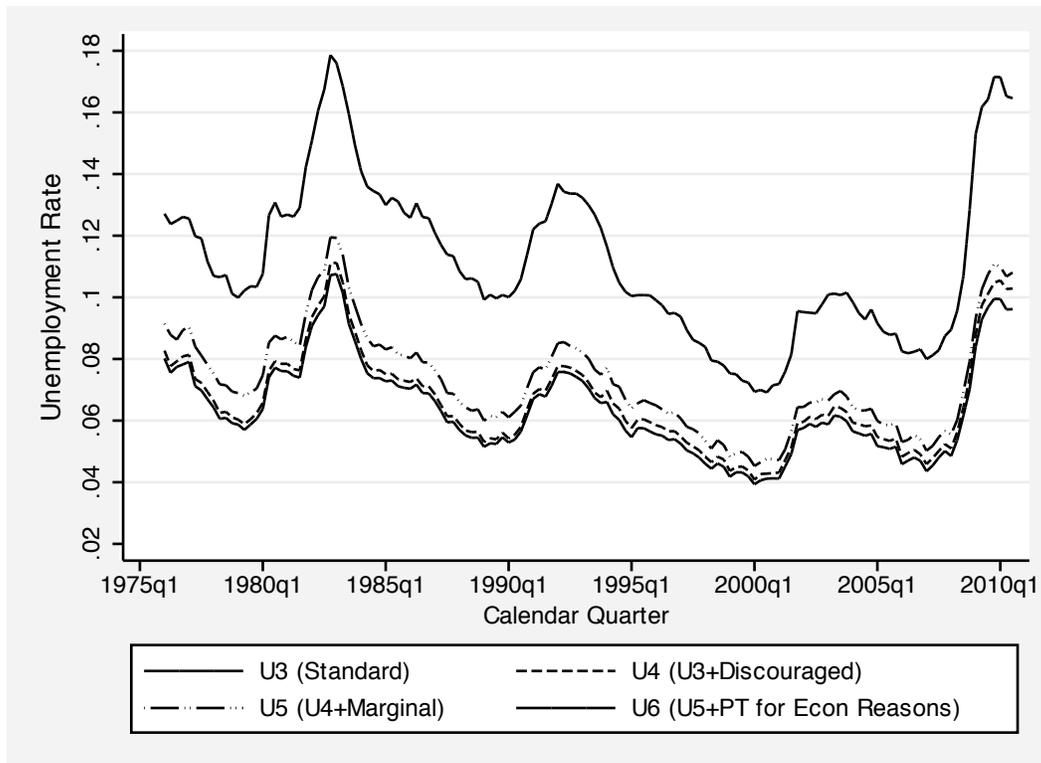


Figure 2: Quarterly Unemployment Rate, various measures (s.a.)

- U3 – Unemployed as share of labor force (the official rate)³
- U4 – (Unemployed + discouraged) as share of (labor force + discouraged)⁴
- U5 – (Unemployed + discouraged + “marginally attached”) as share of (labor force + discouraged + “marginally attached”)⁵
- U6 – (Unemployed + discouraged + “marginally attached” + employed part-time for economic reasons) as share of (labor force + discouraged + “marginally attached”)

The three alternative measures (U4, U5, and U6) cumulatively add additional individuals both to the pool of unemployed and to the labor force. As shown in figure 2, they yield

³ To be counted as unemployed, and, hence, part of the labor force, an individual who is not working has to have searched for work during the reference week (or past month?).

⁴ Discourage workers are those who report they want a job but have stopped searching because they believe no job is available.

⁵ “Marginally attached” workers are those who want a job and are available to work, have looked for work in the past year, but have not looked for work in the past month for a variety of reasons beyond discouragement.

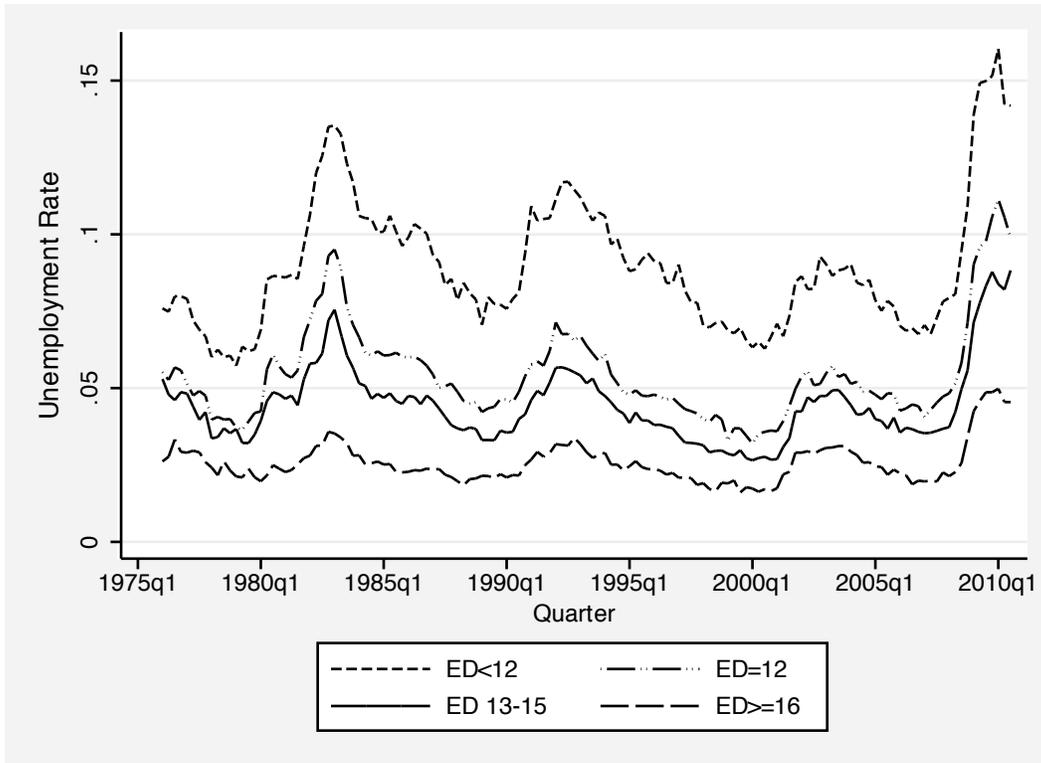


Figure 3: Quarterly Unemployment Rate, by Education (s.a.)

progressively higher unemployment rates. Interestingly, adding discouraged workers and marginally attached workers adds very little to the unemployment rate. However, U6, which includes workers who are working part-time for economic reasons as if they were unemployed, is substantially higher than U3 (by 7.1 percentage points in 2009q4). This is more fairly called an “underemployment rate,” but, by any name, it suggests that currently about one in six workers in the U.S. are not working as much as they would like. Since the time-series patterns of U3 and U6 are very similar (the simple correlation is 0.98), In what follows, I focus on the standard unemployment rate (U3).

Figure 1 shows that the aggregate unemployment rate in the current recession did not reach the level seen in the recession in 1982-83 (10.1 percent in 2009q4 vs. 11.0 in 1983q1 for U3). However, this comparison understates the relative severity of the current recession. There have been compositional changes in the labor force in the last quarter century toward groups (notably the more educated) with historically lower levels of unemployment.

In order to illustrate this point, figure 3 contains plots of the quarterly unemployment rate separately for four educational groups. Not surprisingly, the unemployment rate is inversely related to education. Currently (2010q3) the unemployment rate is 9.9 percent for high school graduates and 4.5 percent for college graduates. A key point to take away from

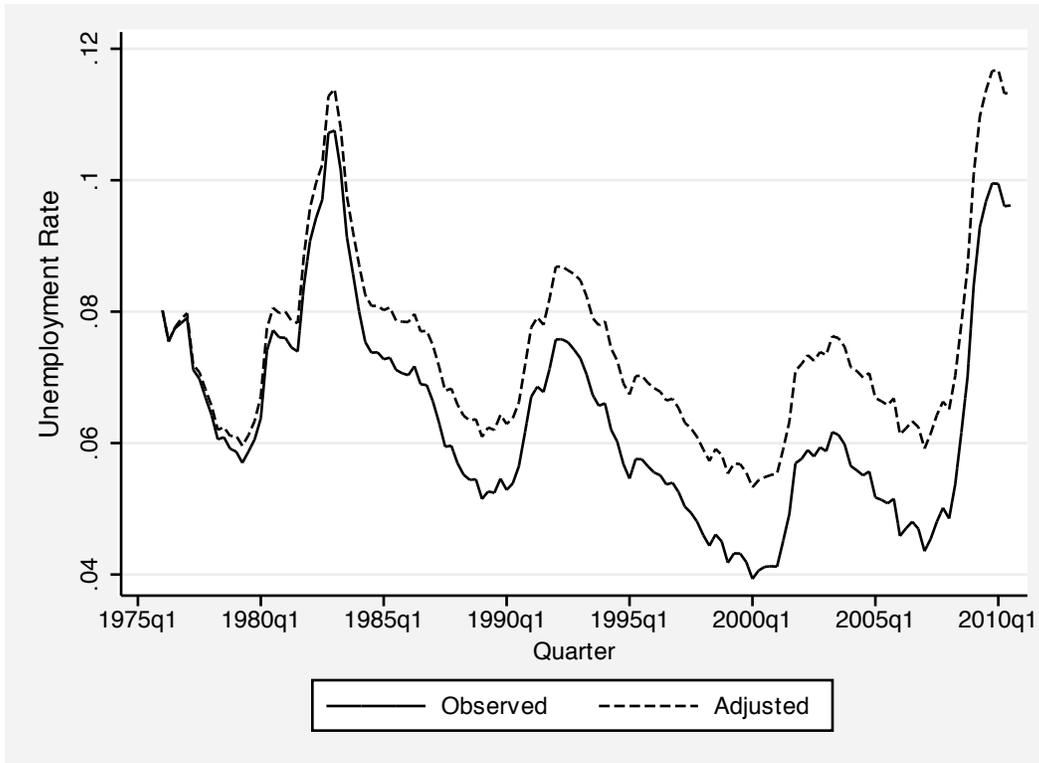


Figure 4: Quarterly Unemployment Rate, Adjusted for Education (s.a.)

figure 3 is that the unemployment rate is currently higher than the earlier peak in 1983q1 for *all* education groups. That the aggregate unemployment rate has not reached its earlier peak reflects the increased educational attainment of the workforce. For example, 57 percent of the labor force had 12 or fewer years of education in 1983. This fraction has fallen to 40 percent by 2010. The fraction with at least 16 years education increased from 20 percent to 30 percent over the same period.

In order to investigate the magnitude of the effects of the increase in educational attainment, I created an unemployment series that accounts for education levels.⁶ This education-adjusted unemployment rate is plotted along with the observed unemployment rate in figure 4, and it shows a substantial gap emerging between the two series beginning in the early 1980s. Figure 4 also shows that the adjusted unemployment rate is currently higher than

⁶ There is a long history of calculating demographically adjusted unemployment rates as weighted averages of sub-group unemployment rates where the weights are labor force shares at a fixed date. See, for example, Summers (1986). I created my adjusted series somewhat differently by regressing the unemployment rate on a complete set of dummy variables for quarter and a set of dummy variables representing four education categories. I then subtract the difference between the coefficient on the dummy variable for the first quarter in my sample (1976q1) and the 1976q1 unemployment rate from the coefficients of each of the quarter dummies. This matches the series to the observed unemployment rate in 1976q1 without changing its shape.

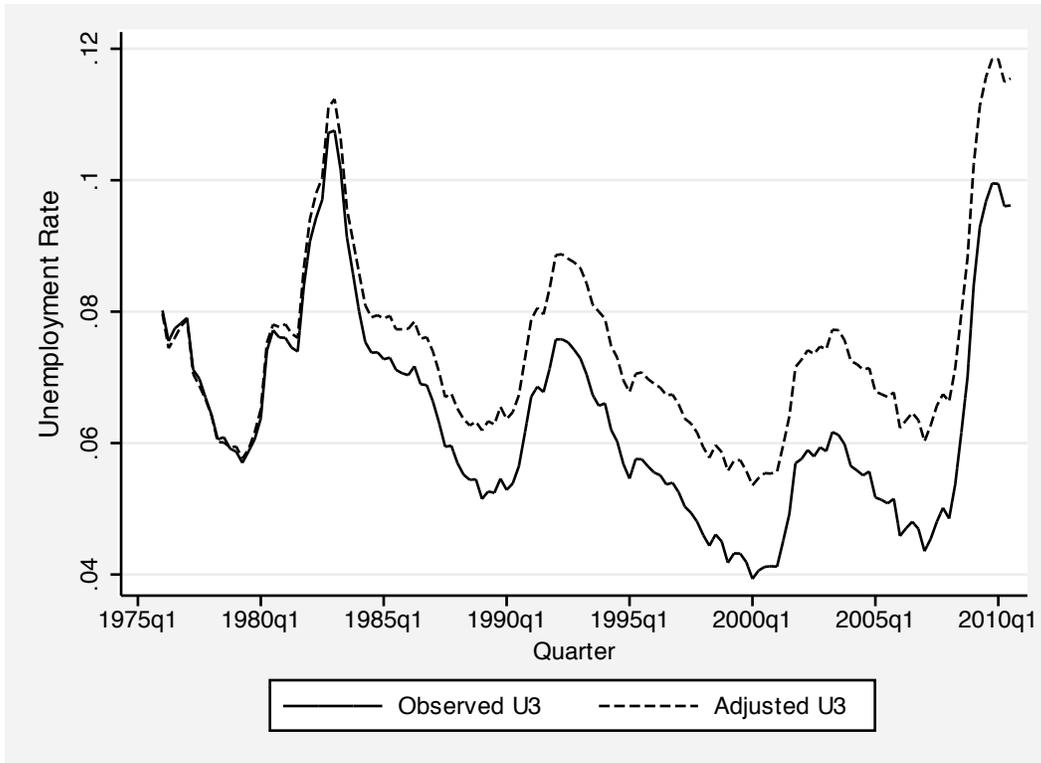


Figure 5: Quarterly Unemployment Rate, Adjusted for Age, Race, Sex, and Education (s.a.)

the 1983 peak (11.7 in 2009q4 vs. 11.3 in 1983q1). Not surprisingly, the adjusted series shows the same sharp cyclical pattern as the unadjusted series.

I repeat this exercise adjusting for age (7 categories), race, and sex as well as education. The results are presented in figure 5. The adjusted series looks almost identical to that presented in figure 4 accounting for changes in education alone. This suggests that changes in the age, race, and sex composition of the labor force over time have had little effect on the unemployment rate, a conclusion that can be verified by examining an adjusted series that accounts only for changes in age, race, and sex (and does not account for changes in education). While not presented here, such an adjusted series looks very close to the unadjusted series.

2.2 The Employment Rate

Figure 6 presents the seasonally adjusted employment-population ration (EPOP) overall and by sex. The EPOP was increasing from at least the mid-1970s through 2000, and this increase resulted from a rapid increase in employment among females partially offset by a slow decline among men. There is an obvious cyclical component to the EPOP with declines



Figure 6: Quarterly Employment-Population Ratio, by Sex (s.a.)

overall and for both sexes in slack periods. Since 2000, there has been no secular increase in the female EPOP, and the overall EPOP has been in decline for the last decade. The drop was especially steep in the recent recession, with the overall EPOP falling from about 0.76 mid-decade to about 0.72 since 2009. This decline is shared by both men and women.

Interestingly, a decomposition of the decline in the EPOP similar to that presented above for the unemployment rate suggests that increase in the female share of the workforce can account for almost none of the movement in the overall EPOP. The unadjusted and adjusted-for-sex EPOPs are shown in figure 7, and it is virtually impossible to distinguish the adjusted and unadjusted rates. The intuition for this is that females continue to have a lower EPOP than males so that the increase in female share while female EPOP is growing offsets the decline in the EPOP among males while male share is falling.

It turns out that much of the growth in the EPOP prior to 2000 can be accounted for by changes in educational attainment. The unadjusted and adjusted-for-education EPOPs are shown in figure 8, and they are sharply different. The adjusted series shows much less growth through 2000 and about the same decline since. This results from a combination of two factors. First, more educated workers have always had higher EPOPs and education levels are growing. Second, females' education levels have been increasing faster than males',

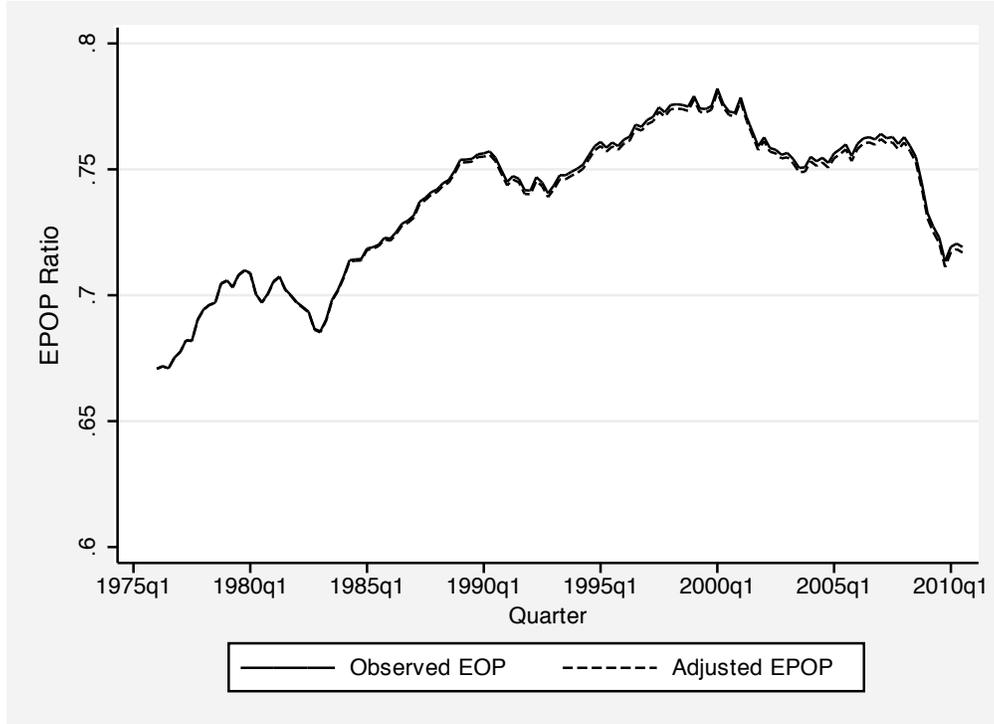


Figure 7: Quarterly Employment-Population Ratio, Adjusted for Sex (s.a.)

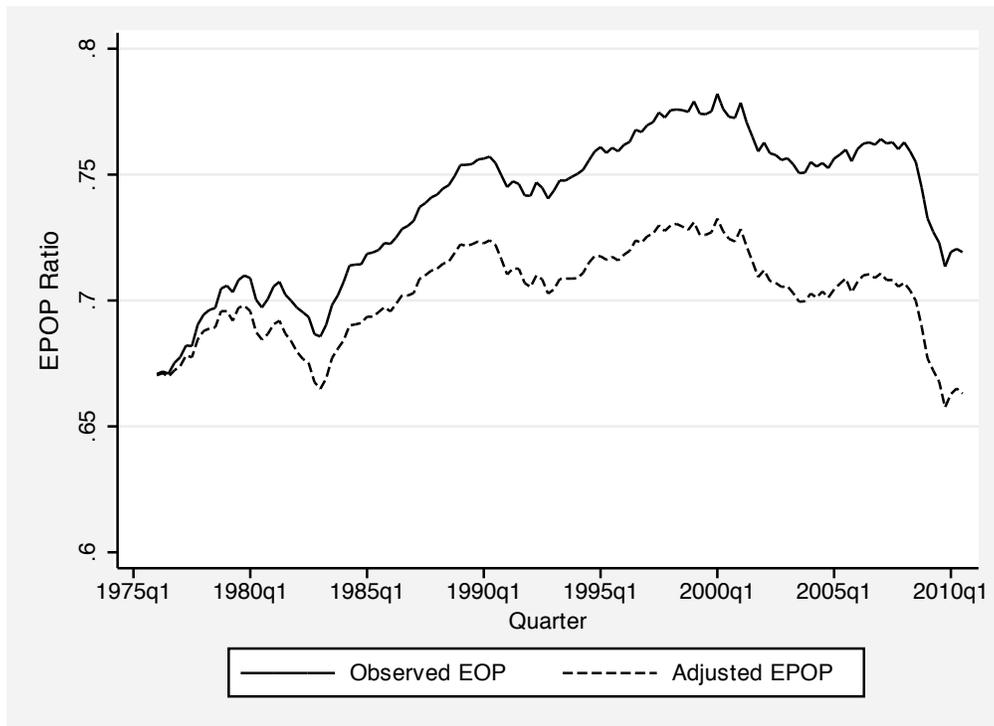


Figure 8: Quarterly Employment-Population Ratio, Adjusted for Education (s.a.)

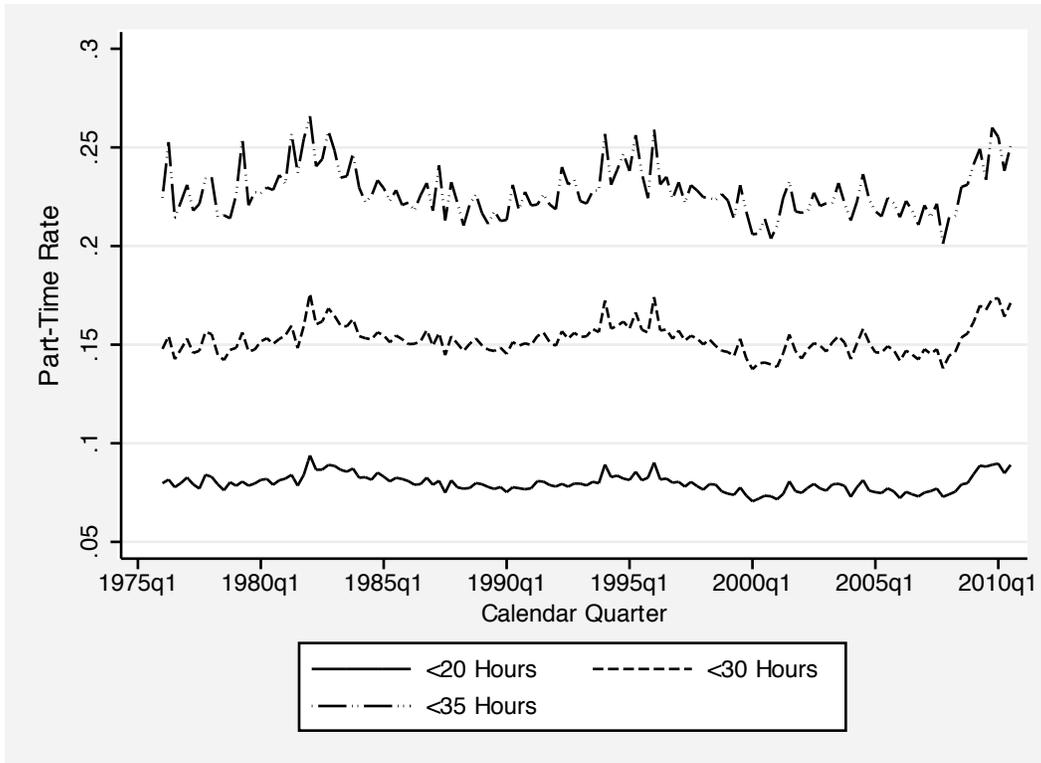


Figure 9: Quarterly Fraction Part-Time (s.a.)

and the female share of the labor force has been growing.

While not shown here, adjusting for age and race does not have much effect on the EPOP. That there is no affect of adjusting for age is is a bit surprising given the trend toward earlier retirement. One potential explanation is that over most of the sample period the baby-boom generation is moving through their prime working years and the trend toward earlier retirement involved relatively smaller older cohorts.

2.3 Part-Time Work

As was clear from figure 2, U6, the “underemployment rate,” which includes those working part-time for economic reasons as unemployed is much higher than the usual unemployment rate. In 2009-2010, one in six workers are underemployed by the U6 definition. Figure 9 presents information on the part-time fraction of employment using three different measures of part time: < 20 hours weekly, < 30 hours weekly, and < 35 hours weekly.⁷ All three

⁷ The seasonal adjustment of the part-time work series required accounting for third quarters where September 1 was a Tuesday so that the Labor Day holiday falls in the second week of September. Since the second week of the month is the CPS reference week, reported hours worked tend to be lower when a holiday

measures show a substantial up-tick since 2008, suggesting that an additional cost of the recession is in hours reduction. For example, the fraction of workers reporting working fewer than 30 hours per week increase from 14.5 percent in 2007 to 17.0 percent in 2010. Females are more likely to be working part-time than males, and, while not shown here, the part-time rates for females and males separately show substantial increases since 2008.

2.4 Employment Outcomes at the Household Level

It is important to understand employment consequences of recession at the household level. Households are an appropriate financial unit, and there is mutual insurance within households. The structure of the CPS allows me to link individuals within households and consider labor market outcomes at the household level. My CPS sample from January 1976-September 2010 contains 17,177,028 monthly observations on households with at least one adult aged 23-64.

I consider, in turn, three groups of households by number of adults aged 23-64.

1. One Adult – 36.8 percent
2. Two Adults – 56.6 percent
3. Three or more Adults – 6.7 percent

Figure 10 contains the zero-employment rate (fraction of households with no adult 23-64 working for households with one adult overall and by sex. There are several striking features of this graph.

1. The overall zero-employment rate is very high at about 30 percent.
2. The overall rate was declining from the mid-1980s through the late-1990s.
3. The gap between the zero-employment rate for females and the rate for males (over 20 percentage points in 1980) has declined dramatically (to less than 5 percentage points in 2009).
4. There has been a sharp increase in the zero employment rate in the current recession, from 27.5 percent in 2007 to 32.5 percent in 2010.

It is clear that single-headed households are quite disadvantaged in the labor market, a condition that is only exacerbated by the recession.

falls in that week.



Figure 10: Zero Employment Rate, Households with One Adult (s.a.)



Figure 11: Employment Rates, Households with Two Adults (s.a.)

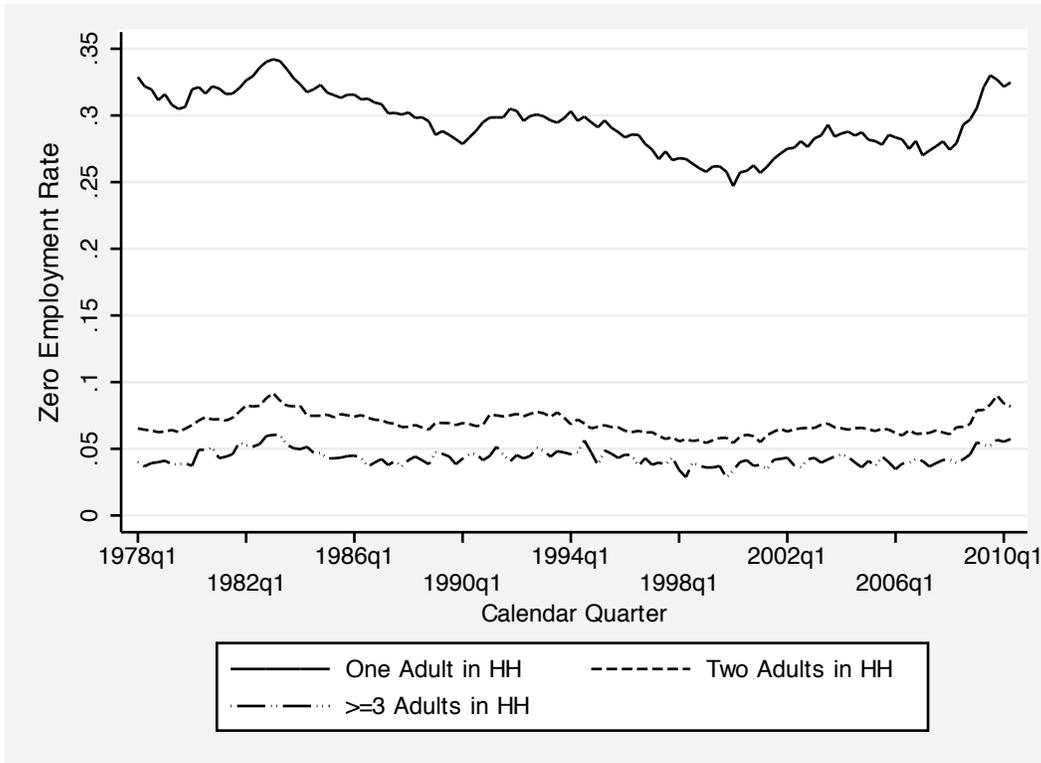


Figure 12: Zero-Employment Rate, by Number of Adults in Household (s.a.)

Figure 11 contains zero-employment, single-employment, and double-employment rates for households with two adults. About 95 percent of these households have one adult male and one adult female. The zero-employment rate of two-adult households is relatively steady at 5 to 10 percent with a strong counter-cyclical component. The zero-employment rate increased from 6.2 percent in 2007 to 8.3 percent in 2010. There was a downward trend through 2000 in the single-employment rate and an upward trend through 2000 in the double-employment rate in two-adult households. This reflects the increased employment rate of females in two-adult households. In the current recession, there has been an increase in the single earner rate (from 31.6 percent in 2007 to 34.5 percent in 2010) and an offsetting larger decrease in the double earner rate (from 62.1 percent in 2007 to 57.2 percent in 2010). This reflects job loss in double-employment households. It is clear that two-adult households are better able to insure themselves than single-adult households in the recession. The zero employment increased by 2.1 percentage points in two-adult households compared with an increase of 5 percentage points in one-adult households.

I do not consider households with three or more adults in detail because they comprise only 6.7 percent of all households. However, figure 12 contains a summary plot of the zero-employment rates for single-, two-, and three-or-more-adult households. This figure clearly

shows the dramatically higher zero-employment rate of single adult households as well their increased vulnerability to job loss in recessions. Interestingly, households with three or more adults have zero-employment rates that are only slightly lower than do households with two adults.

While I do not show the results here, analysis of zero-employment rates by maximum education level among the household's adults shows a sharply negative relationship. Households where maximum education is higher have substantially lower zero-employment rates.

3 Job Loss Rates from the Displaced Workers Survey

Perhaps the most comprehensive source of information on the incidence and costs of job loss in the United States is the Displaced Workers Survey (DWS), administered every two years since 1984 as a supplement to the Current Population Survey (CPS). I utilize data on 1,058,244 individuals between the ages of twenty and sixty-four from the 14 DWSs conducted as part of January or February CPSs in even years from 1984-2010.⁸

There are three important issues of measurement and interpretation that arise when comparing job loss rates calculated using the DWS over time.

1. The DWS asks only about a single involuntary job loss. The survey does not capture multiple job losses by the same worker. Neither does it capture worker terminations “for cause.” The survey is meant to capture worker terminations as the result of business decisions of the employer unrelated to the performance of the particular employee (e.g., a plant closing, a layoff, the abolition of a job). Thus, the measure of the job loss rate that I calculate is the fraction of workers who lost at least one job not “for cause” in the relevant period rather than the rate of destruction of worker-employer matches.
2. The DWS from 1984-1992 asked about job separations in the previous five years while the later DWS asked about job separation in the previous three years. The measure of job loss that I use is adjusted to account for this change in the recall period so that all rates are reported on a three-year basis. This adjustment is detailed in Farber (1997).
3. The basic wording of key questions changed since the inception of the DWS in 1984. This may have affected whether survey respondents would report a job separation in a particular circumstance as an involuntary separation in one survey but would not

⁸ These are January CPSs in 1984, 1986, 1988, 1990, 1992, 2002, 2004, 2006, 2008, and 2010 and February CPSs in 1994, 1996, 1998, and 2000. Examples of earlier work using the DWS includes Farber (1997, 1998), Podgursky and Swaim (1987), Kletzer (1989), Topel (1990), Gardner (1995), Neal (1995), Esposito and Fisher (1997), and Hipple (1999). I present a brief review of some of this literature in Farber (2004).

report a separation in the same circumstance as involuntary in another year. In Farber (1998) and Farber (2004), I use additional data from debriefing questions asked of a fraction of DWS respondents in 1996, 1998, and 2000 to investigate how changes in the wording of the key question may have affected the likelihood that a worker reported a particular separation as an involuntary job change. I use the results of that analysis to calculate re-weighted job loss rates that I present in this study.⁹

3.1 The Rate of Job Loss

In these surveys, I count as job losers workers who reported a job loss in the three calendar years prior to the survey. Based on these data, I calculate the rate of job loss as the ratio of the number of reported job losers divided by the number of workers who were either employed at the survey date or reported a job loss but were not employed at the survey date. I then adjust these rates of job loss as described in Farber (2004) to account for the change in the recall period from five years to three years in 1994 and changes in the wording of the key job loss question.

Figure 13 contains plots of adjusted three-year job loss rates computed from each of the fourteen DWSs from 1984-2010 along with the average civilian unemployment rate for each three-year period.¹⁰ The cyclical behavior of job loss is apparent, with job-loss rates clearly positively correlated with the unemployment rate ($\rho = 0.42$). It is clear from figure 13 that the unemployment rate has trended downward since 1981. A simple regression of the unemployment rate on a time trend has an R^2 of 0.44. There is not significant time trend in the job loss rate. It is also clear that the job loss rate is more variable than the detrended unemployment rate. The coefficient of variation is 0.199 for the job loss rate and 0.163 for the detrended unemployment rate.

With regard to the current recession, the job-loss rate in 2007-2009 has reached its highest level, with 16 percent of workers reporting that they had lost a job sometime during the three year period. The previous maximum job-loss rate was 12.8 percent in the 1981-1983. period.

There is substantial heterogeneity in job loss rates across workers. Figure 14 contains three-year rates of job loss by year for each of four education categories. Not surprisingly, job loss rates are dramatically higher for less educated workers than for more educated workers. There is a strong cyclical pattern in job loss rates for less educated workers, but the cyclical pattern is weaker for more educated workers. For example, the job loss rate

⁹ Job losers are asked to report the reason for their job loss. One allowable response is “other.” The adjustment for changes in the wording of the key job loss question discounts job loss rates for “other” reasons by 37.4% for the 1984-1992 DWS and by 74.8% for the 1994 and later DWSs. See Farber (1998) for details.

¹⁰ All counts are weighted using the CPS sampling weights.

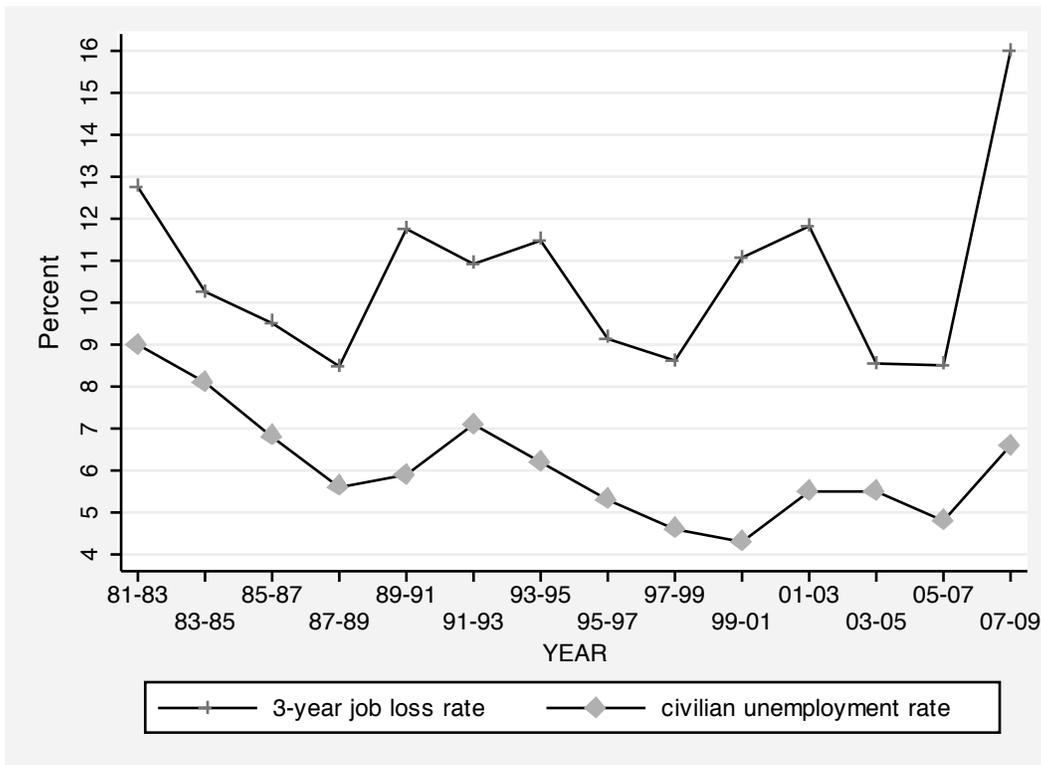


Figure 13: Unemployment and Job Loss Rates, by Year

for workers with twelve years of education was 9.0 percent in 1997-99 (the lowest in the sample period) compared with 14.3 percent in 1981-83 and 19.4 percent in 2007-2009. In contrast, the job loss rate for workers with at least sixteen years of education was 6.7 percent in 1997-99 compared with 6.9 percent in 1981-83 and 11.0 percent in 2007-2009. Prior to the most recent period, there was some convergence of job loss rates by education. The gap between the job loss rates for the high-school educated and the college educated fell from 7.3 percentage points in the 1981-83 period (a serious recession) to less than 3 percentage points in the 1996-2005. However, the education gap in job loss rates has reasserted itself, increasing to 8.4 percentage points in the most recent period.

Figure 15 contains three-year job loss rates by year for four age groups covering the range from 20-64. Job loss rates are highest for the youngest workers (20-29) and generally show a strong cyclical pattern. The difference in rates of job loss by age group have converged over time. In 1981-83, the difference in job loss rates between the youngest and oldest group was 5.9 percentage points. This difference fell to 3.2 percentage points by 2007-09. The rates of job loss are higher for every age group in the current recession than in earlier recessions.

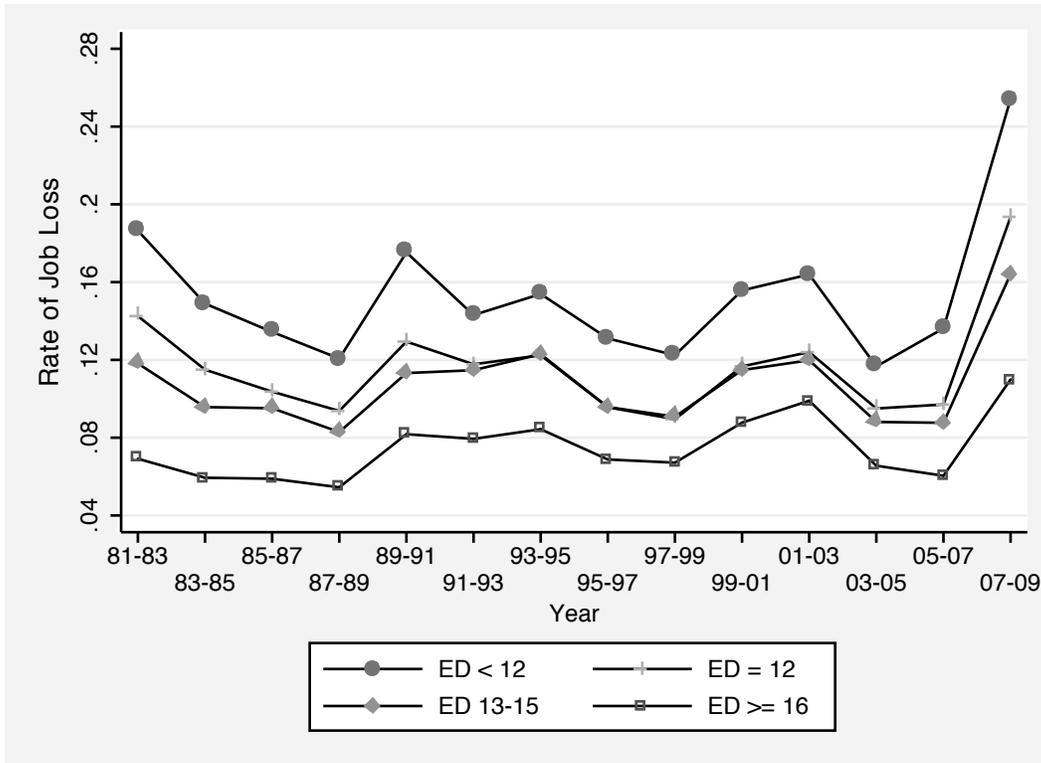


Figure 14: Three-Year Job Loss Rate by Education, 1981-2009.

4 The Duration of Unemployment

Perhaps the most striking feature of the current recession is the long duration of many unemployment spells. Figure 16 presents plots of the mean, median, and 75th percentile reported durations of unemployment. The mean duration of an in-progress spell of unemployment is at 33.3 weeks with a median of 21 weeks and a 75th percentile value of 52 weeks. These figures are much higher than even those seen in the weak labor market of 1983.¹¹

The extreme length of spells of unemployment in the current recession raises the important question of why they are so long. The old common categories of explanations for unemployment suggest themselves.

1. (Frictional) The extended duration of unemployment benefits may have encouraged

¹¹ Note that these are not durations of completed spells. If, on average, the completed duration of a sampled in-progress spell is twice the duration of a randomly selected point in the spell (as one might characterize the CPS data on durations), then the average duration of a completed spell of unemployment will be 66 weeks. See Akerlof and Main (1980) for a discussion of this method of estimating completed durations data on incompleting spells. However, there is a bias in the other direction in that longer spells are more likely to be sampled in the first place (length-biased sampling). This is well known in the literature on durations. See Kaitz (1970) and Salant (1977) for early references.

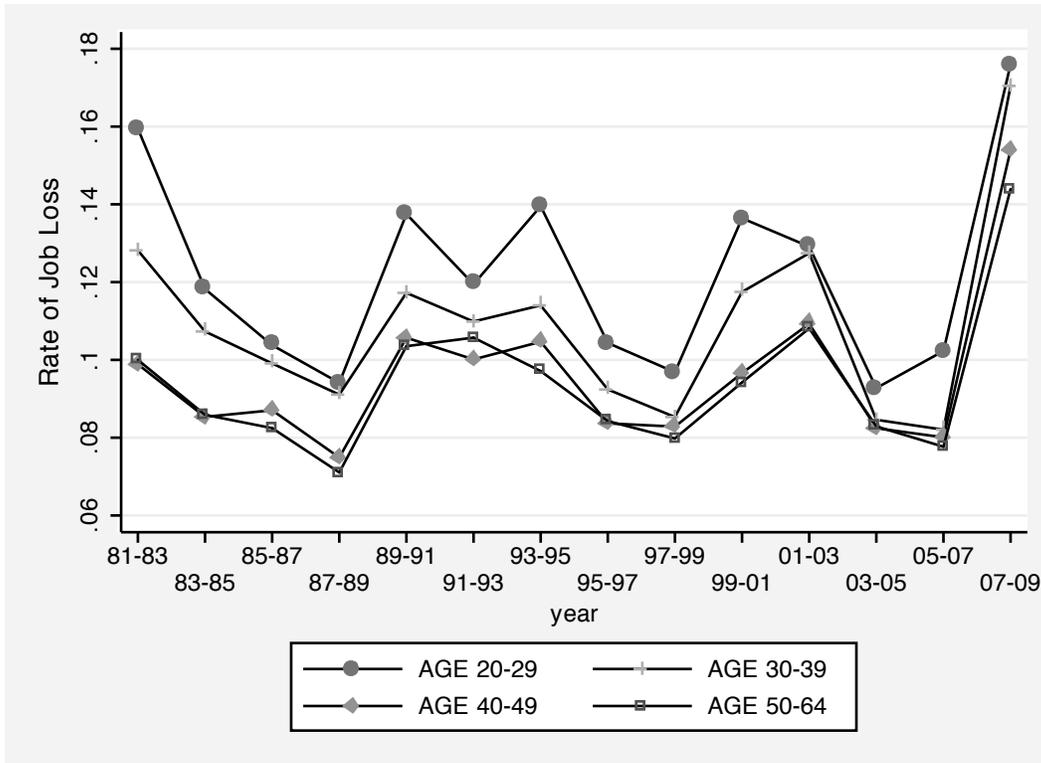


Figure 15: Three-Year Job Loss Rate by Age, 1981-2009.

some of the unemployed to search longer.

2. (Structural) There may be a mis-match, either geographically or by skill level between available workers and the jobs available to them.
3. (Deficient Demand) Employers may simply not be hiring due to insufficient product demand.

I cannot hope to resolve this question completely, but some of the available evidence points the way.

4.1 Labor Market Flows

One helpful set of facts is on transition rates between labor market states. In order to analyze these labor force dynamics, I created a database that matches CPS observations month-to-month. Recall that the CPS has a rotation-group structure where individuals living at sampled addresses (approximately 60,000 each month) are surveyed for four consecutive months (rotation groups 1-4), left alone for eight months, and interviewed again for four consecutive months (rotation groups 5-8). If a household/individual changes residence at any

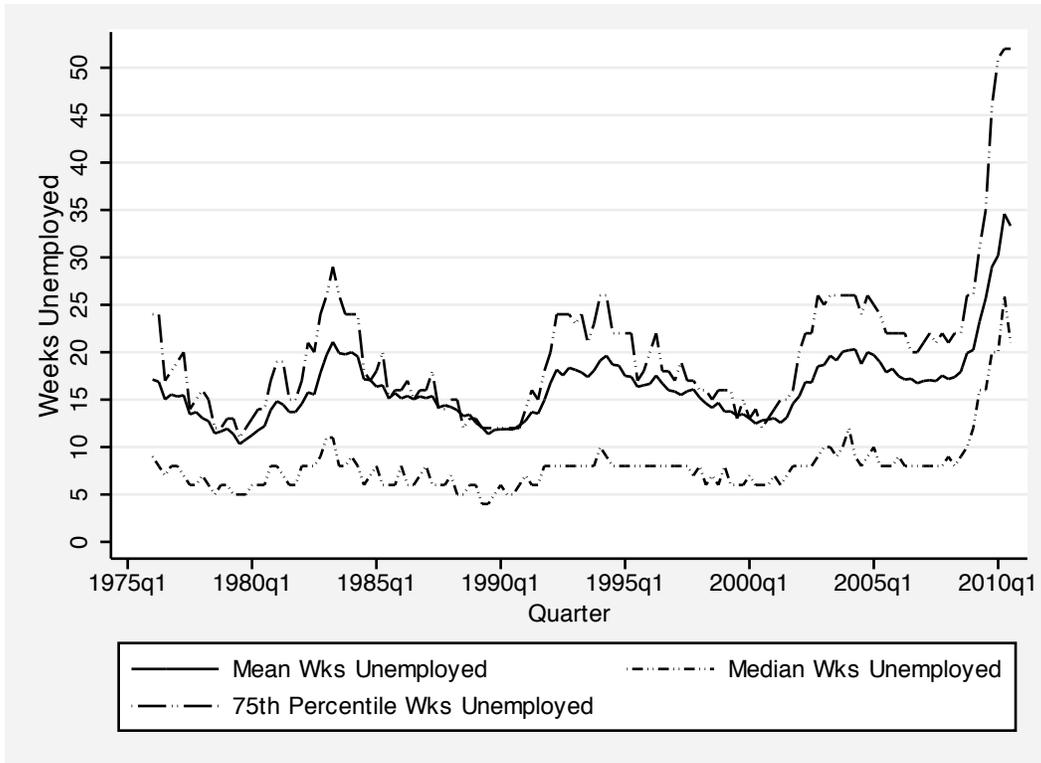


Figure 16: Duration of Unemployment Spells, by Quarter

point during this 16 month period, whatever new households/individuals at that address are interviewed. With some exceptions, since September 1995 it is straightforward to determine whether individuals in rotation groups 2-4 and 5-8 (the continuing rotation groups) are the same individual surveyed in the previous month.¹² The overall individual match rate for those in eligible rotation groups (2-4 and 6-8) is 94.8 percent. The matched sample includes 12,823,102 observations matched month-to-month.

In order to start, I present the average monthly transition rates from employment in figure 17. The E-E flow shows the sharp decline in the probability of remaining employed (read from the left-hand axis) early in the current recession. The E-E transition probability fell from 0.960 to 0.955 after 2007q4. At the same time the probability of moving from employment to not-in-the-labor-force (the E-N flow, read from the right-hand axis) fell from 0.028 in 2007q4 to 0.026 in 2009q2. Since the three transition probabilities sum to one, it

¹² There were several months since September 1995 where linking variables changed and it was not possible to match. It is possible to match observations prior to 1994 (before computer-aided interviewing was introduced for the CPS), but it is more difficult and match rates are lower. See Peracchi and Welch (1995) and Madrian and Lefgren (1999) for discussions of matching in the CPS. I intend to extend the match further back in time in a revised version of this paper.

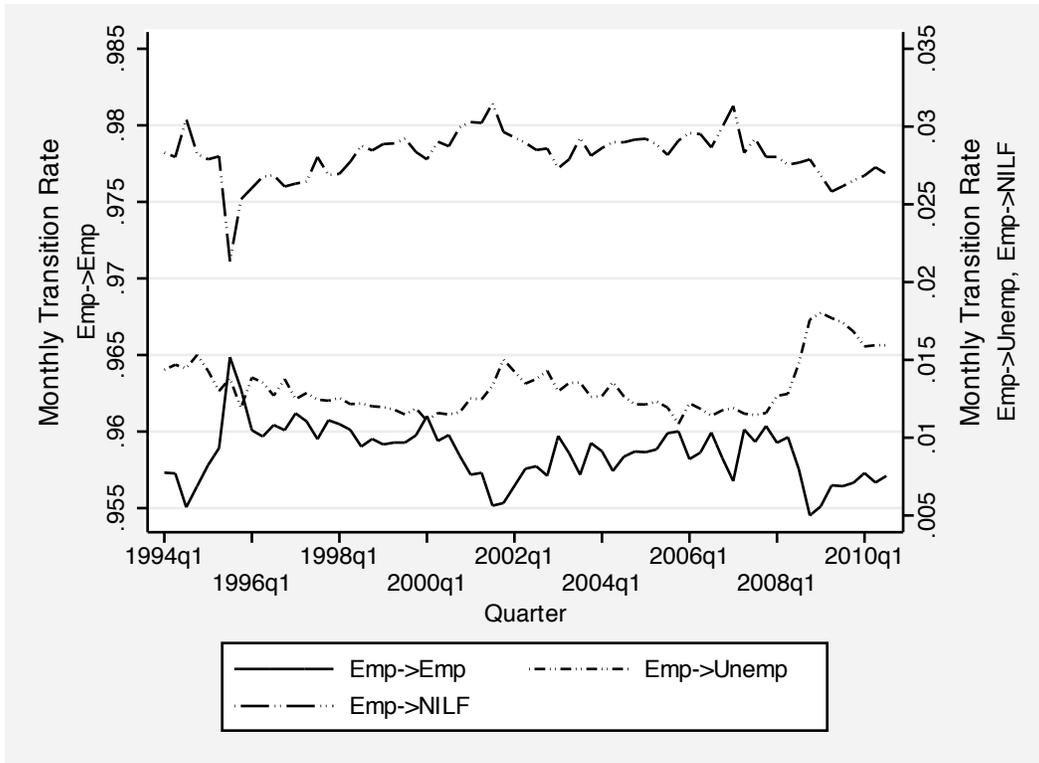


Figure 17: Average Monthly Transition Rates from Employment (s.a.)

is the case that the probability of a transition from employment to unemployment (the E-U flow, again read from the right-hand axis) increased substantially, 0.012 in 2007q4 to 0.018 in 2009q2. These may seem like small changes, but they need to be evaluated understanding that the pool of employed workers in 2007 was 19 times larger than the pool of unemployed workers. A small increase in the transition rate from employment to unemployment implies a much larger proportional increase in the stock of unemployed workers.

It is of particular interest to examine the transition rates from unemployment. Figure 18 presents the average monthly transition probabilities from unemployment by quarter. These transition rates show the usual cyclical pattern during the recession of the early 2000s. What is striking is the sharp upward movement in the U-U transition rate from about 0.47 in 2006-2007 to 0.63 in 2009-2010. This is due to the combination of a sharp drop in the U-E transition rate from 0.28 to 0.17 and a substantial drop in the U-N transition rate from 0.25 to 0.20 over the same period.

4.1.1 Geographic Mobility of the Unemployed

It is worth investigating the extent to which unemployed workers move and the extent to which such movement is lower than expected in the current recession. If mobility rates are

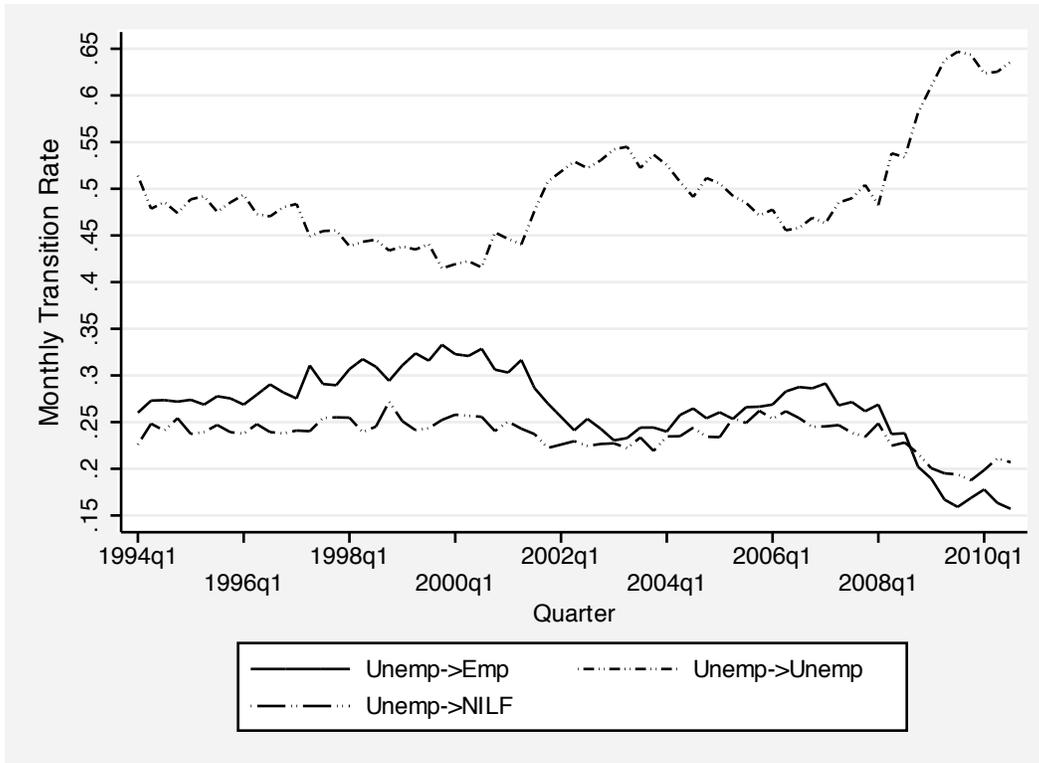


Figure 18: Average Monthly Transition Rates from Unemployment (s.a.)

lower than expected, this could reflect one of two factors:

1. (Structural) Some of the long unemployment durations we are seeing is due to mobility constraints on job losers, who are moving at lower rates than in earlier periods.
2. (Deficient Demand) A lack of jobs generally gives workers less reason to move to find work than in earlier periods.

One source of information is the DWS, where job losers are if they moved to a different county or state subsequent to their job loss. The average mobility rate by DWS year are presented in figure 19. I also present the average unemployment rate in each 3-year period in order to help focus on the cyclical nature of the mobility rate of job losers. Interestingly, the mobility rate of job losers has been trending downward since the mid-1990s, a phenomenon that deserves further attention, particularly as it may relate to the housing market. There is a positive correlation between the mobility rate and the unemployment rate so that job losers are more likely to move in weaker labor markets. The correlation between the mobility rate and unemployment rate is 0.43. The 2007-2009 period is an exception. The mobility continued to decrease (to its lowest level in the sample period) despite an increase in the unemployment rate. The correlation between the mobility rate and unemployment rate

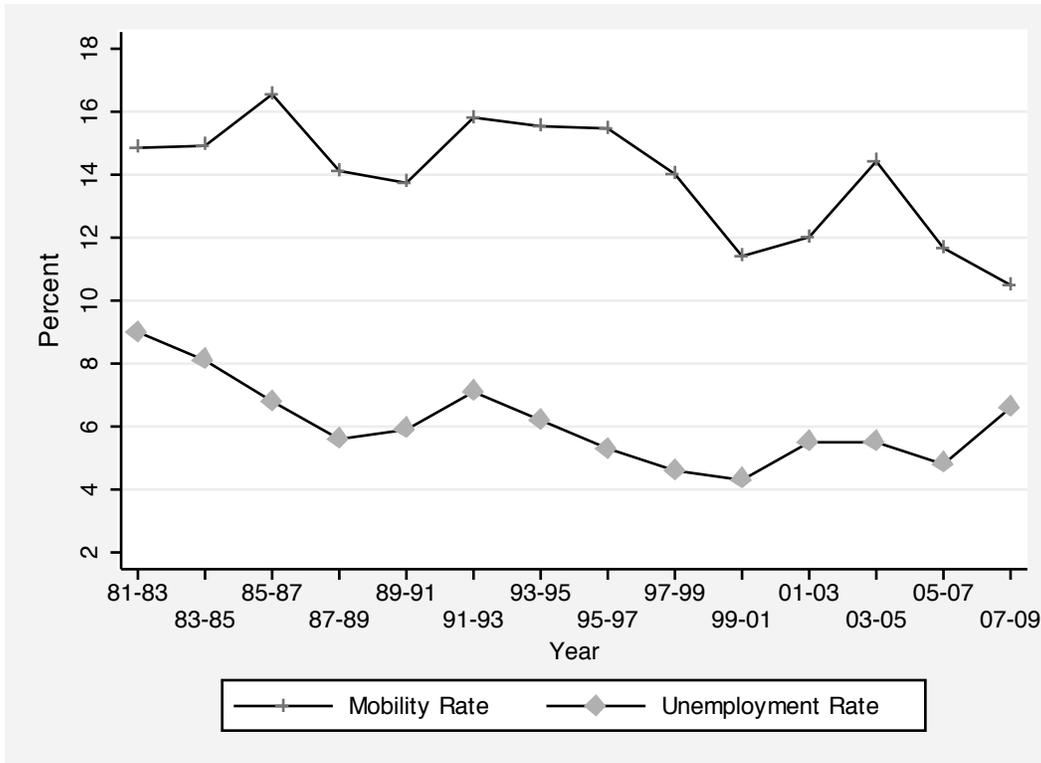


Figure 19: DWS Geographic Mobility Rate, Job Losers

excluding this last observation increases substantially to 0.58. The low level of mobility among job losers in the most recent period is clearly unusual.

I derive more information on mobility by exploiting the rotation-group structure of the CPS (described above). The major reason an individual in a continuing rotation group (2-4 or 6-8) cannot be found at the same address in consecutive months is that the individual has moved to a new address. Such a move may be within the same area, but it may also be to another area. In any case, it represents mobility, and I use this as a crude proxy for geographic movement.

I examine the non-match rates in the CPS over time in order to investigate the extent to which unemployed workers are changing residence in the month following a month in which they report being unemployed. To this end, figure 20 contains the non-match/mobility rates of individuals by labor force status. Interestingly, unemployed individuals have a substantially higher rate of residential mobility than do either the employed or those not in the labor force. The mobility rates of workers in all labor force states has declined in the last several years, but it has declined particularly sharply for the unemployed. The month-to-month mobility rate for the unemployed declined from about 8.5 percent in 2006-2007 to 6.9 percent in 2009-2010. The current mobility rate for unemployed workers is the lowest

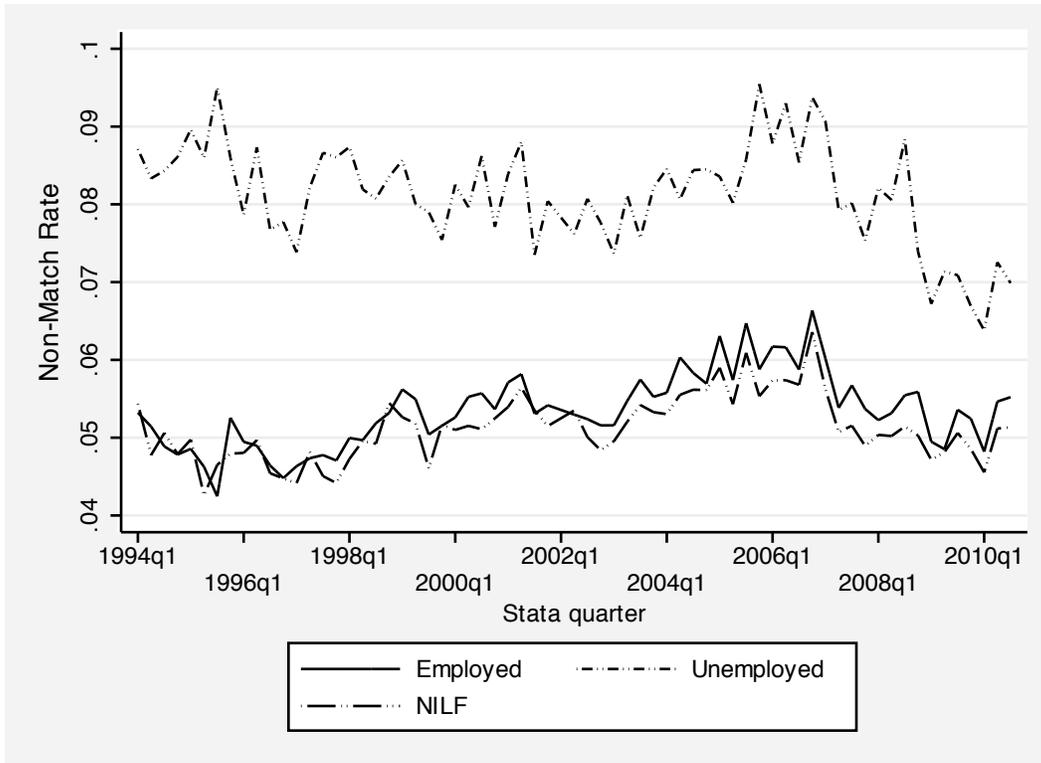


Figure 20: CPS Non-Match/Mobility Rate, by Labor Force Status (s.a.)

in my sample, since 1995. This is consistent with the findings on mobility among job losers from the DWS.

One explanation for a structural restriction on mobility of the unemployed in the most recent period is that the collapse of the housing market may make it difficult or impossible for unemployed homeowners to move to a new location to search for or take a job.¹³ This would suppress both the post-job-loss mobility rate and the the U-E transition rate. To the extent that the structural interpretation of the low mobility rate of job losers is due to the housing market, then the probability of a move by a homeowner who loses a job will be lower in the current period than it was earlier. I turn to such a calculation.

The basic monthly CPS questionnaire asks for information on whether the respondent lives in an owner-occupied dwelling. Unfortunately, this information does not appear to be available after August 2000 in the basic monthly CPS release. However, it is available in releases of the CPS that contain supplements subsequent to this date. I am able to use data on home ownership in the CPS for every month from January 1994 to August 2000 and for 74

¹³ Oswald (1996) argues that high unemployment rates in industrialized countries stems in part from high rates of home-ownership that make it expensive and difficult for workers to move in order to find jobs.

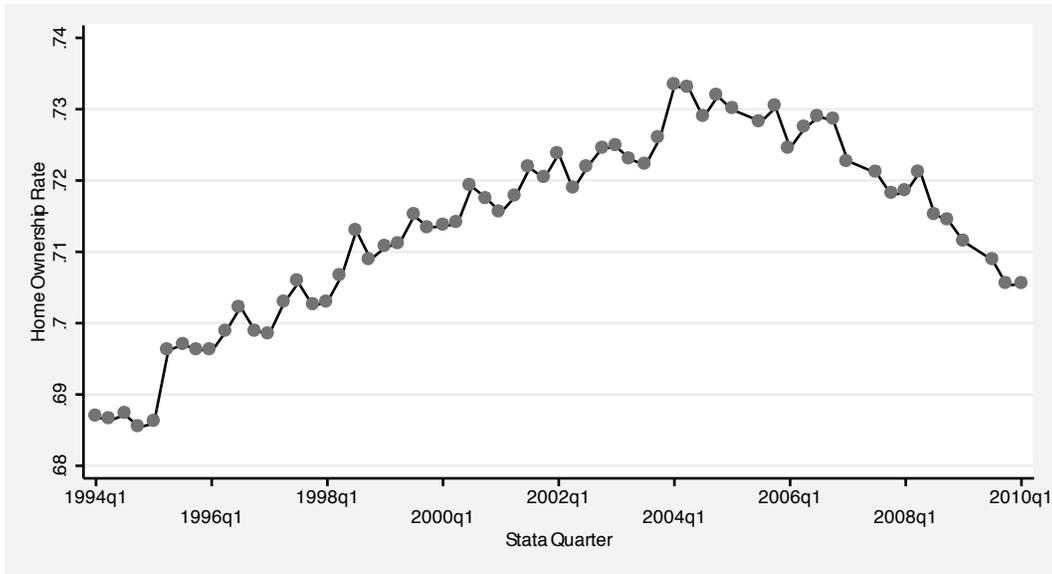


Figure 21: CPS Home Ownership Rate, 1994-2010

of the 121 months from September 2000 through September 2010.¹⁴ I plot home-ownership rates from 1994-2010 from the CPS by labor force state in figure 21. This is the fraction of individuals living in owner-occupied dwellings, and it increase from about 69 percent in 1994 to a peak of about 73 percent in the 2004-2006 period before declining to 71 percent in 2009.

Figure 22 contains the seasonally-adjusted match/non-match mobility rates of employed and unemployed workers by home-ownership status quarterly from 1994 through 2010. Not surprisingly mobility rates are substantially higher for renters than for homeowners, independent of labor force status. Mobility rates for all groups have fallen in recent years. The average mobility rate for unemployed homeowners fell from 6.3 percent in 2006 to 5.2 percent in 2009, a decline of 1.1 percentage points. This, by itself, is consistent with the collapse of the housing market hindering mobility of the unemployed. However, over the same period, the average monthly mobility rate for unemployed renters fell from 12.3 percent to 9.8 percent, an even larger decline of 2.5 percentage points. On this basis, the difference-in-difference estimate of the decline in the mobility rate of unemployed homeowners (using unemployed renters as a “control group”) was -1.4 percentage points between 2006 and 2009. The mobility rates of unemployed homeowners actually *increased* relative to that of unemployed renters.

¹⁴ This includes 3 months in late 2000, 10 months in 2001, 9 months in 2002, 8 months in 2003, 9 months in 2004, 6 months in 2005, 9 months in 2006, 6 months in 2007, 8 months in 2008, 4 months in 2009, and 2 months in 2010 (as of November 2010).

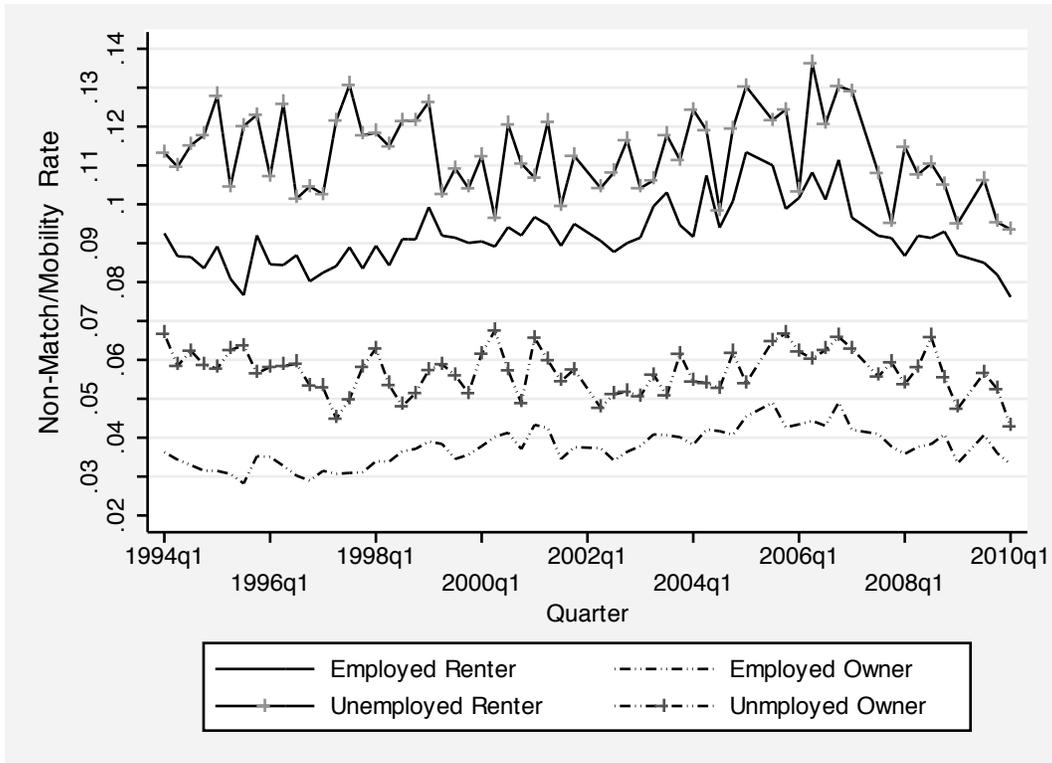


Figure 22: CPS Non-Match/Mobility Rate, by Home-ownership and Labor Force Status (s.a.)

A similar pattern is evident for those employed. The average mobility rate for employed homeowners fell from 4.5 percent in 2006 to 3.7 percent in 2009, a decline of 0.8 percentage points. Over the same period, the average monthly mobility rate for employed renters fell from 10.6 percent to 8.5 percent, a decline of 2.1 percentage points. On this basis, the difference-in-difference estimate of the decline in the mobility rate of employed homeowners relative to employed renters was -1.3 percentage points between 2006 and 2009. As with the unemployed, the mobility rates of employed homeowners increased relative to that of employed renters.

I conclude from this analysis that there is no evidence that the collapse of the housing market has, on average, caused unemployed homeowners to be unable to move to find work or employed homeowners to be unable to move to find new jobs.

Returning to the DWS information on the mobility of job losers, I can utilize the basic CPS information on home ownership for these job losers. Ideally, we would like to know the ownership status of the dwelling at the time of job loss, but this is not available. However, with some assumptions and with the application of Bayes' Rule I can say something tentative about how the likelihood of moving given home ownership status has changed. By Bayes'

rule,

$$P(M = 1|O = 1) = 1 - \frac{P(O = 1, M = 0)}{P(O = 1)}, \quad (4.1)$$

where M is an indicator for a move and O is an indicator for home ownership. It is reasonable to assume that the observed *ex post* home rental rate for job losers who do not move is a good proxy for the *ex ante* home rental rate of non-movers ($P(O = 1|M = 0)$). The rate of non-movement ($P(M = 0)$) is directly observable in the data. The problem is that there is not a good proxy for the *ex ante* overall home ownership rate of job losers ($P(O = 1)$).

If I am willing to assume that the *ex ante* home ownership rate of job losers is constant between two years, say 0 and 1, I can express the change in the probability of mobility conditional on home ownership, using equation 4.1, as

$$\Delta[P(M = 1|O = 1)] = \frac{P_0(O = 1|M = 0)P_0(M = 0) - P_1(O = 1|M = 0)P_1(M = 0)}{P(O = 1)} \quad (4.2)$$

Multiplying equation 4.2 by $P(O = 1)$ yields the change in the joint probability of moving and owning a home as

$$\Delta[P(M = 1, O = 1)] = P_0(O = 1|M = 0)P_0(M = 0) - P_1(O = 1|M = 0)P_1(M = 0). \quad (4.3)$$

Analogous application of Bayes' rule to non-owners yields the change in the probability that job loser who rents moves as

$$\Delta[P(M = 1|O = 0)] = \frac{P_0(O = 0|M = 0)P_0(M = 0) - P_1(O = 0|M = 0)P_1(M = 0)}{P(O = 0)} \quad (4.4)$$

Multiplying equation 4.4 by $P(O = 0)$ yields the change in the joint probability of moving and not owning a home for job losers as

$$\Delta[P(M = 1, O = 0)] = P_0(O = 0|M = 0)P_0(M = 0) - P_1(O = 0|M = 0)P_1(M = 0). \quad (4.5)$$

Figure 23 shows the change in the conditional probability of mobility for job losers by homeownership status assuming an overall homeownership rate for job losers of 0.6 for successive pairs of DWSs from 1986-2010. This is based on equations 4.2 and 4.4. Mobility rates of renting job losers are quite volatile. There is a counter-cyclical pattern in the change in mobility rates of renting job losers. The correlation of unemployment rate (averaged over the three years prior to the DWS survey date) with the change in the mobility rate of renting job losers is 0.61. The change in the mobility rate of homeownership job losers does not appear to have a cyclical component. The correlation of unemployment rate with the change in the mobility rate of homeownership job losers is 0.06.

With regard to the most recent period, the change in the mobility rate of homeownership job losers was positive. Interestingly, the change in the mobility rate of renting job losers was

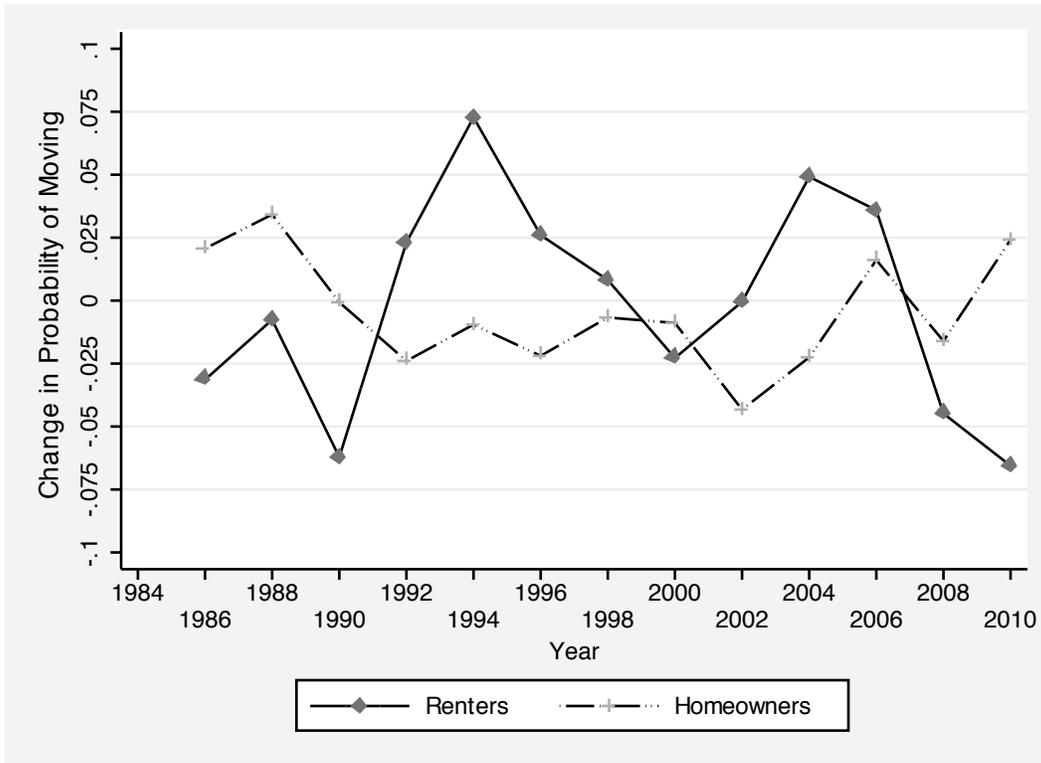


Figure 23: Change in the Probability of Moving, by Home-ownership Status (DWS)

negative and substantial. These calculations are summarized in table 1. The results in this table clearly show that home ownership did not adversely affect the mobility of job losers in 2010 relative to 2008. The third line of table 1 shows 1) that there was virtually no change in the joint probability of mobility and homeownership and 2) that there was a decrease of 2.7 percentage points in the the joint probability of mobility and non-homeownership. Assuming a common probability of home ownership for job losers of 0.6 (as in figure 23), the fourth line of the table rescales these changes to reflect the probability of mobility conditional on homeownership and the probability of mobility conditional on non-homeownership. This suggests, counter to expectations, that a homeowner’s probability of moving subsequent to job loss increased by 2.4 percentage points between 2008 and 2010 while the probability that a non-homeowner moves subsequent to job loss fell by 6.6 percentage points over the same period.

The finding that rates of mobility fell more for renters than for homeowners suggests that the collapse of the housing market has not been an important factor in preventing job losers from moving. A more likely cause is deficient demand generally so that there is less incentive to move.

Table 1: Probability of Mobility of Workers Who Lose Jobs, by Homeowner Status

	2008	2010		2008	2010
(1) $P(O = 1 M = 0)$	0.662	0.637	$P(O = 0 M = 0)$	0.338	0.363
(2) $P(M = 0)$	0.883	0.895	$P(M = 0)$	0.883	0.895
(3) $\Delta P(M = 1, O = 1)$		0.014	$\Delta P(M = 1, O = 0)$		-0.026
(4) $\Delta P(M = 1 O = 1)$		0.024	$\Delta P(M = 1 O = 0)$		-0.066

O is an indicator for home ownership. M is an indicator for mobility. $P(O|M = 0)$ is derived from DWS data on geographic mobility and basic CPS data on homeownership. $P(M)$ is derived from DWS data on geographic mobility For job losers. The third line is calculated from equations 4.3 and 4.5. The fourth line is calculated from equations 4.2 and 4.4 assuming that $P(O = 1) = 0.6$.

4.2 Post-Displacement Labor Force Status of Job Losers

Figure 24 contains plots of the fraction employed, unemployed and not in the labor force at the DWS survey dates for job losers in each of the DWSs from 1984-2010. It is clear from this figure that the post-displacement employment rate is pro-cyclical, with relatively low rates for job loss in slack labor markets. Job losers in the current recession have the lowest reemployment rate over the period surveyed, with only 50 percent of job losers in the 2007-2009 period employed in January 2010. In contrast, 58 percent of job losers in the 1981-1983 recessionary period were employed in January 1984. These movements are mirrored in the survey-date unemployment rate among job losers, which moves counter-cyclically. Almost 37 percent of job losers in the 2007-2009 period were unemployed in January 2010 while 29 percent of job losers in the 1981-1983 period were unemployed in January 1984. There is no evidence from the DWS that job losers are disproportionately discouraged in recessions, leading to withdrawal from the labor force. The fraction of job losers reporting that they are not in the labor force at the subsequent interview shows very little movement over time.

The use of aggregate fractions in figure 24 masks some important differences in labor force status across workers by sex, education, and age. Figure 25 contains plots of the distribution of survey-date labor force status by sex, and, while the male and female plots show the same cyclical patterns, it is clear that female job losers have weaker attachment to the labor force. Female job losers have higher higher fractions not in the labor force and somewhat lower unemployment rates. The substantial drop in post-displacement employment rates and the substantial increase in post-displacement unemployment rates in the current recession is shared by workers of both sexes.

Another important dimension along which there are differences is education. Figure 26 contains plots of survey-date employment probabilities for displaced workers by year broken down by education. Not surprisingly, the likelihood of post-displacement employment rises with education while there is a negative relationship between post-displacement unemploy-

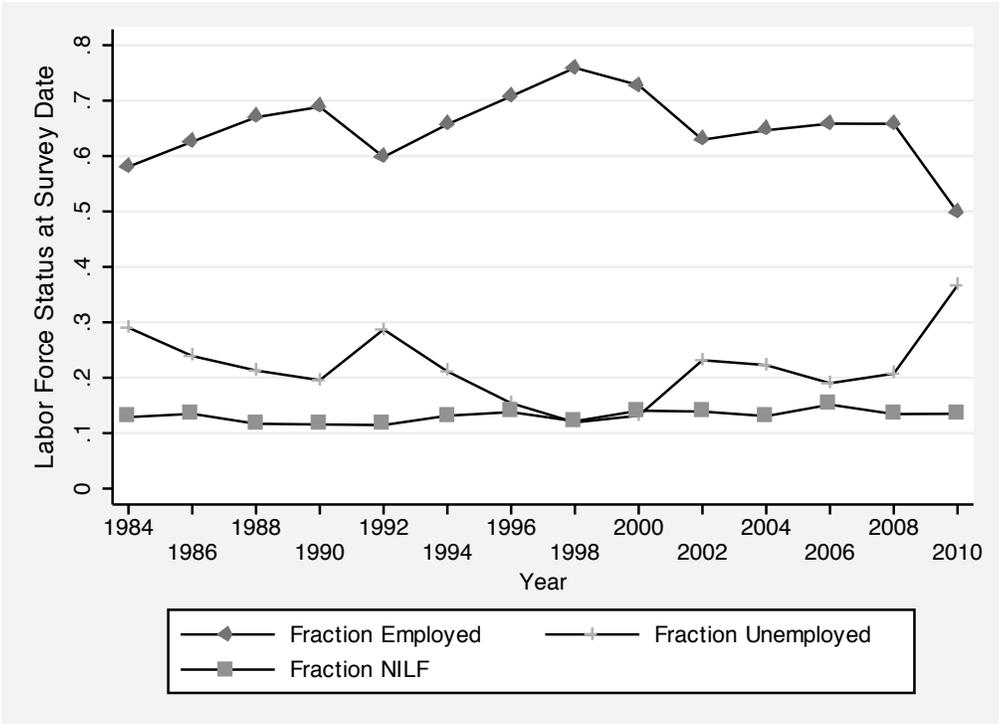


Figure 24: Survey Date Labor Force Status of Job Losers

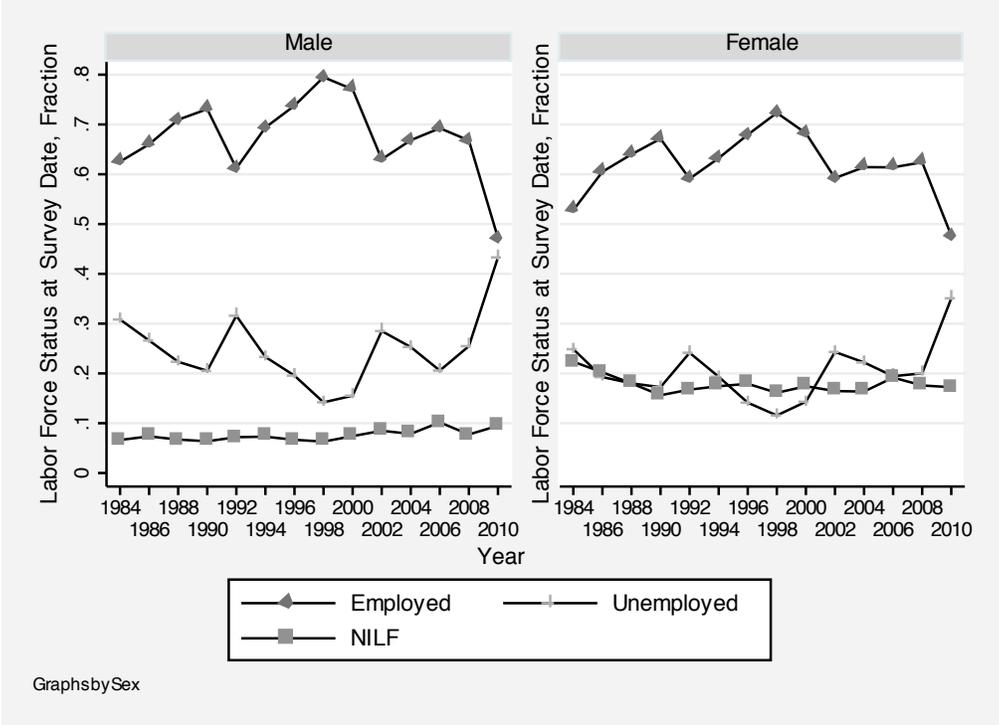


Figure 25: Survey Date Labor Force Status of Job Losers, by Sex

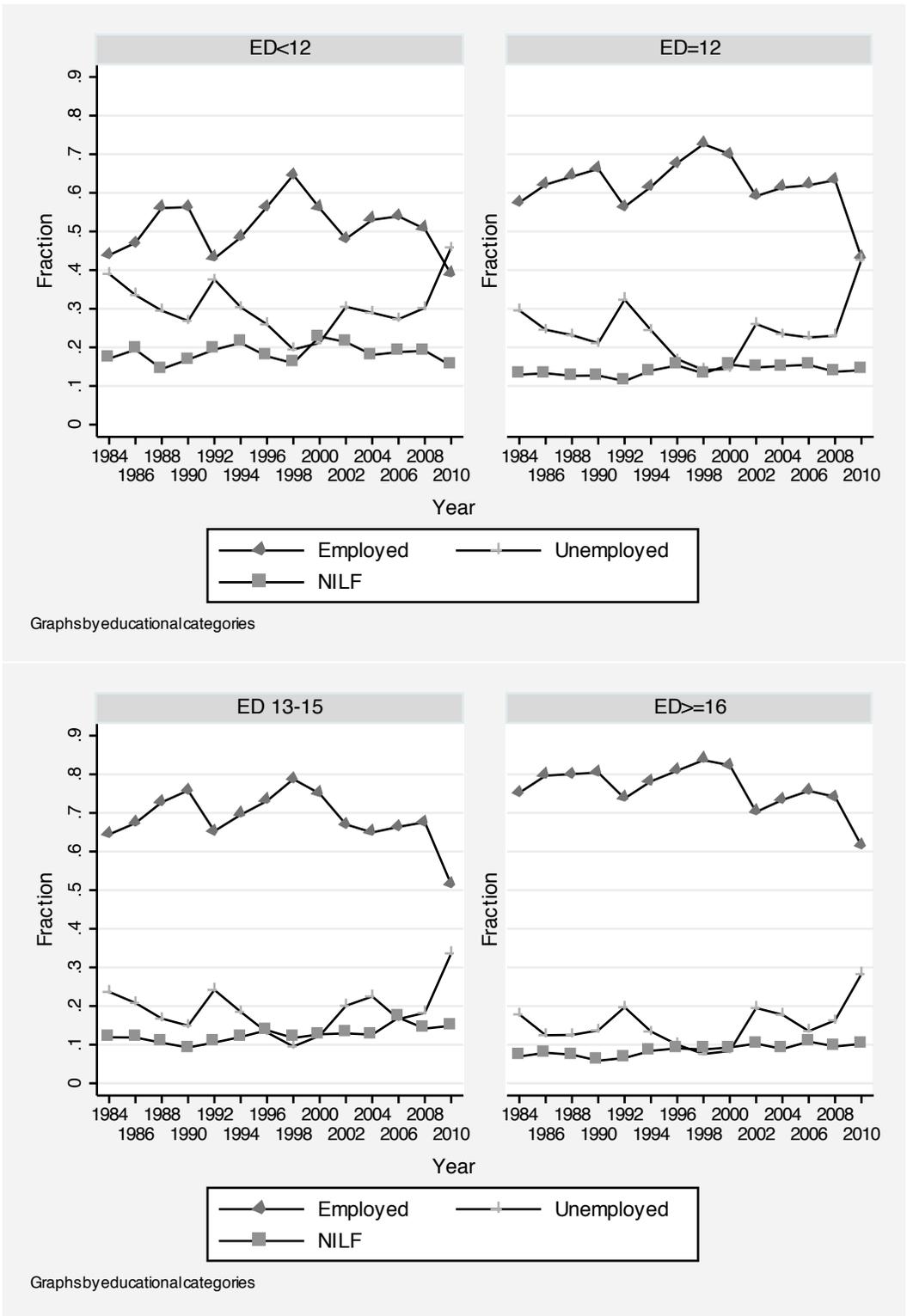


Figure 26: Survey Date Labor Force Status of Job Losers, by Education

ment rates and education.

The usual cyclical pattern of both the employment and unemployment fractions exists at all education levels. There generally has been somewhat more cyclical variation among the less educated. In the early 1990s, the fraction employed among college graduate job losers fell from a peak of about 82 percent in 1990 to a trough of 74 percent in 1992, a decline of 8 percentage points. Over the same period, the fraction employed among high school graduate job losers fell from 68 percent to 57 percent, a decline of 11 percentage points. In the current recession, the fraction employed among college graduate job losers fell from a peak of about 76 percent in 2006 to 61.5 percent in 2010, a decline of 15.5 percentage points. Over the same period, the fraction employed among high school graduate job losers fell from 62 percent to 43.2 percent, a decline of 17.5 percentage points. These patterns are mirrored in post-displacement unemployment rates. In the current recession, college graduates have a post-displacement unemployment rate of about 30 percent while high-school graduates have a post-displacement unemployment rate of about 40 percent.

There are also strong differences in post-displacement labor force status by age. Figure 27 contains plots of survey-date employment probabilities for displaced workers by year broken down by age. As with sex and education, the usual cyclical pattern of both the employment and unemployment fractions exists at all age levels. Not surprisingly, prime-age job losers (25-54 years of age) have the strongest attachment to the labor force. They have the highest fraction employed and the lowest fraction out of the labor force. Older job losers (55-64 years of age) are substantially more likely than younger job losers to be out of the labor force, perhaps reflecting a move to retirement.

One possibility that finds mixed support in the DWS is that older job losers might be more likely to remain in the labor force than in the past due to pension and other losses of wealth suffered in the recent financial crisis. It does not appear from figure 27 that older job losers are substantially less likely to leave the labor force. However, they are remaining unemployed at much higher rates than in the past (as are workers in the other age groups).

In order to investigate movement of unemployed workers out of the labor force (U-N), I return to the matched CPS data with information on U-N flows for four age groups. This information is presented in figure 28. While the U-N flow rates have declined for all age groups in the last five years, the decline is particularly sharp for workers older than 65. Five years ago, almost half of unemployed workers aged 65 or older moved out of the labor force (presumably to retirement). This is particularly striking given that these are high frequency (one month) transition rates). The U-N transition rate fell from 44 percent in 2006 to 27 percent in 2009 before rebounding to 33 percent in 2010. Younger workers, even those 55-64 have much lower U-N flow rates, and these flows have also been declining for several years. Interestingly, among the “younger” age groups, the decline was sharpest for workers 55-64,

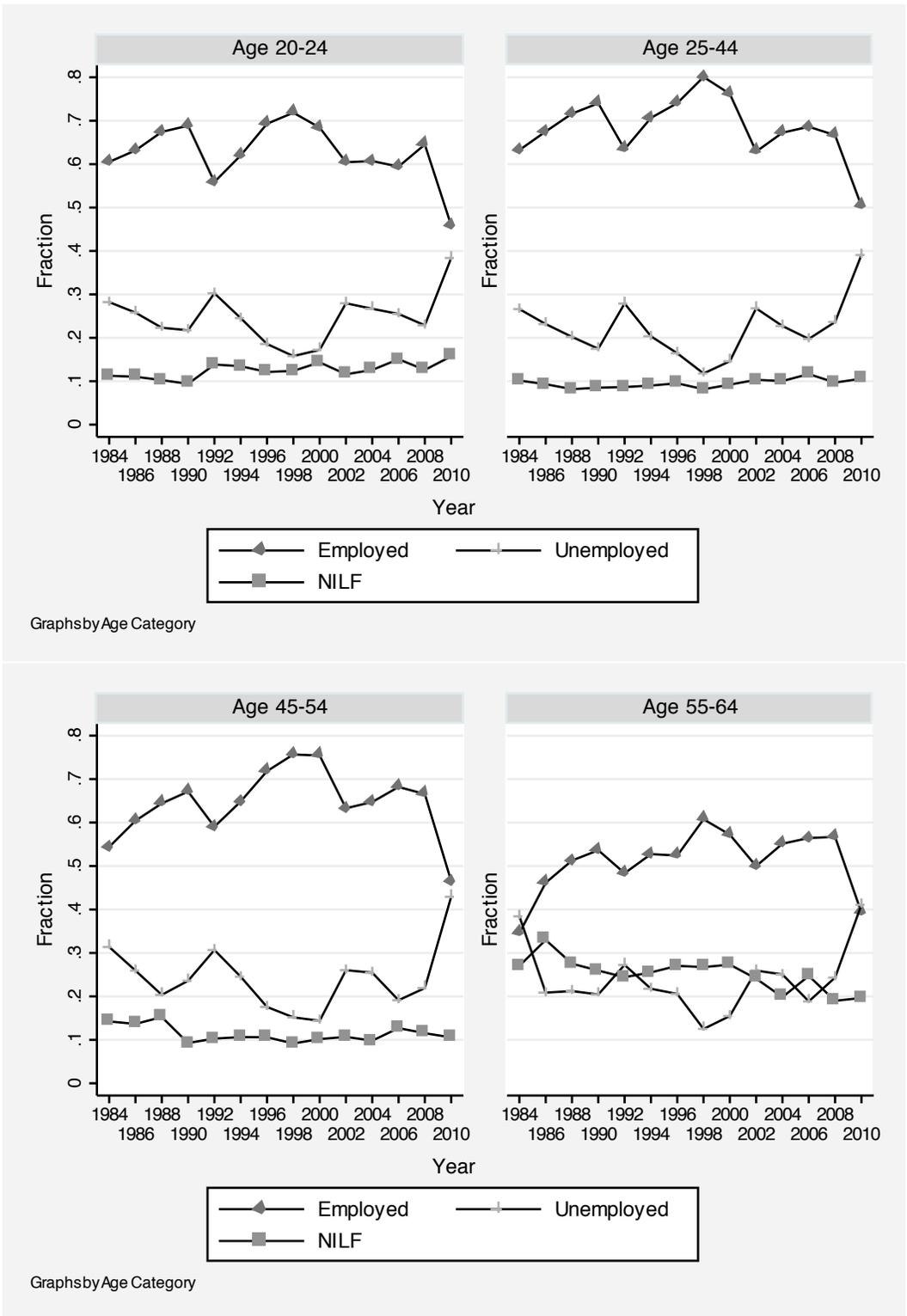


Figure 27: Survey Date Labor Force Status of Job Losers, by Age

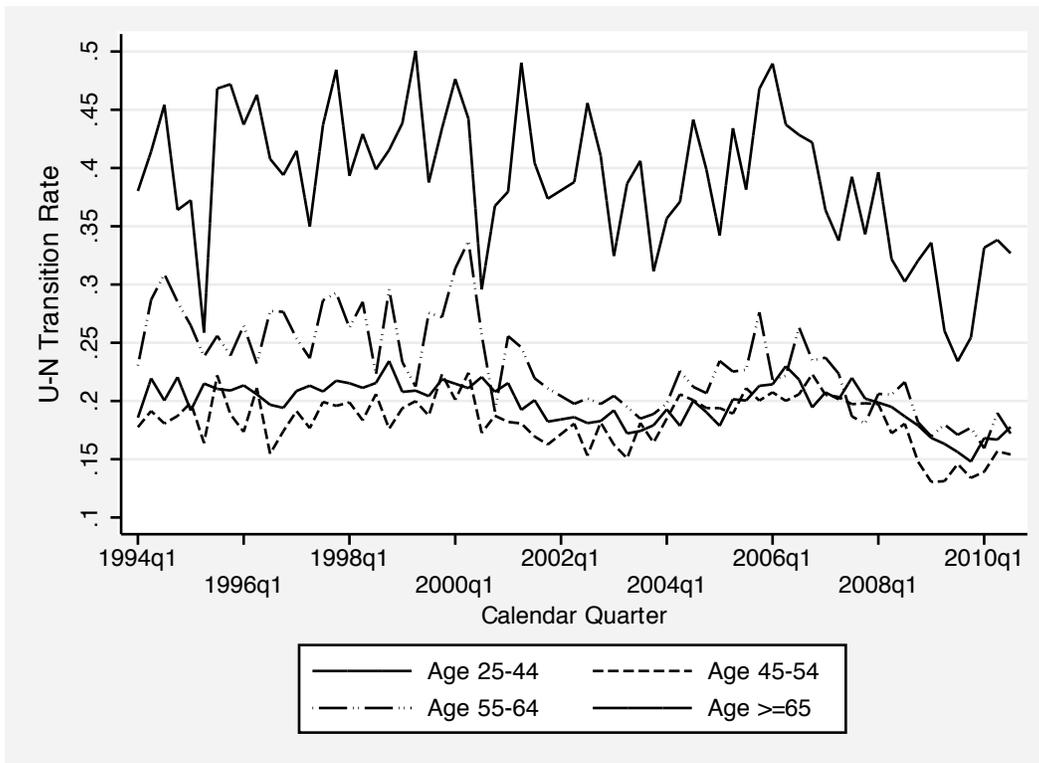


Figure 28: Transition Rate of Unemployed Workers to NILF, by age (s.a.)

where the U-N transition rate fell from 23.5 percent in 2006 to 17.4 percent in 2009 and 2010 with no rebound in 2010. This is consistent with older job losers remaining in the labor force as a result of pension and other wealth losses in the financial crisis.

Another indication that the financial crisis is having the effect of keeping people in the labor force would be a reduction in flows directly from employment to out of the labor force (as would be the case in retirement), particularly by older workers. In order to investigate this possibility figure 29 contains plots of E-N flows by age group. Not surprisingly, the flows from employment to out of the labor force of older workers are much higher than those for younger workers. What is interesting is that the monthly flow directly from employment to NILF for workers aged 65 and older (presumably retirement) has declined quite substantially, from 10.8 percent in 1995 to 7.4 percent in 2009 and 2010. The E-N flow for workers 55-64 has also declined from 3.1 percent to 2.5 percent over the same period. However, there is no evidence that the financial crisis of the last few years has had an effect on these flows.

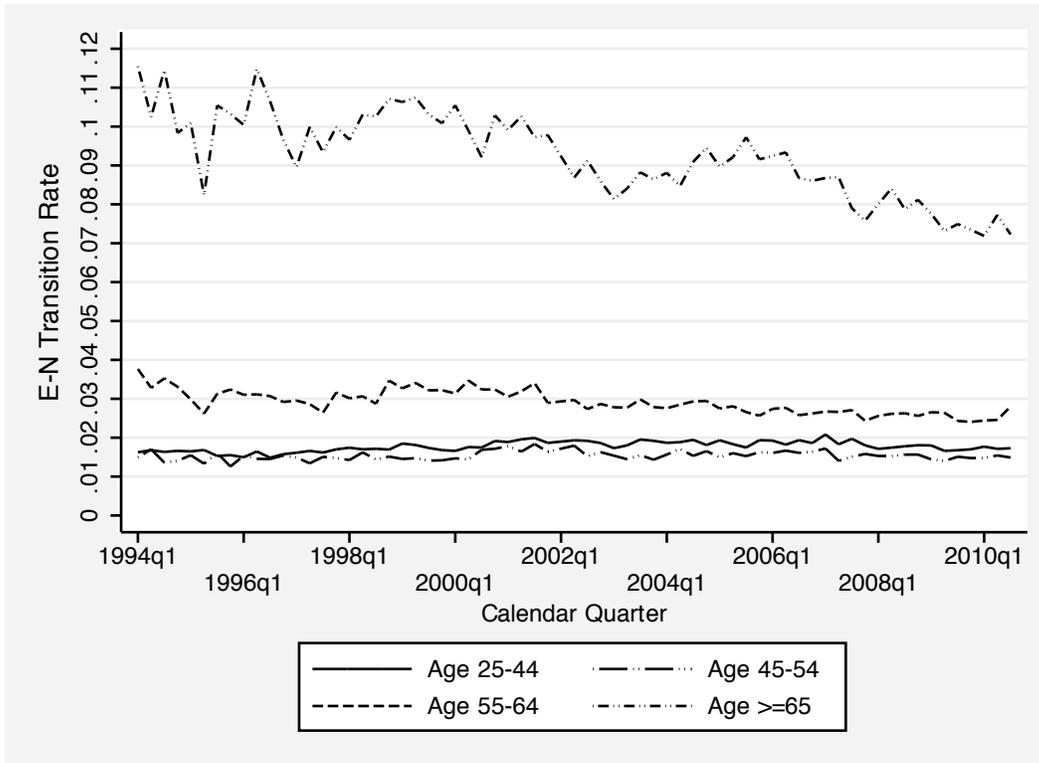


Figure 29: Transition Rate of Employed Workers to NILF, by age (s.a.)

5 Concluding Remarks

The labor market remains extremely weak. The unemployment rate is very high by any measure, and unemployment durations are unprecedentedly long. Unemployed workers are remaining in the labor force, and job losers are less likely to be reemployed than at anytime in the last 30 years. Clearly, what is driving the long durations of unemployment are depressed rates of transition from unemployment to employment reinforced by low rates of transition from unemployment to not-in-labor-force (NILF). However, what is not clear is why this is the case.

One suggested explanation is structural: workers are not moving to locations where there are jobs (geographic mismatch). Indeed, evidence from the CPS suggests that mobility rates of the unemployed are lower. However, an obvious explanation for this decline in mobility is the collapse of the housing market which makes it difficult or impossible for unemployed homeowners to move in order to take jobs. This is not supported by the data. My analysis of the CPS implies that the decline in mobility rates is largest among renters and that there is not a substantial decline in mobility rates among homeowners. This is not consistent with the structural explanation. It is more likely that the decline in mobility of the unemployed is

due to a general lack of hiring that reduces the incentive to move to find work. This implies that deficient demand is an important factor in the current labor market.

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