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Draft, Comments Welcome

An Analysis of Long-Term Unemployment

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Abstract: This article uses the National Longitudinal Survey of Youth 1979 (NLSY79) to examine long-term unemployment in the United States over men's early and mid-careers. Over 25 percent of men in the sample experience at least one long-term spell of unemployment from their mid 20s through 2009. On average, the first spell lasts over a year. Hazard estimates show that being black, having lower educational attainment, and having lower cognitive test scores are associated with increased odds of having a long-term spell of unemployment in any given month. Black men also have decreased odds of reemployment in any given month after onset of a long-term spell. Having a higher cognitive test score and having worked full-time at a job prior to the long-term spell are associated with increased odds of reemployment. The wage costs of a long-term spell are persistent, with wage losses found 5 years after onset of the first long-term unemployment spell.

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I. Introduction

The Great Recession (December 2007-June 2009) and its aftermath brought attention to the plight of the long-term unemployed (those unemployed for 27 weeks or more), as many of the unemployed entered their ranks.[1] From December 2010 through November 2012, well after the recent recession ended, the long-term unemployed comprised at least 40 percent of the unemployed. In contrast, in June 1983, after the 1981-1982 recession, the long-term unemployed peaked at 26 percent of the unemployed.[2]

Long-term unemployment can impose financial costs on the individual and his or her family. For example, researchers find persistent subsequent earnings losses, earnings volatility, and later periods of job loss associated with unemployment due to job displacement (Jacobson, Lalonde, and Sullivan, 1993; Stevens, 1997, von Wachter, Song, and Manchester, 2009), although none specifically look at the long-term unemployed. When a household member is unemployed, household finances suffer: savings are often depleted, debt increases, and households may have trouble making rent or mortgage payments (Morin and Kocchar, 2010). In addition to negative financial impacts, long-term unemployment may adversely affect physical and mental health of the unemployed (Morin and Kocchar, 2010, Sullivan and von Wachter, 2009) and negatively impact their children's schooling outcomes (Oreopoulos, Page, and Stevens, 2008; Stevens and Schaller, 2011).

Point-in-time estimates of long-term unemployment, which are available from cross-sectional surveys, don't tell us what proportion of individuals have a long-term unemployment spell over their labor market careers, how long it takes to find a job after their first long-term

[1] See, for example, Congressional Budget Office (2012).
[2] See Bureau of Labor Statistics, historical data series LNS13025703.

unemployment spell, or how the spell affects wages over time. This paper provides a starting point for answering these questions. It uses the employment history of men in the National Longitudinal Survey of Youth 1979 (NLSY79), a cohort born in the years 1957 to 1964, to estimate the hazards for entry into and exit from long-term spells of unemployment. It then estimates the wage loss over time associated with having had a long-term unemployment spell. The analysis focuses on men's employment histories from their mid 20s, after initial labor market churning occurs, until their mid-to-late 40s and early 50s. The rich longitudinal data set, which includes a cognitive test score as well as a wide array of background characteristics, helps to control for heterogeneity across individuals.

In my sample of NLSY79 men, over 25 percent experience at least one long-term spell of unemployment from their mid-20s through 2009. On average, the first spell lasts over a year. Hazard estimates show that being black, having lower educational attainment, and having lower cognitive test scores are associated with increased odds of having a long-term spell of unemployment in any given month. Black men also have decreased odds of reemployment in any given month after onset of a long-term spell. Having a higher cognitive test score and having worked full-time at a job prior to the long-term spell are associated with increased odds of reemployment. The wage costs of a long-term spell are persistent, with wage losses found 5 years after onset of the first long-term unemployment spell.

The paper proceeds as follows. Section II provides a brief overview of background literature. Section III outlines the econometric approach. Section IV describes the data and variables. Section V contains empirical results and Section VI concludes the paper.

II. Literature

The duration of unemployment and its consequences have been studied with several data sources in several contexts. With respect to unemployment duration, for example, Rothstein (2011) examines the effect of the expansion of unemployment insurance benefit length on job search and reemployment during the Great Recession using linked data from the Current Population Survey (CPS). He finds small, negative effects of benefit length on exit from unemployment for the long-term unemployed. Many papers that look at unemployment duration use the Displaced Workers Survey, a supplement to the CPS. Depending on the year, the survey asks about a job loss during the past three to five calendar years due to specific reasons (such as plant closings). For example, Farber (2011) uses data from the 1984-2010 Displaced Workers Survey to examine the incidence and consequences of job loss during the Great Recession compared to earlier recessionary and non-recessionary periods. He finds a very high incidence of job loss during the recent recession with very low rates of reemployment relative to earlier periods.

Looking at both duration and consequences of unemployment on future employment, Chan and Stevens (2001) use the Health and Retirement Study to estimate hazard models for reemployment after job displacement and then subsequent exit from the post-displacement job. Their findings suggest large and lasting effects of a job loss on the future employment probabilities of older workers. A very recent paper by Kroft, Lange, and Notowidigdo (forthcoming) reports results from an experiment in which fictitious resumes were sent out to real job postings in 100 U.S. cities. The authors find that the likelihood of receiving a call back for an interview decreased significantly with the duration of the unemployment spell on the

resume, particularly during the first eight months. The results suggest that employers potentially view a long-term unemployment spell as a negative signal of the worker's quality.

Researchers have found significant wage consequences of job displacement. Many of these papers focus on the time path of wage effects of job displacement and control for unobserved heterogeneity through a person fixed effect. Jacobson, LaLonde, and Sullivan (1993) use an administrative data set of displaced and non-displaced workers in Pennsylvania. The authors find that workers' earnings losses begin mounting in the years prior to job separation and that earnings losses after separation persist over time with little evidence of substantial recovery after the third year. Stevens (1997) uses the Panel Study of Income Dynamics to study long-term wage and earnings losses of displaced workers. She finds that earnings and wage losses are persistent even six or more years post-displacement. An innovation in her paper is her examination of how subsequent displacements affect earnings and wages. She finds that much of the persistence in wage losses following first displacement is actually due to subsequent job displacements. Kletzer and Fairlie (2003) use the NLSY79 to look at wage and earnings costs of first job displacement for young workers from 1984-1993. They find large earnings and wage losses that remain five years after the first job displacement. Von Wachter, Song, and Manchester (2009) use matched employer-employee data merged with annual Social Security earnings data to look at the effects of job displacement during the early 1980s on men's earnings. The authors find that that even 15 to 20 years later, these workers have substantially lower wages than workers not displaced during the early 1980s.

Historically, long-term unemployment has been a much larger problem in Europe than in the United States, and a number of papers focus on European countries in analyzing the causes and consequences of long-term unemployment. Machin and Manning (1999) summarize much

of this literature; the papers cover a myriad of topics, including whether and why the outflow rate from unemployment varies systematically over a spell of unemployment (unobserved heterogeneity vs. duration dependence) and how the proportion of long-term unemployed in the labor market affects wages.

III. Econometric Approach

This section outlines the paper's empirical strategy for estimating the hazard for onset of a long-term unemployment spell over one's early and mid-career years and the subsequent hazard for exit through reemployment. It also describes a method for examining the wages losses over time following a long-term unemployment spell.

Similar to a paper by Chan and Stevens (2001), who focus on employment patterns of older workers, I estimate a series of reduced-form discrete-time hazard models to describe onset of a first long-term unemployment spell and the subsequent exit into a job. For spell onset, the discrete time hazard rate (S_{it}) is the probability that person i transitions into his first long-term unemployment spell in each month (t), conditional on having not yet entered one. Using the logit functional form, the model is as follows:

$$(1)\quad \log[S_{it}/(1-S_{it})] = V_{1i}\beta_1 + V_{2it}\beta_2$$

where V_{1i} is a set of time-invariant variables, such as race, AFQT score, and industry, region, and age at labor market entry, and V_{2it} is a set of time-varying variables, including education, age, marital status, actual labor market experience, monthly unemployment rate, an indicator for year is a recession, and in some specifications indicators for recent short- and intermediate-term

unemployment spells.[3] Thus, the hazard gives the probability that person i enters his first long-term spell in month t conditional on a series of background characteristics.

Left-censoring is not an issue here because of my definition of labor market entry. I start tracking the respondent's employment history the year he turns 25. Labor market entry starts in the calendar year in which he has two consecutive years of working 40 or more weeks. These restrictions ensure that the men in the analysis are fully integrated into the labor market, thus avoiding the labor market mobility (churning) that is common in the early years of work experience.

Spell exit focuses on those who have at least one long-term unemployment spell. I convert the 27th week of the long-term spell into month, and the hazard rate (J_{it}) is the probability that person i transitions into a job in each month (t), conditional on having not yet entered one. Again using a logit functional form, the model for the second problem is:

$$(2)\ \log[J_{it}/(1-J_{it})] = Z_{1i}\theta_1 + Z_{2it}\theta_2 + f(t)$$

where Z_{1i} is a set of time invariant variables, including race, AFQT score, an indicator for whether the spell began in a recession, and characteristics measured just prior to the first long-term unemployment spell (age, and hours, tenure, hourly wage, and industry at last job, and in some specifications indicators for short- and intermediate-term unemployment spells in recent years measured at onset of the long-term spell). Time varying variables (Z_{2it}) include education, marital status, and the monthly unemployment rate. To capture negative duration dependence in the probability of starting a job, the function f(t) is modeled as a quartic in time, and t measures months since the month of the 27th week of the first long-term unemployment spell. This second

[3] Actual labor market experience since time of onset and age dummy variables also control for time effects.

hazard gives the probability that person i obtains his first job after the 27th week of his first long-term unemployment spell, conditional on a series of background characteristics and time. Because I am interested in factors affecting time until the long-term unemployed obtain their next job, I do not specifically model unemployment-to-out-of-the-labor-force transitions.

To examine the effect of a long-term unemployment spell on hourly wages, I use an econometric approach based on work by Jacobson, LaLonde, and Sullivan (1993) and Stevens (1997). In their approach, wages are a function of the time before and after the transition (job displacement in their case, long-term unemployment here). Prior to a long-term unemployment spell, individuals may experience a deterioration in wages, perhaps due to declining demand conditions at the firm, or due to moving in and out of employment relationships themselves after losing a job in a prior period. In the first years after the long-term spell, wages might be lower as individuals have lost their firm-specific human capital and their general human capital may have depreciated. If they can build up human capital in their new job, one would expect wages to increase over time. However, if individuals face additional periods of joblessness, wages may not recover over time.

The equation used to model the effect of a first long-term unemployment spell on log of hourly or weekly wages is as follows:

$$(3)\quad \log W_{it} = X_{1i}\tau_1 + X_{2it}\tau_2 + L_i\gamma + LT_{it}\delta + \alpha_i + \varepsilon_{it}$$

where log W is log of real average hourly or weekly wages person i earned in calendar year t, X_{1i} is a vector of time invariant variables that may influence wages, including race and AFQT score, and X_{2i} is a vector of time-varying variables including education, labor market experience and its square, annual unemployment rate, and age. L_i is an indicator set equal to 1 if person i ever

experienced a long-term unemployment spell and 0 otherwise. LT_{it} is a vector of dummy variables indicating the onset of a first long-term unemployment spell in a future, current, or prior year. α_i is a person fixed effect. Within a fixed effects framework, L_i drops out, and the vector of coefficients δ are only identified off of those who experienced a spell of long-term unemployment—the effect of the treatment on the treated (Heckman, et al., 1999). If the effects of long-term unemployment are different for people who experience a spell than they would have been for those who do not, then estimates of δ will not provide estimates of the effects of a first long-term unemployment spell for the population. In a second part of the wage analysis, I define the current and post long-term unemployment spell dummy variables in LT_{it} with respect to the most recent long-term unemployment spell, as in Stevens (1997).

IV. Data

Data are from the NLSY79, a data set that is very well-suited for this paper's topic. The NLSY79 contains a complete work history for each respondent, and differentiates between time spent unemployed and time spent out of the labor force. It also contains the Armed Forces Qualifying Test (AFQT) score for respondents, which is a measure of math and verbal aptitude, and a rich array of background characteristics. [4] The survey began in 1979 with a nationally representative sample of 6,403 males and 6,283 females born between 1957 and 1964 and living in the United States at the time of the initial survey. Respondents were interviewed annually through 1994 and biennially afterwards. By the 2010 survey, the last round of data available when I began this paper, NLSY79 respondents were ages 45 to 53. The NLSY79 includes

[4] Because respondents were different ages when they took the test in 1980, I standardize the AFQT score by year of birth; the standardized score has a mean of 0 and a standard deviation of 1 in the full, weighted, NLSY79 sample.

oversamples of black, Hispanic, military personnel (dropped after 1984) and low-income whites (dropped in 1990).

I restrict my sample to men in the cross-section and black and Hispanic oversamples who completed the 2010 survey (N = 3,524), as women's labor force participation is generally more complicated due to fertility and child-care decisions. The sample is reduced to 3,304 after deleting men with any active military service from the year they turn 25 through the 2009 calendar year to focus on civilian labor market experiences. It is further reduced to 2,736 due to missing employment status information in the NLSY79 weekly work status main array.[5] Finally, I obtain a final sample of 2,661 after deleting 75 respondents who did not work 40 or more weeks per year for two consecutive calendar years.

For the purposes of this analysis, labor market entry occurs in the year in which a respondent begins a streak of at least 2 consecutive calendar years working at least 40 weeks per year. The earliest this streak can begin is the January of the calendar year in which the respondent turns 25. Although this delays the entry date for some respondents, over two thirds of my final sample enter in the January of the year they turn 25 and almost 93 percent have entered by the January of the year they turn 29.

I provide three definitions of long-term unemployment or non-employment. The first is that the person is unemployed for 27 weeks or more. The second definition is less restrictive, and was chosen based on the way the NLSY79 work-history status arrays allocate periods not

[5] I delete respondents from the sample if they are missing 8 weeks of employment status information in a calendar year (year turn 25 through 2009) or if they have 8 weeks in a calendar year in which unemployed vs. out of the labor force cannot be determined.

working when the person looked for work during only part of the employment gap.[6] That is, a long-term spell occurs when a person starts out the period having been unemployed for 2 weeks and then is either unemployed or out of the labor force (or both) for an additional 25 weeks or more. The third definition is the least restrictive, and matches that available in other longitudinal surveys such as the Panel Study of Income Dynamics or the Health and Retirement Study, which do not distinguish between periods of unemployment vs. out of the labor force. In the third definition, long-term non-employment occurs when someone has a non-employment gap of 27 weeks or more.

Table 1 provides descriptive statistics for the full sample of men, and by whether they ever had each of the three definitions of long-term unemployment or non-employment spells. Using definition 1, unemployed for at least 27 weeks, I find that over a quarter of men have ever had a long-term spell of unemployment from the time of labor market entry through 2009. The second definition of long-term non-employment captures almost a third of the sample (unemployed for 2 weeks and then unemployed or out of the labor force for at least 25 weeks more). About 45 percent of the sample had a long-term spell in which they were unemployed or out of the labor force for at least 27 weeks (definition 3). Overall, the sample members averaged almost 21 years of employment experience from the year of labor market entry through 2009. They were unemployed under a year and out of the labor force for almost 1.5 years over this same period.

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[6] The NLSY79 records the dates of the gaps in employment. However, if a respondent reports he was looking for work during only part of the gap, it does not then ask the dates for the unemployed portion of the spell. The weekly work history arrays in the public-use NLSY79 data allocate the unemployed period to the middle part of the gap in employment and the out-of-the-labor-force period to the end points.

Men who have ever had a long-term unemployment or non-employment spell differ from those who have never had one. They are more likely to be black, have over half a standard deviation lower AFQT scores, and have lower levels of education and are less likely to be married at labor market entry. Men who have ever had a long-term spell of unemployment or non-employment average at least 17.5 years of labor market experience from the year of labor market entry through 2009. In comparison, those who have never had a long-term spell average over 22 years of labor market experience. Depending on the definition of a long-term spell of unemployment or non-employment, those with a long-term spell average about 1.6 to 2.5 years of unemployment and 2.7 to 3.1 years out of the labor force from the year of labor market entry through 2009. Men who have ever had a long-term unemployment or non-employment spell are also more likely to have worked in seasonal industries and those prone to layoff such as construction or manufacturing, and are less likely to have worked in more stable industries such as professional or the public sector in the first year after labor market entry.

Table 2 displays the number of long-term unemployment or non-employment spells from labor market entry through 2009, conditional on having at least one spell. The majority of men who have had a long-term spell have one or two spells over this period. Almost 62 percent of men have only one long-term unemployment spell and another 23 percent have two (definition 1) from labor market entry through 2009. Similarly, using definition 2, 59 percent have only one long-term unemployment or non-employment spell and 24 percent have two. The numbers for definition three are 50 and 26 percent, respectively.

Figure 1 displays the calendar year of onset of the first long-term unemployment spell for all three definitions of unemployment or non-employment. The trend lines spike up around years of economic downturns and are similar for all three definitions. For example, in 1991 and

1992, when the men were fairly early in their labor market careers, 9.2 and 7.1 percent, respectively, began their first long-term unemployment spell (definition 1). In 2001, the time of another economic downturn, 5.2 percent of men began their first long-term unemployment spell (definition 1). Finally, in 2008, the time of the most recent recession, 6.6 percent of men began their first long-term unemployment spell (definition 1). The results are similar for definitions 2 and 3. Figure 2 shows the calendar year of onset of all long-term spells of unemployment or non-employment. As in Figure 1, Figure 2 depicts peaks in long-term unemployment onset during recessions, with a very large up-tick during 2008, when the Great Recession was underway.

Table 3 restricts the sample to men who experienced a long-term unemployment or non-employment spell. The table shows that, on average, the first long-term spell of unemployment or non-employment lasted from 57 (definition 1) to 97 weeks (definition 3), well above the 27-week definition of long-term unemployment. Note that the first long-term unemployment spell may end due to men finding and starting a job or leaving the labor force in definition 1.[7] About 88 percent of male respondents with a first long-term spell of unemployment or non-employment held a job by the end of 2009 (or sooner). There was an average of 40 weeks between the 27th week of the first long-term spell and the start date of the next job (definition 1). Men with a long-term spell of unemployment or non-employment worked at least 9 years and had less than a third of a year of unemployment prior to the onset of that spell. About 80 percent of men were holding a job in which they worked full-time prior to the spell. The average tenure on the job held prior to the long-term spell was over 4 years.

[7] Men with an on-going first long-term unemployment spell in December of 2009 were also used in the calculation.

Table 4 displays real ($1982-1984), average hourly and weekly wages around the calendar year of onset of the first long-term unemployment or non-employment spell. I use the weekly-work-history arrays in the NLSY79 to fill in hourly wages and hours worked per week of every job held in a particular calendar year.[8] The wages were deflated to 1982-1984 dollars.[9] Sample size varies over the years in Table 4 due to periods of non-work, timing of the long-term unemployment spell, and invalid wage data.

A slight decline in wages occurs in the two calendar years leading up to the first long-term unemployment spell. However, one calendar year after the onset of the first long-term unemployment or non-employment spell, hourly wages are 5 to 11 percent lower than in the year onset, and weekly wages are about 4 to 8 percent lower. By 5 years after the calendar year of the first long-term spell's onset, real hourly wages have increased by 1 to 8 percent above the real hourly wage in the year of the spell's onset and weekly wages have increased by 5 to 13 percent. However, even 7 or more years post onset, hourly and weekly wages are still quite a bit lower (about 26 percent using the first definition of long-term unemployment) than the average hourly and weekly wages of workers who have experienced no long-term spell of unemployment or non-employment.

Table 5 shows the real average hourly and weekly wages for the most recent long-term unemployment or non-employment spell. Using Steven's (1997) methodology, one is only pre-spell once—before the first long-term unemployment spell. Current and post long-term

[8] At an interview, respondents report wages and hours for each job held since the date of the last interview.
[9] Hourly wage values were excluded if they were less than $2/hour or more than $200/hour. Hourly wages were then averaged over all of the weeks worked in the calendar year with valid wage observations. Weekly wages were calculated by multiplying hourly wage by hours worked per week. Any weekly wage value of more than $4000/week was deleted. Weekly wages were then averaged over all of the weeks worked in the calendar year with valid observations. I exclude the yearly average wage observation if more than 50 percent of the wage values are missing for the weeks worked.

unemployment spell information pertains to the most recent spell. Thus men with multiple long-term unemployment spells can be, for example, one year post-spell more than once. This table shows a much larger drop in hourly and weekly wages from the year prior to spell onset to the year of spell onset, as men with multiple long-term spells of unemployment receive more weight. Wages fall further in the first calendar year post onset and then begin to rise to pre-onset levels.

V. Empirical Results

This section describes results from reduced-form logit models of the hazard for entering into a long-term unemployment spell over one's early and mid-career years and the subsequent hazard for exit through entry into an employment relationship. It also shows estimates of wage losses over time following a long-term unemployment spell.

a. onset of first long-term unemployment spell

To begin, Figure 3 displays the cumulative percentage of men who have not yet begun a first long-term unemployment or non-employment spell in each month, or the cumulative survival curve. In the first two definitions, men are not necessarily directly transitioning from a period of employment to the long-term spell, although the descriptive statistics show that prior to the long-term spell, they had, on average, worked over 9 years since labor market entry. In the third definition, men are directly transitioning into long-term non-employment from a period of employment.

Survival curves for definitions 1 and 2 are very similar, with slightly steeper curves from about 2 to 5 years after labor market entry. The survival curve for definition 3 has a steeper

slope over years 2 to 8 than the curves for definitions 1 and 2; it then mostly parallels the other two. Five years after labor market entry, between 8 (definition 1) to 16 (definition 3) percent of the sample of men had begun a long-term unemployment or non-employment spell. By 10 years, the numbers are 14 (definition 1) to 28 (definition 3) percent. By 20 years after labor market entry, 24 (definition 1) to 41 (definition 3) percent of men in the sample have begun at least one long-term spell of unemployment or non-employment. The hazard results that follow include controls for a series of background characteristics.

Table 6 displays odds ratio estimates and p values from logit estimation of the hazard for beginning a long-term unemployment or non-employment spell. The p values are based on robust standard errors clustered by person id. Two specifications are shown for each definition of long-term unemployment or non-employment; the first excludes and the second includes indicators for recent spells of intermediate (15 to 26 weeks) or short-term (2 to 14 weeks) unemployment or non-employment. Rather than having year effects, I include an indicator set equal to 1 if the year is a recession or the year following a recession. Figure 1 shows spikes up in long-term- spell onset in the year of and the year following a recession. Monthly unemployment rate controls for labor market conditions as well. Estimation in Table 6 uses 2,661 men and 546,507 (definition 3) to 634,643 (definition 1) person-months.

Turning to the first column (definition 1--unemployed for at least 27 weeks) Table 6 indicates that black men have almost 72 percent higher odds of onset of a first long-term unemployment spell in any given month, as compared to non-black, non-Hispanic men. Education plays a significant role in the hazard for beginning a long-term unemployment spell, with lower education levels having the highest odds. For example, compared to men with a bachelor's degree or more, men with less than 12 years of education have over 125 percent

higher odds of beginning a first long-term unemployment spell in any given month, and men with 12 years of education have 71 percent higher odds. Higher AFQT scores are associated with lower odds of having a first long-term spell. A .5 increase in AFQT scores, about half a standard deviation, results in a 10 percent decrease in the odds of beginning a first long-term unemployment spell in any given month. Married men have lower odds of having a first long-term unemployment spell compared to never-married men. The year of or following a recession is associated with a 106 percent increase in the odds of beginning a long-term unemployment spell. The second column for definition 1 adds indicator variables set equal to 1 if the respondent experienced a short-term or intermediate-term unemployment spell within the past year, two years, or three years. Having had a recent spell of relatively shorter unemployment greatly increases the odds of having a first long-term unemployment spell. For example, men who have begun an intermediate-term unemployment spell in the prior 12 months have about 128 percent higher odds of beginning a first long-term unemployment spell in any given month as compared to men who have not begun an intermediate-term unemployment spell in the past 12 months.

The results for definition 2 of long-term unemployment are very similar to those that use definition 1. Definition 3, the least restrictive measure (unemployed or out of the labor force or both for at least 27 weeks) shows a few differences from the results using definition 1. For example, indicators for race and recession have smaller effects on the hazard for beginning a first long-term spell in any given month. However, in general, the results tell a similar story across all definitions: being black, having lower educational attainment, and having lower AFQT scores are associated with increased odds of onset of a first long-term spell of unemployment or non-employment in any given month.

b. Exit from 27th week of first long-term unemployment spell into job

Figure 4 displays the cumulative percentage of men who enter a job in each month following the 27th week of their first long-term spell of unemployment or non-employment (or 1 minus the survival rate in their first long-term unemployment or non-employment spell). Unlike in Figure 3, which shows the cumulative survival curves for onset of long-term unemployment or non-employment, here the curves for all three definitions are nearly overlapping. In the first 12 months or so, the curves rise sharply, as the men return to work. After this, the curves become less steep, and at about 30 months they flatten out as fewer and fewer of the very long-term unemployed enter into an employment relationship. By 6 months, between 44 (definition 3) and 48 (definitions 1 and 2) percent of men have returned to work. By 2 years, between 80 (definition 3) and 85 (definition 1) percent of men who were in a long-term unemployment or non-employment spell have found a job.

Table 7 shows odds ratio estimates and p values from logit estimation of the hazard for exiting from the month of the 27th week of the first long-term unemployment or non-employment spell into a job. Estimation uses men from the sample of 2,661 who have ever had a long-term unemployment or non-employment spell. The subsample contains 717 (definition 1) to 1,189 men (definition 3) and over 9,232 (definition 1) to 20,744 (definition 3) person-months. To capture the negative duration dependence in the probability of entering a job shown in Figure 4, the hazard includes a quartic in time.

Beginning with the first column for definition 1, unemployed for at least 27 weeks, Table 7 indicates that black men have about 19 percent lower odds of exiting from their first long-term

unemployment spell into a job in any given month, compared to white, non-Hispanic men. Education is not statistically significant in the hazard. However, a .5 increase in AFQT score, about half a standard deviation, results in a 7 percent increase in the odds of starting a job in any given month. Men who were older at the start of their first long-term spell have lower odds of finding a job, compared to men 30 and under. In addition, men whose prior job was at least 35 hours per week have about 49 percent higher odds of finding another job in any given month compared to men whose prior job was under 35 hours per week. Having a long-term unemployment spell that begins in a recession or the following year does not significantly affect the odds of finding a job in any given month.

The second column for definition 1 adds indicator variables set equal to 1 if the respondent experienced a short- or intermediate-term unemployment spell within the past year, two years, or three years. Having a recent spell of relatively shorter unemployment increases the odds of finding a job in any given month. Perhaps these variables are picking up something about industry volatility/seasonality, beyond the dummy variable controls for industry for job prior to the long-term spell. Turning to the results for definitions 2 and 3, race and monthly unemployment rate are no longer statistically significant, and prior shorter spells of unemployment or non-employment are mostly not statistically significant.

c. Wage effects of long-term unemployment

Table 8 uses an unbalanced panel of NLSY79 data to test whether log of hourly wages vary over the time leading up to or following the first long-term unemployment or non-employment spell. The calendar year of onset of the long-term spell is the excluded dummy variable. Some specifications include controls for background characteristics that include race, age, education,

AFQT score, experience and its square, and annual unemployment rate. Per each definition of long-term unemployment or non-employment, Table 8 displays estimates of the impact of first long-term spell on the log of hourly wages from four specifications. The first two are OLS and fixed effects specifications with no background controls. The second two add background controls, and again the first is OLS and the second adds a person fixed effect. Robust standard errors clustered by person id are shown in parentheses. Each specification uses 54,766 annual wage observations for 2,653 men.[10]

The first specification (no controls) for each of the three definitions of first long-term unemployment or non-employment spell shows that men who experience a long-term spell have hourly wages that are about 31 percent lower (exp[-.373] -1) than men who do not experience a long-term spell (definition 1). The LT_{it} variables for the time path leading up to the first long-term spell show a positive effect on wages in this first specification that trends downward in the two years before the spell's onset. In the year post onset, wages are about 11 percent lower than those in the year of onset. By three years post onset, the wage effects of the spell are essentially zero compared to wages in the year of onset, and beyond that, wages begin to trend upwards. The second specification, which again has no background controls, but includes a person fixed effect, estimates only the longitudinal variation in log of hourly wages. The results are very similar to the first specification.

With the addition of background controls in specification 3, the effect of experiencing a long-term spell decreases dramatically relative to specification 1, to 13 to 15 percent lower wages depending on the definition of long-term spell. As in the prior specifications, we see a decrease in wages the year before onset of the long-term spell relative to the prior years. In the

[10] Eight men from the 2,661 in the full sample are excluded because they have no valid wage observations.

year post onset, wages fall further. However, unlike in the specifications without background controls, the wage effects never become positive in the years post spell. They remain negative or not statistically different from zero. The inclusion of a person-fixed effect in specification 4 tends to enlarge the values in the time path post the long-term spell. Five years after the onset of the long-term spell, hourly wages remain 6 to 9 percent lower than in the year of the long-term spell.

Table 9 replicates the specifications from Table 8 using log of weekly wages as the dependent variable, instead of hourly wages. The weekly wage measure takes into account any wage losses that are due to a drop in hours worked per week. Overall, the results are quite similar. For example, using definition 1 and the specification that includes background controls and fixed effects, one year after spell onset weekly wages decrease about 11 percent compared to the year of onset, which is about the same found for hourly wages. And, five years post onset of a long-term unemployment spell, weekly wages remain almost 6 percent lower, again similar to the magnitude found for hourly wages.

The estimates found in Tables 8 and 9 are on the low side compared to results from prior research using displaced workers. Six years after displacement, Stevens (1997) finds an 11-12 percent decrease in wages relative to the year of displacement. Jacobson, LaLonde, and Sullivan (1993) find a very large effect--a 25 percent reduction in wages 6 years later. However, replicating Jacobson, Lalonde, and Sullivan (1993) using data from Connecticut (rather than Pennsylvania) and a later time period, Couch and Placzek find a 13-15 percent reduction in wages 6 years after displacement.

Table 10 redefines the post-spell dummy variables as years since onset of the most recent long-term unemployment spell. Hourly wage is the dependent variable. The table shows a stronger wage recovery among workers who avoid multiple long-term unemployment spells, as Stevens (1997) found with respect to job displacement.[11] For example, in the specification with background controls and fixed effects in Table 8, hourly wages are about 6 percent lower five years following the first long-term spell (definition 1). In contrast, for the same specification in Table 10, hourly wages are not statistically different from zero five years after the most recent long-term unemployment spell.

d. Stratification by race and education

The descriptive statistics in Table 1 indicate that black, non-Hispanic men and men with lower levels of education are much more likely to experience a long-term spell of unemployment over their early and mid-careers than non-black, non-Hispanic men, or men with higher levels of education. Table 11 displays reduced-form logit models of the hazard for entering into a long-term unemployment spell and the subsequent hazard for exit through entry into an employment relationship, stratified by race (non-black, non-Hispanic and black, non-Hispanic) and education (less than or equal to 12 years of education, 13 or more years of education).[12] The table uses the standard definition of long-term unemployment—a long-term unemployment spell occurs when the respondent is unemployed for 27 weeks or more (definition 1 in this paper).

A few things stand out in Table 11 with respect to spell onset. First, the effects of recession or year after are larger for non-black, non-Hispanic men and for those with 13 or more years of

[11] Wage observations for men with multiple spells will be more concentrated in the early years post-spell, rather than in the later years.

[12] I exclude the Hispanic sample due to its smaller size. Note that Hispanics in the NLSY79 are those who were living in the U.S. in 1979 when first interviewed. The NLSY79 does not contain an immigrant refresher sample.

education. For example, the year of or following a recession is associated with a 145 percent increase in the odds of beginning a long-term unemployment spell in any given month for non-black, non-Hispanic men compared to an 81 percent increase for black, non-Hispanic men. Second, being black is associated with increased odds of onset of a long-term unemployment spell for both levels of education, but the relative disadvantage is higher for those with at least 13 years of education. And third, stratified by race, those with less than 12 years of education have much higher odds of spell onset compared to those with 16 or more years of education. However, the relative disadvantage is much higher for black men, at a 148 percent increase in odds compared to 108 for non-black, non-Hispanic men. The hazards for reemployment after spell onset show mostly statistically insignificant coefficients.

Table 12 shows estimates of hourly wage losses over time following a long-term unemployment spell, with samples stratified by race and education. The specifications in Table 12 include controls for background characteristics, both excluding and including a person fixed effect, and use the first definition of long-term unemployment (unemployed for 27 weeks or more). The specifications that are stratified by race show much larger wage losses for non-black, non-Hispanic men than for black men (14 percent vs. 7 percent in the fixed effect specification) in the first year after spell onset. Five years after spell onset wage losses are about 9 percent for non-black, non-Hispanic males, and are small and not significantly different from zero for black males. Wage effects over time are similar in specifications stratified by education. The exception is 5 or more years after spell onset, when the wage losses become large after earlier small effects for men with at least 13 years of education, and are small and not significantly different from zero for men with 12 or fewer years of education.

e. Women and long-term unemployment

This section focuses on long-term unemployment over women's careers. I worry that unobserved heterogeneity issues are greater for women than for men for the topic of this paper, given fertility and child-care choices embedded in many women's labor supply decisions. However, a comparison of women's and men's results can still be informative. In the analysis, I use the first definition of long-term unemployed (unemployed for 27 weeks or more).

The sample consists of 2,905 women. Almost 21 percent have ever had a long-term unemployment spell from the year of labor market entry through 2009. Overall, the sample averages about 18 years of employment, half a year unemployed, and almost 3 years out of the labor force over this time. As with men, women who have a long-term unemployment spell are more likely to be black, have lower AFQT scores, and have lower levels of education at labor market entry. Similar to men, the first long-term unemployment spell lasts an average of 56 weeks. About 83 percent of women with a first long-term spell of unemployment held a job by the end of 2009 or sooner, and there was an average of 47 weeks between the 27th week of the first long-term spell and the start date of the next job. Real hourly wages show a small decline in the years before the first long-term unemployment spell. One calendar year after the onset of the spell, hourly wages are 11 percent lower than in the year of onset. Real hourly wages then begin to slowly increase in the years post onset, but are mostly lower or similar to hourly wages in the pre-onset years.

Table 13 shows results from reduced-form logit models of the hazard for entering into a long-term unemployment spell and the hazard for exiting from the spell through starting a job. Comparable specifications for men are in the first column of Tables 6 and 7. Turning to long-

term unemployment spell onset, the table shows a number of differences in the results for women compared to those for men in Table 6. For both men and women, being black increases the odds of onset of a first long-term unemployment spell in any given month, but the odds are higher for black men (72 percent higher odds) than for black women (39 percent higher odds). Lower levels of education are associated with much higher odds of having a long-term unemployment spell in a given month for men, but for women, education is not statistically significant. The year of or following a recession is associated with a 106 increase in the odds of beginning a long-term unemployment spell for men, but a 50 percent increase for women. Turning to employment entry after a long-term spell, race and AFQT score are not statistically significant predictors for women, although they are for men. However, similar to men, women who are older at the start of their first long-term unemployment spell have lower odds of finding a job than those who are 30 or under. Although not shown in the table, having worked at least 35 hours per week on the prior job, prior job tenure, and whether the long-term unemployment spell began during a recession or the following year do not affect the odds of reemployment in any given month.

Table 14 displays estimates of the impact of first long-term spell on the log of hourly wages for women, which correspond to specifications shown in columns 3 and 4 of Table 8 for men. The specifications include background controls; the first is OLS and the second includes a person fixed effect. Women who experience a long-term spell have about 10 percent lower hourly wages than women who do not experience a long-term spell, a smaller effect than that for men (15 percent lower). As with men, wages decrease in the year prior to the long-term spell and fall further the first year post onset. Similar to the results for men, the wage effects never become positive in the years post spell. Fixed effects results for women are very similar to the OLS results.

VI. Conclusion

Experiencing a long-term unemployment spell can potentially be a traumatizing event, leading to subsequent earnings losses, financial instability, and adverse effects on physical and mental health. The study of long-term unemployment and its consequences have become particularly salient due to the enormous increase in the number of long-term unemployed during and after the Great Recession. This is the first research paper that I am aware of that focuses on long-term unemployment in the U.S. over men's careers. I find that a very large proportion of NLSY79 men (almost 25 percent) experience at least one long-term unemployment spell from their mid-20s through 2009. On average, the first spell lasts over a year. Hazard models of spell onset indicate that black men, men with lower levels of education, and men with lower cognitive test scores have higher odds of having a first long-term unemployment spell in any given month. Black men are also less likely to be reemployed after a long-term spell. Hourly wage losses after a first long-term unemployment spell persist 5 or more years after spell onset.

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Table 1. Descriptive Statistics, by Whether Ever Had a Long-Term (LT) Unemployment Spell

		Definition 1 Unemployment		Definition 2 Unemp. or OLF		Definition 3 Unemp. or OLF	
	All	No LT Spell	LT Spell	No LT Spell	LT Spell	No LT Spell	LT Spell
Ever Have Long-term Unemployment Spell							
Definition 1	.269	.000	1.000	.000	.862	.000	.603
Definition 2	.313	.059	1.000	.000	1.000	.000	.700
Definition 3	.447	.243	1.000	.195	1.000	.000	1.000
Black	.286	.231	.435	.220	.431	.208	.384
Hispanic	.189	.187	.195	.187	.194	.180	.202
AFQT score	-.266	-.093	-.741	-.065	-.712	.019	-.617
	(1.096)	(1.084)	(.984)	(1.074)	(1.011)	(1.062)	(1.034)
At Labor Market Entry							
< 12 years of ed.	.169	.132	.269	.125	.266	.109	.244
12 years of ed.	.450	.434	.494	.432	.488	.429	.476
13-15 years of ed.	.196	.210	.158	.212	.160	.211	.177
16 + years of ed.	.185	.224	.079	.230	.087	.251	.103
Never married	.587	.563	.652	.553	.662	.545	.639
Married	.371	.398	.298	.410	.284	.426	.303
Divorced	.042	.039	.050	.036	.054	.028	.059
Age 24-27	.896	.918	.838	.923	.838	.934	.849
Age 28 +	.104	.082	.162	.077	.162	.066	.151
Industry in First Year of Entry							
Agriculture/mining	.046	.046	.047	.047	.044	.049	.042
Construction	.119	.105	.158	.104	.153	.096	.149
Manufacturing	.226	.217	.249	.219	.241	.227	.224
Transportation	.075	.080	.059	.081	.061	.078	.070
Trade	.207	.199	.226	.197	.227	.195	.221
Fire	.038	.043	.026	.044	.026	.045	.030
Business repair	.090	.090	.090	.088	.094	.087	.093
Personal services	.028	.029	.026	.027	.032	.021	.038
Entertainment/recreation	.016	.015	.017	.016	.016	.015	.016
Professional	.101	.113	.069	.114	.073	.118	.079
Public sector	.054	.062	.033	.064	.032	.068	.037
Labor Market Experience from Entry through 2009							
Years employed	20.923	22.134	17.638	22.401	17.673	23.169	18.142
	(5.043)	(4.254)	(5.532)	(3.970)	(5.602)	(3.159)	(5.532)
Years unemployed	.806	.193	2.469	.164	2.218	.144	1.626
	(1.411)	(.326)	(1.822)	(.285)	(1.814)	(.263)	(1.777)
Years out of the labor force (OLF)	1.446	.973	2.728	.783	2.903	.143	3.060
	(2.955)	(2.420)	(3.779)	(2.131)	(3.855)	(.245)	(3.842)
N	2,661	1,944	717	1,829	832	1,472	1,189

Notes: Means, standard deviations in parentheses. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 2. Number of Long-Term Unemployment or Non-Employment Spells, Conditional on Having 1 Spell, Year of Labor Market Entry through 2009

Number of Spells	Definition 1 Unemployment	Definition 2 Unemp. or OLF	Definition 3 Unemp. or OLF
1	.618	.587	.500
2	.227	.242	.256
3	.089	.099	.117
4	.038	.054	.077
5	.017	.013	.029
6	.006	.005	.013
7	.004	.001	.005
8 or more	.000	0	.003
N	717	832	1,189

Notes: Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 3. Descriptive Statistics of Sample with a Long-Term Unemployment or Non-Employment Spell

	Definition 1 Unemployment	Definition 2 Unemp. or OLF	Definition 3 Unemp. or OLF
At Onset of First Long-Term Spell			
< 12 years of education	.230	.227	.213
12 years of education	.505	.498	.486
13-15 years of education	.169	.169	.182
16 + years of education	.096	.106	.119
Never married	.411	.424	.396
Married	.440	.437	.470
Divorced	.149	.138	.134
Age ≤ 30	.247	.288	.332
Age 31-39	.414	.407	.399
Age 40 +	.339	.304	.268
Calendar year	1997.460	1996.790	1996.030
	(6.821)	(6.594)	(6.427)
Monthly unemployment rate	5.847	5.871	5.845
	(1.167)	(1.164)	(1.110)
Recession	.437	.413	.372
Employment Experience Up to Spell Onset			
Years employed	9.632	9.144	9.015
	(6.371)	(6.237)	(6.386)
Years unemployed	.299	.221	.176
	(.395)	(.324)	(.285)
Years out of the labor force (OLF)	.828	.668	.135
	(1.628)	(1.376)	(.211)
Job Prior to First Long-Term Spell			
Hours ≥ 35	.901	.896	.885
Hours < 35	.099	.104	.115
Tenure (years)	4.221	4.150	4.564
	(5.063)	(4.931)	(5.321)
Hourly wage (1982 $)	7.570	7.615	8.067
	(6.454)	(6.222)	(6.660)
About First Long-Term Spell			
Length of spell (weeks)	56.672	82.263	96.940
	(39.743)	(105.235)	(124.925)
Spell ongoing in December 2009	.079	.108	.117
Post-Spell Employment			
Ever employed 1 or more weeks (all observations)	.880	.892	.883
Time between 27th week of long-term spell and job start	39.460	41.852	49.164
	(58.975)	(63.599)	(76.179)
N	717	832	1,189

Notes: Means, standard deviations in parentheses. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 4. Hourly and Weekly Wages around Year of First Long-Term Unemployment or Non-Employment Spell ($1982)

	Definition 1 Unemployment			Definition 2 Unemployment or OLF			Definition 3 Unemployment or OLF		
Years Before/After Spell	Hourly Wage	Weekly Wage	N	Hourly Wage	Weekly Wage	N	Hourly Wage	Weekly Wage	N
7 or more before	7.69	340.95	3,464	7.81	343.17	3,557	8.48	369.72	4,568
6 before	7.94	389.34	430	8.01	380.23	479	8.51	416.13	622
5 before	7.71	385.87	456	7.86	383.14	527	8.36	408.60	712
4 before	7.83	369.19	500	7.91	372.80	592	8.60	397.98	828
3 before	8.06	364.48	559	8.09	367.25	656	8.34	388.33	937
2 before	7.87	346.94	614	7.84	349.18	725	8.19	375.65	1,057
1 before	7.64	348.94	626	7.61	343.91	732	8.14	375.51	1,094
Year of spell	7.56	345.48	575	7.48	337.14	670	8.00	367.22	1,076
1 after	6.73	318.76	446	6.93	321.96	525	7.59	354.25	692
2 after	7.00	335.33	490	7.28	337.66	572	7.79	363.95	813
3 after	7.39	342.47	482	7.53	348.19	580	7.90	369.84	831
4 after	7.43	350.18	462	7.58	361.02	556	7.82	374.07	804
5 after	7.70	362.92	424	8.06	379.83	517	8.07	392.86	764
6 after	7.71	379.39	402	7.95	387.58	502	8.52	412.01	745
7 or more after	8.20	408.26	3,359	8.46	418.77	4,198	9.14	457.00	6,579
Workers with no long-term spell	11.28	551.53	41,477	11.41	559.17	39,378	11.73	576.89	32,644

Notes: Means. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 5. Hourly and Weekly Wages around Year of Most Recent Long-Term Unemployment or Non-Employment Spell ($1982)

	Definition 1 Unemployment			Definition 2 Unemployment or OLF			Definition 3 Unemployment or OLF		
Years Before/After Spell	Hourly Wage	Weekly Wage	N	Hourly Wage	Weekly Wage	N	Hourly Wage	Weekly Wage	N
7 or more before	7.69	340.95	3,464	7.81	343.17	3,557	8.48	369.72	4,568
6 before	7.94	389.34	430	8.01	380.23	479	8.51	416.13	622
5 before	7.71	385.87	456	7.86	383.14	527	8.36	408.60	712
4 before	7.83	369.19	500	7.91	372.80	592	8.60	397.98	828
3 before	8.06	364.48	559	8.09	367.25	656	8.34	388.33	937
2 before	7.87	346.94	614	7.84	349.18	725	8.19	375.65	1,057
1 before	7.64	348.94	626	7.61	343.91	732	8.14	375.51	1,094
Year of spell	7.20	331.86	870	7.04	320.23	1,089	7.33	341.99	2,045
1 after	6.59	307.26	616	6.72	313.55	731	7.26	340.19	1,029
2 after	6.94	324.78	626	7.13	330.78	751	7.67	359.51	1,105
3 after	7.29	335.75	588	7.43	340.74	712	7.91	374.51	1,052
4 after	7.32	349.28	531	7.51	353.77	656	7.83	379.24	936
5 after	7.68	361.64	471	7.80	369.96	580	8.17	398.75	838
6 after	7.78	381.70	404	7.97	389.64	518	8.87	429.98	754
7 or more after	8.71	442.44	2,534	9.16	461.31	3,083	10.02	506.92	4,545
Workers with no long-term spell	11.28	551.53	41,477	11.41	559.17	39,378	11.73	576.89	32,644

Notes: Means. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 6. Onset of First Long-Term Unemployment or Non-Employment Spell Hazard

	Definition 1 Unemployment		Definition 2 Unemp. or OLF		Definition 3 Unemp. or OLF	
Black	1.715	1.689	1.670	1.649	1.418	1.419
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Hispanic	1.231	1.208	1.204	1.189	1.167	1.190
	(.075)	(.103)	(.088)	(.111)	(.081)	(.047)
AFQT score	.800	.811	.815	.818	.837	.838
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
< 12 years of education	2.254	2.092	2.081	1.955	2.208	1.846
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
12 years of education	1.706	1.618	1.595	1.535	1.562	1.487
	(.000)	(.002)	(.001)	(.001)	(.000)	(.000)
13-15 years of education	1.507	1.441	1.386	1.341	1.425	1.404
	(.000)	(.019)	(.021)	(.038)	(.002)	(.003)
Work experience (years)	.969	.986	.966	.976	.976	.991
	(.004)	(.217)	(.001)	(.025)	(.015)	(.388)
Monthly unemployment rate	.969	.945	.981	.962	.959	.938
	(.287)	(.064)	(.496)	(.181)	(.084)	(.011)
Recession or year after	2.059	2.026	1.863	1.835	1.599	1.554
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Married	.512	.532	.501	.508	.540	.550
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Divorced	.925	.865	.913	.855	1.005	.901
	(.525)	(.237)	(.429)	(.174)	(.958)	(.299)
Age 31-39	1.580	1.415	1.430	1.360	1.231	1.126
	(.000)	(.005)	(.002)	(.007)	(.044)	(.241)
Age 40 +	1.782	1.637	1.588	1.585	1.276	1.195
	(.003)	(.012)	(.013)	(.014)	(.169)	(.319)
Intermediate-term non-employment spell in prior 12 months	----	2.282 (.000)	----	1.894 (.001)	----	2.004 (.000)
Intermediate-term non-employment spell in prior 13-24 months	----	2.103 (.000)	----	2.029 (.000)	----	2.542 (.000)
Intermediate-term non-employment spell in prior 25-36 months	----	1.458 (.122)	----	1.469 (.107)	----	1.447 (.037)
Short-term non-employment spell in prior 12 months	----	2.516 (.000)	----	1.824 (.000)	----	1.808 (.000)
Short-term non-employment spell in prior 13-24 months	----	1.706 (.000)	----	2.025 (.000)	----	1.833 (.000)
Short-term non-employment spell in prior 25-36 months	----	1.707 (.000)	----	1.805 (.000)	----	1.602 (.000)
N persons	2,661	2,661	2,661	2,661	2,661	2,661
N person-months	634,643	634,643	611,291	611,291	546,507	546,507
Chi-squared(dof)	555(31)	857(37)	620(31)	891(37)	671(31)	1,068(37)

Notes: Odds ratios, p-values in parentheses. Also included in logit hazard models are age, region, and industry at labor market entry dummy variables. Data are monthly. Robust standard errors clustered by person id used for p-value calculations. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 7. First Long-Term Unemployment Spell to Entry into Employment Hazard

	Definition 1 Unemployment		Definition 2 Unemp. or OLF		Definition 3 Unemp. or OLF	
Black	.814	.800	.863	.831	.991	.981
	(.053)	(.039)	(.144)	(.069)	(.917)	(.821)
Hispanic	.960	.994	1.081	1.082	1.049	1.056
	(.751)	(.963)	(.487)	(.485)	(.607)	(.559)
AFQT score	1.139	1.133	1.191	1.187	1.174	1.169
	(.023)	(.033)	(.001)	(.001)	(.000)	(.000)
< 12 years of education	.994	.913	1.107	1.060	1.069	1.052
	(.977)	(.682)	(.615)	(.774)	(.657)	(.740)
12 years of education	.899	.842	1.079	1.042	.933	.910
	(.579)	(.374)	(.661)	(.815)	(.580)	(.464)
13-15 years of education	1.252	1.155	1.191	1.109	.921	.909
	(.247)	(.466)	(.301)	(.548)	(.509)	(.451)
Monthly unemployment rate	.924	.912	.960	.951	.991	.989
	(.056)	(.028)	(.301)	(.202)	(.803)	(.747)
Married	1.169	1.136	.998	.984	.985	.977
	(.121)	(.205)	(.979)	(.860)	(.845)	(.761)
Divorced	1.092	1.051	.990	1.015	1.100	1.097
	(.525)	(.719)	(.939)	(.905)	(.374)	(.382)
Prior to Long-Term Spell						
Work experience (years)	1.000	1.005	1.021	1.022	1.009	1.011
	(.978)	(.706)	(.096)	(.080)	(.416)	(.350)
Age 31-39	.735	.692	.671	.676	.711	.720
	(.013)	(.003)	(.000)	(.000)	(.000)	(.000)
Age 40 +	.418	.409	.306	.311	.370	.370
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Hours ≥ 35	1.494	1.444	1.329	1.305	1.275	1.263
	(.004)	(.007)	(.023)	(.032)	(.014)	(.017)
Tenure (years)	.997	1.003	1.004	1.008	.991	.994
	(.782)	(.759)	(.720)	(.405)	(.298)	(.484)
Hourly wage	1.001	1.002	1.006	1.006	1.004	1.003
	(.852)	(.662)	(.267)	(.275)	(.402)	(.476)
Recession or year after	.993	.982	.907	.945	.991	.991
	(.951)	(.869)	(.323)	(.564)	(.912)	(.912)

Table 7 continued

Intermediate-term non-employment spell in prior 12 months	----	1.652 (.009)	----	1.055 (.825)	----	1.224 (.180)
Intermediate-term non-employment spell in prior 13-24 months	----	1.548 (.024)	----	.737 (.237)	----	.792 (.090)
Intermediate-term non-employment spell in prior 25-36 months	----	.838 (.484)	----	1.110 (.681)	----	1.138 (.504)
Short-term non-employment spell in prior 12 months	----	1.053 (.633)	----	1.269 (.030)	----	1.024 (.773)
Short-term non-employment spell in prior 13-24 months	----	1.084 (.534)	----	1.119 (.378)	----	1.073 (.412)
Short-term non-employment spell in prior 25-36 months	----	1.615 (.001)	----	1.635 (.000)	----	1.270 (.011)
N persons	717	717	832	832	1,189	1,189
N person-months	9,232	9,232	11,558	11,558	20,744	20,744
Chi-squared(dof)	284(35)	304(41)	354(35)	386(41)	512(35)	534(41)

Notes: Odds ratios, p-values in parentheses. Also included in logit hazard models are quartic in time and industry dummy variables from job before long-term spell. Data are monthly. Robust standard errors clustered by person id used for p-value calculations. Time until entry is calculated from 27 weeks into the unemployment or non-employment spell. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 8. Effects of First Long-Term Unemployment Spell on Real Log Hourly Wages ($1982)

	Definition 1: Unemployment				Definition 2: Unemployment or OLF				Definition 3: Unemployment or OLF			
	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects
	No Controls		With Controls		No Controls		With Controls		No Controls		With Controls	
Long-term unemp.	-.373	----	-.158	----	-.396	----	-.168	----	-.369	----	-.142	----
spell indicator	(.023)		(.020)		(.022)		(.019)		(.019)		(.017)	
Years Before and After Spell												
7 or more before	.046	-.063	.079	.143	.063	-.066	.082	.147	.076	-.085	.094	.152
	(.026)	(.021)	(.022)	(.021)	(.023)	(.020)	(.022)	(.021)	(.021)	(.018)	(.019)	(.019)
6 before	.062	.023	.073	.115	.085	.033	.090	.129	.090	.007	.082	.117
	(.024)	(.022)	(.022)	(.022)	(.023)	(.021)	(.021)	(.021)	(.019)	(.018)	(.018)	(.018)
5 before	.051	.025	.057	.099	.074	.029	.078	.108	.071	.011	.071	.103
	(.022)	(.021)	(.021)	(.020)	(.020)	(.019)	(.019)	(.019)	(.018)	(.016)	(.017)	(.016)
4 before	.058	.038	.069	.095	.069	.031	.075	.092	.072	.027	.080	.101
	(.021)	(.020)	(.020)	(.020)	(.019)	(.018)	(.018)	(.018)	(.017)	(.016)	(.016)	(.016)
3 before	.074	.071	.091	.113	.080	.051	.088	.095	.055	.023	.067	.079
	(.020)	(.019)	(.019)	(.019)	(.018)	(.017)	(.018)	(.017)	(.015)	(.014)	(.014)	(.014)
2 before	.063	.076	.084	.101	.065	.055	.076	.081	.044	.035	.063	.070
	(.018)	(.017)	(.017)	(.017)	(.016)	(.015)	(.016)	(.015)	(.013)	(.012)	(.012)	(.012)
1 before	.031	.045	.040	.051	.041	.039	.040	.044	.033	.030	.040	.041
	(.013)	(.011)	(.012)	(.011)	(.011)	(.010)	(.011)	(.010)	(.009)	(.008)	(.008)	(.008)
1 after	-.116	-.105	-.114	-.112	-.084	-.101	-.096	-.109	-.070	-.096	-.079	-.103
	(.022)	(.020)	(.021)	(.019)	(.020)	(.018)	(.018)	(.018)	(.018)	(.016)	(.017)	(.016)
2 after	-.082	-.058	-.087	-.082	-.048	-.049	-.064	-.075	-.047	-.059	-.069	-.084
	(.022)	(.020)	(.021)	(.020)	(.020)	(.019)	(.020)	(.019)	(.017)	(.016)	(.016)	(.016)
3 after	-.023	-.008	-.039	-.049	-.006	-.012	-.033	-.056	-.025	-.030	-.054	-.076
	(.022)	(.020)	(.021)	(.020)	(.020)	(.019)	(.019)	(.019)	(.017)	(.016)	(.016)	(.016)
4 after	-.006	.005	-.034	-.056	.010	-.004	-.034	-.068	-.025	-.027	-.072	-.095
	(.022)	(.020)	(.021)	(.020)	(.020)	(.019)	(.019)	(.019)	(.017)	(.016)	(.016)	(.016)
5 after	.008	.014	-.038	-.066	.042	.022	-.025	-.063	.005	-.003	-.065	-.094
	(.025)	(.022)	(.025)	(.022)	(.023)	(.021)	(.022)	(.021)	(.018)	(.016)	(.017)	(.017)

Table 8 continued

6 after	.010	.021	-.044	-.078	.037	.028	-.042	-.077	.031	.019	-.060	-.095
	(.026)	(.024)	(.025)	(.024)	(.025)	(.022)	(.023)	(.022)	(.020)	(.018)	(.019)	(.018)
7 or more after	.075	.099	-.035	-.089	.098	.099	-.033	-.095	.099	.105	-.048	-.105
	(.025)	(.021)	(.023)	(.022)	(.023)	(.020)	(.021)	(.020)	(.019)	(.170)	(.018)	(.017)

Notes: Robust standard errors clustered by person id are in parentheses. Sample size is 2,653 men, 54,766 wage observations. Controls include race, AFQT score, education, experience, experience squared, age dummy variables, and annual unemployment rate. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 9. Effects of First Long-Term Unemployment Spell on Real Log Weekly Wages ($1982)

	Definition 1: Unemployment				Definition 2: Unemployment or OLF				Definition 3: Unemployment or OLF			
	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects
	No Controls		With Controls		No Controls		With Controls		No Controls		With Controls	
Long-term unemp.	-.470	----	-.235	----	-.512	----	-.261	----	-.463	----	-.210	----
spell indicator	(.028)		(.025)		(.027)		(.024)		(.023)		(.020)	
Years Before and After Spell												
7 or more before	.044	-.125	.116	.190	.079	-.122	.132	.199	.066	-.169	.112	.169
	(.030)	(.028)	(.028)	(.028)	(.030)	(.027)	(.028)	(.027)	(.025)	(.022)	(.023)	(.022)
6 before	.139	.071	.161	.212	.166	.076	.184	.226	.161	.039	.162	.201
	(.031)	(.029)	(.029)	(.028)	(.029)	(.026)	(.026)	(.026)	(.025)	(.022)	(.023)	(.022)
5 before	.141	.091	.155	.204	.164	.088	.180	.210	.139	.043	.151	.181
	(.030)	(.028)	(.028)	(.027)	(.028)	(.025)	(.026)	(.025)	(.023)	(.020)	(.021)	(.020)
4 before	.101	.069	.122	.158	.127	.066	.148	.164	.098	.030	.123	.143
	(.028)	(.026)	(.026)	(.026)	(.026)	(.023)	(.024)	(.023)	(.021)	(.019)	(.020)	(.019)
3 before	.087	.078	.120	.147	.109	.062	.135	.136	.078	.028	.108	.114
	(.026)	(.024)	(.025)	(.024)	(.024)	(.022)	(.023)	(.022)	(.019)	(.017)	(.018)	(.017)
2 before	.052	.076	.090	.121	.076	.059	.105	.107	.057	.039	.096	.099
	(.025)	(.022)	(.023)	(.021)	(.022)	(.020)	(.021)	(.020)	(.017)	(.015)	(.016)	(.015)
1 before	.042	.066	.060	.083	.062	.060	.069	.076	.044	.044	.062	.068
	(.020)	(.016)	(.018)	(.016)	(.016)	(.014)	(.015)	(.014)	(.011)	(.010)	(.011)	(.010)
1 after	-.110	-.090	-.115	-.114	-.072	-.098	-.089	-.118	-.082	-.118	-.090	-.134
	(.033)	(.020)	(.032)	(.030)	(.031)	(.028)	(.029)	(.028)	(.025)	(.023)	(.024)	(.023)
2 after	-.033	-.002	-.051	-.051	-.003	-.001	-.029	-.046	-.045	-.061	-.073	-.104
	(.029)	(.027)	(.028)	(.026)	(.026)	(.025)	(.026)	(.025)	(.023)	(.022)	(.022)	(.021)
3 after	.009	.037	-.025	-.038	.038	.036	-.007	-.037	-.020	-.023	-.062	-.095
	(.028)	(.026)	(.027)	(.025)	(.026)	(.025)	(.025)	(.024)	(.023)	(.021)	(.022)	(.021)
4 after	.042	.067	-.011	-.038	.074	.059	.003	-.045	.012	.011	-.056	-.095
	(.030)	(.027)	(.028)	(.027)	(.028)	(.026)	(.027)	(.025)	(.022)	(.020)	(.021)	(.020)
5 after	.051	.070	-.026	-.060	.098	.080	-.001	-.053	.053	.047	-.045	-.091
	(.034)	(.031)	(.032)	(.031)	(.032)	(.029)	(.030)	(.029)	(.025)	(.023)	(.023)	(.022)

Table 9 continued

6 after	.094	.123	-.001	-.041	.124	.115	.002	-.051	.094	.088	-.034	-.083
	(.035)	(.033)	(.034)	(.033)	(.033)	(.030)	(.031)	(.030)	(.025)	(.023)	(.024)	(.023)
7 or more after	.159	.222	-.036	-.095	.197	.223	-.022	-.099	.190	.216	-.048	-.119
	(.031)	(.028)	(.029)	(.028)	(.029)	(.026)	(.027)	(.026)	(.023)	(.021)	(.022)	(.021)

Notes: Robust standard errors clustered by person id are in parentheses. Sample size is 2,653 men, 54,766 wage observations. Controls include race, AFQT score, education, experience, experience squared, age dummy variables, and annual unemployment rate. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 10. Effects of Most Recent Long-Term Unemployment Spell on Real Log Hourly Wages ($1982)

	Definition 1: Unemployment				Definition 2: Unemployment or OLF				Definition 3: Unemployment or OLF			
	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects
	No Controls		With Controls		No Controls		With Controls		No Controls		With Controls	
Long-term unemp.	-.422	----	-.204	----	-.461	----	-.229	----	-.455	----	-.217	----
spell indicator	(.022)		(.020)		(.021)		(.018)		(.019)		(.016)	
Years Before and After Spell												
7 or more before	.095	-.050	.124	.179	.129	-.045	.140	.191	.162	-.060	.166	.208
	(.025)	(.021)	(.023)	(.022)	(.024)	(.020)	(.022)	(.021)	(.022)	(.018)	(.020)	(.019)
6 before	.111	.036	.118	.154	.151	.053	.149	.178	.177	.033	.155	.180
	(.025)	(.022)	(.023)	(.022)	(.023)	(.021)	(.022)	(.022)	(.020)	(.017)	(.019)	(.018)
5 before	.101	.038	.103	.139	.140	.050	.137	.159	.157	.036	.143	.167
	(.023)	(.020)	(.022)	(.020)	(.021)	(.018)	(.020)	(.019)	(.019)	(.015)	(.017)	(.016)
4 before	.108	.051	.114	.136	.135	.051	.134	.143	.159	.052	.153	.167
	(.022)	(.019)	(.021)	(.019)	(.020)	(.017)	(.019)	(.017)	(.018)	(.015)	(.017)	(.016)
3 before	.123	.084	.137	.155	.145	.072	.147	.148	.141	.048	.139	.146
	(.021)	(.019)	(.020)	(.019)	(.019)	(.017)	(.018)	(.017)	(.016)	(.014)	(.015)	(.014)
2 before	.112	.089	.130	.143	.131	.075	.135	.134	.130	.058	.135	.139
	(.019)	(.017)	(.018)	(.017)	(.017)	(.015)	(.016)	(.015)	(.014)	(.012)	(.013)	(.012)
1 before	.081	.058	.086	.093	.106	.059	.099	.098	.119	.053	.113	.111
	(.015)	(.012)	(.014)	(.013)	(.014)	(.012)	(.013)	(.012)	(.012)	(.010)	(.011)	(.010)
1 after	-.080	-.087	-.077	-.086	-.042	-.073	-.052	-.072	-.017	-.064	-.037	-.059
	(.018)	(.016)	(.017)	(.016)	(.017)	(.014)	(.016)	(.015)	(.015)	(.012)	(.014)	(.012)
2 after	-.041	-.029	-.044	-.043	-.004	-.020	-.020	-.035	.026	-.017	-.012	-.027
	(.020)	(.017)	(.019)	(.017)	(.019)	(.016)	(.018)	(.016)	(.015)	(.013)	(.014)	(.013)
3 after	.010	.015	-.011	-.016	.045	.017	.008	-.015	.063	.014	.009	-.014
	(.021)	(.018)	(.021)	(.018)	(.018)	(.016)	(.018)	(.016)	(.015)	(.013)	(.014)	(.013)
4 after	.029	.025	-.004	-.025	.068	.033	.014	-.018	.068	.014	-.007	-.034
	(.020)	(.017)	(.020)	(.017)	(.018)	(.016)	(.017)	(.016)	(.016)	(.013)	(.015)	(.013)
5 after	.062	.044	.003	-.026	.093	.041	.011	-.031	.104	.045	.005	-.024
	(.023)	(.019)	(.022)	(.019)	(.021)	(.017)	(.019)	(.017)	(.018)	(.014)	(.016)	(.014)

Table 10 continued

6 after	.077	.056	.002	-.031	.119	.065	.020	-.023	.159	.086	.037	-.003
	(.025)	(.021)	(.024)	(.021)	(.023)	(.018)	(.021)	(.018)	(.019)	(.016)	(.017)	(.016)
7 or more after	.187	.145	.042	-.023	.245	.164	.070	-.005	.279	.176	.070	.006
	(.028)	(.021)	(.026)	(.021)	(.026)	(.020)	(.023)	(.020)	(.023)	(.016)	(.019)	(.016)

Notes: Robust standard errors clustered by person id are in parentheses. Sample size is 2,653 men, 54,766 wage observations. Controls include race, AFQT score, education, experience, experience squared, age dummy variables, and annual unemployment rate. Definition 1 = unemployed for 27 or more weeks. Definition 2 = unemployed for first 2 weeks and then unemployed or out of the labor force for 25 or more weeks. Definition 3 = unemployed or out of the labor force for 27 weeks or more.

Table 11. Onset of First Long-Term Unemployment Spell and Subsequent Entry into Employment Hazards: Stratified by Race and Education

	Onset of Spell				Reemployment			
	White	Black	≤ 12 yrs ed	13+ yrs ed	White	Black	≤ 12 yrs ed	13+ yrs ed
Black	----	----	1.582	1.911	----	----	.800	.788
			(.000)	(.000)			(.072)	(.331)
Hispanic	----	----	1.321	.982	----	----	.893	1.147
			(.041)	(.943)			(.471)	(.570)
< 12 years of	2.076	2.478	----	----	.992	1.137	----	----
education	(.009)	(.003)			(.981)	(.742)		
12 years of	1.611	1.889	----	----	1.257	.815	----	----
education	(.028)	(.017)			(.395)	(.547)		
13-15 years of	1.344	1.820	----	----	1.716	1.262	----	----
education	(.213)	(.023)			(.043)	(.504)		
AFQT score	.747	.880	.763	.719	1.130	1.156	1.129	1.161
	(.000)	(.142)	(.000)	(.000)	(.241)	(.108)	(.066)	(.188)
Work experience	.978	.969	.970	.955	.968	1.007	1.012	.977
(years)	(.289)	(.049)	(.015)	(.062)	(.113)	(.764)	(.442)	(.406)
Monthly unemp.	.990	.939	.982	.938	.910	.928	.941	.896
rate	(.977)	(.204)	(.604)	(.254)	(.216)	(.298)	(.230)	(.209)
Recession or year	2.445	1.810	1.962	2.356	1.219	1.010	.946	1.126
after	(.000)	(.000)	(.000)	(.000)	(.316)	(.956)	(.667)	(.602)
Married	.446	.592	.512	.487	1.061	1.147	1.193	.984
	(.000)	(.000)	(.000)	(.000)	(.711)	(.437)	(.156)	(.937)
Divorced	.665	1.099	.887	1.061	1.138	1.108	1.122	.806
	(.060)	(.616)	(.394)	(.813)	(.564)	(.599)	(.461)	(.533)
Age 31-39	1.543	1.488	1.565	1.715	.568	.927	.775	.643
	(.047)	(.030)	(.001)	(.044)	(.011)	(.693)	(.084)	(.096)
Age 40 +	1.874	1.591	1.646	2.557	.475	.441	.357	.592
	(.085)	(.096)	(.022)	(.033)	(.018)	(.010)	(.000)	(.211)
N persons	1,395	762	1,647	1,126	265	312	526	193
N person-months	357,121	158,333	611,291	280,871	2,489	4,944	7,408	280,871

Notes: p-values in parentheses. Robust standard errors clustered by person id used for p-value calculations. See notes in Table 6 (onset of spell) and Table 7 (reemployment).

Table 12. Effects of First Long-Term Unemployment Spell on Real Log Hourly Wages ($1982): Stratified by Race and Education

	White		Black		≤ 12 years ed.		13+ years ed.	
	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects
Long-term unemp. spell indicator	-.118 (.033)	----	-.186 (.030)	----	-.164 (.022)	----	-.186 (.043)	----
Years Before and After Spell								
7 or more before	.038	.138	.111	.114	.072	.112	.065	.150
	(.037)	(.038)	(.032)	(.031)	(.026)	(.023)	(.044)	(.048)
6 before	.045	.104	.104	.108	.067	.098	.070	.114
	(.040)	(.040)	(.032)	(.031)	(.024)	(.024)	(.050)	(.048)
5 before	.053	.108	.067	.075	.640	.093	.029	.076
	(.039)	(.039)	(.030)	(.029)	(.022)	(.022)	(.048)	(.046)
4 before	.049	.093	.095	.095	.055	.079	.098	.118
	(.038)	(.037)	(.028)	(.027)	(.021)	(.021)	(.046)	(.044)
3 before	.590	.090	.127	.130	.084	.105	.107	.122
	(.035)	(.034)	(.029)	(.029)	(.020)	(.020)	(.047)	(.045)
2 before	.067	.085	.093	.104	.086	.109	.072	.077
	(.032)	(.031)	(.024)	(.023)	(.018)	(.017)	(.043)	(.041)
1 before	.009	.031	.060	.065	.041	.057	.036	.035
	(.022)	(.021)	(.015)	(.015)	(.012)	(.011)	(.029)	(.026)
1 after	-.158	-.155	-.069	-.073	-.111	-.113	-.118	-.111
	(.036)	(.035)	(.030)	(.027)	(.022)	(.021)	(.047)	(.043)
2 after	-.120	-.113	-.027	-.033	-.086	-.078	-.081	-.083
	(.037)	(.036)	(.031)	(.029)	(.023)	(.022)	(.049)	(.045)
3 after	-.092	-.113	.021	.008	-.037	-.044	-.015	-.038
	(.037)	(.036)	(.029)	(.028)	(.024)	(.023)	(.046)	(.042)
4 after	-.057	-.092	-.003	-.014	-.029	-.046	-.019	-.054
	(.037)	(.035)	(.030)	(.028)	(.023)	(.022)	(.046)	(.042)
5 after	-.058	-.099	-.012	-.034	-.017	-.037	-.056	-.109
	(.043)	(.040)	(.032)	(.029)	(.026)	(.025)	(.053)	(.049)
6 after	-.091	-.129	.025	-.006	-.014	-.039	-.082	-.138
	(.045)	(.042)	(.032)	(.030)	(.028)	(.027)	(.054)	(.050)
7 or more after	-.077	-.143	.005	-.036	-.006	-.050	-.050	-.104
	(.040)	(.037)	(.032)	(.030)	(.026)	(.024)	(.047)	(.047)
N persons	1,392	1,392	757	757	1,643	1,643	1,135	1,135
N person-years	29,885	29,885	14,448	14,448	31,293	31,293	23,473	23,473

Notes: Robust standard errors clustered by person id are in parentheses. Controls include race, ethnicity, AFQT score, education, experience, experienced squared, age dummy variables, and annual unemployment rate.

Table 13. Onset of First Long-Term Unemployment Spell and Subsequent Entry into Employment Hazards: Women

	Onset of Spell	Reemployment
Black	1.394	.936
	(.005)	(.606)
Hispanic	.910	1.216
	(.485)	(.193)
< 12 years of education	1.219	.928
	(.353)	(.756)
12 years of education	1.229	.908
	(.152)	(.564)
13-15 years of education	1.219	.765
	(.159)	(.089)
AFQT score	.757	1.071
	(.000)	(.368)
Work experience (years)	.978	1.024
	(.037)	(.071)
Monthly unemployment rate	1.015	.931
	(.626)	(.085)
Recession or year after	1.498	.840
	(.000)	(.175)
Married	.660	1.013
	(.000)	(.912)
Divorced	.816	.931
	(.122)	(.655)
Age 31-39	1.595	.592
	(.001)	(.000)
Age 40 +	2.254	.374
	(.000)	(.000)
N persons	2,905	606
N person-months	680,878	8,650

Notes: p-values in parentheses. Robust standard errors clustered by person id used for p-value calculations. See notes in Table 6 (onset of spell) and Table 7 (reemployment).

Table 14. Effects of First Long-Term Unemployment Spell on Real Log Hourly Wages ($1982): Women

	OLS	Fixed Effects
Long-term unemployment spell indicator	-.108	----
	(.019)	
Years Before and After Spell		
7 or more years before	.108	.134
	(.022)	(.019)
6 years before	.062	.083
	(.020)	(.019)
5 years before	.101	.119
	(.020)	(.019)
4 years before	.088	.093
	(.017)	(.016)
3 years before	.080	.091
	(.019)	(.018)
2 years before	.073	.078
	(.017)	(.016)
1 year before	.021	.027
	(.012)	(.011)
1 year after	-.072	-.087
	(.025)	(.023)
2 years after	-.058	-.066
	(.024)	(.022)
3 years after	-.058	-.057
	(.024)	(.023)
4 years after	-.050	-.044
	(.024)	(.023)
5 years after	-.036	-.036
	(.026)	(.025)
6 years after	-.025	-.036
	(.027)	(.027)
7 or more years after	-.014	-.038
	(.027)	(.026)
N persons	2,891	2,891
N person-years	52,977	52,977

Notes: Robust standard errors clustered by person id are in parentheses. Controls include race, ethnicity, AFQT score, education, experience, experienced squared, age dummy variables, and annual unemployment rate.

Figure 1: Distribution of calendar year of onset of first long-term unemployment spell

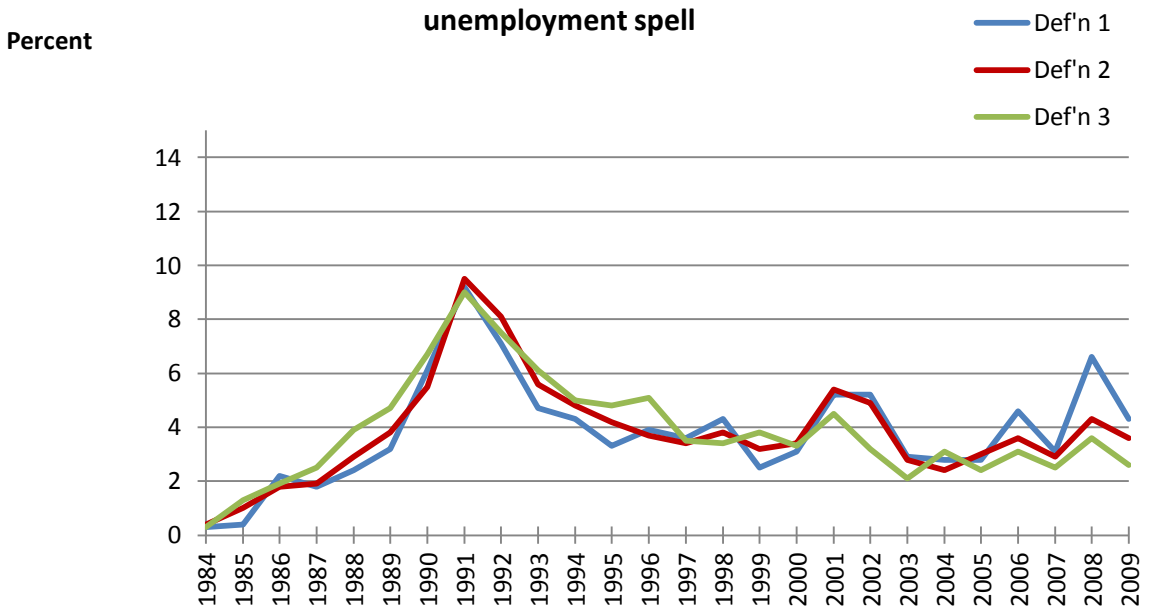


Figure 2: Distribution of calendar year of onset of all long-term unemployment spells

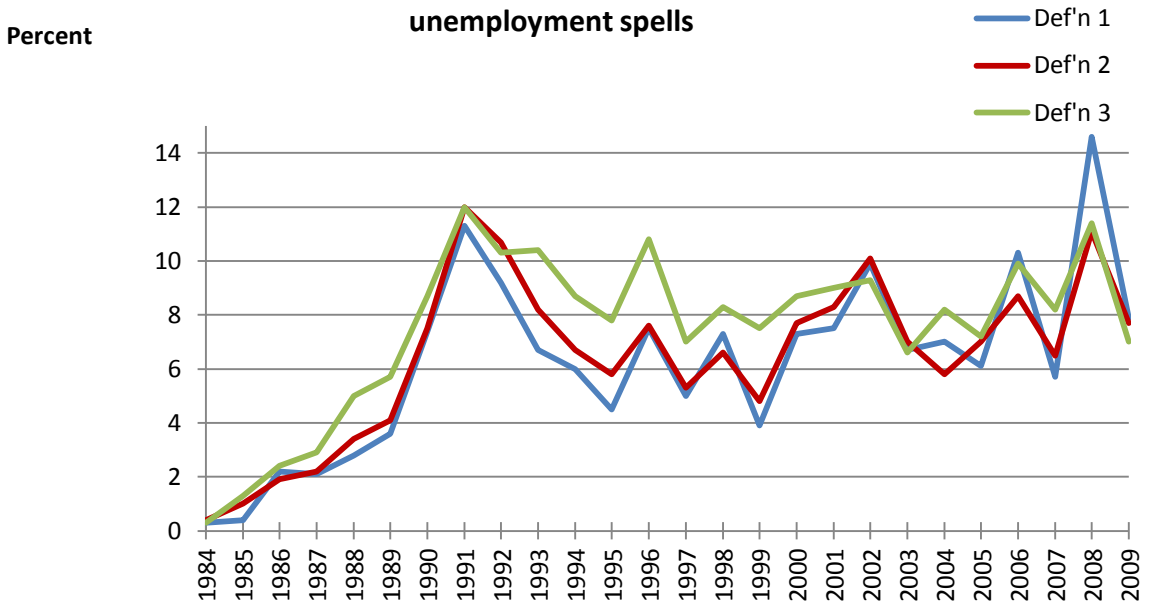
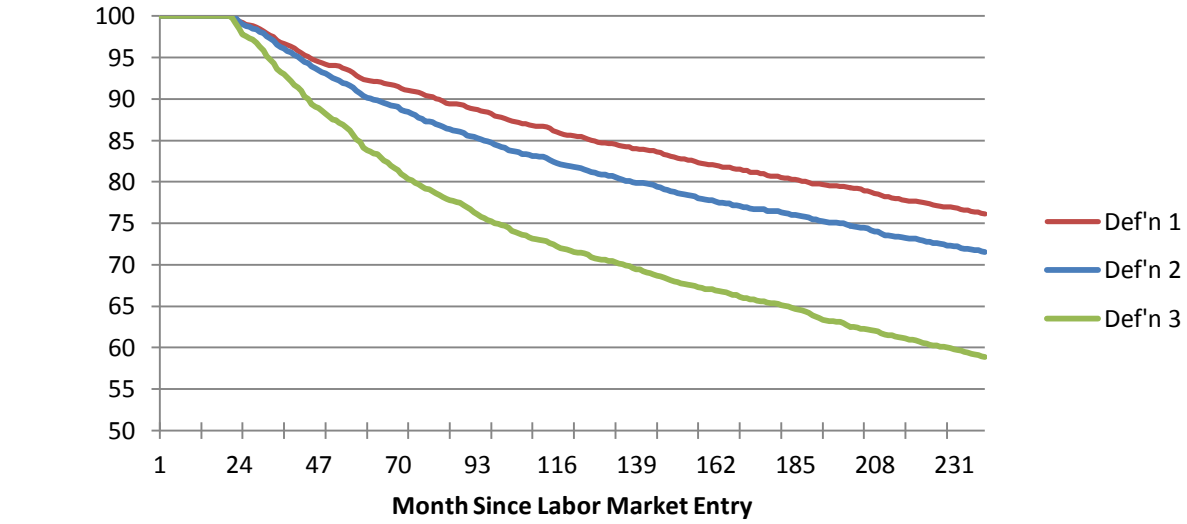


Figure 3. Cumulative Percentage of Men Who Have not Begun a Long-term Unemployment or Non-employment Spell, by Month



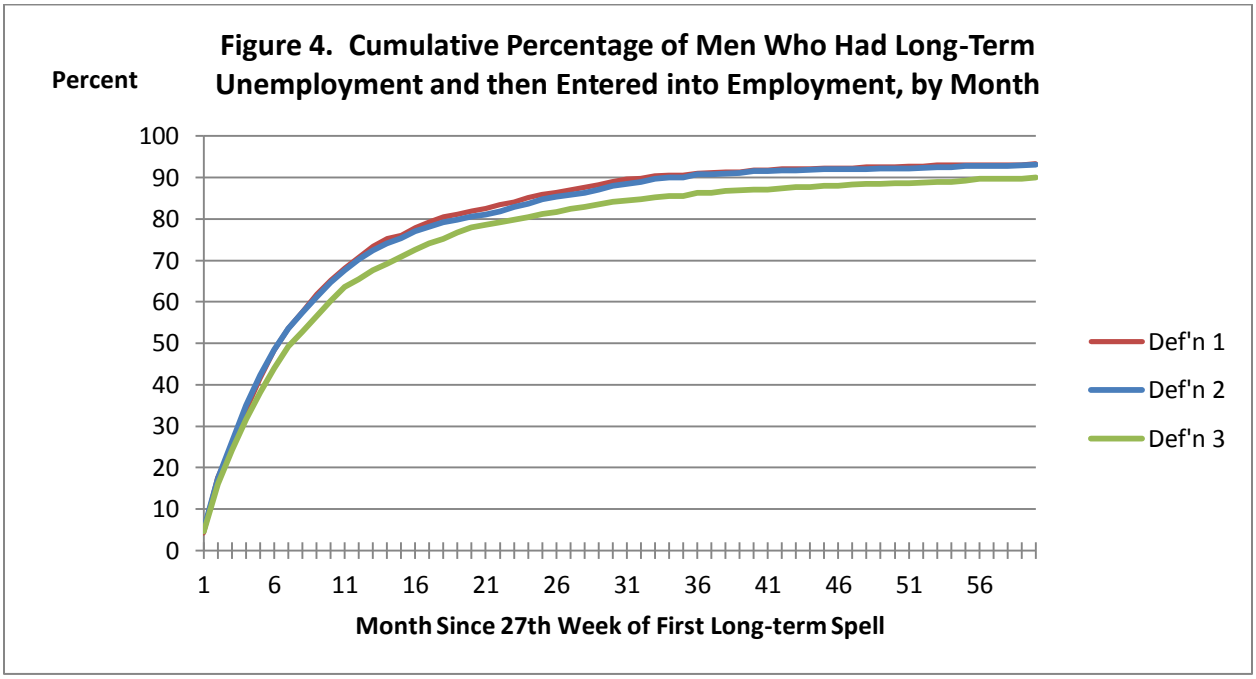


Figure 4. Cumulative Percentage of Men Who Had Long-Term Unemployment and then Entered into Employment, by Month
Percent
100
90
80
70
60
50
40
30
20
10
0
1
6
11
16
21
26
31
36
41
46
51
56
Month Since 27th Week of First Long-term Spell
Def'n 1
Def'n 2
Def'n 3