CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

THE IMPACT OF UNEMPLOYMENT INSURANCE EXTENSIONS ON DISABILITY INSURANCE APPLICATION AND ALLOWANCE RATES

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Abstract

Both unemployment insurance (UI) extensions and the availability of disability benefits have disincentive effects on job search. But UI extensions can reduce the efficiency cost of disability benefits if UI recipients delay disability application until they exhaust their unemployment benefits. This paper, the first to focus on the effect of UI extensions on disability applications, investigates whether UI eligibility, extension, and exhaustion affect the timing of disability applications and the composition of the applicant pool. Jobless individuals are significantly less likely to apply to Social Security Disability Insurance (SSDI) during UI extensions, and significantly more likely to apply when UI is ultimately exhausted. Healthier potential applicants appear more likely to delay, as state allowance rates increase after a new UI extension. Though simulations find that extensions do not decrease SSDI costs, the benefits of UI extensions still may be understated — permanent disability benefits are diverted to shorter-run unemployment benefits and, potentially, new jobs, while easing the burden on the nearly insolvent SSDI Trust Fund.

Introduction

The Great Recession of 2007-2009 has resulted in the highest national unemployment rate in nearly 30 years, increasing from 4.7 percent to a peak of 10.1 percent, and those who find themselves unemployed remain without a job longer than ever before. Whereas the U.S. Bureau of Labor Statistics' median unemployment duration measure, which dates to 1967, had never before exceeded 12.3 weeks, the median spell remains above 20 weeks nearly four years after the financial crisis began.

In response, the federal government has extended unemployment insurance (UI) benefits up to 99 weeks, almost a year and a half longer than normal durations. In making the decision to extend benefits, policymakers must balance the need to stimulate aggregate demand and the desire to help the victims of a weak macroeconomy with the disincentive effect of additional UI benefits. The economics literature has consistently found that the job-finding rate increases significantly near the end of UI benefit duration (Moffitt 1985; Meyer 1990; Katz and Meyer 1990), suggesting that search effort has a strong influence on the probability of an unemployed worker finding a new job.

Meanwhile, the burgeoning rolls of public disability insurance programs, even before the crisis, have increased the call for disability reform (Autor and Duggan 2010), and record growth with the onset of the recession has only strengthened this effort. Social Security Disability Insurance (SSDI) applications reached an all-time high in 2009 – 2.82 million, nearly 32 percent higher than the number received in 2006 (Annual Statistical Supplement 2010). Preliminary data from the monthly workload reports of Social Security Administration (SSA) state agencies, used in the state-level analysis in this paper, indicate that applications have kept rising. Including both SSDI and the Supplemental Security Income (SSI) program for low-income families, the average month saw 263,400 applications in 2010 and 264,700 applications the first five months of 2011, versus 254,500 in 2009 using the same data. Though the purpose of public disability programs is to provide income to the long-term disabled and those with terminal conditions, numerous studies have found a positive correlation between the macroeconomy and disability applications (see Autor and Duggan 2006; and Bound and Burkhauser 1999 for literature reviews).

The extension of UI benefits, however, can ameliorate concerns about disability insurance being used as supplemental unemployment insurance. Potential disability applicants may delay

their application until they have exhausted their extended UI benefits. In the meantime, costs are transferred from the SSDI Trust Fund, scheduled to be exhausted in 2018 (Social Security Trustees Report 2011), to general revenue, which is more fungible. In addition, some delayed applicants might find jobs, thereby reducing the long-term costs of the disability programs.

This paper investigates whether the availability of unemployment insurance, in general, and extended UI benefits, in particular, delays disability applications and changes the composition of the pool of remaining applicants. This study uses the variation in the total UI duration provided by extensions to estimate whether remaining UI eligibility, extension, and exhaustion affect individual workers' hazard to SSDI application, using the *Survey of Income and Program Participation* (SIPP) Gold Standard File, which links job loss data from a household survey to disability application and earnings information from the SSA's administrative records. The effect of a new UI extension on the proportion of a state's workers who apply to the SSDI program and the (lagged) success rate for these applications provide corroborating evidence on the incentive to apply for disability and the composition of applicants.

The results indicate that jobless individuals are significantly less likely to apply for disability benefits during the months their UI benefits are extended and significantly more likely to apply to SSDI in the month that UI is ultimately exhausted. State-level analysis suggests that relatively healthier applicants are most likely to delay application during the first months of a UI extension, thereby increasing the allowance rate observed after the applications wind their way through the determination process.

A simulation then uses these results to calculate the change in expected costs to the UI, SSDI, and Medicare systems of a 13- or 26-week UI extension. Based on individual-specific benefits and the predicted probability of applying to SSDI successfully or unsuccessfully, or finding re-employment, these simulations indicate that UI extensions lead to small increases in the expected cost of SSDI benefits. This finding contradicts the prediction that UI extensions should reduce SSDI costs as some potential applicants instead find new jobs, which could be explained by the allowance probability of any given application increasing during UI extensions. The study suggests several reasons why the probability of a successful application could increase around UI extensions, including the recession, worsening medical conditions associated with the disability or the screening process becoming potentially more permissive when suitable jobs are less likely to be available.

These results are consistent with growing evidence that the definition of a work-limiting disability, far from an objective, context-free state, depends on the availability (Autor and Duggan 2003) and generosity (Lindner 2011) of alternative sources of income available to potential disability beneficiaries. This paper suggests, however, that other efficiency gains, due to the diversion of some recipients of permanent, expensive benefits into shorter-term benefits and, potentially, jobs, offset some of the efficiency loss of the job-finding disincentives.

The next section discusses the existing literature on the relationship between job search and both unemployment insurance and disability insurance. Section 3 describes the details of unemployment insurance and public disability programs. Section 4 sketches a conceptual model for how UI eligibility and exhaustion may affect disability application. Section 5 describes the data. Section 6 outlines the empirical models for both the individual- and state-level regressions, as well as the cost simulation. Section 7 discusses the results, and Section 8 concludes.

Previous Literature

The idea that job finding rates increase substantially near the end of an individual's unemployment benefit eligibility is well-established both in theoretical models (Mortensen 1977, Moffitt and Nicholson 1982) and in empirical studies. Moffitt (1985) was the first study to use duration-model analysis to examine the distribution of unemployment spells, finding spikes at 26 and 39 weeks, consistent with two standard UI benefit durations. Meyer (1990) and Katz and Meyer (1990) find more direct evidence that UI exit rates are highly correlated with benefit duration and that UI extensions lead some workers to delay their return to work.

Still, most empirical estimates of the effect of UI extensions on the length of unemployment spells find only moderate positive relationships. The estimated effect of a one-week increase in the duration of UI benefits ranges from 0.08 (Card and Levine 2000) to 0.20 (Katz and Meyer 1990).[1] Elsby, Hobijn, and Sahin (2010) suggest that estimates on the lower end are more appropriate for more recent extensions, as workers in the recessions of the 1970's and 1980's were more likely to be recalled after temporary layoffs than the modern-day unemployed. They also suggest that estimates of the disincentive effect of UI on job search may be overestimated, as UI is extended most often in slack local labor market conditions, so durations may be longer

[1] These estimates focus on the average duration of nonemployment, but more heterogeneous impacts are possible. Gritz and MaCurdy (1997) find very little response in the median nonemployment duration to UI extensions, but longer spells of nonemployment get even longer when UI benefits are extended.

around the time of UI extensions not because of UI but because of the inability for the jobless to find work.[2] Indeed, Card and Levine (2000), which uses an exogenous UI extension in New Jersey during the mid-1990's expansion, estimate the smallest response to UI duration. It is also well-established that increases in the unemployment rate are associated with increases in disability applications (Stapleton et al. 1998; Rupp and Scott 1998; Black, Daniel, and Sanders 2002; Autor and Duggan 2003). On a micro level, a few papers have used a Moffitt-Meyer-style duration model to estimate the effect of unemployment insurance on the probability of applying for disability insurance but only with data from outside the United States; Roed and Zhang (2005) and Henningsen (2007) use Norwegian data, Larsson (2006) uses Swedish data, and Pellizzari (2006) samples households in six European countries. These papers all find a significant increase in the hazard to disability-insurance application or receipt in the months approaching UI exhaustion.

For U.S. data, only Lindner (2011) examines the association between applying for SSDI and SSI and the generosity of UI benefits on a micro-level. He similarly estimates a hazard model of disability application using SIPP data linked to SSA administrative records, but his focus is on estimating the elasticity of DI application with respect to the UI monthly benefit amount. Because of this different focus, Lindner includes measures of the maximum spell duration in the individual's state and whether the benefits were ever extended instead of more direct controls for the UI duration facing the specific individual. Lindner also limits his analysis to the individual decision to apply for DI and to take up UI, without considering the effect of UI policy on the composition, and eventual success, of DI applicants. He finds that higher UI benefits significantly reduce the hazard into the DI program, but he can discern no coherent pattern in the elasticity of DI application with respect to UI generosity by the ordinal month of the jobless spell.

Other studies have focused on the composition of the applicant pool and their eventual success in obtaining disability benefits. Strand (2002), in a comprehensive analysis of the determinants of SSDI and SSI initial allowance rates, finds that a 1-percentage-point increase in the state unemployment rate is associated with a 1.3- to 1.9-percentage-point decline in the

[2] Jurajda and Tannery (2003) find a larger spike in job finding rates in Philadelphia, which survived the 1980's recession relatively intact, than in Pittsburgh, where unemployment rates soared. However, they find little statistically significant difference between the job-finding hazard among workers in the two cities once they account for the interaction of unemployment rate with remaining UI duration.

allowance rate. Rupp and Stapleton (1995) find a negative correlation between the initial allowance rate and the unemployment rate lagged by one and two years but not the current unemployment rate, as expected. Autor and Duggan (2003) model the decision to apply for disability benefits "conditionally," where the individual chooses to apply only in the event of a job loss, which motivates their finding that selection bias has helped lower the observed unemployment rate as more high school dropouts shift to the disability rolls. This paper estimates whether conditional applicants are further induced by unemployment insurance eligibility changes within their jobless spell, conditional on local labor market conditions.

This paper is the first to focus on the effect of UI extensions on disability applications and the applicant pool. It contributes to the literature that estimates the effect of UI duration and extension on exit from unemployment by exploring the importance of an additional exit pathway. It provides another estimate of the effect of macroeconomic conditions on both the state-level application rate and the individual decision to apply for disability. Finally, this paper extends the literature on how macroeconomic conditions affect the SSDI and SSI allowance rates both at the state-level and by individuals' eventual success in obtaining disability benefits.

Institutional Background

Unemployment Insurance. Most workers who lose their jobs involuntarily and without cause, or voluntarily quit in some states depending on the reason, are eligible for unemployment benefits. The system is financed mostly through taxes on employers that are experience-rated, where employers that have a history of former employees collecting benefits often are taxed at a higher rate. Although states must meet criteria to be eligible for federally financed administrative costs, the parameters of the unemployment system vary greatly by state, including the payroll tax level and experience rating, the weekly benefit formula, the formula for determining the duration of benefits, and the automatic triggers for extended benefits. The U.S. Department of Labor's Employment and Training Administration collects these details in the "Comparison of State Unemployment Insurance Laws" annual report.

Unemployed workers' eligibility depends on their accumulated earnings exceeding a proscribed level during the base period, which for most states is the first four out of the last five completed calendar quarters. The weekly benefit amount is then a certain percentage, usually between 1/24 and 1/26, of the worker's earnings in the highest-earning quarter (27 states) or the

average of their best two quarters (11 states) during the base period. As there are 13 weeks in a quarter, the replacement rate, or the ratio of the weekly benefit amount to the pre-job loss weekly wage, is roughly 50 percent, though the replacement rate is less than one-half for higher wage workers, because most states cap the weekly benefit amount at a fraction (most often two-thirds) of the state's average weekly wage. Twelve states then add a small stipend for each dependent child, up to a maximum. The weekly benefit levels vary greatly between the states; Massachusetts has the highest maximum benefit ($625 in 2011) and Washington the highest minimum benefit ($135), while Mississippi has by far the lowest maximum benefit ($235, with a minimum of $30 per week).

The duration of benefits is either set at a fixed level for all UI recipients (nine states), or depends on the total amount of benefits unemployed workers can receive during their eligibility period. This "maximum entitlement" is the lesser of 26 (or 30 in Massachusetts) times the weekly benefit amount or a fraction, usually one-third (16 states), of total base period earnings. The benefit duration is then the maximum entitlement divided by the weekly benefit amount. For most people, this calculation results in 26 (or 30) weeks exactly, but durations may be shorter for individuals whose base period earnings are concentrated in just one or two calendar quarters.[3]

There are two ways in which UI benefits may be extended. One is through federal emergency legislation, including laws passed in 1991, 2002, and 2008 that extended benefits nationwide, with funding from the federal government's general revenue. The Emergency Unemployment Compensation Act of 1991 initially added 13 weeks of benefits, and later 26 weeks, to normal durations for all states, though states could qualify for longer extensions (20 weeks initially, and later 33 weeks) if the unemployment rate was sufficiently high. The Temporary Extended Unemployment Compensation Act of 2002 added 50 percent to normal durations (up to 13 weeks), while making automatic state triggers easier to hit, with the federal government financing the difference. Finally, the Emergency Unemployment Compensation Program of 2008 initially added 20 weeks, plus an additional 13 weeks if the state unemployment rate was sufficiently high; after October 2009, all states received 34 weeks (Tiers

[3] Alaska, Idaho, Montana, North Carolina, and North Dakota use a sliding scale based on the ratio of base period earnings to the highest quarter's earnings to calculate duration. For example, Montana has a maximum duration of 28 weeks, longer than all but one other state, but workers must have a ratio of 3.5 or better, essentially ruling out any worker with volatile quarterly earnings or short recent work history. In addition, New Jersey and Pennsylvania base duration on the number of accumulated "credit weeks," weeks where earnings exceeded a small threshold.

1 and 2), plus another 13 (Tier 3) to 19 weeks (Tier 4) if the state unemployment rate exceeded certain levels.

The other extension route is the Extended Benefits program. This program is triggered by high and rising unemployment rates, based on standards imposed by federal law. All states must extend UI durations by 13 weeks during these periods, but states may opt for additional triggers, which provide an additional 13 to 33 weeks.[4] When benefits are extended automatically, the federal government pays for one-half of the added cost. The federal emergency extensions of 2002 and 2008 supplemented the automatic Extended Benefits program, while the federal extension in 1991 superseded the state-level triggers (Whittaker and Isaacs 2011).

UI duration varies across states and individuals and over time: the adjustment in the duration formula for workers with highly concentrated earnings over their base period; the longer durations in Massachusetts (30 weeks for 1989 to present), Montana (28 weeks for 2004 to present), and Washington (30 weeks for 1989 to 2004); automatically triggered Extended Benefits; and federal emergency extensions. Figure 1 plots the histograms of durations in the regression sample from the SIPP Gold Standard File for those whose benefits were never extended during their jobless spell, those whose benefits were already longer than normal but were not extended further, and those whose durations were extended during their time between job loss and either disability application, re-employment, or censoring. Not surprisingly, the plurality of jobless individuals are eligible for 26 weeks of unemployment benefits, but more than 60 percent of the sample is eligible for a different number of weeks, including 32 percent of those unaffected by a UI extension.

Disability Insurance. The SSA administers two programs that provide disability benefits to qualified workers. Workers with work-limiting health conditions and a sufficient amount of total and recent working experience may qualify for SSDI. Those with lower incomes may qualify for

[4] The mandatory extension is 13 weeks when the 13-week rolling average of the insured unemployment rate is at least 5 percent and is 120 percent of the average insured unemployment rate over the same period each of the previous two years. (The insured unemployment rate, or IUR, is the number of individuals receiving UI benefits after the first week divided by the number of workers eligible for or already receiving UI.) The first optional level adds 13 weeks if the IUR averages at least 6 percent for 13 weeks, regardless of past rates; 39 states participate in this program. The second optional level adds another 13 weeks if the three-month rolling average of the more familiar total unemployment rate is at least 6.5 percent and is 110 percent of the rolling average in either of the previous two years, or 20 weeks if the unemployment rate is 8 percent with the same comparison to previous years; 11 states participated in this level in 2009, but that increased to 38 states in 2010.

SSI. Many work-limited, low-income individuals with sufficient work experience apply to both programs concurrently.

An individual is SSDI-insured if he or she has accumulated a sufficient number of "work credits," both over his or her career and over the last 10 years. A worker earns one work credit for every $1,120 earned in 2011, up to four credits a year (which are meant to represent the number of calendar quarters worked, but without necessitating quarterly reporting). Individuals need to earn two credits per year since the year they turned 21, with 20 of those credits (for those age 31 and older) coming in the last 10 years

Individuals who are not working can apply for disability beginning five months after the onset of the disability. The Disability Determination Service in the applicant's state uses information from medical providers to decide whether the individual's medical condition is sufficiently severe and on the List of Impairments, whether the applicant can do the same work he or she did before, and whether he or she can do any other type of work. Approximately 37 percent of applications are allowed at the initial determination, according to the data used in the state-level regression, but some states have consistently higher or lower allowance rates across years, even accounting for observable differences between the states (Strand 2002).

The SSDI benefit is calculated from the same Primary Insurance Amount (PIA) formula as Social Security old-age retirement benefits. The PIA is a graduated percentage of a worker's Average Indexed Monthly Earnings, which are the average earnings over the individual's working years (excluding up to the five lowest-earning years), adjusted for the growth of overall wages in each year. [5] In addition, SSDI beneficiaries are eligible for health insurance coverage through Medicare 24 months after first being entitled to benefits.

Few applicants leave SSDI before their Full Retirement Age (FRA), when their benefits are rolled into the old-age retirement program. About 7.6 percent of exits can be attributed to SSDI recipients being found no longer medically eligible in a Continuing Disability Review (Annual Statistical Supplement 2010). In addition, recipients who earn more than a set amount for a sufficient number of months may be removed from the SSDI rolls.[6]

[5] The PIA formula can be found in Section 7 of the Social Security Handbook (http://www.ssa.gov/OP_Home/handbook/ssa-hbk.htm).

[6] SSDI beneficiaries can earn up to $720 (in 2011) in any of nine months over a 5-year period as part of the Trial Work Period. After the ninth month, the beneficiary moves into an Extended Period of Eligibility for three years; benefits are not paid in a month if earnings exceed the Substantial Gainful Activity level ($1,000 in 2011) in that month, except for the first time, which allows for a three-month grace period.

Working-age individuals are eligible for SSI only if their income and wealth fall below eligibility thresholds and they satisfy a similar disability screening to SSDI. Countable income, which includes one's own and one's spouse's income but excludes $20 per month of non-labor income and, for workers, $65 per month plus one-half of labor earnings beyond this level, must be below the federal SSI benefit level. In addition, non-housing wealth (excluding automobiles, life insurance, burial plots, and burial funds) must be below $2,000. The individual can then receive the difference between the monthly benefit level of $674 and the recipient's countable income.

There are no restrictions on SSDI or SSI applicants receiving unemployment benefits, so individuals may apply for both unemployment and disability benefits at the same time. In fact, UI benefits can help to bridge the gap between SSDI application and the first receipt of benefits. Disability recipients, however, are excluded from UI benefits in most states because they are no longer able and available to work, but nine states exempt those who are unavailable because of illness or disability from the "able and available" requirement provided they do not refuse suitable work offers.

Conceptual Framework

This study provides a simple model of the decision by utility-maximizing individuals who have recently experienced a job loss to either apply for disability insurance or search for a job (and thereby receive UI benefits, if the current time is before UI exhaustion).[7] The individuals' utility in month t, V_t, is simply the larger of the utility from disability application, V_t^d, and the utility from job search, V_t^s.

The utility from job search depends on the unemployment benefits, b, which are received when the current time t is before the exhaustion point L; the probability of finding a job, p; the discount factor β; the wage offer w, which is always accepted and earned in every period until infinity with no risk of further job loss; and the continuation value V_{t+1}:

$$V_t^s = U\left[bI(t < L) + \beta p \frac{w}{1-\beta} + \beta(1-p)V_{t+1}\right]$$

[7] This model is in some ways a simplification of the model in Lindner (2011), ignoring search effort and the possibility of receiving UI benefits during the wait for disability application and adding the assumption that wait time J is known.

where $I(t < L)$ is an indicator function equal to one if t<L and zero otherwise.

Disability applications are allowed with probability q, but only after J months of review; I assume that J is known to the applicants throughout. The model assumes that disability applications have utility cost a. The model also assumes that applicants stop searching after they decide to apply, so they cannot earn unemployment benefits during their wait between application and determination, nor will they receive job offers. Finally, the model assumes that allowed disability determinations are never reviewed, so successful applicants receive disability benefits d permanently. The utility from disability application is:

$$V_t^d = U\left[\beta^J q \frac{d}{1-\beta} + \beta^J (1-q) V_{t+1}\right] - a$$

In the simplest model, p and q are time-invariant; that is, the job finding rate and the success rate of disability application do not depend on the amount of time the individual has been unemployed. In that model, some individuals would apply for disability benefits immediately after job loss, as $V_0^d > V_0^s$. Others would never apply for disability, as $V_t^s > V_t^d$ even when unemployment benefits are not available (t≥L).

As all parameters are time-invariant other than $bI(t < L)$, the only marginal applicants are those whose decision depends on the presence or absence of unemployment benefits. Some individuals will opt to search when unemployment benefits are available (t<L), but prefer application after UI exhaustion (t≥L), so $V_{t<L}^s > V_t^d > V_{t\geq L}^s$. In this simple model of time-invariant probabilities, individuals only will apply for disability benefits in the first period and at L, as all parameters are otherwise equal within the two time periods (t<L and t≥L). When UI benefits are extended, so that L is increased to L', the applicants in the initial period (with $V_0^d > V_0^s$) and those who never apply (with $V_t^s > V_t^d$) are unaffected, but the marginal applicants will delay application until exactly L'.

A more interesting model is one that allows for p and q to vary over time.[8] The assumption is that p'(t)<0, as the longer one is unemployed, the more difficult it is to find a job, and that q'(t)>0, as the longer one is unemployed, the easier it is to convince the Disability

[8] The qualitative result is similar if only one of the probabilities varies with time.

Determination Service that one is unable to work.[9] In this model, the passage of an additional month reduces V_t^s and increases V_t^d. Like the time-invariant model, there will be concentrations of applications at both month 0 and month L, but unlike the simpler model, individuals will apply for disability in other months as well. Furthermore, when benefits are extended and L is increased to L', individuals who have not yet applied will delay their applications; the local maximum at L moves to L', but a few others will apply in between.

Data

The Survey *of Income and Program Participation* (SIPP) is a nationally-representative longitudinal survey of households conducted by the U.S. Census Bureau. Every four months over a two- to four-year period, respondents are asked a battery of questions on their labor market participation, sources of income, employment relationships, demographics and family structure, health insurance status, wealth, and public program participation during each month between interviews. New panels began annually between 1990 and 1993, plus 1996, 2001, 2004, and 2008.

The SIPP Gold Standard File (GSF) matches all but the latter panel to disability application data originally from the SSA's 831 File and earnings data originally from both the SSA's Summary Earnings Record (SER) and the IRS' Detailed Earnings Record (DER).[10] Approximately 88 percent of SIPP respondents over age 15 provided valid Social Security numbers and were successfully matched (Abowd, Stinson, and Benedetto 2006).

The sample for the individual-level regressions includes workers ages 25 to 64 who are observed losing a job during their time in the SIPP panel. An individual has lost a job in month t if he or she worked all weeks in month t-1, less than the full number of weeks in month t, and no weeks in month t+1.[11] The sample excludes individuals with missing work status information at

[9] Though the literature (e.g., Ruhm 2000) often finds a positive effect of recessions on health, others find that individual job loss results in increased incidence of disability (Gallo, Brand et al. 2009). The first derivative of q with respect to time may also be positive if the negative effect of job loss on health gets worse as the jobless spell continues.

[10] The 2008 SIPP panel will be matched to the SSA and IRS datasets, including the 2008 calendar year disability activity, in fall 2011.

[11] Individuals may have more than one jobless spell. The individual's spell is right-censored if he or she finds a new job, but a subsequent job loss would put him or her back in the sample a second time. Most individuals have only one spell during the SIPP – the sample includes 33,385 spells for 28,728 unique persons.

any point, as well as anyone whose state of residence is missing or unidentifiable.[12] The sample also excludes individuals who have insufficient earnings to receive UI, and those who are ineligible for SSDI. The resulting sample yields approximately 29,000 working-age adults who lost at least one job during their SIPP sampling window from 1990 to 2006. Table 1 details the process of refining the sample from the full SIPP. Table A1 provides summary statistics.

The 831 File includes the date of application, the filing type (SSDI, SSI, or concurrent), and the result of the initial determination for up to six disability applications for each individual through the end of calendar year 2007.[13] The sample excludes individuals who have ever applied successfully for SSDI prior to the job loss and those who apply in the same month as the job loss. The sample also excludes disability applications more than 48 months after the job loss, as they likely have little to do with health conditions at the time of separation; for non-applicants, the sample censors monthly observations at 48 months as well.[14]

SSDI eligibility and the level of monthly benefits (the primary insurance amount, or PIA) are calculated using the individual's earnings history from the SER. The explanatory variables also include the individual's earnings previous to a job loss and his or her spouse's earnings in the year of the job loss from the DER; unlike the SER, the DER includes uncapped and non-FICA earnings. The benefits levels and the earnings variables are adjusted for inflation using the Consumer Price Index from the U.S. Bureau of Labor Statistics.

Each state's unemployment insurance parameters are collected from two reports produced annually by the Employment and Training Administration in the U.S. Department of Labor: the "Significant Provisions of State UI Laws" and the "Comparison of State Unemployment Insurance Laws."[15] These reports include the formulas for the weekly benefit amount and the duration of unemployment. Because the UI benefit formulas depend on

[12] Prior to the 2004 panel, several states were combined to prevent identification. In the 1990 through 1993 panels, the following states were grouped together: Maine and Vermont; Iowa, North Dakota, and South Dakota; and Alaska, Idaho, Montana, and Wyoming. In the 1996 and 2001 panels, Vermont was grouped with Maine, and Wyoming was grouped with North Dakota and South Dakota.

[13] The current GSF includes the first, second, and most recent application to both SSDI and SSI. Most people who apply to each program at some point in their history apply to both programs concurrently, so the number of applications per person is usually no more than three. An application is considered concurrent if the individual has SSDI and SSI applications in the same calendar month.

[14] The longest SIPP panels (1996 and 2004) are 48 months long. Because re-employment is only observed in the SIPP, the empirical probability of finding a job is zero after the end of the individual's SIPP panel.

[15] Both reports are available on the DOL website (http://www.ows.doleta.gov/unemploy/statelaws.asp). The author would like to thank Daniel Hays, Patricia Martens, and Julie Balster from the ETA for their assistance in obtaining pre-2002 editions of the Comparison report.

quarterly earnings, earnings are imputed for each of the last six quarters by distributing one's annual earnings from the administrative data between the calendar quarters according to the percent of one's total income earned that quarter, or evenly (annual earnings divided by four) for individuals who have not been in the SIPP for a full 18 months prior to the job loss. Though all but a few states have a maximum UI duration of 26 weeks, individual workers may have shorter durations if their earnings were concentrated in one or two quarters.[16] The Comparison of State Unemployment Laws report also includes information on the unemployment rate thresholds each state uses in the federal-state Extended Benefits program, as well as the dates of the three emergency UI extensions passed by the U.S. Congress since 1990.[17]

The state unemployment rate is from the Local Area Unemployment Statistics of the U.S. Bureau of Labor Statistics. The insured unemployment rate, the number of individuals receiving UI benefits after the first week ("continuing claims") divided by the number of workers eligible for or already receiving UI, is from the U.S. Department of Labor's Unemployment Insurance Weekly Claims data.

Monthly state-level disability activity is available from the SSA State Agency Monthly Workload Data from October 2000 to May 2011. A state's monthly application rate is the number of initial receipts divided by the estimated age 18 to 64 population for that state in the given month (excluding current beneficiaries), multiplied by 12 to annualize the rate.[18] The initial allowance rate is the number of allowances divided by the number of determinations in that state for that month.

[16] The Gold Standard File does not include an indicator for whether the individual reports receiving unemployment benefits, so the model in this paper implicitly assumes that take-up is random with respect to the other covariates. Lindner (2011) finds that many seemingly-eligible individuals do not report receiving UI benefits, and differential take-up affects the estimates of the effect of UI benefit generosity on disability application.

[17] Information on the 1991-1994 Emergency Unemployment Compensation is collected from Corson, Needels, and Nicholson (1999), Table A.2.

[18] The estimated age 18 to 64 population for 2000 to 2009 is from the U.S. Census Bureau's Population Estimates Program. To get the 2010 and 2011 estimated working-age state populations, which are not yet available from the Census, the state's 2009 population is regressed on the population in each year from 2000-2008, then used the results to predict 2010 using 2001-2009 and 2011 using 2002-2010. The number of current SSDI beneficiaries is also only available from the Annual Statistical Supplement through 2009; the imputed number of beneficiaries in a state in 2010 and 2011 is the number of beneficiaries in the previous year plus the number of (pro-rated) allowances for that year divided by the mean ratio of allowances to the year-to-year change in recipients for all other years. The state population net of current beneficiaries in a given month is smoothed within a year assuming a constant linear growth rate from month to month.

Empirical Models

Individual-level analysis. This study investigates whether jobless workers time their disability application to coincide with the exhaustion of their UI benefits.[19] UI extensions provide additional variation in UI benefit duration, but are interesting in their own right; the study therefore investigates whether UI extensions induce jobless workers to delay disability claims and instead find employment, and whether the composition of applicants changes when UI benefits are extended.

The regression analysis allows for jobless individuals to end their spell through either disability application or re-employment; essentially, these outcomes are competing hazards in that applicants could decide to either apply to SSDI or find a job, but only the outcome that occurs first is observed.[20] To account for these competing hazards, the individual's decision in month *t* is modeled as a multinomial logit regression, with three potential outcomes, *j*: applying for SSDI, finding a job, or continuing the jobless spell.[21] The probability of the individual *i* choosing outcome *j* in month *t* is:

$$p_{ijt} = \frac{e^{Y_{ijt}}}{\sum_{k=1}^{3} e^{Y_{ikt}}}, \qquad j = 1, \ldots, 3$$

where the index function Y_{ijt} is defined as:

[19] This analysis does not distinguish between SSDI-only and concurrent applications. Coe, et al. (2011), find that SSDI-only applications are much more responsive to UI duration than applications for both programs together, suggesting that the results in this paper underestimate the effect of UI eligibility and extension on SSDI alone.

[20] The estimates of the hazard to SSDI application without regard to the competing hazard of re-employment, assuming either a Weibull or gamma-distributed parametric form or using a more flexible spline of time remaining until UI exhaustion, are qualitatively similar.

[21] All other outcomes, including applying to SSI, losing eligibility for SSDI, dropping out of the SIPP mid-panel, or reaching the maximum of 48 months after job loss, are considered censored. The outcome in the last month for censored observations is the baseline outcome of continued search.

$$
\begin{aligned}
Y_{ijt} = \; & \beta_{0j} + \beta_{1j} NormalUI_{it} + \beta_{2j} NormExpNext_{it} \\
& + \beta_{1j} NormExpNow_{it} + \beta_{1j} NormExpLast_{it} \\
& + \beta_{1j} OnExt_{it} + \beta_{1j} ExtExpNext_{it} \\
& + \beta_{1j} ExtExpNow_{it} + \beta_{1j} ExtExpLast_{it} \\
& + \beta_{1j} InitExp_{it} + \beta_{1j} NewExtBefore_{it} \\
& + \beta_{1j} NewExtAfter_{it} + \lambda_1 U_{st} + \lambda_2 U_{st_0} + X_{ist}\zeta \\
& + \nu_{ist}
\end{aligned}
\tag{1}
$$

To identify the model, the coefficient vector $\beta$is constrained to be zero for the baseline outcome, continuing the spell.

The first eight terms in $Y$are mutually exclusive indicators that capture the effect of UI eligibility, approaching exhaustion, and extension on the application or job-finding decision; the omitted condition is no longer being eligible for UI (excluding the month immediately after exhaustion). The values of these eight indicators, plus the three that follow, depend on whether UI benefits are ever extended during the jobless spell. For defining these variables, the sample can be split into three groups: those whose benefits are never extended, those whose benefits are extended before their original UI eligibility is exhausted, and those whose benefits are extended only after a delay.

For all three groups, the first term, $NormalUI_{it}$ equals one if jobless individual *i* is receiving the first few months of the UI duration for which he or she was eligible at the beginning of his or her jobless spell, up to one month before exhaustion. Compared to months when UI is about to expire, both SSDI applications and job-finding should be less likely in the first few months of UI eligibility. Applications and re-employment may be more likely in these months than in months without any UI benefits because of negative duration dependence; that is, those who are many months after job loss are not likely to reach either of these outcomes, because if either option was attractive, they would have done it already.

For the group whose benefits have never been extended, only the next three terms will ever equal one, while the subsequent seven will all equal zero. $NormExpNext$, $NormExpNow$, and $NormExpLast$ capture the effect of imminent, current, or having just exhausted UI benefits, respectively. This specification allows for flexibility in the timing of one's reaction to exhausted

benefits; some UI recipients may act in anticipation of exhaustion the next month, while others may wait until the first month with no benefits.

For those whose benefits are extended before their initial eligibility is exhausted, the analogous variables are $ExtExpNext$, $ExtExpNow$, and $ExtExpLast$. In addition, $OnExt$ is equal to one when individual *i* receives UI benefits only because of an ongoing extension, and exhaustion is more than a month away (so as not to overlap with $ExtExpNext$). Both outcomes should be less likely during months of extended benefits, and grow increasingly likely with the approach of the new UI exhaustion.

For the extended group, two other variables also are relevant. $InitExp$ is equal to one if the individual was scheduled to exhaust his or her UI benefits in the current month based on his or her UI eligibility at the time of job loss.[22] This variable captures two effects, both of which are expected to encourage application. First, the individual may plan at the outset to apply for disability at the conclusion of his or her UI benefit eligibility, and those plans aren't easily adjusted.[23] Second, the individual may be unaware or indifferent toward increases in his or her UI duration.

The other pertinent indicator for those whose benefits are extended during their normal duration is $NewExtBefore$, equal to one if the UI exhaustion point is further away than it was the previous month, where "before" refers to the fact that the UI extension is announced before this individual's benefits are exhausted. An announcement of a new extension has ambiguous effects on applications and job loss; though additional weeks increase the present value of benefits, making either decision less likely at the present time, the announcement itself may be a signal of poor employment prospects, which encourages application or more fervent job searches.

[22] Unlike the previous eight indicator variables, $InitExp$ is not a mutually exclusive category. In most cases, though, it will be. Among those whose benefits are never extended, $InitExp$ will always equal zero, because $NormExpNow$ already captures the effect of UI expiring in the current month. If the UI extension is at least two months, when $InitExp$ is equal to one, $OnExt$equals zero, because UI benefits are still being received under the normal duration. For extensions of less than two months, however, $InitExp$ and $ExtExpNext$ may both equal one; the former captures the effect of the original duration expiring, while the latter captures the effect of imminent UI exhaustion.

[23] Meyer (1990) and Katz and Meyer (1990) find that many workers are subject to recall from temporary layoffs, which are often exactly as long as the worker is eligible for unemployment benefits. Disability application is not part of those studies, but workers who are on temporary layoff but *not* recalled may opt to apply to SSDI in that month, the equivalent of workers who do not have the same recall expectation applying for SSDI in the first month of the jobless spell, a common occurrence.

The final group of jobless individuals is those whose benefits are extended during their jobless spell, but only after lapsing at some point. Federal UI extensions usually allow those whose benefits have recently expired to come back on the UI rolls, so some UI recipients have gaps in their UI benefit history. Unlike the other two groups, therefore, all of the indicators for UI receipt, exhaustion, and extension have the potential to be turned on at some point during their spell, with the exception of $NewExtBefore$. Instead, the relevant variable for the announcement of a new extension is $NewExtAfter$, where "after" refers to the fact that the new extension occurred after benefits had expired. Separating these two variables allows for differential effects for extensions that occur before they are truly needed versus those that come only retroactively; whereas individuals who know they have additional months of benefits coming may plan accordingly, those whose benefits have expired may begin to make plans to apply for SSDI or find a job before they find out about additional months of UI.U_{st} and U_{st_0}control for the state unemployment rate currently and at the time of job loss, respectively. Both should have a negative effect on disability application. The effect on job finding is ambiguous; in months of high unemployment, the job offer rate is likely lower, but search effort could be higher, as the unemployed feel the need to compete with a larger number of job seekers, or lower, if the unemployed are discouraged by bleak prospects.

X_{ist} is a vector of individual characteristics that may influence the decision to apply for disability or find a job. These include the log of real potential UI benefits, calculated from state parameters using imputed quarterly earnings, and the log of real potential SSDI benefits, calculated using the PIA formula. X_{ist} also includes the log of the individual's real annual earnings in the year prior to the job loss, the log of his or her spouse's real earnings (if married) in the current year, and an indicator for whether the individual is lacking health insurance in the current month. Importantly, X_{ist} includes an indicator of whether the individual reports either a work-limiting condition or receipt of sick pay, workers' compensation, or veterans' benefits during his or her time in the SIPP; interestingly, many applicants do not have a value of one for this variable, so regression results are reported separately for those who do and do not satisfy one of these conditions. Finally, X_{ist} includes age at the time of separation and its square, gender, race, education, marital status, number of children, an indicator for foreign born, and the quintile of total wealth among the sample.

In addition to separate estimations of those with and without self-reported work limitations, broadly defined, the model is estimated separately by age (those under 50 at the time of separation versus those 50 and over) and education (those with less than a high school diploma versus those who at least completed high school). Older workers may be more likely to apply for disability benefits, because of a higher probability of a successful application due to declining health and less strict disability criteria[24] or larger potential benefits due to a longer work history, but less likely to become re-employed, because of the desirability and feasibility of early retirement and the loss of firm- or occupation-specific capital. Lower-skill workers also may be more likely to apply for disability – weak employment prospects may be less desirable than even the uncertain disability application process, while the disability criterion that determines whether the applicant can find suitable work is more easily satisfied when many potential jobs feature physical labor – and less likely to find re-employment than comparable jobless individuals with more education.

Potential applicants can only guess at the probability of successful application, as the determination depends on numerous factors, some predictable – the severity of the disability as perceived by oneself and one's health care professional, or the relative strictness of the applicant's state SSA office – and others unpredictable – for one, the relative strictness of the examiner within the SSA office (Maestas, Mullen, and Strand 2011). To the extent that eventual success can proxy for the potential applicant's ex-ante perception of his or her own probability of success, allowed and denied applicants may have different responses to UI eligibility, exhaustion, and extension; the macroeconomy; benefit generosity; and other factors. To test whether ultimately allowed and denied applicants are significantly different, an additional multinomial logit regression is estimated, now with three outcomes: successful SSDI application, unsuccessful SSDI application, and finding re-employment.

State-level analysis. This study also uses state-level monthly data to determine whether the aggregate of many individual decisions about whether and when to apply to disability has a substantial impact on application activity.

[24] Chen and van der Klaauw (2008) report on the use of a vocational grid in the determination process that is based on age, educational attainment, and the strenuousness of work. They show that there are discontinuities created by this grid by age, such that an individual older than a certain age (either 45, 50, or 55 depending on the applicant's education) may have their application allowed, while the same application by someone just younger than that age will be denied.

The advantage to using state-level analysis is that the prediction for the effect of new UI extensions on the composition of applicants, in particular, is somewhat clearer than with the individual data. At a given unemployment rate, a state that extends benefits should see fewer disability applications than a state whose UI recipients receive only their normal duration. Those few applicants who still file when UI benefits are extended are likely to be in worse health and, therefore, have a higher probability of having their application approved. At the state level, then, UI extensions should be associated with a lower application rate and a higher allowance rate, relative to similar states (or that same state at a different time) without extensions.[25]

The challenge to state-level analysis, though, is that it requires more careful consideration of when the effect of UI extensions on the application and allowance rates should be observed. First, state SSA offices report their number of allowances based on the month of determination, not the month of application. According to a report from the SSA Office of the Inspector General (2008), the disability determination process averages 131 days from the time of application to the initial determination. Unlike the individual analysis, where applications can be split by their eventual success or failure, the state-level analysis makes the assumption that all determinations are made on four-month-old applications.[26]

Second, a new UI extension should have an effect on application and allowance rates for more than just its first month. Jobless workers given a 13-week extension will likely delay their disability application for most, if not all, of those 13 weeks, so the application rate should remain at the new lower level for at least that long. After 13 weeks, those who would have exhausted their benefits absent the extension will finally come off the UI rolls, and the application rate will start to slowly increase. As the weeks go on, more and more UI recipients will exhaust their benefits, and the application rate will likely be restored to near its normal level, even before the extension actually expires. Finally, when the UI extension ends, a few more workers will retain extended benefits for an additional 13 weeks, so the disability application rate should be slightly below normal until 13 weeks after the extension expires. At each stage (and with that four-month lag), the healthiest potential disability applicants are most likely to delay applications, so allowance rates should move inversely with the predicted change in application rates. Unlike the

[25] An additional advantage of the state-level analysis is that the data is more up-to-date and therefore includes the current recession and recovery, unlike the individual-level data. The 2007-2011 period is especially interesting given the length of the UI extensions and the unprecedented growth in disability applications.
[26] The state-level results are robust to the choice of a four-month lag over three-, five-, or six-month lags.

individual analysis, which controls for the remaining duration of UI benefits for that recipient directly, the state-level analysis has to account for UI recipients exhausting their benefits on a rolling basis.

The state-level regression model, estimated by ordinary least squares, is:

$$App_{st} = \alpha_0 + \beta_0 Before_{st} + \beta_1 First_{st} + \beta_2 Ongoing_{st} + \beta_1 PhaseOut_{st} + \theta_1 U_{st} + \theta_2 U_{s,t-6} + \pi_1 t + \pi_2 t^2 + m_t + \xi_s + \upsilon_{st} \quad (2)$$

$$Allow_{st} = \alpha_0 + \beta_0 Before_{s,t-4} + \beta_1 First_{s,t-4} + \beta_2 Ongoing_{s,t-4} + \beta_1 PhaseOut_{s,t-4} + \theta_1 U_{s,t-4} + \theta_2 U_{s,t-10} + \pi_1 t + \pi_2 t^2 + m_t + \xi_s + \upsilon_{st} \quad (3)$$

The coefficients of interest are on the four mutually exclusive indicator variables for time since the start of the UI extension: $Before_{st}$, which equals one if the current month is 12 months or less before the start of the extension; $First_{st}$, which equals one if the current month is one of the first N months in an N-month extension; $Ongoing_{st}$, which equals one if the current month is after the first N months, but the extension is still active; and $PhaseOut_{st}$, which equals one if the current month is within the first N months after the extension expires. The discussion above suggests that β_1, β_2, and β_3 are all negative in (2) and positive in (3), but $|\beta_1| > |\beta_2| > |\beta_3|$, so that only β_1 may be significantly different from the omitted condition of no recent or imminent extension.

Importantly, the regression also controls for two measures of the unemployment rate. The literature (e.g., Autor and Duggan 2006) has found a consistent positive correlation between disability applications and U_{st}, the contemporaneous state unemployment rate.[27] $U_{s,t-6}$, the

[27] Most states that extend UI benefit durations also have rising unemployment rates, as the extension comes about because the national unemployment rate is rising, inducing Congress to pass emergency legislation that sends funds to the states for additional benefits, or because state labor market conditions deteriorate enough to trigger automatic increases in benefit duration. Therefore, it can be difficult to separate the effects of new extensions from the worsening economic conditions that trigger them. One approach used in this study is to interact the extension indicators in (2) and (3) with an indicator for whether the unemployment rate in that state has increased by at least 20 percent over the six months before the extension was implemented. The decrease in application rates at the start of these "endogenous" extensions are similar to more "exogenous" extensions that occur when the state's local unemployment rate has been stable, but benefits are extended because of tightening labor markets elsewhere.

unemployment rate lagged six months, accounts for the proportion of the state's population that, except for during UI extensions, is exhausting their unemployment benefits in month t.[28] There are too few calendar years in which new UI extensions were implemented to include year fixed effects; instead, the model includes linear and quadratic time trends – t and t^2, respectively – to account for the secular upward trend in applications. The calendar month fixed effect, m_t, accounts for seasonal patterns, and the state fixed effect, ξ_s, controls for time-invariant differences across states in the inclination to apply for disability.[29]

Cost estimates. The final section of the results estimates the increase in cost per jobless individual from a 13- or 26-week UI extension. When UI is extended, additional UI benefits are paid out until the new exhaustion point or the recipient finds a job, whichever is earlier. This paper suggests a second important change in costs: if a potential SSDI applicant finds a job during the UI extension, or otherwise opts to not apply or significantly delay applying, SSDI benefits paid out could decrease. In addition, because SSDI recipients are eligible for Medicare 24 months after first receipt, delayed or diverted SSDI applications could reduce Medicare expenditures as well.

The multinomial logit regression yields predicted probabilities of applying to SSDI successfully, $P(Allow_{it})$, and unsuccessfully, $P(Denied_{it})$, for person *i* in month *t*, as well as the probability of finding a job, $P(Job_{it})$. Therefore, the probability of continuing to search is: $P(Search_{it}) = 1 - P(Allow_{it}) - P(Denied_{it}) - P(Job_{it})$.

The model assumes a five-month waiting period for the initial determination of SSDI benefits, both because of the lag while the application is reviewed, and the requirement that no benefits are received until at least five months after the onset of the disability, those who have approved SSDI applications begin receiving benefits five months after applying through their

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Allowance rates increase substantially more in exogenous extensions, as expected, but the magnitude of this increase is not robust to the definition of exogeneity; these results are available upon request.

[28] The unemployment rate is lagged seven months for the few states that had maximum durations of 28 (Montana starting in 2004) or 30 weeks (Massachusetts throughout the sample period, and Washington until 2004).

[29] Coe, Haverstick, Munnell, and Webb (2011) find that state fixed effects explain a significant portion of cross-state differences in disability application rates. This study's results are similar, though the standard errors are somewhat larger, when the model includes the set of state characteristics used in that study, both in lieu of and in addition to state fixed effects. This study include only the state fixed effects, because most state characteristics are available only annually. These state characteristics also are unavailable for 2010 and 2011; the addition of the latter 17 months are important because those months provide additional observations of states that are phasing out extended UI benefits.

FRA. Those whose SSDI application is ultimately allowed receive UI benefits for as long as they are eligible or for five months, whichever is earlier, plus Medicare benefits starting 29 months (five months for the determination plus 24 months for Medicare eligibility) after application. Those whose benefits are ultimately denied also receive UI benefits for as long as they are eligible, except that they continue to receive benefits after the five-month waiting period (if they are still eligible).[30] Those who are continuing to search receive UI benefits until those benefits are exhausted, while those who find a job stop receiving benefits immediately.

An individual *i*'s cost to the UI system depends on *i*'s estimated probability of still receiving benefits and *i*'s individual-specific real benefits, as calculated based on the state of residence and pre-job loss earnings (or zero if the current month *t* is after the exhaustion point). In month 0, the first month after job loss, *i* receives UI benefits if *i* is searching or has a pending SSDI application (regardless of its eventual outcome), and receives nothing if *i* finds a job:

$$UI\ Cost_{i0} = UI_{i0}[P(Allow_{i0}) + P(Denied_{i0}) + P(Search_{i0})]$$

In month 1, *i* is in the sample for the multinomial logit regression only if *i* did not find a job or apply to SSDI in month 0; otherwise, *i* is no longer "at risk," in the language of hazard models. Person *i* receives benefits if *i* has a pending application or is still searching:

$$\begin{aligned} UI\ Cost_{i1} = UI_{i1}\big[&P(Allow_{i0}) + P(Denied_{i0}) \\ &+ P(Search_{i0})[P(Allow_{i1}) + P(Denied_{i1}) \\ &+ P(Search_{i1})]\big] \end{aligned}$$

Similarly, in month 2, *i*'s UI cost is:

$$\begin{aligned} UI\ Cost_{i2} = UI_{i2}\Big[&P(Allow_{i0}) + P(Denied_{i0}) \\ &+ P(Search_{i0})\big[P(Allow_{i1}) + P(Denied_{i1}) \\ &+ P(Search_{i1})[P(Allow_{i2}) + P(Denied_{i2}) \\ &+ P(Search_{i2})]\big]\Big] \end{aligned}$$

[30] Every state requires that UI recipients are actively seeking work and able and available to begin work within a short period of time. Few states, however, require such onerous levels of documentation that applicants to SSDI would not be able to receive UI benefits during the period that their applications are pending. Lindner (2011) similarly models SSDI applicants as eligible for UI benefits while applications are pending.

More generally, *i*'s UI cost in month *t* is:[31]

$$UI\ Cost_{it} = UI_{it}\left\{\left[\sum_{\tau=0}^{t}[P(Allow_{i\tau}) + P(Denied_{i\tau})]\prod_{s=0}^{\tau-1}P(Search_{is})\right] + P(Search_{it})\prod_{r=0}^{t-1}P(Search_{ir})\right\} \quad (4)$$

The term in the square brackets represents the probability of having applied for SSDI benefits (regardless of determination) any time before month *t*; the product term accounts for the fact that person *i* could only apply for SSDI if he or she had not previously applied or found a job in any of the previous months. The second term, outside of the square brackets, is the probability of still searching in month *t*, which is conditional on having searched in all previous months.

Person *i*'s cost to the SSDI system in month *t* is similarly derived, with the simplification that only the probability of having applied successfully at least five months before *t* matters. As in equation (4), *i*'s cost also depends on the individual-specific real PIA calculated from *i*'s earnings history. In addition, *i* will be eligible for Medicare 29 months after submitting a successful application; the real cost of Medicare benefits is approximated by the average monthly cost of disabled Medicare enrollees in the given year (see Appendix Table A2). The total cost for *i* if he or she is approved for SSDI benefits is:

$$SSDI\ Cost_{it} = PIA_{it}\left\{\sum_{\tau=0}^{t-5}P(Allow_{i\tau})\prod_{s=0}^{\tau-1}P(Search_{is})\right\} + Medicare_{t}\left\{\sum_{\tau=0}^{t-29}P(Allow_{i\tau})\prod_{s=0}^{\tau-1}P(Search_{is})\right\} \quad (5)$$

Finally, *i*'s long-run cost to the SSDI program includes the time-discounted cost of SSDI and Medicare benefits until *i* reaches his or her FRA (between 65 and 67 depending on *i*'s year

[31] For ease of notation, the probability of search for any month that appears to be out of range (such as $t - 29$ when $t < 29$) is assumed to equal one, and the probability of applying to SSDI successfully or unsuccessfully is zero.

of birth), which occurs in month T_R. The model inputs the expected SSDI and Medicare cost in the last period, t_L, into the formula for a geometric sum between t_L and T_R:[32]

$$LR\ SSDI\ Cost_i = (PIA_{i,t_L} + Medicare_{i,t_L}) \frac{\left(\phi_{t_L}^{(\frac{t_L}{12})} - \phi_{t_L}^{(\frac{T_R - t_L}{12})}\right)}{1 - \phi_{t_L}} \quad (6)$$

where $0 < \phi_{t_L} = {1}\Big/{1 - (\frac{r_{t_L}}{100})} < 1$, the discount factor using the 20-year Treasury bond rate in the year of t_L as the discount rate (r_{t_L}).

Results

Individual-level Analysis. Figure 2 and Table 2 both provide evidence that individuals consider their remaining unemployment insurance benefits in the timing of their disability application. Figure 2 plots the survivor function, the proportion of the sample that has not yet applied for either SSDI after each period, separately by whether the individual's benefits were extended during their jobless spell. Many individuals who eventually apply for SSDI benefits do so in the first three months after losing a job; the survivor function is steepest between the first two points for both those who never have benefits extended and those who have a longer-than-normal duration at the outset of their jobless spell but are not further extended. After the first three months, the survivor function falls at a relatively constant rate. The survivor function is quite different for those whose benefits are extended (or extended further, if they are already longer than normal at the time of job loss) during their jobless spell: the survivor function is rather flat for the first months, and gets steeper over time. The increasing steepness in the unconditional survivor function is remarkable in light of the fact that benefits are extended typically in poor economic conditions; as seen in the state results, jobless individuals in slack labor markets should be inclined to apply for disability benefits faster, not slower.

Table 2 measures whether the timing of SSDI application coincides with the timing of UI exhaustion more directly. Each cell in Table 2 is the number of applications in the months

[32] This calculation assumes a constant real cost of Medicare. In fact, Medicare costs have exceeded the rate of inflation in recent years. This calculation, therefore, represents a lower bound on the long run expected per-person cost of SSDI among those experiencing a job loss.

before and after UI exhaustion, standardized to reflect that the periods are not of equal length.[33] The number of disability applications ticks up in the month that UI is exhausted, particularly for individuals whose benefits are extended during their jobless spell, probably reflecting pent-up demand from the months during the extension. This is less the case for individuals whose benefits are never extended, though this table does not take into account survivor bias; that is, because individuals drop out of the analysis after they've applied for disability, each successive period includes fewer potential applicants "at risk," so increases in later periods are that much more meaningful.

Figure 2 and Table 2 only consider one potential exit for the unemployed – SSDI application. Most jobless individuals instead find re-employment. Others, even if they do not find a new job, may never apply for SSDI or SSI if their perceived probability of success is too low to justify the application costs. Figure 3 splits the sample by those who find a job, apply for SSDI or SSI, or are censored, either by losing eligibility, missing waves of the SIPP mid-panel, or by reaching the maximum of 48 months after job loss. Among those whose UI benefits are of normal duration throughout their spell, 4.1 percent apply for SSDI and 60.6 percent find a new job. As expected, the SSDI application rate is lower (3.5 percent) for those whose benefits are extended. Perhaps more surprisingly, the proportion who exit the sample by finding a new job is also lower, 54.6 percent, so disability applicants who delay the decision to apply to SSDI or SSI do not appear to find jobs instead. As noted above, this may be due to the fact that individuals whose benefits are extended tend to face more difficult labor markets; indeed, the proportion of those with extended benefits who reach 48 months without either finding a job or applying for disability is nearly double the proportion of those with normal UI duration.

These concerns about survivor bias and confounding macroeconomic factors motivate the multinomial logit model, presented in Table 3. The point estimates in the first two columns represent the effect of each variable on the probability of applying to SSDI or finding a job, respectively, relative to the baseline outcome of continuing the jobless spell, for the full sample of jobless individuals. Table 3 also reports marginal effects, defined as the change in the predicted probability (or hazard) of application or re-employment from making a small change in

[33] For example, the average individual in the sample spends 4.9 months in the first period, greater than two months until UI is exhausted, though this varies from three-and-a-half months for people whose UI is never extended, to more than seven months for those whose benefits are extended during the jobless spell. The number of applications in the period is divided by the average number of months in that period (by extension category) to get the entries in Table 2.

the variable (for a continuous variable) or the difference between values of 1 and 0 for all observations (for a binary variable), divided by the mean predicted hazard rate using the actual data. All specifications include fixed effects for the month since separation, to account for duration dependence, and demographic controls.[34]

The top portion of Table 3 reports the coefficients and marginal effects for the indicators of UI eligibility, extension, and exhaustion. The top line indicates that individuals who are receiving UI during its normal duration are 31 percent more likely to apply for SSDI benefits, and 13 percent less likely to find a job, than similar individuals who exhausted UI at least one month before (the omitted condition). Both differences are statistically significant, though for the former, only at the 90 percent level.

The next three estimates focus on individuals whose UI benefits have not been extended since the start of the jobless spell, and whose UI eligibility is coming to an end. These individuals are 49 percent less likely to apply for SSDI in the month of exhaustion, and 9 percent less likely to find re-employment, both statistically significant differences from UI-ineligible months.

The next five estimates focus on individuals whose UI benefits have been extended. The most relevant result is the second one: individuals are far less likely to apply for SSDI (47 percent) or find a job (32 percent) during months when they are receiving benefits only because of an extension. These represent the largest estimated effects (in absolute value) of any indicator of UI eligibility, and both are statistically different from months after UI has been exhausted. During the month that UI had been originally scheduled to expire, individuals may be more likely to apply for SSDI, but the estimate is not statistically significant. Job finding is 15 percent less likely in that same month than in UI-ineligible months, a statistically significant difference and one that stands in contrast to Meyer's (1990) finding that recalls from temporary layoffs were important in his data the late 1970s and early 1980s. The results also suggest that SSDI application is more likely and job finding less likely in the final month of the UI extension, but these estimates are not statistically significant.

Finally, there appears to be little effect of the announcement of UI extensions, either before they actually are needed or when they are needed immediately, on the hazard to SSDI application. Individuals who learn of a new UI extension while still eligible, however, are 23

[34] These estimates are suppressed for space and are available upon request.

percent less likely to find a job in that same month than in other months with the same values for the UI exhaustion indicators.[35]

The other four columns present the results of separate multinomial logit estimations for those without and with self-reported work limitations or the receipt of benefits that could be associated with disability, including veterans' benefits or workers' compensation. The estimates for the indicators along the UI eligibility timeline are largely similar to the full sample. The job-finding hazard is more responsive to UI eligibility for those without work limitations, except that both groups are significantly less likely to find a job during extensions. Those without work limitations are more likely to apply for SSDI around the time of UI exhaustion relative to non-UI months whether or not UI benefits have been extended: 74 percent more likely in the last month of non-extended UI benefits, and 121 percent more likely in the month just after the end of a UI extension. While those with a work limitation do not respond to UI exhaustion when benefits are not extended, they are even more likely to apply in the last month of a UI extension, a statistically significant 144-percent increase over UI-ineligible months.

The pattern is also roughly similar for jobless individuals above and below age 50 at the time of separation, and between those with or without a high school degree (Appendix Table A3). Both older and younger workers have spikes in the SSDI application hazard at UI exhaustion, but the difference with non-UI months is only significant for those under 50 who did not see UI extended. Similarly, both more- and less-educated potential applicants may be more likely to apply in the last month of UI eligibility or immediately after, though the estimate is not statistically significant. As with the full sample and those with and without work limitations, the point estimates for SSDI application during UI extensions are large and negative for all four subgroups, but with smaller sample sizes, the standard errors are too large to rule out the null of no effect. Job finding results are of similar magnitude to the results in Table 3 and more likely to be statistically significant than estimates of the SSDI hazard for these groups.

Figures 4a and 4b use the estimates from Tables 3 and A3 to graph the predicted probability of applying to SSDI for each period of UI eligibility, extension, and exhaustion.

[35] Because the indicators for new UI extensions are not mutually exclusive with the other UI eligibility indicators, the probability of finding a job could be even lower if, for example, the UI extension adds to a previous extension. In that case, the hazard to job finding is projected to be 55 percent lower – 23 percent lower due to the extension announcement, and an additional 32 percent lower due to having extended benefits already – relative to similar individuals who are no longer eligible for UI.

Figure 4a shows a noticeable spike in the SSDI hazard in the month that normal (non-extended) UI expires, particularly for the three subgroups most likely to apply for SSDI: those with work limitations, those over age 50 at the time of job separation, or those with less than a high school education. The spike is even larger at the end of UI extensions (Figure 4b) for those with work limitations, while for those over 50 or with less than a high school degree, the spike is actually delayed until the month after extended benefits expire. The probability of applying to SSDI falls for all groups during UI extensions.

The individual analysis can also indicate whether UI extensions alter the composition of SSDI applicants, if ultimately successful applicants are more or less responsive to UI eligibility than ultimately unsuccessful applicants. Table 4 reports full-sample results of a multinomial logit regression with three possible outcomes (besides the baseline of continuing the jobless spell): applying for SSDI and having that application allowed at the initial determination, applying for SSDI and being denied at the initial determination, and finding a job.

The conceptual framework suggests that, if applicants' ultimate success rate is relatively predictable, denied applications should decrease by more than allowed applications when UI is extended and should increase by more around the time that UI benefits are exhausted. While few of the estimates are statistically significant, the opposite appears to be true, if anything. The probability of submitting a successful SSDI application is substantially (and significantly) higher in the first few months of one's normal UI duration, and in the last month of, and month immediately after, non-extended UI benefits are exhausted. For unsuccessful applications, the magnitudes are smaller and statistically insignificant. The SSDI hazard falls by about the same amount for both allowed and denied applications during UI extensions, but the decrease is not significantly different than surrounding months.

Other estimates in Table 4 suggest something closer to the conceptual framework, that more marginal applicants are induced to apply for SSDI by incentives in the timeline of UI benefits. If this is correct, the announcement of a new UI extension should lead relatively healthier beneficiaries of the extension, who are more likely to apply to SSDI because of poor short-run job prospects rather than long-run need, to delay SSDI application. Along these lines, the estimated effect of a new UI extension on ultimately denied applications is large and negative, though not statistically significant. Meanwhile, the effect on ultimately allowed applications is large, positive, and statistically significant – as opposed to the prediction that they

would be indifferent to the extension, relatively unhealthier applicants are induced to apply sooner.

Another piece of evidence in support of the conceptual framework is the estimated effect of health insurance status on successful and unsuccessful applicants. Potential applicants who are uninsured are 17 percent more likely to submit an ultimately denied application to SSDI, a statistical significant difference versus those with health insurance coverage, and 22 percent less likely to apply to SSDI successfully. Both results are consistent with the conceptual framework – relatively healthier jobless individuals may apply for SSDI in order to obtain Medicare coverage after the 24-month waiting period, while relatively healthier potential applicants do not have the luxury of waiting so long for affordable care and find alternative resources (though perhaps not their own employment, as the probability of finding a job is lower for the uninsured).

State-level results. The state-level analysis provides further evidence in favor of the hypothesis that healthier individuals delay applications to SSDI when extended UI benefits are available. Table 5 presents the results from OLS regressions of state application and allowance rates on indicators for imminent or recent UI extensions. Months without a recent UI extension and with no extension coming in the next 12 months are the omitted condition. Consistent with the individual-level analysis, applications fall by 2.6 percentage points (the second coefficient from the top), or about 2.8 percent of the 0.93 percent mean application rate, in the first N months of an N-month extension, when all of the recently unemployed in the state are eligible for extended benefits. Application rates then begin to rise, as those who delayed SSDI applications exhaust even their extended UI benefits, and they are highest in the last months of the UI extension, when only those who have been grandfathered in are still eligible for UI. Surprisingly, SSDI applications fall even before the introduction of the UI extension, but this may be due to a delayed reaction to the end of the macroeconomic expansion. As expected, the application rate increases with both the contemporaneous and the lagged state unemployment rate; when the local labor market tightens, SSDI application becomes more attractive, especially to those who have exhausted their UI eligibility.

Matching the hypothesis, the state allowance rate rises in the first few months of a UI extension, while all of the state's recently unemployed are eligible for UI benefits. This increase of just over 1 percentage point, or 2.8 percent of the 37.6 percent mean allowance rate, is likely

due to healthier potential applicants postponing their decision to file for SSDI benefits until after UI benefits are exhausted, leaving only higher-probability applicants in the pool.

The increase in the allowance rate is also consistent, however, with potentially disabling health conditions, especially mental illness and stress-related conditions, becoming worse with the onset of a recession. Another possibility is that the probability of any individual application being approved may increase during recessions, because there are fewer jobs that the disability applicant could perform. These latter two arguments may explain why the allowance rate remains about 0.8 percentage points higher in later months of the UI extension, a statistically significant increase over non-extended months, even as the increase in the application rate suggests that more marginal applicants are applying for economic reasons.

Cost estimates. Table 6 presents the results of a simulation that provides estimates of the expected cost to the UI, SSDI, and Medicare systems of additional weeks of UI benefits, using the estimates from Table 4 to calculate the probability of applying successfully or unsuccessfully to SSDI or of finding a job. The simulation multiplies the individual's own UI and SSDI benefits by the conditional probability of earning those benefits to get the individual's expected cost in each month, and then sums those expected costs.

The top panel of Table 6 presents the mean, standard deviation, and median over the full sample of the cost for each program for UI durations of different lengths. When all individuals are eligible only for UI for the duration to which they're entitled at the start of their jobless spell (which may be longer than normal, if benefits have previously been extended), the average jobless person in the sample costs the entire system $2,194 in expectation. About $1,287 of that total consists of expected UI benefits, and about $1,012 consists of expected SSDI and Medicare costs, including the long run costs of SSDI and Medicare until the jobless individual reaches FRA.[36] Median costs are slightly lower for UI and nearly half of the mean for SSDI and Medicare, suggesting that the cost distribution is skewed to the right by individuals expected to have long unemployment spells.

[36] The summary statistics in Table 6 are calculated separately for each program and for the total. As a result, the sum of the means (or medians) of the costs of the programs will not exactly equal the mean (or median) total cost. The percent changes reported in the last three columns are also the summary statistics for each individual's percent change in cost, so these figures will not match the percent change one could calculate from the first three columns.

Increasing the duration of UI benefits by 13 weeks for all individuals in the sample, starting from a random point within the first nine months of the jobless spell, results in a new mean total cost of $2,463, an average increase of 13.6 percent. The cost of UI benefits increases by 19.5 percent; given that 13 weeks is about 37 percent of the average number of weeks for which an individual is eligible (including extensions), just over 35 weeks, this increase indicates that not everyone delays SSDI application or job finding until only after extended UI benefits are exhausted. While this study hypothesizes that SSDI and Medicare costs could fall when UI is extended, as some would-be applicants extend their search and instead find a job during the extension, the simulation finds a small increase in the cost of SSDI and Medicare benefits of about 3.4 percent, on average.

A 26-week extension of UI benefits on top of the duration at the start of each person's jobless spell, similar to extensions in the 1991-93 and 2008-11 recessions, increases costs further, at a slightly increasing rate. The mean expected total cost per individual in the sample is $2,771, an average increase of 30 percent over the non-extension regime, or about 15 percent more than a 13-week extension. Extra UI benefits make up almost all of this cost increase, as SSDI and Medicare costs are essentially the same as they are under the 13-week extension.

The lower panel reports the summary statistics for expected costs for the same simulation but calculated over just the work-limited individuals in the sample. This group is most likely to both apply for disability benefits and use the full duration of UI, because work-limited individuals are less likely to find re-employment in any period, so expected costs are uniformly higher. The mean expected total cost increases from $4,400 to $4,700 with a 13-week extension, and increases further to about $5,040 with a 26-week extension. Compared to the full sample, the cost increase is smaller, only 8.5 percent for the short extension, and an additional 8.2 percent for the longer extension. In each case, the bulk of the cost increase is due to extra UI benefits. SSDI costs increase slightly with the short extension, but are essentially flat when benefits are extended further.

Figures 5a, 5b, and 5c plot predicted probabilities from the simulation for each of the three scenarios. The cumulative probability of having started a job by month t (Figure 5a) falls with the addition of UI extensions, but by only about one percentage point at each point in time. The cumulative probability of having applied for SSDI by month t (Figure 5b) changes by even less when adding 13 or 26 weeks to individuals' UI durations.

The one pattern that changes substantially is the cumulative probability of having submitted a successful application, conditional on having applied to SSDI (Figure 5c). This probability, which is essentially the allowance rate measured at the individual level with perfect foresight, is noticeably larger in the first few months after job loss under the UI extension scenarios; for example, the allowance rate six months after job loss increases from 46 percent with no extension to 48 percent under both 13- and 26-week extensions. These early months coincide with each individual enjoying extended benefits; together with the decline in allowance rates observed at the state level after the implementation of an extension, this finding strengthens the evidence that healthier potential applicants delay SSDI filing until closer to the end of the UI extension. But the persistence of the higher allowance probability even after this period — almost a percentage point higher under a 26-week extension even four years after job loss — suggests that any given application is more likely to be successful during years in which UI has been extended. The increased probability of success for any SSDI application appears to be driving the counterintuitive increase in SSDI costs.

Conclusion

As of September 25, 2011, more than three years after unemployment insurance durations were extended by 20 to 33 weeks nationwide, the Emergency Unemployment Compensation Act of 2008 is still in effect. Residents of every state are still eligible for 34 weeks of UI benefits on top of their normal, state-funded UI duration; all but seven states are eligible for an additional 13 weeks; and the unemployed in 24 states (including Washington D.C.) are still eligible for Tier Four benefits totaling as many as 99 weeks. Though many workers who lost their jobs at the onset of the Great Recession have long since exhausted even these lengthy UI durations, research should inform policymakers about whether other already overburdened public programs, including SSDI, need to fear further strain from yet more displaced and desperate working-age adults.

The results of this study suggest that jobless individuals delay applying to SSDI until after they have exhausted their unemployment benefits. UI extensions push out these exhaustion dates; this study finds evidence at both the individual- and state-levels that the unemployed respond in-kind. Jobless individuals are significantly less likely to apply for SSDI while they benefit from extra months of UI. This study also observes that in states where UI has been

extended, allowance rates in subsequent months rise, indicating that only the unhealthiest potential applicants continue to seek SSDI benefits.

Public disability insurance programs are structured as long-term programs – applicants are required to demonstrate that their disabling conditions limit their ability to work permanently or over the long term, and few beneficiaries leave the program except through reaching the FRA or death. Demand for these programs, then, should not respond to short-run business cycle fluctuations. One interpretation of this paper's findings is that disability insurance is being used, at least in part, to supplement unemployment insurance, a departure from its intended purpose made all the more expensive because any less-than-deserving recipient is on the rolls more or less permanently.

On the other hand, it is less clear whether the individuals who apply for disability benefits as soon as they exhaust their UI benefits would have applied sooner if UI had not been available. Unemployment benefits are comparable to SSDI benefits, averaging, for jobless individuals in the SIPP, $233 per week for UI versus $963 per month for SSDI. The upside to unemployment benefits is that the income is received with almost 100 percent certainty, whereas disability applicants are far more likely to be rejected, and even successful applicants must wait for the decision. In addition, SSDI requires a five-month waiting period between the onset of disability and the first payment of benefits, so UI supports recently employed disability applicants in the interim. Both programs require non-trivial effort, but the Social Security interviews and acquiring medical clearance from doctors probably outweigh calling in to UI's automated phone system once a week to confirm that the recipient is still searching for a job.

Considering all of these factors, perhaps the bigger concern is that the individuals who are induced to apply due to UI expiration do not apply even sooner. This is especially true for those who delay application during the UI extension. Whereas they have a stronger case for being unable to work after six months of joblessness compared to immediately after job loss, the marginal increase in the allowance rate from an additional three to six months is likely small. These arguments suggest that the perceived costs of applying to SSDI – including effort and transaction costs, psychic costs, and lost resources during the wait for the determination – are quite high.

The conceptual framework outlined above suggests that the individuals most likely to delay application to SSDI are those who are healthier, and thus less likely to be approved;

indeed, state allowance rates increase during the first few months of a new UI extension. Because healthier individuals are also more likely to find re-employment, the logical conclusion is that UI extensions should lead to fewer applications to SSDI, decreasing the expected cost of SSDI benefits and, further down the road, Medicare payments on behalf of SSDI beneficiaries.

Instead, the simulation in this study finds that expected SSDI and Medicare costs rise, not fall. This counterintuitive result is consistent with other findings in this paper. For one, ultimately successful SSDI applicants are more responsive to the incentives created by the UI system than those who are eventually denied. For another, the largest spike in applications at the end of UI extensions is by work-limited individuals, who are more likely to be approved, and are presumably more likely to apply due to a real medical need, not out of labor market-induced desperation. In addition, though state SSDI application rates increase as UI recipients exhaust their extended eligibility, suggesting that more marginal applicants are induced to file for SSDI benefits, allowance rates remain significantly above their normal level.

Several explanations are possible for these observations. One is that the economic downturn that leads to UI extension makes successful application more likely, all else equal. This change in the allowance probability for any given application, which is evident in Figure 5c, could come from either party. Among potential applicants, recessions may make the disabling medical condition worse, especially mental illnesses such as anxiety or depression, or stress-induced physical conditions such as heart disease. It also may be easier for the applicant to prove to the Disability Determination Service that he or she cannot find suitable work if fewer jobs are available.

In addition, the UI extension itself may signal to potential applicants that job prospects are weak and induce jobless individuals to apply for disability benefits that would not have applied absent that signal. Both the individual and state-level models attempt to account for the severity of the recession by including controls for the state unemployment rate, but there may be a disproportionate response to especially severe recessions – those that lead to long, widespread UI extensions – in application probabilities or the composition of applicants.

Finally, potential applicants, their medical care professionals, and their other advisors simply may be poor judges of their probability of success in applying for disability. As a result, the response of potential applicants along the distribution of health to changes in potential resources may be too noisy to detect a pattern in the composition of applicants.

Though UI extensions do not appear to lower SSDI costs as expected, extended UI benefits may still provide a benefit due to increased efficiency. For as long as potential disability applicants delay their application in favor of unemployment benefits, costs are borne by the UI system, rather than SSDI. Experience-rated taxes on former employers fund normal UI durations, with the incidence of these taxes borne by employees and employers, an insurance system that is likely more efficient than inducing the unemployed to apply for effectively permanent benefits. The federal government pays for all of the cost of benefits that are extended by emergency legislation, and half of the Extended Benefits program, out of general revenue; these actions are important short-run macroeconomic stabilizers and, unlike any similar action taken by individual states, can be financed by countercyclical deficits. Delayed application, therefore, effectively transfers funds from these sources into the SSDI Trust Fund, the same transfer that will occur more explicitly, absent substantial reform, if the Trust Fund is exhausted in 2018 as currently projected (Social Security Trustees Report 2011).

Debates over the merits of UI benefit extensions focus on the program costs, which include both the dollar value of extra benefits distributed to those eligible and the efficiency cost of job search disincentives, and the direct benefits to UI recipients without alternative income sources. This paper suggests that these debates miss an important indirect benefit of UI extensions: increased efficiency due to delayed disability benefits. Moreover, UI extensions provide recipients with more incentive to find a job than they would have while receiving permanent disability benefits, which hopefully defrays even more of the long-run cost. Ignoring these indirect benefits has likely led to fewer, shorter, and more controversial UI extensions than a more complete accounting would suggest.

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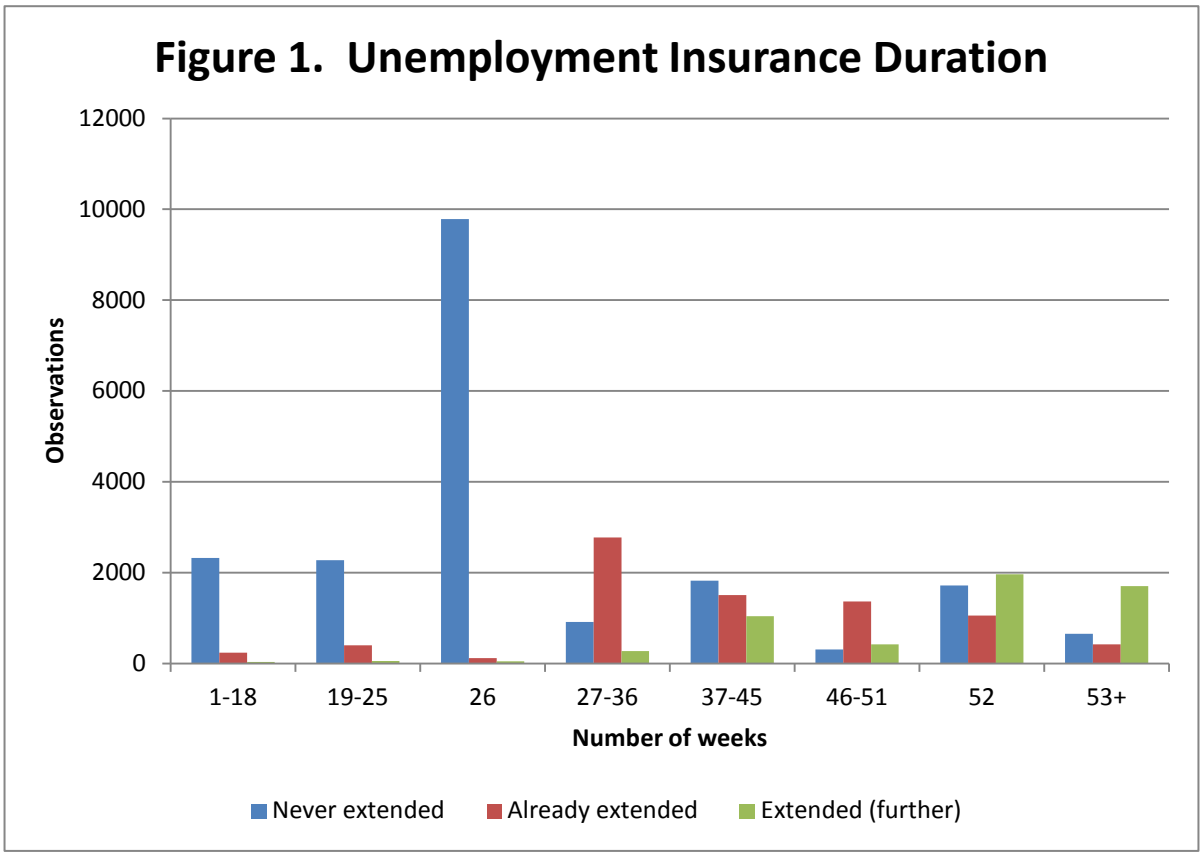


Figure 1. Unemployment Insurance Duration
12000
10000
8000
6000
4000
2000
0
Observations
1-18
19-25
26
27-36
37-45
46-51
52
53+
Number of weeks
Never extended
Already extended
Extended (further)

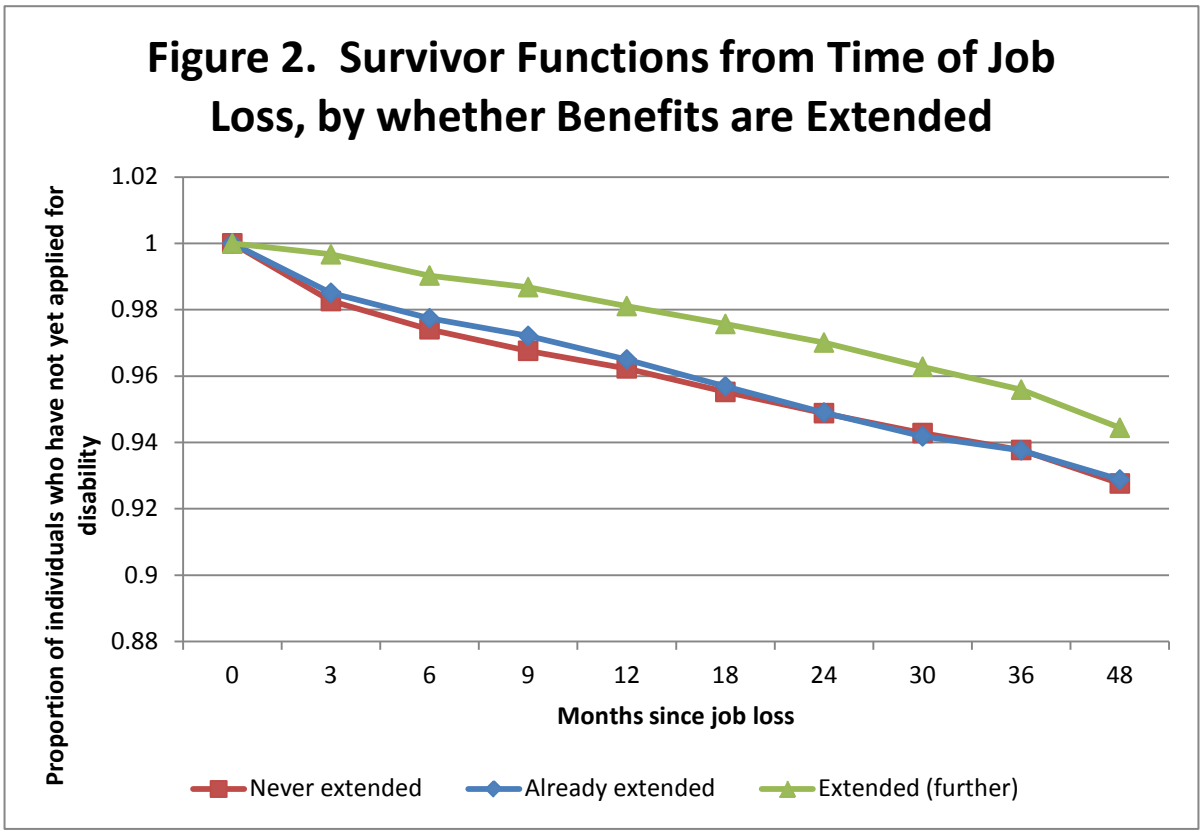


Figure 2. Survivor Functions from Time of Job Loss, by whether Benefits are Extended
Proportion of individuals who have not yet applied for disability
1.02
1
0.98
0.96
0.94
0.92
0.9
0.88
0
3
6
9
12
18
24
30
36
48
Months since job loss
Never extended
Already extended
Extended (further)

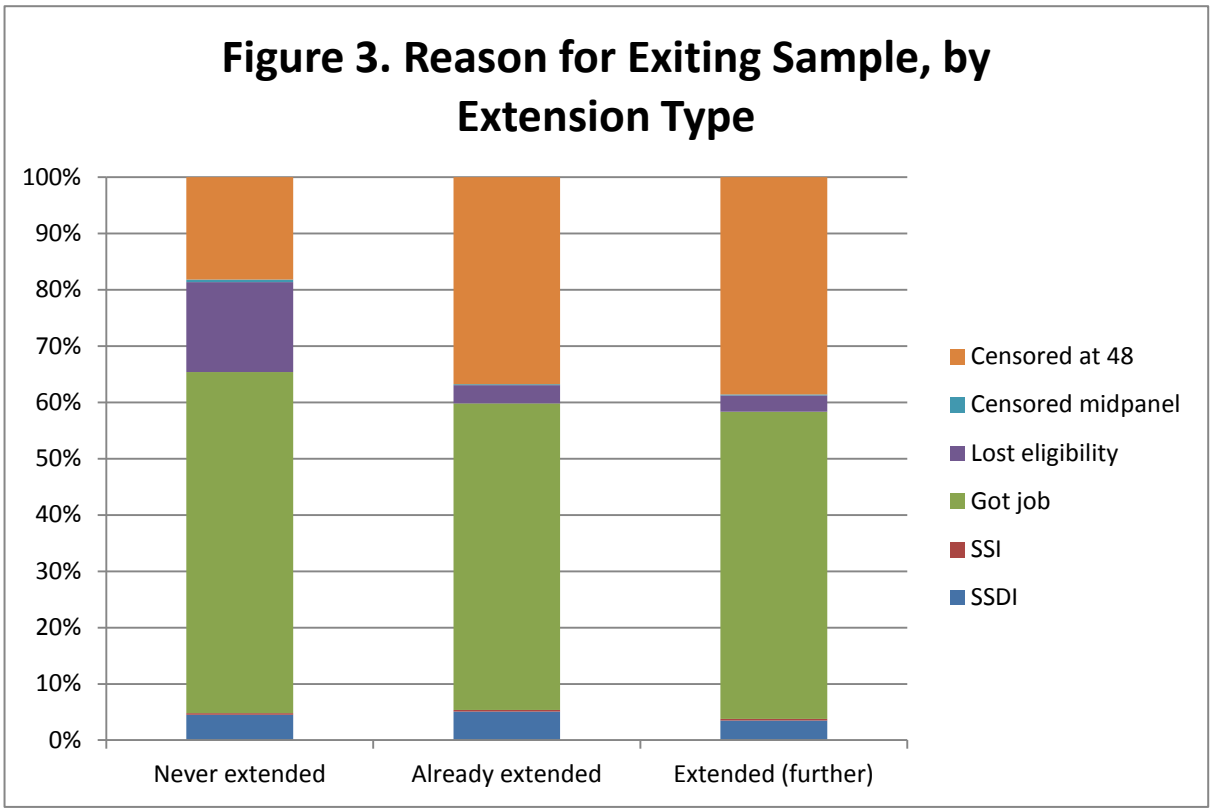


Figure 3. Reason for Exiting Sample, by Extension Type
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Never extended
Already extended
Extended (further)
Censored at 48
Censored midpanel
Lost eligibility
Got job
SSI
SSDI

Figure 4a: Predicted Hazard to SSDI Application, by Remaining UI Eligibility No UI Extension

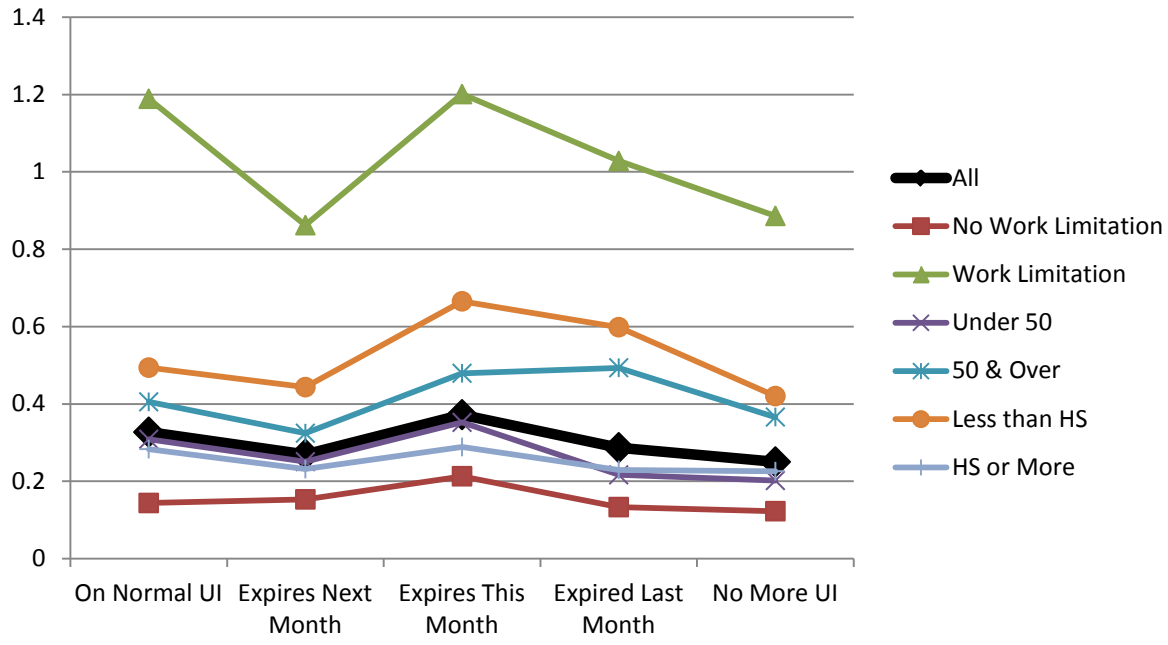


Figure 4b: Predicted Hazard to SSDI Application, by Remaining UI Eligibility UI Extended

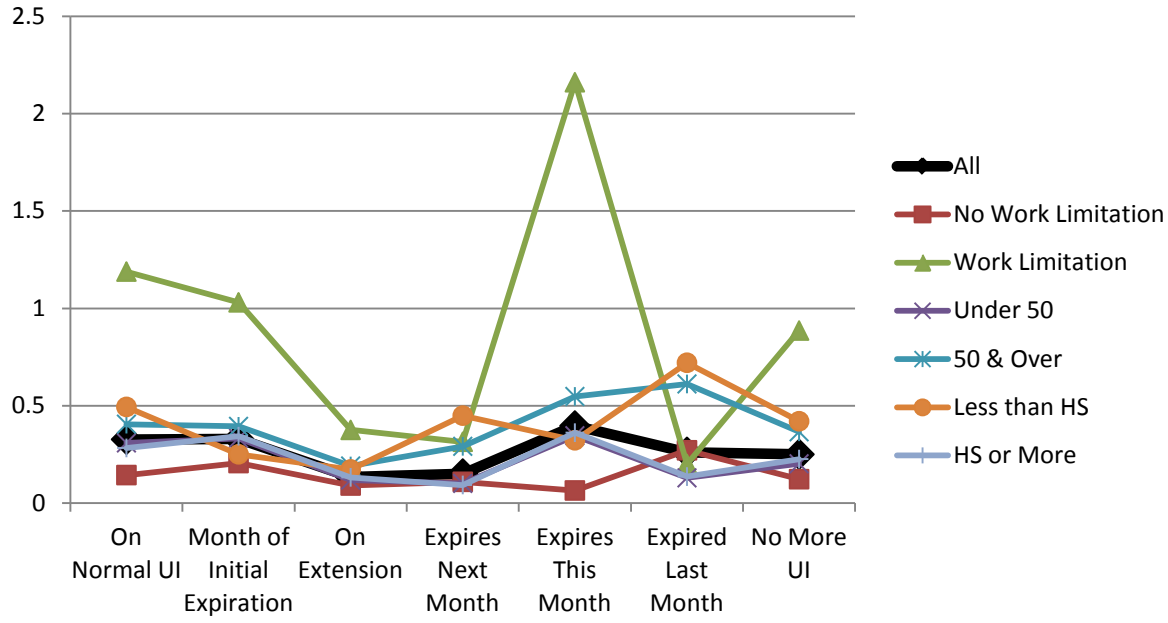


Figure 5a: Simulated Cumulative Probability of Starting a New Job, by UI Extension

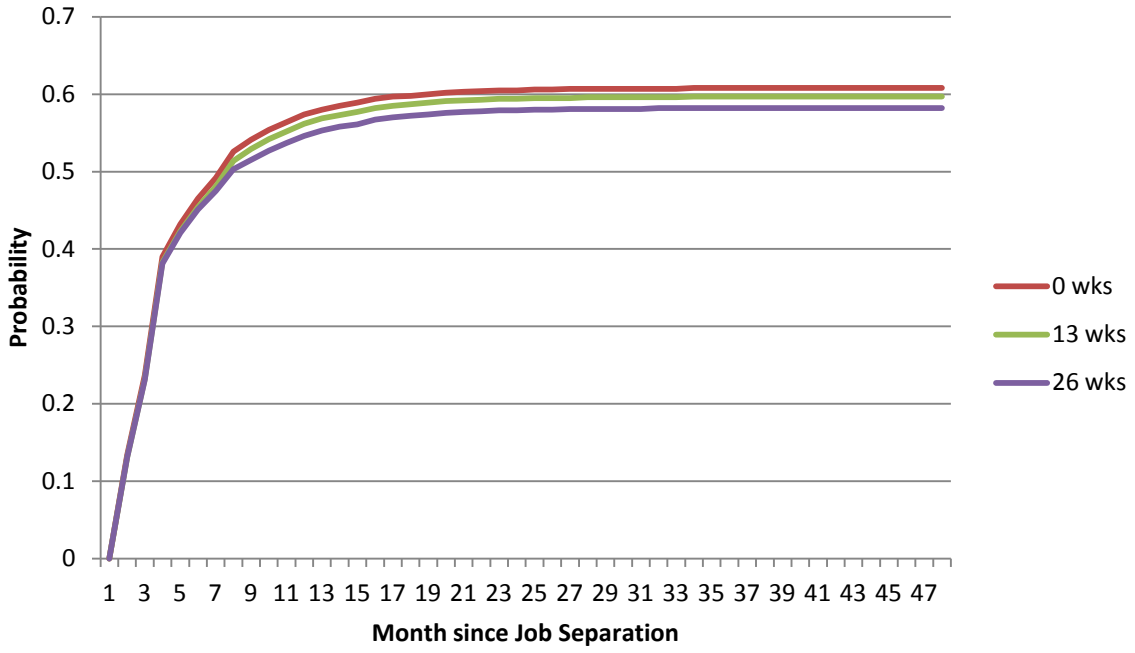
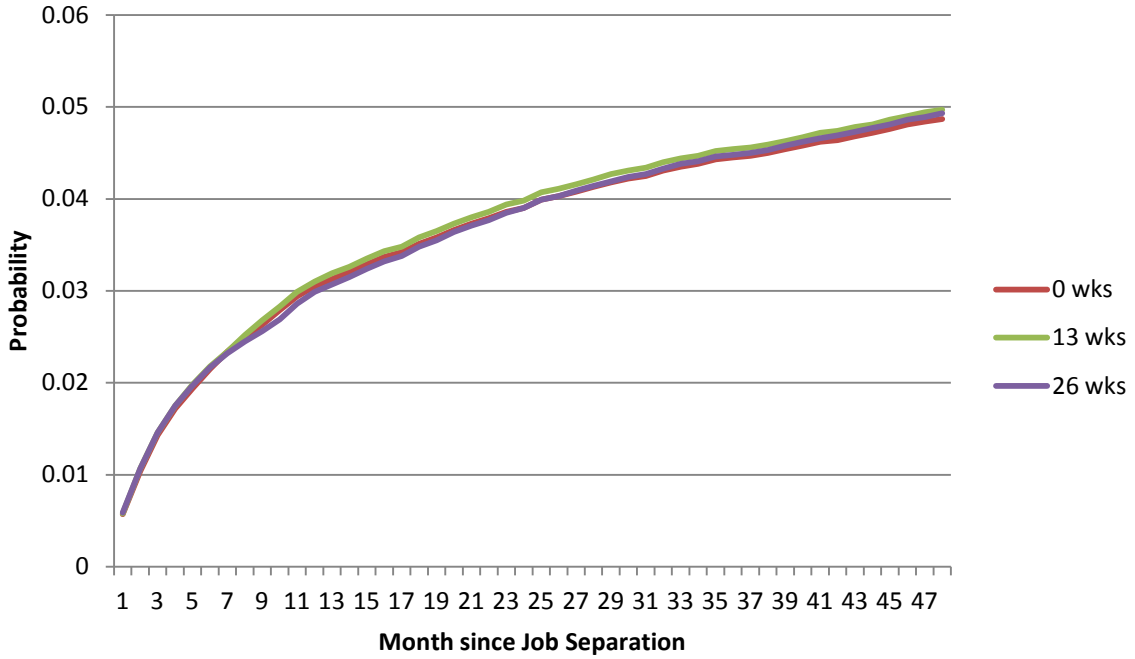


Figure 5b: Simulated Cumulative Probability of Applying to SSDI, by UI Extension



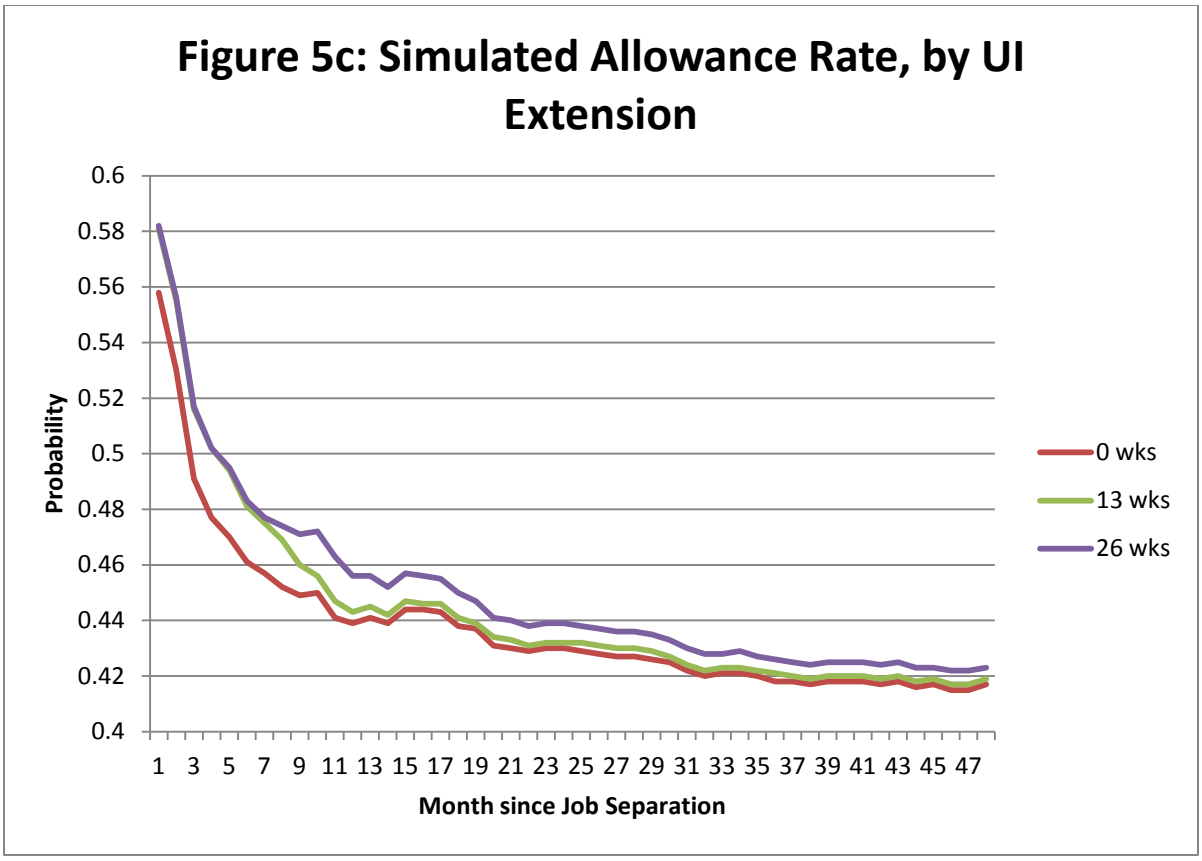


Figure 5c: Simulated Allowance Rate, by UI Extension
Probability
0.6
0.58
0.56
0.54
0.52
0.5
0.48
0.46
0.44
0.42
0.4
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
Month since Job Separation
0 wks
13 wks
26 wks

Table 1. Refining the Sample

Refinement	Remaining Sample
Total sample in 1990-2004 SIPP panels	588722
Age 25 to 64	306864
Non-missing work status	243414
Experienced a job loss during SIPP	53849
Matched successfully to SSA	41239
Living in identifiable state	37313
Filing date not the same as job loss date	37126
Eligible for UI	34960
Eligible for SSDI and/or SSI	28583

Table 2. Timing of Disability Application Relative to Unemployment Insurance Exhaustion

Month	All	Never extended	Already extended	Extended (further)
>2 mo before UI ends	113.0	90.7	25.9	8.1
1-2 mo before UI ends	83.9	61.7	19.8	6.5
Month UI ends	91.5	61.0	23.0	10.1
1-2 mo after UI ends	63.8	44.3	13.6	7.0
3-6 mo after UI ends	46.7	29.4	11.4	5.9
7-12 mo after UI ends	38.2	22.6	10.6	5.0
13-24 mo after UI ends	30.4	16.1	7.8	6.5
25-48 mo after UI ends	19.4	9.1	5.4	5.0

Note: Figures are applications in the average month over the given time period.

Table 3. Multinomial Logit Regression Results for SSDI Application or Job-Finding

	All		Not Work Limited		Work Limited	
	Apply to SSDI	Find Job	Apply to SSDI	Find Job	Apply to SSDI	Find Job
On Normal UI (0/1)	0.292 *	-0.145 ***	0.160	-0.174 ***	0.337 *	-0.007
	(0.158)	(0.040)	(0.269)	(0.044)	(0.197)	(0.103)
	[30.8]	[-12.7]	[17.3]	[-15.1]	[34.2]	[-1.1]
Normal UI Duration (0/1)						
Expires Next Month	0.071	-0.122 ***	0.219	-0.139 ***	-0.030	-0.037
	(0.186)	(0.045)	(0.307)	(0.049)	(0.234)	(0.115)
	[7.8]	[-10.2]	[24.9]	[-11.5]	[-2.7]	[-3.3]
Expires This Month	0.404 **	-0.104 **	0.557 *	-0.155 ***	0.322	0.155
	(0.171)	(0.046)	(0.284)	(0.050)	(0.215)	(0.112)
	[48.8]	[-8.9]	[73.7]	[-12.8]	[35.6]	[14.2]
Expired Last Month	0.139	-0.013	0.082	-0.022	0.154	0.027
	(0.180)	(0.046)	(0.309)	(0.050)	(0.223)	(0.119)
	[14.7]	[-1.2]	[8.6]	[-1.9]	[16]	[2.2]
Extended UI Duration (0/1)						
Month of Initial Expiration	0.266	-0.413 ***	0.505	-0.405 ***	0.135	-0.535
	(0.386)	(0.110)	(0.625)	(0.117)	(0.493)	(0.329)
	[32.1]	[-30.8]	[67.5]	[-30.2]	[16.3]	[-39.2]
On Extension	-0.641 *	-0.431 ***	-0.322	-0.412 ***	-0.879 *	-0.573 **
	(0.332)	(0.080)	(0.479)	(0.085)	(0.465)	(0.228)
	[-46.5]	[-31.8]	[-26.6]	[-30.5]	[-57.6]	[-40.8]
Expires Next Month	-0.510	0.098	-0.114	0.075	-1.027	0.235
	(0.432)	(0.095)	(0.565)	(0.104)	(0.726)	(0.236)
	[-40.1]	[9]	[-11]	[6.7]	[-64.5]	[24.5]
Expires This Month	0.461	-0.169	-0.649	-0.264 *	0.935 **	0.266
	(0.343)	(0.130)	(0.785)	(0.146)	(0.382)	(0.282)
	[58.5]	[-14]	[-47.3]	[-20.6]	[143.9]	[24]
Expired Last Month	0.040	-0.095	0.797 **	-0.083	-1.490	-0.150
	(0.366)	(0.129)	(0.406)	(0.140)	(1.008)	(0.329)
	[4.4]	[-8]	[121.1]	[-7.1]	[-77.3]	[-11.7]
Announced UI Extension (0/1)						
Before Expiration	0.117	-0.299 ***	0.379	-0.350 ***	0.010	-0.005
	(0.265)	(0.077)	(0.418)	(0.085)	(0.343)	(0.188)
	[13.6]	[-23.2]	[47.6]	[-26.6]	[1.1]	[-0.4]
After Expiration	-0.273	0.242	-0.581	0.242	-0.058	0.267
	(0.647)	(0.157)	(1.092)	(0.170)	(0.805)	(0.408)
	[-24.6]	[23.1]	[-44.7]	[22.8]	[-6.8]	[27]
On UI After Previous Expiration (0/1)	-0.005	-0.048	0.791	-0.003	-0.557	-0.312
	(0.451)	(0.140)	(0.637)	(0.154)	(0.629)	(0.345)
	[-0.3]	[-4.1]	[119.3]	[-0.4]	[-41.7]	[-24.4]
ln(Previous Earnings)	0.044 **	0.021 ***	0.004	0.019 ***	0.060 **	0.026 *
	(0.020)	(0.006)	(0.028)	(0.006)	(0.028)	(0.015)
	[4.2]	[1.8]	[0.3]	[1.7]	[5.8]	[2.3]
ln(Spouse's Earnings)	-0.013 *	-0.010 ***	-0.011	-0.011 ***	-0.010	-0.006
	(0.007)	(0.002)	(0.011)	(0.002)	(0.009)	(0.005)
	[-1.2]	[-0.9]	[-1]	[-0.9]	[-1]	[-0.5]
ln(UI Benefit)	-0.007	0.035 ***	-0.009	0.035 ***	0.024	0.027
	(0.040)	(0.012)	(0.052)	(0.013)	(0.058)	(0.033)
	[-0.8]	[3]	[-1.1]	[3]	[2.2]	[2.4]
ln(SSDI Benefit)	-0.277 ***	-0.002	-0.530 ***	0.003	-0.100	-0.031
	(0.069)	(0.022)	(0.104)	(0.024)	(0.093)	(0.057)
	[-27.4]	[-0.1]	[-52.8]	[0.4]	[-9.7]	[-2.7]
Unemployment Rate (Current)	0.007	-0.157 ***	0.004	-0.168 ***	0.004	-0.088 ***
	(0.028)	(0.010)	(0.042)	(0.011)	(0.039)	(0.027)
	[1.4]	[-13.6]	[1.1]	[-14.5]	[0.8]	[-8]
Unemployment Rate (At Job Loss)	-0.022	0.128 ***	-0.063	0.135 ***	-0.001	0.087 ***
	(0.028)	(0.010)	(0.041)	(0.011)	(0.039)	(0.027)
	[-2.8]	[11.1]	[-6.8]	[11.6]	[-0.5]	[7.8]
Work Limited (0/1)	1.703 ***	-0.277 ***				
	(0.055)	(0.023)				
	[232.2]	[-23.2]				
No Health Insurance Currently (0/1)	0.022	-0.301 ***	0.278 ***	-0.309 ***	-0.123	-0.262 ***
	(0.063)	(0.019)	(0.101)	(0.021)	(0.081)	(0.048)
	[3.6]	[-25.7]	[28.9]	[-26.1]	[-10.8]	[-23.4]
Sample Size	592,651		493,658		98,993	
Log-likelihood	-71,996		-57,692		-14,119	

Note: Standard errors in parentheses. Marginal effects (percent increase over the mean hazard to applying to SSDI or finding a job) in brackets. All specifications also include demographic variables and month-since-separation fixed effects.

*** - Significantly different from zero at the 99 percent confidence level ** - 95 percent confidence level * - 90 percent confidence level

Table 4. Multinomial Logit Regression Results for Allowed SSDI Application, Job-Finding, or Denied SSDI Application

	SSDI Allowed	SSDI Denied	Find Job
On Normal UI (0/1)	0.464 *	0.188	-0.145 ***
	(0.246)	(0.205)	(0.040)
	[49.3]	[30]	[-12.8]
Normal UI Duration (0/1)			
Expires Next Month	0.280	-0.054	-0.123 ***
	(0.284)	(0.244)	(0.045)
	[32.4]	[-13.4]	[-10.3]
Expires This Month	0.604 **	0.283	-0.104 **
	(0.265)	(0.222)	(0.046)
	[80.7]	[26.5]	[-8.9]
Expired Last Month	0.636 **	-0.277	-0.013
	(0.257)	(0.258)	(0.046)
	[86.2]	[-29.5]	[-1.2]
Extended UI Duration (0/1)			
Month of Initial Expiration	0.306	0.279	-0.413 ***
	(0.623)	(0.489)	(0.110)
	[37.2]	[-13.7]	[-30.8]
On Extension	-0.640	-0.619	-0.431 ***
	(0.525)	(0.428)	(0.080)
	[-46.4]	[-37.7]	[-31.8]
Expires Next Month	-0.039	-1.040	0.098
	(0.557)	(0.725)	(0.095)
	[-3.9]	[-100.6]	[9]
Expires This Month	0.319	0.603	-0.169
	(0.543)	(0.436)	(0.130)
	[37.5]	[209.2]	[-14]
Expired Last Month	-1.307	0.544	-0.095
	(1.011)	(0.396)	(0.129)
	[-73.1]	[-58.4]	[-8]
Announced UI Extension (0/1)			
Before Expiration	0.559 *	-0.768	-0.299 ***
	(0.299)	(0.582)	(0.077)
	[75.9]	[-53.7]	[-23.2]
After Expiration	-0.075	-0.641	0.242
	(0.838)	(1.069)	(0.157)
	[-8]	[-100.2]	[23.1]
On UI After Previous Expiration (0/1)	0.326	-0.382	-0.048
	(0.630)	(0.677)	(0.140)
	[38.6]	[-66.2]	[-4.1]
ln(Previous Earnings)	0.112 ***	0.004	0.021 ***
	(0.036)	(0.024)	(0.006)
	[11]	[1.4]	[1.8]
ln(Spouse's Earnings)	-0.006	-0.018 *	-0.010 ***
	(0.010)	(0.009)	(0.002)
	[-0.5]	[-0.8]	[-0.9]
ln(UI Benefit)	-0.043	0.011	0.035 ***
	(0.065)	(0.050)	(0.012)
	[-4.4]	[3.5]	[3]
ln(SSDI Benefit)	-0.240 **	-0.316 ***	-0.002
	(0.105)	(0.092)	(0.022)
	[-23.7]	[-12]	[-0.1]
Unemployment Rate (Current)	0.028	-0.008	-0.157 ***
	(0.043)	(0.038)	(0.010)
	[3.4]	[-2]	[-13.6]
Unemployment Rate (At Job Loss)	-0.031	-0.019	0.128 ***
	(0.043)	(0.038)	(0.010)
	[-3.6]	[0.9]	[11.1]
Work Limited (0/1)	1.718 ***	1.694 ***	-0.277 ***
	(0.081)	(0.075)	(0.023)
	[233.1]	[0]	[-23.2]
No Health Insurance Currently (0/1)	-0.239 **	0.247 ***	-0.301 ***
	(0.094)	(0.086)	(0.019)
	[-22.3]	[16.7]	[-25.7]
Sample Size	592,651		
Log-likelihood	-72,861		

Note: Standard errors in parentheses. Marginal effects (percent increase over the mean hazard to applying to SSDI or finding a job) in brackets. All specifications also include demographic variables and month-since-separation fixed effects.
*** - Significantly different from zero at the 99 percent confidence level ** - 95 percent confidence level * - 90 percent confidence level

Table 5. Estimated Effect of New, Ongoing, and Phased-Out Extensions on SSDI Application and Allowance Rates

	Application Rate	Allowance Rate
12 Months before Extension (0/1)	-0.026 ***	
	(0.005)	
12 Months before Extension, Lagged 4 months (0/1)		0.481
		(0.299)
First Months of Extension (0/1)	-0.026 ***	
	(0.008)	
First Months of Extension, Lagged 4 months (0/1)		1.053 **
		(0.409)
Ongoing Extension (0/1)	0.020 *	
	(0.010)	
Ongoing Extension, Lagged 4 months (0/1)		0.899 **
		(0.396)
Extension Phase-Out (0/1)	0.054 ***	
	(0.012)	
Extension Phase-Out, Lagged 4 months (0/1)		0.840 **
		(0.402)
State unemployment rate	0.027 ***	
	(0.005)	
State unemployment rate 6 months ago		-0.403 **
		(0.165)
Proportion at maximum duration	0.005 *	
	(0.003)	
Proportion at max duration 4 mos ago		-0.715 ***
		(0.149)
Constant	0.215 ***	53.83 ***
	(0.045)	(1.637)
R^2	0.856	0.731
Sample size	6477	6477

Note: Regressions include linear and quadratic time trends and month and state fixed effects. Standard errors in parentheses.
*** - Significantly different from zero at the 99 percent confidence level ** - 95 percent confidence level * - 90 percent confidence level

Table 6. Expected Cost of 13- or 26-week UI Extensions

		Full Sample					
		Per-Person Cost ($)			Percent Change		
Extension Weeks		0 wks	13 wks	26 wks	0 to 13	0 to 26	13 to 26
Total Cost	Mean	2194	2463	2771	13.6	30.1	14.8
	SD	(1768.5)	(1895.3)	(2005.5)	(8.6)	(15.4)	(13.1)
	Median	{1811}	{2069}	{2385}	{13.8}	{29.5}	{13.5}
UI	Mean	1287	1529	1842	19.5	45.5	22.4
	SD	(758.9)	(898.3)	(1069.9)	(11.3)	(20.3)	(18.8)
	Median	{1252}	{1482}	{1778}	{19}	{43.3}	{19.6}
SSDI and Medicare	Mean	1012	933	929	3.4	3.1	0.0
	SD	(1062.7)	(1090.4)	(1084.8)	(5.7)	(5.8)	(7.6)
	Median	{466}	{482}	{480}	{4.7}	{4}	{-0.8}
Sample Size		33200					

		Work Limited					
		Per-Person Cost ($)			Percent Change		
Extension Weeks		0 wks	13 wks	26 wks	0 to 13	0 to 26	13 to 26
Total Cost	Mean	4392	4727	5042	8.5	17.3	8.2
	SD	(2845.9)	(3006.3)	(3107.5)	(6.8)	(11.5)	(9.8)
	Median	{3733}	{4053}	{4367}	{8.3}	{15.8}	{7.4}
UI	Mean	1244	1495	1824	21.3	50.0	24.6
	SD	(802.9)	(956.0)	(1142.0)	(12.2)	(21.8)	(21.1)
	Median	{1155}	{1382}	{1691}	{20.7}	{48}	{21.4}
SSDI and Medicare	Mean	3148	3232	3218	2.8	2.5	-0.1
	SD	(1788.4)	(1834.7)	(1823.7)	(5.1)	(5.2)	(6.8)
	Median	{2860}	{2951}	{2932}	{4}	{3.5}	{-0.6}
Sample Size		5577					

Table A1. Summary Statistics for Individual-Level Sample

	All	Work Limited	Not Work Limited	Under 50	50 & Over	Less than HS	HS or More
Apply for SSDI or SSI within 48 Months	0.07	0.23	0.04	0.06	0.11	0.13	0.06
	(0.26)	(0.42)	(0.20)	(0.24)	(0.32)	(0.34)	(0.24)
Weeks of UI	35.27	34.32	35.46	35.45	34.71	35.87	35.36
	(13.61)	(13.78)	(13.57)	(13.66)	(13.47)	(13.61)	(13.56)
Real Spouse's Earnings	14561	9945	15484	16107	10490	7023	16388
	(24970)	(19576)	(25816)	(25926)	(21737)	(14509)	(26438)
Real Earnings Before Job Loss	25187	20449	26143	23178	31253	17259	26702
	(29152)	(20928)	(30456)	(27054)	(34016)	(14492)	(31203)
Real UI Benefits	232.83	210.13	237.41	227.22	249.76	193.79	241.16
	(125.16)	(123.17)	(125.06)	(123.80)	(127.69)	(111.10)	(125.26)
Real SSDI Benefits	962.89	912.69	972.93	902.19	1122.72	786.47	999.47
	(395.22)	(368.89)	(399.52)	(360.77)	(435.34)	(349.19)	(396.92)
Unemployment Rate at Job Loss	5.75	5.87	5.72	5.78	5.64	5.97	5.71
	(1.56)	(1.58)	(1.55)	(1.57)	(1.52)	(1.55)	(1.55)
Current Unemployment Rate	5.63	5.70	5.62	5.69	5.51	5.86	5.59
	(1.55)	(1.59)	(1.54)	(1.55)	(1.52)	(1.55)	(1.54)
Disabled	0.17	1	0	0.15	0.22	0.23	0.16
	(0.37)	(0)	(0)	(0.36)	(0.41)	(0.42)	(0.37)
Currently Uninsured	0.42	0.48	0.40	0.49	0.24	0.62	0.36
	(0.49)	(0.50)	(0.49)	(0.50)	(0.43)	(0.48)	(0.48)
Age at Job Loss	40.78	43.63	40.21	35.54	56.63	42.05	40.77
	(11.22)	(11.00)	(11.18)	(7.12)	(4.35)	(11.54)	(11.16)
Black (0/1)	0.13	0.13	0.13	0.14	0.10	0.15	0.13
	(0.34)	(0.33)	(0.34)	(0.35)	(0.30)	(0.35)	(0.33)
Other Non-White (0/1)	0.05	0.04	0.05	0.05	0.04	0.05	0.05
	(0.21)	(0.20)	(0.21)	(0.22)	(0.19)	(0.21)	(0.21)
Male (0/1)	0.46	0.53	0.44	0.44	0.51	0.53	0.44
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)
High School Graduate Only (0/1)	0.32	0.35	0.31	0.32	0.32	0.00	0.39
	(0.47)	(0.48)	(0.46)	(0.47)	(0.47)	(0.00)	(0.49)
Some College (0/1)	0.30	0.33	0.29	0.30	0.28	0.00	0.37
	(0.46)	(0.47)	(0.45)	(0.46)	(0.45)	(0.00)	(0.48)
College Degree (0/1)	0.20	0.11	0.21	0.19	0.21	0.00	0.24
	(0.40)	(0.31)	(0.41)	(0.39)	(0.40)	(0.00)	(0.43)
Number of Kids	0.93	0.83	0.95	1.13	0.29	1.26	0.87
	(1.20)	(1.18)	(1.20)	(1.25)	(0.72)	(1.43)	(1.14)
Married (0/1)	0.61	0.57	0.62	0.58	0.70	0.61	0.62
	(0.49)	(0.49)	(0.49)	(0.49)	(0.46)	(0.49)	(0.49)
Foreign-Born (0/1)	0.10	0.08	0.10	0.10	0.09	0.25	0.08
	(0.30)	(0.28)	(0.30)	(0.30)	(0.28)	(0.43)	(0.27)
2nd Wealth Quintile (0/1)	0.20	0.21	0.20	0.23	0.11	0.27	0.19
	(0.40)	(0.41)	(0.40)	(0.42)	(0.32)	(0.44)	(0.40)
3rd Wealth Quintile (0/1)	0.19	0.18	0.19	0.19	0.17	0.19	0.19
	(0.39)	(0.39)	(0.39)	(0.40)	(0.38)	(0.39)	(0.39)
4th Wealth Quintile (0/1)	0.17	0.16	0.17	0.15	0.25	0.12	0.18
	(0.38)	(0.37)	(0.38)	(0.35)	(0.43)	(0.33)	(0.39)
5th Wealth Quintile (0/1)	0.16	0.13	0.17	0.11	0.32	0.05	0.18
	(0.37)	(0.33)	(0.37)	(0.31)	(0.47)	(0.23)	(0.39)
Wealth N/A (0/1)	0.05	0.05	0.05	0.06	0.04	0.04	0.04
	(0.22)	(0.21)	(0.22)	(0.23)	(0.20)	(0.20)	(0.18)
Unique individuals	28,601	4,775	23,826	21,341	7,260	3,813	23,270
Person-spells	33,200	5,577	27,623	24,942	8,258	4,635	26,934
Person-years	79,928	13,326	66,602	57,929	21,999	11,582	63,620
Person-months	625,851	104,570	521,281	443,241	182,610	91,281	494,462

Note: Standard deviations in parentheses.

Table A2. Cost of Medicare per Disabled Enrollee

Year	Disabled Enrollees (Millions)	Disabled Medicare Program Payments ($ Thousands)	Cost per Disabled Enrollee
1990	3,252	11,799	3,628.23
1991	3,477	12,828	3,689.65
1992	3,702	14,469	3,908.96
1993	3,926	15,894	4,048.14
1994	4,151	18,835	4,537.46
1995	4,409	21,029	4,769.56
1996	4,654	22,577	4,851.10
1997	4,829	23,768	4,921.93
1998	5,041	23,746	4,710.57
1999	5,219	24,262	4,648.78
2000	5,371	25,773	4,798.55
2001	5,567	29,680	5,331.42
2002	5,805	33,108	5,703.36
2003	6,077	37,095	6,104.16
2004	6,401	42,085	6,574.75
2005	6,723	46,550	6,923.99
2006	7,022	48,204	6,864.66
2007	7,297	50,697	6,947.44
2008	7,516	54,018	7,187.25
2009	7,755	59,462	7,667.30

Source: CMS Medicare and Medicaid Statistical Supplement

Table A3. Multinomial Logit Regression Results for SSDI Application or Job-Finding, by Age at Job Separation and Education

	Under 50		50 and Over		Less than HS		HS Diploma or More	
	Apply to SSDI	Find Job	Apply to SSDI	Find Job	Apply to SSDI	Find Job	Apply to SSDI	Find Job
On Normal UI (0/1)	0.479 **	-0.149 ***	0.105	-0.078	0.174	0.037	0.243	-0.125 ***
	(0.203)	(0.045)	(0.233)	(0.083)	(0.319)	(0.101)	(0.189)	(0.045)
	[53]	[-13]	[10.7]	[-7.3]	[17.5]	[3.2]	[25.3]	[-10.9]
Normal UI Duration (0/1)								
Expires Next Month	0.215	-0.115 **	-0.142	-0.581 ***	0.044	-0.299 ***	0.020	-0.112 **
	(0.243)	(0.050)	(0.276)	(0.099)	(0.373)	(0.115)	(0.222)	(0.051)
	[24.2]	[-9.5]	[-11.4]	[-43.9]	[5.5]	[-24.2]	[2.5]	[-9.4]
Expires This Month	0.567 **	-0.116 **	0.271	-0.152 *	0.474	-0.012	0.246	-0.085 *
	(0.220)	(0.051)	(0.241)	(0.092)	(0.325)	(0.112)	(0.209)	(0.051)
	[74.5]	[-9.8]	[30.9]	[-13.5]	[58.3]	[-1.4]	[27.8]	[-7.2]
Expired Last Month	0.068	-0.055	0.308	0.023	0.367	0.110	0.014	-0.040
	(0.250)	(0.052)	(0.242)	(0.091)	(0.337)	(0.114)	(0.220)	(0.052)
	[7.3]	[-4.7]	[34.8]	[1.9]	[42.4]	[9.9]	[1.6]	[-3.4]
Extended UI Duration (0/1)								
Month of Initial Expiration	0.490	-0.406 ***	0.057	-0.568 **	-0.539	-0.539 *	0.410	-0.366 ***
	(0.490)	(0.120)	(0.608)	(0.267)	(1.042)	(0.285)	(0.420)	(0.122)
	[64.9]	[-30.2]	[7.6]	[-41.5]	[-40.4]	[-38.8]	[52]	[-27.8]
On Extension	-0.553	-0.431 ***	-0.669	-0.388 **	-0.909	-0.766 ***	-0.553	-0.382 ***
	(0.429)	(0.088)	(0.523)	(0.190)	(0.740)	(0.229)	(0.373)	(0.087)
	[-41.4]	[-31.7]	[-48]	[-30.2]	[-58.9]	[-50.8]	[-41.5]	[-28.6]
Expires Next Month	-0.688	0.095	-0.224	0.156	0.083	0.327	-0.884	0.102
	(0.607)	(0.107)	(0.614)	(0.212)	(0.659)	(0.213)	(0.602)	(0.109)
	[-50]	[8.5]	[-20.4]	[15.5]	[6.9]	[32.8]	[-58.9]	[9.3]
Expires This Month	0.541	-0.126	0.400	-0.312	-0.287	-0.616 *	0.473	-0.099
	(0.431)	(0.142)	(0.574)	(0.323)	(0.805)	(0.350)	(0.425)	(0.144)
	[71.4]	[-10.5]	[49.6]	[-25.5]	[-23.3]	[-43.1]	[60]	[-8.4]
Expired Last Month	-0.450	-0.068	0.516	-0.243	0.548	-0.054	-0.518	-0.150
	(0.590)	(0.143)	(0.467)	(0.299)	(0.530)	(0.291)	(0.589)	(0.151)
	[-35.9]	[-5.6]	[67.1]	[-20.6]	[71.5]	[-5.1]	[-39.8]	[-12.2]
Announced UI Extension (0/1)								
Before Expiration	0.249	-0.272 ***	-0.043	-0.532 ***	-1.250	-0.338	0.387	-0.321 ***
	(0.342)	(0.084)	(0.419)	(0.196)	(1.007)	(0.209)	(0.276)	(0.085)
	[29.5]	[-21.3]	[-2.5]	[-39.5]	[-71.2]	[-26.1]	[48.3]	[-24.8]
After Expiration	-0.205	0.221	-0.434	0.391	-0.318	0.068	-0.299	0.255
	(0.801)	(0.172)	(1.110)	(0.380)	(1.185)	(0.372)	(0.785)	(0.182)
	[-19.4]	[20.6]	[-36.1]	[42.9]	[-27.2]	[6.4]	[-26.7]	[24.3]
On UI After Previous Expiration (0/1)	0.163	0.009	-0.253	-0.407	0.336	0.187	0.076	-0.105
	(0.585)	(0.153)	(0.722)	(0.358)	(0.799)	(0.319)	(0.568)	(0.162)
	[17.5]	[0.7]	[-21.1]	[-31.6]	[38.1]	[17.6]	[8.3]	[-8.8]
ln(Previous Earnings)	0.022	0.027 ***	0.076 **	-0.008	0.046	0.008	0.035	0.025 ***
	(0.024)	(0.006)	(0.035)	(0.013)	(0.042)	(0.016)	(0.025)	(0.007)
	[2.1]	[2.3]	[7.5]	[-0.8]	[4.5]	[0.7]	[3.3]	[2.2]
ln(Spouse's Earnings)	-0.017 *	-0.015 ***	-0.008	0.005	-0.008	-0.024 ***	-0.012	-0.009 ***
	(0.009)	(0.002)	(0.011)	(0.004)	(0.015)	(0.006)	(0.008)	(0.002)
	[-1.6]	[-1.3]	[-0.8]	[0.4]	[-0.7]	[-2.2]	[-1.1]	[-0.7]
ln(UI Benefit)	-0.047	0.037 ***	0.044	0.011	-0.048	0.014	0.047	0.024
	(0.048)	(0.013)	(0.071)	(0.028)	(0.086)	(0.033)	(0.056)	(0.015)
	[-4.8]	[3.2]	[4.3]	[1]	[-4.8]	[1.3]	[4.6]	[2]
ln(SSDI Benefit)	-0.286 ***	0.055 **	-0.227 **	-0.111 **	-0.304 **	0.052	-0.272 ***	-0.003
	(0.090)	(0.026)	(0.110)	(0.047)	(0.133)	(0.056)	(0.085)	(0.025)
	[-28.6]	[4.8]	[-22]	[-10.1]	[-30.2]	[4.8]	[-26.9]	[-0.2]
Unemployment Rate (Current)	-0.009	-0.168 ***	0.022	-0.129 ***	-0.053	-0.186 ***	0.024	-0.146 ***
	(0.037)	(0.012)	(0.045)	(0.023)	(0.057)	(0.028)	(0.034)	(0.011)
	[-0.1]	[-14.4]	[2.6]	[-11.9]	[-4.5]	[-16.5]	[3.1]	[-12.7]
Unemployment Rate (At Job Loss)	-0.016	0.138 ***	-0.032	0.096 ***	0.066	0.134 ***	-0.044	0.122 ***
	(0.036)	(0.012)	(0.045)	(0.023)	(0.057)	(0.028)	(0.034)	(0.011)
	[-2.3]	[11.8]	[-3.5]	[8.9]	[5.9]	[11.9]	[-4.9]	[10.5]
Work Limited (0/1)	1.816 ***	-0.275 ***						
	(0.073)	(0.026)						
	[259.1]	[-22.6]						
No Health Insurance Currently (0/1)	0.034	-0.350 ***	0.044	-0.087 *	-0.075	-0.370 ***	0.071	-0.269 ***
	(0.084)	(0.021)	(0.096)	(0.045)	(0.127)	(0.050)	(0.074)	(0.021)
	[5.1]	[-29.9]	[4.8]	[-7.9]	[-5.9]	[-34.4]	[8.3]	[-22.7]
Sample Size	418,299		174,352		86,646		467,528	
Log-likelihood	-54,800		-17,742		-10,822		-58,306	

Note: Standard errors in parentheses. Marginal effects (percent increase over the mean hazard to applying to SSDI or finding a job) in brackets. All specifications also include demographic variables and month-since-separation fixed effects.

*** - Significantly different from zero at the 99 percent confidence level ** - 95 percent confidence level * - 90 percent confidence level

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