# The Effects of Wealth and Unemployment Benefits on Search Behavior and Labor Market Transitions *

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May 2004

**Abstract**

This paper explores the affect of wealth and unemployment benefits on the probability job seekers transition to employment by estimating a simultaneous equations model using data from the 1984 SIPP. We allow changes in wealth and unemployment benefits to affect both search intensity and reservation wages. Our results are consistent with the predictions of search models where individuals are risk averse and imperfectly insured. Higher levels of wealth or benefits increase reservation wages and decrease search effort. Both effects decrease the probability of transition. However, the majority of this decrease is due to increased reservation wages lowering the probability that a job is accepted.

*The authors would like to acknowledge helpful input from seminar participants at the 2003 Econometric Society Summer Meetings in Evanston, the 2003 NBER Summer Meetings, the 2002 SED Summer Meeting in New York, the First Transatlantic SOLE/IZA Meetings 2002, Canadian Economic Association Meetings, the Missouri Economics Conference, the Midwest Economics Conference, the Stockholm School of Economics, the University of British Columbia, the University of Missouri and the University of Toronto. Joseph Harkness provided help with computer code. All errors and omissions are the sole responsibility of the authors.

# 1 Introduction

An increasing number of papers examine labor market outcomes using search models.[1] One branch of this literature endogenizes search intensity, while another focuses on models that investigate the impact of labor market policies and outside resources, such as unemployment insurance, on reservation wages and job market outcomes.[2] Although many of these models assume that individuals are risk neutral, this may not be the case. If individuals are in fact risk averse, models such as those presented in Danforth(1979), Browning et. al.(2002), Rendon(2004) and Lentz and Tranaes (2003) demonstrate that wealth may affect an individual's reservation wage and search intensity. However, little empirical work has focused on quantifying the affect of wealth on reservations wages, search intensity, and the probability of transitioning to a job and determining if the data supports the assumption of risk aversion.

In this paper, we attempt to fill this gap and extend the literature on the affects of unemployment insurance by exploring four issues. First, we examine how outside resources such as wealth, other family income and unemployment insurance benefits affect a worker's search intensity and unemployment spell duration. Second, we examine whether the observed relationship between reservation wages and wealth is consistent with the assumption that individuals are risk averse. Third, we examine whether higher levels of outside resources (such as wealth or UI benefits) increase spell duration primarily through decreasing search intensity or primarily though the increasing reservation wages. Finally, we examine the affect of search requirements imposed on recipients of unemployment insurance, Food Stamps or

[1] See Mortenson and Pissarides' (1999) handbook chapter, Ljungqvist and Sargent (1998), Fredriksson and Holmlund(2001) and Lentz and Tranaes (2003) for examples.

[2] See Mortensen (1986) and Mortensen and Pissarides (1999)

AFDC on the number of employers contacted.

Although a small number of papers empirically estimate the relationship between search intensity and unemployment benefits, none focus on the effects of savings on search intensity.[3] This omission is primarily due to the lack of suitable data. However, the 1984 Survey of Income and Program Participation includes information on self-reported reservation wages and job search intensity for unemployed individuals, as well as data on wealth and transitions into jobs. This allows us to estimate a simultaneous equation model of wealth, search intensity, reservation wages and unemployment duration. Our results yield insights into the effect of wealth and unemployment insurance benefits on search intensity and on the probability that unemployed workers transition to a job. In addition, our findings offer evidence as to how reasonable it is to assume that search effort is exogenous or that workers are risk neutral.

Consistent with the models presented in Danforth (1979) and Lentz and Tranaes (2003), we find evidence that increases in wealth raise the reservation wage and decrease search intensity. Both effects are consistent with the assumption that workers are risk averse and imply that higher wealth increases the duration of non-employment spells. However, our results suggest that the majority of the increase in duration is caused by the affect of wealth on the reservation wage. The same result holds for increases in unemployment insurance. Our estimates indicate that individuals who receive higher unemployment insurance benefits have higher reservation wages, and thus are less likely to accept low paying jobs. In contrast, we find that search effort is not significantly decreased by an increase in the unemployment

[3] See Barron and Gilley (1979), Barron and Mellow (1979) and Devine and Kiefer (1991) for surveys of the evidence.

insurance benefit level. This is likely tied to the fact that in many states, individuals must meet job search requirements to maintain eligibility for unemployment insurance benefits.[4]

Our study uses a sample from the 1984 SIPP. This data set has a unique mixture of information not available in the more widely used NLSY or PSID.[5] Individuals who report that they are currently looking for work or may look for work in the near future are asked questions about their reservation wage, their methods of job search, and how many employers they have contacted. In addition, the SIPP provides detailed information about wealth, family income, and the duration of their current unemployment spell. Individuals are then followed for 16 months after this information is collected which allows us to observe any transition out of unemployment and the wage received at the new place of employment. We augment this data with information on search requirements for unemployment insurance recipients.[6] This information lets us examine how the receipt of unemployment benefit affects search intensity in addition to exploring the relationship between the benefits levels and search effort.

Along some dimensions, this paper is similar to recent studies by Bloemen and Stancanelli (2001), and Alexopoulos and Gladden (2003) that explore the relationship between self-reported reservation wages and wealth.[7] Both of these papers use a simultaneous equation model and find evidence that wealth has a significant positive impact on reservation wages.

[4] Similar findings emerge when we examine the affect of AFDC payments and Food Stamps on search effort.

[5] The National Longitudinal Survey of Youth and the Panel Study of Income Dynamics.

[6] Search requirements for UI recipients vary by state. We collected this information from state unemployment offices, as described below.

[7] Algan et al (2003) also examine the relationship between wealth and self-reported reservation wages for a French panel. However, their method differs from those in this paper.

However, in contrast to the other papers, we allow search intensity to be endogenously determined. This permits us to focus on the affect of wealth and unemployment benefits on search intensity and the impact of changes in search intensity on unemployment duration. In addition, our framework lets us decompose the affect of increased wealth and unemployment benefits on the probability of transition into the portion due to reduced search intensity, which reduces the probability of an offer, and the portion due to increased reservation wages, which reduces the probability that offer is accepted.[8] .

We organize the paper as follows. Section 2 presents the empirical model used in the estimation procedure. Section 3 discusses our data. Section 4 presents the results of the estimation, and Section 5 concludes.

# 2 The Empirical Model

For tractability, search models generally allow either search intensity and offer arrival rates to be endogenously determined, or they focus on the job acceptance decision and allow the reservation wage to be affected by factors such as unemployment insurance, firing costs, and the probability of receiving an offer when searching. When workers are not risk neutral, papers such as Danforth (1979), Rendon (2004) and Shimer and Werning (2003) demonstrate that the reservation wage depends on the level of wealth. Moreover, Lentz and Tranaes (2003) show that search intensity can vary with wealth when workers are risk averse and cannot perfectly insure themselves against income risk. Unfortunately, analytic solutions for search models with risk averse agents are not generally available, especially for the case where both

[8] Barron and Mellow (1979), Barron and Gilley (1979), and Keeley and Robins (1985) also use U.S. data to examine the relationship between search intensity and unemployment income. For a survey of the existing studies using direct evidence of search intensity through 1990, see Devine and Kiefer (1991).

the reservation wage and search intensity can vary with wealth.[9] As a result, we focus on estimating a reduced form of a model that allows both reservation wages and search intensity to be affected by wealth and unemployment insurance.

In our model, jobs are characterized in terms of the wages they offer workers. Job-seekers face a lognormal wage offer distribution:

$$\ln w_{it} = \delta' k_{it} + e_{it} \text{ where } e_{it} \sim N(0, \sigma_e^2) \tag{1}$$

where $i$ indexes individuals and $k_{it}$ are the individual's characteristics at date $t$. The parameters of this wage-offer distribution, $\delta$, are estimated using data on employed workers and a Heckman two step to correct for selection.[10] Once the parameters are determined, the estimates are used to help determine the probability an individual will accept an offer given the level of his reservation wage.

We assume that the log of the reservation wage, $R = \ln(w^R)$, is a function of the individual's wealth level, $A_{it}$, and other characteristics, $X_{it}$:

$$R_{it} = f(A_{it}) + \xi' X_{it} + \varepsilon_{it} \text{ where } \varepsilon_{it} \sim N(0, \sigma_\varepsilon^2). \tag{2}$$

For the purpose of our investigation we allow $f(A_{it})$ to be a quadratic function of wealth to allow for a non-linear relationship between $R_{it}$ and $A_{it}$.[11]

Consistent with standard models, an individual's wealth, $A_{it}$, is determined by lagged

[9] See for example Costain (1999).

[10] The results of this regression are reported in Appendix A.

[11] As in Bloemen and Stancanelli (2001) and Alexopoulos and Gladden (2003), this reservation wage equation can be interpreted as an approximation to the solution of a structural search model where the error term may represent measurement error, approximation error or randomness in preferences.

income and demographic information:

$$A_{it} = \Omega' H_{i,t-1} + \upsilon_{i,t-1} \text{ where } \upsilon_{i,t-1} \sim N(0, \sigma_\upsilon^2) \tag{3}$$

where $H_{i,t-1}$ includes the individual's characteristics as of period $t-1$. The period $t-1$ values are used because current wealth, $A_{it}$, is determined by lagged income and other lagged variables which affect the household savings decisions.[12]

Finally, we allow wealth to affect the arrival rate. Wealth and the arrival rate may be positively correlated due to unobserved worker heterogeneity or wealth's influence on search intensity. Workers who are higher quality conditional on the observables may have both higher wealth and a higher arrival rate, either because they search harder or because of factors observable to employers but not to the econometrician. Alternatively, wealthy workers may be able to pay higher search costs, increasing their arrival rate. On the other hand, higher wealth might reduce the marginal benefit of income and thus reduce search intensity, causing a negative correlation between wealth and the arrival rate. Given the potential correlation between wealth, search intensity and arrival rates, we assume that an individual's search intensity is determined by the equation:

$$E_{it} = g(A_{it}) + \xi' z + \tau_{it} \text{ where } \tau_{it} \sim N(0, \sigma_\tau^2).$$

Again, the function $g(A_{it})$ is assumed to be a quadratic function in wealth to allow for a non-linear relationship. The measure of search intensity is censored below at zero. We take this into account by using a Tobit estimation procedure in single equation models of search intensity, and by correcting for censoring in the likelihood function for the simultaneous equation model.

[12] E.g., previous marital status, number of children in the household, previous spells of unemployment, etc.

In a standard search model, the probability of a transition to employment depends on both the probability that an individual will receive a job offer and the probability that the offer will be accepted. We assume that the probability of receiving a job offer during a period is:

$$\Pr(job\ offer|Z_{it}) = \lambda_{it} = 1 - \exp(-\exp(\gamma' Z_{it})) \tag{4}$$

where $\gamma$ is a parameter vector and $Z_{it}$ includes characteristics such as the elapsed unemployment duration and our measure of the individual's search effort (the number of contacts made last month). Using this functional form, the larger the value of $\gamma' Z_{it}$, the higher the probability that the individual will receive an offer. We also assume joint normality of the error terms, $e, \varepsilon$, $\tau$ and $\upsilon$ and define $\rho_{e\varepsilon}$ as the correlation between the errors in the offer and reservation wage equations ($e_{it}$ and $\varepsilon_{it}$), $\rho_{e\upsilon}$ as the correlation between the errors in the offer and wealth equations ($e_{it}$ and $\upsilon_{i,t-1}$) and $\rho_{\varepsilon\upsilon}$ as the correlation between the errors in the wealth and reservation wage equations ($\upsilon_{i,t-1}$ and $\varepsilon_{it}$). We set the cross-correlations of $\rho_{\tau\upsilon}, \rho_{\tau\varepsilon}$ and $\rho_{\tau e}$ to zero to make our analysis tractable.[13]

An individual accepts a job offer if the wage offered exceeds his reservation wage. The acceptance probability conditional on wealth and the observed reservation wage can be written as:

$$\Pr(\ln w_{it} > R_{it} \mid R_{it}, A_{it}) = \left(1 - \Phi\left(\frac{R_{it} - k'_{it}\delta - \psi_{e|\varepsilon,\upsilon,\tau}}{\sigma_{e|\varepsilon,\upsilon.\tau}}\right)\right) \tag{5}$$

where $\Phi(\cdot)$ is the standard normal distribution function, $\psi_{e|\varepsilon,\upsilon,\tau}$ is the part of the conditional mean that arises due to the possible nonzero correlation between the errors of the equations

[13] To explore how problematic these assumptions are, we estimated single equation models of the reservation wage equation and the wealth equation, and tested whether the errors from these regressions were significant predictors of the individual's search intensity. These errors were not significant predictors of the number of employers contacted.

and $\sigma_{e|\varepsilon,v.\tau}$ is the conditional variance of the wage error term.[14] It follows that the probability of observing a transition from unemployment to employment is the probability of a job offer multiplied by the probability that the job offer is accepted:

$$\Pr(\text{Transition}_i = 1) = (1 - \exp(-\exp(Z'_{it}\gamma))) \left(1 - \Phi\left(\frac{R_{it} - k'_{it}\delta - \psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v.\tau}}\right)\right) \qquad (6)$$

For each individual who makes a transition, the likelihood contribution is obtained by multiplying the transition probability by the joint density of wealth and reservation wages. For individuals who do not make the transition, the likelihood contribution is obtained by multiplying 1-Pr(Transition) by the joint density of wealth and reservation wages.

Wealth enters our model in three places: as one of the four simultaneously determined endogenous variables, as a determinant of the individual's search effort and as a determinant of the individual's reservation wage. Therefore, wealth only affects the probability of a transition into employment indirectly, through the reservation wage, search intensity, or possible correlations between the error terms. Similarly, unemployment insurance affects the transition probability through its affect on search intensity and reservation wages.

# 3 The Data

We construct a sample from the 1984 Survey of Income and Program Participation (SIPP). The 1984 SIPP is survey of about 21,000 households representative of the United States population. These households were originally interviewed between October 1983 and January 1984, and were then re-interviewed every four months until late 1986. During each of the nine interviews, monthly information is collected on wages, earnings, labor market status,

[14] The formulas, along with the derivation of the likelihood function, are available in a technical appendix available from the authors upon request.

spouse's earnings, and income received from government programs. In addition, during the fifth interview, individuals who are looking for work are asked a series of questions about reservation wages and job search intensity. The SIPP also provides detailed information on wealth, assets, and past employment history. We combine the data from waves 2 through 9 with state level information on search requirements mandated for unemployment insurance eligibility, unemployment benefits, maximum unemployment insurance employer taxes, labor market conditions and cost of living.[15]

**The Selection of the Sample:** Since we are interested in job market transitions, we limit our sample to individuals who are likely to be available for work (individuals age 18-64 who are not enrolled in school) for whom we have information on reservation wages[16] and wealth levels.[17] Because wealth information is collected at the household level, we restrict our sample to household heads and wives.[18] Reservation wage and search intensity information is only collected for the individual interviewed in wave 5 (and not for their family members), and is only collected for individuals who are either unemployed or out of the labor force but likely to look for work in the next year (the OLF sample). This leaves us with a sample of 1412 heads and wives. After the date the reservation wage information is collected, individuals are followed for an additional 16 months (through 4 more interviews).

[15] Our analysis uses information from interviews 2 through 9 because changes in the questionnaire make the information from the first interview less reliable.

[16] We exclude individuals who report a reservation wage of less than $1 per hour.

[17] To check for robustness, we estimated models using only prime age workers (18-50). Our qualitative results do not change, although the sample size falls from 1412 to 1175 and the standard errors increase somewhat.

[18] We exclude single individuals still living with their parents since their household wealth information includes their parents' wealth. In earlier specifications including single non-heads we found no evidence that our measures of wealth influenced this group's reservation wages or transition probabilities.

This allows us to observe whether they accept a job during this time frame and the wage at the job if it is accepted.

**Descriptive Statistics:** Table 1 presents summary statistics for wealth, non-earned income, search intensity and reservation wages for the heads and wives in our sample. Since our sample includes both unemployed and out of labor force individuals, separate summary statistics are presented for these two groups.[19]

**Wealth and Income Data** Our measure of wealth uses information from the wave 4 questions on the household's assets and liabilities.[20] We define wealth as total net worth: total wealth minus total unsecured debt, where total wealth includes the household's home equity, net equity in vehicles, business equity, interest earning assets held in banking and other institutions, equity in stocks and mutual fund shares, equity in other real estate, total of mortgages held, money owed from sale of business, bonds, IRA and Keogh accounts.[21] This measure of wealth is chosen since it includes most of the major assets that a household would hold, and takes into account the total amount of the household's debt (secured and unsecured).[22]

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[19] See Alexopoulos and Gladden (2003) for a comparison of the unemployed and OLF individuals in the SIPP to the unemployed and OLF individuals in the representative sample from the 1984 Current Population Survey.

[20] McNeil and Lamas (1989), and Curtin, Juster and Morgan (1989) examine the 1984 SIPP wealth data in waves 4 and 7. They find that the wealth information is comparable to that in the PSID. The differences between the SIPP and the Survey of Consumer Finances (SCF) seem to be related to measures of equity in motor vehicles and businesses, and the fact that the SCF over samples the high income portion of the population. Since our sample eliminates a large part of the high income population, our wealth information should not differ significantly that in other surveys.

[21] This measure is very similar to the one used by Bloemen and Stancanelli (2001), which allows us to compare our results for the reservation wage to theirs.

[22] As a check for robustness, we have also estimated all models defining wealth as liquid net worth, which includes interest earning assets held in banking and other institutions, equity in stocks, bonds, and mutual

Table 1 presents summary statistics for wealth, unemployment insurance income and reservation wages for the heads and wives in the reservation wage sample. Compared to household heads, wives are younger, wealthier, have higher total family income and are more likely to be currently out of the labor force. Heads are much more likely to receive unemployment insurance, report working more hours at their previous job, and have an average reservation wage of $5.44, which is about one dollar higher than the average reservation wage for wives and approximately $2.10 higher than the legal minimum wage at the time ($3.35/hour).

Table 1 also reveals important differences between the unemployed sample and the OLF sample. Individuals in the OLF sample are more likely to be female, more likely to be single, and more likely to be black than the unemployed sample. About 74% of the unemployed sample reports having held a job in the previous 16 months, compared with about 41% of the OLF sample. Among household heads, the unemployed report lower net worth, but a higher wage at their previous job and a higher reservation wage, than OLF sample.

Heads - especially female heads - are much more likely to receive income from AFDC and Food Stamps than are wives. Among out of the labor force heads, approximately 35% receive AFDC and 50% receive Food Stamps, while less than 5% of OLF wives receive income from either of these programs. Unemployed workers are less likely to participate in these programs, but again heads are more likely to participate than wives. We find that 16% of unemployed heads participate in AFDC and 28% in Food Stamps, compared to 3.7% of unemployed wives who receive AFDC and 7.9% who receive Food Stamps.[23]

fund shares minus unsecured debt. These results are not reported in the paper since the substance of our results using this measure of wealth is the same as the results presented here.

[23] Again, female heads are much more likely than male heads to receive AFDC and Food Stamps: 47% of

Table 2 reports the quantiles of the distribution for net worth. The top panel reports the quantiles for the representative panel from the 1984 SIPP, while the bottom panel reports wealth for our sample of job seekers. Individuals looking for jobs have much lower levels of wealth than the representative sample: in the representative sample, median total net worth is about $34,800, compared with a median of $9,500 in the sample of job seekers. Both heads and wives in our sample have lower total net worth than their counterparts in the representative sample. One striking fact is that only about 10% of our sample reports zero total net worth. This reduces concern about measurement error due to people mis-reporting zero wealth.

**Search Intensity Data:** During the wave 5 interview, each job seeker is asked if they have directly contacted employers, and if so how many they have contacted in the past month. In addition, they are asked if they have searched for a job by (i) contacting the unemployment office, (ii) using a private employment agency, (iii) asking friends or relatives, or (iv) doing anything else. Table 3 presents summary statistics for these measures of search intensity. Results are presented separately for heads and wives, and for men and women.

Over 90% of unemployed individuals in all sub-groups of our sample report directly contacting employers as a method of job search. However, male heads report contacting more employers in the past month than female heads or wives: on average, male heads report contacting 9 employers in the past month, while female heads report contacting 6.5 employers and wives report contacting about 5 employers. Slightly more than 9% of the sample reports searching for a job using a method other than directly contacting employers.

unemployed female heads receive AFDC and 68% receive Food Stamps.

We find some indication that job seekers move to other methods only after they do not find a job using direct employer contact. Individuals who report using two or more methods of search have spell duration that is 20 weeks longer, on average, than individuals who are using only one search method, or who are searching by directly contacting employers. Since only 60 individuals report using search methods other than direct employer contact, the results below measure search intensity as the number of direct employer contacts.

**Reservation Wage Data:** Our measure of the reservation wage is based on the response to the question: What is the lowest wage or salary that you would accept for a job? Survey respondents are asked to report the minimum wage they would accept per hour, per week, per month, and per year. Most respondents provide an hourly wage. For the other respondents, the answer is converted to an hourly wage assuming that individuals work 40 hours per week, 176 hours per month, and 2000 hours per year. Table 4 compares self-reported hourly reservation wages with the hourly wage received before the non-employment spell, and with the hourly wage at the next job accepted.[24]

We first compare the reservation wage with the wage received at an individual's most recent job. The previous wage is observed for about 52% of our sample. This comparison provides evidence that individuals are not simply reporting their wage at their most recent job as their reservation wage. Previous wages are on average about $1 higher than reservation wages. This difference is larger for the groups most attached to the labor force: heads and the unemployed sample. About 57% of individuals report a reservation wage that is lower

[24] Ryscavage (1988) compares the properties of the self reported reservation wages in the SIPP with the self-reported reservation wages in the 1976 CPS. He finds that the two datasets are similar in terms of the percent of individuals who report reservation wages below the federal minimum wage and the fraction of individuals who report reservation wages above their previous wage.

than their most recent wage, and 75% of individuals report a reservation wage no more than ten cents higher than their most recent wage. In addition, columns (6)-(10) indicate that at all levels of the reservation wage, the previous wage is on average higher than the reservation wage.

We next compare the self reported reservation wage to the wage accepted at the next job. We observe the accepted wage for over 45% of the sample.[25] For about 72% of these individuals, the accepted wage is in fact higher than the reservation wage. Another 10% of these individuals accept a wage no more than ten cents lower than their reservation wage. On average, the accepted wage is two dollars higher than the reservation wage. Once again, these results are consistent across demographic groups and at all levels of the reservation wage.

**Unemployment Insurance Search Requirement Data:** In order to identify the search intensity equation, we need variables that affect search intensity but not wealth, reservation wages, or the probability that an individual will transition to a job. Since search requirements for individuals who receive UI benefits vary significantly between states, these requirements provide identifying variables. We create three variables to capture between state variation in UI eligibility requirements in 1985: (1) the number of employer contacts the state required the individual to make in the previous month to maintain UI eligibility; (2) an indicator that takes the value of one if state search requirements were not specified by law; and (3) an indicator that takes the value of one if there was variation in the number of weekly contacts required by the state, multiplied by the number of weeks in the past month that

[25] The value of the next wage is not recorded for all individuals in our sample who make the transition into employment.

the individual receive UI benefits.

For a small subset of states, information on 1985 search requirements is recorded in Corson et al (1988). For the other states, we contacted the state government department that was responsible for running the unemployment insurance program. Each state agency was asked three questions: (1) What was the usual number of weekly contacts required for individuals who were on unemployment insurance in 1985? (2) Was the number of required contacts specified by law? and (3) Was their variation in the required number of weekly contacts?[26]

To calculate number of employer contacts required for UI eligibility in the past month, we multiply the number of weekly contacts required by the state by the number of weeks in the past month that the individual received UI .

The rules for search requirements were given by law in some states. In other states, local unemployment offices had more flexibility in setting job search requirements. To capture the affect of this type of discretion, we define a dummy variable which takes the value of one if the search requirements were not given by legislation.

Finally, in many states the number of required weekly contacts could vary significantly across individuals. Some states reported allowing UI offices to increase the number of required contacts for individuals whose skills were in high demand, decrease the number of required contacts for individuals in areas where the unemployment rate was especially high, or require fewer contacts for individuals who were on lay-off or mothers with young children. To account for this, we define an indicator that takes the value of one for individuals who

[26] We are able to obtain information for all states except Indiana, representing about 4.5% of our sample. Of this group, only 10 people were on UI benefits in Wave 5. For this 0.7% of our sample we used information on Indiana's more current search requirements .

live in states that report variation in the required number of contacts. We then multiply this variable by the number of weeks in the past month that the individual received UI benefits. The resulting variable captures the degree to which the actual number of contacts required for a given individual may have varied from the number the state usually required.

Table 5 reports the means for the variables discussed above. The top panel of Table 5 presents results for the portion of the unemployed sample receiving UI benefits - the portion of the sample for which we would expect state search requirements to affect search behavior. For comparison, the bottom panel presents results for unemployed not receiving UI Separate results are presented for the full sample and for sub-groups of states with and without contacts required by law and with and without variation in required contacts.[27]

As expected, individuals seem to search most when they reside in states where the requirements are the most stringent: states where the number of required contacts is specified by law and there is no variation in the requirements. The average monthly number of contacts for UI recipients in these states is 9.9, compared with an average of 6.5 contacts for the unemployed not on UI in the same states, and an average of 8.7 contacts for all UI recipients.

Also consistent with our expectations, UI recipients make fewer contacts in states where search requirements are not specified by law and UI offices do not have the ability to vary the requirements. In states where search requirements are set by law, UI offices seem to use their discretion to reduce the number of contacts required - the typical UI recipient in such a state

[27] The percent of people with fewer contacts than required for those who received U.I. during the last month should be viewed as the upper bound of those not complying since some individuals may have exhausted their benefits during the month, while others just entering the system may not have been on benefits for the first week or two of their unemployment spell.

was required to make only 5.2 employer contacts per month, compared with a requirement of 8.9 contacts in states where UI offices were not allowed to vary state requirements. In response, the typical UI recipient contacted almost 2 fewer employers each month. However, in states where the law does not specify the number of contacts, UI offices used their discretion to impose fairly strict requirements. UI recipients in these states were required to contact 8 employers per month on average.

# 4 Empirical Results

In this section, we discuss our empirical results. First we present single equation estimates of the search intensity equation. Next, we estimate the simultaneous equation model of reservation wages, search intensity, wealth and transitions to employment. Finally, we explore the relationship between search intensity, reservation wages, and the probability of transitioning to a job.

## 4.1 Single Equation Determinants of Search Intensity:

Models such as that in Lentz and Tranaes (2003) suggest that after controlling for demographic variables and education, wealth and family income may be negatively correlated with search intensity. To examine this hypothesis, we estimate a Tobit model of the number of employers contacted. Explanatory variables include wealth, wealth squared, the amount of the monthly UI payment, other monthly family income, a quadratic in the number of weeks since the individual last worked interacted with a dummy indicating if an individual

currently receives UI [28] , a quadratic in experience[29] , and indicators which take the value of one if an individual currently receives unemployment insurance, is looking for a part time job, and expects to be recalled. We also control for standard demographic variables: education, gender, marital status, head, and black and kids interacted with gender.[30] A finding that wealth is negatively correlated with search intensity may indicate that individuals are risk averse and do not have access to perfect income insurance. The results are reported in Table 6.[31]

**Wealth, Income from Unemployment Insurance and Other Family Members:** Our results indicate that the number of employers contacted decreases as wealth, although the effect is significant only in the full-sample estimates.[32] ,[33] A $10,000 increase in wealth is associated with a decrease in the number of employers contacted each month of 0.06 for wives and of 0.21 for heads.[34]

As expected, individuals who receive unemployment insurance contact more employers,

[28] To examine if the inclusion of weeks not worked bias our estimates, we estimated a version of the model excluding these variables. Including these variables does not significantly alter our findings.

[29] Experience is measured as age-education-6.

[30] Questions about search were only asked of the unemployed sample. We estimated models using only the unemployed sample and models using liquid net worth instead of total net worth. The substance did not change. We present results assuming individuals who are out of the labor force do not search and using total net worth.

[31] We also estimated a model including the state unemployment rate, the state average wage and the state CPI. None of these variables are statistically significant predictors of the number of contacts made when the state search requirement variables are included.

[32] Across specifications, the effect of wealth on search intensity is consistently negative and sometimes significant at the 10% level. The point estimate of the effect is larger for heads than for wives.

[33] To examine if our results are caused by unobserved heterogeneity, we use the procedure suggested by Newey(1987) to estimate the search intensity equation using historical state and federal marginal tax rates as instruments for wealth. We find that the relationship between search intensity and wealth is small and insignificant.

[34] The results from a Poisson count model are similar.

since they are often required to do this to maintain their UI eligibility.[35] However, the amount of the monthly payment has little effect on the number of employers contacted, although the coefficient is negative for heads. The number of employers contacted by wives actually increases as the UI payment increases, possibly because higher UI benefits indicate higher levels of attachment to the labor force. Finally, the number of employers contacted decreases as other family income increases: a $1000 increase in other family income reduces the number of employers contacted by approximately 1.5 per month for heads and by about 0.6 per month for wives.

**Search Requirements:** Several variables are included to measure variation in search requirements across individuals. We include the three variables discussed above to capture state variation in requirements for unemployment insurance eligibility: the number of employer contacts an individual was required to make in the previous month to maintain UI eligibility, an indicator that takes the value of one if the number of required contacts for UI eligibility is not determined by law, and a variable that indicates the number of weeks in the past month that there could have been variation in the number of required contacts.[36]

In many states, AFDC and Food Stamp recipients are required to engage in job search activity.[37] To capture the affect of these search requirements, we include an indicator which takes the value of one if an individual received income from either of these programs in the

[35] The effect of receiving unemployment insurance is insignificant when the variables with state rules for UI eligibility are included in the model, but is positive and significant if the state rule variables are excluded from the model.

[36] In alternative specifications, we included an indicator that takes the value of one if a state required individuals to actively seek work to maintain U.I. eligibility. This variable is not a significant predictor of the number of contacts once the other search requirement variables are included in the regression.

[37] See Keeley and Robins (1985) for a study of how search requirements associated with AFCD, Food Stamps and WIN programs affected search behavior.

previous month.

State search requirements have the expected affect on the number of employers contacted by wives: living in a state where search requirements are not specified by law reduces the number of employers contacted by a wife on UI by about 4 per month. However, living in a state where search requirements are not specified by law has no statistically significant effect on the number of employers contacted by heads. For every additional required employer contact, wives contact about 0.4 additional employers, while there is no statistically significant effect for heads.

The variable that does affect search intensity for heads is whether or not the state reports any variation in the search requirements for workers on UI . Living in a state with variability in search requirements reduces the number of employers contacted by a heads on UI by about 0.8 per week. Thus, a typical head who was on UI all four weeks of a given month would contact 3.2 fewer employers that month if he is living in a state with variability in search requirements.

Finally, we find that male heads and wives who receive AFDC or Food Stamps contact more employers. However, female heads who receive AFDC or Food Stamps search less than other individuals, possibly because the search requirements for these programs are more likely to be imposed on married couples or single males.[38]

**Spell Duration:** If unemployed individuals get discouraged over time, we would expect search intensity to decrease as spell duration increases. However, the incentives from the UI

[38] The number of male heads and wives on AFDC is too small to identify the effect of the two programs separately. We estimated models including the amount of AFDC and Food Stamp income, and found that this did not significantly effect search intensity.

program alter this prediction for U.I recipients. In particular, we would expect UI recipients to increase their search intensity as they near the time when their benefits expire, then to decrease their intensity beyond this point.

Figure 1 shows changes in the predicted number of contacts as spell duration increases. Unemployed workers who are not receiving unemployment insurance decrease their search intensity as spell duration increases. For each additional week of duration, heads reduce the number of employers contacted each month by about 0.3, and wives reduce the number of employers contacted each month by about 0.4. However, UI recipients increase the number of employers contacted as the duration of their spell increases, possibly because they increase their search intensity as they get nearer to the time when their benefits lapse. For both heads and wives on UI , the predicted number of employer contacts peaks at about 26-30 weeks, or near the duration at which UI benefits expire.[39] This is consistent with the patterns reported in Meyer (1990).

Individuals looking for part time work make 7-8 fewer contacts than individuals looking for full time employment, while individuals who are currently laid off but expect to be recalled make at least two fewer contacts per month. In general, the demographic variables have the expected effects. Search intensity increases with education. The affect of experience on the number of contacts is non-linear but is significant only for wives. The coefficients indicate that search increases with experience until near retirement age. This pattern may be due to experienced individual's beliefs about the likelihood of getting a good job offer late in their career. We also find that, all else equal, men and individuals living in metropolitan areas

[39] U.I. benefits typically expire at 26 or 39 weeks, although as Meyer (1990) notes, there is considerable variability in the number of weeks of eligibility.

contact more employers.

## 4.2 Simultaneous Equations Estimation

Although the single equation model provides important insights into the relationship between search intensity and resources such as wealth and unemployment insurance, it does not allow us to determine the impact of changes in wealth or benefit levels on the probability of transitioning into employment. To explore this relationship, we estimate a simultaneous equations model. In this model we allow both the reservation wage and search intensity to depend on wealth and unemployment benefits, and we estimate the effect of the number of employers contacted in the previous month on the probability of receiving a job offer and making a transition. Our results help us determine: (1) why individuals with higher net worth stay unemployed for longer periods of time and (2) whether unemployment benefits lead to longer spells of unemployment. Our results are reported in Tables 7 through 9.[40] The corresponding elasticities for the number of contacts, the probability of a job offer, the reservation wage, the probability that an individual accepts a job offer, and the probability of transitioning to employment with respect to wealth, unemployment insurance and search requirements are found in Tables 10 through 15.

### 4.2.1 The Wealth Accumulation Equation:

Standard theory predicts that wealth depends on previous income levels and characteristics that influence the individual's savings decisions. Therefore, we allow wealth accumulation to depend on previous period household earnings and unearned income, as well as demographic

[40] We present results allowing heads and wives to draw wages from different wage offer distributions.The results do not qualitatively change if we instead assume that heads and wives draw from the same wage offer distribution. The estimated parameters of these wage-offer equations are found in Appendix A.

and human capital variables. Since previous period income variables should be uncorrelated with the reservation wage and with search intensity once we have controlled for current period wealth and income these variables allow us to identify the wealth equation. The simultaneous equations estimates of the wealth accumulation equation are given in column (4) of Tables 7 to 9.

Our results are generally consistent with the theory. Individuals with higher previous period earnings and higher previous period other family income have higher current wealth. A $1000 increase in lagged own monthly earnings is associated with a $6,385 increase in current total net worth for heads and a $9503 increase for wives, suggesting that income received by working wives is more likely to be used to augment savings.

Lagged other family income[41] is also a significant predictor of total net worth. A $1000 increase in lagged other income translates to an increase in total net worth of $10,140 for heads and $19,837 for wives. Once again, additional income is more likely to be used to augment savings in households with working wives.

The demographic variables have the expected effect on wealth. Wealth accumulation increases with education and decreases with the number of children. Individuals who are unemployed have lower levels of accumulated wealth, while, all else equal, married individuals have higher asset levels than single individuals. This may be because married couples are more likely to save to purchase a house or for future expenses such as children's college funds.

We allow wealth to depend on a quadratic in experience to capture the life cycle patterns of wealth accumulation. The point estimates indicate that individuals' wealth levels increase until retirement, although the effect is insignificant. Controlling for other observables, black

[41] This is defined as the sum of spouse's earnings and unearned income.

individuals accumulate less wealth than their white counterparts. A black individual has, on average, $15,400 less total net worth than a comparable white individual. The fact that we do not control for parent's wealth may explain part of this result. If white individuals start out life with more wealth (or less debt), this may lead to greater wealth accumulation, all else held constant.

#### 4.2.2 The Search Effort Equation:

Search effort is measured as the number of employers contacted in the past month. We allow search effort to depend on the same set of explanatory variables as in the model presented in Table 6. The variables included in the search effort equation that are not included in any other equation in our system include: the variables measuring variation in search requirements for U.I recipients (number of required contacts, variation in required contacts $\times$ weeks on UI last month, and search requirements not specified by law), an indicator representing whether the individual received aid from either Food Stamps or AFDC, a dummy which takes the value of one if the individual expects to be recalled to his previous job, and the number of weeks the individual was not employed last month.[42] The results for this equation are presented in column (3) of Tables 7 to 9. Since we assume that the errors in the search effort equation are uncorrelated with the errors from the other equations in our model, the parameter estimates are the same as in the single equation Tobit model.[43]

However, the standard errors differ because of the increased efficiency. Table 10 reports

[42] We examined whether recall, aid receipt and the unemployment search requirement variables were significant predictors of the reservation wages found that they were not.

[43] To test the assumption that the errors from the search effort equation are in fact uncorrelated with the errors from the other three equation, we ran single equation models of the reservation wage, search effort, and wealth equations and verified that the errors were in fact uncorrelated.

the elasticity of search effort with respect to wealth, unemployment benefits, and search requirements for U.I eligibility.

As in the single equation estimates, the point estimates indicate that the number of employers contacted decreases as wealth increases, although the affect is only significant for the full sample and the wives. Column (3) of Table 10 presents the elasticity of search intensity with respect to changes in wealth. At the mean values of the explanatory variables, a 10% increase in wealth reduces the number of contacts made by 1.1% for heads and 1.4% for wives. The sensitivity of search intensity to wealth is smallest for individuals who are unemployed or on unemployment insurance.

The point estimates indicate that increases in UI benefit levels decrease the number of employers contacted by heads, and increase the number of employers contacted by wives, although the effect is statistically significant only for wives. Column (5) of Table 10 presents the elasticity of search intensity with respect to the level of unemployment insurance benefit. We find that a 10% increase in UI benefits decreases the number of contacts made by heads by 0.9% and increases the number of contacts made by wives by 5%.

Finally, column (7) of Table 10 presents the elasticity of search effort with respect to the number of required contacts. Our estimates indicate that higher UI search requirements in fact increase the number of employers contacted by UI recipients, although the effect is insignificant for heads. Increasing the number of required contacts by 1 per week [44] increases the number of employers contacted each month by about 2 for wives on UI and by about 1.4 for heads on UI

[44] This translates to an increase of approximately 60%.

### 4.2.3 The Job Offer Equation:

Although it is interesting to investigate the affects of outside resources and search requirements on search intensity, ultimately we are interested in how the influence of search intensity on the probability of receiving a job offer and on the probability of transition. We assume the probability of receiving a job offer in the 16 months following the wave 5 interview follows a probit model.[45] The identifying variables in the job offer equation include the maximum level of state employer UI taxes, the state unemployment rate, and a dummy variable that takes the value of 1 if an OLF individual reports that he is "very likely" or "likely" to search for a job in the near future.[46] Other explanatory variable in the job offer equation include education, a quadratic in experience, a quadratic in the number of weeks since the individual was last employed, the number of direct employer contacts the individual made during the last month, a dummy variable that indicates if the individual is searching for a specific type of job, and dummy variables indicating if an individual is living in a city, is male, is married or is black. The estimates of the parameters in the job offer equation (the vector $\gamma$ in equation 8) are presented in column (2) of Tables 7 to 9.

The most significant predictors of the probability that an individual receives a job offer are whether the individual is looking for a specific job (a proxy for directed search), the number of employer contacts made in the past month, the state unemployment rate, whether an OLF individual indicates that he is likely to search for a job in the near future, and the time

[45] As a sensitivity analysis, we estimated our model using data on transitions to a job within four months following the wave 5 interview. Our main findings are unaltered by this change.

[46] We assume that the state unemployment rate does not affect the reservation wage or search intensity. This is consistent with our finding that the state unemployment rate is not statistically significant when included in either the reservation wage or the search intensity equation.

elapsed since the last job. The maximum level of state employer UI taxes is also a significant predictor of the probability of receiving a job offer for the subsample of wives.

Our results indicate that contacting more employers increases the probability of receiving a job offer. Consistent with previous studies[47] , we find that the probability of a job offer decreases as the duration of the current unemployment spell increases. Each additional week of spell duration decreases the probability of receiving a job offer by 0.6 percentage points for the average household head and 0.3 percentage points for the average wife.[48] This effect may be related to skill deterioration or to employers' beliefs that individuals who have been out of work for long periods of time are lower quality employees that those with short unemployment duration.[49]

We find that, when state unemployment rates are high, individuals are less likely to receive job offers - a one percentage point increase in the state unemployment rate reduces the probability of a job offer by about 2.5 percentage points. High levels of state unemployment taxes on employers reduce the probability of a job offer[50] , although this affect is only statistically significant for the subsample of wives. Individuals who search for a specific type of job are about 14 percentage points more likely to receive job offers, suggesting that directed search is more effective than random search.

[47] Such as Bloemen and Stancanelli (2001), Katz and Meyer (1990) and Barron and Mellow (1981).

[48] The elapsed time without a job may be correlated with unobserved heterogeneity. To verify that including this variable does not drive our results, we estimated the model excluding the duration variables. The results were not significantly different from those reported in the paper. We also estimated models including the number of past long term unemployment spells in the offer equation to correct for unobserved heterogeneity. The coefficient on the number of past spells had the expected negative sign, but it was small in magnitude and statistically insignificant.

[49] Our findings are consistent with the environment in Blanchard and Diamond (1994) where employers rank job candidates by their unemployment duration and those with longer durations are the last to receive job offers.

[50] These effects are consistent with the findings of Millard and Mortensen (1997).

Table 11 reports the elasticities of the probability of receiving a job offer within 16 months with respect to wealth, unemployment benefits and the number of required contacts for U.I eligibility. In all cases we find that the elasticities are approximately zero since the probability of receiving a job offer within 16 months is close to one, especially for U.I recipients. To determine if the results are by our definition of transitions, we re-estimate the model defining transitions as finding a job within a 4 month time period. This lowers the estimated probability of individuals receiving a job offer: the full sample estimates are that 76% of UI recipients and 42% of all job seekers will receive an offer within 4 months. However, the elasticity of the probability of an offer with respect to wealth, U.I benefit levels, and UI search requirements remains small. For example, in the full sample 4 month model, the elasticity of the probability of an offer with respect to wealth is only -0.016 and the elasticity with respect to U.I benefits is only 0.016.[51] This suggests that, if wealth and unemployment insurance affect the probability of making a transition into employment, the primary effect does not come from significantly reducing the number of job offers.

#### 4.2.4 The Reservation Wage Equation:

The simultaneous equations estimates of the reservation wage equation are given in column (1) of Tables 7 to 9. We assume that state CPI, the log of the state average wage, the minimum state unemployment benefit and the amount of income from Food Stamps and AFDC affect the individual's reservation wage but do not directly impact wealth, search

[51] For heads the the elasticity with respect to wealth is -0.024, while for wives the elasticity with respect to wealth is -0.066. The elasticity of the job offer with respect to U.I. benefits is -0.024 for heads and is approximately zero for wives.

intensity or the probability of transitioning to employment.[52] Other independent variables include wealth, wealth squared, unemployment insurance income, other family income, a quadratic in experience, a quadratic in the number of weeks since the individual was last employed interacted with the unemployment dummy, a dummy variable indicating if the individual has any children interacted with gender, and dummy variables indicating if an individual is unemployed, is looking for a specific type of job, is looking for a part time job, is male, is a household head, is married, and is black. Wealth is measured in $10,000; monthly levels of unemployment insurance income, income from AFDC and Food Stamps, and other family income are measured in $1,000.

**Wealth:** Consistent with the findings of Bloemen and Stancanelli (2002), we find that the reservation wage increases with wealth for all but the most wealthy in our sample.[53] . The positive effect of wealth on the reservation wage is consistent across demographic groups and remarkably robust across specifications. Increasing total net worth from zero to $10,000 increases the reservation wage by about 3.4%. Table 12, column (3), reports the elasticity of the reservation wage with respect to wealth at the mean of the explanatory variables. According to our estimates the elasticity of reservation wages with respect to net worth is approximately 0.13 for the full sample, household heads and wives.[54]

Although wealth increases the reservation wage for nearly all individuals in our sample,

[52] The theoretical literature suggests that these variables may also affect search intensity. To test our identifying assumptions, we estimated alternate specifications of the model and found that none of these variables were statistically significant predictors of the number of contacts made.

[53] We find that for over 95% of individuals in our sample, reservation wages increase with total net worth.

[54] Although one might worry that these results could solely be due to unobserved heterogeneity, our results in Alexopoulos and Gladden (2003) suggest that this is not the case. In particular, we find that the estimated effect of wealth on reservation wages is similar when we instrument for wealth.

we find significant differences between heads and wives in the magnitude of the effect. At low levels of wealth, heads are more sensitive than wives to changes in wealth. For example, increasing net worth from $0 to $10,000 increases the reservation wage by about 2.7% for a typical wife and 5.3% for a typical head. However, the elasticities reported in Table 12, column (3) suggest that, at the mean of the explanatory variables, the elasticity of the reservation wage with respect to wealth is virtually identical for heads and wives (0.133 vs. 0.130).

**Income from Unemployment Insurance, Food Stamps, and AFDC:** As expected, unemployment insurance income, amount of aid received and other family income increase the reservation wage. However, once again we find significant differences between heads and wives. An increase of $1000 in other family income increases the reservation wage by about 2.9% for heads and 2.1% for wives, although the effect is insignificant for the heads. Female heads are more sensitive to changes in income from AFDC and Food Stamps. An increase of $100 in monthly income from aid increases the reservation wage by about 2.5% for female heads but has no significant affect on the reservation wages of men or married women. Heads are more sensitive to increases in monthly UI benefits. Table 12, column (5) reports the elasticity of the reservation wage with respect to UI benefit levels. We find an elasticity of 0.18 for heads on U.I and an elasticity of 0.028 for wives on UI , which suggests that a $50 per month increase in U.I benefits would increase the reservation wage by about 1.8% for heads on U.I and by about 0.3% for wives on UI

**Other Explanatory Variables:** Inter-state variation in price, wage, and benefit levels effect the reservation wage in the expected way. Reservation wages increase with the state CPI and increase with the log state average wage. Higher minimum levels of unemployment benefits (which may proxy for higher levels of future insurance) decrease reservation wages. Increasing the average minimum weekly UI benefit by \$3.15, or by about 10%, decreases the reservation wage by approximately 0.47% on average, suggesting that extra insurance against future wage loss due to layoff makes workers more likely to accept lower paying jobs today.

For unemployed workers, reservation wages fall as spell duration increases: an increase in duration from 0 to 4 weeks decreases the reservation wage by about 2% for these workers. For OLF individuals, the effect of duration on the reservation wage is smaller (approximately 0.3%) and statistically insignificant.

#### 4.2.5 The Probability of Acceptance:

The probability of acceptance depends on the offer drawn from the wage distribution and the individual's reservation wage. As a result, the finding that reservation wages increase with wealth indicates that wealthier individuals are more likely to turn down a job offer, all else equal. Table 13, column (3) reports the magnitude of the wealth affect. For the typical member of our sample, a 10% increase in wealth reduces the probability of accepting a job offer by about 1.5%.

Similarly, the finding that reservation wages increase with increased UI benefits indicates that, all else equal, higher benefit levels will decrease the probability that an individual will accept a job offer. Table 13, columns (5), reports the elasticity of the acceptance probability

with respect to UI benefits. Our estimates imply that a 10% increase in the benefit level reduces the probability of accepting a job offer by 1.8% for the typical head on U.I, and by 0.3% for the typical wife on UI

#### 4.2.6 The Probability of a Job Transition:

According to the model presented in Section 3, the probability of transition depends on the probability that the individual receives a job offer and the probability that the offer is accepted. Our results suggest that financial resources - wealth, UI income, and other family income - affect this probability in two ways. First, individuals with more resources may search with less intensity, reducing their probability of receiving a job. Second, increased resources increase the reservation wage, reducing the probability that a job offer is accepted. Table 14 reports the aggregate affect on the probability of a transition for different groups, while Table 15 illustrates which of the two channels has the larger impact on the probability of transition.[55]

**Wealth:** We expect that, since wealth increases the reservation wage and decreases search intensity, increased wealth should decrease the probability of transitioning to a job. Table 14, column (3), presents estimates of the affect of wealth on the probability of transitioning to a job within 16 months. Our results indicate that a 10% increase in wealth reduces the probability of transitioning to a job by about 1.6%. Table 15 demonstrates that the vast majority of this decrease in the transition probability is due to the fact that increases in wealth significantly increase the reservation wages of workers, which, in turn, increases the

[55] To demonstrate that our findings are not very sensitive to our choice of a 16 month period, we also report the results from the model using a 4 month period in Table 15.

probability that a job offer is rejected: increased reservation wages account for over 87% of the affect of wealth on transition in the 16 month model and over 71% of the overall affect in the 4 month model.[56]

**Unemployment Income:** Since UI benefits increase the reservation wage and decrease search intensity, we expect higher benefit levels to decrease the probability of transitioning to a job. Table 14, column (5), reports the affect on the transition probability of changes in UI benefits. A 10% increase in the benefit decreases the probability of transitioning to a job within 4 months by about 2% for heads and by about 0.6% for wives. The bottom panel of Table 15 decomposes this effect into the portion due to higher reservation wages and the portion due to lower search intensity. We find that the primary affect (over 88%) of an increase in UI benefits on the probability of transition is through the increase in the reservation wage and the corresponding decrease in the probability of accepting a job offer.

**Search Requirements:** Search requirements associated with UI eligibility may increase the probability of transitioning to a job since they increase search intensity, and therefore increase the probability of a job offer. Table 14, column (7), reports the affect on the transition probability of search requirements associated with eligibility for UI benefits. Table 10 demonstrates that stricter search requirements do increase employer contacts among UI recipients. However, as Tables 14 and 15 show, the elasticity of the probability of transition within 16 months with respect to an increase in the required number of contacts is approximately zero. There is some evidence that stricter search requirements increase the

[56] These findings are not significantly altered if we use the elasticity of effort with respect to wealth implied by our I.V. estimates or our instrumented tobit estimates.

probability that heads will transition to a job within 4 months. A 10% increase in the number of required contacts increases the probability of transitioning to a job within 4 months by 0.38% in the full sample and by 0.2% for heads, while a similar increase in the required number of contacts for wives has virtually no effect on the probability of transition.

According to our estimates, for the full sample, increasing UI benefits by 10% would decrease the probability of a transition by about 1.6%. However, increasing the number of required contacts for UI recipients by one contact a week would increase the probability of transition in 4 months by about 2%. For heads, our estimates suggest that the negative affects of a 10% increase in UI benefits can be offset by increasing the number of required contacts by 2 contacts per week. As a result, if a state wants to increase the generosity of its benefits without decreasing the probability of making a transition in the short run, they can increase the search requirements for benefit recipients.

# 5 Conclusions

In this paper, we estimate a simultaneous equations model of search intensity, reservation wages, labor market transitions and wealth using a sample from the 1984 Survey of Income and Program Participation. This allows us to explore the affect of changes in wealth and unemployment benefits on search intensity and the probability of a job offer, on reservation wages and the probability of accepting a job offer, and on the probability that an unemployed worker will transition to a job. Consistent with labor market search models that assume that workers are risk averse and unable to perfectly insure themselves, we find that higher levels of wealth increase the reservation wage and decrease search intensity. However, these effects differ greatly in the magnitude of their influence on non-employment spell duration.

Our simultaneous model allows us to decompose the effect of an increase in wealth or UI benefits on the probability that the worker transitions to employment into the portion due to decreased search intensity and the corresponding decrease in the probability of a job offer and the portion due to the increase in the reservation wage and the corresponding decrease in the probability of accepting a job offer.

Our estimates indicate that a 10% increase in wealth reduces the number of contacts made by 1.1% for heads and 1.4% for wives, and increases the reservation wage by about 1.3% for both heads and wives. While both of these affects work to increase the duration of non-employment, the vast majority of the effect of wealth on the probability of making a job transition is caused by the impact of wealth on reservation wages. Over 71% of the effect of wealth on the probability of making a transition in 4 months, and over 87% of the effect of wealth on the probability of transition in 16 months is due to the increase in the reservation wage and the corresponding decrease in the probability of accepting a job offer.

We find a similar pattern when we examine the affect of changes in UI benefits on the probability of making a transition into employment. Increases in benefit levels do not significantly reduce search effort, and therefore do not significantly reduce the probability of an offer. However, higher benefit levels increase the reservation wage and therefore decrease the probability that an offer is accepted. For example, the estimates for the full sample imply that a 10% increase in the benefit level increases the reservation wage by 1.4% and decreases the probability that an offer is accepted by 1.4%. Together, these results suggest that increases in unemployment benefits increase the duration of non-employment, but this occurs primarily because increased reservation wages cause workers to reject more job offers.

We also examine the relationship between search requirements for UI recipients and the

number of contacts made. We find that in states with stricter job search requirements for UI eligibility, UI recipients contact more employers each month. In states where unemployment offices have the flexibility to vary requirements, heads who receive UI contact fewer employers than in other states. This suggests that if states wish to increase the generosity of their UI benefits without increasing spell duration, they should increase both their job search requirements and the level of enforcement.

Our findings generally support the relationships predicted by models where individuals are risk averse and unable to perfectly insure themselves against income risk: increases in wealth increase the reservation wage and decrease search intensity. As a result, wealthier individuals will experience longer unemployment duration. Given that wealth significantly affects transition probabilities, our results suggest that researchers may want to move towards building more search models that assume that markets are incomplete and individuals are risk averse. Finally, given that search intensity is not significantly affected by changes in wealth or unemployment insurance, it is relatively more important for models to allow reservation wages, as opposed to search intensity, to respond to changes in wealth or benefit levels.

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**TABLE 1: Wealth, Non-Work Income, and Reservation Wages**

Unemployed and Out of the Labor Force Job Seekers, 1984 SIPP

**Out of the Labor Force**

| | Full Sample (N=755) | | Heads (N=273) | | Wives (N=482) | |
|---|---|---|---|---|---|---|
| | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. |
| Household Net Worth | $42,594.08 | $74,957 | $33,171 | $80,818 | $47,930 | $70,957 |
| Reservation Wage | $4.62 | $2.81 | $5.11 | $3.90 | $4.34 | $1.90 |
| Receive Unemployment Insurance | 2.12% | | 0.0256 | | 0.0187 | |
| Monthly U.I. Payment[i] | $408.00 | $68.34 | $529.57 | $90.90 | $313.44 | $51.26 |
| Receive AFDC | 14.04% | | 0.348 | | 0.0228 | |
| Monthly AFDC Payment[ii] | $363.58 | $185.98 | $361.92 | $187.84 | $377.91 | $176.78 |
| Receive Food Stamps | 20.93% | | 0.5018 | | 0.0436 | |
| Monthly Food Stamp Amount[iii] | $162.53 | $85.52 | $162.68 | $86.99 | $161.57 | $77.22 |
| Spouse's Monthly Earnings[iv] | $1,261.28 | $1,791.78 | $132.50 | $470.02 | $1,900.61 | $1,942.93 |
| Monthly Family Income | $1,741.94 | $1,909.99 | $859.34 | $1,134.17 | $2,241.83 | $2,073.31 |
| Held Job in Last 16 Months | 40.93% | | 0.4103 | | 0.4087 | |
| Wage at Previous Job | $5.42 | $4.28 | $6.01 | $4.39 | $5.07 | $4.19 |
| Hours per Week at Previous Job | 31.73 | 12.73 | 33.67 | 13.28 | 30.59 | 12.29 |
| Age | 36.62 | 12.25 | 38.73 | 13.61 | 35.43 | 11.24 |
| Male | 11.66% | | 32.23% | | | |
| Married | 71.39% | | 20.88% | | | |
| Black | 12.32% | | 27.84% | | 3.53% | |

**Unemployed**

| | Full Sample (N=657) | | Heads (N=415) | | Wives (N=242) | |
|---|---|---|---|---|---|---|
| | Mean | St. Dev. | Mean | St. Dev. | Mean | St. Dev. |
| Household Net Worth | $32,477 | $75,533 | $23,856 | $46,460 | $47,261 | $107,118 |
| Reservation Wage | $5.37 | $3.50 | $5.85 | $4.00 | $4.54 | $2.17 |
| # of Direct Employer Contacts | 7.114 | 7.587 | 8.13 | 8.268 | 5.372 | 5.869 |
| # of Search Methods | 1.046 | 0.261 | 1.058 | 0.297 | 1.025 | 0.18 |
| Receive Unemployment Insurance | 28.61% | | 30.60% | | 0.25 | |
| Monthly U.I. Amount[v] | $483.17 | $259.83 | $545.45 | $293.39 | $353.51 | $179.05 |
| Receive AFDC | 11.57% | | 16.14% | | 3.72% | |
| Monthly AFDC Payment[vi] | $347.74 | $166.21 | $344.49 | $165.83 | $371.89 | $177.14 |
| Receive Food Stamps | 20.70% | | 28.19% | | 7.85% | |
| Monthly Food Stamp Amount[vii] | $151.10 | $70.68 | $147.92 | $71.03 | $170.63 | $66.99 |
| Spouse's Monthly Earnings[viii] | $678.47 | $1,077.06 | $279.98 | $677.19 | $1,361.84 | $1,275.73 |
| Monthly Family Income | $1,244.09 | $1,200.93 | $926.00 | $1,004.56 | $1,789.59 | $1,311.17 |
| Held Job in Last 16 Months | 73.97% | | 74.94% | | 72.31% | |
| Wage at Previous Job | $6.91 | $5.02 | $7.64 | $5.66 | $5.59 | $3.19 |
| Hours per Week at Previous Job | 35.16 | 12.38 | 37.76 | 11.62 | 30.46 | 12.35 |
| Age | 36.46 | 12.09 | 37.20 | 12.31 | 35.20 | 11.61 |
| Male | 39.42% | | 62.41% | | | |
| Married | 64.99% | | 44.58% | | | |
| Black | 14.76% | | 17.11% | | 10.74% | |

[i] Among individuals receiving U.I. payments.
[ii] Among individuals receiving AFDC payments.
[iii] Among individuals receiving Food Stamps.
[iv] Among married individuals.
[v] Among individuals receiving U.I. payments.
[vi] Among individuals receiving AFDC payments.
[vii] Among individuals receiving Food Stamps.
[viii] Among married individuals.

**TABLE 2: Distribution of Wealth in 1984 Dollars**
Representative Panel and Reservation Wage Sample, 1984 SIPP

**1984 SIPP Representative Panel**

| Percentile of Net Worth[i] | Full Sample (N=21108) | Heads (N = 12597) | Wives (N=8511) |
|---|---|---|---|
| 10% | $0.00 | $0.00 | $576.80 |
| 25% | $5,358.00 | $3,350.00 | $10,469.00 |
| 50% | $34,773.50 | $28,000.00 | $44,526.00 |
| 75% | $86,552.00 | $78,197.50 | $99,314.00 |
| 90% | $173,069.50 | $158,440.00 | $190,448.60 |

**Reservation Wage Sample**

| Percentile of Net Worth | Full Sample (N=1412) | Heads (N=759) | Wives (N=653) |
|---|---|---|---|
| 10% | -$332.40 | -$750.00 | $0.00 |
| 25% | $200.00 | $0.00 | $2,209.50 |
| 50% | $9,542.50 | $2,610.00 | $21,350.00 |
| 75% | $48,382.50 | $32,603.00 | $62,251.50 |
| 90% | $107,417.30 | $92,075.00 | $133,325.40 |

[i] Net worth is defined as total wealth minus total unsecured debt, where total wealth includes the household's home equity, net equity in vehicles, business equity, interest earning assets held in banking and other institutions, equity in stocks and mutual fund shares, equity in other real estate, total of mortgages held, money owed from sale of business, bonds, IRA and Keogh accounts.

**TABLE 3: Search Methods**

Unemployed Job Seekers, 1984 SIPP

| | **Full Sample** N=657 | **Male Heads** N=259 | **Female Heads** N=156 | **Wives** N=242 |
|---|---|---|---|---|
| Search Methods: | | | | |
| Contacting Employers | 90.87% | 90.35% | 91.67% | 90.91% |
| # of Employers Contacted Last Month | 7.11 | 9.09 | 6.53 | 5.37 |
| Methods Other Than Direct Contact[i] | 9.13% | 9.13% | 8.33% | 9.09% |
| Unemployment Office | 3.81% | 3.09% | 5.13% | 3.72% |
| Private Agency | 0.61% | 0.39% | 0.00% | 1.24% |
| Friends and Relatives | 3.50% | 3.86% | 3.85% | 2.89% |
| Other Methods | 5.78% | 7.72% | 5.77% | 3.72% |

[i] The percent of individuals who report searching using at least one method other than direct employer contact.

**TABLE 4: Comparison of Hourly Wages and Reservation Wages**
by Demographic Group and Reservation Wage Level

| | **Full Sample** | **Heads** | **Wives** | **Unemployed** | **Out of Labor Force** |
|---|---|---|---|---|---|
| | N=1412 | N=688 | N=724 | N=755 | N=657 |
| | (1) | (2) | (3) | (4) | (5) |
| Reservation Wage | $4.97 | $5.55 | $4.41 | $5.37 | $4.57 |
| % Previous Wage Observed[i] | 52.41% | 58.28% | 46.82% | 70.78% | 36.42% |
| Previous Wage | $6.35 | $7.22 | $5.32 | $6.91 | $5.42 |
| Previous Wage – Reservation Wage[ii] | $0.97 | $1.21 | $0.69 | $1.16 | $0.66 |
| % Previous Wage ≥ Reservation Wage | 57.03% | 57.61% | 56.34% | 59.57% | 52.73% |
| % Accepted Wages Observed | 45.82% | 46.51% | 45.17% | 57.38% | 35.76% |
| Accepted Wage | $7.18 | $8.14 | $6.24 | $8.11 | $5.87 |
| Accepted Wage – Reservation Wage[iii] | $2.01 | $2.30 | $1.73 | $2.59 | $1.20 |
| % Accepted Wage ≥ Reservation Wage | 72.22% | 71.65% | 72.78% | 73.28% | 70.74% |

| | **Level of the Reservation Wage** | | | | |
|---|---|---|---|---|---|
| | **< $3.35** | **= $3.35[iv]** | **= $3.36-$4.00** | **= $4.01-$5.00** | **> $5.00** |
| | N=90 | N=438 | N=288 | N=245 | N=351 |
| | (6) | (7) | (8) | (9) | (10) |
| Reservation Wage | $2.39 | $3.35 | $3.79 | $4.85 | $8.68 |
| % Previous Wage Observed | 50.00% | 42.69% | 51.74% | 50.20% | 67.24% |
| Previous Wage | $3.90 | $4.46 | $4.54 | $6.24 | $9.52 |
| Previous Wage – Reservation Wage[v] | $1.32 | $1.11 | $0.73 | $1.43 | $0.71 |
| % Previous Wage ≥ Reservation Wage | 77.78% | 63.64% | 59.00% | 47.90% | 51.20% |
| % Accepted Wages Observed | 44.44% | 39.95% | 45.14% | 47.35% | 52.99% |
| Accepted Wage | $5.59 | $5.31 | $5.42 | $7.64 | $10.21 |
| Accepted Wage – Reservation Wage[vi] | $3.19 | $1.96 | $1.63 | $2.84 | $1.55 |
| % Accepted Wage ≥ Reservation Wage | 97.50% | 81.14% | 73.85% | 71.55% | 57.75% |

[i] The previous wage is the wage the individual received at his most recent job.
[ii] Calculated for individuals for whom the previous wage was observed.
[iii] Calculated for individuals for whom a wage after the non-employment spell was observed.
[iv] $3.35 was the minimum wage in 1984.
[v] Calculated for individuals for whom the previous wage was observed.
[vi] Calculated for individuals for whom a wage after the non-employment spell was observed.

**Table 5: Requirements for Unemployment Insurance Eligibility**

By Type of Search Requirement

Workers on U.I. and Other Unemployed Workers

| | # Obs. | # Employers Contacted | # Contacts Required For U.I. Eligibility[i] | Weeks Not Employed Last Month | % with Fewer Contacts than Required[i] |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| **Individuals Receiving Unemployment Insurance** | | | | | |
| Full Sample | 204 | 8.7402 | 6.3775 | 3.8529 | 35.29% |
| Contacts Required by Law[ii], No Variance in Requirements[iii] | 49 | 9.9184 | 8.9592 | 4.0204 | 51.02% |
| Contacts Not Required by Law, No Variance in Requirements | 24 | 7.0417 | 0 | 3.4167 | 0.00% |
| Contacts Required by Law, Variance in Requirements | 68 | 7.75 | 5.1618 | 3.7941 | 30.88% |
| Contacts Not Required by Law, Variance in Requirements | 63 | 9.5397 | 8.1111 | 3.9524 | 41.27% |
| **Unemployed Individuals Not Receiving Unemployment Insurance** | | | | | |
| Full Sample | 469 | 6.1642 | 6.6119 | 3.7505 | 49.96% |
| Contacts Required by Law, No Variance in Requirements | 79 | 6.5063 | 8.4937 | 3.9367 | 43.76% |
| Contacts Not Required by Law, No Variance in Requirements | 39 | 4.9744 | 0 | 3.7692 | 0.00% |
| Contacts Required by Law, Variance in Requirements | 163 | 6.0123 | 5.5583 | 3.6748 | 50.15% |
| Contacts Not Required by Law, Variance in Requirements | 188 | 6.3989 | 8.1064 | 3.734 | 49.49% |

[i] For individuals not receiving benefits the number of contacts required is based on requirements if they were receiving benefits. The % with fewer contacts than required is also based on eligibility requirements if they were receiving benefits.

[ii] Takes the value of one if state law specifies that U.I. recipients must contact employers to maintain eligibility.

[iii] A state has variance in requirements if the state U.I. office had the discretion to alter the number of required contacts for individual U.I. recipients.

**TABLE 6: Single Equation Tobit Estimates of the Search Intensity Equation**

Dependent Variable: Number of Employers Contacted[i]

(Standard Errors in Parenthesis) [ii]

| | **Full Sample** | | **Heads** | | **Wives** | |
|---|---|---|---|---|---|---|
| | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef..* | *S.E* |
| Wealth[iii] | -0.1114 | (0.0696) | -0.2113 | (0.1405) | -0.0644 | (0.0731) |
| Wealth$^2$ | 0.0016$^{*}$ | (0.0006) | 0.0015 | (0.0026) | 0.0012 | (0.0005) |
| U.I. Income[iv] | 1.3387 | (3.1169) | -1.8607 | (3.6320) | 11.1090$^{*}$ | (6.0668) |
| Other Family Income | -1.0126$^{***}$ | (0.3594) | -1.4794$^{***}$ | (0.5854) | -0.5989$^{*}$ | (0.3689) |
| Looking for Part Time Work | -8.1781$^{***}$ | (0.8729) | -8.1913$^{***}$ | (1.3868) | -6.9846$^{***}$ | (1.0410) |
| Weeks Not Worked in Last Month | -0.0189 | (0.3856) | 0.9637$^{*}$ | (0.5240) | -1.2922$^{***}$ | (0.5422) |
| # Contacts Required in Past Month[v] | 0.3787 | (0.2053) | 0.1184 | (1.8511) | 0.4566$^{**}$ | (1.5667) |
| Head × # Required in Past Month | -0.2112 | (2.3357) | | | | |
| Variation in Required Contacts[vi] | 0.5865 | (0.3848) | -0.8023$^{*}$ | (0.4657) | 0.7627 | (0.3871) |
| Head × Var. in Required Contacts | -1.1316$^{*}$ | (0.1694) | | | | |
| Contacts Not Specified by Law[vii] | -4.4886$^{**}$ | (1.6933) | 2.5441 | (0.1718) | -4.1864$^{**}$ | (0.1843) |
| Head × Not Specified by Law | 7.0037$^{***}$ | (0.5088) | | | | |
| Expecting Recall from Layoff | -2.9235$^{**}$ | (1.1729) | -2.3228 | (1.4570) | -4.0710$^{**}$ | (1.7992) |
| Get U.I. | 1.0782 | (2.1279) | 3.9416 | (2.8800) | -3.4850 | (2.9530) |
| Receiving Aid[viii] | 2.9611$^{*}$ | (1.5771) | 2.5021 | (1.6759) | 2.3719 | (1.4787) |
| Female × Receiving Aid | -2.1972 | (1.8607) | -3.8244$^{*}$ | (2.2045) | | |
| Weeks Since Last Worked | -0.2673$^{***}$ | (0.0820) | -0.2791$^{**}$ | (0.1178) | -0.1911$^{*}$ | (0.1045) |
| Weeks Since Last Worked$^2$ | 0.0023$^{**}$ | (0.0010) | 0.0024$^{*}$ | (0.0015) | 0.0017 | (0.0013) |
| Get U.I. × Weeks Since Last Worked | 0.4298$^{***}$ | (0.1412) | 0.3707$^{*}$ | (0.1947) | 0.4846$^{*}$ | (0.2315) |
| Get U.I. × Weeks Since Last Worked$^2$ | -0.0052$^{*}$ | (0.0021) | -0.0039 | (0.0028) | -0.0080 | (0.0043) |
| Weeks Since Last Worked Censored | -2.2290$^{*}$ | (1.1151) | -2.0449 | (1.7382) | -2.2132 | (1.2670) |
| Experience | 0.1063 | (0.0951) | 0.0106 | (0.1325) | 0.2289$^{*}$ | (0.1257) |
| Experience$^2$ | -0.0027 | (0.0021) | -0.0001 | (0.0028) | -0.0063$^{**}$ | (0.0028) |
| Highest Grade Competed | 0.6921$^{***}$ | (0.1538) | 0.8537$^{***}$ | (0.2202) | 0.4829$^{**}$ | (0.1970) |
| Metropolitan Area | 1.3901$^{**}$ | (0.6435) | 1.8517$^{*}$ | (0.9662) | 0.9681 | (0.7826) |
| Constant | 0.3330 | (2.1400) | -3.1054 | (2.4385) | 6.4330$^{***}$ | (2.2442) |
| Selection Parameter | 9.1332 | -0.283 | 9.7076 | -0.376 | 7.4931 | -0.39 |
| Number of Observations | 1412 | | 688 | | 724 | |
| Log Likelihood | -2512 | | -1564 | | -924 | |
| Pseudo R2 | 0.107 | | 0.0751 | | 0.131 | |

[i] The regressions also include indicators for head, married, male, children interacted with male, and black.

[ii] Standard errors are corrected for heteroskedasticity.

[iii] Wealth is measured in $10,000.

[iv] U.I income and Other Family Income are measured in $1000 per month.

[v] The number of contacts required per week for U.I. recipients multiplied by the number of weeks the individuals has received U.I. in the past month.

[vi] An indicator which takes the value of one if the state indicated that there was some variation in whether workers were in fact required to contact employers, multiplied by the number of weeks the individual received U.I. in the past month.

[vii] An indicator which takes the value of one if the state requires U.I. recipients to contact employers.

[viii] An indicator which is equal to one if the individual is currently receiving AFDC or Food Stamps.

**TABLE 7: Simultaneous Equation Estimation: Full Sample**

(Standard Errors in Parenthesis)[i]

| Dependent Variable: | **Reservation Wage**[ii] | | **Job Offer** | | **Search Effort** | | **Wealth** | |
|---|---|---|---|---|---|---|---|---|
| | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* |
| Wealth[iii] | 0.0339** | (0.0132) | | | -0.1114 | (0.0697) | | |
| Wealth$^2$ | -0.0001 | (0.0001) | | | 0.0016*** | (0.0006) | | |
| U.I. Income | 0.2924*** | (0.0618) | | | 1.3387 | (3.0925) | | |
| Other Family Income | 0.0230*** | (0.0075) | | | -1.0126*** | (0.3592) | | |
| Income from Aid[iv] | -0.0629 | (0.0877) | | | | | | |
| Female × Income from Aid | 0.2493** | (0.1047) | | | | | | |
| Log State Average Wage | 0.2599 | (0.1792) | | | | | | |
| Min. State U.I. Benefit | -0.0015** | (0.0007) | | | | | | |
| Cost of Living Index | 0.0078*** | (0.0026) | | | | | | |
| Unemployed | 0.0748 | (0.0477) | | | | | | |
| Looking for Specific Job | 0.1198*** | (0.0181) | 0.6734*** | (0.1632) | | | | |
| Looking for Part Time work | -0.1021*** | (0.0228) | -0.0596 | (0.1771) | -8.1781*** | (0.8729) | | |
| Good Chance of Searching | | | 0.6825*** | (0.1797) | | | | |
| Number of Direct Contacts | | | 0.1714*** | (0.0458) | | | | |
| Max. State U.I. Employer Tax | | | -0.0491 | (0.0426) | | | | |
| State Unemployment Rate | | | -0.1031** | (0.0466) | | | | |
| Weeks not Worked last Month | | | | | -0.0189 | (0.2025) | | |
| # of Required Contacts[v] | | | | | 0.3787** | (0.1675) | | |
| Head × # of Required Contacts | | | | | -0.2112 | (0.2055) | | |
| Variation in Required Contacts[vi] | | | | | 0.5865 | (0.3845) | | |
| Head × Var. in Req, Contacts | | | | | -1.1316** | (0.5072) | | |
| Contacts Not Specified by Law[vii] | | | | | -4.4886*** | (1.6931) | | |
| Head × Not Specified by Law | | | | | 7.0037*** | (2.3335) | | |
| Expect to be Recalled | | | | | -2.9235** | (1.1723) | | |
| Lagged Other Family Income | | | | | | | 1.2200* | (0.7436) |
| Getting U.I. | | | | | 1.0782 | (2.1153) | | |
| Getting Aid | | | | | 2.9611* | (1.5764) | | |
| Female × Getting Aid | | | | | -2.1972 | (1.8607) | | |
| Lagged Own Earnings | | | | | | | 0.8823*** | (0.2203) |
| Unemployed in Wave 4 | | | | | | | -0.7559** | (0.3690) |
| Weeks Since Last Worked | -0.0018 | (0.0029) | -0.0667*** | (0.0143) | -0.2673*** | (0.0743) | | |
| Weeks Since Last Worked$^2$ | 0.0000 | (0.0000) | 0.0006*** | (0.0002) | 0.0023** | (0.0009) | | |
| Unemp. × Weeks Since Worked | -0.0049 | (0.0032) | | | | | | |
| Unemp. × Weeks Since Worked$^2$ | 0.0000 | (0.0000) | | | | | | |
| Get U.I. × Weeks Since Worked | | | | | 0.4298*** | (0.1409) | | |
| Get U.I. × Weeks Since | | | | | -0.0052** | (0.0021) | | |
| Constant | -0.2195 | (0.2332) | 2.1753 | (0.6578) | 0.3330 | (1.9091) | -3.0754 | (1.4620) |
| Standard Deviation of Errors | 0.6279*** | (0.0698) | | | 2.5531*** | (0.1358) | 3.0221*** | (0.0594) |
| Correlation of errors with e | 0.4641*** | (0.0698) | | | 0.0231 | (0.0473) | | |
| Correlation between ε and ϑ | -0.4622*** | (0.1679) | | | | | | |

[i] Standard errors are corrected for heteroskedasticity.

[ii] The reservation wage, job offer, and search effort equations also include experience, experience squared, an indicator for metropolitan area, highest grade completed, head and black. The wealth equation also includes age, age squared, , an indicator for metropolitan area, highest grade completed, and black.

[iii] Wealth is measured in $10,000. Other family income, U.I. benefits, and income from aid are measured in $1000.

[iv] Income from Food Stamps or AFDC.

[v] The number of employers U.I. regulations required the individual to make last month. Is equal to zero for individuals not on U.I..

[vi] An indicator which takes the value of one if the there is variation in state U.I. search requirements, interacted with the number of weeks the individual received U.I. payments.

[vii] An indicator which takes the value of one if state U.I. search requirements are not specified by law.

**TABLE 8: Simultaneous Equation Estimation: Heads**

(Standard Errors in Parenthesis) [i]

| Dependent Variable: | **Reservation Wage**[ii] | | **Job Offer** | | **Search Effort** | | **Wealth** | |
|---|---|---|---|---|---|---|---|---|
| | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* |
| Wealth[iii] | 0.0509** | (0.0229) | | | -0.2113 | (0.1412) | | |
| Wealth$^2$ | -0.0004*** | (0.0001) | | | 0.0015 | (0.0026) | | |
| U.I. Income | 0.3304*** | (0.0707) | | | -1.8607 | (3.6478) | | |
| Other Family Income | 0.0251 | (0.0197) | | | -1.4794 *** | (0.5850) | | |
| Income from Aid[iv] | -0.0530 | (0.0893) | | | | | | |
| Female × Income from Aid | 0.2164* | (0.1208) | | | | | | |
| Log State Average Wage | 0.0385 | (0.2708) | | | | | | |
| Minimum State U.I. Benefit | -0.001 | (0.0010) | | | | | | |
| Cost of Living Index | 0.0107*** | (0.0037) | | | | | | |
| Unemployed | 0.1272* | (0.0702) | | | | | | |
| Looking for Specific Job | 0.1984*** | (0.0267) | 1.1297 *** | (0.3094) | | | | |
| Looking for Part Time work | -0.031 | (0.0434) | 0.306 | (0.4655) | -8.1913 *** | (1.3891) | | |
| Good Chance of Searching | | | 0.762 ** | (0.3829) | | | | |
| Number of Direct Contacts | | | 0.2388 *** | (0.0827) | | | | |
| Max. State U.I. Employer Tax | | | 0.0925 | (0.0710) | | | | |
| State Unemployment Rate | | | -0.212 ** | (0.0874) | | | | |
| Weeks not Worked last Month | | | | | 0.9637 * | (0.5248) | | |
| # of Required Contacts[v] | | | | | 0.1184 | (0.1717) | | |
| Variation in Required Contacts[vi] | | | | | -0.8023 * | (0.4654) | | |
| Contacts Not Specified by Law[vii] | | | | | 2.5441 | (1.8499) | | |
| Expect to be Recalled | | | | | -2.3228 * | (1.4564) | | |
| Getting U.I. | | | | | 3.9416 | (2.9094) | | |
| Getting Aid | | | | | 2.5021 | (1.6797) | | |
| Female × Getting Aid | | | | | -3.8244 * | (2.2038) | | |
| Lagged Other Family Income | | | | | | | 1.014 | (0.8292) |
| Lagged Own Earnings | | | | | | | 0.6385 *** | (0.2280) |
| Unemployed in Wave 4 | | | | | | | -0.655 * | (0.4123) |
| Weeks Since Last Worked | 0.0023 | (0.0046) | -0.075 *** | (0.0232) | -0.2791 ** | (0.1179) | | |
| Weeks Since Last Worked$^2$ | 0.0000 | (0.0001) | 0.0008 *** | (0.0003) | 0.0024 | (0.0015) | | |
| Unemp. × Weeks Since Worked | -0.012*** | (0.0048) | | | | | | |
| Unemp. × Weeks Since Worked$^2$ | 0.0002** | (0.0001) | | | | | | |
| Get U.I. × Weeks Since Worked | | | | | 0.3707 ** | (0.1951) | | |
| Get U.I. × Weeks Since Worked$^2$ | | | | | -0.0039 | (0.0028) | | |
| Constant | -0.269 | (0.3537) | 2.0519 * | (1.1763) | -3.1054 | (2.6741) | -0.227 | (1.7397) |
| Standard Deviation of Errors | 0.6383*** | (0.0423) | | | 2.2902 *** | (0.1744) | 3.1157 *** | (0.0677) |
| Correlation of errors with e | 0.5464*** | (0.0848) | | | -0.036 | (0.0728) | | |
| Correlation between ε and ϻ | -0.4452*** | (0.2385) | | | | | | |

[i] Standard errors are corrected for heteroskedasticity.

[ii] The reservation wage, job offer, and search effort equations also include experience, experience squared, an indicator for metropolitan area, highest grade completed, head and black. The wealth equation also includes age, age squared, , an indicator for metropolitan area, highest grade completed, and black.

[iii] Wealth is measured in $10,000. Other family income, U.I. benefits, and income from aid are measured in $1000.

[iv] Income from Food Stamps or AFDC.

[v] The number of employers U.I. regulations required the individual to make last month. Is equal to zero for individuals not on U.I..

[vi] An indicator which takes the value of one if the there is variation in state U.I. search requirements, interacted with the number of weeks the individual received U.I. payments.

[vii] An indicator which takes the value of one if state U.I. search requirements are not specified by law.

**TABLE 9: Simultaneous Equation Estimation: Wives**

(Standard Errors in Parenthesis) [i]

| Dependent Variable: | **Reservation Wage** [ii] | | **Job Offer** | | **Search Effort** | | **Wealth** | |
|---|---|---|---|---|---|---|---|---|
| | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* |
| Wealth [iii] | 0.0273 ** | (0.0122) | | | -0.0644 | (0.0730) | | |
| Wealth$^2$ | 0.0000 | (0.0000) | | | 0.0012 ** | (0.0005) | | |
| U.I. Income | 0.0781 | (0.1055) | | | 11.1090 * | (6.0616) | | |
| Other Family Income | 0.0208 *** | (0.0071) | | | -0.5989 | (0.3688) | | |
| Income from Aid [iv] | 0.1073 | (0.1117) | | | | | | |
| Log State Average Wage | 0.3926 * | (0.2289) | | | | | | |
| Min. State U.I. Benefit | -0.0011 | (0.0009) | | | | | | |
| Cost of Living Index | 0.0044 | (0.0034) | | | | | | |
| Unemployed | 0.0510 | (0.0614) | | | | | | |
| Looking for Specific Job | 0.0319 | (0.0228) | 0.3631 | (0.3630) | | | | |
| Looking for Part Time work | -0.1242 *** | (0.0269) | 0.2219 | (0.4384) | -6.9846 *** | (1.0403) | | |
| Good Chance of Searching | | | 1.3237*** | (0.4598) | | | | |
| Number of Direct Contacts | | | 4.6805*** | (1.3886) | | | | |
| Max. State U.I. Employer Tax | | | -0.2367** | (0.1068) | | | | |
| State Unemployment Rate | | | -0.0183 | (0.0847) | | | | |
| Weeks not Worked last Month | | | | | -1.2922 ** | (0.5419) | | |
| # of Required Contacts [v] | | | | | 0.4566 ** | (0.1842) | | |
| Variation in Required Contacts [vi] | | | | | 0.7627 ** | (0.3868) | | |
| Contacts Not Specified by Law [vii] | | | | | -4.1864 *** | (1.5657) | | |
| Expect to be Recalled | | | | | -4.0710 ** | (1.7980) | | |
| Getting U.I. | | | | | -3.4850 | (2.9516) | | |
| Getting Aid | | | | | 2.3719 | (1.4777) | | |
| Unemp. in Wave 4 | | | | | | | -0.6252 | (0.6043) |
| Lagged HH Income | | | | | | | 1.9837 ** | (0.7610) |
| Lagged Own Earnings | | | | | | | 0.9503 *** | (0.2795) |
| Weeks Since Last Worked | -0.0020 | (0.0036) | -0.0518 | (0.0380) | -0.1911 * | (0.1045) | | |
| Weeks Since Last Worked$^2$ | 0.0000 | (0.0000) | 0.0004 | (0.0004) | 0.0017 | (0.0013) | | |
| Unemp. × Weeks Since Worked | 0.0015 | (0.0043) | | | | | | |
| Unemp. × Weeks Since Worked$^2$ | -0.0001 | (0.0001) | | | | | | |
| Get U.I. × Weeks Since Worked | | | | | 0.4846 ** | (0.2315) | | |
| Get U.I. × Weeks Since | | | | | -0.0080 * | (0.0043) | | |
| Constant | -0.1318 | (0.3010) | 4.1762** | (1.9137) | 6.4330 *** | (2.2428) | -4.9705 * | (2.6334) |
| Standard Deviation of Errors | 0.605 *** | (0.0399) | | | 2.7313 *** | (0.1912) | 2.7374 *** | (0.1062) |
| Correlation of errors with e | 0.3831 *** | (0.0986) | | | 0.081 | (0.0601) | | |
| Correlation between ε and ν | -0.5105 *** | (0.1846) | | | | | | |

[i] Standard errors are corrected for heteroskedasticity.

[ii] The reservation wage, job offer, and search effort equations also include experience, experience squared, an indicator for metropolitan area, highest grade completed, head and black. The wealth equation also includes age, age squared, , an indicator for metropolitan area, highest grade completed, and black.

[iii] Wealth is measured in $10,000. Other family income, U.I. benefits, and income from aid are measured in $1000.

[iv] Income from Food Stamps or AFDC.

[v] The number of employers U.I. regulations required the individual to make last month. Is equal to zero for individuals not on U.I..

[vi] An indicator which takes the value of one if the there is variation in state U.I. search requirements, interacted with the number of weeks the individual received U.I. payments.

[vii] An indicator which takes the value of one if state U.I. search requirements are not specified by law.

**TABLE 10: The Elasticity of Number of Employer Contacts**
With Respect to Wealth, U.I. Benefit Level and Required Contacts

| | # of Employers Contacted Last Month (1) | Wealth (2) | $\frac{\%\Delta \#\ of\ Contacts}{\%\Delta Wealth}$ [i] (3) | U. I. Benefit Level (4) | $\frac{\%\Delta \#\ of\ Contacts}{\%\Delta Benefit\ Level}$ (5) | # Required Contacts [ii] (6) | $\frac{\%\Delta \#\ of\ Contacts}{\%\Delta Required\ Contacts}$ (7) |
|---|---|---|---|---|---|---|---|
| **Full Sample:** | | | | | | | |
| All Individuals | 3.31 | $37,886.84 | -0.113 | | | | |
| Unemployed | 7.11 | $32,477.46 | -0.041 | | | | |
| Receiving U.I. | 8.74 | $32,391.89 | -0.03 | $477.27 | 0.064 | 1.672 | 0.151 |
| **Heads:** | | | | | | | |
| All Individuals | 4.90 | $27,552.80 | -0.114 | | | | |
| Unemployed | 8.13 | $23,856.59 | -0.055 | | | | |
| Receiving U.I. | 10.06 | $30,538.31 | -0.045 | $544.62 | -0.089 | 1.692 | 0.068 |
| **Wives:** | | | | | | | |
| All Individuals | 1.80 | $47,707.03 | -0.141 | | | | |
| Unemployed | 5.37 | $47,261.17 | -0.042 | | | | |
| Receiving U.I.. | 6.21 | $35,940.17 | -0.029 | $348.36 | 0.534 | 1.578 | 0.377 |

[i] The elasticities are calculated at the mean of the independent variables.
[ii] The number of employers individuals on U.I. are required to contact each week to maintain eligibility.

**TABLE 11: The Elasticity of the Probability of a Job Offer With Respect to**
Wealth, the U.I. Benefit Level, and the Required Number of Contacts

| | | Probability of Offer (1) | Wealth (2) | $\frac{\%\Delta P(Offer)}{\%\Delta Wealth}$ [i] (3) | U. I. Benefit Level (4) | $\frac{\%\Delta P(Offer)}{\%\Delta Benefit\ Level}$ (5) | # Required[ii] Contacts (6) | $\frac{\%\Delta P(Offer)}{\%\Delta Required\ Contacts}$ (7) |
|---|---|---|---|---|---|---|---|---|
| **Full Sample** | | | | | | | | |
| All Individuals | 16-month | 87.19% | $37,886.84 | -0.019 | | | | |
| | 4-month | 42.33% | | -0.016 | | | | |
| Unemployed | 16-month | 99.05% | $32,477.46 | -0.003 | | | | |
| | 4-month | 61.00% | | -0.011 | | | | |
| Receiving U.I. | 16-month | 99.98% | $32,391.89 | 0.000 | $477.27 | 0.0002 | 1.672 | 0 |
| | 4-month | 76.74% | | -0.008 | | 0.0162 | | 0.038 |
| **Heads** | | | | | | | | |
| All Individuals | 16-month | 96.49% | $27,552.80 | -0.016 | | | | |
| | 4-month | 44.98% | | -0.024 | | | | |
| Unemployed | 16-month | 99.99% | $23,856.59 | 0.000 | | | | |
| | 4-month | 62.79% | | -0.017 | | | | |
| Receiving U.I. | 16-month | 100.00% | $30,538.31 | 0.000 | $544.62 | 0.000 | 1.692 | 0 |
| | 4-month | 80.17% | | -0.013 | | -0.024 | | 0.019 |
| **Wives** | | | | | | | | |
| All Individuals | 16-month | 100.00% | $47,707.03 | 0.000 | | | | |
| | 4-month | 63.18% | | -0.066 | | | | |
| Unemployed | 16-month | 100.00% | $47,261.17 | 0.000 | | | | |
| | 4-month | 99.89% | | -0.001 | | | | |
| Receiving U.I.. | 16-month | 100.00% | $35,940.17 | 0.000 | $348.36 | 0.000 | 1.578 | 0 |
| | 4-month | 100.00% | | 0.000 | | 0.000 | | 0 |

[i] The elasticities are calculated at the mean of the independent variables.
[ii] The number of employers individuals on U.I. are required to contact each week to maintain eligibility.

**TABLE 12: The Elasticity of the Reservation Wage**
With Respect to Wealth and U.I. Benefits

| | Reservation Wage (1) | Net Worth (2) | $\frac{\%\Delta \text{Reservation Wage}}{\%\Delta \text{Wealth}}$ [i] (3) | U. I. Benefit Level (4) | $\frac{\%\Delta \text{Reservation Wage}}{\%\Delta \text{Benefit Levels}}$ (5) |
|---|---|---|---|---|---|
| **Full Sample:** | | | | | |
| All Individuals | $4.97 | $37,886.84 | 0.126 | | |
| Unemployed | $5.34 | $32,477.46 | 0.107 | | |
| Receiving U.I. | $6.05 | $32,391.89 | 0.099 | $477.27 | 0.143 |
| **Heads** | | | | | |
| All Individuals | $5.55 | $27,552.80 | 0.133 | | |
| Unemployed | $5.84 | $23,856.59 | 0.117 | | |
| Receiving U.I. | $6.84 | $30,538.31 | 0.123 | $544.62 | 0.182 |
| **Wives** | | | | | |
| All Individuals | $4.41 | $47,707.03 | 0.130 | | |
| Unemployed | $4.47 | $47,261.17 | 0.126 | | |
| Receiving U.I.. | $4.45 | $35,940.17 | 0.107 | $348.36 | 0.028 |

[i] The elasticities are calculated at the mean of the independent variables.

**TABLE 13: The Elasticity of the Probability of Job Acceptance**

With Respect to Wealth, U.I. Benefit Level, and the Required Number of Contacts

| | | | Probability of Acceptance (1) | Wealth (2) | $\frac{\%P(Acceptance)}{\%\Delta Wealth}$ [i] (3) | U. I. Benefit Level (4) | $\frac{\%P(Acceptance)}{\%\Delta Benefit\ Levels}$ (5) |
|---|---|---|---|---|---|---|---|
| **Full Sample** | | | | | | | |
| | All Individuals | 16-month | 62.76% | $37,886 | -0.137 | | |
| | Unemployed | 16-month | 65.64% | $32,477 | -0.109 | | |
| | Receiving U.I. | 16-month | 65.89% | $32,391 | -0.100 | $477.27 | -0.144 |
| **Heads** | | | | | | | |
| | All Individuals | 16-month | 59.96% | $27,552 | -0.164 | | |
| | Unemployed | 16-month | 65.48% | $23,856 | -0.125 | | |
| | Receiving U.I. | 16-month | 67.67% | $30,538 | -0.124 | $544.62 | -0.184 |
| **Wives** | | | | | | | |
| | All Individuals | 16-month | 56.41% | $47,707 | -0.161 | | |
| | Unemployed | 16-month | 58.61% | $47,261 | -0.148 | | |
| | Receiving U.I.. | 16-month | 61.12% | $35,940 | -0.119 | $348.36 | -0.031 |

[i] The elasticities are calculated at the mean of the independent variables.

**TABLE 14: The Elasticity of the Probability of Transition to Employment**

With Respect to Wealth, U.I. Benefit Level, and the Required Number of Contacts

| | | Probability of Transition (1) | Wealth (2) | $\frac{\%\Delta P(Transition)}{\%\Delta Wealth}$ [i] (3) | U. I. Benefit Level (4) | $\frac{\%\Delta P(Transition)}{\%\Delta U.I.Benefit}$ (5) | *Required Contacts*[ii] (6) | $\frac{\%\Delta P(Transition)}{\%\Delta \text{Re}quiredContacts}$ (7) |
|---|---|---|---|---|---|---|---|---|
| **Full Sample** | | | | | | | | |
| All Individuals | 16-month | 0.547 | $37,886 | -0.157 | | | | |
| Unemployed | 16-month | 0.65 | $32,477 | -0.111 | | | | |
| Receiving U.I. | 16-month | 0.659 | $32,391 | -0.1 | $477.27 | -0.144 | 1.672 | 0 |
| **Heads** | | | | | | | | |
| All Individuals | 16-month | 0.579 | $27,552 | -0.18 | | | | |
| Unemployed | 16-month | 0.655 | $23,856 | -0.125 | | | | |
| Receiving U.I. | 16-month | 0.677 | $30,538 | -0.124 | $544.62 | -0.184 | 1.692 | 0 |
| **Wives** | | | | | | | | |
| All Individuals | 16-month | 0.564 | $47,707 | -0.161 | | | | |
| Unemployed | 16-month | 0.586 | $47,261 | -0.148 | | | | |
| Receiving U.I.. | 16-month | 0.611 | $35,940 | -0.119 | $348.36 | -0.031 | 1.578 | 0 |

[i] The elasticities are calculated at the mean of the independent variables.

[ii] The number of employers individuals on U.I. are required to contact each week to maintain eligibility.

**TABLE 15: Decomposition of the Elasticity of the Probability of Transition**
With Respect to Wealth and the U.I. Benefit Level (Percent of Effect in Parenthesis)

**Decomposition of the Elasticity of the Probability of Transition with respect to Wealth**

| | Full Sample | | | Heads | | | Wives | | |
|---|---|---|---|---|---|---|---|---|---|
| | $\frac{\%\Delta P(Accept)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Offer)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Trans)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Accept)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Offer)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Trans)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Accept)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Offer)}{\%\Delta Wealth}$ | $\frac{\%\Delta P(Trans)}{\%\Delta Wealth}$ |
| | *(1)* | *(2)* | *(3)=(1)+(2)* | *(4)* | *(5)* | *(6)=(4)+(5)* | *(7)* | *(8)* | *(9)=(7)+(8)* |
| All Individuals | | | | | | | | | |
| 16 Month | -0.137 | -0.019 | -0.157 | -0.164 | -0.016 | -0.180 | -0.161 | 0.000 | |
| | (87.6%) | (12.4%) | (100.0%) | (90.9%) | (9.1%) | (100.0%) | (100.0%) | (0.0%) | (100.0%) |
| 4 Month | -0.133 | -0.016 | -0.149 | -0.160 | -0.024 | -0.184 | -0.161 | -0.066 | -0.227 |
| | (89.4%) | (10.6%) | (100.0%) | (86.8%) | (13.2%) | (100.0%) | (71.0%) | (29.0%) | (100.0%) |
| Unemployed | | | | | | | | | |
| 16 Month | -0.109 | -0.003 | -0.111 | -0.125 | 0.000 | -0.125 | -0.148 | 0.000 | -0.148 |
| | (97.4%) | (2.6%) | (100.0%) | (99.9%) | (0.1%) | (100.0%) | (100.0%) | (0.0%) | (100.0%) |
| 4 Month | -0.106 | -0.011 | -0.117 | -0.123 | -0.017 | -0.140 | -0.150 | -0.001 | -0.151 |
| | (90.5%) | (9.5%) | (100.0%) | (87.7%) | (12.3%) | (100.0%) | (99.3%) | (0.7%) | (100.0%) |
| Unemployed on U.I. | | | | | | | | | |
| 16 Month | -0.100 | 0.000 | -0.100 | -0.124 | 0.000 | -0.124 | -0.119 | 0.000 | -0.119 |
| | (99.9%) | (0.1%) | (100.0%) | (100.0%) | (0.0%) | (100.0%) | (100.0%) | (0.0%) | (100.0%) |
| 4 Month | -0.098 | -0.008 | -0.106 | -0.124 | -0.013 | -0.137 | -0.122 | 0.000 | -0.122 |
| | (92.5%) | (7.5%) | (100.0%) | (90.4%) | (9.6%) | (100.0%) | (100.0%) | (0.0%) | (100.0%) |

**Decomposition of the Elasticity of the Probability of Transition with Respect to Unemployment Insurance Benefit Levels**

| | Full Sample | | | Heads | | | Wives | | |
|---|---|---|---|---|---|---|---|---|---|
| | $\frac{\%\Delta P(Accept)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Offer)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Trans)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Accept)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Offer)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Trans)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Accept)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Offer)}{\%\Delta U.I.}$ | $\frac{\%\Delta P(Trans)}{\%\Delta U.I.}$ |
| | *(1)* | *(2)* | *(3)=(1)+(2)* | *(4)* | *(5)* | *(6)=(4)+(5)* | *(7)* | *(8)* | *(9)=(7)+(8)* |
| Unemployed on U.I. | | | | | | | | | |
| . 16 Month | -0.144 | 0.000 | -0.144 | -0.184 | 0.000 | -0.184 | -0.031 | 0.000 | -0.031 |
| | (100.1%) | -(0.1%) | (100.0%) | (100.0%) | (00.0%) | (100.0%) | (100.0%) | (00.0%) | (100.0%) |
| 4 Month | -0.154 | 0.016 | -0.138 | -0.194 | -0.024 | -0.218 | -0.062 | 0.000 | -0.062 |
| | (111.7%) | -(11.7%) | (100.0%) | (88.9%) | (11.1%) | (100.0%) | (100.0%) | (00.0%) | (100.0%) |

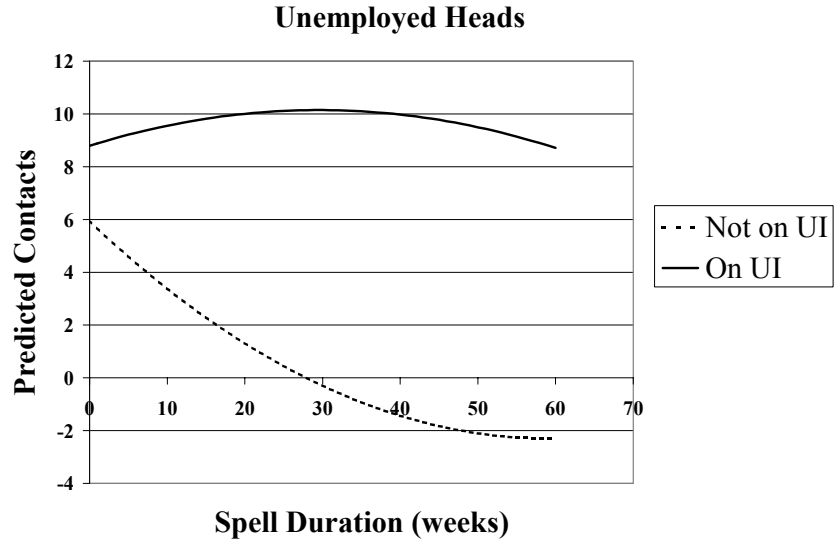
**Table A1: Wage Offer Distribution and the Selection Equation**

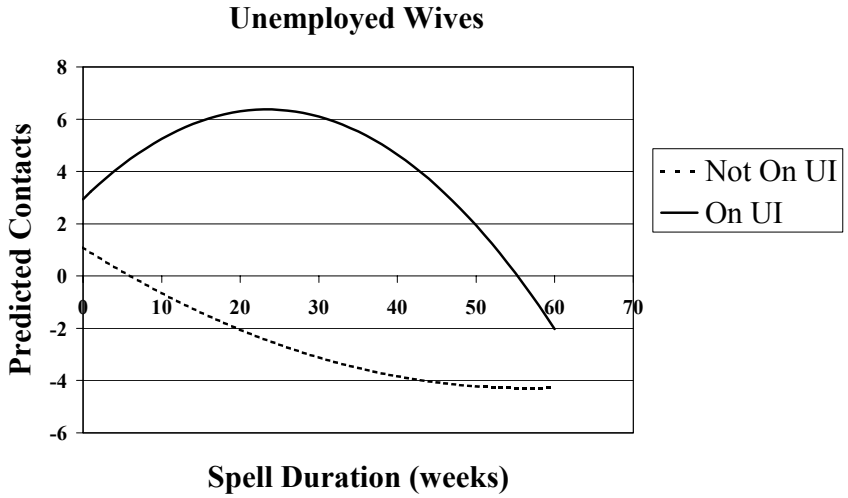
Dependent Variable: Log Wage

Heads and Wives

| | Full Sample | | Wives | | Heads | |
|---|---|---|---|---|---|---|
| **Wage Equation** | | | | | | |
| | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* |
| Highest Grade | 0.0891 | 0.0020 | 0.0934 | 0.0042 | 0.0896 | 0.0022 |
| Experience | 0.0380 | 0.0020 | 0.0174 | 0.0024 | 0.0377 | 0.0020 |
| Experience$^2$ | -0.0006 | 0.0000 | -0.0003 | 0.0001 | -0.0006 | 0.0000 |
| Female×Experience | -0.0217 | 0.0027 | | | -0.0208 | 0.0038 |
| Female×Experience$^2$ | 0.0003 | 0.0001 | | | 0.0003 | 0.0001 |
| Black | -0.1015 | 0.0160 | 0.0089 | 0.0331 | -0.1319 | 0.0186 |
| Male | -0.4793 | 0.1303 | | | -0.2329 | 0.2188 |
| Head | 0.1174 | 0.0229 | | | | |
| Married | 0.0868 | 0.0156 | | | 0.0845 | 0.0157 |
| Part-Time | -0.2287 | 0.0356 | -0.1486 | 0.0443 | -0.3177 | 0.0611 |
| Hours | 0.0287 | 0.0049 | 0.0044 | 0.0048 | 0.0235 | 0.0056 |
| Hours$^2$ | -0.0003 | 0.0000 | 0.0000 | 0.0001 | -0.0003 | 0.0001 |
| Female×Hours | -0.0246 | 0.0059 | | | -0.0114 | 0.0109 |
| Female×Hours$^2$ | 0.0003 | 0.0001 | | | 0.0001 | 0.0001 |
| Inverse Mills Ratio | -0.0785 | 0.0790 | 0.2184 | 0.1091 | -0.1457 | 0.1145 |
| Intercept | 1.1147 | 0.1073 | 1.0036 | 0.1219 | 1.1342 | 0.2497 |
| **Selection Equation** | | | | | | |
| | *Coef.* | *S.E.* | *Coef.* | *S.E.* | *Coef.* | *S.E.* |
| Highest Grade | 0.0400 | 0.0042 | 0.0810 | 0.0068 | 0.0157 | 0.0054 |
| Experience | 0.0090 | 0.0049 | 0.0365 | 0.0049 | 0.0104 | 0.0050 |
| Experience$^2$ | -0.0007 | 0.0001 | -0.0012 | 0.0001 | -0.0008 | 0.0001 |
| Female×Experience | 0.0290 | 0.0064 | | | 0.0444 | 0.0095 |
| Female×Experience$^2$ | -0.0006 | 0.0001 | | | -0.0010 | 0.0002 |
| Black | 0.1315 | 0.0360 | 0.3667 | 0.0617 | 0.0120 | 0.0439 |
| Male | 0.2243 | 0.0715 | | | 0.2006 | 0.0962 |
| Head | 0.4271 | 0.0514 | | | | |
| Married | 0.0312 | 0.0418 | | | 0.0019 | 0.0424 |
| Any Children | 0.0044 | 0.0417 | -0.2423 | 0.0450 | -0.0186 | 0.0423 |
| Any Children <6 | -0.0733 | 0.0446 | -0.1771 | 0.0391 | -0.0551 | 0.0458 |
| Female×Any Children | -0.4207 | 0.0536 | | | -0.7781 | 0.0818 |
| Female×Any Children <6 | 0.0006 | 0.0550 | | | 0.2990 | 0.0914 |
| Spouses Earnings | 0.0002 | 0.0000 | 0.0001 | 0.0000 | 0.0002 | 0.0000 |
| Other Familiy Income | -0.0002 | 0.0000 | -0.0002 | 0.0000 | -0.0002 | 0.0000 |
| Unemployed | -2.7808 | 0.1167 | -2.2821 | 0.1895 | -2.9899 | 0.1396 |
| Intercept | 0.1706 | 0.0642 | -0.0372 | 0.0619 | 0.7570 | 0.0859 |
| Log Likelihood | 20898.41 | | -8290.81 | | -12498.41 | |
| N | 21255 | | 8570 | | 12685 | |
| Censored | 8083 | | 4294 | | 3789 | |
| Uncensored | 13172 | | 4276 | | 8896 | |

**Figure 1: Predicted Employer Contacts by Unemployed Individuals**[i]




[i] The predicted number of contacts is calculated for each unemployed individual at the actual value of all variables except duration. The mean of these predicted values for the relevant group is graphed for various values of spell duration.

# 6 Not For Publication Technical Appendix

## 6.1 Computing the log-likelihood function:

This appendix derives the likelihood for estimating a four equation simultaneous system for the endogenous variables search effort, wealth, reservation wages, and labor market transitions. As in the paper, assume that the reservation wage equation is given by:

$$R_{it} = f(W_{it}) + X'_{it}\beta + \varepsilon_{it}, \text{ where } \varepsilon \sim N(0, \sigma_\varepsilon^2)$$

where $R_{it}$ is the log of the individual's self-reported reservation wage, $X_{it}$ contains the individual's characteristics, and $f(W_{it})$ is a quadratic function of wealth. The search effort equation can be written as:

$$E_{it} = \xi' z + \tau_{it}, \text{ where } \tau \sim N(0, \sigma_\tau^2)$$

Assume that the wage offer distribution is lognormal and is described by the equation:

$$\ln(w_{it}) = k'_{it} m + e_{it}, \text{ where } \sim N(0, \sigma_e^2)$$

where i indexes individual i in the population of job searchers, and $k_{it}$ are the individual's characteristics at date t. The wealth accumulation equation is specified as:

$$W_{it} = Q'_{it}\mu + v_{it-1}, \text{ where } v \sim N(0, \sigma_v^2)$$

where $Q'_{it}$ includes the individual's characteristics as of period t-1.

The probability of receiving a job offer in any period is assumed to be:

$$Pr(job\ offer) = \lambda_{it} = 1 - exp(-\eta_{it})$$

where $\eta_{it}$ is a positive parameter that depends on the individual's characteristics, $Z_{it}$ in the follow way:

$$\eta_{it} = exp(Z'_{it}\gamma)$$

where $\gamma$ is a vector of parameters and $Z_{it}$ includes characteristics such as the elapsed unemployment duration and measures of the individual's search effort.

Assume that the error terms are jointly distributed normally, that the errors from the effort equation are uncorrelated with the other errors, and that the errors and the regressors are orthogonal (except for the covariance between the endogenous variables and the error):

$$\begin{bmatrix} e \\ \varepsilon \\ v \\ \tau \end{bmatrix} \sim N \left( \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \sigma_e^2 & \sigma_{e\varepsilon} & \sigma_{ev} & 0 \\ \sigma_{e\varepsilon} & \sigma_\varepsilon^2 & \sigma_{\varepsilon v} & 0 \\ \sigma_{ev} & \sigma_{\varepsilon v} & \sigma_v^2 & 0 \\ 0 & 0 & 0 & \sigma_\tau^2 \end{bmatrix} \right)$$

Let $T_i$ be the variable that denotes whether the i$^{th}$ individual has made a transition from unemployment to work ($T_i = 1$ if there was a transition and $T_i = 0$ otherwise). We can then write the likelihood function as:

$$L = \prod_{i=1}^{N} f(R_i, W_i, T_i, E_i) = \prod_{i=1}^{N} f(T_i \mid R_i, W_i, E_i) f(R_i \mid E_i, W_i) f(E_i \mid W_i) f(W_i)$$

Given the definition of $T_i$, we can express the probability that an individual job seeker

makes the transition to employment as

$$\text{Prob}(\text{T}_i = 1) = (1 - \exp(-\exp(Z'_{it}\gamma))) \left(1 - \Phi\left(\frac{R_{it} - k'_{it}m - \psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v.\tau}}\right)\right)$$

where $\Phi(\cdot)$ is the cdf of the Normal(0,1) distribution

$$\sigma_{e|\varepsilon,v,\tau} = \left\{ \sigma_e^2 - \begin{bmatrix} \sigma_{e\varepsilon} & \sigma_{ev} & 0 \end{bmatrix} \begin{bmatrix} \sigma_\varepsilon^2 & \sigma_{\varepsilon v} & 0 \\ \sigma_{\varepsilon v} & \sigma_v^2 & 0 \\ 0 & 0 & \sigma_\tau^2 \end{bmatrix}^{-1} \begin{bmatrix} \sigma_{e\varepsilon} \\ \sigma_{ev} \\ 0 \end{bmatrix} \right\}^{\frac{1}{2}}$$

$$\psi_{e|\varepsilon,v,\tau} = \begin{bmatrix} \sigma_{e\varepsilon} & \sigma_{ev} & 0 \end{bmatrix} \begin{bmatrix} \sigma_\varepsilon^2 & \sigma_{\varepsilon v} & 0 \\ \sigma_{\varepsilon v} & \sigma_v^2 & 0 \\ 0 & 0 & \sigma_\tau^2 \end{bmatrix}^{-1} \begin{bmatrix} \varepsilon \\ v \\ \tau \end{bmatrix}$$

where $\sigma_{e|\varepsilon,v,\tau}$ and $\psi_{e|\varepsilon,v,\tau}$ are derived using the fact that $e \mid \varepsilon, v, \tau$ is distributed normally with mean $\psi_{e|\varepsilon,v,\tau}$ and variance $\sigma^2_{e|\varepsilon,v,\tau}$.[57] . We do not need to worry about the fact that $\tau$ appears because under the assumption that $\tau$ is uncorrelated with the other errors the coefficient on $\tau$ is zero.

This implies that:

$$\begin{aligned}
\prod_{i=1}^{N} f(T_i \mid R_i, E_i, W_i) &= \prod_{T_i=1} (1 - \exp(-\exp(Z'_{it}\gamma))) \left(1 - \Phi\left(\frac{R_{it} - k'_{it}m - \psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v,\tau}}\right)\right) \times \\
&\quad \prod_{T_i=0} \left[1 - (1 - \exp(-\exp(Z'_{it}\gamma))) \left(1 - \Phi\left(\frac{R_{it} - k'_{it}m - \psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v,\tau}}\right)\right)\right] \\
&= \prod_{i=1}^{N} \left[(1 - \exp(-\exp(Z'_{it}\gamma))) \left(1 - \Phi\left(\frac{R_{it} - k'_{it}m - \psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v,\tau}}\right)\right)\right]^{T_i} \times \\
&\quad \left[1 - (1 - \exp(-\exp(Z'_{it}\gamma))) \left(1 - \Phi\left(\frac{R_{it} - k'_{it}m - \psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v,\tau}}\right)\right)\right]^{1-T_i}
\end{aligned}$$

[57] See Green, 2nd edition, page 76 for the formula

Given that

$$\begin{aligned} R \quad | \quad E, W &\sim N(\mu_{R|E,W}, \sigma_{R|E,W}) \\ where\ \mu_{R|E,W} &= (X'\beta) + \begin{bmatrix} \sigma_{\varepsilon v} & 0 \end{bmatrix} \begin{bmatrix} \sigma_v^2 & 0 \\ 0 & \sigma_\tau^2 \end{bmatrix}^{-1} \begin{bmatrix} v \\ \tau \end{bmatrix}, \\ and \sigma_{R|E,W} &= \sigma_\varepsilon^2 - \begin{bmatrix} \sigma_{\varepsilon v} & 0 \end{bmatrix} \begin{bmatrix} \sigma_v^2 & 0 \\ 0 & \sigma_\tau^2 \end{bmatrix}^{-1} \begin{bmatrix} \sigma_{\varepsilon v} \\ 0 \end{bmatrix}. \end{aligned}$$

and that $E \mid W \sim N(\xi' z, \sigma_\tau^2)$ and $W \sim N\left((Q'\mu), \sigma_v^2\right)$, we can write:

$$\prod_{i=1}^{N} f(R_i \mid E_i, W_i) = (2\pi\sigma_{R|E,W})^{\frac{-N}{2}} \exp\left\{ -\frac{1}{2} \frac{\left[(\varepsilon + av + b\tau)'(\varepsilon + av + b\tau)\right]}{\sigma_{R|E,W}} \right\}$$

where $a = \frac{\sigma_\tau^2 \sigma_{\varepsilon\nu} - \sigma_{\varepsilon\tau}\sigma_{\nu\tau}}{\sigma_v^2\sigma_\tau^2 - \sigma_{\nu\tau}^2}$ and $b = 0$. When we have censoring we need to break apart the sample into the part that is censored and the part that is not...i.e., the group that is searching and the part that is not...

$$\begin{aligned} \prod_{i=1}^{N} f(E_i \quad | \quad W_i) f(W_i) &= \frac{(2\pi)^{\frac{-N}{2}}}{\left(\sqrt{\sigma_\tau^2}\right)^N} \exp\left\{ -\frac{1}{2} \frac{\left[\tau'\tau + \left(\frac{\sigma_{\tau v}}{\sigma_v^2}\right)^2 v'v - 2\tau' v \left(\frac{\sigma_{\tau v}}{\sigma_v^2}\right)\right]}{\sigma_\tau^2 - \left(\frac{\sigma_{\tau v}}{\sigma_v}\right)^2} \right\} \frac{(2\pi)^{\frac{-N}{2}}}{\left(\sqrt{\sigma_v^2}\right)^N} \exp\left\{ -\frac{1}{2} \frac{v'v}{\sigma_v^2} \right\} \\ &= \frac{(2\pi)^{-N}}{\left(\sqrt{\sigma_\tau^2\sigma_v^2 - \sigma_{\tau v}^2}\right)^N} \exp\left\{ -\frac{1}{2} \frac{\left[\tau'\tau + \left[\left(\frac{\sigma_{\tau v}}{\sigma_v}\right)^2 + \sigma_\tau^2 - \left(\frac{\sigma_{\tau v}}{\sigma_v}\right)^2\right] \frac{v'v}{\sigma_v^2} - 2\tau' v \left(\frac{\sigma_{\tau v}}{\sigma_v^2}\right)\right]}{\sigma_\tau^2 - \left(\frac{\sigma_{\tau v}}{\sigma_v}\right)^2} \right\} \\ &= \frac{(2\pi)^{-N}}{\left(\sqrt{\sigma_\tau^2\sigma_v^2\Lambda}\right)^N} \exp\left\{ -\frac{1}{2} \frac{\left[\tau'\tau + [\sigma_\tau^2] \frac{v'v}{\sigma_v^2} - 2\tau' v \left(\frac{\sigma_{\tau v}}{\sigma_v^2}\right)\right]}{\sigma_\tau^2 \Lambda} \right\} \\ &= \frac{(2\pi)^{-N}}{\left(\sigma_\tau \sigma_v \Lambda^{\frac{1}{2}}\right)^N} \exp\left\{ -\frac{1}{2} \frac{\left[\frac{\tau'\tau}{\sigma_\tau^2} + \frac{v'v}{\sigma_v^2} - 2\frac{\tau' v}{\sigma_\tau \sigma_v}\rho_{\tau v}\right]}{\Lambda} \right\} \\ \text{where } \Lambda &= (1 - \rho_{\tau v}^2) = \frac{\sigma_\tau^2\sigma_v^2 - \sigma_{\tau v}^2}{\sigma_\tau^2\sigma_v^2} \text{ and } \rho_{\tau v} = \frac{\sigma_{\tau v}}{\sigma_\tau \sigma_v} \end{aligned}$$

Therefore the log of the likelihood function becomes:

$$\begin{aligned}
\ln L \;=\; & \left\{-\frac{3N}{2}\ln(2\pi) - N\left[\ln(\sigma_v)+\ln(\sigma_\tau)+\frac{1}{2}\ln(\Lambda)\right] - \frac{N}{2}\ln(\sigma_{R|E,W})\right\} \\
& -\frac{\left[(\varepsilon+av+b\tau)'(\varepsilon+av+b\tau)\right]}{2\sigma_{R|E,W}} - \frac{\left[\frac{\tau'\tau}{\sigma_\tau^2}+\frac{v'v}{\sigma_v^2}-2\frac{\tau'v}{\sigma_\tau\sigma_v}\rho_{\tau v}\right]}{2\Lambda} \\
& +\sum_{i=1}^{n}\left\{(1-T_i)\ln\left\{\left[1-(1-\exp(-\exp(Z_{it}'\gamma)))\left(1-\Phi\left(\frac{R_{it}-k_{it}'m-\psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v,\tau}}\right)\right)\right]\right\}\right\} \\
& +\sum_{i=1}^{n}\left\{(T_i)\ln\left\{\left[(1-\exp(-\exp(Z_{it}'\gamma)))\left(1-\Phi\left(\frac{R_{it}-k_{it}'m-\psi_{e|\varepsilon,v,\tau}}{\sigma_{e|\varepsilon,v,\tau}}\right)\right)\right]\right\}\right\}
\end{aligned}$$

Using maximum likelihood estimation, we then obtain estimates for $\beta, \xi, \mu, \gamma$, $\sigma_e^2$,$\sigma_\varepsilon^2$,$\sigma_v^2$,$\sigma_\tau^2$ and the correlations between the error terms.