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Source: *ILR Review*, Vol. 52, No. 3 (Apr., 1999), pp. 460-477

Published by: Sage Publications, Inc.

Stable URL: <https://www.jstor.org/stable/2525145>

Accessed: 04-12-2019 08:56 UTC

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THE RETURNS TO MOBILITY AND JOB SEARCH BY GENDER

KRISTEN KEITH and ABAGAIL McWILLIAMS*

Using data from the National Longitudinal Survey of Youth, the authors estimate the returns to job search, mobility, and the interaction of search and mobility for young men and women. They find statistically significant gender differences in mobility patterns and search behavior, but not in the *returns* to a given behavior. Both men and women engaged in substantial job search and mobility early in their careers, which resulted in wage growth premiums. There is evidence of an interactive effect: returns to search were realized through mobility, and returns to mobility were augmented by search.

Young workers are very mobile. Most of them change jobs several times during the first decade of work. This mobility seems to pay off, as wage growth is also high for young workers. Because mobility is typically associated with successful employed job search, the returns to search are often subsumed in estimates of the returns to mobility. As a result, there is not much compelling evidence concerning the role of job search, independent of mobility, in wage growth. Nor is there good evidence on the job search and mobility behavior and returns to women as compared to men. Hence, much remains to be examined with respect to job search, mobility, and wage growth for young workers, by gender.

Like mobility, job search is usually motivated by the worker's desire for an improved employment relationship. It seems reasonable to suppose that workers who engage in job search should experience more wage growth than those who do not, because they are better informed about their value to the market. **This outcome does not necessarily require mobility. A worker who searches and discovers he is worth more than his current wage can realize the higher wage by changing employers, or by bargaining with his current employer for the higher wage.** Consequently, we cannot assume that search and job mobility are simply complements.

Considering job search and mobility jointly raises several questions. Does job search vary with the type of mobility? Do men and women differ in their job search

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A data appendix with additional results, and copies of the computer programs used to generate the results presented in this paper, can be obtained from Kristen Keith at the University of Toledo, Department of Economics, Toledo, OH 43606.

behavior? Are there interactive effects to job search and mobility, that is, do job searchers who move realize a premium over job searchers who do not move, and do movers who search fare better than movers who do not search? Are there gender differences in the returns to job search or mobility? To address these questions, we use data from the National Longitudinal Survey of Youth to examine the job search and mobility patterns of men and women, and the effect of job search and different types of mobility on wage growth by gender. We are particularly interested in job search behavior and its impact on wage growth associated with mobility, and whether there are gender differences in behavior or wage growth.

Employed Search and Job Mobility

Employed Job Search

Empirical studies indicate that the first decade of work experience is characterized by high job mobility and wage growth (Topel and Ward 1992). This high rate of mobility and the corresponding wage growth has been attributed to job shopping, in which individuals try out jobs to determine their comparative advantage (Johnson 1978); the search for higher-quality job matches (Jovanovic 1979); skill-biased technological change (Siegel 1998); and the search for better pay (Parsons 1973; Burdett 1978).

Inherent in the job mobility literature is the notion that the decision to quit is, in most cases, precipitated by successful employed job search, because most quits are associated with job-to-job transitions rather than a period of unemployment. Employed job search is defined as search that takes place while the worker is still employed in his or her current job. In the basic employed-search model, an employed worker can continue to search on the job and will change jobs if an offer above the current wage is received (see the discussion in Devine and Kiefer 1991). The arrival rate of alternative job offers depends on the individual's search intensity, which depends on the potential gains from search.

One prediction of the basic model is that because workers in low-wage jobs potentially can gain the most from employed search, they should have higher acceptance probabilities than workers in high-wage jobs. If wages vary positively with experience (given the same wage offer distribution), young lower-paid workers should face greater gains from search than older higher-paid workers. It stands to reason, therefore, that younger workers should be more likely to search than older workers. This says nothing about differences in search choice between men and women in a given age group, however.

Men's and women's search behavior could differ for any of several reasons. One possible reason is gender differences in the returns to search. Such differences would occur if men and women differ in (1) intensity of search effort, (2) reservation wages, or (3) wage and offer functions.

The intensity of search is inversely related to the costs of search, including both direct and opportunity costs (Barron and McCafferty 1977; Kahn and Low 1984). Direct costs include such expenses as employment services, travel, and purchasing of newspapers and trade journals. We have no reason to suspect that these direct costs differ for men and women. Opportunity costs include the cost of non-wage time that is used for search rather than other non-work activities. There is reason to suspect that opportunity costs may differ for men and women. Much of a worker's non-wage time may be used in the production of household activities such as cleaning, cooking, and child care (Hersch and Stratton 1997). Women, especially married women, spend much more time engaged in household activities than men do (Hersch and Stratton found that the difference is nearly 3 to 1). Therefore, the opportunity cost of search may be higher for women than for men.

Reservation wages, *ceteris paribus*, are likely to be inversely related to search costs (Lippman and McCall 1976). Therefore, if women's (opportunity) cost of search is higher than men's, we would expect their reservation wages, on average, to be lower.

Lower average reservation wages would result in lower returns to search.

The offer probability and wage offer functions might differ by gender if the technology of search varies for men and women. Time spent on household activities might result in women being required to use more formal means of search, such as employment agencies or job advertisements, while men make use of personal contacts. Personal contacts and informal information may be more accessible to men than women due to the effects of occupational segregation or discrimination. Male-dominated occupations may be associated with more personal contacts outside of work or more informal information sources than are other occupations. In some occupations, lingering discrimination might oblige women to make more inquiries than men to generate the same number of responses from potential employers. Any of these mechanisms could cause the returns to search to differ for men and women, resulting in differences in search behavior.

Direct evidence of job search is rare, due to a lack of data.¹ Studies that have used direct measures have focused on the determinants of employed search (Black 1981; van Ophem 1991) or the determinants of the choice of search mode, such as employed versus unemployed search (Kahn and Low 1982, 1984; Parsons 1991).² Few studies have compared the search behavior of men and women. Those that have done so report some gender differences. Specifically, evidence using U.S. data (Parsons 1991) and British data (van Ophem 1991) indicates that women are less likely to search than are men.

There is also evidence, although indirect, that women's time cost of search may be higher than men's. Parsons (1991) reported that being married has a negative impact on young women's, but not young men's, likelihood of employed job search. Jones (1989) reported, for unemployed British workers, that men spent more hours searching for employment than did women. Moreover, men and women differed in their search activity. Men spent more hours checking with friends and relatives, and making direct applications to firms, than did women, whereas women spent more time looking at ads in newspapers. Blau (1992) reported that, among employed workers, women's probability of accepting job offers was slightly higher than was men's, which may imply less search.

Job Mobility and the Returns to Mobility

As would be expected, there is consistent evidence that changing jobs for voluntary reasons results in higher wage growth than not changing jobs, or changing jobs for involuntary reasons (Bartel and Borjas 1981; Mincer 1986). Further, there is evidence that different types of voluntary separations and different types of involuntary separations have different effects on wage growth. For example, Bartel and Borjas (1981) reported that quits made for job-related reasons had a larger positive impact on wage growth than quits made for personal reasons, and Keith and McWilliams (1997) found that being fired resulted in a larger wage penalty than being laid off.³

There is also some evidence of gender differences in job mobility propensities and returns to mobility. For example, Blau and Kahn (1981a) found that women experi-

¹Indirect evidence, that is, information on quits and other types of job separations, is much more prevalent.

²A related area of research focuses on the effect of advance-notice information on post-displacement outcomes such as the incidence of unemployment, the duration of unemployment, and the reservation wages of men and women. See, for example, Swaim and Podgursky (1990), Addison and Portugal (1992), and Addison and Blackburn (1995).

³Layoffs differ from discharges in that a discharge implies that the terminated employee's performance was incompetent or his or her behavior had been malfeasant, while a layoff is due to circumstances beyond the control of the employee (U.S. Department of Labor 1971).

enced substantially less involuntary turnover than men, and Keith and McWilliams (1997) reported similar results using a more recent cohort of individuals. Light and Ureta (1992) found that women may be less likely to quit than men, depending on whether the women have completed their desired fertility. Earlier research on voluntary turnover found that, all else equal, men and women had the same quit propensities (Viscusi 1980; Blau and Kahn 1981b). Further, Blau and Kahn (1981a) found that men are hurt more by a layoff than are women, and Loprest (1992) found that young men's wages grew twice as much from changing employers as did young women's. However, in contrast, Keith and McWilliams (1997) found little gender difference in the returns to mobility when the reason for job change is taken into account.

The Interaction of Job Mobility and Employed Search

Mincer (1986) explained the higher wage growth following voluntary moves, as compared to involuntary moves, as being the result of asymmetric information regarding the likelihood of turnover. One of the important distinctions between a quit and a layoff is that the worker has pre-knowledge of the quit and may not have pre-knowledge of the layoff. With foreknowledge of an impending move, a worker can engage in pre-separation, or employed, job search. The worker would then be in a position to move when a higher-paying position is offered. Without pre-knowledge of the separation, the worker would be constrained to search after separation—while unemployed. To the extent that employed searchers' reservation wage is likely to exceed their current wage, while unemployed searchers' reservation wage is likely to be lower, quits should be associated with higher average wage growth than layoffs.⁴

This argument can be extended to explain the differential impact on wage growth of different types of voluntary and involuntary mobility. Voluntary mobility can be separated into job-related and non-job-related quits. If non-job-related quits are due to unexpected random events, such as family members' health crises, then the individual will be less likely to have pre-knowledge of the separation. With less pre-knowledge, the worker will be less likely to have searched while still employed. Similarly, involuntary mobility can be separated into layoffs and discharges. If those who are laid off have better information about the likelihood of being let go than those who are fired, they could engage in more employed search.

Keith and McWilliams (1995) provided some indirect evidence that employed search is, in fact, related to mobility type. They reported that men and women who quit for an economic reason were twice as likely to have a new job lined up as those who were laid off, and four to five times as likely as those who were fired. Further, those who were laid off were twice as likely as those who were fired to have secured a job prior to the termination. The opportunity to search while employed is important, because employed job search seems to be effective. Swaim and Podgursky (1990) showed that employed job search significantly accelerated re-employment for all white-collar workers and for blue-collar men. Black (1980) reported (for men only) that those who searched prior to changing jobs earned wage premiums relative to who did not.

Taken together, the existing evidence on employed job search, mobility, and wage growth suggests that there is something to learn from examining how job search af-

⁴The research to date on this issue has produced conflicting evidence. For example, Mattila (1974) argued that employed workers' search produces

higher wage offers than unemployed workers' search. In contrast, Kahn and Low (1982) reported that taking into account the self-selection of individuals into their optimal mode of search results in unemployed search producing higher wage offers than employed search.

fects the returns to different types of mobility, and how gender differences in job search and mobility behaviors affect the relative wage growth of men and women. To address these issues, we examine the job search and mobility patterns of men and women and the effect of job search and different types of mobility on their wage growth.

Job Mobility and Employed Search Patterns

The above evidence and arguments suggest that gender differences in returns to mobility could follow from several causes: men and women may have different job mobility patterns; the likelihood of employed job search may vary by mobility type; the likelihood of employed job search may vary by gender; and there may be important interaction effects for employed search and mobility. To determine the influence of each of these factors, and the differential impact by gender, we examined the work histories of samples of young men and women (aged 18–27) from the National Longitudinal Survey of Youth (NLSY). The NLSY is a panel study that has, since 1979, annually collected information on the labor market activities of men and women who were 14 to 22 years old in 1979 (Center for Human Resource Research 1995).

Gender Differences in Job Separation Rates

The annual NLSY data files contain questions that provide information on four types of job mobility. For every job separation, the respondent is asked the reason for the change in employer. From the responses, one can classify each separation as a layoff, a discharge, a family-related quit, or a non-family-related quit.

Table 1 presents men's and women's job separation rates, that is, job separations as a percent of all jobs held (up to five jobs per person per year) between 1979 and 1984.⁵

Each observation is weighted by its sampling weight. We used data from these years to be consistent with the available information on employed job search contained in the NLSY. During this period, these young people were highly mobile—both genders had a 50% likelihood of separating from a given job. The men, however, were marginally more likely to separate than were the women.

Separate examinations of involuntary (employer-initiated) and voluntary (employee-initiated) separations reveal that this high turnover rate reflects both the adverse economic conditions of the early 1980s and the usual high rate of mobility associated with young workers. The involuntary separation rates range from 17% to 21%, which may reflect the impact of the 1980–81 and 1981–82 recessions on this group's employment. At the same time, the voluntary separation rates range from 33% to 37%. The disaggregation reveals that women's voluntary mobility rate is higher than men's, which is consistent with the results presented by Viscusi (1980) and Blau and Kahn (1981b) for samples from earlier cohorts.

The second part of Table 1 contains men's and women's separation rates conditioned on the type of separation, that is, the number of observations of each type of mobility (number of layoffs, for example) as a percentage of all separations. These data indicate that men were (1) more likely than women to separate because they were laid off or fired, and (2) less likely than women to quit. Although gender differences exist for all four types of job mobility, the biggest differences are in the layoff and family-related quit rates. In particular, for this sample, men were 23% more likely than women to be laid off, and women were twice as likely as men to quit for a family-related reason.

⁵The separation and employed job search rates presented in Tables 1 and 2 were calculated by pooling all the respondents' jobs (or his or her annual

CPS job) over the sample period. We did not adjust the standard errors for the likely interdependence associated with multiple observations on the same individual over time. Thus, the reported t-values from the paired t-tests may overstate the true level of statistical significance.

Table 1. Separation Likelihoods of Women and Men Aged 18 to 27, 1979–1984.^a

<i>Likelihood of Separation</i>	<i>Women</i> (<i>n</i> = 35,405) (1)	<i>Men</i> (<i>n</i> = 41,466) (2)	<i>t</i> (3)
Aggregate Likelihood ^b	53.0%	54.5%	-3.7***
Involuntary	16.5%	21.2%	-16.5***
Voluntary	36.5%	33.3%	9.4***
Disaggregated Separation Likelihoods ^c			
Layoffs ^d	26.7%	32.9%	-13.9***
Discharges	4.8%	5.9%	-6.8***
Family-Related Quits	8.4%	3.8%	19.5***
Non-Family-Related Quits	60.4%	57.3%	6.4***

^aAll means are sample-weighted.

^bThe separation likelihoods are calculated as the number of job separations as a percentage of all jobs held (up to five jobs per year per person) between 1979 and 1984.

^cEach disaggregated separation rate is the number of each type of mobility (for example, the number of layoffs) as a percentage of all job separations between 1979 and 1984.

^dThe layoff category does not distinguish between temporary and permanent layoffs.

***Female/male difference is statistically significant at the 1% level (two-tailed tests).

Source: National Longitudinal Survey of Youth, 1979 to 1984.

Gender Differences in Job Mobility and Search

Direct evidence of employed job search is, unfortunately, limited to the 1979–84 data files. During those surveys, each employed individual was asked, with reference only to his or her current job, “Have you been looking for *other* work in the last four weeks?” We used the respondents’ answers to this question to calculate their employed search rates, which are reported in Table 2.

The first part of Table 2 includes the likelihood of employed search as a percentage of the total number of current jobs held between 1979 and 1984. Again the unit of observation is the job, and each observation is weighted by its sampling weight. It is clear from the evidence in Table 2 that young workers did engage in employed job search—at rates ranging from 17% to 20%.

The second part of Table 2 includes the employed job search rates conditioned on whether the respondent stayed at or separated from the current job. Each conditional search rate is relative to the mobility category only. For example, of those who stayed with their current employer, 12.6% of the men and 11.3% of the women had

sought for other work within the previous four weeks.

The data reveal that the different types of mobility are associated with different amounts of job search, in much the way predicted. The mobility decisions that are likely to be associated with the greatest amount of pre-knowledge, such as non-family-related quits, are also associated with a higher likelihood of employed search, regardless of gender.

A comparison of these conditional job search rates shows that non-family-related quits and layoffs are associated with the most employed job search, for both genders, and that staying is associated with the least employed search. Interestingly, the incidence of employed search among those who were eventually laid off is statistically similar to that of those who quit for non-family-related reasons. While this finding is somewhat counter-intuitive, it may simply be a statistical artifact resulting from a self-selection process. For example, because individuals have some control over whether a temporary layoff becomes permanent by taking another job while on temporary layoff, the layoff category may include a disproportionate share of the workers who did search before being tem-

Table 2. Employed Job Search Likelihoods of Women and Men Aged 18 to 27, 1979–1984.^a

<i>Likelihood of Employed Job Search (EJS)</i>	<i>Women</i> (<i>n</i> = 13,594) (1)	<i>Men</i> (<i>n</i> = 15,188) (2)	<i>t</i> (3)
Unconditioned Likelihood ^b	17.2%	19.9%	−6.1***
EJS Likelihoods Conditioned on:			
Staying	11.3%	12.6%	−2.8***
Separating:			
Permanent Layoffs	29.7%	34.4%	−2.7***
Discharges	20.9%	25.2%	−1.5
Family-Related Quits	17.6%	19.6%	−0.4
Non-Family-Related Quits	29.9%	35.0%	−4.8***

^aAll means are sample-weighted.

^bThe likelihood of employed search is calculated as a percentage of the total number of annual Current Population Survey (CPS) jobs held between 1979 and 1984.

***Female/male difference is statistically significant at the 1% level (two-tailed tests).

Source: See Table 1.

porarily laid off. If those who did not search returned to the original firm, they would not be included in the permanent layoff category.

These data do reveal evidence of gender differences in search behavior. Among those who stayed, those who were laid off, and those who quit for non-family-related reasons, the men were more likely than the women to have searched while employed. These results are consistent with the results presented by Blau (1992) and Burgess and Low (1992) for samples from different data sources.

Overall, men engaged in more employed job search than women did, on average. Although women were more likely to separate for a voluntary reason, men engaged in more employed job search for voluntary mobility, the type of mobility that has the highest average return. Given that there is evidence of gender differences in mobility and job search behavior, it is worthwhile to examine the impact of these differences on wage growth.

Methodology

The Model

Studies examining the returns to job mobility typically have used one of two methods to estimate the unobserved op-

portunity cost of changing jobs.⁶ The first method compares movers' and stayers' wage growth. This is accomplished by estimating separate wage level equations for movers and stayers, correcting those estimates for the sample selection bias associated with mobility status, and then using the corrected estimates to predict movers' and stayers' wages (Marshall and Zarkin 1987). The difference between the two mean wage predictions is an estimate of the returns to job mobility for the average job changer.

The second method measures the returns to job mobility as the difference between the wage growth of individuals who changed jobs in the current period and the wage growth of individuals who did not change jobs in the current period but did change jobs in the next period (Bartel and Borjas 1981; Mincer 1986; Abbott and Beach 1994). The wage growth of the second group of individuals is considered a proxy for the current period movers' forgone wage growth. This procedure is based on the assumption that current period stayers who move in the next period are more

⁶Both of these methods assume that the quit decision is exogenous. Three studies that deal directly with endogenous quits are Blau and Kahn (1981b) and Antel (1986, 1991).

similar to current period movers in terms of their mobility behavior and their unobserved characteristics than are *all* current period stayers, many of whom did not change jobs in the next period.

We used the second method to estimate the returns to men's and women's mobility and employed job search. Specifically, we used an empirical method employed by Mincer (1986) to measure the gains to job mobility. Using Mincer's definition, the gain to job mobility is the difference between the post-separation wage and pre-separation wage at the same tenure level, net of accumulated experience. This difference is estimated as an upward (or downward) shift in the individual's wage/tenure profile at the new job, relative to the preceding job.

Consider the following wage growth equation:⁷

$$(1) \quad \Delta \log W_i = \Delta X_i \beta + \alpha EJS_{i,1} + b_1 M_{i,1} + b_2 M_{i,2} + u_i,$$

where i refers to the individual mover/stayer, and the two mobility periods, t and $t + 1$, are represented by 1 and 2. The term ΔX_i is a vector of variables that reflect changes in human capital attributes and labor market characteristics over the two periods, $EJS_{i,1}$ is a dummy variable that indicates whether the individual engaged in employed job search in period 1, and u_i is a random element with the usual properties. M_1 is a dummy variable equaling one if a move takes place in period 1, zero otherwise. M_2 is a dummy variable equaling one if a move occurred in period 2 but not in period 1, zero otherwise. The excluded mover/stayer category represents those individuals who did not move in either period.⁸

⁷This specification assumes that the decision to engage in employed search is exogenous, which may be invalid. However, the results from a Hausman test (Hausman 1978) indicate that we can accept the hypothesis that the employed search variable and the error term were uncorrelated for our sample.

⁸Because other models have different implications regarding the relation between mobility and wage

The estimate of b_1 represents the mean difference between the wage growth of period-1 movers and the wage growth of those who stayed at their present job through both periods. The estimate of b_2 represents the mean difference between the wage growth of individuals who stayed put in period 1 but moved in period 2 and the wage growth of those who moved in neither period. Because the difference between b_1 and b_2 nets out the wage growth of stayers, it is a fairly unbiased estimate of the wage growth from mobility, according to Mincer (1986).

The human capital variables included in the ΔX_i vector are changes in the number of years of tenure, years of tenure squared, and years of experience squared. The change in the number of years of experience is approximately one for both stayers and movers, and is, thus, excluded.⁹ For stayers, the change in years of tenure is also approximately one, and for most movers (for whom this value is pre-separation tenure minus post-separation tenure) it is negative.¹⁰ The change in tenure squared is also positive for stayers and negative for movers. Finally, because the value of the change in experience squared depends on the level of experience in period 1, it acts as a control for years of experience.

growth, a comprehensive investigation would take into account the importance of things such as the quality of the job match and the availability of firm-specific training. Unfortunately, data limitations do not allow us to control for private-sector training opportunities or job-match quality during this period.

⁹Our experience variable is the number of hours the individual worked since his or her last interview, with 2000 hours per year equaling a year of experience. Because individuals may work more (or less) than 2000 hours per year, the change in years of experience is approximately one rather than exactly one.

¹⁰The tenure variable is the number of weeks the individual has worked for his or her current employer. Because individuals are not necessarily interviewed on the same date every year, their years of tenure could change by more (or less) than one year between their annual interviews.

The key to estimating shifts in wage/tenure profiles, according to Mincer (1986), is using the change in years of tenure, rather than the pre-separation tenure level, as a right-hand-side variable. When pre-separation tenure levels are held constant, a mobility variable indicates the wage change associated with moving from one job to another (for example, $b \cdot M_{i,1} \cong \% \Delta W_i - \beta \cdot T_{i,1}$, where $M_{i,1}$ is the mobility variable previously described, $\% \Delta W_i$ is the individual's wage growth, and $T_{i,1}$ is pre-separation years of tenure). However, when the change in years of tenure is held constant, mobility variables measure the change in wages from the preceding job to the current job—estimated at similar tenure levels (for example, $b \cdot M_{i,1} \cong \% \Delta W_i - \beta \cdot \Delta T_i = \% \Delta W_i + \beta \cdot T_{i,1}$, because for movers $\Delta T_i = 0 - T_{i,1}$).¹¹

The estimate of α represents the return to employed job search of individuals who engaged in search in period 1, regardless of their mobility status. Because we have not controlled for the searchers' mobility status, it would be difficult to interpret the meaning of a statistically significant estimate of α . For example, would a positive estimate mean that individuals who searched and received higher wage offers moved, or, conversely, would it mean individuals who searched and received higher wage offers had their offers met by their current employer and, therefore, stayed? To examine the relation between employed job search and mobility, we combined equation (1) with the interactions between the mobility variables and the employed search variables to form the following equation:

$$(2) \quad \Delta \log W_i = \Delta X_i \beta + \alpha EJS_{i,1} + b_1 M_{i,1} + b_2 M_{i,2} + a_1 EJS_{i,1} \cdot M_{i,1} + a_2 EJS_{i,1} \cdot M_{i,2} + u_i.$$

¹¹Because our method for measuring the change in tenure differs slightly from Mincer's, we ran additional regressions in which we restricted the value of the change in tenure variable to what was used by Mincer—one for stayers, and minus one times the pre-separation level of tenure for movers. Imposing this restriction did not substantively affect the estimates of the search and mobility variables.

In this equation, the difference between b_1 (the wage growth of period-1 movers) and b_2 (the wage growth of those who stayed in period 1 but moved in period 2) represents the return to mobility for individuals who moved in period 1, but did not engage in employed job search. The difference between $(b_1 + a_1)$ and $(b_2 + a_2)$ represents the return to mobility for individuals who moved in period 1 and did engage in job search. Substituting the different types of job mobility for M_1 and M_2 in equations (1) and (2) allowed us to estimate the returns to the various types of involuntary and voluntary mobility, as well as the interaction between mobility type and employed job search.

The Sample

To determine the impact of employed job search on wage growth, we drew samples of men and women from the 1979–85 NLSY data files. We chose these years because the questions regarding employed job search were asked only for the 1979–84 surveys. The resulting sample consists of individuals who were in the first decade of their work experience. Three criteria had to be satisfied in order for these individuals to be included in the sample: they had to have had a wage observation in periods 1 and 2 (that is, periods t and $t + 1$, where $t = 1979-84$); they had to have been out of school and in the labor force in periods 1 and 2; and they had to be 18 years old or over in period 1.¹² These restrictions resulted in a sample of 9,870 observations on men's wage growth and 8,943 observations on women's wage growth. (The descriptive statistics for

¹²Some individuals with period-1 wage observations are excluded from the sample because their period-2 wage is missing, owing to the fact that they (a) were unemployed, (b) had dropped out of the labor force, or (c) were not interviewed for that round of the survey. Because these individuals are not in the sample, the reported returns to search could be biased. The direction of the bias depends on the intra- and inter-firm wage growth prospects of those for whom information is missing and also on why the period-2 wage observation is missing.

both subsamples and the descriptions of the variables used in the analysis are presented in Appendix Table A1.)

This sample contains multiple observations on individuals. However, the method we use to estimate the wage growth equations should take account of any possible intra-group correlation associated with multiple observations on individuals. Intra-group correlation could occur if the error structure of a wage function at time t included an individual effect, v_i , that varies across individuals but not across time (Greene 1997). Because this individual effect is assumed to be time-invariant, and because we differenced the dependent variable and all of the right-hand-side variables, the individual effect should drop out, which would result in independent observations on men's and women's wage growth.

Regression Results

The Wage Growth Estimates

The data we extracted from the NLSY files allowed us to examine four different models of mobility: job mobility, job mobility disaggregated into voluntary and involuntary mobility, involuntary mobility disaggregated into layoffs and discharges, and voluntary mobility disaggregated into family-related and non-family-related quits. Estimating equations (1) and (2) separately for the four categories of mobility resulted in eight sets of estimates—one for each mobility category, both with and without its interaction with search—individually for men and women.¹³ We use these estimates to calculate the returns to the four types of mobility separately for searchers and nonsearchers of each gender, as reported in Tables 4 and 5.¹⁴

¹³The results from Chow tests indicate that the wage growth equations differ for men and women.

¹⁴A data appendix containing the regression results from equations (1) and (2) for model 1 (job mobility), model 2 (involuntary and voluntary mobility), model 3 (layoffs and discharges), and model 4 (family-related and non-family-related quits) is available from the authors on request.

Table 3 contains selected period-1 estimates of wage growth for women and men. Columns 1 and 3 include the wage growth estimates of women's and men's mobility and employed search ignoring the interaction of mobility and employed search. Columns 2 and 4 include the wage growth estimates of mobility and employed search *including* their interaction.

An examination of columns 1 and 3 shows that both the mobility and the employed job search estimates are positive and statistically significant for both genders. This implies that workers who moved earned wage premiums relative to those who did not move, and workers who searched also earned wage premiums relative to those who did not search. However, an examination of the mobility and search estimates in columns 2 and 4 makes it clear that the premium associated with search was due *solely* to the interaction of search and mobility.¹⁵ It also appears (for men only) that the positive return to mobility was also due solely to the interaction of search and mobility. To disentangle these effects, we calculated the returns to mobility and to search, which we present and describe in the next section.

The Returns to Mobility and Job Search

We used the estimates from equations (1) and (2) to calculate three types of returns to mobility. The first, an aggregated return, completely ignores the interaction between job mobility and employed search. In other words, the aggregated returns were calculated using the estimates from equa-

¹⁵Black (1980) reported the same type of result for samples of employed men from the early 1970s. He provided the following explanation of why employed search in the absence of mobility may not pay. Workers who have the poorest wage growth prospects are the ones looking for alternative employment. If those who received acceptable wage offers moved, while those who did not receive acceptable wage offers stayed, the returns to search for stayers would be reduced. Thus, according to Black, the apparent lack of return to EJS in the absence of mobility is a statistical artifact resulting from a self-selection process.

*Table 3. Wage Growth of Women and Men Aged 18 to 27:
Selected Estimates Controlling for Mobility and Employed Job Search, 1979–1985.^a
(Absolute Value of the t-Statistic in Parentheses.)*

<i>Wage Growth Variables</i>	<i>Women (n = 8,943)</i>		<i>Men (n = 9,870)</i>	
	(1)	(2)	(3)	(4)
MODEL 1^b				
Employed Job Search (EJS)	0.047*** (4.17)	0.014 (0.66)	0.050*** (5.22)	-0.011 (0.65)
Period-1 Mobility	0.052*** (3.86)	0.032** (2.22)	0.042*** (3.64)	0.017 (1.32)
Period-1 Mobility × EJS	—	0.082*** (3.13)	—	0.105*** (4.79)

^aThe dependent variable is the hourly (log) period-2 wage minus the hourly (log) period-1 wage in 1982–84 dollars.

^bThe following explanatory variables were included in the analysis: a constant term, period-2 mobility, the interaction of period-2 mobility and EJS, change in experience squared, change in tenure, change in tenure squared, change in geographic location, moving from an urban to a rural area, moving from a rural to an urban area, decrease in the local unemployment rate, increase in the local unemployment rate, and indicator variables for the years 1979 to 1983. See Appendix A for a description of these variables. A data appendix containing additional regression results is available from the authors on request.

Statistically significant at the 5% level; *at the 1% level (two-tailed tests).

Source: National Longitudinal Survey of Youth, 1979–85.

tion (1). For the second and third types of returns we disaggregated search status into search and nonsearch, and then calculated these returns using the estimates from equation (2). The standard error of each return is the square root of the variance of the linear function of the estimates used to calculate the return. For example, the variance of $(b_1 - b_2)$ is $V(b_1 - b_2) = V(b_1) + V(b_2) - 2 \cdot Cov(b_1, b_2)$. These standard errors were used to calculate the absolute value of the t-statistics, which we report in parentheses in Tables 4 and 5.

Because the comparison of first-period movers to their second-period counterparts may over-control for the unobserved heterogeneity associated with mobility status, we present two estimates of each type of return.¹⁶ The first estimate is the mean

difference between the wage growth of period-1 movers and the wage growth of those who stayed in both periods, that is, b_1 for non-searchers and $(b_1 + a_1)$ for searchers. The second, using Mincer's (1986) method, is the mean difference between the wage growth of period-1 movers and their second-period counterparts, that is, $(b_1 - b_2)$ for non-searchers and $(b_1 + a_1) - (b_2 + a_2)$ for searchers.

Tables 4 and 5 contain the calculated returns to women's and men's mobility and employed job search. Table 4 contains the returns to job mobility (columns 1, 2, 5, and 6) and the returns to involuntary and voluntary mobility (columns 3, 4, 7, and 8). Table 5 contains the returns to layoffs, discharges, and family-related and non-family-related quits.

Simply calculating the returns to men's and women's mobility without controlling for the type of mobility might lead one to draw three conclusions: mobility does result in wage premiums; employed search also results in wage premiums; and, ignoring search status, there appears to be no real difference between the returns to men's and women's mobility. For our samples, on

¹⁶Specifically, if unsuccessful employed job searchers' reservations wages fall over time, then subtracting out the gains of period-2 movers may understate the interactive effect of search and mobility. Thus, comparing period-1 movers' returns to the returns of both stayers and period-2 movers would give us bounds for the true effect.

Table 4. The Returns to Job Mobility Controlling for Employed Job Search, 1979–1985.^a
(Absolute Value of the t-Statistic in Parentheses)

Return to Period–1 Mover Relative to: Type of Mobility	Women (n = 8,943)				Men (n = 9,870)			
	Stayers (1)	Period–2 Movers (2)	Stayers (3)	Period–2 Movers (4)	Stayers (5)	Period–2 Movers (6)	Stayers (7)	Period–2 Movers (8)
<i>Job Mobility</i>								
All Period–1 Movers ^b	5.2%*** (3.86)	7.5%*** (5.23)			4.2%*** (3.64)	5.9%*** (4.45)		
Non-Searchers ^c	3.2%** (2.22)	4.6%*** (2.90)			1.7% (1.32)	3.6%** (2.43)		
Searchers	11.4%*** (4.49)	17.8%*** (6.29)			12.2%*** (5.91)	11.0%*** (5.91)		
F-Statistic for Difference between the Return to Searchers and Non- Searchers	20.8***	39.51***			34.99***	19.62***		
<i>Involuntary Mobility</i>								
All Period–1 Involuntary Movers			–0.4% (0.21)	2.5% (0.94)			–5.2%*** (3.70)	–2.3% (1.20)
Non-Searchers			–1.5% (0.71)	0.4% (0.08)			–8.0%*** (5.03)	–5.2%*** (2.40)
Searchers			3.7% (1.03)	11.8%* (1.93)			3.4% (1.34)	5.1% (1.32)
F-Statistic for Difference between the Return to Searchers and Non- Searchers			1.06	3.71*			1.81	1.74
<i>Voluntary Mobility</i>								
All Period–1 Voluntary Movers			7.0%*** (4.95)	9.2%*** (5.82)			9.5%*** (6.05)	10.6%*** (6.65)
Non-Searchers			4.8%*** (3.12)	6.1%*** (3.48)			7.3%*** (5.30)	8.9%*** (4.96)
Searchers			13.5%*** (5.14)	19.7%*** (6.21)			16.6%*** (7.62)	13.8%*** (4.38)
F-Statistic for Difference between the Return to Searchers and Non- Searchers			26.40***	38.51***			58.10***	19.20***

^aSee the notes to Table 3 and Appendix A for information on the variables used to estimate equations (1) and (2) for job mobility (model 1) and involuntary and voluntary mobility (model 2). A data appendix containing the estimates from these models is available from the authors on request.

^bThe returns to all period–1 movers are calculated using the mobility estimates from equation (1).

^cThe returns to non-searchers and searchers are calculated using the mobility estimates and the interaction of mobility and search estimates from equation (2).

*Statistically significant at the 10% level; **at the 5% level; ***at the 1% level (two-tailed tests).

Source: See Table 3.

average, the women who moved received wage premiums of 5–7.5%, the men who moved received wage premiums of 4–6%, and engaging in job search prior to the move resulted in wage premiums of an additional 7–13%. However, disaggregating the sample by reason for mobility reveals more interesting results.

First, involuntary mobility resulted in no wage growth gains or losses, while first-period movers, regardless of gender, who

moved for a voluntary reason earned wage growth premiums. Second, among those who moved voluntarily, the returns to mobility were greatly affected by whether or not the individual searched prior to the job change. Those whose voluntary mobility was preceded by search realized wage growth double or treble that of those who did not search but did move.

The evidence in Table 4 reveals some gender differences in search and mobility.

Table 5. Returns to Layoffs, Discharges, and Quits Controlling for Employed Job Search, 1979 to 1985.^a
(Absolute Value of the t-Statistic in Parentheses)

Return to Period-1 Mover Relative to: Type of Mobility	Women (n = 8,943)		Men (n = 9,870)	
	Stayers (1)	Period-2 Movers (2)	Stayers (3)	Period-2 Movers (4)
<i>Laid Off</i>				
All Period-1 Laid-off Workers ^b	0.9% (0.47)	3.3% (1.08)	-4.7%*** (3.11)	-3.5%* (1.61)
Non-Searchers	0.4% (0.19)	1.3% (0.39)	-7.9%*** (4.64)	-7.4%*** (3.02)
Searchers	3.4% (0.90)	11.8%* (1.77)	4.8%* (1.81)	7.0%* (1.61)
F-statistic for Difference between the Return to Searchers and Non-Searchers	0.82	3.14*	3.26*	2.60*
<i>Discharged</i>				
All Period-1 Discharged Workers	-5.7% (1.60)	-1.1% (0.21)	-7.5%*** (3.09)	0.4% (0.11)
Non-Searchers	-8.4%** (2.13)	-4.0% (0.70)	-8.5%*** (3.04)	0.9% (0.22)
Searchers	5.0% (0.67)	11.4% (0.76)	-3.1% (0.67)	-3.1% (0.39)
F-Statistic for Difference between the Return to Searchers and Non-Searchers	0.45	0.58	0.45	0.15
<i>Quit for a Family-Related Reason</i>				
All Period-1 Workers Who Quit for a Family-Related Reason	-15.4%*** (4.66)	-10.3%*** (2.58)	-12.3%** (2.05)	-13.3% (1.14)
Non-Searchers	-17.5%*** (4.88)	-14.0%*** (3.25)	-12.7%* (1.68)	-16.5% (1.21)
Searchers	-5.4% (0.70)	10.5% (1.05)	-8.8% (0.89)	-1.6% (0.07)
F-Statistic for Difference between the Return to Searchers and Non-Searchers	0.49	1.10	0.80	0.01
<i>Quit for a Non-Family-Related Reason</i>				
All Period-1 Workers who Quit for a Non-Family-Related Reason	8.4%*** (5.86)	10.0%*** (5.91)	9.9%*** (7.95)	11.0%*** (6.86)
Non-Searchers	6.4%*** (4.14)	7.3%*** (3.89)	7.6%*** (5.48)	9.3%*** (5.15)
Searchers	13.9%*** (5.27)	18.4%*** (5.41)	17.1%*** (7.81)	14.1%*** (4.44)
F-Statistic for Difference between Return to Searchers and Non-Searchers	27.79***	29.24***	61.05***	19.72***

^aSee the notes to Table 3 and Appendix A for information on the variables used to estimate equations (1) and (2) for layoffs and discharges (model 3) and family-related and non-family-related quits (model 4). A data appendix containing the estimates from these models is available from the authors on request.

^bSee footnotes b and c from Table 4.

*Statistically significant at the 10% level; **at the 5% level; and *** at the 1% level (two-tailed tests).

Source: See Table 3.

Among the nonsearchers, men were penalized more than women for involuntary mobility. For men who did not search,

involuntary mobility was associated with a 5–8% wage loss, while women who did not search prior to an involuntary move appear

to have suffered no real wage losses. Among the searchers, the return to mobility was higher for women than for men. However, women's higher return to search disappears when mobility is disaggregated into voluntary and involuntary.

An examination of Table 5 indicates that the type of voluntary and involuntary mobility the individual engaged in is also of importance. Quitting for a non-family-related reason paid for both men and women. First-period movers who quit for a non-family-related reason earned wage premiums of 8–11%. Furthermore, controlling for search status shows that those who searched gained twice as much as those who did not. The largest returns to mobility were earned by those who searched while employed and then quit for a non-family-related reason. Mobility for other reasons did not result in the same high premiums. Layoffs (for men only), discharges, and family-related quits are associated with wage losses. However, search behavior was still important. Men who searched prior to being laid off or quitting for a non-family-related reason, and women who searched prior to quitting for any reason, earned wage premiums relative to those who did not search.

The results in Table 5 also reveal gender differences. Wage losses are associated with layoffs for men, but not for women. Search paid for men with respect to layoffs and non-family-related quits. Those who searched prior to a layoff did not suffer the wage losses of 7–8% that non-searchers received, and men who searched prior to a non-family-related quit received wage premiums relative to their counterparts who did not search. Employed search did not appear to pay for men who were fired or those who quit for a family-related reason. It is possible that employed search does not appear to pay for men who are fired, because the adverse signal from being discharged outweighs any benefit to search. The result associated with family-related quits cannot be given much weight, because only 0.3% of the observations on men's wage growth is associated with this type of mobility.

It appears that search also paid off for women who engaged in voluntary mobility, that is, quit. Women who searched prior to quitting for a non-family-related reason realized wage growth twice that of women who did not search while still employed. Women who searched prior to quitting for a family-related reason did not suffer the wage growth loss of 14–18% that was experienced by women who did not search.¹⁷ The evidence does not reveal a return to search for women who were laid off or fired, but nearly 70% of mobility for women is voluntary.

Conclusions

Using data from the NLSY, we have presented evidence that young men and women differed in their mobility and job search activity. Men were more mobile than women, that is, they had higher separation rates. Men suffered from more involuntary mobility: they were more likely than women to be laid off or discharged. However, when it comes to voluntary mobility, women were much more likely to change jobs for a family-related reason than were men. For all types of mobility, men engaged in more employed job search than women did.

More important, the evidence shows that, for both genders, employed search and voluntary mobility paid off. First period movers, men and women, who quit for a non-family-related reason earned wage premiums of 8–11%. Those who searched while still employed gained two to three

¹⁷Searching prior to exiting the labor market may mitigate some of the wage loss associated with periods of nonparticipation, which may be especially important for women who exit employment for family-related reasons. Women who return to the labor market after a period of nonparticipation may receive lower wage offers than women who have not exited, because nonparticipation may cause skills to atrophy. Additionally, women who have not been employed recently may have a lower reservation wage, because they lack knowledge of market wages. Employed job search, prior to exit, may provide information that leads to a higher reservation wage on reentry.

times as much as those who did not. Clearly, the largest returns to mobility were earned by those who searched while employed, and then quit for a non-family-related reason. Similar returns were realized by both men and women when they engaged in similar job search and mobility.

What this means for young workers is that employed job search followed by separation for non-family-related reasons pays high premiums, on average, for both men and women, whereas separation for family-related reasons does not, even when it is preceded by employed search (although employed search does mitigate the negative impact of a family-related quit on wage growth). To the extent that women engage in more of this type of mobility than men do, their average wage growth resulting from mobility may be lower. Also, women engage in less employed search than men do, for all types of mobility. To the extent that search augments the premiums to mobility, lower levels of search, on average, negatively affect women's wage growth re-

sulting from mobility.

We have identified two reasons why (young) women's wage growth would, on average, be lower than men's. First, women are much more likely than men to quit a job for a family-related reason, and this type of mobility results in lower wage growth than quitting for a non-family-related reason. Second, women engage in less employed search than men do, and employed job search is instrumental to wage growth. Both of these determinants of lower wage growth may result from societal constraints associated with women's dominant role in child care. Because women, as a group, are the primary child care providers, they are more likely to quit jobs for family-related reasons. Additionally, child care and other responsibilities may make the opportunity cost of searching higher for women, resulting in less job search by women. Any structural or policy changes that lower the cost of employed job search for women would mitigate the negative effects of family-related quits on women's wage growth.

APPENDIX TABLE A1
Means, Women and Men Aged 18 to 27^a

<i>Variable</i>	<i>Women</i> (<i>n</i> = 8,943)	<i>Men</i> (<i>n</i> = 9,870)	<i>t</i>
Annual Wage Growth ^b	3.6%	4.7%	-2.0**
<i>Mobility and Job Search Variables</i>			
Percentage Who Engaged in Employed Job Search in Period 1	17.0%	20.2%	-5.7***
Percentage Who Moved (i.e., Changed Employers) in Period 1	32.7%	36.2%	-5.0***
Percentage Who Stayed with Their Current Employer in Period 1 but Moved in Period 2	19.0%	16.3%	4.8***
Involuntary Mobility in Period 1	7.0%	12.4%	-12.8***
Voluntary Mobility in Period 1	25.8%	23.7%	3.2***
Layoff in Period 1	5.5%	9.9%	-11.4***
Discharge in Period 1	1.5%	2.6%	-5.3***
Family-Related Quit in Period 1	1.8%	0.3%	10.1***
Non-Family-Related Quit in Period 1	24.0%	23.5%	0.9
<i>Change in Tenure and Experience, Periods 1 to 2</i>			
Change in Years of Experience	0.88	1.00	-25.1***
Change in Years of Experience Squared	5.82	7.80	-28.4***
Change in Years of Tenure	0.46	0.45	1.0
Change in Years of Tenure Squared	2.49	2.68	-2.3**
<i>Job Market Change, Periods 1 and 2</i>			
Change in Geographic Area	3.2%	3.0%	0.6
Rural to Urban	2.7%	2.4%	1.1
Urban to Rural	3.2%	3.4%	-0.7
Decrease in Unemployment Rate	26.2%	25.5%	1.0
Increase in Unemployment Rate	27.4%	27.0%	0.7

^aAll means are sample-weighted.

^bSelected variable definitions:

Annual wage growth is the difference between the log of the hourly period-2 wage and the log of the hourly period-1 wage. All wages have been converted to real wages using the CPI-U (1982-84 = 100).

Employed job search equals one if the employed respondent stated for his or her annual CPS job that he or she had looked for other work in the last four weeks, zero otherwise.

Experience is measured as the number of hours the individual worked since his or her last interview, with 2,000 hours per year equaling a year of experience.

Tenure is the number of weeks the individual worked for his or her current employer, with 50 weeks per year equaling a year of tenure.

Change in geographic area equals one if the respondent lived in different geographic areas in periods 1 and 2, zero otherwise. (The geographic information in the NLSY is confined to four different areas: Northeast, North Central, South, and West.)

Rural to urban equals one if the respondent did not live in an urban area during period 1 and did during period 2, zero otherwise.

Urban to rural equals one if the respondent did live in an urban area during period 1 and did not during period 2, zero otherwise.

Decrease in the local unemployment rate equals one if the local unemployment rate decreased between periods 1 and 2, zero otherwise.

Increase in unemployment rate equals one if the local unemployment rate increased between periods 1 and 2, zero otherwise. (The annual information in the NLSY on local unemployment rates is confined to six unemployment rate categories: less than 3%, 3-5.9%, 6-8.9%, 9-11.9%, 12-14.9%, and 15% or more.)

Female/male difference is statistically significant at the 5% level, *at the 1% level (two-tailed tests).

Source: See Table 3.

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