Does Changing Jobs Pay Off?
The Relationship between Job Mobility and Wages

By Amanda J. Huffman

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ABSTRACT

Over the last three decades, wages have stagnated for most American workers, especially men. While demographic characteristics, education, and structural changes are common foci of wage analyses, more subtle factors may also play a role. One potential wage determinant is job mobility: the movement of an individual from job to job over the course of his or her career. The existing literature suggests that job mobility is associated with positive wage returns for workers early in their careers, but that the effect diminishes as workers gain experience and positive wage returns associated with job tenure grow stronger. Thus, the relationships between job mobility, tenure, and wages may depend upon work experience. This study uses a fixed-effects regression model and finds evidence of positive wage returns associated with high voluntary job mobility, which appear to diminish as workers gain experience. The study also finds that tenure is positively associated with higher wages for both low- and high-experience workers, not just for those workers with high work experience. These findings broadly indicate that some work patterns could result in higher average wages than others. A diverse portfolio of labor policies may therefore benefit workers who are just beginning their careers, whereas policies that foster longer tenure may create the greatest opportunity for wage growth among workers later in their careers.

I. INTRODUCTION

An increasing gap between productivity and compensation, along with persistent wage stagnation, are two US labor-market trends that mark the past three decades. Between 1979 and 2012, productivity in nonfarm business sectors grew by 86.2 percent, while real hourly compensation grew just 47.36 percent. When all industries and occupations are considered, an even more compelling fact emerges: wages for American men are no higher than they were in 1979 (BLS 2012).

In order to understand these trends, scholars often analyze individual characteristics like demographics and education, as well as structural changes in the labor market such as the decline in union participation. However, more subtle factors may play a role in wage levels over time. One potential wage determinant is job mobility: the movement of an individual from job to job throughout his career. It is possible that workers experience differences in wages according to whether or not, and when, they are highly mobile.

The influence of job mobility on wage levels has valuable implications for government policies that aim to assist workers. For example, job-search assistance programs that promote expanded access to general education and training may help workers change jobs multiple times throughout their careers. If job mobility is associated with wage gain, workers who take advantage of these programs could secure higher pay. Alternatively, policies that provide incentives for employers to train and invest in current employees may encourage workers to make fewer job changes. If job mobility is associated with wage loss, such policies could help workers avoid lower pay. In this study, I examine the relationship between job mobility and wages in order to understand which level of job mobility is associated with the highest wages according to how long workers have participated in the labor force.

II. BACKGROUND

Over the last several decades, trends in the US labor market suggest that job mobility may be on the rise. First, employment is shifting away from goods-producing industries toward service-oriented industries (Shin 2007). This pattern has eliminated a large number of jobs, especially for low-skilled workers, and has increased wage returns to jobs requiring skilled workers (Holzer et al. 2011). Second, the introduction of new technology has increased productivity, especially in the manufacturing sector, such that machines can now perform many jobs that once required additional human labor. The impact of this second trend reflects that of the first: job loss, especially for low-skilled workers. A third trend, increased competition owing to globalization, is also a cause of job loss, in this case to countries overseas where goods can be produced cheaper than in the US (Holzer et al. 2011).

A fourth major trend concerns how employers are restructuring their

business models to accommodate the aforementioned labor market changes. Union participation is declining, which leaves workers with less collective bargaining power, decreased wages, and lower job stability (Holzer et al. 2011). As a result, employers have greater ability to terminate employees and workers have less incentive to stay in any one particular job. Additionally, to cut costs and remain flexible, businesses are employing more contract and temporary workers. Consequently, employer-employee relationships are much easier to dissolve, increasing the probability of job separation rates (Shin 2007; DOL 2011). Given these transformations in the US labor market, workers and policymakers alike may benefit from a better understanding as to what kind of job changes, as well as how often and when they are made, are most likely to create optimal wage opportunities for workers.

III. LITERATURE REVIEW

Job Mobility Measurement

In order to understand how the job mobility patterns of an increasingly mobile labor market may affect wage levels, two aspects of job mobility measurement call for clarification. First, studies employ two different measures to capture job mobility effects: 1) the short-term wage change that results from moving from one job to the next, and 2) the long-term wage change associated with the cumulative number of times an individual switches jobs throughout his career. Second,

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most studies emphasize that job mobility effects depend upon whether job separations are made voluntarily or involuntary (Bartel and Borjas 1981; Topel and Ward 1992; Light and Ureta 1992; Keith and McWilliams 1995; Fuller 2008).

Voluntary Job Changes

Employee-initiated, voluntary job changes are associated, on average, with positive, short-term wage gains (Light 2005). Bartel and Borjas (1981) find that young and mature men who quit their jobs experience short-term wage increases of 11 cents and 3 cents an hour, respectively, relative to comparable men who did not quit their jobs. Further, Fuller (2008) finds that voluntary job mobility is associated with wages approximately 3 percent higher over the long term for job changes that occur within the first five years of potential work experience.

Involuntary Job Changes

In contrast, employer-initiated, involuntary job changes are associated, on average, with negative, short-term wage losses (Light 2005). This makes logical sense, as the types of workers who experience involuntary job separations may also be the types of workers, on average, for whom finding and keeping employment is

"This study fills a gap in cumulative job mobility literature by closely examining how the relationship between job mobility and wages is linked to tenure and experience."

more difficult. In addition, a worker who does not initiate a job separation is less likely to have been searching for an alternative, higher-wage job. Bartel and Borjas (1981) find that being laid off decreases the short-term wages of young and mature men by 2 cents and 19 cents an hour, respectively, and Fuller's (2008) cumulative study reveals that involuntary job mobility is generally associated with lower wages over the long term.

Having clarified job mobility measurement, I now turn to theoretical literature that investigates why job mobility may be an important factor for workers' wage trajectories. These studies contain two schools of thought, the first of which is search theory. Search theory suggests that "job-shopping" is associated with wage changes. The premise of this perspective is that workers are constantly searching for higher wage opportunities and, to the extent that their searches are successful in creating suitable employer-employee "matches," workers will experience positive, short-term wage returns from job mobility (Bartel and Borjas 1981; Antel 1986; Keith and McWilliams 1999). For example, Topel and Ward (1992) find that white men hold an average of seven jobs during their first 10 years in the labor market, and more than a third of wage growth during this period is accounted for by job mobility resulting from successful job searches.

Firm-specific human capital theory is the focus of a second school of thought in the literature. Studies in this camp examine the relationship between wages and the accumulation or loss of skills resulting from job changes. Theoretically, worker investments in firm-specific human capital result in lower job mobility and increased job tenure, which is the length of time spent with a particular employer (Antel 1986). For example, Fuller (2008) finds that cumulative overall job mobility is negatively correlated with wage growth, in part because highly mobile workers are not able to take advantage of positive job tenure effects.

In addition to the two schools of thought summarized above, job mobility literature suggests that the impact of job separations on wages depends upon when job changes occur. As cited earlier, Bartel and Borjas (1981) find that the consequences of quitting and being laid off are different for young and mature men. Larger wage gains are associated with voluntary job mobility (11 percent vs. 3 percent) and smaller wage losses are associated with involuntary job mobility (2 percent vs. 19 percent) for young workers compared to older workers. In addition to their short-term findings, Bartel and Borjas also conclude that increased job mobility later in life is associated with less long-term wage growth.

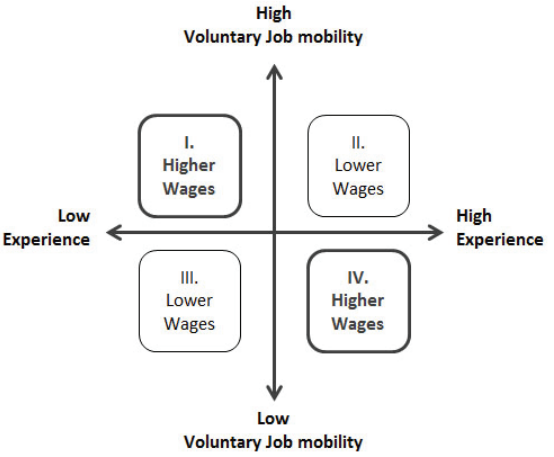
The studies summarized above inform this study in several ways. First, as the literature implies that the relationship between job mobility and wage change depends upon the reason for the job separation, I classify job separations into voluntary and involuntary categories. Nevertheless, I concentrate on the potential impact of voluntary job separations as voluntary job changes involve a choice by the worker as to what is best for his earnings trajectory. Second, studies that emphasize long-term, "cumulative," job-mobility wage effects are less common than those that focus on short-term, "job-to-job" mobility wage effects. As the cumulative approach offers a more complete picture of the relationship between job mobility and wages over the span of a worker's entire career, and to address a clear gap in the literature, I focus on long-term job mobility. Third, considering the prominent role that job tenure seems to play in determining the relationship between job mobility and wages, I follow the precedent of previous work and include tenure as a key independent variable in my analysis. Finally, as the benefits of job mobility appear to be realized in the early career years, with benefits to tenure becoming more important as individuals become older and more experienced, the length of time workers have participated in the labor force is a key consideration in this study (Bartel and Borjas 1981; Mincer 1986).

Despite the broad consistencies described above, academics have not reached a consensus as to which job mobility patterns are the most, or least, favorable for wage outcomes, leaving room for further research as to which level of job mobility is associated with the highest wages. This study fills a gap in cumulative job mobility literature by closely examining how the relationship between job mobility and wages is linked to tenure and experience. The conceptual model and hypotheses in the following section suggest the possibility for optimal levels of voluntary job mobility and tenure for workers at different points in their careers.

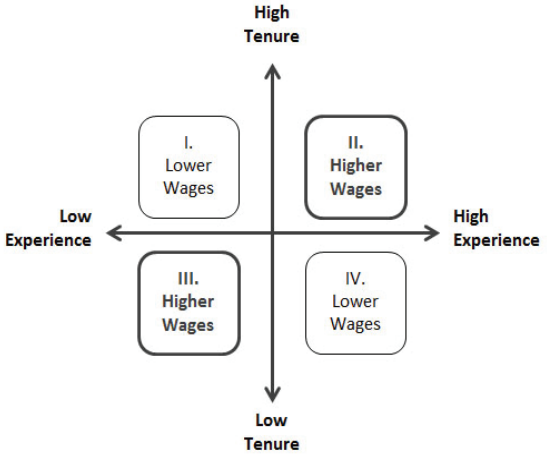
IV. CONCEPTUAL FRAMEWORK & HYPOTHESIS

As indicated in the previous section, the literature suggests an inverse relationship between job mobility and tenure. This makes sense conceptually, as workers with high job mobility are likely to have lower tenure than their low job mobility counterparts. Conversely, workers with high tenure likely make fewer job changes than those with low tenure. If job mobility and tenure have an inverse relationship, in the extreme case, they may also be pulling wages in opposite directions. For example, workers who gain wages from frequently changing jobs may lose wages by staying with a single employer for a prolonged period of time. Furthermore, in theory, wage returns to different levels of job mobility and tenure are also related to experience, with returns to tenure growing stronger as workers move into the later stages of their careers (Bartel and Borjas 1981; Topel and Ward 1992; Fuller 2008).

Figure 1. Conceptual Model
A. Hypothesized Relationship between Voluntary Job Mobility and Wages by Experience



B. Hypothesized Relationship between Tenure and Wages by Experience



The conceptual model for this study, Figure 1, extends these theoretical relationships among wages, job mobility, tenure, and experience by suggesting that high voluntary job mobility and high tenure have opposite impacts on wages. Figure 1A depicts four quadrants predicting the relationship between low and high voluntary job mobility and wages according to experience level, while Figure 1B depicts four quadrants predicting the relationship between low and high tenure and wages according to experience level.

Based on this conceptual model, I make four predictions. As represented in quadrants I and IV of Figure 1A, I hypothesize that:

1) Among workers with low experience, wages are higher for those with high voluntary job mobility compared to those with low voluntary job mobility.

2) Among workers with high experience, wages are higher for those with low voluntary job mobility compared to those with high voluntary job mobility.

Conversely, as depicted in quadrants II and III of Figure 1B, I further hypothesize that:

3) Among workers with low experience, wages are higher for those with low tenure compared to those with high tenure.

4) Among workers with high experience, wages are higher for those with high tenure compared to those with low tenure.

The empirical analyses described in the next several sections test these hypotheses.

V. DATA & METHODS

Data Source

Analyses of cumulative job mobility require data that track respondents for a substantial portion of their careers. I use data from the 1979 panel of the National Longitudinal Survey of Youth (NLSY79). In the NLSY79, respondents were interviewed every year from 1979 to 1994 and then every other year after 1994. When first interviewed in 1979, respondents' age ranged from 14 to 22. In 2008, the most recent year for which NLSY data are publicly available, respondents' age ranged from 43 to 51. Among a host of other information, the survey contains a detailed work history for each respondent, including hourly wages for each job held, reasons for job changes, job tenure, and length of labor force participation.[1]

Analysis Plan

To isolate the relationship between job mobility and wages, this study uses person and year fixed effects to eliminate all potential omitted variable bias associated with time-invariant individual characteristics. Fixed effects controls for relevant, easy-to-measure factors such as gender, minority status, cognitive skills, and native-born status. Further, the specification also controls for person-specific characteristics, such as ability, that are more difficult to measure, are arguably fixed over time, and are potentially correlated with both wages and job mobility. All models also include time fixed effects, which control for omitted factors that vary over time but are common to all observations, such as the general state of the US economy and the unemployment rate.

The most basic empirical model used in this analysis specifies the log of real hourly wages as a function of job mobility, tenure, experience, and several time-variant control variables, where α_i and δ_t represent individual and year fixed effects, respectively, and ε_{it} represents an error term that varies within people, over time.

[1] For more detailed information on this study's data, variable descriptions, and data manipulation methods, see Huffman (2012).

Empirical Model

$$\begin{aligned}ln\ real\ hourly\ wages_{it} &= \beta_0 + \beta_1 Job\ mobility + \beta_2 Tenure_{it} + \beta_3 Tenure^2_{it} \\ &+ \beta_4 Experience_{it} + \beta_5 Experience^2_{it} \\ &+ \beta_6 High\ school_{it} + \beta_7 Greater\ than\ high\ school_{it} + \beta_8 Age_{it} + \beta_9 Age^2_{it} \\ &+ \beta_{10} Percent\ time\ employed_{it} + \beta_{11} Married_{it} + \beta_{12} Occupation_{it} + \beta_{13} Industry_{it}\ \alpha_i + \delta_t + \varepsilon_{it}\end{aligned}$$

I describe the key variables included in this fixed-effects model below.

Dependent Variable

The dependent variable for this analysis is the natural log of real hourly wages (in 2008 dollars). The real hourly wage measurement is the weighted average of hourly wages for up to five jobs held by a worker in any given year, multiplied by the Consumer Price Index (CPI) to account for inflation.

Key Independent Variables

Overall job mobility is a continuous measure equal to the number of job changes an individual has ever made up to the point of survey administration in any given year. While I concentrate on voluntary job mobility in most analyses, I use overall job mobility in descriptive statistics and in the base regressions depicted in Tables 3 and 4.

Voluntary job mobility and *involuntary job mobility* capture job changes that are either employee or employer initiated, respectively. For each job change, the NLSY79 records the reason that the respondent left his job, which allows for the characterization of each job separation as either voluntary or involuntary.

Tenure is a measure of how long, in years, an individual has been employed by the same employer. The literature suggests that wages increase as workers gain skills associated with a specific employer (Bartel and Borjas 1981). In addition, tenure has a conceptual correlation with job mobility; that is, the more tenure a worker accumulates, the lower his predicted overall job mobility. Research also suggests that tenure provides diminishing wage returns; thus, I include a quadratic term, tenure^2, in anticipation of a nonlinear relationship between tenure and wages.

My analysis also includes *high voluntary job mobility* and *high tenure* as dummy variables. These variables are set equal to one for person-years with voluntary job mobility and tenure at or above the median of their respective continuous variable counterparts (Fuller 2008).

Experience measures the number of years an individual has ever worked as of a given year. As workers gain more experience in the labor market, it is expected that their wages will increase. Experience is also negatively correlated with overall job mobility; that is, workers generally change jobs more in the early stages of their careers compared to the later stages (Topel and Ward 1992). As is the case with tenure, I include a quadratic term, experience^2, to account for a well-documented nonlinear relationship between experience and wages. Finally, I divide my sample into low- and high-experience groups, with low experience including those person-years with

less than 10 years of experience, and high experience including those person-years with at least 10 years of experience. I determine low- and high-experience groups at the 10-year mark to mirror existing studies that use 10 years as a benchmark for the end of the "early-career" period (Mincer 1986; Topel and Ward 1992).

Control Variables

Whether workers are full-time, part-time, or marginally attached to the labor force is likely correlated to both wages and job mobility. Thus, I include *percent time employed* as a measure of labor force attachment equal to the number of hours or weeks spent working in a particular year. *Education, age, married, occupation,* and *industry* are additional control variables that account for worker skill level, age, marital status and type of work.

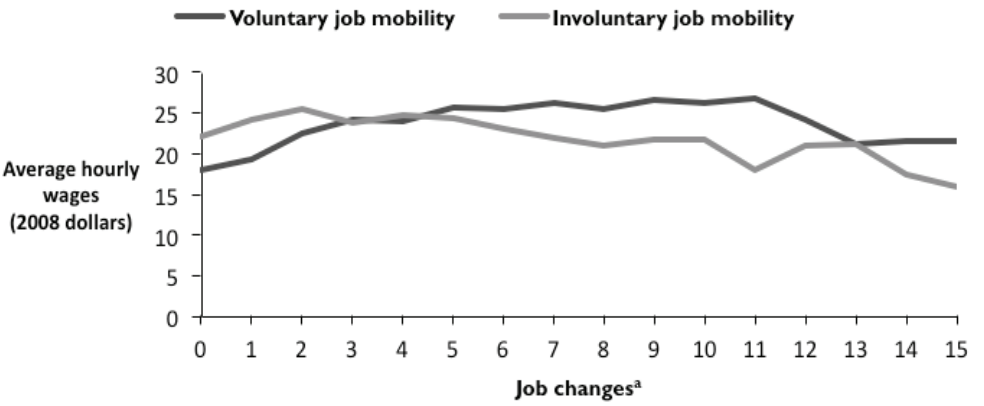
VI. RESULTS

Descriptive Results

Voluntary Job Mobility

Figure 2 displays average hourly wages according to workers' first 15 voluntary and involuntary job changes. The nonlinear trend line suggests that the relationship between voluntary job mobility and wage level may depend upon the number of voluntary job changes. Specifically, average hourly wages appear to increase for the first three to five changes, increase more gradually for the next five to six changes, and decrease after 11 job changes. On the other hand, involuntary job mobility only appears to be associated with wage increases for up to two involuntary job changes, at which point each additional involuntary job change is associated, on average, with lower wages.

Figure 2. Average Hourly Wages by Job Changes, Men in the NLSY79, 1979-2008



[a] The maximum number of voluntary job changes is 29 and the maximum number of involuntary job changes is 27. 97% and 99% of workers made 15 or fewer voluntary and involuntary job changes, respectively.

Table 1. Average Hourly Wages According to Voluntary Job Changes and Experience, Men in the NLSY79, 1979-2008

Low experience: < 10 years

	# voluntary job changes[a]	Observations	Sample frequency	Mean wage	Std. dev.
Low voluntary job mobility	0	1,242	5.27%	16.93	10.93
	1 to 3	5,380	22.84%	20.18	13.2
High voluntary job mobility	4 to 9	7,308	31.02%	23.59	14.65
	≥ 10	2,489	10.57%	21.65	13.7
Average		-	-	20.59	13.12
Total observations		16,419	69.70%		

High experience: ≥ 10 years

	# voluntary job changes[a]	Observations	Sample frequency	Mean wage	Std. dev.
Low voluntary job mobility	0	222	0.94%	23.48	11.88
	1 to 5	3,301	14.01%	27.53	15.04
High voluntary job mobility	6 to 9	2,196	9.32%	28.92	16.87
	≥ 10	1,420	6.03%	26.55	14.94
Average		-	-	26.62	14.68
Total observations		7,139	30.30%		

[a] The median for voluntary job mobility is 4 for the low-experience group and 6 for the high-experience group. Throughout this study, these medians define low and high voluntary job mobility groups within each experience group.

Voluntary Job Mobility and Experience

In order to further examine the relationship between number of voluntary job changes and wage levels, Table 1 displays average hourly wages for workers according to number of voluntary job changes and years of work experience. Specifically, Table 1 presents job changes for low- and high-experience groups, subdivided into two groups each for voluntary job changes below the median and above the median. In later analyses, I only break my sample into four voluntary-job-change categories. In Table 1, however, I create eight different categories in order to provide a more detailed comparison of average wages for workers with different levels of job mobility and experience.

Among workers with less than 10 years of work experience, those with between four and nine voluntary job changes experience the highest wages ($23.59). A two-sample mean comparison test reveals that even the smallest difference between the high and low voluntary job mobility groups ($21.65 and $20.18, respectively) is statistically significant ($p<0.001$). The finding of higher wages for low-experience workers with high voluntary job mobility provides evidence in support of Hypothesis 1.

Table 1 also reveals that, for workers with at least 10 years of experience, workers in the high voluntary job

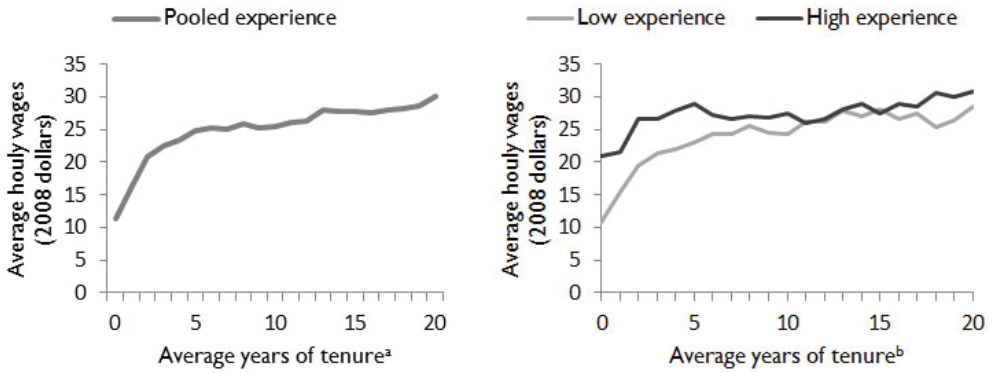
mobility category with between six and nine voluntary job changes experience the highest wages ($28.92). Wages for high-experience workers in this middle category are significantly higher (p=0.001) than the wages of workers in either low voluntary job mobility group. These findings are somewhat at odds with Hypothesis 2. In contrast, high-experience workers with 10 or more voluntary job changes have significantly lower wages ($26.55, p=0.04), on average, than workers in the high-experience group with one to five voluntary job changes ($27.53).

The complex relationship between voluntary job mobility and wages for experienced workers indicates that support for this study's hypotheses may be limited by the definition of "high voluntary job mobility" as having made at least the median number of job changes, or by defining "high experience" as having at least 10 years of experience. However, in general, Table 1 provides suggestive evidence that the relationship between voluntary job mobility and wages may depend upon the number of voluntary job changes and when in workers' careers these changes occur.

Tenure and Experience

Having examined the relationship between voluntary job mobility and wages, I now examine the relationship between years of tenure and wages. As depicted by the trend line of the pooled-experience group in Figure 3, tenure, on average, appears to be positively associated with wages. Interestingly, tenure is also positively associated with wages for disaggregated low- and high-experience groups. This finding indicates a potential challenge to Hypothesis 3, which posits a negative relationship between tenure and wages for low-experience workers. Despite this result, Figure 3 does provide support for Hypothesis 4, which implies

Figure 3. Average Hourly Wages by Tenure, Men in the NLSY79, 1979 – 2008



[a] For the pooled-experience group, the maximum number of years of tenure is 33. 95% of workers averaged 20 or fewer years of tenure. 73% averaged 10 or fewer years, and 50% averaged 5 years or fewer. Although not shown here, wages steadily decline for the 5% of the sample who averaged more than 20 years of tenure.

[b] For the low-experience group, the maximum number of years of tenure is 28. 99% of workers averaged 20 or fewer years of tenure. For the high-experience group, the maximum number of years of tenure is 33. 87% of workers averaged 20 or fewer years of tenure.

a positive relationship between tenure and wages for high-experience workers.

Voluntary Job Mobility, Tenure, and Experience

For a combined examination of the relationship between wages, voluntary job mobility, tenure, and experience, Table 2 provides descriptive statistics for average hourly wages within low- and high-experience groups, which are further subdivided into both voluntary job mobility and tenure groups.

Two findings in the pooled-tenure group provide support for Hypotheses 1 and 2. Advancing Hypothesis 1, among low-experience workers, those with high voluntary job mobility have significantly higher wages ($23.10) than those with low voluntary job mobility ($19.56). Conversely, in partial contradiction to Hypothesis 2, among high-experience workers, those with high voluntary job mobility also have higher wages ($28.01) than those with low voluntary job mobility ($27.27). However, the fact that the high voluntary job-mobility wage premium for low-experience workers is five times greater than the same wage premium for high-experience workers suggests that high voluntary job mobility produces greater earnings opportunities for low-experience workers relative to high-experience workers. Ultimately, though, these relationships may mask a more interesting story revealed when different levels of tenure are considered.

Thus, I now turn to the disaggregated low- and high-tenure groups, beginning with the low-tenure group. Among workers with low experience and low tenure, those with high voluntary job mobility earn wages that are $6.35 higher than their low voluntary job mobility counterparts. In contrast, there is no significant difference between low and high voluntary job mobility groups for high-experience workers. In the high-tenure, low-experience group, workers with high voluntary job mobility earn $2.11 more an hour than their low voluntary job mobility counterparts. Interestingly, a similar wage premium is associated with high voluntary job mobility among high-experience workers ($2.03).

Finally, I consider findings across tenure groups. Among low-experience workers, the wage premium associated with high voluntary job mobility for low-tenure workers ($6.35) is greater than the premium associated with their high-tenure counterparts ($2.11). In contrast, among high-experience workers, the wage premium associated with high voluntary job mobility for low-tenure workers ($0.79) is less than that earned by their high-tenure counterparts ($2.03).

The disaggregated results expose two interesting wage relationships according to 1) experience within tenure groups and 2) tenure within experience groups. First, for workers in the low-tenure group, high voluntary job mobility is associated with a wage premium for low-experience workers only. For workers in the high-tenure group, the voluntary job mobility wage premium is approximately the same for low- and high-experience workers.

Table 2. Average Hourly Wages by Voluntary Job Mobility, Tenure, and Experience Groups, Men in the NLSY79, 1979 – 2008

		Average hourly wage (Std. dev.) n	Average hourly wage (Std. dev.) n
Pooled tenure (n = 23,558)			
		Experience	
		Low	High
Voluntary job mobility	Low	$19.56 (12.87) 6,622	$27.27 (14.88) 3,523
	High	$23.10 (14.44) 9,797	$28.01 (16.20) 3,616
	Mean difference	$3.54***	$0.74**
Low tenure (n =12,205)			
		Experience	
		Low	High
Voluntary job mobility	Low	$14.12 (9.23) 3,116	$26.26 (15.46) 1,237
	High	$20.47 (13.64) 5,449	$27.04 (16.48) 2,403
	Mean difference	$6.35***	$0.79
High tenure (n =11,353)			
		Experience	
		Low	High
Voluntary job mobility	Low	$23.99 (13.69) 3,506	$27.79 (14.56) 2,286
	High	$26.10 (14.75) 4,348	$29.82 (15.49) 1,213
	Mean difference	$2.11***	$2.03***

Note: As is the case with low and high voluntary job mobility, low tenure and high tenure are determined according to median tenure in low- and high-experience groups, 4.21 and 9.17 years, respectively. Mean differences are statistically significant at the *0.10, **0.05, or ***0.01 significance levels.

Second, high tenure is associated with a decrease in voluntary job mobility wage premiums for low-experience workers, but with an increase in these wage premiums for high-experience workers.

In sum, the data in Table 2 reinforce the notion that the strength of the relationship between high voluntary job mobility and wages diminishes with experience and varies according to length of tenure. The apparent complexity of these relationships among wages, voluntary job mobility, tenure, and experience provides impetus for multiple regression analyses that incorporate all of these factors into a single model.

Regression Results

To more precisely estimate the relationship between voluntary job mobility and wages, I run nine regression models that control for person and year fixed effects, education, age, percent time employed, marital status, industry, and occupation. The results of these regressions are presented in Tables 3 and 4.

Table 3 pools low- and high-experience observations and controls for experience, while Table 4 displays models with only low-experience observations and models with only high-experience observations. For each of the experience groups (pooled, low, and high), I specify three models. In terms of job mobility measures, the regression in the first column for each group includes only overall job mobility; the regression in the second column replaces overall job mobility with voluntary and involuntary job mobility; and the regression in the third column replaces the disaggregated job mobility variables with dummy variables for high voluntary job mobility and high involuntary job mobility. The regression in the third column of each group also replaces the continuous tenure variables, tenure and tenure^2, with a dummy variable for high tenure.

Job Change Timing

The coefficient on overall job mobility in the first regression of each experience group is positive and is not statistically significant in the pooled- and low-experience groups, but the coefficient is negative and statistically significant in the high-experience group (-0.040). This finding indicates that the relationship between job changes and wages cannot be estimated with precision in the early stage of workers' careers, but that the relationship becomes distinctly negative for experienced workers. Specifically, it is estimated that, on average, for each additional job change, wages for workers with at least 10 years of experience are expected to decrease by 4 percent.

Reason for Job Change

The relationship between job mobility and wages also differs according to whether the job changes are voluntary or involuntary, and the sign and precision of the variables' coefficients both change according to experience. In both the pooled- and low-experience groups, a voluntary job change is associated, on average,

Table 3. Fixed-Effects Regression of Voluntary Job Mobility on Log Hourly Wages

	Pooled Experience		
Independent variables	Model 1	Model 2	Model 3
Overall job mobility	0.003		
	(0.003)		
Voluntary job mobility		0.012***	
		(0.004)	
Involuntary job mobility		-0.014**	
		(0.006)	
High voluntary job mobility			0.083***
			(0.023)
High involuntary job mobility			-0.039
			(0.029)
Tenure	0.026***	0.026***	
	(0.002)	(0.002)	
Tenure^2	-0.001***	-0.001***	
	(0.000)	(0.000)	
High tenure			0.065***
			(0.009)
Experience	0.022	0.02	0.037**
	(0.015)	(0.015)	(0.016)
Experience^2	0.001*	0.001*	0.000
	(0.001)	(0.001)	(0.001)
HS education	-0.105***	-0.109***	-0.112***
	(0.030)	(0.031)	(0.031)
Greater than HS education[a]	0.027	0.019	0.013
	(0.053)	(0.053)	(0.053)
Age	0.104***	0.103***	0.109***
	(0.013)	(0.013)	(0.013)
Age^2	-0.002***	-0.002***	-0.002***
	(0.000)	(0.00)	(0.000)
Percent time employed	0.226***	0.228***	0.232***
	(0.040)	(0.040)	(0.041)
Married	0.107***	0.105***	0.108***
	(0.013)	(0.013)	(0.013)
Constant	0.728***	0.754***	0.682***
	(0.199)	(0.200)	(0.197)
Observations (person-year)	23,558		23,558
Adj. R-squared	0.693		0.691

Note: These regressions were estimated using 30 years (1979-2008) of panel data from the NLSY79. All models control for person and year fixed effects, as well as person-year industry and occupation. Robust standard errors are reported in parentheses under coefficients. Individual coefficients are statistically significant at the *0.10, **0.05, or ***0.01 significance levels.

[a] As it is widely accepted that having the equivalent of a high school education increases wages relative to high school dropouts, which is the omitted education category in all models, the negative coefficient on HS education is likely negatively biased owing to an omitted variable correlated with both wages and education. It is plausible that, among those who have the equivalent of a HS education but who do not go on to attend college, there are a considerable number who initially dropped out of school and later returned to high school or earned a GED. Compared to those HS dropouts who entered the workforce immediately and consistently earned wages, the late HS education equivalents, characterized as having a HS education in my sample, could have lower wages than dropouts due to some unobserved factor, e.g., motivation. In other words, a likely explanation for the negative coefficient on HS education is that the variation between late HS education equivalents and HS dropouts is driving the results, rather than the variation between regular HS graduates and dropouts.

Table 4. Fixed-Effects Regression of Voluntary Job Mobility on Log Hourly Wages, by Job Experience Category

Independent variables	Low Experience (< 10 years)			High experience (≥ 10 years)		
	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Overall job mobility	0.004			-0.040**		
	(0.004)			(0.017)		
Voluntary job mobility		0.015***			-0.026	
		(0.005)			(0.017)	
Involuntary job mobility		-0.013*			-0.092***	
		(0.007)			(0.031)	
High voluntary job mobility			0.077***			-0.034
			(0.026)			(0.044)
High involuntary job mobility			-0.05			-0.165*
			(0.032)			(0.088)
Tenure	0.046***	0.047***		0.013***	0.013***	
	(0.004)	(0.004)		(0.005)	(0.005)	
Tenure^2	-0.002***	-0.002***		-0.000***	-0.000***	
	(0.000)	(0.000)		(0.000)	(0.000)	
High tenure			0.098***			0.041**
			(0.013)			(0.018)
Experience						
Experience^2						
HS education[17]	-0.122***	-0.125***	-0.133***	-0.048	-0.045	-0.048
	(0.044)	(0.045)	(0.044)	(0.032)	(0.032)	(0.032)
Greater than HS education	0.020	0.012	-0.002	0.016	0.018	0.006
	(0.062)	(0.063)	(0.063)	(0.058)	(0.058)	(0.056)
Age	0.134***	0.131***	0.152***	0.142***	0.141***	0.151***
	(0.016)	(0.016)	(0.016)	(0.050)	(0.050)	(0.051)
Age^2	-0.002***	-0.002***	-0.002***	-0.001*	-0.001*	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Percent time employed	0.236***	0.237***	0.267***	0.033	0.038	0.061
	(0.047)	(0.047)	(0.048)	(0.044)	(0.044)	(0.043)
Married	0.110***	0.109***	0.111***	0.066*	0.065*	0.073**
	(0.017)	(0.017)	(0.017)	(0.036)	(0.036)	(0.036)
Constant	0.241	0.291	0.016	-1.231	-1.143	-1.582
	(0.223)	(0.224)	(0.221)	(1.654)	(1.652)	(1.735)
Observations (person-year)	16,419	16,419	16,419	7,139	7,139	7,139
Adj. R-squared	0.666	0.667	0.662	0.836	0.836	0.835

Note: These regressions were estimated using 30 years (1979-2008) of panel data from the NLSY79. All models control for person and year fixed effects, as well as person-year industry and occupation. Robust standard errors are reported in parentheses under coefficients. Individual coefficients are statistically significant at the *0.10, **0.05, or ***0.01 significance levels.

with an increase in wages between 1 and 2 percent, while an involuntary job change is associated, on average, with a wage decrease of approximately 1 percent. However, for high-experience workers, the coefficient on voluntary job mobility turns negative and is no longer significant (-0.026), while the coefficient on involuntary job mobility is highly significant and substantially greater in magnitude than its pooled- and low-experience counterparts (-0.092). This result suggests that the positive relationship between voluntary job mobility and wages decreases with experience, while the negative relationship between involuntary job mobility and wages becomes even more negative as workers advance in their careers.

Evaluating Four Hypotheses

The next four results of interest concern the coefficients on high voluntary job mobility and high tenure in the low- and high-experience groups, which I highlight to evaluate the four hypotheses set forth at the outset of this study. In support of Hypothesis 1, the coefficient on high voluntary job mobility in the low-experience group (0.077) is positive and highly significant, indicating that for workers with low experience, wages for workers with high voluntary job mobility are predicted to be approximately 8 percent higher than wages for workers with low voluntary job mobility.

In terms of Hypothesis 2, the coefficient on high voluntary job mobility for high-experience workers is negative, but this coefficient is imprecisely estimated (p=.0773). It is therefore difficult to draw any informative conclusions about this particular relationship using the results presented here.

The coefficient for high tenure in the low-experience group directly contradicts Hypothesis 3, that for workers with low experience, wages are higher for workers with low tenure compared to workers with high tenure. In fact, low-experience, low-tenure workers are expected to have, on average, wages that are 10 percent lower than low-experience, high-tenure workers.

Finally, the coefficient on high tenure in the high-experience group supports Hypothesis 4, indicating that high-experience workers with high tenure are expected to have wages that are approximately 4 percent higher than their counterparts with low tenure. In sum, not only do high-tenure workers realize wage premiums regardless of experience, but also, the relationship between high tenure and wages is greater in magnitude and precision for low-experience workers.

VII. DISCUSSION & CONCLUSION

Previous job mobility studies have largely focused on individual job changes, comparing wage changes of workers who switched jobs to those of workers who stayed in their current jobs. These "job-to-job" mobility studies find that, in general, voluntary job changes are positively associated with wages, whereas involuntary job

changes are negatively associated with wages. A smaller number of studies have examined how job mobility may impact wage levels over time. These less common "cumulative" studies confirm that voluntary job mobility is associated with higher wage levels, yet they also indicate that any positive wage impact from voluntary job changes may diminish over time as wage returns to tenure become stronger. In this study, I hypothesize that voluntary job mobility and tenure, in the extreme, have the opposite effect on wages. Specifically, I evaluate four hypotheses:

1) Among workers with low experience, wages are higher for those with high voluntary job mobility compared to those with low voluntary job mobility.

2) Among workers with high experience, wages are higher for those with low voluntary job mobility compared to those with high voluntary job mobility.

3) Among workers with low experience, wages are higher for those with low tenure compared to those with high tenure.

4) Among workers with high experience, wages are higher for those with high tenure compared to those with low tenure.

I find that positive wage returns are associated with high voluntary job mobility that diminish over time. In particular, it is predicted that high voluntary job mobility is associated with wages that are approximately 8 percent higher for workers with less than 10 years of experience, but that high voluntary job mobility is not associated with either higher or lower wages for workers with at least a decade of work experience. I also find that high tenure is positively associated with higher wages for both low- and high-experience workers (10 percent and 4 percent, respectively), not just those workers with high work experience.

While my results are generally consistent with existing literature, one of the regression results diverts from previous research. Specifically, I find higher wage premiums for high-tenure workers with less, compared to more, experience. This may be because my conceptual model is too extreme in suggesting that high voluntary job mobility and high tenure are associated with opposite wage outcomes. My results indicate that voluntary job mobility and tenure are not so negatively correlated that 1) a high instance of one variable dictates a low instance of the other, and 2) for the same group of workers, a high instance of one variable being positively associated with wages indicates that a high instance of the other is negatively associated with wages. In fact, my results imply an overlap between categories that are conceptually mutually exclusive in my hypotheses. Future research that specifies a more subtle relationship between wages, voluntary job mobility, tenure, and experience may be enlightening.

Moreover, my regression results are based upon defining high voluntary job mobility and high tenure as

simply being equal to or greater than the median number of voluntary job changes or years of tenure, respectively. Additional research that uses an alternate threshold or employs a more nuanced approach with more than two categories for each variable may be able to identify more precisely which mobility patterns are associated with the highest wages.

Finally, as the oldest workers in my sample were only 51, classifying all workers with at least a decade of work experience as "high experience" is not necessarily analogous to "late career." As the NLSY79 continues to be administered, additional research that divides workers into "early-," "mid-," and "late-" career workers based upon ten-year increments of experience should provide a more realistic picture of which job mobility patterns are associated with the highest wages.

I must also emphasize that, even after controlling for fixed effects and including several relevant control variables, unexplained variation in wages still exists. It is possible, then, that my results suffer from omitted variable bias. For example, some workers may have high instances of voluntary job changes because of health complications. This particular omission, which may be positively correlated with voluntary job mobility and negatively correlated with wages, would result in a negative bias in my job mobility coefficients.

In terms of policy implications, these findings broadly indicate that some job mobility patterns may result in higher average wages than others. In general, comparatively high numbers of voluntary job changes within the first 10 years of work experience are associated with higher average wages, lending credibility to policies—like job search assistance—that encourage workers to job-shop. Thus, policies that promote expanded access to general education and training opportunities may be a worthwhile investment to develop transferable skills in young workers.

"... a diverse portfolio of labor policies stands to benefit workers who are just beginning their careers, whereas policies that foster increased tenure may create the greatest opportunity for wage growth among workers later in their careers."

However, the findings also indicate that tenure is positively correlated with wages for all workers, regardless of experience, providing support for policies that encourage employers to invest in their employees through firm-specific training. Perhaps the most appropriate conclusion is that a diverse portfolio of labor policies stands to benefit workers who are just beginning their careers, whereas policies that foster increased tenure may create the greatest opportunity for wage growth among workers later in their careers. However, since the results are relatively inconclusive as to their policy implications, they should be assessed with some caution.

In conclusion, heterogeneity in job mobility patterns may play a role in

wage levels over time. Controlling for other factors, workers with the "best" mobility patterns will experience higher wages than their peers. More detailed research is needed to specify which cumulative mobility patterns maximize wages, and for whom. In particular, it may be that workers in specific industries or occupations are more likely than others to experience higher wages from voluntary job mobility or tenure. Additional research exploring which mobility patterns are associated with higher wages according to gender, race, skill level, and income level could lead to more targeted job search and training policies.

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