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WAGES, NONWAGE JOB CHARACTERISTICS
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Ann Bartel

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ABSTRACT

This paper examines the impact of a set of nonwage job characteristics on the quit decisions of young and middle-aged men. The empirical analysis shows that young men are less likely to quit "physical" jobs or jobs with bad working conditions but are more likely to quit repetitive jobs. Older men, however, are more likely to quit jobs with physical requirements or bad physical conditions but are less likely to quit repetitious jobs. After they quit, young men experience an increase in the physical components of the job and a decline in repetitiveness while exactly the opposite holds for the older men. It was shown that the age differences in the impacts of the nonwage attributes could be explained by the fact that young men place greater weight on wage growth opportunities in the job and in the physically demanding jobs there are good opportunities for wage growth, while in the repetitive jobs, wage growth is slow. The finding that young workers want to move into jobs that are simultaneously perceived by older workers to be undesirable indicates how opportunities for mobility can improve an economy's productivity.

Ann Bartel
Graduate School of Business
Columbia University
N.Y., N.Y. 10027

(212) 280-4419

WAGES, NONWAGE JOB CHARACTERISTICS AND LABOR MOBILITY

Ann P. Bartel *

Since the time of Adam Smith, the theory of equalizing differences -- that individuals are induced to accept less attractive jobs by receiving compensating increases in their wages -- has been used by economists as an explanation of the existence of wage differences in the labor market. By definition, the theory has important implications for understanding the mobility of labor since an individual's decision to change jobs is based on all the characteristics of a job -- the wage rate, fringe benefits and the nonpecuniary job attributes. Reynolds (1951) explicitly recognized this in his case study of labor mobility in a New England factory city in the years 1946-1948. While the analytical studies of labor mobility that appeared after the Reynolds study made important contributions to our understanding of the determinants of individual turnover behavior, they ignored the nonpecuniary motives for turnover because of the lack of data on nonpecuniary job attributes.¹ The only study that examined the relationship between

* Associate Professor, Columbia University Graduate School of Business.

¹ For example, see Parnes and Nestel (1975), Bartel and Borjas (1977, 1978) and Jovanovic and Mincer (1979).

worker quitting and nonpecuniary attributes was that of Viscusi (1979) but his work was limited to an examination of the impact of the industry injury rate on worker quit behavior.

In this paper, the analysis of individual turnover behavior is expanded to consider the role of a set of nonwage job attributes. In particular, the relative importance of nonpecuniary returns at different stages in an individual's life cycle is explored. Data on the nonwage attributes of an individual's job are obtained by merging the Dictionary of Occupational Titles data set and fringe benefit data from the Bureau of Economic Analysis with the National Longitudinal Surveys of Young and Mature Men. In Part I, a framework for incorporating nonwage job characteristics into the job change decision is presented. Part II discusses the manner in which the data set was created. The empirical results are presented in Parts III, IV and V and conclusions are given in Part VI.

I. Framework

In a world characterized by imperfect information and/or changing conditions or tastes, labor turnover is the means by which workers and firms correct their errors. If the match between a worker and a firm is determined to be unsatisfactory, this can be rectified by a separation. A worker compares his real income stream in the current job, Y_c , with his real income stream in the alternative job, Y_a . If $Y_a - Y_c$ is greater than the costs associated with mobility, the individual will change jobs and thereby improve his economic position.

The important point to recognize here is that the real income stream is composed of both monetary (wages and fringes) and non-monetary forms of compensation. The latter should have a distinct role in the turnover process for the following reasons. First, it is usually more difficult to obtain information about nonpecuniary job attributes unless some time is spent on the job. Therefore much job turnover may take place as a way of learning about the characteristics of various types of jobs. This would be true especially in the case of young individuals. Second, as an individual ages, his preferences for nonmonetary as opposed to monetary forms of compensation may change. This could be due, for example, to changes in health status and family responsibilities. To the extent that the relative mix between monetary and nonmonetary returns could not be changed on a given job, a separation would occur. For both of these reasons, an analysis that ignored the role of nonpecuniary job characteristics in the turnover process would be unable to explain much of observed turnover behavior.²

The effect of nonpecuniary job characteristics on the individual's job change decision can be obtained by estimating the following equation:

$$Q_i = \alpha_0 + \alpha_1 \ln W_i + \alpha_2 \ln F_i + \alpha_3 NP_i + \alpha_4 X_i + \alpha_5 C_i + \alpha_6 T_i + \alpha_7 T_i^2 + \epsilon_i \quad (1)$$

where Q_i is the probability that the individual quits in the relevant time period, W_i is his money wage in the current job (before the quit), F_i is current fringe benefits, NP_i is a vector of nonpecuniary job

²It would not be necessary to distinguish between pecuniary and nonpecuniary forms of compensation if the two were perfectly correlated.

attributes, X_i is a vector of personal characteristics that may influence turnover behavior even though the wage is held constant (e.g. education, experience, health, unionization),³ C_i is a vector of variables that measure the costs of mobility (e.g. wife's labor force participation),⁴ T_i is job tenure and T_i^2 is the quadratic of job tenure,⁵ and ϵ_i is the residual. Since the decision to change jobs is based on the difference between real income streams in the current and alternative jobs (holding costs of mobility constant), the coefficients on W_i , F_i and desirable NP_i should be negative; the lower W_i , F_i or desirable NP_i , ceteris paribus, the greater the probability of quitting since the individual's skills are likely to be rewarded at a higher rate in other firms.

II. Data

In order to compare the effect of nonpecuniary job attributes on turnover at different stages in the life cycle, the quit equation is estimated for the NLS Young Men's sample and the NLS Mature Men's sample. The young men were between the ages of 14 and 24 in 1966 while the mature men were between 45 and 59 in that year. Since both samples

³These variables have been used in previous studies of job mobility. See Bartel and Borjas (1977) and Jovanovic and Mincer (1979).

⁴In the case of local mobility, a working wife should lower the cost of mobility since her earnings provide a cushion against the risk associated with a job change.

⁵Jovanovic and Mincer (1979) show that the tenure-turnover profile is nonlinear because specific capital accumulation in the firm is eventually completed. Even if returns to specific capital do not decelerate with tenure, the growth of acceptance wages guarantees a nonlinear tenure-turnover profile because of the declining upper tail of the wage offer distribution.

survey individuals over several years, a quit is defined to occur if the individual quit the job he was holding in the base year over a subsequent two-year period. The two-year periods analyzed are 1967-69 and 1969-71. In order to be in the sample, the individual had to be employed both at the beginning and at the end of the relevant two-year period. In addition, the young men were required to not be enrolled in school while the mature men could not be retired from their regular jobs. These restrictions insure that the sample is composed of primary workers fully committed to the labor force and also guarantees that a quit does not occur in order to leave the labor force.⁶

While the NLS data sets provide information on turnover, wages, and personal characteristics, they do not provide information on fringe benefits nor do they describe the nonpecuniary characteristics of the job. An estimate of the fringe benefits that an individual is receiving in his current job can be obtained by using data collected by the Bureau of Economic Analysis on the total expenditures for labor compensation, divided into wage and nonwage components, for 2-digit SIC industries and similar data reported in the Annual Survey of Manufacturers for 3-digit SIC manufacturing industries. Brown (1980) has used these data to create the ratio of nonwage compensation/wages for industries classified according to the 3-digit Census system and his data set is used here for merging with the NLS samples. The use of this

⁶Given these restrictions, I am not examining all turnover incidents experienced by the men in the sample but have focused very specifically on job changes experienced by regular full-time workers.

ratio enables us to consider whether the wage and the nonwage forms of compensation have equal impacts on the quitting decision.

Given the form in which the fringe data are available, we need to express the quit equation differently than it is shown in equation (1). Define total monetary compensation received by the employee as $M_i = W_i + F_i$. Then write the quit equation as:

$$Q_i = \alpha_0 + \alpha_1 \ln M_i + \alpha_3 NP_i + \dots \quad (2)$$

This can be rewritten as:

$$Q_i = \alpha_0 + \alpha_1 \ln W_i + \alpha_1 \ln(1 + F_i/W_i) + \alpha_3 NP_i + \dots \quad (2a)$$

or under the assumption that F_i/W_i is small,

$$Q_i = \alpha_0 + \alpha_1 \ln W_i + \alpha_1 F_i/W_i + \alpha_3 NP_i + \dots \quad (2b)$$

Equation (2b) enables us to test whether wages and fringes have equal impacts on quitting by using the logarithm of the wage and the absolute ratio of fringes to wages (as calculated by Brown) as independent variables and testing to see if the coefficients on these two variables are equal.

The second component of nonwage job attributes is the nonpecuniary characteristics of the job, or the working conditions. An important source of data on job characteristics is the Dictionary of Occupational Titles (DOT) file. Originally, each of over 13,000 DOT occupations was assigned a dummy variable for each of about twenty job characteristics. These 13,000 occupations were then aggregated into the nearly 300 3-digit Census occupations using a conversion matrix

based on the October 1966 Current Population Survey. Thus the "score" for each occupation represents the probability that a randomly selected individual in that 3-digit occupation has the given job characteristic. For those individuals in occupation categories 775 (operatives, not elsewhere classified) or 985 (laborers, not elsewhere classified), the job characteristic data are further classified by the 3-digit Census industry code.

Since the NLS data provide information on the individual's 3-digit Census occupation and industry categories, the NLS files and the DOT file can be merged. The DOT file has been similarly merged by researchers who were studying other topics. For example, Lucas (1977) merged it with the Survey of Economic Opportunity file in order to examine the extent to which wages adjust in the market in response to the existence of positive and negative job attributes. Brown (1980) merged the DOT file with the NLS Young Men's sample to expand on Lucas's work in order to account for the correlation between job characteristics and unobservable variables that affect the wage. Finally, Quinn (1977) merged it with the Retirement History Study in order to estimate the impact of job characteristics on the retirement decision.

For the study on the relationship between turnover and job characteristics, six characteristics from the DOT file were selected for merging with the NLS data.⁷

⁷The excluded characteristics were those describing the educational, training and aptitude requirements of the job as well as variables such as "job involves interpretation of feelings in terms of personal viewpoint," "job involves evaluation of information against judgmental criteria."

- (1) The job requires performing repetitive functions (REP)
- (2) The job involves a variety of duties or the direction, planning and control of an entire activity or the activity of others (WHVAR)
- (3) The job requires working under stress (STRESS)
- (4) The job requires physical strength (REQST)
- (5) The job has other physical requirements such as climbing, balancing, stooping, crawling, reaching, handling, talking, hearing or seeing (PHYS)
- (6) The job involves bad working conditions (extremes of cold or heat, humidity, noise, toxic conditions, or hazards) (BADWC)

Recall that in the only previous study of quits and nonpecuniary job attributes, i.e. the work by Viscusi, the industry injury rate was used as a measure of nonpecuniary characteristics. The DOT data are far superior to this measure for two reasons. First, they provide information on several nonpecuniary attributes. Second, the data are specific to the individual's occupation and therefore avoid the problem faced by Viscusi, namely that all occupations within an industry are not likely to come into contact with the job hazard (e.g. clerical and sales management jobs); in other words, an industry injury rate is not a proper estimate of the hazards faced by individuals in specific occupations.

Table 1 presents the mean values of the wages and nonwage job characteristics of the two samples. The mature men earn significantly higher wages than the young men and also have a significantly higher ratio of fringes to wages. In the case of the DOT characteristics, the young men are significantly more likely to be in jobs with bad working conditions (BADWC), jobs that have physical requirements (PHYS) and jobs that are repetitive (REP). The older men are significantly more likely than the young men to be in jobs that are stressful (STR) and jobs that involve a variety of duties (WHVAR). The only inconsistent finding here is the greater likelihood of older men being in jobs that require physical strength (REQST).

III. Quit Equations

In this section the results of estimating equation (2b) on the merged data files are presented. Since the results for the two time intervals, 1967-69 and 1969-71, were quite similar, the time periods were pooled. Two dependent variables were used: QUIT, which equals one if the individual quit his job during the relevant time period and JOBREL, which equals one if the individual quit his job for job-related reasons such as wages, working conditions, disliking fellow employees, etc.⁸ Since the dependent variable is dichotomous,

⁸The alternative is to quit for personal reasons such as health or family problems. 70 percent of the mature men's quits and 81 percent of the young men's quits were for job-related reasons.

Table 1

MEANS AND STANDARD DEVIATIONS OF WAGES
AND NON-WAGE JOB CHARACTERISTICS^a

	NLS Young Men		NLS Mature Men	
	Mean	Std. Dev.	Mean	Std. Dev.
LWAGE	1.025	(.39)	1.222	(.49)
FRINGE	.1098	(.05)	.1131	(.05)
BADWC	.4962	(.50)	.4607	(.38)
REQST	.0912	(.29)	.1267	(.22)
PHYS	.3705	(.48)	.3494	(.37)
STRESS	.0392	(.19)	.0511	(.16)
REP	.3455	(.47)	.2813	(.33)
WHVAR	.4154	(.49)	.5115	(.37)
Sample Size	2116		3393	

^aThe time periods 1967-69 and 1969-71 are pooled.
The wage rate is in 1967 dollars.

the maximum-likelihood probit technique was used for estimation. Table 2 presents the results for the young men while Table 3 shows the results for the mature men. Only the coefficients on the wage, the fringe benefit variable and the nonpecuniary job attributes are shown. The other variables included in the quit regressions are education, experience, the square of experience, tenure, the square of tenure, marital status, health status, size of local labor market, a vector of industry dummy variables and a dummy distinguishing the two time periods.

The results show that money wages have a negative and significant effect on the probability of quitting for both young and older men. Fringe benefits also have a negative effect for both samples but the effect is not significant for young men. It is interesting to consider whether the coefficients on LWAGE and FRINGE are significantly different from one another for either sample. The results of the likelihood-ratio test show that only in the case of job-related quits by the older men do fringes have a larger impact than wages. In all other cases the wage and fringe coefficients are not significantly different. These results are important since they indicate that the relative values placed on the two forms of monetary compensation change as an individual ages. This may be in response to changing tastes, family responsibilities or health conditions.⁹

⁹The test is performed by calculating the ratio of the restricted and unrestricted likelihood functions. Minus two times the logarithm of this ratio is distributed chi-square.

Table 2

PROBIT COEFFICIENTS ON THE WAGE AND NON-WAGE JOB CHARACTERISTICS
FROM QUIT EQUATIONS FOR NLS YOUNG MEN^a
(t-values are in parentheses)

	QUIT			JOBREL		
	(1) Variables in lines 3-8 entered together	(2) ^b Variables in lines 3-8 used separate- ly	(3) Lines 9-11 used in place of lines 3-8	(4) Variables in lines 3-8 entered together	(5) ^b Variables in lines 3-8 used separate- ly	(6) Lines 9-11 used in place of lines 3-8
1. LWAGE	-.3185 (-3.32)		-.3314 (-3.48)	-.2892 (-2.91)		-.3018 (-3.06)
2. FRINGE	-1.126 (-1.43)		-1.141 (-1.46)	-1.103 (-1.33)		-1.159 (-1.39)
3. BADWC	.1042 (1.02)	-.0389 (.57)		.1015 (.96)	.0097 (.14)	
4. REQST	.0121 (1.03)	-.0483 (-.46)		-.1464 (-1.17)	-.1674 (-1.52)	
5. PHYS	-.1110 (-1.03)	-.0426 (-.60)		-.1157 (-1.04)	-.0810 (-1.10)	
6. STRESS	-.2959 (-1.54)	-.2282 (-1.31)		-.1110 (-.55)	-.1524 (-.84)	
7. REP	.0353 (.42)	.1586 (2.36)		-.0229 (-.26)	.1251 (1.80)	
8. WHVAR	-.1966 (-2.49)	-.2184 (-3.38)		-.2335 (-2.86)	-.2230 (-3.32)	
9. BRP			-.0737 (-1.00)			-.1157 (-1.51)
10. RWH			.4162 (2.34)			.5136 (2.69)
11. STRESS			-.2338 (-1.33)			-.1647 (-.90)

^aThe time periods 1967-69 and 1969-71 are pooled. The other variables included in these equations are described in the text. The complete regressions are shown in Appendix Table A-1.

^bThe coefficients for LWAGE and FRINGE are not reported in this column but these variables were included in each of the six equations to which this column refers.

Table 3

PROBIT COEFFICIENTS ON THE WAGE AND NON-WAGE JOB CHARACTERISTICS
FROM QUIT EQUATIONS FOR NLS MATURE MEN^a
(t-values are in parentheses)

	QUIT			JOBREL		
	(1) Variables in lines 3-8 entered together	(2) ^b Variables in lines 3-8 used separately	(3) Lines 9-11 used in place of lines 3-8	(4) Variables in lines 3-8 entered together	(5) ^b Variables in lines 3-8 used separately	(6) Lines 9-11 used in place of lines 3-8
1. LWAGE	-.2917 (-3.32)		-.2880 (-3.28)	-.2301 (-2.28)		-.2318 (-2.31)
2. FRINGE	-6.805 (-2.94)		-6.743 (-2.92)	-9.588 (-3.15)		-9.475 (-3.13)
3. BADWC	.3253 (1.51)	.1627 (1.39)		.6554 (2.71)	.3191 (2.37)	
4. REQST	.0321 (.15)	.0905 (.49)		-.0856 (-.35)	.0355 (.16)	
5. PHYS	-.1589 (-.74)	.1002 (.87)		-.3288 (-1.39)	.1613 (1.23)	
6. STRESS	-.1698 (-.63)	-.0474 (-.18)		-.1706 (-.55)	.0674 (.23)	
7. REP	-.2576 (-1.37)	-.0145 (-1.12)		-.2098 (-.95)	-.1747 (-1.16)	
8. WHVAR	-.0857 (-.53)	.0595 (.54)		.0510 (.28)	.1458 (1.15)	
9. BRP			.1871 (1.22)			.3071 (1.74)
10. RWH			-.1225 (-.95)			-.2117 (-1.42)
11. STRESS			-.0489 (-.19)			.0668 (.23)

^aThe time periods 1967-69 and 1969-71 are pooled. The other variables included in these equations are described in the text. The complete regressions are shown in Appendix Table A-2

^bThe coefficients for LWAGE and FRINGE are not reported in this column but these variables were included in each of the six equations to which this column refers.

The effects of the nonpecuniary job attributes are shown in Tables 2 and 3 in three ways. In Columns (1) and (4) the six variables are used together. In Columns (2) and (5) the variables are used separately in the equation so that these columns in effect report results from six different equations. Finally, in Columns (3) and (6), the six variables are collapsed into three factors that resulted from a factor analysis of the variables. They are: BRP which is composed of BADWC, REQST and PHYS and therefore measure the "physical" components of the job, RWH which equals REP minus WHVAR and therefore measures the repetitiveness or lack of variety in the job, and STRESS which measures whether the job requires working under stress. These different specifications of equation (2b) were used because of the high degree of correlation among many of the nonpecuniary variables.

The results show that for the young men, bad working conditions and physical requirements do not have a significant impact on quitting while strength requirements actually lower the probability of quitting for a job-related reason (in column (5)). The factor that is composed of these three variables, BRP, has a negative effect which is close to significance for job-related quits. Repetitiveness, variety of duties on the job and control over an entire activity have important effects on the probability of quitting for young men. REP is positive and significant in Columns (2) and (5) while WHVAR is negative and significant in Columns (1), (2), (4) and (5). Further, the factor that combines these two variables, RWH, is positive and significant for all quits and for job-related quits. The stress variable is negative and almost significant in Column (1). In sum, young men are more likely

to stay on jobs that are "physical," jobs that are stressful, or jobs that are non-repetitive and involve the control over an entire activity.

The results for the older men are quite different. In Table 3 we see that the presence of bad working conditions increases the probability of quitting and this is significant for job-related quits. Further, the factor that measures all of the "physical" components of the job is positive and again, this is significant for job-related quits. In addition, older men are less likely to quit jobs that involve repetitive tasks as shown by the coefficients on REP and RWH.

In sum, the results in Tables 2 and 3 confirm the roles played by wages, fringe benefits and nonpecuniary job attributes in the turn-over decision. An important finding is the existence of differences in the impacts of the nonpecuniary characteristics across age groups. Young men are less likely to quit "physical" jobs or jobs with bad working conditions and are more likely to quit repetitive jobs while older men are more likely to quit jobs with bad physical conditions or physical requirements and are less likely to quit repetitive jobs. A possible reason for these age differences is explored in Part V.

IV. Changes in Wages and Non-Wage Job Characteristics

The analysis in Part III showed that, holding other things constant (e.g. the wage and fringes), young men quit "repetitive" jobs while older men quit "physical" jobs. An interesting issue is to consider what happens to these men after they quit. Do the young quitters move into jobs that are less repetitive and do the older

quitters take jobs that are less physical? The results in Tables 2 and 3 do not necessarily provide answers to these questions. Given the longitudinal nature of the data, however, the questions can be answered by examining changes in wages and nonwage job characteristics over the two-year period under study. This is done by estimating an equation in which the dependent variable is the change in the job characteristic and the independent variables are a set of personal characteristics and a set of dummy variables indicating the individual's mobility status over the relevant two year period. The coefficients on the mobility variables show how the job characteristic changed relative to the change experienced by the stayers.

This type of analysis is also valuable because it provides a method of coping with potential problems due to population heterogeneity. It is possible that in the quit equations estimated above the job characteristics proxy unobserved personal characteristics which measure the propensity for turnover. For example, "unstable" young men may tend to be in repetitive jobs. By examining changes in job characteristics, this bias is avoided because unobserved personal characteristics are likely to be constant over time. The change in a given individual's status can be directly observed.

Tables 4 and 5 present the coefficients on the mobility variables from the "change" equations. Mobility status is indicated by JOBREL -- a job-related quit took place, PERS- a personal reason quit took place, and LAYOFF - a layoff took place. The coefficients in Table 4 show that young men who quit for job-related reasons experience larger wage increases than stayers but the ratio of fringes to wages remains

the same. For these quitters the physical components of the job (as summed up by BRP) increase and repetitiveness (as measured by RWH) declines. Both of these changes are close to significance. The change in physical requirements (PHYS) is significant at the 5 percent level. These results are consistent with the findings from Table 2 indicating that the heterogeneity bias was not dominating those results. The coefficients in Table 5 show that older men who quit for job-related reasons, like their younger counterparts, experience a significant increase in wages relative to stayers while the fringe benefit/wage ratio remains the same. As anticipated, for these men the physical components of the job (BADWC, PHYS, BRP) decline while repetitiveness increases and variety of duties decreases (the sum of these effects is demonstrated by RWH). These results are close to significance; the strongest result is a decline in BADWC. Again, these findings are consistent with the earlier findings in Table 3b.

The results in Tables 4 and 5 show that quitters obtain increased compensation in their new jobs. The interesting finding is that both monetary and nonmonetary forms of compensation increase. For young workers, an increase in nonmonetary compensation means a decrease in the repetitiveness of the job while for older men it means a decrease in the job's physical requirements.

V. Explaining the Observed Age Differences

One of the major findings of the analyses presented in Parts III and IV is that there are distinct age differences in the roles played by various nonpecuniary characteristics in the mobility decision. Young

Table 4

THE EFFECTS OF MOBILITY ON CHANGES IN WAGES
AND NON-WAGE JOB CHARACTERISTICS^a
NLS Young Men
(t-values in parentheses)

Dependent Variable: The Change In	JOBREL	PERS	LAYOFF
1. LWAGE	.0607 (3.77)	-.1335 (-4.38)	-.0425 (-2.10)
2. FRINGE	.0014 (.65)	-.0041 (-.99)	-.0021 (-.77)
3. BADWC	.0212 (1.25)	.0048 (.15)	.0114 (.54)
4. REQST	.0049 (.38)	-.0040 (-.17)	-.0043 (-.27)
5. PHYS	.0324 (1.90)	.0472 (1.46)	.0479 (2.23)
6. STRESS	.0129 (1.67)	-.0056 (-.38)	.0129 (1.32)
7. REP	-.0248 (-1.35)	-.0512 (-1.47)	-.0078 (-.34)
8. WHVAR	.0275 (1.37)	-.0082 (-.21)	.0062 (.24)
9. BRP	.0195 (1.50)	.0160 (.65)	.0183 (1.12)
10. RWH	-.0262 (-1.45)	-.0215 (-.63)	-.0070 (-.31)

^aThe time periods 1967-69 and 1969-71 are pooled. The other variables included in these equations are education, experience, the square of experience, marital status, wife's education, respondent's health status, and a dummy variable distinguishing the two time periods. The complete regressions are shown in Appendix Table A-3.

Table 5

THE EFFECTS OF MOBILITY ON CHANGES IN WAGES
AND NON-WAGE JOB CHARACTERISTICS^a

NLS Mature Men

(t-values in parentheses)

Dependent Variable: The Change In	JOBREL	PERS	LAYOFF
1. LWAGE	.0512 (1.61)	-.1599 (-3.07)	-.0753 (-2.80)
2. FRINGE	-.0003 (-.13)	-.0078 (-1.80)	.0001 (.05)
3. BADWC	-.0457 (-2.46)	.0097 (.32)	.0239 (1.52)
4. REQST	.0018 (.13)	-.0127 (-.58)	.0083 (.74)
5. PHYS	-.0259 (-1.31)	-.0274 (-.85)	.0263 (1.58)
6. STRESS	.0187 (1.97)	.0201 (1.30)	-.0042 (-.52)
7. REP	.0197 (1.05)	.0878 (2.87)	.0137 (.87)
8. WHVAR	-.0361 (-1.63)	-.0826 (-2.27)	-.0567 (-3.03)
9. BRP	-.0233 (-1.61)	-.0101 (-.43)	.0195 (1.59)
10. RWH	.0279 (1.46)	.0852 (2.73)	.0352 (2.19)

^aThe time periods 1967-69 and 1969-71 are pooled. The other variables included in these equations are education, experience, the square of experience, marital status, wife's education, respondent's health status, and a dummy variable distinguishing the two time periods. The complete regressions are shown in Appendix Table A-4.

people tend to quit jobs that are repetitive in nature while older people tend to quit jobs that have physical requirements or bad working conditions. A possible explanation for this age difference is that older people are more likely to experience health problems that may force them to leave physically demanding jobs.¹⁰ This hypothesis can be tested by creating interaction terms between the nonpecuniary characteristics and the health variable and adding these terms to the older men quit equations. The argument would be that, among the older men, those with health problems are more likely to quit jobs that are physically demanding or have bad working conditions. The results, not reported here, do not support this hypothesis; the interaction term between HLTH and BRP was never significant.

A second hypothesis that could explain the age differences relates to the opportunities for investment and wage growth on the job. It is possible that those jobs that are physically demanding or have bad working conditions are also the types of jobs on which the individual can experience rapid wage growth. Since young men would place greater weight on these growth opportunities than the older men (in view of their longer time horizon) we would then expect to observe young men being less likely to quit the physically demanding jobs. This hypothesis was tested by estimating wage growth equations for a sample of young men who did not change jobs over the relevant two-year time period. In addition to a vector of personal characteristics, the nonpecuniary variables (those

¹⁰ In the NLS samples, 11 percent of the young men and 22 percent of the older men reported that they had health problems that limited the kind or amount of work they could do.

produced by the factor analysis described in Part III) were used as independent variables in these equations. The coefficients on the nonpecuniary variables are shown in Panel A of Table 6. The results show that young men in jobs that are physically demanding or have bad working conditions (BRP) have significantly larger wage growth in both dollar and percentage terms. Further, young men in jobs that are repetitive in nature (RWH) have significantly smaller wage growth in both dollar and percentage terms. Since these equations are restricted to individuals who did not change jobs over the two-year period, it is possible that a selection bias exists in Panel A. An alternative test that avoids this bias is shown in Panel B where a wage equation is estimated on the full sample and the variables BRP, RWH and STRESS, their interactions with tenure, and a vector of personal characteristics are included. The results show that the tenure interaction with BRP is positive and close to significance while the tenure interaction with RWH is negative and significant. Recall from Part III that young men were less likely to quit the physical jobs but more likely to quit the repetitive jobs. The results in Table 6 provide an explanation for these findings, namely, that young men quit in order to improve their opportunities for wage growth.¹¹

¹¹The opportunities for wage growth that exist in the physical jobs do not appear to be due to formal company training programs. Even when a variable indicating the acquisition of such training was included in the wage growth equations, the positive and significant effect of BRP remained. Growth opportunities on these jobs are obviously due to informal methods of training and skill acquisition.

Table 6

THE RELATIONSHIP BETWEEN NONPECUNIARY JOB CHARACTERISTICS
AND WAGE GROWTH
NLS Young Men

A. Coefficients on Nonpecuniary Variables From Wage Growth Equations^a

	Percentage Growth	Absolute Growth
1. BRP	.0682 (2.88)	.2209 (2.85)
2. RWH	-.0464 (-2.48)	-.1809 (-2.95)
3. STR	.0018 (.04)	-.0414 (-.34)

B. Coefficients on Nonpecuniary Variables and Tenure-Nonpecuniary
Interactions From LWAGE Equation^b

1. BRP	.0020 (.05)
2. RWH	.0334 (1.19)
3. STR	.0398 (.63)
4. JOBBRP	.0207 (1.60)
5. JOBRWH	-.0253 (-2.24)
6. JOBSTR	-.0212 (-.88)

^aOther variables in the equation are education, experience, tenure, health, marital status, wife's labor force status and a dummy distinguishing the two time periods. See Appendix Table A-5.

^bIn addition to the variables listed in footnote a, the equation includes quadratic terms in experience and tenure. See Table A-5.

VI. Summary

This paper examines the impact of a set of nonwage job characteristics on the quit decisions of young and middle-aged men. The data set was constructed by merging the data in the National Longitudinal Surveys of Young and Mature Men with data from the Dictionary of Occupational Titles File and the Bureau of Economic Analysis file on fringe benefits. The empirical analysis showed that many of the nonwage job attributes had significant impacts on worker quit behavior and there were differences in the effects of the nonwage characteristics across age groups. Young men were less likely to quit "physical" jobs or jobs with bad working conditions but were more likely to quit repetitive jobs. Older men, however, were more likely to quit jobs with physical requirements or bad physical conditions but were less likely to quit repetitive jobs.

These age differences were further demonstrated in an analysis that examined changes in the nonwage components of the individual's job after the quit took place. This exercise also avoided the heterogeneity bias that may have plagued the quit equations. The findings here were that young quitters experience an increase in the physical components of the job and a decline in repetitiveness after the quit while exactly the opposite holds for the older men who quit.

In conclusion, this paper has demonstrated that the quit decision is multi-faceted and a thorough analysis requires information on the various attributes of the individual's job. The observed age differences have important implications for the role that labor mobility plays in allocating human resources within the economy. The finding

that young individuals want to move into jobs that are simultaneously perceived by older workers to be undesirable indicates how opportunities for mobility can improve an economy's productivity. Similarly, seniority rights, often viewed as constraints on optimizing behavior, can be seen in this context as beneficial; they enable senior workers to choose the jobs they prefer thereby creating vacancies in jobs that young workers desire.

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APPENDIX

The complete regressions from which selected coefficients were chosen for the text tables are reported in the Appendix. The variables that have not already been defined in the text are defined below.

<u>Variable</u>	<u>Definition</u>
EDUC	years of school completed
EXPER	years of labor market experience
EXBERSQ	The square of EXPER
JOB	years on the current job
JOBSQ	the square of JOB
MAR	equals one if married with spouse present
WLFP	equals one if wife works (Young sample only)
WIFED	wife's education (Mature sample only)
HLTH	equals one if health limits kind or amount of work
SIZE	size of local labor market
D69	equals one if data refer to time period 1969-71
MINE	equals one if employed in mining
CONS	equals one if employed in construction
MANUF	equals one if employed in manufacturing
TRANSP	equals one if employed in transportation, communication or public utilities
WHRET	equals one if employed in wholesale or retail trade

FIN	equals one if employed in finance, insurance, or real estate
BUSREP	equals one if employed in business or repair services
PERS	equals one if employed in personal services
ENT	equals one if employed in entertainment or recreation services
PROFREL	equals one if employed in professional or related services

Table A-1

QUIT AND JOBREL PROBIT REGRESSIONS FOR NLS YOUNG MEN^a

Independent Variable	QUIT		JOBREL	
	b	t	b	t
LWAGE	-.3314	(-3.48)	-.3018	(-3.06)
FRINGE	-1.141	(-1.46)	-1.159	(-1.39)
EDUC	-.0012	(.07)	-.0036	(-.20)
EXPER	-.0295	(-1.14)	-.0115	(-.43)
EXPERSQ	.0030	(1.39)	.0015	(.67)
JOB	-.1521	(-3.70)	-.1483	(-3.45)
JOBSQ	.0057	(.92)	.0059	(.90)
MAR	.0489	(.59)	.1013	(1.18)
WLFPS	-.0539	(-.70)	-.0801	(-1.01)
HLTH	.0243	(.26)	-.0257	(-.26)
SIZE	.0066	(.39)	-.0054	(-.30)
D69	-.1961	(-3.12)	-.2592	(-3.98)
MINE	.7451	(2.41)	.9531	(2.96)
CONS	.6138	(3.20)	.7009	(3.31)
MANUF	.2633	(1.52)	.4141	(2.14)
TRANSP	.1660	(.83)	.3193	(1.44)
WHRET	.5437	(3.12)	.6344	(3.27)
FIN	.4159	(1.78)	.6326	(2.53)
BUSREP	.5867	(2.60)	.7556	(3.11)
PERS	.7895	(2.50)	.9954	(3.05)
ENT	.9157	(1.52)	.1016	(.15)
PROFREL	.2672	(1.37)	.4545	(2.12)
BRP	-.0737	(-1.00)	-.1157	(-1.51)
RWH	.4162	(2.34)	.5136	(2.69)
STR	-.2338	(-1.33)	-.1647	(-.90)
In L	-1213.33		-1109.90	

^aThese equations correspond to columns 3 and 6 in Table 2

Table A-2

QUIT AND JOBREL PROBIT REGRESSIONS FOR NLS MATURE MEN^a

Independent Variable	QUIT		JOBREL	
	b	t	b	t
LWAGE	-.2880	(-3.28)	-.2318	(-2.31)
FRINGE	-6.743	(-2.92)	-9.475	(-3.13)
EDUC	.0058	(.32)	-.0013	(-.06)
EXPER	-.0655	(-.94)	-.1190	(-1.51)
EXPERSQ	.0007	(.73)	.0013	(1.19)
JOB	-.0855	(-7.68)	-.0767	(-5.41)
JOBSQ	.0016	(4.60)	.0011	(2.22)
MAR	.0860	(.47)	-.0456	(-.23)
WIFED	.0124	(.92)	.0047	(.31)
HLTH	.1479	(1.71)	-.0555	(-.53)
SIZE	-.0055	(-.02)	.0027	(.74)
D69	-.1545	(-1.99)	-.1526	(-1.71)
MINE	.0836	(.23)	.5049	(1.30)
CONS	.0925	(.53)	.3173	(1.49)
MANUF	.1254	(.74)	.4127	(1.98)
TRANSP	.1147	(.70)	.3892	(1.89)
WHRET	.1303	(.82)	.3688	(1.86)
FIN	.4900	(2.04)	.7977	(2.78)
BUSREP	.5093	(2.28)	.7869	(3.09)
PERS	.1015	(.30)	.2101	(.52)
ENT	.4335	(1.10)	.7130	(1.72)
PROFREL	-.1962	(-1.08)	-.1104	(-.49)
BRP	.1871	(1.22)	.3071	(1.74)
RWH	-.1225	(-.95)	-.2117	(-1.42)
STR	-.0489	(-.19)	.0668	(.23)
ln L	-677.34		-509.59	

^aThese equations correspond to columns 3 and 6 in Table 3.

Table A-3

REGRESSIONS ON CHANGES IN WAGES
AND NONWAGE JOB CHARACTERISTICS
NLS Young Men
(t values in parentheses)

Independent Variable	Dependent Variable	Δ LWAGE	Δ FRINGE	Δ BADWC	Δ REQST	Δ PHYS
EDUC		.0015 (.48)	-.0005 (-1.09)	.0042 (1.24)	.0026 (1.01)	.0036 (1.03)
EXPER		-.0062 (-1.10)	-.0012 (-1.59)	.0094 (1.60)	-.0035 (-.79)	.0081 (1.36)
EXPERTSQ		.0001 (.24)	.0001 (1.11)	-.0004 (-.88)	.0005 (1.25)	-.0003 (-.62)
HLTH		-.0201 (-.95)	-.0069 (-2.38)	.0118 (.53)	.0078 (.47)	.0163 (.73)
MAR		-.0604 (-3.42)	-.0015 (-.60)	.0017 (.09)	.0091 (.66)	.0156 (.83)
WLFP		.0331 (2.01)	.0025 (1.12)	-.0236 (-1.36)	-.0124 (-.96)	-.0259 (-1.48)
D69		-.0843 (-6.24)	-.0019 (-1.04)	.0158 (1.12)	-.0017 (-.16)	.0186 (1.30)
JOBREL		.0607 (3.77)	.0014 (.65)	.0212 (1.25)	.0049 (.38)	.0324 (1.90)
PERS		-.1335 (-4.38)	-.0041 (-.99)	.0048 (.15)	-.0040 (-.17)	.0472 (1.46)
LAYOFF		-.0425 (-2.10)	-.0021 (-.77)	.0114 (.54)	-.0043 (-.27)	.0479 (2.23)
R ²		.06	.01	.01	.002	.01

Table A-3 (continued)

Independent Variable	Dependent Variable	Δ STRESS	Δ REP	Δ WHVAR	Δ BRP	Δ RWH
EDUC		-.0004 (-.24)	.0038 (1.03)	-.0016 (-.40)	.0034 (1.32)	.0027 (.75)
EXPER		-.0011 (-.41)	.0135 (2.11)	-.0049 (-.69)	.0047 (1.03)	.0092 (1.46)
EXBERSQ		.0001 (.30)	-.0011 (-2.04)	.0005 (.87)	-.0001 (-.24)	-.0008 (-1.52)
HLTH		-.0082 (-.81)	-.0455 (-1.89)	.0321 (1.21)	.0119 (.70)	-.0388 (-1.63)
MAR		.0019 (.22)	-.0086 (-.43)	.0219 (.99)	.0088 (.62)	-.0153 (-.77)
WLFPS		-.0114 (-1.44)	-.0170 (-.91)	.0296 (1.43)	-.0206 (-1.55)	-.0233 (-1.26)
D69		-.0016 (-.25)	-.0144 (-.93)	.0239 (1.41)	.0109 (1.00)	-.0191 (-1.26)
JOBREL		.0129 (1.67)	-.0248 (-1.35)	.0275 (1.37)	.0195 (1.50)	-.0262 (-1.45)
PERS		-.0056 (-.38)	-.0512 (-1.47)	-.0082 (-.21)	.0160 (.65)	-.0215 (-.63)
LAYOFF		.0129 (1.32)	-.0078 (-.34)	.0062 (.24)	.0183 (1.12)	-.0070 (-.31)
R ²		.004	.01	.01	.01	.01

Table A-4

REGRESSIONS ON CHANGES IN WAGES
AND NONWAGE JOB CHARACTERISTICS
NLS Mature Men
(t-values in parentheses)

Independent Variable	Dependent Variable				
	Δ LWAGE	Δ FRINGE	Δ BADWC	Δ REQST	Δ PHYS
EDUC	.0036 (1.29)	.0001 (.06)	.0001 (.04)	-.0013 (-1.11)	-.0004 (-.21)
EXPER	.0089 (.75)	.0011 (1.08)	.0056 (.81)	-.0025 (-.50)	.0031 (.42)
EXPERSQ	-.0001 (-.67)	-.0001 (-1.05)	.0008 (-.91)	.0001 (.34)	-.0001 (-.45)
HLTH	.0041 (.26)	.0006 (.45)	.0150 (1.66)	.0025 (.38)	.0086 (.91)
MAR	-.0503 (-1.58)	-.0007 (-.26)	.0133 (.72)	-.0210 (-1.58)	.0069 (.35)
WIFED	.0027 (1.17)	.0001 (.13)	-.0010 (-.77)	.0023 (2.34)	-.0001 (-.08)
D69	-.0274 (-2.14)	-.0016 (-1.48)	-.0035 (-.47)	.0067 (1.25)	-.0030 (-.38)
JOBREL	.0512 (1.61)	-.0003 (-.13)	-.0457 (-2.46)	.0018 (.13)	-.0259 (-1.31)
PERS	-.1599 (-3.07)	-.0078 (-1.80)	.0097 (.32)	-.0127 (-.58)	-.0274 (-.85)
LAYOFF	-.0753 (-2.80)	.0001 (.05)	.0239 (1.52)	.0083 (.74)	.0263 (1.58)
R ²	.01	.002	.004	.003	.002

Table A-4 (continued)

Independent Variable	Δ STRESS	Δ REP	Δ WHVAR	Δ BRP	Δ RWH
EDUC	.0005 (.56)	.0011 (.70)	-.0019 (-.99)	-.0005 (-.42)	.0015 (.92)
EXPER	.0025 (.72)	.0022 (.31)	-.0050 (-.60)	.0021 (.39)	.0036 (.51)
EXBERSQ	-.0001 (-.64)	-.0001 (-.37)	.0001 (.52)	-.0001 (-.49)	-.0001 (-.49)
HLTH	.0054 (1.17)	.0076 (.83)	-.0058 (-.54)	.0087 (1.24)	.0067 (.73)
MAR	-.6869 (-.07)	.0140 (.74)	.0025 (.11)	-.0002 (-.02)	.0057 (.30)
WIFED	-.2992 (-.44)	.0003 (.25)	-.0015 (-.94)	.0004 (.35)	.0009 (.67)
D69	-.0017 (-.44)	.0040 (.54)	.0048 (.53)	.0001 (.01)	-.0004 (-.04)
JOBREL	.0187 (1.97)	.0197 (1.05)	-.0361 (-1.63)	-.0233 (-1.61)	.0279 (1.46)
PERS	.0201 (1.30)	.0878 (2.87)	-.0826 (-2.27)	-.0101 (-.43)	.0852 (2.73)
LAYOFF	-.0042 (-.52)	.0137 (.87)	-.0567 (-3.03)	.0195 (1.59)	.0352 (2.19)
R ²	.003	.005	.006	.002	.005

Table A-5

WAGE GROWTH AND WAGE LEVEL EQUATIONS FOR YOUNG MEN

Dependent Variable:	Percentage Growth ^a		Absolute Growth ^a		LWAGE	
	b	t	b	t	b	t
EDUC	.0039	(1.13)	.0371	(3.28)	.0675	(17.12)
EXPER	-.0048	(-2.06)	-.0071	(-.94)	.0356	(5.66)
EXBERSQ					-.0012	(-2.18)
JOB	-.0073	(-2.42)	-.0205	(-2.08)	.0424	(4.02)
JOBSQ					-.0053	(-3.99)
WLFP	-.0047	(-.33)	-.0656	(-1.41)	-.0855	(-4.71)
HLTH	.0113	(.53)	-.0160	(-.23)	-.0451	(-1.96)
MAR	.0109	(.69)	.1065	(2.06)	.1940	(10.01)
D69	-.0507	(-4.19)	-.1299	(-3.28)	.0783	(5.33)
BRP	.0682	(2.88)	.2209	(2.85)	.0020	(.05)
RWH	-.0464	(-2.48)	-.1809	(-2.95)	.0334	(1.19)
STR	.0018	(.04)	-.0414	(-.34)	.0398	(.63)
JOBBRP					.0207	(1.60)
JOBRWH					-.0253	(-2.24)
JOBSTR					-.0212	(-.88)
R ²	.05		.05		.28	

^aThese regressions are restricted to individuals who did not change jobs over the two-year period.