HOW DO TRAINING AND EARLY LABOR MARKET EXPERIENCE AFFECT THE ECONOMIC WELL-BEING OF YOUTHS?

Masanori Hashimoto and Ross A. Miller

ABSTRACT: Using the National Longitudinal Survey of Youth, we investigate whether the wage and non-wage effects of training hold up over the long run. We also examine the effects of several other early labor market experience variables. We find that the effects of training and early labor market experiences on future economic well-being are virtually confined to wages. Neither apprenticeship nor company training is found to reduce unemployment or to increase the likelihood of having health insurance coverage. For high-school dropouts, there evidently are non-wage benefits from off-the-job training, offsetting the negative impact of such training on wages.

KEY WORDS: economics, training, National Longitudinal Survey of Youth, schooling

JEL codes: J20, J24, J29

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I. Introduction

An important policy concern in recent years has been how youths, particularly those who are not college-bound, make the transition from formal schooling to the world of work. The MIT Commission on Industrial Productivity concludes, for example, that non-college bound American youths suffer a severe disadvantage relative to their German and Japanese counterparts due to the lack of an institutional structure to guide them through this transition (Dertouzos, et. al. 1989). As a result, these youths often remain unskilled for life.[2] This phenomenon is of current social concern: Over the past fifteen years, the demand for less educated workers has fallen relative to the demand for others. The result has been a widening of the wage inequality between high school and college graduates and an increase in the incidence of unemployment and non-labor-force participation among high-school graduates (Murphy and Welch 1993a, 1993b, Topel 1993).[3]

Bleak as the overall prospects may appear, these youths' experiences are actually quite diverse. Some manage to establish successful careers, while others endure a series of job changes without any discernible improvements in their earnings potential. Many eventually do receive training (Lynch 1992). A recent tabulation of the *National Longitudinal Survey of Youth* (*NLSY*) indicates that 33.5 percent of high school graduates

[1] We thank Audrey Light for helpful comments on our earlier version and G.S. Maddala for econometric advice. Tracy Foertsch's able research assistance is gratefully acknowledged.

[2] German youths routinely receive training via the celebrated apprenticeship program while in Japan youths undergo intensive employment-based training.

[3] As the performance of the U.S. economy has improved relative to its competitors, some have suggested that these competing systems, particularly the German system, may not prepare workers better for a world of rapid technological innovation because of their reliance on specific rather than general training. See for example the March 12, 1994 issue of *The Economist*.

between the ages of 21 and 29 in 1986 received some type of training during the period 1986 to 1991, with 19.4 percent of these receiving company training (Veum 1993). What factors determine who among the school-leaving youths succeeds in finding a steady job that pays good wages and benefits? What types of early labor market experiences are most important for later labor market outcomes? In particular, does early training affect the economic outcome of the recipients? These are some of the issues this paper seeks to illuminate.

Recent studies by Lynch (1992) and Veum (1995) on the effects of training are the starting point for this paper. Lynch looks at the impact of training received between 1979 and 1983, a period corresponding to the first few years following school, on wages in 1983. Veum's study is perhaps less related to the school-to-work transition given that his sample is restricted to those who were between the ages of 21 and 29 by 1986. Lynch finds that company training significantly raises wages before adjusting for sample selection, but that these benefits disappear when such adjustments are made. She also finds evidence indicating that the benefits of company-provided training are not transferable to new employers. In contrast, Veum concludes that while the hours spent in company training are unrelated to wages, the mere incidence of training increases wages regardless of duration.[4] Their findings for apprenticeship training differ even more sharply.

This paper extends these previous studies in several dimensions. First, we investigate whether the wage effects of training hold up over a longer period by examining the effects on wages up to ten years after training is received. Because wage effects can erode if early training is firm specific, this extended time frame is potentially important in light of the well known high job mobility among young workers (e.g. Light and McGarry

[4] Both of these findings hold up after adjustments are made for sample selection. Veum interprets the difference between the effects of hours of training and the receipt of training as indicating either that the "productivity-enhancing content [of any given program] was not directly related to the length of the program" or that measurement error was present in the training duration variable.

1993).[5] We also compare the effects of training with the effects of any additional schooling obtained after the transition from formal schooling to the world of work.[6] Second, we investigate whether there are nonwage benefits to early training. Workers could benefit, for example, from the reduced likelihood of becoming unemployed or from the increased likelihood of being covered by health insurance. We are unaware of any previous work on the effects of training on non-wage benefits. Third, we examine the effects of such early labor market experiences as the frequency of turnover and the reason for its occurrence, employment status immediately after leaving school, and the time required to find the first full-time job.

II. Data and Variables

Our sample is taken from the 1992 release of the *National Longitudinal Survey of Youth* (*NLSY*), a longitudinal survey of 12,686 people who were between the ages of fourteen and twenty-one in 1979. Because the majority of the survey respondents were still enrolled in school at the time of the first interview, it is possible to construct complete labor market histories for the purposes of our study.

Given our interest in labor market experiences obtained immediately following formal schooling, it is important to establish when an individual first left school. Each year the survey asks respondents whether they have "attended or been enrolled in regular school" at any time since the date of the last interview; if they answer "yes" to this question, the survey goes on to ask if they are currently enrolled in regular school. If the answer to either question is "no", the survey then asks the month and year that the respondent was last enrolled in school. The month and year recorded by the first survey in which a respondent answers "no" to either question are noted and used as the month and

[5] We find a high degree of job mobility even among workers who have received company training, with only a small fraction of the individuals in our sample who received such training during the early 1980s still working for the same employer by 1992.

[6] Both Lynch and Veum restrict their samples to individuals who did not return to school within the first three to four years after an initial separation. Lynch also restricts her sample to non-college-graduates.

year in which the respondent first left school. Individuals for whom complete labor market histories are not available are dropped from the sample, leaving 9,271 respondents.[7] Of these, 1,252 were enrolled in school every survey year between 1979 and 1984, the year we stopped tracking the early career, leaving a data set of 8,019. For various reasons, however, only 4,433 of the 8,019 respondents could be included in the 1992 wage regression.[8]

Table 1 shows demographic and other selected characteristics of the sample, broken down by years of education completed as of 1992. Overall, 53 percent of the sample are male while 47 percent are female. The percentage of high school dropouts who are male exceeds the percentage who are female (70.1 percent vs. 29.9 percent); however, this gender difference is reversed for college graduates, with the percentage of college graduates who are female exceeding the percentage who are male (45.4 percent vs. 54.6 percent). As expected, the proportions of blacks and Hispanics in the sample generally fall when going from high school dropouts to college graduates. The proportion of married individuals in the sample rises with the level of educational attainment. Not surprisingly, the sample is dominated by terminal high-school graduates, who account for 3,282 out of the total 4,433 respondents.

The variables of most interest are the measures of training received. Following Lynch, we investigate three types of training -- company training, apprenticeship training, and off-the-job training. For each training type, we measure the duration of the program by the number of weeks of training received during the first three years after leaving

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[7] Because job information was collected only for jobs starting after January of 1978, a full labor market history is not available for those respondents who left school prior to this date.

[8] This reduction in the sample size is attributable to the following: (i) 1,961 respondents were not interviewed in 1992; (ii) of those interviewed, 1,188 had not had a "current or most recent job" during the previous year; and (iii) 437 of the remaining cases were missing some of the explanatory variables. Each regression has a slightly different sample size, reflecting differences in who was interviewed and who reported a "current or most recent job" in each year. The samples differ even within years because one does not need a “current or most recent job” to generate an observation on the percentage of weeks unemployed and because some respondents have observations on the wage at a job but not on the various fringe benefits (or lack thereof) received as a result of it.

school. Table 2 shows the frequency distribution for individuals in our sample by training type, by level of educational attainment, and by length of the training period.

Apprenticeships are apparently rare in this sample. Only 52 individuals out of a sample of 4,433, or 1.2 percent, completed even one week of an apprenticeship program. Apprenticeship training was concentrated, not surprisingly, among high school dropouts and high school graduates; only 0.6 percent of college graduates reported receiving any apprenticeship training.[9] These individuals could have entered apprenticeship programs following college, but given that we classify respondents by the level of education attained as of the 1992 interview, it is just as likely that they began an apprenticeship program after leaving high school and only later decided to go on to college.

Company training is somewhat more common; 177 individuals, or 4.0 percent of the sample, had some weeks of company training. Company training increases notably as one moves from the lower educational classifications to the higher ones; for example, only 1.0 percent of high school dropouts received some kind of company training, as compared to 9.0 percent of college graduates. Off-the-job training is the most common, with 17.2 percent of the overall sample completing some program of this type. Off-the-job training is most heavily concentrated among high school graduates, over 20 percent of whom received such training.

The above patterns are similar to those reported by Lynch (1992), who also uses the *NLSY*. Of her sample, 1.8 percent received apprenticeship training, 4.2 percent received company training, and 14.7 percent received off-the-job training. Veum (1995), on the other hand, reports significantly higher rates for company training (23.7%) and off-the-job training (23.8%). In our opinion, these differences arise because Veum's training variables cover a period extending from 1986 to 1991, while those training variables

[9] Note that rounding errors in Table 2 account for some small differences between the percentages reported in the table and the percentages reported in the text.

constructed from our sample terminate in 1987. In other words, Veum's sample allows for the possibility that more established workers have received more company training.

We also compare the benefits of training to the benefits of returning to school after an initial separation. Toward this end, we create an *Add-School* variable, to measure the additional number of years of school completed following the initial separation. In all, 31.6 percent of our sample completed some additional schooling. More than half of the college graduates and over 30 percent of the high school graduates received some additional schooling, but only 10 percent of the high school dropouts did so. Most of the returnees obtained one to two years of additional schooling.

III. Empirical Model

We follow Lynch in studying the effects of three types of training -- apprenticeship training, company training, and off-the-job training.[10] The econometric problems encountered in this type of study are well-known. If individuals select themselves, or are selected, for training based on unobservable characteristics, such as ambition or unmeasured ability, the error term in a standard log wage equation is correlated with the measured training. An OLS regression then yields biased and inconsistent estimates of the training coefficients. The OLS estimates were obtained but are not reported here to save space.

The traditional approach to correcting for sample selection bias by analyzing the first differences of the variables is not feasible here, as the early labor market experience variables are predetermined and time-invariant. Differencing would eliminate the variables of interest. Instead, we use the Tobit two-stage least squares technique described in Maddala (1983), which yields consistent estimates of the training variables without differencing. The empirical model is given as follows:

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[10] This last category includes courses taken at business colleges, vocational or technical institutes, nursing schools, barber or beauty schools, flight schools, and through correspondence coursework. Veum examines these types of training separately.

(1) $APRN = \alpha_1 + \gamma_1 Z_1 + u_1$,

(2) $COMP = \alpha_2 + \gamma_2 Z_2 + u_2$,

(3) $OFFJT = \alpha_3 + \gamma_3 Z_3 + u_3$,

(4) $ADD - SCHOOL = \alpha_4 + \gamma_4 Z_4 + u_4$,

(5) $\log\ Wage = \alpha_4 + \beta_1 APRN + \beta_2 COMP + \beta_3 OFFJT + \gamma_4 Z_5 + u_4$,

where *APPREN*, *COMP*, and *OFFJT* are, respectively, weeks of apprenticeship training, company training, and off-the-job training, and where *ADD-SCHOOL* is years of additional schooling obtained after an initial separation. Weeks of unemployment and the receipt of health insurance are analyzed by replacing Equation (5) with an analogous equation. The Tobit 2SLS technique involves estimating Equations (1) through (4) by Tobit to obtain the predicted values of the training variables and then substituting these into Equation (5) to estimate by OLS. The Tobit two stage procedure is appropriate if u_1, u_2, and u_3 are uncorrelated.[11] We begin by estimating the model using the 1992 observations on the dependent variables. We then discuss the results obtained by estimating the same model using the variance-components approach with a four-year panel covering the years 1989 through 1992.

We include certain early labor market experience variables among the *Zs* in Equations (1) through (5). These are the number of job separations during the first four years after leaving school attributable to being fired (*Numfrs*), quitting for family reasons (*Famquit*), and quitting for other reasons (*Othquit*); a dummy variable indicating the respondent's employment status in the last year of school (*School Job*), and a variable indicating the time needed to find a first full-time job after leaving school (*Job1 Search*). The final two variables are expected to contain information about job search ability and the respondent's motivation to find a job early in his career.

[11] Lynch examines a similar model concluding that the correlation between u_1 and u_3 is small.

We utilize three measures of labor market outcomes as dependent variables in Equation (5) -- the log of the wage (*LWAGE*) at the "current or most recent job", the percentage of weeks unemployed since the last interview (*WKSUMP*), and the probability of being covered by a health care plan *(HLTHCARE)* at work.

Table 3 reports the Tobit estimates of Equations (1) through (4) used to generate the predicted training variables. In addition to the early labor market experience variables described above, these training variables are regressed on a number of demographic and background variables, including years of schooling completed at the time of the initial separation (*School*), tenure at the longest job held as of the interview immediately following leaving school (*Experience*), the number of jobs ever held as of the first interview after the worker left school (*Number of Jobs*), and a dummy variable indicating if the worker held a union job at any time during the first three years after leaving school (*Union*). Certain variables are excluded from each of the equations to meet the identification criteria.[12]

Some of the statistically significant findings are as follows. Blacks received less, and males received more, company training. Males were less likely to obtain additional schooling after their initial separation. The higher the level of educational attainment, the shorter was the duration of apprenticeship training and the lower was the likelihood of additional schooling. College graduates were more likely, but high school dropouts were less likely, than others to obtain additional schooling. Union workers received less company training and more apprenticeship training. If an individual held a large number of jobs up to the time of the first interview after leaving school, he evidently was less likely to have received any type of training, although the variable, *Number of Jobs*, is significant only in the off-the-job training equation. An individual holding a manufacturing job was less likely to have obtained additional schooling. Finally, ability as measured by the *AFQT*

[12] We first ran the Tobit regressions using all of the early schooling and labor market variables. Generally speaking, the excluded variables are those for which we obtained low *t*-values.

score increased the number of weeks of training and additional schooling received; the coefficients are significant for all but company training.[13]

IV. Findings

Table 4 reports the wage regression for the Tobit 2SLS. Model 1 examines the effect of training regardless of schooling background, while Model 2 allows for differences between high school dropouts, high school graduates, and college graduates in the training effects. A number of the standard demographic, human capital and other explanatory variables are included, and their estimated coefficients have the signs usually found. The following effects are statistically significant in both models: blacks are paid less than whites, males are paid more than females, and married males are paid more than single males. Also significant are the findings that wages are higher for full-time workers, union workers, workers in SMSA, workers with longer job tenure, and higher ability workers (*AFQT89*). The variable *School* obtains positive coefficients, though the t-statistics are low. There is little indication that being a high school dropout has a significant effect on later wages, but in Model 1 being a college graduate is significantly associated with higher wages.

As for early labor market experiences, *Numfrs*, *Famquit*, *Othquit* obtain significant coefficients in both models. Not surprisingly, being fired (*Numfrs*) and having to quit for family reasons (*Famquit*) both have adverse consequences for later wage. In contrast, quitting for other reasons (*Othquit*) is positively related to wages, suggesting that this variable may reflect the job-shopping motive for quitting. The coefficients for *School job* are positive, though not significant, hinting that already having a job around the time of leaving school raises later wages. The coefficients for *Job1 Search* are negative but their

[13] The sometimes significant differences between our results and those reported by Lynch are most likely due to our inclusion (and her exclusion) of AFQT scores and her inclusion (and our exclusion) of experience and the unemployment rate. Our results are closer to those of Veum, who does include AFQT scores; however, our *t*-statistics tend to be lower than his.

t-values are less than one; evidently, the time it takes to find a first full-time job after leaving school has an insignificant effect on later wages.

If one looks only at Model 1, apprenticeship training appears to have no effect on wages. But the more flexible specification of Model 2 indicates that such training does have a significantly positive effect for H.S. dropouts, and a positive effect for college graduates which is nearly-significant, but that it has an insignificant effect for H.S. graduates. The F-statistic for the impact of apprenticeships for H.S. dropouts is 4.609, while it is 3.527 for college graduates.[14] Company training doesn't appear to have significant effects on wages. Since youths are prone to change employers, the weak effects of company training in Table 4 is consistent with Lynch's finding that training acquired at an employer has no impact on wages at subsequent employers. As for off-the-job training, Model 1 shows no significant impact on wages, but Model 2 reveals a negative and significant impact (F-statistic of 3.769) for high school dropouts.

The coefficient for *Add-School* requires attention. Schooling added after the initial break from school (*Add-School*) is already counted in *School*, which is the total years of schooling completed as of 1992. In other words, the null hypothesis that the coefficient of *Add-School* is zero means that an additional year of schooling completed after a break in schooling is worth the same as a year of schooling completed without a break. It turns out that in both models *Add-School* obtains negative coefficients, though the t-statistics are not large. These coefficients imply that an extra year of schooling, if obtained after an interruption, detracts from, rather than add to, future wages. In an attempt to understand this perplexing finding, we hazard the conjecture that *Add-School* may be reflecting the tendency for those who obtain additional schooling to be less attached to the labor market and therefore to settle for low wage jobs rather than engage in lengthy job search. Also, our finding is consistent with Light's (1995) that, holding years of schooling constant, a

[14] The degrees of freedom for both tests is (1,4400).

person who attends school continuously receive a larger percent wage increase as a result of schooling than a person who returns to obtain additional schooling after an interruption.

Table 5 reports the regression estimates to explain unemployment incidence as measured by the percentage of weeks an individual was unemployed since previous interview for survey year 1992.[15] Many of the demographic variables have significant coefficients with largely expected signs: blacks, males, and single people experience more unemployment than others, as do those with lower AFQT scores; educational attainment appears to have no significant effect. As for the early labor market experience, only the experience of being fired appears to matter for later unemployment -- those experiencing more fires (*Numfrs*) experience more unemployment.

Neither apprenticeship training nor company training has a significant impact on unemployment experience. However Model 2 indicates that off-the-job training provides benefits for H.S. dropouts by reducing unemployment (the F-statistic is 6.306).[16] The variable, *Add-School*, has a positive but insignificant coefficient, again perhaps reflecting the tendency for those who obtain additional schooling to be less attached to the job market and to settle for low wage and unstable jobs.

Table 6 reports the results of Probit regressions on health insurance coverage in 1991. A number of demographic and job-related variables have significant coefficients. Males are less likely to have coverage, although married males are more likely to be covered than single males. Not surprisingly, health insurance coverage is positively, and very strongly, related to having a full time job, to being a union member, and to having a long job tenure. Coverage is also positively related both to years of schooling and to AFQT scores. Early-career events, including training, seem to play little role in determining health insurance coverage later on.

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[15] These regressions include more observations than the regressions in Table 4 in each year because wage observations are not available for individuals who were not employed for the whole year preceding the survey.

[16] The degrees of freedom for this test are (1,5523).

The preceding findings suggest that the effects of training and early labor market experience on later economic well-being are virtually confined to wages. We find no evidence that either apprenticeship or company training reduces unemployment or increases the chance of having health insurance coverage later in the career. There appear to be non-wage benefits for high school dropouts from off-the-job training, which offset the negative impact of such training on the wage: such training both reduces the unemployment experienced and increases the probability of having health insurance coverage. These results are robust in similar regressions for the years 1991 and 1990. The most noteworthy departures from this summary are that 1991 provided some evidence that off-the-job training reduced wages for high school graduates as well as H.S. dropouts, and that apprenticeship training increased weeks of unemployment for high school dropouts. In addition, the 1990 regression showed that company training increased unemployment for both H.S. dropouts and H.S. graduates.

In part because of the variability in our findings across years, we introduce an additional refinement to the estimates using the variance components approach. This approach also helps ensure the consistency of our estimates and enable us to gain efficiency in case there is unobserved heterogeneity remaining in the Tobit Two Stage model (Hsiao 1986, p 37). In particular, we use the multiple observations on each individual over time to adjust for unobserved heterogeneity as well as the multiple observations on each year to adjust for unobserved differences among the years studied. The variance components approach specifies the error structure as follows:

(6) $u_{i,t} = v_i + e_t + \varepsilon_{it}$,

where v_i is an individual-specific component, e_t is a time-specific component, and ε_{it} is analogous to the random error term. Each error term is independently distributed with zero means, and variances σ_v^2, σ_e^2, and σ_ε^2, respectively. We use a four-year panel covering the years 1989 through 1992. Since this necessitates having complete survey information for each of the four years, the number of cross section observations falls to

3370, which yields 13,480 observations in the log wage regression.[17] We rely on the SAS routine which uses the Fuller-Battese method to generate the estimates.

The estimation results for the log wage model are reported in Table 7. Most of the demographic and background variables that were significant in Table 4 remain significant with similar coefficient size.[18] Generally speaking, the coefficients of the training variables have the same signs as those reported in Table 4, but have greater magnitude and are more significant. The wage benefits of apprenticeship training, for example, are significant for high school graduates as well as for dropouts and college graduates, and are significantly more beneficial for high school dropouts than they are for high school graduates. On the other hand, the negative coefficients for off-the-job training are uniformly significant, meaning that these other types of training cause all three groups to suffer lower wages in the long run. And even though the coefficients are larger, and still positive, company training still has no significant positive effect on wages in the long run, except possibly for college graduates.

As in Table 4, *Add-school* has a negative coefficient; the magnitude of the estimate is larger here, and more significant. And, as in Table 4, the magnitude of the estimate exceeds the magnitude of the positive coefficient for *school*.

The variance component results for weeks unemployed are shown in Table 8. These results indicate that, besides not raising wages, company training significantly increases unemployment for high school dropouts, and is just shy of conventional significance levels in increasing it for high school graduates (these findings are similar to those for the 1990 interview year alone, mentioned above). Off-the-job training continues to reduce unemployment significantly for high school dropouts, as in Table 5, and it

[17] And 4,835 cross-sectional observations in the unemployment regression.

[18] Although the coefficient of *School Job* becomes significant, and the coefficient of *Fulltime* is dramatically reduced, and becomes insignificant.

becomes significant in reducing unemployment for high school graduates as well. Apprenticeship training continues not to show any significant impact on unemployment, as in the 1992 results of Table 5.[19]

V. Summary and Remarks

We find that the effects of training and early labor market experience on later economic well-being are virtually confined to wages. Our finding of no wage effects of company training is reminiscent of the finding in Kalleberg and Lincoln (1988) that such training produces virtually no pay increments for American manufacturing workers. We find no evidence that either apprenticeship or company training reduces unemployment or increases the chance of having health insurance coverage later in the career. For high-school dropouts, there evidently are non-wage benefits from off-the-job training, offsetting the negative impact of such training on the wages. Similar finding was obtained for high school graduates in the variance components analysis.

Longer term training effects on wages were found to differ from the shorter term effects found previously by Lynch and Veum. In particular, our findings that apprenticeship training raises wages differ from those of Veum, but suggest that Lynch's findings for a shorter time span than ours are valid for the long run aS well. We believe that the difference derives from the fact that the training in Veum's study did not really occur during the transition from school to work, but later, when most workers in his sample were in their later twenties and early thirties. Our finding that company training has an insignificant wage effect is different from both Lynch's and Veum's results; we

[19] We did not conduct a variance components run for health insurance coverage because of the Probit nature of the dependent variable.

believe that this is because of the lack of portability of company training found by Lynch, combined with the low probability of even trained workers staying with an employer they began their career with. And contrary to Lynch, we find a negative effect of off-the-job training on wages. We attribute this difference as well to a difference in time horizons: the types of training included in this category may have relatively flat wage profiles, or they may simply not be the sorts of jobs people stay with for a career.

These differences between our results and others point to the importance of considering exactly which workers a training program is intended to help. These results suggest, for example, that apprenticeship training is beneficial for young workers during the transition from school to work; Veum's results suggest that such training will not benefit workers if undertaken later in the career. On the other hand, his results suggest that company training may be effective for workers who are further along in their careers. Based on our findings, it appears that programs designed to aid workers in the school-to-work transition should focus on apprenticeship training, and that such training has greater benefits for high-school dropouts than for workers with higher levels of schooling attainment.

We find that off-the-job training actually reduces wages, but that it has some compensating positive impacts on employment and fringe benefits. Given the diversity of training types grouped under this category, an investigation into the separate effects of some of the training types may be in order. In planning off-the-job training programs, for example, it would be useful to know how a particular type of training affects wages and non-wage benefits.

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Table 1

Percent Distribution by Characteristics

Characteristics	Percentage of Sample			
	H.S. dropouts	**H.S. grads**	**College grads**	**All**
Male	70.1%	52.5%	45.4%	53.2%
Female	29.9	47.5	54.6	46.8
Black	28.4	31.6	20.4	29.5
Hispanic	30.6	18.9	9.6	18.7
Non-Black, Non-Hispanic	41.0	49.5	70.0	51.8
Married	43.6	53.0	62.5	53.5
Union	14.8	18.4	13.6	17.3
Northeast	14.8	16.7	18.0	16.7
North Central	20.2	23.5	24.8	23.3
South	38.6	40.0	39.0	39.7
N	461	3282	690	4433

Source: National Longitudinal Survey of Youth

Table 2
Weeks of Training Received and
Years of Additional Schooling Completed
by Educational Attainment

A. Apprenticeship Training

	H.S. dropouts	H.S. grads	College grads
Yes Training	1.0%	1.2%	0.6%
1--10 Wks	0.4%	0.3%	0.1%
11--30	0.2%	0.4%	0.1%
31--52	0.2%	0.2%	0.3%
> 52	0.2%	0.3%	0.1%
No Training	98.9%	98.7%	99.3%

B. Company-Provided Training

Yes Training	1.0%	3.4%	8.9%
1--10 Wks	0.4%	1.5%	3.3%
11--30	0.4%	1.2%	3.0%
31--52	0.0%	0.3%	1.6%
> 52	0.2%	0.4%	1.0%
No Training	98.9%	96.6%	91.0%

C. Off-the-Job Training

Yes Training	7.2%	20.2%	10.0%
1--10 Wks	2.8%	3.9%	2.8%
11--30	2.8%	6.5%	4.2%
31--52	0.7%	5.9%	1.4%
> 52	0.9%	3.9%	1.6%
No Training	92.8%	79.9%	90.0%

D. Additional Schooling

Yes Schooling	10.4%	30.1%	52.7%
1--2 Yrs	9.5%	23.9%	27.4%
3--4	0.9%	5.5%	21.0%
5--7	0.0%	0.7%	4.2%
> 7	0.0%	0.0%	0.1%
No Schooling	89.6%	69.8%	47.2%

Source: See Table 1.

Table 3
First Stage Tobit Regressions for Log Wage Regressions
(Asymptotic t-statistics are in parentheses)

	Apprenticeship Training		Company Training		Off-the-Job Training		Additional Schooling	
Intercept	7.1087	(4.754)	3.5808	(4.203)	4.1085	(10.984)	3.1848	(23.032)
Hispanic	.4983	(1.777)	.0689	(0.378)	-.0449	(-0.605)	.0232	(0.776)
Black	.3761	(1.428)	-.3630	(-2.002)	-.0564	(-0.834)	.0071	(0.250)
Male	-.0165	(-0.049)	.2803	(2.334)	-.0007	(-0.013)	-.0594	(-2.740)
Married	NA	NA	NA	NA	.1382	(1.925)	-.0646	(-2.313)
School	-.3714	(-3.295)	-.0469	(-0.695)	-.0379	(-1.199)	-.2108	(-18.724)
College Graduate	1.1588	(1.699)	.2864	(1.012)	.0537	(0.349)	.5276	(10.525)
H.S. Dropout	-.2549	(-0.689)	-.0639	(-0.208)	-.2222	(-2.234)	-.4032	(-9.785)
Union	.4286	(2.015)	-.3346	(-2.466)	NA	NA	NA	NA
Tenure	NA	NA	-.0025	(-2.318)	-.0004	(-0.944)	-.0000	(-0.206)
Number of Jobs	-.0302	(-0.694)	-.0204	(-0.714)	-.0531	(-4.266)	-.0038	(-0.701)
Manufacture	NA	NA	NA	NA	NA	NA	-.0754	(-2.603)
Construction	.1855	(0.657)	NA	NA	NA	NA	NA	NA
Trade	NA	NA	-.1650	(-1.300)	NA	NA	NA	NA
Service	-.4302	(-1.639)	NA	NA	-.0826	(-1.629)	-.0100	(-0.453)
AFQT89	.0177	(3.829)	.0028	(0.901)	.0036	(3.016)	.0066	(12.182)
N	6769		6769		6769		6769	
log likelihood	-83.19		-367.94		-1492.29		-1683.96	

Notes: NA indicates that the variable was excluded to satisfy the identifying criterion. The dependent variables are weeks of training of each respective type received during the first three years following the initial separation from school. The explanatory variables pertain to this same three year period. The variable, *Number of Jobs*, is the total number of jobs held up to the time of the first interview after leaving school; *AFQT89* is the worker's AFQT test score as recalculated in 1989.

Table 4
Tobit 2SLS Regressions of Log 1992 Wage
(Asymptotic t-statistics are in parentheses)

	Model 1		**Model 2**	
Intercept	1.5365	(9.633)	1.5557	(9.536)
Black	-.0784	(-3.371)	-.0809	(-3.469)
Hispanic	-.0158	(-0.607)	-.0223	(-0.849)
Male	.0782	(3.115)	.0732	(2.893)
Married	-.0009	(-0.043)	-.0011	(-0.049)
Married Male	.1464	(4.910)	.1465	(4.912)
Fulltime	.1126	(5.138)	.1137	(5.189)
Union	.1977	(9.879)	.1996	(9.957)
SMSA	.1445	(7.844)	.1445	(7.842)
Job Tenure	.0013	(10.381)	.0013	(10.410)
$Tenure^2$	-.0000	(-6.063)	-.0000	(-6.113)
School	.0192	(2.065)	.0190	(2.026)
High School Dropout	-.0307	(-0.870)	.2449	(1.373)
College Graduate	.1253	(3.311)	.0163	(0.128)
AFQT89	.0043	(8.618)	.0043	(8.471)
Early Labor Market Experiences				
Numfrs	-.0647	(-4.399)	-.0662	(-4.487)
Famquit	-.0763	(-3.599)	-.0764	(-3.607)
Othquit	.0174	(3.496)	.0172	(3.460)
School Job	.0245	(1.573)	.0239	(1.535)
Job1 Search	-.0003	(-0.518)	-.0003	(-0.510)
Early Training Experiences				
Apprentice (pred.)	.0011	(1.333)	.0005	(0.557)
Company-Train (pred.)	.0012	(0.417)	.0023	(0.747)
Off-the-Job-Train (pred.)	-.0034	(-1.409)	-.0036	(-1.314)
Add-School (pred.)	-.0769	(-2.136)	-.0797	(-2.202)
Training-Schooling Interaction				
Appren-DO (pred.)	NA	NA	.0024	(1.815)
Appren-Coll (pred.)	NA	NA	.0029	(1.638)
Comp-DO (pred.)	NA	NA	-.0050	(-0.746)
Comp-Coll (pred.)	NA	NA	-.0009	(-0.187)
Offtrain-DO (pred.)	NA	NA	-.0126	(-1.497)
Offtrain-Coll (pred.)	NA	NA	.0017	(0.320)
N	4433		4433	
R^2	.3094		.3108	

Notes: Predicted variables are obtained from the Tobit regressions reported in Table 3. The variable, *Numfrs*, is the number of jobs from which the worker was fired in the first 48 months after leaving school. *Famquit* is the number of jobs quit for family reasons while *Othquit* is the number of jobs quit for other reasons during this same 48 month period. *School Job* has a value of 1 if the worker held a job during approximately a one year period preceding the first interview conducted after leaving school; *Job1 search* is the number of months elapsed between leaving school and finding the first full-time job. The training variables refer to the number of weeks of training the worker received during the first 36 months after leaving school; *Add-School* is the number of years of schooling the worker completed after initially leaving school. *Appren-DO*, *Appren-Coll.*, *Comp-DO*, *Comp-Coll.*, *Offtrain-DO*, and *Offtrain-Coll.* are the interactions of training variables with high school dropouts (*DO*) or college graduates (*COLL*); *AFQT89* is the worker's AFQT test score as recalculated in 1989. The regressions control for regions.

Table 5
Tobit 2SLS Regressions of Percentage of Weeks Unemployed, 1992
(Asymptotic t-statistics are in parentheses)

	Model 1		**Model 2**	
Intercept	.0879	(1.738)	.0874	(1.690)
Hispanic	-.0059	(-0.738)	-.0071	(-0.868)
Black	.0214	(2.867)	.0211	(2.810)
Male	.0367	(4.695)	.0348	(4.394)
Married	-.0222	(-3.232)	-.0220	(-3.209)
Married male	-.0206	(-2.193)	-.0208	(-2.203)
SMSA	-.0047	(-0.785)	-.0049	(-0.822)
School	-.0013	(-0.428)	-.0017	(-0.564)
High School Dropout	-.0011	(-0.102)	.0891	(1.631)
College Graduate	.0044	(0.362)	.0005	(0.013)
AFQT89	-.0005	(-3.193)	-.0005	(-3.274)
Early Labor Market Experiences				
Numfrs	.0140	(2.952)	.0134	(2.833)
Famquit	.0110	(1.680)	.0106	(1.619)
Othquit	.0008	(0.512)	.0007	(0.455)
School Job	-.0053	(-1.054)	-.0053	(-1.056)
Job1 search	.0002	(0.754)	.0002	(0.750)
Early Training Experiences				
Apprentice (pred.)	-.0001	(-0.356)	.0002	(0.602)
Company-Train (pred.)	.0005	(0.555)	.0002	(0.200)
Off-the-Job Train (pred.)	-.0013	(-1.753)	-.0012	(-1.371)
Add-School (pred.)	.0130	(1.146)	.0140	(1.233)
Training-Schooling Interaction				
Appren-DO (pred.)	NA	NA	-.0003	(-1.110)
Appren-Coll (pred.)	NA	NA	-.0009	(-1.520)
Comp-DO (pred.)	NA	NA	.0022	(1.124)
Comp-Coll (pred.)	NA	NA	.0008	(0.527)
Offtrain-DO (pred.)	NA	NA	-.0049	(-1.993)
Offtrain-Coll (pred.)	NA	NA	.0007	(0.372)
N	5552		5552	
R^2	.0427		.0442	

Notes: The dependent variable is the percentage of weeks unemployed since the last interview (1992). Predicted variables are obtained from the Tobit regressions reported in Table 3. The regressions control for regions.

Table 6
Tobit 2SLS Regressions
Health Insurance Coverage, 1992
(Asymptotic t-statistics are in parentheses)

	Model 1		**Model 2**	
Intercept	-2.1261	(-3.897)	-2.0981	(-3.759)
Hispanic	.0841	(0.994)	.1023	(1.197)
Black	.0001	(0.001)	-.0032	(-0.042)
Male	-.2020	(-2.536)	-.1801	(-2.241)
Married	.0569	(0.772)	.0594	(0.806)
Married male	.2610	(2.666)	.2622	(2.672)
Fulltime	.9468	(12.473)	.9464	(12.459)
Union	.6179	(8.218)	.6141	(8.167)
SMSA	.0839	(1.410)	.0827	(1.386)
Job Tenure	.0048	(11.341)	.0048	(11.225)
Tenure^2	-.0000	(-6.959)	-.0000	(-6.843)
School	.0801	(2.477)	.0877	(2.683)
H.S. Dropout	-.1156	(-1.038)	-1.2848	(-2.322)
College Graduate	.0143	(0.106)	-.2461	(-0.522)
AFQT89	.0039	(2.343)	.0041	(2.406)
Early Labor Market Experiences				
Numfrs	-.0370	(-0.829)	-.0324	(-0.721)
Othquit	-.0187	(-1.168)	-.0169	(-1.049)
Famquit	-.1243	(-1.825)	-.1208	(-1.769)
School Job	.0758	(1.483)	.0790	(1.544)
Job1 Search	-.0010	(-0.473)	-.0008	(-0.361)
Early Training Experiences				
Apprentice (pred.)	-.0040	(-1.509)	-.0056	(-1.998)
Comp-Train (pred.)	-.0066	(-0.715)	-.0100	(-0.980)
Offtrain (pred.)	.0039	(0.471)	.0019	(0.213)
Add-School (pred.)	.1561	(1.289)	.1510	(1.229)
Training-Schooling Interaction				
Appren- DO (pred.)	NA	NA	.0029	(0.701)
Appren- Coll (pred.)	NA	NA	.0050	(0.709)
Comp-DO (pred.)	NA	NA	-.0090	(-0.460)
Comp-Coll (pred.)	NA	NA	.0183	(0.979)
Offtrain-DO (pred.)	NA	NA	.0539	(2.052)
Offtrain-Coll (pred.)	NA	NA	-.0060	(-0.283)
N	4068		4068	
Log L	-1761.71		-1757.53	

Notes: The regressions hold constant the regional dummy variables. The dependent variable is the dichotomous variable denoting health insurance coverage. Predicted variables are obtained from the Tobit regressions reported in Table 3.

Table 7
Variance Components Model of Log Wage
Based on Tobit 2SLS Regressions
(Asymptotic t-statistics are in parentheses)

	Model 1		**Model 2**	
Intercept	1.6391	(12.324)	1.6631	(12.199)
Hispanic	-.0304	(-1.358)	-.0304	(-1.344)
Black	-.0441	(-2.183)	-.0464	(-2.282)
Male	.0775	(3.833)	.0782	(3.848)
Married	.0018	(0.113)	.0019	(0.117)
Married male	.1147	(5.343)	.1151	(5.363)
Fulltime	.0130	(0.904)	.0139	(0.967)
Union	.1418	(11.312)	.1430	(11.394)
SMSA	.1355	(9.141)	.1348	(9.095)
Job Tenure	.0009	(10.779)	.0009	(10.714)
$Tenure^2$	-.0000	(-5.487)	-.0000	(-5.449)
School	.0237	(3.103)	.0226	(2.907)
High School Dropout	-.0072	(-0.237)	.0839	(1.180)
College Graduate	.1072	(3.489)	.0441	(0.758)
AFQT89	.0040	(9.704)	.0041	(9.651)
Early Labor Market Experiences				
Numfrs	-.0633	(-5.009)	-.0632	(-4.999)
Famquit	-.0827	(-4.135)	-.0822	(-4.109)
Othquit	.0128	(2.970)	.0130	(3.005)
School Job	.0337	(2.504)	.0342	(2.542)
Job1 search	-.0007	(-1.344)	-.0007	(-1.258)
Early Training Experiences				
Apprentice (pred.)	.0025	(3.551)	.0017	(2.238)
Comp-Train (predicted)	.0044	(1.816)	.0038	(1.409)
Off-the-Job Train (pred.)	-.0057	(-2.510)	-.0050	(-2.079)
Add-School (pred.)	-.1105	(-3.764)	-.1117	(-3.784)
Training-Schooling Interaction				
Appren-DO (pred.)	NA	NA	.0029	(2.459)
Appren-Coll (pred.)	NA	NA	.0018	(1.209)
Comp-DO (pred.)	NA	NA	-.0029	(-0.477)
Comp-Coll (pred.)	NA	NA	.0034	(0.845)
Offtrain-DO (pred.)	NA	NA	-.0067	(-1.225)
Offtrain-Coll (pred.)	NA	NA	-.0010	(-0.287)
N	13480		13480	
Variance Component for cross sections	.0966		.0964	
Var. Comp. for time series	.0037		.0037	
Var. Comp. for error	.1470		.1470	

Notes: The regressions hold constant the regional dummy variables. The dependent variable is the log of reported wages for the years 1989-1992. Predicted variables are obtained from Tobit regressions.

Table 8
Variance Components Model of Unemployment
Based on Tobit 2SLS Regressions
(Asymptotic t-statistics are in parentheses)

	Model 1		**Model 2**	
Intercept	.0865	(2.956)	.0890	(2.972)
Hispanic	-.0025	(-0.547)	-.0038	(-0.788)
Black	.0309	(7.013)	.0311	(6.989)
Male	.0205	(4.601)	.0194	(4.290)
Married	-.0124	(-3.334)	-.0124	(-3.343)
Married male	-.0181	(-3.522)	-.0180	(-3.500)
SMSA	-.0107	(-3.126)	-.0108	(-3.152)
School	-.0023	(-1.321)	-.0023	(-1.333)
High School Dropout	.0071	(1.128)	.0008	(0.056)
College Graduate	.0041	(0.582)	.0012	(0.085)
AFQT89	-.0004	(-4.437)	-.0004	(-4.399)
Early Labor Market Experiences				
Numfrs	.0159	(5.616)	.0158	(5.551)
Famquit	.0023	(0.613)	.0023	(0.592)
Othquit	.0003	(0.330)	.0003	(0.282)
School Job	-.0102	(-3.479)	-.0101	(-3.436)
Job1 search	.0000	(0.273)	.0000	(0.212)
Early Training Experiences				
Apprentice (pred.)	.0001	(1.085)	.0003	(1.821)
Comp-Train (predicted)	.0012	(2.332)	.0011	(1.901)
Off-the-Job Train (pred.)	-.0009	(-1.929)	-.0010	(-1.994)
Add-School (pred.)	.0019	(0.307)	.0014	(0.228)
Training-Schooling Interaction				
Appren-DO (pred.)	NA	NA	-.0002	(-1.340)
Appren-Coll (pred.)	NA	NA	-.0004	(-1.240)
Comp-DO (pred.)	NA	NA	.0020	(1.665)
Comp-Coll (pred.)	NA	NA	-.0000	(-0.009)
Offtrain-DO (pred.)	NA	NA	-.0006	(-0.641)
Offtrain-Coll (pred.)	NA	NA	.0005	(0.700)
N	19340		19340	
Variance Component for cross sections	.0044		.0044	
Var. Comp. for time series	.0000		.0000	
Var. Comp. for error	.0186		.0186	

Notes: The regressions hold constant the regional dummy variables. The dependent variable is the percentage of weeks unemployed for the years 1989-1992. Predicted variables are obtained from Tobit regressions.

Table A1
First Stage Tobit Regressions for Variance Components Regressions
(Asymptotic t-statistics are in parentheses)

	Apprenticeship Training		Company Training		Off-the-Job Training		Additional Schooling	
Intercept	7.1087	(4.754)	3.4494	(4.357)	4.2582	(11.524)	3.1667	(21.937)
Hispanic	.4983	(1.777)	.0541	(0.306)	-.0432	(-0.582)	.0395	(1.248)
Black	.3761	(1.428)	-.3938	(-2.201)	-.0629	(-0.938)	.0156	(0.534)
Male	-.0165	(-0.049)	.2971	(2.531)	.0056	(0.110)	-.0482	(-2.135)
Married	NA	NA	NA	NA	.1210	(1.719)	-.1265	(-4.303)
School	-.3714	(-3.295)	-.0325	(-0.521)	-.0506	(-1.623)	-.2107	(-17.976)
College Grad.	1.1588	(1.699)	.2714	(1.027)	.1044	(0.688)	.5424	(10.245)
High Sch. Dropout	-.2549	(-0.689)	-.0467	(-0.156)	-.2419	(-2.458)	-.3981	(-9.112)
Union	.4286	(2.015)	-.3282	(-2.470)	NA	NA	NA	NA
Tenure	NA	NA	-.0025	(-2.348)	-.0005	(-1.070)	-.0003	(-1.309)
Numjobs	-.0302	(-0.694)	-.0265	(-0.954)	-.0519	(-4.181)	-.0062	(-1.066)
Mfg.	NA	NA	NA	NA	NA	NA	-.0981	(-3.221)
Const.	.1855	(0.657)	NA	NA	NA	NA	NA	NA
Trade	NA	NA	-.1780	(-1.432)	NA	NA	NA	NA
Service	-.4302	(-1.639)	NA	NA	-.0818	(-1.623)	-.0078	(-0.337)
AFQT89	.0177	(3.829)	.0022	(0.723)	.0036	(3.029)	.0065	(11.528)
N	6880		6880		6880		6880	
log likelihood	-83.19		-378.53		-1515.38		-1430.89	

Notes: NA indicates that the variable was excluded to satisfy the identifying criterion. The dependent variables are weeks of training of each respective type received during the first 36 months following the initial break from school. The explanatory variables are based on schooling attained at the time the worker first left school and on work experience during the first three years following school.