Avoiding a Future of Unemployment and Low Wages: What Opportunities Are Open to Young Unskilled Workers?

by

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The U.S. occupational structure continues to shift toward jobs that require higher levels of education and cognitive skill. Job opportunities in occupations that require few cognitive skills -- occupations like service station attendant or elevator operator -- are disappearing. This raises a fundamental labor market policy problem: what will happen to workers who, in an earlier time, would have become service station attendants or elevator operators? After all, not everyone is willing or able to prepare for jobs that require cognitive skills. Each year there emerges from the nation's high schools a cohort of young people with low reading and mathematical test scores. Many are dropouts who will never again step into a classroom. What will happen to these people? Are they consigned to a life of unemployment and low wages, or are there paths by which some fraction will find a degree of financial security?

This paper examines that issue. In particular, it examines the importance of three career paths by which a young person with limited academic credentials may avoid a life of unemployment and low wages. The three paths are (1) obtain additional formal schooling, (2) obtain a job that provides secure employment at "good" wages, and (3) obtain a job that provides skills and thereby opens a door to good future jobs. The paper examines whether these are viable paths for academic "underachievers," and whether access to these paths has changed through time.

The paper begins with an investigation of recent trends in skill requirements. Section II first documents the trend toward a job structure

that requires ever greater cognitive skills. It then examines the supply side of the labor market, noting that the past two decades have witnessed a rather significant improvement in educational attainment. Despite this supply-side response, the bottom essentially dropped out of the market for unskilled labor. Young high school dropouts suffered a significant decline in real wages. As indicated in Section II, there is good reason to expect this process to continue into the future.

Section III reviews a literature that is particularly relevant to the notion of paths to success. It examines the debate about whether there ever really exist "good" jobs, and concludes that efficiency wage theories provide a theoretical basis for jobs that provide secure employment at above-market wages. The section closes with a review of the empirical literature on "good" jobs.

Section IV examines data from the National Longitudinal Survey of Young Men (NLS-YM). The analysis focuses on men who were 18-19 in 1966, and who had not completed twelve years of education by their nineteenth birthday. Using the NLS-YM, it is possible to not only examine the success of these academic underachievers at age 33-34, but also the paths that they followed. Three conclusions come out of this work:

1. The majority of these young men did not obtain additional formal schooling. Indeed, as best can be determined with these data, many did not obtain any other form of additional training.

2. Although additional training in 1966-71 appears to pay off with a somewhat higher probability of full-year employment and above-poverty earnings in 1978-81, the relationship is weak. Failure to pursue additional training does not carry a large penalty; many of the young men who did not pursue additional training ended up with full-year employment and above-poverty earnings in 1978-81.

3. There is some evidence of a link between industry and occupation of early jobs and later success. In this population, work in the construction industry and in clerical and kindred occupations tended to

be associated with a higher probability of later success. Yet the statistical links are not strong.

Section V continues the empirical analysis with data from the 1979 National Longitudinal Survey Youth Cohort. The goal is to determine whether a more recent vintage of young men had different experiences than the earlier 1966 vintage. Once again the analysis focuses on men who were 18-19 at the start of the survey, and who had not completed twelve years of education by their nineteenth birthday. Five conclusions come out of this work:

4. As in the earlier cohort, the majority of nongraduates in the 1979 cohort do not obtain additional formal schooling or any other form of training.

5. There is some evidence that the more recent cohort was less likely to obtain employer provided training.

6. The more recent cohort was much less successful in attaining full-year employment and above-poverty earnings.

7. As in the earlier cohort, additional training appears to pay off with a somewhat higher probability of full-year employment and above-poverty earnings. With possible exception of employer provided training, however, relationships are quite weak. Once again, failure to pursue additional training evidently does not carry a large penalty.

8. As in the earlier cohort, there is weak evidence of a link between industry and occupation of early jobs and later success. Yet industries and occupations that matter in the early cohort cease to matter in the more recent cohort. There is no evidence of a stable subset of jobs that consistently serve as a pathway to later success.

These results do not convey an image of unobstructed paths to success. Rather they convey an image of academic underachievers trying to navigate a maze of ill-marked paths, some leading to above-poverty earnings and some not. While training and certain early jobs may be statistically associated with later success, the linkages are weak and uncertain. Moreover, the set of jobs that lead to success may change over time in unpredictable ways.

These academic underachievers confront a difficult labor market. The results hint at the possibility that future success depends less on what you

do than who you are. Success may depend less on the path taken, than on the characteristics of the navigator.

Section VI considers the issue of government policies that could assist young people with limited academic skills and achievements. It concludes that the most beneficial policy would be to sharply reduce the supply of unskilled labor. Not only will this have the beneficial effect of raising the wage paid to unskilled workers, but it will also force employers to either eliminate or restructure unskilled jobs. There are several ways to implement this strategy. Of particular importance are,

-- Expanded efforts at enhancing early education.

-- Training vouchers for young adults.

-- Restrictions on immigration of unskilled workers.

Section VI also considers demand side interventions, and essentially concludes that, with some exceptions, these should be avoided. The above noted evidence indicates that it will be difficult for governments to identify clusters of jobs that unambiguously lead to financial security for people with limited academic skills. Moreover, even if such jobs could be identified, demand side interventions frequently have side-effects that reduce job opportunities for unskilled workers. Supply side intervention makes the most sense.

People with limited academic skills or credentials often reside at the bottom of the earnings distribution. As cognitive skills become more important, these people confront a labor market that is increasingly characterized by unemployment and low wages. Neither training nor early jobs provide straight, unobstructed, paths to employment and above-poverty earnings for this population. There is no simple solution to the problem. Government

policy should aim at reducing the size of the problem by reducing the size of the unskilled population.

II. Recent Trends in Demand and Supply for Unskilled Workers

In recent decades, unskilled workers faced declining job opportunities. Jobs like servant or gas station attendant declined in number, while jobs like manager or computer programmer expanded. The structure of jobs essentially shifted toward one requiring greater cognitive skills. According to the Bureau of Labor Statistics, this shift will continue into the next century.

This shift toward greater skill requirements can be viewed as the product of two forces. First, the skills required within specific jobs increased. For example, over time the job "nursing" has increasingly required knowledge of computers. Second, unskilled jobs contracted and skilled jobs expanded so that the mix of jobs changed. For example, the number of laborers in manufacturing contracted while professional services (e.g., lawyer or accountant) expanded.

This change in skill requirements can be documented with data from the Occupational Outlook Handbook. The Handbook specifies the educational requirements of almost 300 occupations. For example, a job as an engineer requires at least a bachelor's degree, while a job as a shoe-repairer or a truck driver requires no formal education or training. Since the Handbook is published annually, it chronicles changes in the educational requirements of occupations through time.

Using the Handbook it is possible to assess the level of education required by the current stock of jobs. Table 1 presents data from two papers that used the Handbook to examine changes in educational requirements. In

1960 only 15.3 percent of the workforce held jobs that (according to the 1960 Handbook) required a college degree. When a similar number is computed for 1986 using the 1986 Handbook, 27.3% of all workers are in occupations requiring a bachelor's degree. These numbers reflect both of the forces noted above, i.e., they reflect both changes in the skills required within occupations, as well as changes in the mix of occupations.

Data from the Dictionary of Occupational Titles (DOT) provide a second way to document changing skill requirements. The 1977 DOT measures several dimensions of skill for some 12,000 job titles. These can be gathered into occupational groups, and used to assess the extent to which changes in the mix of occupations affect skill requirements. Howell and Wolff (1991) present a particularly insightful version of this exercise. They begin by grouping the DOT data into four variables:

> General Educational Development. A DOT index of mathematical, language and reasoning skills.
>
> Substantive Complexity. A factor analytic index based on DOT measures of required verbal and numerical aptitude, specific vocational training time, temperament for nonrepetitive activities, and temperament for activities of an abstract and creative nature.
>
> Interactive Skills. A DOT index of the extent to which a job requires "people" skills. These range from "high" skills of mentoring and negotiating to "low" skills of serving and taking instructions.
>
> Motor Skills. A factor analytic index based on DOT measures of required motor coordination, manual dexterity, and ability to set up machines and perform precision manual work.

Howell and Wolff then assign these variables to 267 occupations and calculate averages for the 1960, 1970, 1980, and 1985 workforce. Since they rely on a single DOT (the 1977 DOT), their analysis can not capture the effect of changes through time in the skill requirements within occupations. Rather, the analysis only reflects changes in skill requirements due to changes in the

mix of skilled and unskilled occupations.

Table 2 presents the Howell and Wolff data on growth rates for the four skill measures. The positive growth rates in the table indicate that, with the exception of motor skills, skill requirements increased through time. Thus, the economy is moving toward an occupational mix that demands higher cognitive skills and lower motor skills. Interestingly, these data suggest that this process may be slowing down; the growth rates tend to become smaller with time. However, that may be an artifact of data that do not capture changes in skill requirements within occupations.

A key factor underlying the trends in Tables 1 and 2 is the expansion and contraction of occupations. Between 1979 and 1989 the fastest growing occupation was computer and data processing services, which doubled its employment share (from 0.3% in 1979 to 0.7% in 1989). Most jobs in this occupation require substantial cognitive skills. The declining occupations are mainly found in manufacturing, for example, handlers and laborers in the rubber and plastics industry. Such occupations emphasize motor skills over cognitive skills. One can, however, oversimplify this story. Although job opportunities tend to be growing in sectors that require comparatively high cognitive skills, that is not always the case. The industry adding the most jobs between 1979 and 1989 was eating and food establishments, which to a large extent consists of low-skilled jobs such as cook or waiter.

The trend toward higher skill requirements is likely to continue into the future. The last row of Table 1 presents Bureau of Labor Statistics (BLS) projections of educational requirements in 2000.[1] The predicted increase in educational requirements is largely due to predicted changes in the

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[1] Silvestri and Lukasiewicz (1989).

occupational distribution. The BLS predicts rapid growth in professional specialty occupations, which require high levels of education and training, and slow or negative growth in occupations requiring less education and training. For example, the employment share of operators, fabricators, and laborers is expected to decline.

These BLS projections are not, however, without controversy. Mishel and Teixeira (1990) claim that the increase in skill requirements will be less than indicated by the BLS. In part they argue that the growth in high skilled occupations will be counterbalanced by a shift toward low-skilled jobs. They cite as evidence the fact that service occupations are projected to make large contribution growth in total employment between 1984 and 2000, and that these occupations often require few skills.[2] In contrast, Bishop (1992) claims that future skill requirements will be greater than those projected by the BLS. Bishop evaluates BLS projections during the 1980s, and demonstrates that the BLS prediction methodology underestimated the rapid growth in high skill jobs and overestimated growth in low-skilled jobs. Given that BLS predictions for the year 2000 are based on the same methodology, Bishop concludes that BLS is underestimating the trend toward higher skills.

At the same time that employers are requiring a more educated workforce, employees are acquiring more education. The past two decades witnessed a rather significant improvement in educational attainment, particularly at the lower levels. The first three columns of Table 3 present data on the educational attainment of the workforce in 1973, 1979, and 1988. Note the decline in male high school dropouts. In 1973 males without a high school degree constituted almost a fifth of the workforce. By 1988 this had been cut

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[2] Mishel and Teixeira (1990), page 22.

in half. A similar phenomenon occurred for women.

One reason for this improved educational attainment is the increased attainment of young workers. The three columns on the right hand side of Table 3 indicate educational attainment for people with less than ten years of potential experience in the labor force. Potential experience indicates the number of years a person could have been in the labor force after completing school; it is computed as age minus years of schooling minus six. Note again the decline in male high school dropouts. Whereas, in 1973 8% of the young males in the workforce were dropouts, by 1988 that had declined to 5%. In general, over this fifteen year period, young cohorts were much more likely to both graduate from high school and enroll in college. This is particularly true for women.

Of course, such increases in years of schooling do not necessarily mean improvements in actual skills. One hears enough about illiterate high school graduates to be cautious about the above statistics. But other data suggest that more schooling has, indeed, translated into improved cognitive abilities. Tables 4 and 5 present data on the reading and math skills of 17-year old high school students. Consistent with the much discussed trends in the Scholastic Aptitude Test, these data indicate little change in the upper tail of the distribution. There is, however, considerable improvement at the lower end; an increasing share of these high school students can read and solve problems at the basic and intermediate level. The improvement is particularly dramatic for blacks, a fact that accords nicely with the decline in black high school dropout rates.[3]

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[3] See Blackburn, Bloom, and Freeman (1990) for additional evidence on this point.

One can, perhaps, make too much of this improvement. Cognitive skills may have improved even more dramatically prior to 1970. Moreover, educational achievement in the U.S. apparently lags behind competitors like Germany and Japan. Finally, the lack of improvement at the high end of the cognitive skill distribution is cause for concern. Still, the point remains: in recent years the cognitive skills of the labor force have, on average, increased.

And it is likely that cognitive skills will continue to improve. There is considerable political pressure for improved public schools. Moreover, as discussed below, the labor market imposes heavy economic penalties on people with few cognitive skills. Thus, gradual increases in cognitive skills -- particularly at the lower levels -- can be expected to continue into the future.

To summarize the above discussion, demand side changes are creating an economy that requires increased levels of cognitive skill. Although supply side changes are producing a better educated workforce, most of the improvement is at the lower end of the cognitive skill distribution. This leads logically to the question of whether the increase in demand is outstripping the increase in supply.

Data on wage trends provide insights into that. Table 6 follows the format of Table 3; it presents data from Bound and Johnson (1992) on real hourly wages for 1973, 1979, and 1988.[4] The principal message in this table is that over the past two decades the bottom dropped out of the market for low-skilled labor. As indicated by the three left-hand columns of Table 6,

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[4] To obtain their wage data, Bound and Johnson estimate a wage regression in each of their 32 sex, education, experience cells for each of the three years. They then predict the mean log wage in each period for each cell, holding relevant worker characteristics fixed.

for all male high school dropouts the real hourly wage dropped from $10.48 to $8.31, a 22% decline. The three right-hand columns indicate that the collapse was even more pronounced for young high school dropouts. Their wages dropped from $7.52 to $5.54, a 27% decline. Note that college graduates did not meet a similar fate. Although they suffered wage losses during the 1970s (when the baby boom cohort entered the labor market), their wages bounced back in the 1980s. Indeed, Table 6 is consistent with the hypothesis that people with greater cognitive skills were less likely to suffer wage losses over the past two decades. Alternatively stated, the table suggests that the increased demand for cognitive skills did, indeed, outstrip supply.

Will the labor market for unskilled workers continue to deteriorate? Probably. Powerful economic forces lie behind the demand side shift toward greater cognitive skills, and these forces are likely to continue. Included here are the microchip revolution and the trend toward greater international trade. Computers and robots can increasingly perform the repetitive work of unskilled labor. Moreover, international trade will arguably result in less demand for goods produced by American unskilled workers. This is because third world countries, with their abundant supplies of unskilled labor, have a comparative advantage in such goods. Of course, the expanding service sector may provide jobs for workers with weak cognitive skills. If the above logic is correct, however, these jobs may well be characterized by declining relative (and perhaps real) wages.

Given this, it is reasonable to speculate that opportunities for upward mobility have declined for lower skilled workers. Some available evidence does, indeed, lend support to such hypotheses. A recent work by Laura Leete-Guy (Leete-Guy, 1992) uses the 1966 NLS Young Men and the 1979 NLS Youth

Cohort data to investigate five year changes in earnings and occupation for young males who had completed their education. She finds that in 1980s there was less occupational advancement or wage growth than in the 1970s. This was particularly true for people without any college education.

A study by Robert Moffitt and Peter Gottschalk (Moffitt and Gottschalk, 1993) uses different data to come to a similar conclusion. Employing the Panel Study of Income Dynamics, Moffitt and Gottschalk find evidence of a decline in earnings mobility (measured as movement between quintiles of the earnings distribution) over the last twenty years. According to their data, this decline in earnings mobility was particularly severe for the bottom quintile of the earnings distribution. Moreover, the bottom quintile experienced declining mobility in both the 1970s and the 1980s.

Thus, there is good reason to predict that unskilled workers will face an increasingly difficult labor market. Both real wages and opportunities for upward mobility are likely to decline in the future.

III. Literature Review

How can a young person with few academic skills or credentials escape a fate of declining real wages and unemployment? Since some high school dropouts succeed in reaching a comfortable standard of living, escape routes must exist.

Escape could involve finding the right job. A good job might provide training that opens up other opportunities at other firms. Alternatively, obtaining a job with a growing or stable firm (e.g., Micro-Soft or a local hospital) could yield job security and a life of rising real wages. Do there

exist a set of easily identified jobs that provide opportunities for upward mobility to people with few academic skills or credentials?

This section investigates the literature on this issue. It focuses on the debate over whether there ever really exist "good" jobs. This debate, which has been going on for more than a century, questions whether a job with premium pay and/or desirable working conditions can persist in a competitive market. While that may seem an abstract diversion from the issues that underlie this paper, in fact it is directly relevant. To posit an identifiable set of jobs that provide opportunities for upward mobility, is to raise the question of whether these are "good" jobs or simply "good" workers. Since that question lurks beneath the surface of much of what follows, it needs to be examined.

In this discussion of good jobs the focus is on jobs that workers identify as desirable, even before they enter them. Such jobs could be called "ex ante good jobs." Workers do not simply discover that these jobs are desirable once they are in them; even before taking the job, workers know they are desirable. As such, this discussion does not deal with the literature on matching.[5] Although there are good jobs in that literature, they are not ex ante good jobs. Rather, good jobs arise out of employers and employees gradually learning about each other. Bad matches are dissolved and good matches ultimately result in premium wages. Neither the worker, the firm, nor an outside researcher can determine ex ante whether a specific worker will obtain a good match at a specific firm.

For purposes of investigating the literature, this section focuses on

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[5] For example, see Jovanovic (1979, 1984), Heckman and Honore (1990), and Heckman and Sedlacek (1985, 1990).

nonunion jobs. That is essentially because there is broad agreement that union jobs are often ex ante good jobs. Unions raise wages above market levels, and workers know about the high wages even before they get into such jobs. I focus here on the more controversial question of whether there exist ex ante good jobs in the nonunion sector.

A. One Side of the Debate: Success Depends on the Worker, not the Job

Some argue that there only exist good workers, and that good jobs are but a chimera. To make the argument, consider a group of identical workers in a labor market where jobs involve a simple task like picking tomatoes. Assume that information is perfect in the sense that workers know all about the characteristics of potential employers. Now, suppose that one of these workers finds a job that pays a higher wage than is received by the other workers. This sets in motion market forces that will eventually wipe out the pay differential. In particular, given perfect information, some of the lower paid workers will seek employment at the high wage job. The employer who offers this high wage job will realize that identical labor could be obtained at less cost. There will then be strong incentives, based on cost minimization, for that employer to reduce the wage.

This is simply the "Law of One Price" applied to labor markets. Just as identical chewing gum should have the same price in the same market, identical labor should have the same price in the same market. Of course higher quality labor (more trained, more motivated, more talented) will command a higher price, just as higher quality chewing gum will command a higher price. Thus, there will only exist good workers, not good jobs.

Similar logic applies to situations where jobs differ in their amenities.

Suppose that a new firm comes into this market. The firm pays the same wage as other firms, but provides more pleasant working conditions (e.g., longer lunch breaks in better dining facilities). Once again, the identical workers in other jobs will seek these jobs. Although the wage is the same, the amenities are better. The employer with the more pleasant working conditions will realize that identical labor can be obtained at less cost, and there will be strong incentives for that employer to drop his wage. Thus, the job is no longer a "good" job. There is a "compensating wage differential." Although the job has more pleasant amenities, workers must effectively pay for those amenities by accepting a lower wage.

Now suppose that yet another new firm comes into this market. This firm pays the same starting wage as other firms, but offers greater opportunity for future wage growth and employment security than other firms. Once again, this is a "good" job. And once again, as the identical workers in other firms seek this job, the employer will face strong incentives to drop his starting wage. The wage should ultimately fall to the point where the job is no longer a "good" job. Although the job has greater opportunities for wage growth and employment security, workers must effectively pay for these amenities by accepting a lower starting wage.

By such logic, there is no such thing as a good job that provides opportunities for upward mobility to young people with limited academic skills and credentials. Such opportunities for upward mobility would be a job amenity. If an employer provided such a job, then there would arise a "queue" of young people outside the door of that employer. The employer would realize that identical labor could be obtained at less cost, and would effectively ask workers to pay for the job.

B. The Other Side of the Debate: Success Depends on both the Worker and the Job

For more than a century, economists have argued the validity of the above logic. Included as critics are John Stuart Mill, John R. Commons, Clark Kerr, Peter Doeringer and Michael Piore.[6] The essence of their critique is that some workers, who are qualified for desirable jobs, only have limited access to them. There is, in fact, a "queue" of workers hoping to get into these jobs. Yet despite the fact that the number of qualified people hoping to take these jobs exceeds the number of jobs that are offered, wages do not fall. Of course, that flies in the face of the above logic. Why would a cost minimizing employer, seeing this queue of workers, not simply drop the wage to the market level?

In the past decade several economists have tried to answer this question by invoking "efficiency wages." They argue that by raising the wage above market levels, the firm reaps a gain in the form of increased productivity and profit. Queues persist because it is profitable to pay above-market wages. There really are ex ante good jobs out there.

As the debate over such ideas intensified, efficiency wage theories increased in both number and sophistication. Here I simply illustrate the nature of the debate by discuss two salient examples: shirking models and turnover models.

The shirking variant of the efficiency wage model posits employers with limited knowledge of worker behavior. In particular, employers can not always determine whether workers are behaving in ways that raise costs. Workers may shirk on the job without the employer seeing it. They may

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[6] See Cain (1976) for a review.

misfile folders or abuse machines without the employer being able to determine who is at fault. They may steal with only a small probability of capture. By paying high wages and firing workers who are caught shirking or stealing, the employer can reduce such behavior. Workers who contemplate shirking or stealing must consider the consequence of possible capture and loss of a future stream of above market wages. The greater the wage premium and the greater the probability of capture, the less likely are workers to shirk or steal. While higher wages may be expensive to the firm, the reduction in shirking and stealing may be sufficiently large to raise profits. Thus, the firm pays above-market wages and a queue of potential workers forms outside the door of the personnel office.

Jobs with efficiency wages are good jobs. Not only do they pay premium wages, but employers try to avoid cyclical or seasonal layoffs. This is because incentives for good behavior are strongest when workers see a stream of above market wages stretching far into the future. Of course, not all jobs will pay these efficiency wages. In some jobs shirking is not costly to the employer and stealing is of minimal importance. For example, plastering is easily monitored by a supervisor (who can count the number of square feet plastered in a day) and theft of materials is presumably a rather minor concern. Other jobs, particularly those in the financial sector, may be more difficult to monitor and more likely to involve efficiency wages.

A second variant of the efficiency wage model arises when employers bear large hiring and training costs (e.g., Salop, 1979). If employers must pay for hiring and training, they will seek to minimize quits. A quit for such employers is like a windfall loss. When hiring workers, these employers anticipate a future return from their investment in hiring and

training. When a worker quits, that anticipated return is lost. The employer must hire a new worker and invest again. By paying above-market wages, the employer can reduce quits and thereby effectively minimize the chance of such windfall losses. Thus, premium wages raise productivity by reducing costly quits. If the reduced cost of quits is large enough to outweigh the increased cost of higher wages, then premium wages are cost minimizing, and queues persist.

Once again, not all firms will use efficiency wages. Only a firm that bears large hiring and training costs would pursue such policies. Firms with unique and complex technologies, or unique and complex relationships to customers would seem possible candidates. Examples might be law firms or public relation firms.

In part because they violate the law of one price, economists often take a skeptical view of efficiency wage theories. The critics make logical counter arguments. In particular, they claim that once that queue forms outside the door of a firm paying efficiency wages, market forces will eventually eliminate the good job. Seeing the queue, the cost minimizing employer could quite possibly charge a fee to newly hired workers. Before hiring or training costs are incurred, or before there is any opportunity to shirk or steal, the employer asks prospective employees for a payment of, say, $5,000. Since the job is better than alternative jobs, workers are willing to pay this fee. Of course, once work begins the job pays a premium wage. That is necessary for preventing shirking, stealing, or quitting. But because workers pay a fee before work begins, the job is no better than any other for which the workers are qualified. Note that by collecting this fee the firm makes higher profits and succeeds in preventing shirking, stealing, or

quitting. Thus, say the critics, efficiency wages only make sense if we rule out hiring fees. Indeed, some take the argument a step further, arguing that since we but rarely observe hiring fees, efficiency wages must not exist.

While proponents of efficiency wage theories make interesting rejoinders,[7] that need not concern us here. The key point is that there are plausible reasons to claim that good jobs exist, but the debate is far from settled.

C. Evidence

One might reasonably ask whether empirical evidence could help to resolve this debate. Several authors have made efforts along these lines.[8] At this point there is substantial evidence consistent with the existence of ex ante good jobs. Several recent papers examine wage differences across industries after controlling for a multitude of worker characteristics (e.g., age, education, experience, occupation).[9] These studies find industry wage differentials that are large, that tend to tend to persist over time, and that are correlated across countries. Such evidence is certainly consistent with the claim that jobs in high wage industries tend to be good jobs.

A related strand of the literature finds that wages vary with firm size. Holding observable worker characteristics constant, large firms tend to pay more and provide more stable jobs than small firms. Moreover, there is evidence that queues form for jobs in large firms (Holzer, Katz, and

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[7] See Dickens et. al. (1989) or Weiss (1990).

[8] See Murphy and Topel (1989), Weiss (1990), and Dickens and Lang (1992) for useful summaries of the empirical work.

[9] See Dickens and Katz 1987 and Krueger and Summers (1988).

Krueger, 1991). After a detailed examination of the relationship between firm size and wages, Brown and Medoff (1989) essentially conclude that the relationship is difficult to explain. It can not be wholly attributed to the quality of workers in large firms, to unpleasant working conditions in large firms, or to union avoidance strategies. Again, jobs in large firms have the markings of ex ante good jobs.

A third strand of the literature suggests that jobs with employer provided training tend to be good jobs. Several studies indicate that when a company provides training, workers benefit through higher wages and lower turnover.[10] Although orthodox theory suggests that workers will pay for this training through lower initial wages, several tests of that hypotheses fail to find support for it.[11] Thus, the available evidence indicates that jobs with company training tend to be ex ante good jobs. Evidently, a worker who obtains such a job can expect higher lifetime earnings, on average, than would be possible in jobs without this training.

Yet, while a great deal of evidence points to the existence of ex ante good jobs, none of it is completely convincing. Those who question the existence of such jobs argue that high wage industries or firms employ higher quality -- more productive -- workers. Even when econometricians statistically control for quality with variables like years of education or years of experience, that only captures a part of the true variation in worker quality. Worker productivity varies for reasons unobserved by the statistician, and that unobserved component may contribute to the wage

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[10] See Duncan and Hoffman (1978), Brown (1989), Lillard and Tan (1986) Mincer (1988), Lynch (1992a, 1992b).

[11] See Barron, Black and Lowenstein (1989) and Parsons (1989).

differential. Indeed, according to Murphy and Topel (1989), industries that tend to pay higher wages, ceteris paribus, also tend to employ workers with observable characteristics (like education) that are usually associated with greater productivity. If these industries are paying for observable quality differences, then they are quite probably also paying for unobservable quality differences.

Moreover, none of this evidence helps determine the validity of the available efficiency wage theories. There is some evidence that higher wages lead to lower dismissal rates (Cappelli and Chauvin, 1991), but that evidence does not permit us to say whether higher wages raise profits, nor does it indicate whether higher wages reduce shirking or simply attract a better behaved class of workers.

To conclude, economists have long argued over whether there ever really exist "good" jobs. There are plausible theoretical reasons for both predicting and doubting the existence of a cluster of jobs that lead to upward mobility for academic underachievers, and the available empirical literature does not fully clarify matters. Perhaps the key point is that, at present, there is no theoretical or empirical basis for ruling out the existence of such jobs. The subsequent empirical work essentially examines whether the data are consistent with that hypothesis.

IV. An Analysis of the NLS Young Men

As noted in the introduction, a young person with few academic skills and credentials is not without options. There would seem to be three career paths by which that person could avoid a life of unemployment and low wages. In particular, (1) obtain additional formal schooling, (2) obtain a job

that provides secure employment at "good" wages, and (3) obtain a job that provides skills and thereby opens a door to good future jobs. The goal of this section is to examine the extent to which an earlier cohort of young unskilled men went down these several paths and actually attained a degree of economic success. The analysis is built on the National Longitudinal Survey of Young Men (the NLS-YM). The NLS-YM began with a representative sample 5,225 young men between the ages of 14 and 24 in 1966, and followed these young men through a final interview in 1981. One major advantage of the NLS-YM is that it tracks a cohort of labor market entrants for fifteen years (1966 - 1981). In contrast, the more recent NLS Youth Cohort (which is used in Section V) is currently limited to eleven years of data (1979 - 1990).

A. Early Training Paths and Later Success -- Cross Tabulations

In order to examine the economic success of young men with few academic skills and credentials, it is first necessary to identify these young men in the data. They could, for example, be identified by examining arithmetic or verbal test scores at (say) age seventeen. It would be interesting to know to what extent people with low test scores succeed in avoiding lives of unemployment and low wages. Unfortunately, available panel surveys do not contain sufficient data to implement that idea.[12]

Instead, this project focuses on nongraduates: people who reached their nineteenth birthday without completing twelve years of education. This group

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[12] The Panel Study of Income Dynamics does not contain information on verbal or arithmetic test scores. Although the National Longitudinal Surveys young male data contains information on IQ tests and the NLS-Youth Cohort contains information on the Armed Services Vocational Aptitude Battery, both surveys have major problems with missing data. Moreover, the tests used in the two surveys are not comparable.

essentially starts off on the wrong foot; they have less formal education than most people in their age cohort. Some are dropouts and some have been forced to repeat grades. As demonstrated below, most will end up in the lower tail of the income distribution. Of course, not all of these nongraduates are lacking in academic skills. Some may be nongraduates because they suffered an illness. Others may have chosen to not graduate in order to pursue other interest (e.g., a career in professional tennis). Still, for purposes of examining the career paths of academic underachievers, nongraduates are a good -- albeit not ideal -- group to look at.

An examination of economic success also requires criteria for success. Since several alternatives are feasible, the subsequent analysis takes a somewhat eclectic view of criteria for success. The three used here are,

> SUCCESS 1: Annual earnings in excess of the U.S. government's poverty line for a family of four. In 1992 this was $13,950. Men with this level of earnings can support a non-working spouse and two children without being in poverty. Attainment of this level of success will usually require a full-time job that pays more than the minimum wage.
>
> SUCCESS 2: Annual weeks worked greater than or equal to 48 and annual earnings in excess of the U.S. government's poverty line for a family of four. People that meet this definition have both steady work and above-poverty earnings.
>
> SUCCESS 3: Annual earnings in excess of $20,000 in 1980. In 1980 $20,000 was slightly above the median earnings for a full-time year round male worker.

Since the NLS-YM data suffer from sample attrition and missing observations, in most cases annual earnings or annual weeks worked were calculated as averages over the 1978, 1980, and 1981 surveys. If data from one survey was missing, then a two year average was used. Similarly, if data on two years was missing, then a single year was used. This helps to alleviate problems with missing observations.

Finally, for purposes of analyzing the paths taken to economic success,

it is necessary to identify different kinds of training. The NLS-YM data are rich in training information. In order to simplify the analysis and to maintain comparability with the NLS-Youth Cohort data, this work focuses on three types of training as reported in the 1967-71 interviews:

> COMPLETED MORE YEARS OF SCHOOLING: This variable takes the value one if the respondent completed an additional year of schooling after his nineteenth birthday. Otherwise it is zero. The additional schooling could involve completion of high school, a year in a community college, or pursuit of university degree.
>
> OBTAINED OTHER TRAINING PROVIDED BY THE EMPLOYER: The NLS-YM asked respondents about the source of their longest spell of occupational training in the past year. This variable equals one if a respondent indicated that he obtained training from a company training school. Otherwise it is zero. Note that this variable focuses on formal training. It will tend to miss less formal types of on-the-job training, such as that provided by a foreman or by coworkers.
>
> OBTAINED OTHER TRAINING -- MISCELLANEOUS. This variable equals one if a respondent indicates that the source of his longest spell of occupational training is other than a company training school. Otherwise it is zero. Thus, it includes training from business colleges, barber schools, correspondence courses, and so forth.

Table 7 presents data on the training paths chosen by young men who were 18-19 in 1966 and did not complete twelve years of schooling by their nineteenth birthday.[13] The most striking result in the table pertains to the absence of additional training. Fully 70% of these men completed no additional years of schooling between 1966 and 1971, and most of the 70% did not obtain any other form of training. In fact, fully 51% of the sample report no additional formal or informal training. For those who obtain additional training outside of the school system, there is almost an even split between employer provided and miscellaneous.

Table 8 presents data on the number of young men in Table 7 who reached

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[13] These numbers are computed with sample weights. The total number of observations is 155.

SUCCESS 2, i.e., they not only had 1978-81 average earnings above the four person poverty line, but were employed 48 or more weeks during the year. Note that the sample size in this table is 62% of that in Table 7 (265,490/426,352 = .62), implying that only 62% of the Table 7 workers succeed in obtaining 1978-81 jobs that satisfy SUCCESS 2. The percentages in Table 8 look quite similar to those in Table 7. The bulk of the "successful" people in this population completed no additional years of schooling (66% of the sample), and fully half of the successes obtained no other observable form of training.

Table 9 provides information on success rates for the several paths. The first column uses the same criterion for success that is used in Table 8, i.e., earnings above the poverty line and 48 or more weeks of work. Perhaps the most surprising result in this table pertains to nongraduates who pursued no other training between 1966 and 1971. Fully 59% of these young men ended up working full time with earnings above the poverty line in 1978-81. At least in this simple cross-tabulation, there appears to be only a weak link between early training and later success.

These three tables provide us with the first conclusion from this study. At least for this cohort of nongraduates, formal training was not critical for full employment and above poverty earnings. There must have been paths to success that either involved another form of training -- a form of training not picked up by the survey -- or that had some other feature that produced upward mobility.

B. Early Training Paths and Later Success -- Multivariate Models

Multivariate statistical model provide another way to examine which training paths have the highest success rate. Unlike the Table 9 cross-

tabulation, multivariate methods such as linear regression permit examination of relationships holding other variables constant. Thus, one can examine which training paths were most successful, holding constant race, age, region, and other variables.

Table 10 presents linear regressions using SUCCESS 1 as the dependent variable. Thus, the dependent variable takes the value "1" if an individual's 1978-81 average earnings are above the poverty line for a family of four. Because they are simpler to interpret, linear regressions are used here rather than the statistically more appropriate logit or probit. It is unusual for coefficient estimates in a logit or probit to differ greatly from those in a linear regression in terms of either coefficient sign or statistical significance.

The model in Column 1 of Table 10 essentially replicates the Table 9 cross-tabulation. It uses the same sample and training path categories.[14] The second coefficient (.214) in Column 1 indicates that, in comparison to someone with no additional training, a person with additional formal schooling (and no other form of training) has a .214 percentage point higher probability of "SUCCESS 1." The third coefficient (.395) indicates that, in comparison to someone with no additional training, a person who both obtained additional formal schooling and company training has a .395 percentage point higher probability of SUCCESS 1. Note that the first two coefficients are statistically significant at conventional levels.

In interpreting these coefficients, it is important to recognize that the higher probability of success associated with training may not be caused

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[14] The results differ somewhat because the Table 9 data are weighted while those in Table 10 are not.

by training per se. This higher probability may be, at least in part, attributable to the characteristics of people who pursue training. There is a "selection process" at work here. If the people who pursue training tend to be more motivated, or tend to have greater cognitive skills than those who do not, then the estimated coefficients will reflect that. These coefficients essentially combine the effects of training with the effects of the unobserved characteristics of people who obtain training.

Column 2 in Table 10 adds control variables to the regression, and thereby holds other variables constant. Although the coefficients on the training variables are quite similar to those in Column 1, their magnitudes (and t-statistics) drop somewhat. Thus, controlling for observed heterogeneity in the population (e.g., race, region, disability, etc.) diminishes the Column 1 training effects. Indeed, none of the Column 2 training coefficients are statistically significant at conventional levels.

Of course, this could be an artifact of sample size. In focusing on males who were 18-19 in 1966, the analysis is restricted to 155 observations. A larger sample would yield more precise coefficients. Thus, Column 3 examines the effect of expanding the sample to include males who were 16 - 19 in 1966. Note that the number of observations now jumps to 405, and that while the coefficients on the training variables are quite similar to those in Column 2, some t-statistics are larger.

The fourth and fifth column in Table 10 explore the effect of adding other control variables to the model. The model in Column 4 adds variables indicating participation in the military between 1966 and 1971. Since the military often provides training, a case can be made for treating these variables as indicators of training. However, since there was both a

draft and war between 1966 and 1971, these variables probably also indicate other phenomena besides training. Note that due to missing data, the sample size drops from 405 to 360. Note also that the coefficients on variables indicating completion of additional formal education decline in magnitude. This could arise if nongraduate males who were in the military tended to pursue additional formal education during or shortly after their military service.

The model in Column 5 includes information on parental education as well as a measure of individual IQ. Again, because of missing data, the sample size drops dramatically. In consequence, little should be made of this model.

Two key conclusions come out of Table 10. First, even after controlling for demographic variables (like race, age, region, and disability), training undertaken between 1966 and 1971 affects the probability that nongraduates have 1978 - 1981 earnings above the poverty line. Thus, training matters. But, second, other variables may matter more. In particular, race and the highest grade completed at age nineteen are strongly related to the subsequent "success" of these nongraduates. Additional regressions that use other definitions of success yield results that are consistent with these conclusions.

C. Early Jobs and Later Success -- Multivariate Models with Industry and Occupation

As indicated in Tables 7 and 8, although many of these academic underachievers do not complete additional formal schooling, a large share ended up in full time jobs that provided earnings above the poverty line. How did they do that? One way to look at this is to examine whether the industry

and occupation of early jobs influence later success. As noted in Section III, an extensive empirical literature finds large industry wage differences that persist over time. The literature often links these differences to efficiency wages. As such, it is reasonable to think that early attachment to specific industries and occupations may translate into higher probabilities of later success.

It must, however, be acknowledged that there are other features of early jobs -- features other than industry and occupation -- that may influence later success. Included here are size of company or union status. Such characteristics are, however, almost certainly correlated with industry and occupation. For purposes of examining whether early jobs influence later success, industry and occupation provide a good point of departure.

To investigate the importance of early industry and occupation, I estimated models of the form,

(1) $Y = \mathbf{X}'\mathbf{B} + \mathbf{Z}'\mathbf{A} + e$

where Y is a measure of success, $\mathbf{X}$ is a vector of demographic and personal characteristics, $\mathbf{Z}$ is a vector of variables indicating industry and occupation of early jobs, $\mathbf{B}$ and $\mathbf{A}$ are parameter vectors, and e is a random error. So that results are not confounded by formal schooling, the models are estimated in the population that did not complete additional years of formal schooling between 1966 and 1971.

Since the analysis is based on panel data, the industry and occupation of early jobs will be measured in terms of time spent in an industry or occupation. Thus, instead of using industry and occupation "dummy" variables, the analysis is based on the fraction of the five years between 1966 and 1971 that an individual spent in a specific industry or occupation. Suppose, for

example, that there are three industries: industry A, industry B, and industry C. If an individual spent 1/5 of the 1966-71 time period in industry A, 4/5 in industry B, and no time in industry C, then data for that individual would take the form, Industry A = .2, Industry B = .8, Industry C = 0.

Column 1 of Table 11 presents coefficients on the industry and occupation variables (Z) in equation 1 when SUCCESS 1 is the dependent variable. The model uses broad industry and occupation categories. Similar results obtain when narrower categories are used. The model is estimated in a sample of male nongraduates age 16-19 who did not complete additional years of formal education. Although there is considerable variation in the coefficients, the t-statistics are quite small. Indeed, using an F-test one can not reject the null hypotheses that all of the coefficients in Column 1 are zero. This is in part due to small sample size. With only 247 observations, it is not possible to obtain sufficiently precise estimates of the coefficients to reject the null hypothesis.

One way to improve the precision of the estimated coefficients is to include high school graduates in the sample. The model in Column 2 of Table 11 does this. The coefficients in this model are estimated in a combined sample of male high school graduates and nongraduates who did not complete additional formal education after their nineteenth birthday. Using an F-test one can reject (at a .05 level) the null hypothesis that all of the coefficients in Column 2 are zero. Thus, at least in this larger sample, there is evidence that early jobs are related to later success. An additional test indicates that the Column 1 and Column 2 coefficients are statistically

similar.[15] That is not particularly surprising. It simply indicates that regardless of high school graduation, young males who do not pursue further formal education confront a similar relationship between early jobs and later success. Given these results, this section focuses on the larger sample.

The Column 2 estimates indicate that some early jobs are more likely to lead to success than others. Since the excluded industry is agriculture, fishing, and forestry, the industry coefficients should be read as indicating differences in success for people who work in a given industry relative to people who work in agriculture, fishing, and forestry. Thus, the first coefficient in Column 2 (+.204) indicates that young men who worked in construction between 1966 and 1971 had a higher probability of success in 1978-81 than did identical young men in agriculture, fishing, and forestry. A parallel interpretation applies to the occupation coefficients. Here, however, the excluded occupation is professional.

Which jobs have the greatest effect? Due to statistical error in the parameter estimates, it difficult to give definitive answers to this question. The Column 2 data suggest, however, that young men who obtain early jobs in the construction industry and in clerical and kindred occupations are <u>particularly likely</u> to enjoy SUCCESS 1 (earnings above the four person poverty line). In contrast those with early jobs in the finance, insurance, and real estate industry and in the occupation, farmers and farm managers, were <u>particularly unlikely</u> to enjoy SUCCESS 1.

The Column 2 parameter estimates imply that these effects could be quite substantial. For example, the .204 coefficient on CONSTRUCTION

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[15] This is an F-test of whether, in the pooled data in column 2, the industry and occupation coefficients for the column 1 subset are statistically different from zero.

indicates that in comparison to a job in agriculture, fishing, and forestry, a job in construction leads to a 20 percentage point higher probability of SUCCESS 1. In like manner, the -.200 coefficient on FINANCE, INSURANCE, AND REAL ESTATE indicates a 20 percentage lower probability of SUCCESS 1. However, the many small t-statistics in Column 2 give one pause. There are no clear paths to success here. It looks more like a poorly marked path with many hazards, forks, and detours.

The remaining columns of Table 11 present parameter estimates based on alternative definitions of success. While the results are similar to those in Column 2, there are some interesting differences. Consider, for example, the third column where success is defined as earnings above the poverty line and 48 or more weeks of work. The string of positive industry coefficients indicate that jobs in agriculture, fishing, and forestry are particularly unlikely to insure success by this definition. This is presumably because early jobs in agriculture, fishing, and forestry are likely to lead to later jobs in these industries, and such jobs tend to not be full-year jobs.

Due to the selection process that matches workers with jobs, these results must be viewed with a degree of caution. Perhaps success does not depend upon industry or occupation per se, but rather on the characteristics of the people who are recruited into an industry or occupation. Perhaps it is the people in the job that matter, not the job itself. The fact that the sample is reasonably homogeneous (nongraduate males age 16 - 19), the fact that the models control for several important variables, and the fact that the results are quite weak all would tend to argue against this interpretation.

To conclude, there is evidence here of a weak link between early jobs and later success. At least for this cohort, work in the construction

industry and in clerical and kindred occupations tends to be associated with a higher probability of success. Yet the statistical links are not strong.

One way to think about these results is to ask the following question: Is there a set of jobs so fundamental to the upward mobility of nongraduates that they should be subsidized or in some other way encouraged? Table 11 provides no grounds for answering "yes" to that question. Rather it would seem to suggest an alternative interpretation. Academic underachievers find paths to success in many different industries and occupations. While some industries and occupations may be more likely to lead to success than others, the linkages are weak and statistically insignificant.

V. Comparing the NLS Young Men with the NLS Youth Cohort

The previous section focused on a cohort that entered the labor market in the late 1960s. In light of the economic changes that occurred in the ensuing decades, it is natural to wonder whether more recent vintages of young workers have similar experiences. The 1979 National Longitudinal Survey Youth Cohort can be used to examine this. The NLS Youth Cohort is a panel survey of 12,686 young men and women who were age 14-21 at the beginning of 1979. One can select 16-19 year old nongraduate males from these data and compare them to similar young males in the 1966 NLS Young Men data. This section presents that comparison.

A. Early Training Paths and Later Success -- Cross Tabulations for Two Cohorts

What looks straightforward in theory can often be difficult in practice. Several complications arise in comparing the 1966 and 1979 data. One complication is due to the different length of the two panels. Whereas the

1966 panel spans fifteen years (1966 - 1981), at present the 1979 panel only spans eleven years (1979 - 1990). In order to evaluate success over similar time intervals, it is necessary to focus on a nine to ten year period. Thus, for the 1966 cohort success is evaluated in terms of earnings in 1975-76; for the 1979 cohort success is evaluated in terms of earnings in 1988-89.[16] In consequence the results on the 1966 cohort in this section will differ somewhat from those in the previous section.

Given these two samples, success can be measured in much the same way as was done in Section IV. In particular,

> SUCCESS 1: Annual Earnings in excess of the U.S. government's poverty line for a family of four.
>
> SUCCESS 2: Annual weeks worked greater than or equal to 48 and annual earnings in excess of the U.S. government's poverty for a family of four.

For the 1966 cohort, annual earnings are measured as average earnings in 1975-1976 and the poverty line is measured as of 1976 ($5,334). For the 1979 cohort, annual earnings are measured as average earnings in 1988-89, and the poverty line is measured as of 1989 ($11,662). Since poverty lines are adjusted for inflation, the 1976 and 1989 poverty lines effectively represent the same level of real income.

Success could also be seen in terms of doing better than other members of one's cohort. For example, rather than view success in terms of attaining some level of real earnings, success might be viewed as attaining a level of real earnings higher than half the members of one's cohort. To get at this, I experimented with an alternative definition of success,

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[16] In order to maintain comparability between the two surveys the 1990 data were not used. The Young Men survey did not collect information on earnings in 1977.

SUCCESS 4: Annual earnings greater than the median money income of males age 30-34.

For the 1966 cohort, median earnings are measured as of 1976 ($13,062).[17] For the 1979 cohort, median earnings are measured as of 1989 ($23,663).[18]

Of course, for purposes of comparing early training for the two cohorts, it is important to measure the training variables in similar ways. As before, three types of training are examined:

COMPLETED MORE YEARS OF SCHOOLING: This variable equals one if the respondent completed an additional year of schooling after his nineteenth birthday. Otherwise it is zero.

OBTAINED OTHER TRAINING PROVIDED BY THE EMPLOYER: This variable equals one if a respondent indicated that he obtained occupational[19] training from a company training school of more than four weeks duration in the past year. Otherwise it is zero.

OBTAINED OTHER VOCATIONAL TRAINING -- MISCELLANEOUS: This variable equals one if a respondent indicated that he obtained occupational training of more than four weeks duration from someplace other a company training school. Otherwise it is zero.

The first variable, COMPLETED MORE YEARS OF SCHOOLING, is identical to that used in the previous section, and there is no real difficulty in obtaining comparable measures for the two cohorts. The other two measures are slightly different from those used in the previous section, and here comparability is more of a challenge.

Whereas the earlier Young Men survey obtained information on a respondent's longest spell of occupational training since the last

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[17] U.S. Department of Commerce, Bureau of the Census, Money Income in 1976 of Families and Persons in the United States, Series P.60, No. 114, 1978, Table 46.

[18] U.S. Department of Commerce, Bureau of the Census, Money Income of Households, Families, and Persons in the United States: 1988 and 1989, Series P-60, No. 172, Table 26.

[19] The NLS Youth Cohort terms this vocational or technical training.

interview, the later Youth Cohort survey did not ask respondents to identify the longest spell of training. Rather, questions were asked about the most recent three spells of training since the last interview. In addition, whereas the earlier Young Men survey did not place restrictions on spell length, the later Youth Cohort survey only collected data on spells that lasted four weeks or more. Thus, the data obtained by the two surveys are not strictly comparable. In order to make comparisons, this section focuses on training spells that lasted more than four weeks. Thus, if a respondent to the earlier Young Men survey reported that his longest spell lasted less than four weeks, that is not treated as a spell of training. As a result, this section's data on OBTAINED OTHER TRAINING PROVIDED BY THE EMPLOYER and OBTAINED OTHER VOCATIONAL TRAINING -- MISCELLANEOUS will differ from the data in Section IV.

Table 12 is similar to Table 7 in Section IV. It presents data on the training paths chosen by 18 - 19 year old nongraduate males in the two surveys.[20] As in Section IV, these were nongraduates in the sense that they had not completed twelve years of school by their nineteenth birthday. In both cohorts, the majority of nongraduates completed no additional years of schooling. Indeed, the majority neither completed additional schooling nor pursued any other form of training (57% in the 1966 cohort, 66% in the 1979 cohort). If one believes these data, nongraduates in 1979 were somewhat less likely to pursue training than those in 1966.

But a degree of skepticism is necessary here. To understand why, note that while 31% of the 1966 cohort went on for additional schooling, only 26%

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[20] In addition, the military subsample was excluded from the NLS Youth Cohort.

of the 1979 cohort did so. Although this 5% difference is interesting, because of sample attrition it must be viewed with caution. The attrition rate in the 1966 data was 39% while that in the 1979 data was only 10%. Since attrition is probably less likely among people who continue their schooling, the 5% difference may simply reflect different attrition rates.

One can be more confident in the results on employer provided training. Table 12 indicates that in the more recent cohort, fewer of the nongraduates obtained employer provided training. This is true regardless of whether they pursued additional schooling. Since the 1966 numbers for such training are probably too low,[21] it is unlikely that this difference is simply an artifact of sample attrition. Indeed, the same phenomenon arises in a sample of high school graduates.[22] Thus, there is evidence here that for the more recent cohort, young men were less likely to obtain employer provided training.

Tables 13 and 14 present data on success rates for alternative training paths. In Table 13 the indicator of success is SUCCESS 1, i.e., annual earnings greater than the poverty line for a family of four. In Table 14 the indicator of success is SUCCESS 2, i.e., annual earnings greater than the poverty line for a family of four and 48 or more weeks of work during the year. Note the differences in success rates for the two cohorts. Looking at Table 13, whereas 75% of the nongraduates in the 1966 cohort had earnings

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[21] Since the earlier Young Men survey reports on only one spell, while the later Youth Cohort survey reports on three spells, other things equal we should observe fewer training spells in the earlier data. Thus, the Young Men survey data provides an underestimate of what would have been found had the NLS Youth Cohort measure been used. Lynch (1992b) page 8 provides evidence consistent with this.

[22] See Leete-Guy (1992) for a similar result. Some of this may be due to the recession that occurred at the beginning of the 1980s.

greater than the poverty line, only 56% of the 1979 cohort attained a similar level of success. This presumably reflects the decline in real earnings experienced by low-skill workers in the 1980s.

The evidence in these tables suggest changes in the success rates associated with different career paths. In particular, whereas additional schooling was associated with a higher success rate in the earlier cohort, that is not the case in the later cohort. Looking at the Table 13, for the 1966 cohort 88% of those who complete additional formal schooling attain SUCCESS 1, while for those who do not complete further formal schooling the success rate is only 70%. The corresponding figures for 1979 are 54% for those who complete additional schooling and 57% for those who do not. Note, however, that employer provided training is effective in both cohorts. Those nongraduates who obtain employer provided training tend to have comparatively high success rates.

In summary, four conclusions can be drawn from Tables 12 - 14. First, in both cohorts the majority of nongraduates tend to not pursue further training. They neither report completion of additional formal schooling nor any other form of training. Second, there is some evidence that the more recent cohort was less likely to obtain employer provided training. Third, the 1979 cohort of nongraduates was much less successful in terms of earnings and employment than the 1966 cohort. Finally, at least in these cross-tabulations, there is little evidence of a link between additional formal schooling and later success.

B. Early Training Paths and Later Success -- Multivariate Models

Of course, the above cross-tabulations results do not control for other

variables that may influence success rates. To do that, we need multivariate models. Table 15 presents multivariate models estimated in samples of young males who had not completed twelve years of education by their nineteenth birthday, and who were ages 16-19 at the beginning of the survey. (Because of this age range, the samples are larger than those in Tables 12 - 14, which were based on 18-19 year old males.) The first two columns present data on sample means. The samples are quite similar. At least, when looking at the means, the 1979 cohort of nongraduates seems somewhat advantaged over the 1966 cohort. Fewer of the 1979 cohort are disabled, and their average education at age nineteen is somewhat higher as is the average education of their parents. The next two columns present linear regression models that use SUCCESS 1 as a dependent variable. Similar results are obtained with similar regression models that use alternative measures of success as a dependent variable.

The Table 15 regressions suggest that the Table 13 and 14 cross-tabulations may be misleading. Once we control for demographic variables (like race, age, region, and disability), there is no clear indication that formal schooling is becoming a less effective route to economic success. Indeed, neither cohort yields strong evidence linking additional schooling to higher success probabilities; in both cohorts the coefficient on additional formal schooling (and no other formal training) is positive but not statistically significant.

There is, however, an interesting pattern to the results on company training. Whereas, in the 1966 cohort company training has little effect on subsequent success, the 1979 cohort results point to a significant effect. The evidence is weak but interesting. Company training was as effective -- if not more effective -- for the 1979 cohort as it was

for the 1966 cohort. But, as indicated in Table 12, a smaller proportion of the 1979 cohort were likely to gain access to it.

Several other coefficients, such as those on WHITE or HIGHEST GRADE COMPLETED WHEN 19 are statistically significant from zero and similar across the two regressions. Indeed, an F-test on all of the slope coefficients (regression coefficients other than the intercept) indicates that one can not reject (at a .05 level) the null hypotheses that these coefficients are the same in the two regressions.

The conclusions that come out of Table 15 are quite similar to those that came out of Table 10 in Section IV. Although there is evidence that early training is associated with later success, other variables like race and highest grade completed at age 19 may be more important. The only evidence of change over time focuses on company training. Company training may have been more effective in insuring later success than it was for the 1966 cohort.

C. Early Jobs and Later Success -- Multivariate Models with Industry and Occupation

What role do early jobs play in later success? Using the NLS-Young Men, Section IV found evidence of a weak link between early jobs and later success. For that earlier cohort, work in the construction industry and in clerical and kindred occupations tends to be associated with a higher probability of success. Do similar results obtain in the later NLS Youth Cohort data?

To investigate this, multivariate models of success (equation 1) are estimated in the two surveys. As in Section IV the industry and occupation of an early job is measured as a fraction of the initial five years of the panel that are spent in the industry or occupation. Also as before, models are

estimated in samples of male high school graduates and nongraduates who did not complete additional formal education after their nineteenth birthday.

Table 16 presents results. The first two columns list sample means for the two cohorts. As might be expected, the more recent cohort is less likely to work in the durable and nondurable manufacturing industries, and more likely to work in construction, wholesale-retail trade, and services. With regard to occupation, there was a major shift out of the operative occupations and into service occupations. A surprise is the greater fraction of "missing" in the more recent cohort. Since these young males did not go on for further schooling, it is not clear why there would be an increase in the fraction of surveys with missing industry and occupation information.

The next two columns of Table 16 present regression coefficients from models of SUCCESS 1. As in Table 11, the excluded industry is agriculture, fishing, and forestry. Thus, the industry coefficients should be read as indicating differences in success for people who work in a given industry relative to people who work in agriculture, fishing, and forestry. The first coefficient in Column 3 (+.937) indicates that young men who worked in construction between 1966 and 1971 had a higher probability of success in 1975-76 than did identical young men in agriculture, fishing, and forestry. A parallel interpretation applies to the occupation coefficients. Here, however, the excluded occupation is professional.

In comparing Columns 3 and 4, one is struck by how different the coefficients are. Industries and occupations that tend to be associated with SUCCESS 1 for the earlier cohort, cease to be for the more recent cohort. For example, whereas construction is strongly related to SUCCESS 1 for the earlier cohort, in the more recent cohort the coefficient is small and statistically

insignificant. In the more recent cohort work in construction is almost as likely to lead to SUCCESS 1 as work in agriculture, fishing, and forestry. There is no clear or consistent pattern here. Indeed, the squared correlation coefficient for the numbers in Columns 3 and 4 is .049. That basically says that there is no statistical relationship between the numbers in Column 3 and those in Column 4.

Despite the many small t-statistics in columns 3 and 4, an F-test indicates that industry and occupation of early jobs affect future success in both cohorts. In both Column 3 and Column 4, one can reject at a .01 level the null hypothesis that all of the coefficients are zero.[23] Thus, initial jobs matter. However, the extent to which a specific industry or occupation affects future success apparently changes through time. There is no evidence here of a stable subset of initial jobs that lead to future success. Columns 5 and 6 in Table 16 as well as columns 1 - 4 in Table 17 yield similar conclusions for different definitions of success: although one can reject the null hypothesis that all of the coefficients in any one column are zero, the coefficients are quite unstable across cohorts.[24]

An initial objective of this research was to project how a changing industrial structure would affect future opportunities for upward mobility of academic underachievers. Given data on changes in the industrial composition of jobs through time, as well as information on industries that lead to upward mobility of academic underachievers, one could project the extent to which

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[23] The F-statistic for the column 3 test is 3.928; that for column 4 is 10.011).

[24] The squared correlation coefficient for the numbers in columns 5 and 6 of Table 16 is .122, for columns 1 and 2 of Table 17 is .012, and for columns 3 and 4 of Table 17 is .095.)

changes in the industrial composition of jobs alter opportunities for upward mobility for academic underachievers. In light of the results in Tables 16 and 17, that exercise has little merit. These tables essentially indicate that we can not identify industries that lead to upward mobility of academic underachievers. Not only is there a problem of imprecisely estimated coefficients, but the coefficients appear to be unstable through time. There is no reason to believe that jobs that once resulted in upward mobility will do the same in the future. One would have little confidence in projections based on such data.

To conclude, the results in this section are quite compatible with those in Section IV. That section concluded by asking the question, "Is there a set of jobs so fundamental to the upward mobility of academic underachievers that they should be subsidized or in some other way encouraged?" The answer was no. The evidence in this section reinforces that answer. Industries and occupations associated with upward mobility at one point in time cease to play that role at a later point in time. As such, there is no reason to believe that government will, at a given moment, be able to predict which set of jobs will lead to later success.

VI. Policy

Are there public policies that would help academic underachievers move toward greater economic security? In trying to answer this question, it is important to realize that governments are already heavily involved in this area. Young people enter the labor market with skills that are in large part shaped by the public school system. Moreover, there is considerable government involvement in adult training through subsidies to community

colleges and public universities, and through training programs like the Job Training Partnership Act. Finally, the types of jobs available in the economy are shaped by government tax and expenditure policy. For example, recent reductions in defense expenditures have eliminated many "good" blue collar jobs. The issue is not then whether governments should be involved, but rather what form of government intervention is most effective.

Government policy in this area can be thought of in terms of interventions on the supply and demand sides of the labor market. Supply side interventions affect the amount and mix of skills that workers bring to the labor market. Included here are education, training, and immigration policy. Demand side interventions affect employers and thereby the types of jobs offered in the economy. Examples of demand side interventions are technology and trade policy.

This section examines possible demand and supply side policies. It concludes that, from the perspective of promoting opportunities for academic underachievers, supply side interventions make the most sense. Demand side interventions often raise more problems than they solve. As indicated by the above evidence, it is not easy to identify early jobs that serve as paths to economic security for this population. Moreover, even if such jobs could be identified, demand side intervention may have side effects that adversely affect low skilled workers.

Rather, federal, state, and local governments should intervene on the supply side. They should pursue a policy of sharply reducing the supply of unskilled labor while expanding the supply of skilled labor. Not only will this have the beneficial effect of raising the wage paid to unskilled workers, but it will also force employers to either eliminate or restructure unskilled

jobs. As argued below, there are several ways in which governments in the U.S. could implement a supply side strategy. In particular,

-- Expand efforts at enhancing early education.

-- Introduce training vouchers for adults.

-- Sharply restrict immigration of unskilled workers into the country.

While supply side interventions should be emphasized, some demand side policies could be beneficial. In particular, unemployment insurance deserves attention. At present, unemployment insurance often effectively subsidizes volatile and temporary jobs. By changing the UI tax system and eliminating this subsidy, governments could encourage the development of more stable jobs.

A. The Supply Side.

Perhaps the least controversial way for governments to promote economic mobility is through policies that raise worker skill levels. At its simplest, the theory behind such policies is to help workers attain a higher skill level and thereby permit them to attain a higher standard of living. A more elaborate version of the theory contends that policies that move workers out of unskilled markets and into skilled markets have the beneficial effect of causing the wages of the unskilled to rise, ceteris paribus. Not only does this (a) improve the standard of living of those who remain in the unskilled labor market, but (b) it forces employers to either stop using unskilled labor or restructure jobs in ways that can make the unskilled more productive. This could involve additional capital, additional training, or alternative organization of work.

Of course, such policies also have costs. In order to raise skill levels, human and material resources must be allocated to the training

process. Moreover, since an increase in the supply of skilled workers may reduce the wages in markets for skilled workers, some high wage workers may suffer a decline in well-being. Obviously, society must decide whether the benefits of such policies are worth the costs.

In a sense, however, that decision has already been made. The federal, state, and local governments are deeply involved in training programs that seek to raise the skill levels of adult academic underachievers. Examples are vocational education programs, training programs that help dropouts gain a high school degree, and job training programs. A rather extensive body of research indicates that these programs are frequently ineffective.[25] This is especially true for school dropouts. One project that provided intensive training to dropouts and used an experimental design to evaluate the effect of the training, found that trainees often did no better than the control group.[26] Thus, the issue is not one of whether the government should train academic underachievers. That decision has already been made. Rather the issue is how to do this most effectively.

Two proposals deserve serious consideration. First, the best way to minimize the number of unskilled young adults in the population is to enhance early education. In comparison to adult education, early education is both effective and inexpensive. Second, instead of targeting training services at academically unskilled young adults, the U.S. should move toward universal

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[25] See Bassi and Ashenfelter (1986) and Osterman (1992) for useful reviews of the literature.

[26] See Summary and Findings of the National Supported Work Demonstration (1980). An important exception is Job Corps. There is substantial evidence that the benefits of this rather expensive residential program exceed the costs. Yet, according to Osterman (1992), p. 23, recent efforts at operating a program quite similar to Job Corps (called JobStart) on a larger scale were unsuccessful.

vouchers for post-high school education.

Enhanced Early Education.

It is inefficient to allocate scarce resources to programs that provide adults with basic reading and mathematic skills. The same skills can be taught with equal or greater effect at younger ages when the opportunity cost of student time is lower.[27] At younger ages it is often possible to identify and deal with problems in ways that do not stigmatize or isolate. Indeed, compensatory education programs seem to be most effective at young ages.[28] In addition, basic reading and mathematic knowledge opens the door to other skills (e.g., science or algebra), that are part of the portfolio of skills needed in an increasingly technological workplace. It is inefficient for elementary school students to be in a position where, because of weak reading and mathematics skills, they can not open those doors. Finally, students who master basic reading and mathematics when young may be more likely to remain motivated and in school.

Of course, improved early education can not completely eliminate the problem of people who reach adulthood without adequate academic skills. There will always be some ineffective schools or teachers; some teenagers will drop out of school because of pregnancy or adolescent rebellion; some people will graduate from high school without basic skills. Adult high schools provide a potential way to address this problem.

Adult high schools can help dropouts complete their high school

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[27] See Murnane and Levy (1992) and Glazer (1987) for thoughtful discussions of specific changes that could accomplish this.

[28] See Glazer (1987), page 172.

education. These should be financed by governments and tuition-free. They should offer a curriculum similar to that available in a conventional high school. They should be demanding -- not simply help students pass a test like the GED.[29] In order to insure access, these adult high schools could be organized as night schools. Yet, no matter how well adapted to the circumstances of adult students, such schools may not be very effective in the sense that benefits exceed costs. Some students may simply refuse to enroll, while other students may enroll and fail. There would probably be a stigma associated with graduation from such schools. To repeat, the way to minimize the number of people who reach adulthood without academic skills is to enhance early education.

Vouchers for Post-High School Training

For those who complete high school, the government should offer universal vouchers for post-high school education. Citing James Tobin, Robert Haveman has proposed a "universal personal capital account for youth." This would involve a "grant of, say, $20,000 to be given to all youth at age eighteen, to be used for human capital investments of their choice."[30] The monies could be spent at universities or colleges as well government certified training and apprenticeship programs. Monies not spent on human capital investments would earn interest and become available at a normal age of retirement.

This idea has merit. It has the virtue of letting individuals decide

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[29] What evidence we have on the GED (generalized equivalency diploma) suggests that it is of little value. See Cameron and Heckman, 1993.

[30] Haveman (1988), 169.

how they can best benefit from post-high school training. Unlike proposals for vouchers at the elementary or high school level, there is nothing revolutionary about individual choice over post-high school training. In the U.S. most decisions about human capital investment after high school are made by young adults and their families. While they may make mistakes, it is not clear that governments can do any better. Indeed, one could argue that we already have a form of education voucher for young adults. Veterans benefits can be used to finance education in a university, community college, or apprenticeship.

Another virtue of this idea is that it is universal. All young people would have an opportunity to use these monies, regardless of their high school academic performance or family background. Of course, young people from poor families with limited access to loans and savings would reap a particular benefits from this voucher. The voucher would open up opportunities that might not be otherwise available to them. However, unlike present training programs that are targeted on the disadvantaged, there would be no stigma associated with using this voucher. Everyone would have an opportunity to use the voucher. If a young person approached an employer about an apprenticeship that is financed out of this capital account, the employer would have no reason to view this person as somehow disadvantaged.

Furthermore, this voucher plan would force a market test upon providers of training. This contrasts with the current situation where governments paternalistically decide on the quality and quantity of training offered to what is essentially a captive population of trainees. With a voucher, organizations that provide training would have to provide effective training in the sense that some fraction of the trainees actually obtain good jobs.

One can imagine a government or "Consumer Reports" type organization collecting and disseminating information on program success rates.

Of course, these vouchers are no panacea. Since there would be a potential for fraud and abuse by providers of training, the federal government may have to regulate the market for providers through some form of certification program. Moreover, as pointed out by Haveman, assignment of the account to private creditors would have to be prohibited. Finally, there is a risk that the vouchers would encourage people to drop out of high school and substitute alternative forms of training for high school training. In a world where basic academic skills are increasingly important, that would be undesirable. In order to maintain incentives, the vouchers should only be available to high school graduates.

Restrict Immigration of Unskilled Workers

Finally, as part of a strategy for reducing the supply of unskilled workers, governments should move to sharply restrict immigration of the unskilled. Between 1981 and 1987 more than four million legal immigrants entered the United States. Rates of legal immigration and the ratio of immigrants to native births are equal to or above those that existed at the turn of the century.[31] Moreover, this legal flow is increasingly a flow of unskilled workers. All indications are that the flow of illegal immigrants is both substantial and even less skilled than the legal flow.[32] Thus, current immigration policy tends to expand the supply of unskilled workers.

Policies should be implemented that restrict this influx of unskilled

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[31] Borjas (1990), page 6.

[32] Borjas (1990), Chapter 4.

workers. In evaluating legal entrants, greater emphasis should be placed on immigrant skill and education and less on family ties. In addition, greater efforts should be made to reduce illegal entry. "To do this, it will be necessary to adopt a counterfeit-proof identification system; to tighten restrictions on the use of fraudulent documents; to enhance border patrol activities; to devote more funds and manpower to the enforcement of employer sanctions; and to place fines on illegal immigrants who are apprehended and found to be employed."[33] In the long run, such policies would have the beneficial effect of reducing the supply of unskilled adults.

B. The Demand side.

For purposes of increasing the job opportunities confronting academic underachievers, one can reasonably question whether supply side interventions are sufficient. Suppose, for example, that all members of an age cohort increased their skill level. There would still be a group with comparatively low skills who would end up in the lesser jobs. Unless those lesser jobs improve in quality, nothing is gained. Alternatively, increases in the supply of skilled workers may simply drive down wages and not greatly increase well-being. If a nation increases its stock of trained human capital, is it plausible to assume that a new and better mix of jobs will suddenly appear?

From this perspective government intervention on the demand (employer) side of the labor market makes sense. Governments can formulate trade, tax, and expenditure policies so as to encourage stable jobs with high wages.[34] A

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[33] Briggs (1992), page 32.

[34] See Bulow and Summers (1986) for a theoretical model where such policies improve economic welfare.

range of policies are possible.

Unemployment insurance provides a good example of a demand side policy intervention that could discourage temporary, high-turnover jobs. The present U.S. unemployment insurance system arguably subsidizes such jobs. Unemployment insurance is financed through an "experience rated" tax on employers, whereby employers that produce more layoffs (and associated unemployment insurance expenditures) are supposed to pay higher taxes. A large body of evidence indicates that the tax is imperfect in the sense that employers bear less than the full cost of an additional layoff, i.e., the unemployment insurance received by a laid off worker exceeds the extra taxes paid by the employer. For example, over 70% of the workers in South Carolina are employed by firms that bear less than the full cost of an additional layoff, and most of these workers are in firms that pay nothing for an additional layoff.[35] Such policies result in both more layoffs and a subsidy to firms and industries with high-turnover jobs. Indeed, recent evidence suggests that state UI policies influence the industrial composition of states, causing a shift of employment away from more stable jobs in the service industry and into more volatile jobs in the construction industry.[36] A reasonable demand side intervention would be to move toward more perfect experience rating.

One can, of course, go further. America's trading partners often pursue policies that amount to demand side interventions aimed at increasing the availability of "good" jobs. Japan, for example, uses trade and industrial policy to encourage growth of capital intensive manufacturing firms, which in

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[35] Anderson and Meyer (1993), page S82.

[36] Deere (1991).

turn provide long-term jobs with extensive training and comparatively high wages. The German government sharply constrains the conditions under which employers can dismiss workers, while essentially subsidizing alternatives to layoffs (e.g., early retirement or payment of unemployment insurance for a shortened work week).[37] In France the government not only sets high minimum wages, but also frequently imposes nationally bargained wage settlements on non-union firms.

Would adoption of such policies in the U.S. have a positive effect on academic underachievers? There would seem to be good grounds for skepticism. First, while such policies may lead to better jobs for the average worker, they may actually harm the least skilled. For example, high minimum wages can lead to reduced job opportunities and unemployment for unskilled workers. Similarly, job protection policies like Germany's can cause employers to be particularly cautious about hiring unskilled and inexperienced workers.

> ...Given uncertainty, dismissal protection may likewise act as a disincentive toward hiring unskilled labor even in the absence of structural change. If firing costs are considerable, firms will prefer hiring such job applicants whose higher marginal value product permits a longer-term employment perspective even through bad times, thereby avoiding the incidence of dismissal costs altogether.[38]

Second, there is reason to worry that job protection policies would lead to less flexible labor markets. Such policies cause employers to react more slowly to changes in demand, and thereby contribute to more serious recessions. Although this theoretical argument does not enjoy solid empirical support, it makes one cautious about government imposed job protection

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[37] Abraham and Houseman, (1993) Chapter 2

[38] Buechtemann (1993), page 11.

policies.

Third, for purposes of helping academic underachievers, a Japanese style industrial and technology policy is not particularly attractive. In a world where industries must quickly respond to an ever-changing international marketplace, such policies run the risk of creating long-run allocative inefficiencies. Moreover, even if the U.S. government could operate an effective industrial policy, it is not clear that this would help academic underachievers. The above empirical work casts doubt on the idea of government encouraging specific industries in order to provide academic underachievers with a path to economic security. And a policy that creates good jobs by promoting industry "winners" and culling industry "losers" may not create jobs for unskilled workers. Indeed, consider the 1980s defense build-up as an example of a government policy that created "good" jobs. Expansion of firms like Grumman or Boeing, or development of high-technology weapons, tends to involve skilled workers and create high wage jobs. Although the defense build up may have had an indirect effect on academic underachievers during the 1980s, there is no reason to believe that the effect was significant. It certainly was not sufficient to check the declining fortunes of unskilled workers.

To conclude, if governments are to help academic underachievers cope with a world of limited employment opportunities, then the principal place to intervene is on the supply side. Governments should actively pursue a policy of sharply reducing the supply of unskilled workers. This can be done through training vouchers, enhanced early education, and immigration reform. The primary beneficiaries of such policies will be academic underachievers who are willing and able to obtain skills. Such policies will, however, also

indirectly benefit those who are unable or unwilling to obtain skills. By reducing the surplus of unskilled workers, such a policy will enhance unskilled wage and employment opportunities.

VII. Conclusion

This paper began by asking what will happen to young people with low reading and mathematical test scores. Are such people consigned to a life of unemployment and low wages, or are there paths by which some fraction will find a degree of financial security? The empirical work sought to determine whether such paths exist. The results were not very encouraging. Although some academic underachievers did attain a degree of financial security, they evidently took many different paths to that end. One can not point to a set of early jobs or early training experiences that provide an "elevator" to higher wages and full employment.

Although government should help academic underachievers, the evidence presented here does not provide a strong basis for intervention on the demand side of the labor market. Rather, the best way to help these young unskilled workers is through supply side interventions. Enhanced early education, universal training vouchers for adults, and limitations on immigration of unskilled workers can promote an environment where academic underachievers have at least some opportunity for upward mobility.

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Table 1
Fraction of all Jobs that Require a College Degree
1960, 1976, 1986, 2000

Year	Require College Degree	Do not Require College Degree
1960	15.3%	84.5%
1976	21.7	80.0
1986	25.1	74.8
2000	27.3	72.7

Source: Rumberger (1981) and Mishel and Teixeira (1990) analyses of the Occupational Outlook Handbook.

Table 2

Annual Rate of Change in Skills Levels
Due to Changing Employment Patterns, 1960-1985[a]

	Period		
Job Skill	1960-70	1970-80	1980-85
Substantive Complexity	0.69%	0.46%	0.28%
General Educational Development	0.36	0.22	0.13
Interactive Skills	0.26	0.22	0.03
Motor Skills	0.07	-0.14	-0.04

[a] From Howell and Wolff (1991), Table 3, p. 491.

General Educational Development. A DOT index of mathematical, language and reasoning skills.

Substantive Complexity. A factor analytic index based on DOT measures of required verbal and numerical aptitude, specific vocational training time, temperament for nonrepetitive activities, and temperament for activities of an abstract and creative nature.

Interactive Skills. A DOT index of the extent to which a job requires "people" skills. These range from "high" skills of mentoring and negotiating to "low" skills of serving and taking instructions.

Motor Skills. A factor analytic index based on DOT measures of required motor coordination, manual dexterity, and ability to set up machines and perform precision manual work.

Table 3
EMPLOYMENT DISTRIBUTION BY EXPERIENCE, EDUCATION, SEX
FOR 1973, 1979, AND 1988[a]

	All Experience Levels			0 - 9 Years Experience		
	1973	1979	1988	1973	1979	1988
Men						
HS Dropout	18%	12%	8%	8%	7%	5%
HS Graduate	24	23	21	24	23	21
Some College	9	11	11	13	12	12
College Grad	10	12	14	13	14	14
Women						
HS Dropout	9	7	5	4	3	3
HS Graduate	19	20	21	20	20	19
Some College	6	8	11	9	11	13
College Grad	6	7	10	8	10	14
Total	100%	100%	100%	100%	100%	100%

[a] Derived from Bound and Johnson (1992), Table 1

Table 4

Percent of 17-Year Old High School Students Reading at or above Selected Levels, by Race, 1970-1988

Reading skill level	1970-71	1974-75	1979-80	1983-84	1987-88
"Basic"					
White	97.7	98.6	99.1	99.1	99.5
Black	82.0	81.1	84.9	95.8	97.1
"Intermediate"					
White	83.5	86.1	87.3	98.9	89.3
Black	39.7	42.4	43.9	66.0	76.0
"Adept"					
White	43.3	44.0	44.1	46.3	46.3
Black	7.5	7.9	6.7	16.3	25.8
"Advanced"					
White	7.5	7.0	6.3	6.5	5.7
Black	.3	.3	.2	.9	1.9

Source: Ina Mullis and Lunn Jenkins, The Reading Report Card, 1971-88 (Princeton: Educational Testing Service, 1990), pp. 63-64 as reproduced in Jencks (1992), p. 178.

Table 5

Percent of 17-Year-Old High School Students with Math Skills or above Selected Levels, by Race, 1970-1988

Math skill level	1977-78	1981-82	1985-86
"Basic Operations and Beginning Problem Solving"			
White	95.8	96.3	98.3
Black	70.0	75.3	86.0
"Moderately Complex Procedures and Reasoning"			
White	57.3	54.5	58.0
Black	18.0	17.3	21.7
"Multi-Step Problem Solving and Algebra"			
White	8.6	6.3	7.6
Black	.4	.6	.3

Source: John Dossey, Ina Mullis, Mary Lindquist, and Donald Chambers, The Mathematics Report Card (Princeton: Educational Testing Service, 1988), pp. 141-142 as reproduced in Jencks (1992), p. 178.

Table 6

Estimated Average Hourly Wages (In 1988 Dollars)
By Experience, Education, Sex
For 1973, 1979, and 1988[a]

	All Experience Levels			0 - 9 Years Experience		
	1973	1979	1988	1973	1979	1988
Men						
HS Dropout	$10.48	$9.78	$8.31	$7.52	$7.20	$5.54
HS Graduate	12.16	11.34	10.15	9.69	8.96	7.31
Some College	13.08	12.29	11.60	10.61	9.89	8.51
College Grad	15.62	14.27	14.81	12.69	11.38	12.16
Women						
HS Dropout	6.29	6.22	5.64	5.80	5.48	4.82
HS Graduate	7.88	7.56	7.34	7.14	6.87	6.18
Some College	9.30	8.48	8.77	8.91	7.79	7.52
College Grad	11.18	9.94	10.81	10.42	9.29	10.00

[a] Derived from Bound and Johnson (1992), Table 1. Columns 1 - 3 are computed using their employment data as weights.

Table 7

Training Paths Pursued by Nongraduate Males Who Were 18-19 in 1966
(NLS Young Men)

Training Path in 1966 - 1971	Number		Percent	
Completed More Years of Schooling	129,366		30%	
And Obtained No Other Training		95,316		22%
And Obtained Other Training				
Provided by Employer		18,102		4%
Miscellaneous		15,948		4%
Did Not Complete More Schooling	296,986		70%	
And Obtained No Other Training		217,650		51%
And Obtained Other Training				
Provided by Employer		37,227		9%
Miscellaneous		42,109		10%
Total	426,352	426,352	100%	100%
Missing	261,557			

Table 8

Training Paths Pursued by Nongraduate Males Who Were 18-19 in 1966
and Who, by 1978-1981, Had Attained SUCCESS 2, i.e.,
Earnings Above the Poverty Line and Full Time Work
(NLS Young Men)

Training Path 1966 - 1971	Number		Percent	
Completed More Years of Schooling	89,095		34%	
And Obtained No Other Training		56,547		21%
And Obtained Other Training				
Provided by Employer		18,102		7%
Miscellaneous		14,447		5%
Did Not Complete More Schooling	176,395		66%	
And Obtained No Other Training		132,164		50%
And Obtained Other Training				
Provided by Employer		18,668		7%
Miscellaneous		25,562		10%
Total	265,490	265,490	100%	100%

Table 9

Success Rates for Alternative Training Paths,
Nongraduate Males who were 18-19 in 1966
(NLS Young Men)

Training Path 1966 - 1971	SUCCESS 2	SUCCESS 1	SUCCESS 3
Completed More Years of Schooling	69%	84%	29%
And Obtained No Other Training	59%	80%	25%
And Obtained Other Training Provided by Employer	100%	100%	52%
Miscellaneous	91%	91%	21%
Did Not Complete More Schooling	59%	72%	10%
And Obtained No Other Training	61%	70%	8%
And Obtained Other Training Provided by Employer	50%	82%	22%
Miscellaneous	61%	73%	12%
Total	62%	75%	16%

SUCCESS 1: Annual Earnings in excess of the U.S. government poverty line for a family of four.

SUCCESS 2: Annual weeks worked greater than or equal to 48 and annual earnings in excess of the U.S. government poverty line for a family of four.

SUCCESS 3: Annual Earnings in excess of $20,000 in 1980.

Table 10

Linear Regression Models of the Probability of SUCCESS 1
Estimated in a Nongraduate Subsample of the 1966 NLS Young Men Data
(t-statistics in parentheses)

	(1)	(2)	(3)	(4)	(5)
Intercept	0.605	-0.155	0.173	0.086	-0.102
	(12.2)	(0.5)	(1.0)	(0.5)	(0.2)
Completed More Years of School & Obtained No Other Training	0.214	0.120	0.163	0.081	0.121
	(2.3)	(1.1)	(2.8)	(1.2)	(1.2)
Completed More Years of School & Obtained Employer Provided Training	0.395	0.209	0.137	0.082	0.146
	(1.9)	(0.9)	(0.9)	(0.5)	(0.7)
Completed More Years of School & Obtained Miscellaneous Training	0.229	0.144	0.025	-0.021	0.103
	(1.2)	(0.7)	(0.2)	(0.2)	(0.5)
Did Not Complete More Years of School but Obtained Employer Provided Training	0.088	0.034	0.154	0.124	0.013
	(0.6)	(0.2)	(1.7)	(1.3)	(0.1)
Did Not Complete More Years of School but Obtained Miscellaneous Training	0.062	-0.048	-0.012	-0.036	-0.048
	(0.4)	(0.3)	(0.1)	(0.4)	(0.3)
White	--	0.094	0.183	0.149	-0.051
		(1.1)	(3.8)	(2.9)	(0.4)
Disabled in 1966	--	-0.098	-0.177	-0.132	-0.168
		(0.8)	(2.3)	(1.7)	(1.0)
Highest Grade Completed at Age 19	--	0.054	0.037	0.044	0.090
		(2.2)	(2.6)	(2.9)	(1.7)
Resided in an SMSA in 1966	--	0.064	0.040	0.070	-0.085
		(0.7)	(0.8)	(1.3)	(0.9)
Age = 19	--	0.060	0.060	0.051	0.027
		(0.8)	(0.9)	(0.7)	(0.2)
Age = 18	--	--	0.014	-0.020	-0.025
			(0.2)	(0.3)	(0.2)

Age = 17	--	--	0.027 (0.5)	0.011 (0.2)	-0.080 (0.8)
Some Active Military Duty Between 1966 & 1971	--	--	--	0.252 (1.6)	--
Months of Active Military Duty Between 1966 & 1971	--	--	--	-0.004 (0.8)	--
Mother's Education	--	--	--	--	0.000 (0.0)
Father's Education	--	--	--	--	0.015 (1.0)
I.Q.	--	--	--	--	0.000 (0.0)
Region Variables Included?	No	Yes	Yes	Yes	Yes
Number of Observations	155	155	405	360	138
R-Square	0.053	0.085	0.179	0.192	0.158

Table 11
Industry and Occupation Coefficients in
Linear Regression Models of the Probability of Success
Estimated in a Nongraduate Subsample of the 1966 NLS Young Men
(t-statistics in parentheses)

	Dependent Variable:				
	SUCCESS 1	SUCCESS 1	SUCCESS 2	SUCCESS 3	Log(Annual Earnings)
Industry	(1)	(2)	(3)	(4)	(5)
Construction	0.264	0.204	0.466	0.609	0.275
	(0.4)	(0.6)	(1.2)	(1.9)	(0.4)
Mining	0.143	0.136	0.551	0.169	0.103
	(0.4)	(0.7)	(2.2)	(0.9)	(0.3)
Durable Goods Manufacturing	0.044	0.140	0.536	0.170	0.195
	(0.1)	(0.7)	(2.1)	(0.9)	(0.5)
Nondurable Goods Manufacturing	0.089	0.128	0.524	0.179	0.169
	(0.3)	(0.6)	(2.0)	(0.9)	(0.4)
Transport, Communications, Utilities	0.032	0.121	0.665	0.163	0.159
	(0.1)	(0.6)	(2.5)	(0.8)	(0.4)
Wholesale and Retail Trade	0.180	0.102	0.615	0.088	0.102
	(0.5)	(0.5)	(2.4)	(0.5)	(0.3)
Finance, Insurance, and Real Estate	-0.541	-0.200	0.439	0.107	-0.206
	(1.2)	(0.8)	(1.4)	(0.5)	(0.5)
Services	-0.157	0.069	0.623	0.124	0.057
	(0.4)	(0.3)	(2.4)	(0.6)	(0.1)
Public Administration	0.034	-0.095	0.570	0.191	-0.103
	(0.0)	(0.3)	(1.6)	(0.7)	(0.2)
Industry Missing	0.119	0.357	0.808	0.317	0.697
	(0.3)	(1.5)	(2.7)	(1.4)	(1.5)
Occupation					
Farmers and Farm Managers	-0.187	-0.360	0.159	-0.207	-0.475
	(0.2)	(1.3)	(0.5)	(0.8)	(0.9)
Managers, Officials and Proprietors	0.099	-0.080	-0.219	0.157	0.265
	(0.2)	(0.5)	(1.1)	(1.0)	(0.9)

Clerical and Kindred	0.415	0.168	0.011	-0.092	0.354
	(0.8)	(1.2)	(0.1)	(0.7)	(1.4)
Sales	-0.309	-0.078	-0.034	0.110	0.259
	(0.5)	(0.5)	(0.2)	(0.6)	(0.8)
Craft, Foremen, and Kindred	0.235	0.060	-0.134	0.145	0.318
	(0.5)	(0.5)	(0.9)	(1.2)	(1.4)
Operatives and Kindred	0.022	-0.006	-0.131	-0.063	0.120
	(0.1)	(0.1)	(0.9)	(0.5)	(0.5)
Service	-0.305	-0.158	-0.282	-0.097	-0.101
	(0.6)	(1.1)	(1.6)	(0.7)	(0.4)
Farm Labor & Foremen	0.035	0.013	0.292	0.111	-0.228
	(0.1)	(0.1)	(0.9)	(0.4)	(0.5)
Laborers, Except Farm	-0.097	-0.078	-0.261	-0.122	-0.065
	(0.2)	(0.6)	(1.7)	(1.0)	(0.3)
Occupation Missing	-0.618	-0.692	-0.730	-0.249	-1.453
	(1.3)	(4.0)	(3.5)	(1.5)	(4.3)
Number of Observations	246	772	748	772	748
R-SQUARE	0.291	0.213	0.154	0.149	0.212

Also included in Models were the following variables: Disabled in 1966, White, Age = 19, Age = 18, Age = 17, Active Military Duty Between 1966 and 1971, Months of Active Military Duty Between 1966 and 1971, Highest Grade Completed when Age 19, and Regional dummies, Resided in an SMSA in 1966.

Table 12

Training Paths Pursued by Nongraduate Males
Who Were Age 18-19 in 1966 and 1979

Training Path	1966-1971 Young Men Data	1979-1984 Youth Cohort Data
Completed More Years of Schooling	31%	26%
And Obtained No Other Training	25%	17%
And Obtained Other Training		
Provided by Employer	3%	1%
Miscellaneous	3%	8%
Did Not Complete More Schooling	69%	74%
And Obtained No Other Training	57%	66%
And Obtained Other Training		
Provided by Employer	5%	1%
Miscellaneous	7%	7%
Total	100%	100%
Total Observations (weighted)	419,789	1,138,426
Total Observations (unweighted)	252	585
Attrition rate (weighted)	39%	10%

Table 13

Success Rates based on SUCCESS 1 for Alternative Training Paths;
Nongraduate Males who were 18 - 19 in 1966 and 1979

Training Path	Fraction that Attain Success 1 1966 Young Men Data	 1979 Youth Cohort Data
Completed More Years of Schooling	88%	54%
And Obtained No Other Training	85%	52%
And Obtained Other Training		
Provided by Employer	100%	65%
Miscellaneous	100%	58%
Did Not Complete More Schooling	70%	57%
And Obtained No Other Training	73%	56%
And Obtained Other Training		
Provided by Employer	76%	81%
Miscellaneous	41%	59%
Total	75%	56%

Table 14

Success Rates based on SUCCESS 2 for Alternative Training Paths;
Nongraduate Males who were 18 - 19 in 1966 and 1979

Training Path	Fraction that Attain Success 2 1966 Young Men Data	 1979 Youth Cohort Data
Completed More Years of Schooling	61%	44%
And Obtained No Other Training	56%	42%
And Obtained Other Training		
Provided by Employer	74%	57%
Miscellaneous	100%	48%
Did Not Complete More Schooling	53%	44%
And Obtained No Other Training	57%	44%
And Obtained Other Training		
Provided by Employer	69%	59%
Miscellaneous	4%	43%
Total	56%	44%

Table 15

Sample Means and Linear Regression Models of the Probability of SUCCESS 1 Estimated in a Nongraduate Subsample of the 1966 NLS Young Male and the 1979 NLS Youth Cohort (t-statistics in parentheses)

	Sample Means		Regressions	
	1966	1979	1966	1979
Intercept	--	--	0.305 (1.8)	-0.144 (1.2)
Completed More Years of School & Obtained No Other Training	0.205	0.136	0.046 (0.7)	0.063 (1.4)
Completed More Years of School & Obtained Employer Provided Training	0.020	0.007	0.069 (0.4)	0.270 (1.6)
Completed More Years of School & Obtained Miscellaneous Training	0.022	0.063	0.018 (0.1)	0.033 (0.5)
Did Not Complete More Years of School but Obtained Employer Provided Training	0.045	0.022	0.029 (0.3)	0.205 (2.0)
Did Not Complete More Years of School but Obtained Miscellaneous Training	0.051	0.101	-0.220 (2.0)	0.070 (1.4)
White	0.563	0.606	0.275 (5.3)	0.156 (5.0)
Disabled when the Panel Began	0.103	0.050	-0.105 (1.3)	0.015 (0.2)
Highest Grade Completed at Age 19	9.482	9.827	0.027 (1.9)	0.051 (4.5)
Resided in an SMSA when the Panel Began	0.565	0.682	0.012 (0.2)	-0.056 (1.7)
Age = 19	0.174	0.207	0.093 (1.4)	0.010 (0.2)

Age = 18	0.201	0.276	0.037 (0.6)	0.037 (0.9)
Age = 17	0.277	0.245	0.020 (0.3)	-0.050 (1.2)
Some Active Military Duty in the First Five Years of the Panel	0.254	0.100	-0.176 (1.2)	0.001 (0.0)
Months of Active Military Duty in the First Five Year of the Panel	6.903	2.910	0.006 (1.1)	-0.003 (1.0)
North East	0.145	0.187	-0.151 (1.3)	0.157 (3.3)
North Central	0.176	0.204	-0.139 (1.3)	0.001 (0.0)
South	0.612	0.394	-0.095 (0.9)	0.086 (2.1)
West	0.067	0.197	--	--
Mother's Education	8.524	9.381	--	--
Father's Education	7.579	8.965	--	--
Number of Observations			401	1082
R-Square			0.121	0.069

Table 16
Industry and Occupation:
Sample Means and Regression Coefficients from Linear Regression Models of the Probability of SUCCESS 1 and SUCCESS 2.
Based on 1966 NLS Young Men and 1979 NLS Youth Data
(t-statistics in parentheses)

	Sample Means		SUCCESS 1		SUCCESS 2	
	1966	1979	1966	1979	1966	1979
Industry	(1)	(2)	(3)	(4)	(5)	(6)
Agriculture, Fishing and Forestry	0.060	0.042	--	--	--	--
Construction	0.004	0.085	0.937 (2.2)	0.031 (0.2)	1.575 (3.2)	0.029 (0.2)
Mining	0.101	0.097	0.205 (1.0)	-0.001 (0.0)	0.579 (2.4)	0.033 (0.2)
Durable Goods Manufacturing	0.199	0.036	0.207 (1.0)	-0.147 (0.9)	0.544 (2.3)	-0.013 (0.1)
Nondurable Goods Manufacturing	0.095	0.022 (1.1)	0.230 (0.2)	0.027 (3.1)	0.767 (0.2)	0.039
Transport, Communications, Utilities	0.050	0.029	0.255 (1.2)	-0.046 (0.3)	0.758 (3.0)	0.008 (0.0)
Wholesale and Retail Trade	0.167	0.192	0.309 (1.5)	-0.082 (0.6)	0.807 (3.3)	-0.012 (0.1)
Finance, Insurance, and Real Estate	0.014	0.009	0.226 (0.9)	-0.039 (0.2)	0.609 (2.0)	-0.183 (0.7)
Services	0.078	0.118	0.122 (0.6)	-0.194 (1.3)	0.601 (2.4)	-0.139 (0.9)
Public Administration	0.010	0.016	0.354 (1.1)	-0.250 (1.2)	0.959 (2.6)	-0.028 (0.1)
Industry Missing	0.223	0.353	0.410 (1.6)	-0.246 (0.4)	1.133 (3.8)	-0.040 (0.1)
Occupation						
Professional	0.026	0.014	--	--	--	--
Farmers and Farm Managers	0.010	0.001	-0.083 (0.3)	0.488 (0.8)	0.521 (1.5)	-0.012 (0.0)

Managers, Officials, and Proprietors	0.024	0.015	0.034 (0.2)	0.266 (1.2)	-0.067 (0.3)	0.383 (1.7)
Clerical and Kindred	0.058	0.046	0.060 (0.4)	0.125 (0.7)	-0.079 (0.4)	0.127 (0.7)
Sales	0.023	0.020	-0.126 (0.6)	-0.190 (1.0)	-0.064 (0.3)	-0.386 (1.9)
Craft, Foreman, and Kindred	0.133	0.115	0.130 (0.9)	0.084 (0.5)	0.029 (0.2)	0.087 (0.6)
Operatives and	0.262	0.172	0.008 (0.1)	0.002 (0.0)	-0.110 (0.7)	0.030 (0.2)
Service	0.049	0.108	-0.120 (0.7)	-0.166 (1.1)	-0.273 (1.3)	-0.134 (0.9)
Farm Labor and Foremen	0.038	0.025	-0.146 (0.5)	-0.338 (1.5)	0.363 (1.1)	-0.133 (0.6)
Laborers, Except Farm	0.124	0.132	-0.037 (0.3)	-0.303 (2.0)	-0.199 (1.1)	-0.208 (1.3)
Occupation Missing	0.252	0.352	-0.802 (4.2)	-0.383 (0.7)	-1.062 (4.7)	-0.487 (0.8)
Number of Observations	759	1779	654	1762	654	1762
R-Square			0.243	0.199	0.208	0.180

Estimated in NLS Young Men and NLS Youth Cohort samples of male high school graduates and nongraduates who did not complete additional formal education after their 19th birthday. Also included in models were the following variables: Disabled when the Panel Began, White, Age = 19, Age = 18, Age = 17, Some Active Military Duty in the First Five Years of the Panel, Months of Active Military Duty in the First Five Years of the Panel, Highest Grade Completed when Age 19, Resided in an SMSA when the Panel Began, and Regional dummies.

Table 17
Industry and Occupation:
Sample Means and Regression Coefficients from Linear Regression Models of the Probability of SUCCESS 4 and Log (Annual Earnings).
Based on 1966 NLS Young Men and 1979 NLS Youth Data
(t-statistics in parentheses)

	SUCCESS 4		Log (Annual Earnings)	
	1966	1979	1966	1979
Industry	(1)	(2)	(3)	(4)
Construction	-0.079	0.249	0.354	0.616
	(0.2)	(2.1)	(0.5)	(2.0)
Mining	-0.036	0.169	0.151	0.442
	(0.2)	(1.4)	(0.4)	(1.4)
Durable Goods Manufacturing	-0.155	0.037	0.034	0.301
	(0.8)	(0.3)	(0.1)	(0.9)
Nondurable Goods Manufacturing	-0.054	0.310	0.150	0.550
	(0.3)	(2.2)	(0.4)	(1.5)
Transport, Communications, and Utilities	-0.014	0.501	0.209	0.667
	(0.1)	(3.6)	(0.6)	(1.9)
Wholesale and Retail Trade	-0.197	0.115	0.083	0.252
	(1.0)	(1.0)	(0.2)	(0.8)
Finance, Insurance, and Real Estate	-0.023	-0.061	0.188	0.088
	(0.1)	(0.3)	(0.4)	(0.2)
Services	-0.266	-0.057	-0.072	-0.013
	(1.2)	(0.5)	(0.2)	(0.0)
Public Administration	0.383	-0.082	0.512	-0.069
	(1.2)	(0.5)	(1.0)	(0.2)
Industry Missing	-0.114	-0.086	0.387	0.119
	(0.5)	(0.2)	(0.9)	(0.1)
Occupation				
Farmers and Farm Managers	-0.024	0.772	-0.296	1.897
	(0.1)	(1.6)	(0.6)	(1.5)
Managers, Officials and Proprietors	0.349	0.323	0.636	0.364
	(1.8)	(1.8)	(1.9)	(0.8)

Clerical and Kindred	0.005	-0.241	0.220	-0.154
	(0.0)	(1.7)	(0.8)	(0.4)
Sales	0.103	-0.078	0.107	-0.131
	(0.5)	(0.5)	(0.3)	(0.3)
Craft, Foremen, and Kindred	0.115	-0.069	0.465	-0.068
	(0.8)	(0.6)	(1.9)	(0.2)
Operatives and Kindred	0.046	-0.239	0.350	-0.204
	(0.3)	(1.9)	(1.5)	(0.6)
Private Household	-0.067	-0.285	0.027	-0.428
	(0.4)	(2.3)	(0.1)	(1.3)
Farm Labor and Foremen	-0.154	-0.199	-0.374	-0.532
	(0.6)	(1.1)	(0.8)	(1.1)
Laborers, Except Farm	-0.073	-0.307	0.203	-0.799
	(0.5)	(2.4)	(0.8)	(2.4)
Occupation Missing	-0.136	-0.216	-1.303	-1.237
	(0.7)	(0.5)	(3.9)	(0.9)
Number of Occupations	654	1761	634	1615
R-Square	0.169	0.162	0.305	0.217

Estimated in NLS Young Men and NLS Youth Cohort samples of male high school graduates and nongraduates who did not complete additional formal education after their 19th birthday. Also included in models were the following variables: Disabled when the Panel Began, White, Age = 19, Age = 18, Age = 17, Some Active Military Duty in the First Five Years of the Panel, Months of Active Military Duty in the First Five Years of the Panel, Highest Grade Completed when Age 19, Resided in an SMSA when the Panel Began, and Regional dummies.