Is High School Employment Consumption or Investment?

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This study examines how high school employment affects future economic attainment. There is no indication that light to moderate job commitments ever have a detrimental effect; instead, hours worked during the senior grade are positively correlated with future earnings, fringe benefits, and occupational status. These gains occur even though employed seniors attain slightly less education than their counterparts. The results are robust across a variety of specifications and suggest that student employment increases net investments in human capital particularly toward the end of high school and for females.

Several prestigious commissions studying the problems of adolescents during the middle of the 1970s (e.g., National Commission on the Reform of Secondary Education 1973; President's Science Advisory Committee 1974; National Panel on High Schools and Adolescent Education 1975b) reached the common conclusion that additional early work experience would foster the development of personal responsibility, smooth the transition from youth to adulthood, and improve educational performance and occupational attainment. Shortly thereafter, a number of federal ini-

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tiatives (e.g., the Career Education Incentive Act of 1977) were passed with the goal of expanding the employment experience of youths.

These recommendations were made in the absence of hard empirical evidence that increased job-holding causes or even is correlated with favorable outcomes. Economic theory also fails to provide unambiguous predictions concerning the efficacy of youth employment. For example, time devoted to jobs could detract from potentially more beneficial educational investments in human capital. Conversely, the employment might provide skills and knowledge that increase future productivity and complement in-class learning.[1] Early work experience could also speed the process by which youths obtain positions providing a good match between job requirements and worker qualifications.[2]

Given these ambiguities, it is not surprising that a partial reappraisal of the benefits and costs of student employment occurred during the 1980s. The seminal research of Ellen Greenberger and Laurence Steinberg and their coauthors (Greenberger and Steinberg 1980; Greenberger, Steinberg, and Ruggiero 1982; Steinberg, Greenberger, Garduque, and McAuliffe 1982; Steinberg, Greenberger, Garduque, Ruggiero, and Vaux 1982) indicated generally negative outcomes, leading them to conclude that "working is more likely to interfere with than enhance schooling; promotes pseudomaturity rather than maturity; is associated in certain circumstances with higher, not lower, rates of delinquency and drug and alcohol use; and fosters cynical rather than respectful attitudes toward work" (Greenberger and Steinberg 1986, p. 235). Furthermore, recent research suggests that youths take jobs primarily to finance short-term personal consumption, rather than to contribute to household expenses or to save for college.[3]

These concerns have provided justification for recent efforts to strengthen enforcement of the child labor provisions in the Fair Labor Standards Act and for some states to place additional restrictions on the employment of minors.[4] Reflecting continuing uncertainty over

[1] Similarly, sociologists have suggested zero-sum models where employment is a diversion from academic pursuits and developmental models in which work experience furthers the total development of individuals.

[2] Topel and Ward (1992) provide evidence of frequent job changing for inexperienced workers and argue that this is an important source of wage and productivity increases.

[3] According to Yeatts (1994), 69% of working high school seniors in the 1982 High School and Beyond Survey report spending some of their earnings for car expenses, 97% to "buy things," but just 44% toward saving for college. However, the high proportion of consumption expenditures does not preclude the possibility that the employment increases human capital.

[4] See Brooks (1991) for a description of the enforcement efforts and Nelson (1994) for a summary of changes in state labor laws occurring during 1993.

the net benefits of job-holding by youths, however, other states have simultaneously liberalized child labor laws and the federal government enacted the School-to-Work Opportunities Act in 1994, which provides competitive grants to states developing programs emphasizing work-based learning, employer involvement, and paid work by students.

It is important to better understand the effects of high school work experience. Rates of employment by in-school youths are at historically high levels. If this job-holding has the negative effects sometimes attributed to it and, in particular, if it reduces educational attainment and academic performance, the elevated work propensities could explain a portion of the wage stagnation observed over the last 2 decades, especially among young workers without college educations. Conversely, if early labor market experience has favorable effects on future economic outcomes, the relatively low employment rates of nonwhite youths could contribute to racial earnings gaps observed later in life.

Previous research suffers from two fundamental shortcomings which make it difficult to determine the net benefits or costs of job-holding by students. First, most studies treat youth employment as exogenous, ignoring the selection process determining which youths work and, conditional upon doing so, how many hours they are employed. Indeed, much of the prior investigation has used unrepresentative samples and held constant few, if any, individual characteristics. Second, analysts have focused upon educational achievement and employment outcomes shortly after the completion of high school but have obtained little information on long-run labor market success.

Using data from the National Longitudinal Survey of Youth (NLSY), this article improves on prior research in both areas. Several strategies are used to account for differences between workers and nonworkers. These entail controlling for an unusually comprehensive set of background characteristics, examining whether reduced form estimates are biased by the potential endogeneity of high school employment, and testing the robustness of key results to changes in samples and specifications. The dependent variables are employment consequences 6–9 years after the scheduled date of high school graduation, thus providing the best available information on long-term effects of the student job-holding. This study examines a diverse set of economic outcomes and utilizes better information on high school employment than has previously been available. The analysis focuses upon the number of hours worked per week in high school, with considerable attention paid to sex differences in the effects of student job-holding. Examining the role of job characteristics, racial differences, or college

employment is beyond the scope of this investigation, however, and is reserved for future research.[5]

The analysis reveals no evidence of detrimental effects of low to moderate amounts of student employment. To the contrary, job-holding in the senior year is associated with substantially elevated future economic attainment, whether the latter is measured by earnings, wages, total compensation, occupational status, or the receipt of fringe benefits. These results are robust across a variety of specifications and sample selection criteria and strongly suggest that employment plays an important developmental role for students as they approach the end of high school. Larger benefits of short to moderate work hours are observed for females than males, and the gains to both sexes occur despite a modest negative predicted effect on the amount of education ultimately received.

I. Previous Research

The effects of high school employment have been widely studied since the late 1970s. Most frequently, researchers have examined the effect of student work on academic performance as measured by grades, test scores, or school completion rates. Employment probabilities and wages in the period shortly following the end of formal education have also received some attention.[6] Samples, time periods, and study methodologies vary widely. The key findings of previous research are summarized in table 1 and briefly discussed below.

There is currently no consensus on whether student employment improves or worsens school performance, although the data do suggest that any beneficial effects are maximized at low or intermediate hours of work, while harmful effects are most likely for heavy job commitments. For example, Barone (1993), Greenberger and Steinberg (1980), Greenberger et al. (1982), Mortimer and Finch (1986), Steinberg and Dornbusch (1991), and Steinberg, Fegley, and Dornbusch (1993) argue that high school employment is associated with lower grade point averages. Conversely, Gade and Peterson (1980), Meyer and Wise (1982), Schill, McCartin, and Meyer (1985), Lillydahl (1990), and Turner (1994) detect either no effects or beneficial effects at moderate work hours.[7] Interest-

[5] See Greenberger et al. (1982), Greenberger and Steinberg (1986), Stern and Nakata (1989), and Stern et al. (1990) for discussion of differences in job characteristics.

[6] Researchers have also studied the effects of youth *unemployment* on future outcomes (e.g., see Ellwood 1982; Smith 1985).

[7] A similar lack of consensus is found in research on employment by college students. For instance, Paul (1982) uncovers negative effects of working, Hood, Craig, and Ferguson (1992) find the highest GPAs among students

ingly, D'Amico (1984) finds that, despite reducing the amount of time spent on studying and school activities, student employment correlates with higher class rank for white males (with no effect for females or minorities) and elevated rates of school completion and college attendance. This suggests that working students may allocate their time more efficiently than their counterparts.

The results pertaining to employment outcomes are more clear-cut. Work during high school is unambiguously associated with elevated rates of future job-holding and increased earnings (Stevenson 1978; Stephenson 1981; Meyer and Wise 1982; D'Amico 1984; Mortimer and Finch 1986; Stern and Nakata 1989; Marsh 1991). It is not obvious, however, whether these benefits represent permanent gains or transitory advantages, and some researchers have argued that work by youths improves initial outcomes but has a negative long-term effect by reducing investments in human capital. Virtually all previous studies have focused on the period immediately following school completion, making it difficult to infer lifecycle effects.[8]

Correlations between student employment and future outcomes could result from unobserved confounding factors, rather than being due to any causal effects of the work itself. Weiss (1988) argues that the earnings premium associated with high school graduation occurs because graduates possess ample endowments of unobservable traits that he groups under the rubric of "stick-to-itiveness." Using the same analogy, if students with low amounts of "stick-to-itiveness" are relatively likely to work (because they do not like school), then youth employment may be associated with unfavorable future outcomes, even in the absence of a causal effect.[9] Spurious correlation is likely to be particularly problematic when, as in many studies, only rudimentary controls for observable differences are included. These methodological problems are further aggravated when (nonrepresentative) convenience samples are used or

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employed 7–14 hours per week, and Ehrenberg and Sherman (1987) contrast positive effects of on-campus job-holding with negative effects of off-campus positions.

[8] Exceptions include Mortimer and Finch (1986) and Stevenson (1978), who utilize data from the 1960s and early 1970s and so provide little information on recent cohorts of students.

[9] Steinberg and Dornbusch (1991) and Steinberg et al. (1993) provide evidence showing that, compared to nonworkers, employed students had lower grades and educational expectations, spent less time studying, and were less engaged in school *even before they started working.* Some researchers (e.g., Meyer and Wise 1982; Lillydahl 1990) have used multiequation models or analysis of the time structure of residuals in an effort to separate causation from correlation. These attempts have met with limited success.

Table 1
Results of Previous Studies Examining the Effects of High School Employment

Author	Sample	"Effects" of Employment and Increased Work Hours	Comments
Barone (1993)	2,000 students from four upstate New York high schools.	Slightly lower GPAs, beyond a low work threshold.	Potentially nonrepresentative sample, no covariates.
D'Amico (1984); D'Amico and Baker (1984)	National Longitudinal Survey Youth Cohort (NLSY), 1979–82 interviews; high school students (in 1979).	Reduced study time and time spent in school activities. Positive effects on class rank for white males, no effect for other groups. Increased knowledge of work world for females. Decreased (increased) educational levels above (below) 20 hours per week of work. Lower unemployment rates and higher wages in first year out of high school (for noncollege bound).	Somewhat selected sample (e.g., class rank only available for respondents graduating high school by January 1991).
Gade and Peterson (1980)	351 10th grade students in two urban high schools in upper midwest.	Statistically insignificantly higher grades.	Small, possibly unrepresentative, samples.
Greenberger and Steinberg (1980); Greenberger, Steinberg, and Ruggiero (1982)	531 10th and 11th graders from 4 southern California high schools working in first jobs or who had never worked.	Greater absenteeism from school, lower GPAs, less time studying, lower educational expectations, more frequent delinquency, greater "business knowledge."	Unrepresentative sample, selection procedure introduces biases.
Lillydahl (1990)	Juniors and seniors not attending vocational schools from 1987 National Assessment of Economic Education.	Intermediate work levels (1–10 hours per week) associated with highest levels of academic achievement.	Simultaneous equation model is poorly described; specifications vary across outcome measures.

Marsh (1991)	High School and Beyond Survey (HSB), 1980–84 interviews.	Reduction in a wide variety of education outcome measures. Decrease in probability of unemployment 2 years after normal high school graduation date.	Attrition reduces sample size and could induce bias. Effects of work hours assumed to be linear.
Meyer and Wise (1982)	National Longitudinal Survey of the high school class of 1972, 1972–76 interviews, males only.	Increases in academic performance, weeks worked, and wage rates.	Relatively good controls for background characteristics.
Mortimer and Finch (1986)	Youth in Transition Study, 1966–74 interviews, 10th graders (in 1966).	Lower grades, academic self-esteem, educational, and occupational aspirations. Higher 1973 earnings and occupational attainment levels. Stronger effects at high work hours.	Data available for 5 years after normal high school graduation date. Effects of dropping out of high school not adequately accounted for.
Schill, McCartin, and Meyer (1985)	14–19-year-old students in Washington state taking classes required for high school graduation.	Higher GPAs, particularly at 1–20 hours of work.	No covariates controlled for. Probable confounding of unobserved differences in backgrounds.
Steel (1991)	NLSY, 1979–81 interviews, 17–18-year-olds (in 1979).	Future school enrollment rates raised (lowered) by moderate (high) work hours for whites. More negative effects for blacks. Subsequent weeks worked increased for whites; no effect for blacks, Hispanics.	Inclusion of out-of-school youths in sample biases analysis of future enrollment rates. Imprecise estimates for nonwhites.
Stephenson (1981)	National Longitudinal Survey (NLS) of Young Men, 1966–71 interviews.	Raises future wages, especially for full-time employment during high school.	Wages of nonworkers set to zero, rather than to potential earnings levels. Future wages could reflect continuation of high school jobs.
Stern and Nakata (1989)	NLSY, 1979–82 interviews, high school seniors who graduated high school but did not directly enroll in college.	Higher hourly earnings and less unemployment after high school graduation, particularly when student employment required complex dealings with people, things, or data.	Relatively few covariates controlled for.

Stevenson (1978)	NLS young men and young women. 16–19-year-olds in initial survey year and followed for 7 years.	High employment rates and earnings in later years.	Few covariates controlled for and some (e.g., labor market knowlege) may be endogenous.
Steinberg and Dornbusch (1991); Steinberg, Fegley, and Dornbusch (1993)	10th–12th graders from six high schools in northern California and three in Wisconsin, interviewed in fall 1987, spring 1988 (and 1 year later in Steinberg et al. 1993).	No effect for 1–10 hours of work. Negative effects on a wide variety of school performance, psychological, and psychosocial maturity variables for longer work hours.	Few covariates. Outcomes assessed up to 5 months after employment status was measured. Potentially severe selection bias in longitudinal analysis.
Steinberg and Greenberger (1982)	Sophomores and juniors in 1979 from four southern California high schools reinterviewed in 1980.	Greater work orientation; less school involvement but no difference in absenteeism or GPAs; more materialistic attitudes; greater use of cigarettes and marijuana.	Unrepresentative sample and selection process introduces potentially severe biases of unknown direction.
Turner (1994)	HSB survey, 1980 and 1982 interviews.	Positive (negative) effects of moderate (high) work hours on grades, test scores, and educational attainment. Effects reduced when controls for selection bias are introduced. Modest reductions in study time, large decreases in leisure activities.	Questionable exclusion restrictions (for selection bias corrections). Employment assumed to affect contemporaneous grades and test scores.
Tymms and Fitz-Gibbon (1992)	U.K. students studying for the A-level exams from 1989 A-level Information Systems data set.	Small negative effect on A-level grades, particularly above 9 hours per week. No effect on study time.	Few covariates controlled for.

when subsamples are selected in ways that introduce unobserved differences between workers and nonworkers.[10]

II. Trends in Student Employment

Concern over student employment stems partly from the belief that this type of work has risen rapidly in recent years. For example, Greenberger and Steinberg (1986) cite a 65% increase in the labor force participation rates of 16- and 17-year-old school-going males (from 27% to 44%) occurring between 1947 and 1980. The expansion in student job-holding is likely to be overstated by these figures, however, for at least two reasons. First, unemployment increased dramatically during this period, which implies larger increases in labor force participation than employment.[11] Second, the changes are sensitive to the endpoints chosen. Thus, participation rose less than half as much (from 37% to 44%) between 1950 and 1980, as when the initial year is 1947, and barely changed at all between 1950 and 1970.

To provide a more accurate indication of recent trends, figure 1 shows the average employment probabilities and work hours (conditional on employment) of youths enrolled in school for each year during the 1968–88 period. The data are from the October Current Population Surveys (CPS) with employment status determined for the week prior to the interview.[12] Figures 1*a* and 1*c* refer to 14–19-year-olds; figures 1*b* and 1*d* to high school sophomores, juniors, and seniors.[13]

[10] For example, Steinberg, Greenberger, Garduque, Ruggiero, and Vaux's (1982) influential longitudinal study included 176 youths from four Orange County, California, high schools. This represented 5.7% of the original (nonrepresentative) sample of students present on two testing days at each school. Potential biases were introduced at each stage in the sampling process. For instance, the exclusion of students away from school on the testing days biases the sample against individuals with high rates of absenteeism, and the deletion of persons holding jobs prior to but not at the final survey date eliminates students with histories of unstable employment.

[11] The unemployment rates of 16–19-year-old males rose from 9.8% in 1948 to 18.3% in 1980 (*Economic Report of the President* 1992, p. 340).

[12] The Current Population Survey may underestimate the level of youth work involvement because information is typically provided by parents, who systematically understate their children's labor force attachments (Freeman and Medoff 1982). Much of the difference between self-reports and proxy-responses relates to causal jobs such as baby-sitting or lawn mowing (Flaim 1982). Discrepancies between CPS and other survey data often reflect differences in what is being measured. For example, much employment information in the High School and Beyond survey refers to the current or *most recent* job. Thus, many researchers (e.g., Marsh 1991) report 0 hours of work only for those students not holding jobs at any point during the survey year. This overstates the fraction employed at a given point in time.

[13] I thank Mark Turner for providing me with a set of tables containing the information on which these figures are based.

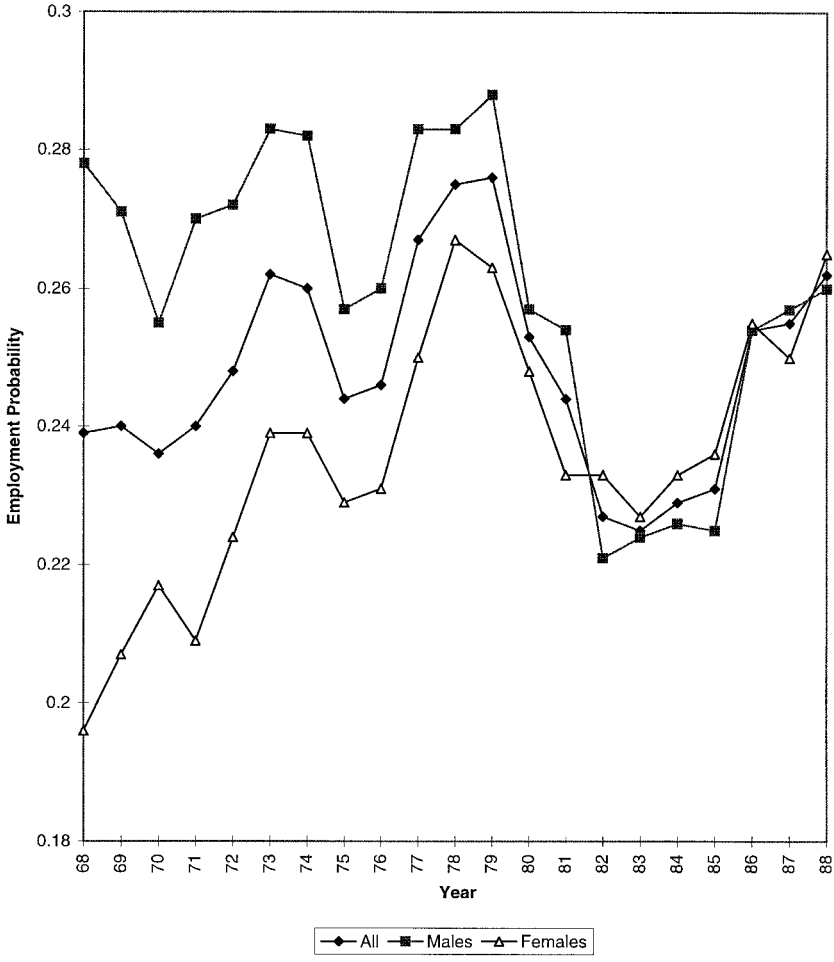

FIG. 1*a:* Employment probabilities of 14–19-year-olds

The CPS data reveal that there has been little or no increase over time in either employment probabilities or work hours. For instance, an average of 24.4% of 14–19-year-olds were employed during the first 6 years of the period (1968–73), as compared to 24.3% over the final 6 (1983–88) years. Similarly, work hours (conditional upon employment) averaged 15.6 per week in the first 6 years and 15.9 per week during the last 6 years. Far more striking than any secular trend is the substantial cyclical variation in employment and, to a lesser extent, work hours (e.g., notice the reductions occurring during the 1975 and 1982–83 recessions).

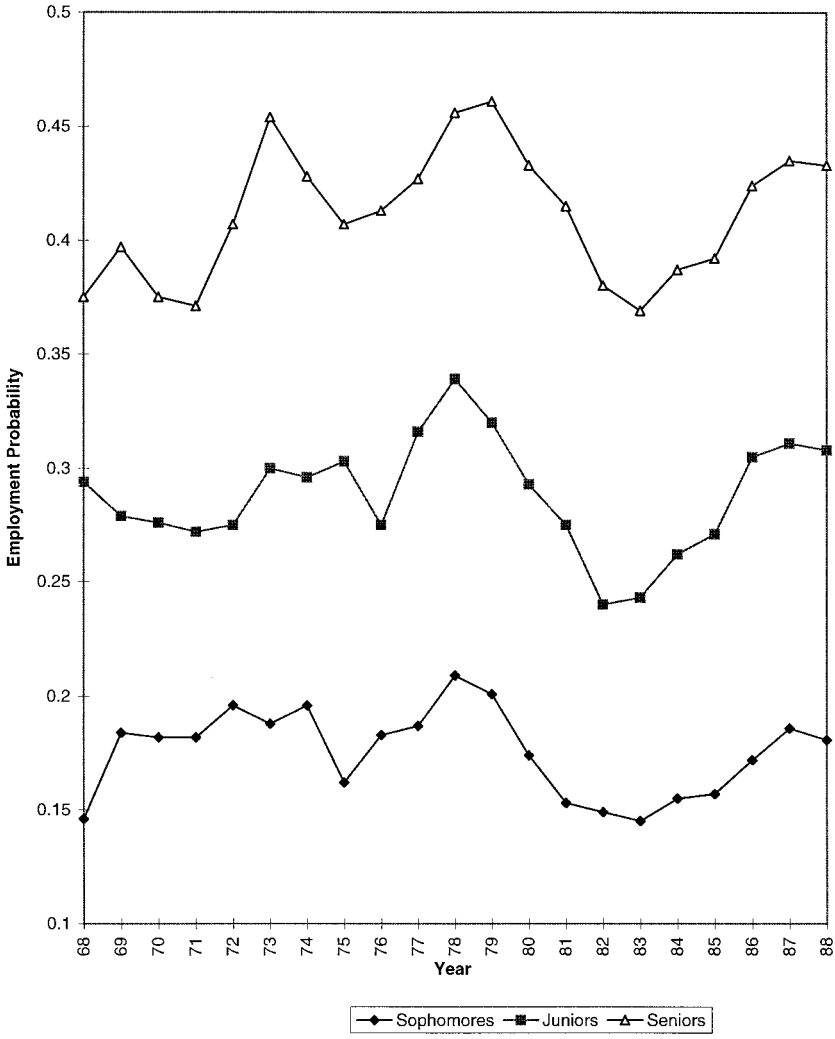

FIG. 1*b:* Employment probabilities by high school grade

There are also sizable sex and age differences. Interestingly, whereas girls were far less likely than boys to work prior to the middle 1970s, the employment rates had converged by the early 1980s (see fig. 1*a*).[14] As expected, student employment increases with grade level. Over the 21-year time span,

[14] However, they still worked 1–2 fewer hours weekly than their employed male peers.

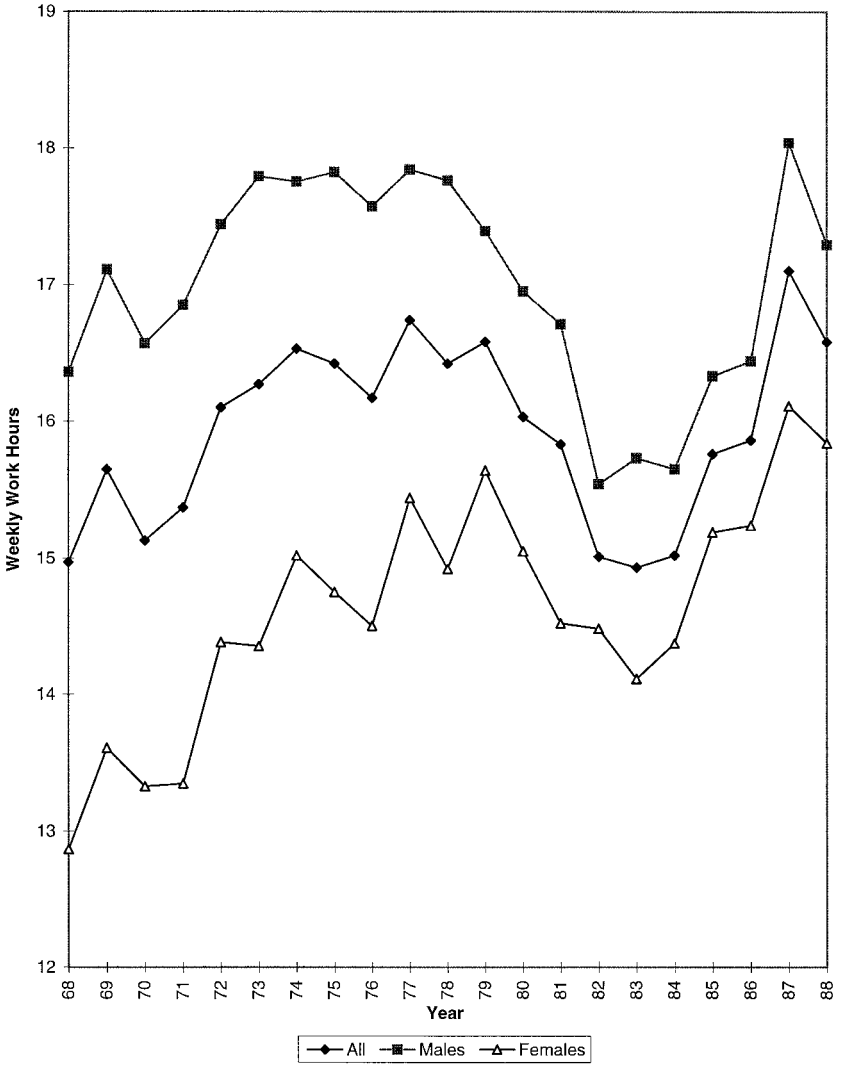

FIG. 1*c:* Work hours of 14–19-year-olds

an average of 18%, 29%, and 41% sophomores, juniors, and seniors were employed, and working students averaged 12, 15, and 19 hours on the job per week. However, there is little evidence of a substantial time trend in either employment rates or work hours for any of the three grades.

To summarize, neither the frequency of student job-holding nor the work hours of employed students have changed much since the late 1960s,

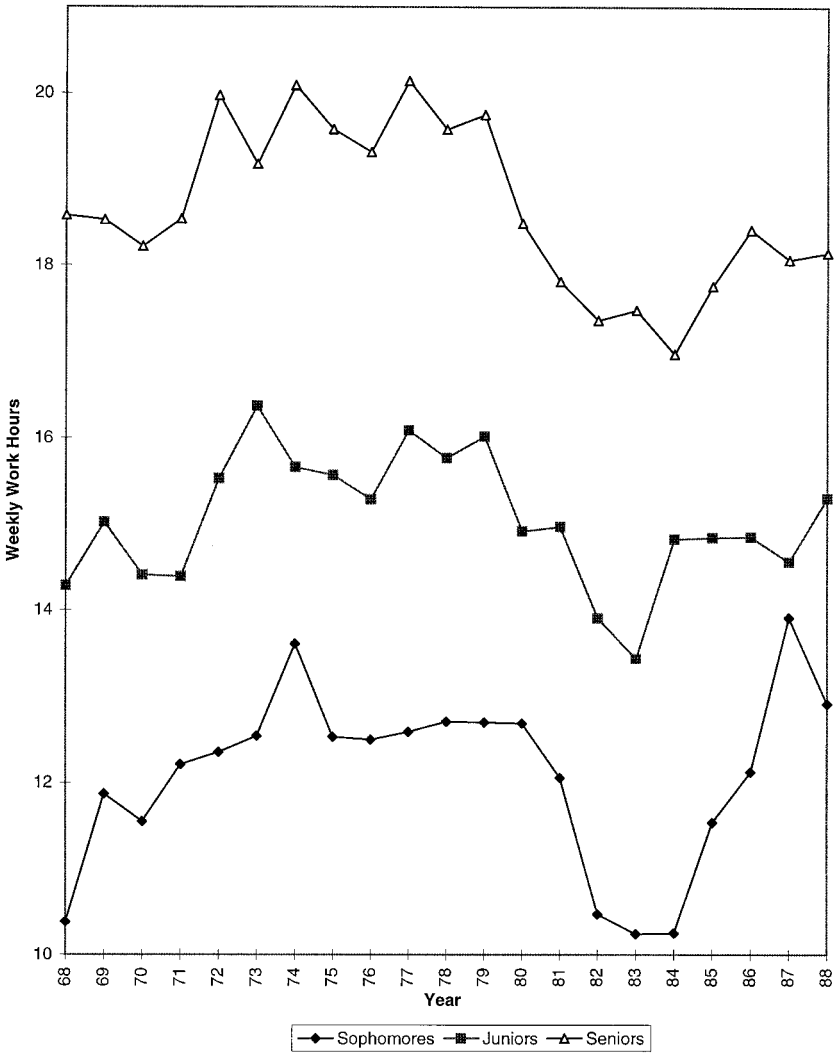

FIG. 1*d:* Work hours by high school grade

with any time trend being dwarfed by cyclical fluctuations. This suggests that concerns over the rapidly rising employment levels of high school students may be exaggerated.

III. Data

This study uses data from the NLSY, a sample of persons aged 14–21 on January 1, 1979. Respondents have been interviewed annually since

1979, and information through the 1991 interview is used below. The primary sample is restricted to respondents who (1) were high school freshman or sophomores in 1979, (2) remained enrolled in school through at least the interview date of their senior year (2 years if a sophomore in 1979 and 3 years if a freshman), and (3) were members of the nationally representative sample of noninstitutionalized civilian youths.[15] These restrictions yield a sample size of 1,149 (588 males and 561 females), 1,067 (545 men and 522 women) of whom were interviewed in 1991—a continuation rate of 93%.

The NLSY has several advantages for studying high school employment. First, it is the only survey following a recent cohort of students for a sufficient time period to allow analysis of the long-term effects of working. Second, it contains unusually rich information on background variables that may jointly influence the decision to obtain student employment and subsequent economic attainment. Third, it includes retrospective data on job-holding, including a separate work history file with weekly information on employment status.

Two types of information on high school employment are utilized below. The first are questions indicating hours worked during the week prior to the survey date (hereafter referred to as the reference or interview week) of the respondent's sophomore, junior, and senior years. Second, the work history file is used to measure average work intensity during the junior and senior academic years and the preceding summers.[16] By averaging over multiple weeks, the latter data have the advantage of smoothing transitory variations in employment. However, since individuals may more reliably report work hours for the reference week than for periods up to a year previously, it is not obvious which employment measure is preferable.

The primary outcome considered is annual earnings from "wages, salary, commissions, or tips . . . before deductions for taxes or anything else." Earnings are then decomposed into wage rates and employment

[15] The effect of limiting the sample to youths remaining in school through their senior year is investigated in Sec. VD. The NLSY also includes supplemental samples of minority and disadvantaged white youths and of 17–21-year-olds in the military on September 30, 1978. See Center for Human Resources Research (1992) for further information on the NLSY.

[16] Academic year hours are measured over a 26-week period during October, November, February, March, April, and May. This time frame was chosen to eliminate potentially atypical employment levels occurring during weeks immediately surrounding the summer and holiday seasons. Information on summer employment is for an 8-week period starting with the week that includes July 1 of the given year. Complete work histories are unavailable for 14- and 15-year-olds, which prevents construction of academic year hours for sophomores.

levels, with the former calculated as total earnings divided by hours or weeks employed. Four additional measures of economic attainment are analyzed. Potential sources of nonwage compensation are accounted for by investigating whether the current or most recent employer provides health insurance or retirement benefits (hereafter referred to as pensions).[17] Estimated values of the two fringe benefits are then added to hourly wages to provide an indicator of total hourly compensation.[18] Finally, the Duncan socioeconomic index, a widely used measure of occupational status, is included to capture potential differences in occupational attainment not yet reflected by the relative incomes of persons in their middle to late twenties.[19] Most of the dependent variables are averaged over the 3-year period 1988–90, which is 6–9 years after the scheduled date of high school graduation.[20] Using information for multiple years dampens the effects of temporary fluctuations and reduces the number of observations lost due to missing data.[21]

The econometric analysis includes two sets of supplemental regressors. The first are standard demographic variables indicating ethnic status (black, Hispanic, white), sex, marital status (single vs. currently married), geographic region (northeast, northcentral, south, west), residence in a standard metropolitan statistical area (SMSA) and in an urban area, local unemployment rates (<3%, 3%–6%, 6%–9%, 9%–12%, >12%), and high school class at the 1979 survey date (freshman vs. sophomore). Schooling is excluded because student employment may affect the level of education, making the latter is endogenous. This is directly tested

[17] Coverage refers to the respondent's job, not to that of the spouse (if any).

[18] The NLSY indicates whether health insurance or pensions are provided by the employer but does not supply additional detail on the type of coverage. Health insurance and pensions are each valued at 9.4% of wages or salaries (18.8% if both are provided) when calculating total compensation. This estimate is arrived at as follows. The cost of employer contributions to group health insurance and private retirement plans was 6.1% and 4.7% of wages and salaries in 1989, with 65.0% and 50.2% of workers receiving the benefits (Piacentini and Foley 1992, tables 2.2 and 2.13). Thus, conditional on coverage, employer health insurance contributions averaged $.061/.650 \times 100\% = 9.38\%$ of wages and salaries while those for pensions averaged $.047/.502 \times 100\% = 9.36\%$.

[19] The Duncan score was calculated for the job at which the individual worked the greatest number of hours during the week prior to the interview. No score was calculated for nonemployed respondents. See Duncan (1961) for information on the Duncan index and Mutchler and Poston (1983) for a critique of it.

[20] The pension and health insurance variables are set equal to 0, 1, and 2 if coverage is provided at none, some, or all three of the interview dates.

[21] If data are missing for a single year, averaging is done over the remaining 2 years.

for by examining the relationship between work hours and subsequent educational attainment.

The second set of attributes includes potentially important characteristics for which data have typically been unavailable to previous researchers. These consist of dichotomous variables indicating whether the respondent and his or her parents are foreign born (three covariates); whether a foreign language was spoken at home; parents' educational attainment (high school dropout, high school graduate, college graduate); if magazines, newspapers, or library cards were in the home at age 14 (three variables); if the respondent considered school boring, unsafe, or was very dissatisfied with it; school type (public vs. private); whether he or she had smoked cigarettes or used drugs (marijuana or hashish) by the sophomore year of high school (two regressors); and religion (Catholic, Jewish, Baptist, other). Also included are continuous measures of expected years of education, the number of siblings, (log of) family incomes, and the score received on the Armed Forces Qualifications Test (AFQT).[22]

IV. High School Employment and Economic Outcomes

Descriptive information on high school work hours is provided in table 2. Column a refers to the full sample and column b to persons interviewed in 1991. The top panel displays data on work hours in the reference week; the lower one presents corresponding information from the work history file on academic year and summer employment. Employment rates are marginally higher for individuals remaining in the sample throughout the period of investigation, but there is little evidence of severe attrition bias, and the remainder of the article restricts analysis to the respondents interviewed in 1991.[23]

Work experience rises steadily through the high school years—28% of sophomores are employed in the interview week, compared to 43% of juniors and 51% of seniors. Given the large fraction of nonemployed students, average weekly work commitments are modest, rising from 3 hours for sophomores to 10 hours for seniors. Conditional upon holding jobs, sophomores, juniors, and seniors work an average of 12, 16, and 19

[22] Family income is averaged over the student's sophomore through senior years of high school, the AFQT score is determined in 1980, information on the age of first cigarette and drug use is obtained in 1984, and time-varying regressors are evaluated contemporaneously with the outcome variables. All of the other covariates refer to the 1979 interview date.

[23] Average values of the explanatory variables are virtually identical for the full sample and for those interviewed in 1991.

Table 2
Frequency and Amount of High School Employment

	Sophomores		Juniors		Seniors	
	(a)	(b)	(a)	(b)	(a)	(b)
Employment status in reference week:						
% working	27.9	28.3	42.4	43.3	50.3	50.8
Average hours per week	3.3	3.3	6.6	6.7	9.4	9.6
Average hours per week if employed	11.9	11.8	15.5	15.5	18.7	18.9
Hours worked in week prior to survey:						
0 (percentage)	72.2	71.8	57.6	56.6	49.7	49.2
1–10	16.3	16.4	15.4	15.8	11.3	11.3
11–20	8.1	8.5	17.1	17.5	20.5	20.5
21–30	2.2	2.3	7.6	7.7	13.4	13.8
31–40	.7	.7	2.0	2.1	4.1	4.2
>40	.5	.4	.4	.4	1.0	1.0
Academic year employment (from work history file):						
% employed at least 1 week			63.9	64.9	72.6	73.4
% of weeks employed			41.5	42.6	51.5	52.3
Average hours per week			7.7	8.0	12.1	12.3
Average hours per week if employed			18.6	18.9	23.5	23.5
Summer employment (from work history file):						
% employed at least 1 week			56.2	57.2	59.6	60.8
% of weeks employed			44.1	45.0	48.5	49.6
Average hours per week			10.2	10.3	13.7	14.0
Average hours per week if employed			23.1	23.0	28.2	28.1

NOTE.—The full sample is included in col. a, $n = 1,149$. Col. b includes respondents interviewed in 1991, $n = 1,067$. Academic year employment status is calculated for 26-week periods covering the months of October, November, February, March, April, and May of the relevant survey years. Summer employment status refers to 8-week periods beginning with the week that includes July 1 of the summer before the specified high school year.

hours per week, respectively.[24] Only 3% of sophomores, 10% of juniors, and 19% of seniors work more than 20 hours in the reference week and 1%, 3%, and 5% are employed over 30 hours. Thus, just a small fraction of students have the heavy job commitments that have raised particular concern in previous research.

[24] These employment probabilities and work hours are slightly higher than the corresponding figures from the October CPS data discussed in Sec. II. Since most of the NLSY interviews take place between January and May, the difference probably occurs because student employment increases as the academic year progresses.

Average work hours, over the 26-week academic year period (shown in the lower panel of the table), exceed those for the interview week by 1 hour for juniors (8.0 hours vs. 6.7 hours) and almost 3 hours for seniors (12.3 hours vs. 9.6 hours). Since there is no reason to expect hours in any given week to differ systematically from those during a longer period, the disparity is probably due to misreporting of the latter. Conversely, the percentage of weeks worked during the academic year corresponds closely to the employment probabilities for the reference week (42.6% vs. 43.3% for juniors and 52.3% vs. 50.8% for seniors). These results suggest that the retrospective data overstate work hours in weeks when respondents are employed and, for this reason, reference week employment hours receive primary attention below.[25]

Almost two-thirds of juniors and three-quarters of seniors hold jobs at some point during the 26-week academic year observation period, demonstrating that employment experience is the norm for high school students. Work hours are higher in the summer than during the academic year but the disparity is relatively small and there is little difference in the probability of working in any given week.[26] There is modest evidence that work hours increase as the academic year progresses, possibly in preparation for summer employment.[27]

Whites and males work more than nonwhites and females. The gender differential in reference week work hours is 57% for sophomores (4.1 vs. 2.6), 43% for juniors (7.9 vs. 5.5), and 12% for seniors (10.1 vs. 9.0). White sophomores work 40% more hours than their minority peers (3.5 vs. 2.5), with still larger 74% and 54% differentials for juniors (7.3 vs. 4.2) and seniors (10.2 vs. 6.6). Conditional upon holding jobs, however, there is no evidence of greater hours for whites.[28] These results are consis-

[25] The findings are consistent with other research indicating that employment hours are inflated in retrospective data. For instance, in the Panel Study of Income Dynamics validation study, respondents claimed to have worked 10%–12% more hours during the previous year than indicated by company records, whereas weeks of employment were more accurately reported (Duncan and Hill 1985).

[26] A larger percentage of students work at some point during the academic year than the summer because the former period contains more weeks.

[27] Reference week work hours average 2.0, 3.1, 3.6, and 4.8 for students surveyed in January, February, March, and April of their sophomore year. Corresponding interview week hours are 5.9, 6.6, 6.5, and 9.1 for juniors and 8.9, 9.2, 9.5, and 12.1 for high school seniors.

[28] A table detailing these results is available upon request. Gade and Peterson (1980), D'Amico (1984), Michael and Tuma (1984), and Steinberg and Dornbusch (1991) describe similar gender differences in student employment. Steele (1991) also finds that whites work more often than nonwhites but with no difference in hours conditional on employment.

Table 3
Economic Outcomes as a Function of High School Employment Hours

High School Employment Hours	*N*	Outcome Measure: Annual Earnings ($)	Annual Work Hours	Hourly Wages ($)	Hourly Compensation ($)	Years of Education
All respondents	1,067	16,513	1,787	9.24	10.36	13.6
Employment status in reference week:						
Sophomore work hours:						
0	766	16,012	1,767	9.11	10.22	13.6
1–20	266	17,846	1,810	9.69	10.84	13.7
>20	35	17,441	2,034	8.68	9.78	13.3
Junior work hours:						
0	604	15,086	1,721	8.79	9.84	13.6
1–20	355	17,969	1,859	9.71	10.93	13.8
>20	108	19.739	1,916	10.19	11.39	13.3
Senior work hours:						
0	525	14,422	1,681	8.71	9.68	13.6
1–20	339	17,949	1,845	9.74	11.01	13.9
>20	203	19,510	1,960	9.75	10.98	13.3
Academic year work hours (from work history file):						
Junior work hours:						
0	370	13,856	1,648	8.52	9.51	13.4
1–20	553	17,592	1,839	9.54	10.71	13.9
>20	139	19,241	1,924	9.87	11.12	13.3
Senior work hours:						
0	282	12,765	1,595	8.29	9.22	13.3
1–20	494	16,703	1,802	9.20	10.29	13.9
>20	289	19,789	1,944	10.18	11.50	13.5

NOTE.—Sample includes respondents interviewed in 1991. Table shows average values of outcome variables for 1988–90 time period. If data are missing for one interview, the average is calculated for the remaining 2 years.

tent with the hypothesis that the racial disparities result from differences in opportunities rather than tastes and, if student employment is beneficial, provide one reason why minorities might receive relatively low pay later in life.

High school students who work generally have higher levels of future economic attainment than those who do not. This correlation holds across a variety of outcome measures, typically increases with grade level, and is strongest when considering earnings (see table 3). For example, sophomores working over 20 hours in the reference week earn 9% more than

their nonworking counterparts, 6–9 years later, compared with differentials of 31% and 35% for juniors and seniors, respectively. Individuals not employed at any point during the academic year do even worse—their peers averaging 20 hours of work per week in the junior and senior grades earn 39% and 55% more annually during the 1988–90 period. These findings provide the first indication that high school employment has favorable effects on future outcomes.

V. Econometric Estimates

The positive relationship between student employment and subsequent labor market attainment could result from confounding factors, rather than being caused by the youth work experience. For example, persons with advantaged backgrounds may have superior access to jobs both in school and after graduation. If so, socioeconomic differences, rather than high school employment, may explain the disparity in economic achievement. Regression analysis is used below to examine whether the relationship persists after controlling for observables.

The basic equation estimated is

$$Y_i = X_i\beta + \gamma H_i + \delta H_i^2 + \varepsilon_i, \tag{1}$$

where Y_i is the outcome for individual i, X is a set of covariates, H is a vector of high school work hours, and ε is the regression disturbance. Quadratic terms are included to allow for nonlinear effects of student employment and the predicted effect of working H hours (compared to nonworkers) is $\hat{\gamma}H + \hat{\delta}H^2$, for $\hat{\gamma}$ and $\hat{\delta}$ the parameter estimates. Standard errors are reported as are probability values (p-values) for the hypothesis that $\hat{\gamma}$ and $\hat{\delta}$ are jointly equal to zero. The latter are obtained from F-tests or likelihood-ratio tests, depending upon whether the estimates are by ordinary least squares (OLS) or using maximum likelihood techniques.

A. Earnings Equations

Table 4 presents the work hours coefficients for various specifications of equation (1). Column a displays the results of models that *separately* control for employment hours in a single high school year (i.e., the top panel reports coefficients from three regressions) and include no other covariates. Column b combines work experience in the three high school grades into a single equation and again excludes other regressors. Column c adds controls for the respondent's race, sex, marital status, geographic region, urbanicity, residence in an SMSA, and high school grade in 1979. The full set of attributes (described in Sec. III) are included in columns d and e, with the difference between the two being that only e contains

Table 4
Regression Estimates of Log Earnings on High School Employment Hours

Type of Employment	(a)	(b)	(c)	(d)	(e)
Employment hours in reference week:					
Sophomore hours:	.0171	.0055	.0013	.0016	.0005
	(.0095)	(.0099)	(.0091)	(.0091)	(.0091)
Hours^2/10	−.0044	−.0024	−.0015	−.0007	−.0004
	(.0030)	(.0030)	(.0028)	(.0027)	(.0027)
p-value	[.193]	[.683]	[.642]	[.966]	[.980]
Junior hours:	.0202	.0100	.0050	.0013	.0013
	(.0090)	(.0096)	(.0088)	(.0088)	(.0088)
Hours^2/10	−.0038	−.0011	−.0009	−.0002	.0002
	(.0031)	(.0033)	(.0030)	(.0030)	(.0030)
p-value	[.005]	[.173]	[.701]	[.878]	[.877]
Senior hours:	.0238	.0210	.0185	.0178	.0168
	(.0068)	(.0071)	(.0066)	(.0066)	(.0066)
Hours^2/10	−.0046	−.0045	−.0037	−.0037	−.0034
	(.0019)	(.0020)	(.0019)	(.0019)	(.0019)
p-value	[.000]	[.008]	[.007]	[.014]	[.019]
R^2		.022	.208	.252	.260
Academic year employment hours (from work history file):					
Junior hours:	.0286	.0155	.0068	.0041	.0056
	(.0091)	(.0104)	(.0096)	(.0098)	(.0098)
Hours^2/10	−.0080	−.0061	−.0038	−.0026	−.0028
	(.0032)	(.0036)	(.0033)	(.0034)	(.0034)
p-value	[.004]	[.243]	[.371]	[.601]	[.610]
Senior hours:	.0234	.0176	.0151	.0138	.0120
	(.0072)	(.0082)	(.0075)	(.0077)	(.0077)
Hours^2/10	−.0037	−.0020	−.0019	−.0020	−.0015
	(.0020)	(.0022)	(.0021)	(.0021)	(.0021)
p-value	[.000]	[.002]	[.008]	[.036]	[.062]
R^2		.023	.208	.251	.259
Regressors included	Work hours in a single grade	Work hours in all three grades	Work hours, standard covariates	Work hours, extended covariates without AFQT	Work hours, extended covariates with AFQT

NOTE.—Sample includes respondents interviewed in 1991. Outcome measures are 3-year averages for the 1988–90 period. Table displays regression coefficients on work hours and work hours squared (n = 990). Standard errors in parentheses; p-value of the hypothesis that the coefficients on hours worked and hours worked squared are jointly equal to zero (obtained from F-tests) is displayed in brackets. AFQT = Armed Forces Qualifications Test. Model a shows results from regressions that control for work hours in a single high school class. In model b, hours in all high school grades are controlled for (sophomore, junior, and senior hours in the top panel; junior and senior hours in the bottom panel). Model c adds regressors for the high school grade in 1979, ethnic status (black, Hispanic, white), sex, marital status, geographic region (four categories), residence in a standard metropolitan statistical area and urban area, and the local unemployment rate (five categories). Model d includes the covariates in c plus whether the respondent and his or her parents are foreign born; if a foreign language was spoken in the home when the respondent was a child; mother and father's educational attainment (four categories each); whether magazines, newspapers, or library card were in the home when the respondent was 14; number of siblings, religion (four categories); educational attitudes (if the respondent considered his school boring, unsafe, or was very dissatisfied with the school); educational expectations; type of school at 1979 survey date (public vs. private); whether the respondent had smoked cigarettes or used marijuana or hashish by the sophomore year of high school; the log of average family incomes during the respondent's sophomore through senior years; and (in the lower panel) work hours and hours squared in the sophomore reference week. Model e includes these variables plus the 1980 AFQT score.

the AFQT score.[29] Thus, more characteristics are held constant when moving from left to right of the table.

Work hours during the senior year of high school are positively and strongly correlated with future incomes, even when holding constant an unusually large variety of observables. Indeed, once a basic set of regressors is controlled for (col. c), additional covariates have little effect on the parameter estimates for student employment, despite substantially increasing the explanatory power of the model.[30] For example, working 10 hours during the reference week of the senior year is predicted to raise future earnings by 16% in specification (c), versus 14% in model e. The coefficients on senior grade employment are always highly significant.

Conversely, there is no evidence of statistically significant employment effects for sophomores or juniors, once senior work hours are controlled for. The junior year coefficients are positive and significant when nothing else is held constant (col. a) but become insignificant with the addition of regressors for senior hours (col. b).[31] The inclusion of individual and background characteristics further reduces the predicted effect of working in the sophomore and junior grades and they never approach statistical significance (cols. c–e).[32] The remainder of the paper presents results using the extended set of characteristics controlled for in column e.[33]

[29] The AFQT score is included separately since it may be endogenous. (It is measured in 1980 and therefore could be affected by sophomore and junior year employment.) Reference week employment hours in the sophomore year are also controlled for in specifications d and e of the bottom panel, since a corresponding academic year variable cannot be constructed from the work history file.

[30] The $\bar{R}^2$ is not reported for col. a, which displays the results of several regressions. *F*-tests were conducted to examine whether the new variables added in each of specifications c–e, compared to the previous column, were jointly significant. In all cases, the null hypothesis of no effect could be rejected at the .01 level.

[31] This is due to a moderately high correlation of work hours across grades. The correlation between sophomore and junior, junior and senior, and sophomore and senior work hours, respectively, is 0.319, 0.447, and 0.236.

[32] Four respondents were interviewed during the summer following their sophomore year (i.e., after June 20), and one was surveyed in the summer after the senior year. To insure that the findings for reference week employment are not sensitive to the inclusion of these individuals, specification e was reestimated with them excluded. The results obtained are virtually identical to those reported in the table.

[33] Sample means and parameter estimates (from specification e) for covariates other than student work hours are detailed in table A1. The regression coefficients generally conform to our expectations. In particular, subsequent earnings are relatively high for whites, men, persons in areas with low local unemployment rates, those with high educational expectations, and those with above average family incomes.

The sensitivity of the findings to changes in specifications and samples is next tested for, with results displayed in table 5. For comparison, column a repeats the findings from specification e of table 4. Columns b and c exploit additional information available in the work history file. Model b also controls for work hours during the summer between the junior and senior year in order to compare the relative returns to academic year and summer employment. Specification c holds constant the number of *weeks* the student is employed during the academic year, instead of the *hours* worked per week. Finally, columns d and e provide separate estimates for males and females.

The main result, that senior work hours are positively correlated with future earnings while there is no statistically discernible effect for sophomore or junior employment, is robust across specifications and samples. Interestingly, column b suggests that school year employment has a bigger payoff than positions held during the summer. This is surprising since summer work is less likely to divert time away from educational pursuits. It is possible, however, that the two types of employment are qualitatively different. Moreover, school year jobs may require students to develop time management skills to a greater extent than summer positions.[34] Column c indicates that there is also a benefit to senior year employment when considering weeks worked, rather than hours per week, and illustrates the need for future research distinguishing between these two effects. Columns d and e suggest that the returns to job-holding by high school seniors are initially larger but exhibit greater diminishing returns for girls than boys. These gender differences are further analyzed below.

B. Selectivity Bias

The regression analysis controls for a broader set of covariates than have typically been available to previous researchers. This section presents two additional types of information pertaining to the selection process into high school employment. First, econometric techniques are utilized in an attempt to determine the nature of any selectivity bias. Although the precision of the resulting estimates is quite low, these methods provide no indication that the predicted effect of senior year employment is spurious. The second approach involves limiting the analysis to persons with relatively homogeneous future work experiences. This reduces the effects of unobserved heterogeneity, to the extent that the latter translate into differences in employment levels throughout the life cycle.

[34] Multicollinearity between summer and academic year employment makes it difficult to separately identify the two effects. The correlation between work hours in the junior (senior) year and during the following (preceding) summer is 0.452 (0.419).

Table 5
Additional Regression Estimates of Log Earnings on High School Employment

Type of Employment	Full Sample Estimates (a)	(b)	(c)	Males (d)	Females (e)
Employment hours in reference week:					
Sophomore hours:	.0005			.0134	−.0199
	(.0091)			(.0087)	(.0212)
Hours²/10	−.0004			−.0045	.0097
	(.0027)			(.0024)	(.0090)
p-value	[.980]			[.167]	[.551]
Junior hours:	.0013			.0008	.0064
	(.0088)			(.0087)	(.0178)
Hours²/10	.0002			.0004	−.0021
	(.0030)			(.0028)	(.0070)
p-value	[.877]			[.821]	[.936]
Senior hours:	.0168			.0146	.0290
	(.0066)			(.0065)	(.0142)
Hours²/10	−.0034			−.0025	−.0081
	(.0019)			(.0017)	(.0047)
p-value	[.019]			[.038]	[.110]
Academic year employment hours or weeks (from work history file):					
Junior hours/weeks:	.0056	.0065	.0110	.0031	.0004
	(.0098)	(.0100)	(.0125)	(.0102)	(.0176)
Hours/weeks/10	−.0028	−.0030	−.0053	−.0047	−.0046
	(.0034)	(.0034)	(.0047)	(.0034)	(.0063)
p-value	[.610]	[.646]	[.386]	[.886]	[.248]
Senior hours/weeks:	.0120	.0092	.0076	.0076	.0225
	(.0077)	(.0078)	(.0127)	(.0079)	(.0143)
Hours/weeks/10	−.0015	−.0009	3.5E-5	−.0005	−.0043
	(.0021)	(.0021)	(.0047)	(.0020)	(.0042)
p-value	[.062]	[.131]	[.059]	[.143]	[.152]
Summer hours:		.0049			
		(.0054)			
Hours²/10		−.0013			
		(.0001)			
p-value		[.350]			
Employment regressor	Hours	Hours	Weeks	Hours	Hours

NOTE.—See table 4 note. Covariates are the same as in specification e of table 4 and employment coefficients from that specification are displayed in col. a. Col. b includes controls for average hours worked during an 8-week period beginning with the week that includes July 1 of the summer before the senior year of high school. In col. c, the number of weeks, rather than hours/week, of academic year employment, is controlled for. Cols. d and e present estimates for the same specification as col. a, for subsamples of males ($n = 512$) and females ($n = 471$).

Table 6
Two-Stage and Restricted Sample Estimates of the Effects of Senior Year Employment

Reference Week Employment Hours	No Work Restriction			Works 1,000 or More Hours	Works 26 or More Weeks
	OLS (a)	Treatment-Effects (b)	IV (c)	(d)	(e)
Full sample:					
Senior hours:	.0168	.0199	.1093	.0119	.0106
	(.0066)	(.0120)	(.2625)	(.0041)	(.0045)
Hours^2/10	−.0034	−.0040	−.0482	−.0018	−.0022
	(.0019)	(.0026)	(.0635)	(.0012)	(.0013)
p-value	[.019]	[.249]	[.519]	[.001]	[.040]
Inverse Mills ratio		−.0252			
		(.0812)			
Males:					
Senior hours:	.0146	.0234	.0804	.0095	.0090
	(.0065)	(.0117)	(.2435)	(.0049)	(.0048)
Hours^2/10	−.0025	−.0040	−.0189	−.0010	−.0012
	(.0017)	(.0023)	(.0711)	(.0013)	(.0013)
p-value	[.038]	[.126]	[.895]	[.012]	[.042]
Inverse Mills ratio		−.0737			
		(.0840)			
Females:					
Senior hours:	.0290	.0382	.1631	.0266	.0250
	(.0142)	(.0253)	(.1191)	(.0083)	(.0099)
Hours^2/10	−.0081	−.0101	−.0544	−.0072	−.0085
	(.0047)	(.0064)	(.0449)	(.0028)	(.0033)
p-value	[.110]	[.290]	[.374]	[.003]	[.035]
Inverse Mills ratio		−.0615			
		(.1436)			

NOTE.—See tables 4 and 5, notes. Work hours refer to the reference week of the senior year in high school. Col. b shows results of an equation that corrects for selection bias by including the inverse Mills ratio from probit estimates of the probability of working positive hours in the senior grade. Col. c displays instrumental variable (IV) estimates. Cols. d and e indicate ordinary least squares (OLS) estimates for samples restricted to persons averaging at least 1,000 hours and 26 weeks of work per year, respectively, between 1988 and 1990.

Results of these efforts are summarized in table 6. For purposes of brevity, this and the remaining tables focus on reference week work hours in the senior grade.[35] Column a repeats the OLS estimates previously obtained using the comprehensive set of covariates (specification e of table 4). Column b shows results from a "treatment-effects" model where the "treatment" is the choice of whether or not to work in the senior year. For these estimates, a probit model is first run, with the dependent

[35] The estimated effects of sophomore and junior grade employment are never statistically significant. As discussed, results using the work history data are viewed as less reliable due to biases in the retrospective reporting of employment hours.

variable equal to one (zero) for respondents working positive hours (not working) in the senior grade interview week.[36] The inverse Mills ratio from the probit is next included as an additional covariate in the second-stage earnings equation.[37] The Mills coefficient indicates the selection effect into senior year employment, with a significantly positive (negative) value implying that parameter estimates from reduced-form models, which do not control for endogenous selection, are upward (downward) biased.[38] Column c displays a set of corresponding instrumental variable (IV) estimates. As in the treatment-effects specification, geographic characteristics in the senior year of high school serve to identify the model. Finally, columns d and e provide OLS estimates for respondents averaging at least 1,000 hours or 26 weeks of employment annually, over the 1988–90 period. These subsamples consist of a relatively homogeneous group of highly work motivated individuals.

The econometric techniques of correcting for selection bias meet with limited success. In particular, standard errors increase substantially for the treatment-effects model, as compared to the OLS estimates, and explode in the IV specification—for the full sample, the standard error on reference week work hours is 82% higher in column b than in column a and almost 40 times larger in column c. As a result, the senior year employment effect is measured very imprecisely.[39] Nonetheless, the treat-

[36] The full sample probit results are summarized in table A2. Senior year employment probabilities are relatively low for blacks, southerners, and respondents living in areas with high unemployment. Family background, as proxied by family incomes and the possession of library cards, is positively related to job-holding. Few other covariates have significant effects.

[37] The inverse Mills ratio is $\phi/\Phi(-\phi/(1-\Phi))$ for seniors who do (do not) work, where ϕ and Φ are the standard normal density and distribution functions, evaluated at the inner-product of probit coefficients and individual attributes. Identification is typically difficult for this class of models because it is hard to select covariates that can justifiably be included in the probit equation but excluded from the second-stage earnings regression. In this context, it is reasonable to assume that geographic characteristics (local unemployment rates, region of the country, SMSA and urbanicity) in the senior year affect student employment (and so are included in the probit) but have no effect on future outcomes (and so are excluded from the earnings equation) while the reverse is true for geographic conditions during the 1988–90 period.

[38] See Greene (1993, pp. 713–14) for further discussion of the treatment-effects model.

[39] The variables used for identification appear valid. As a group, they are jointly significant (at the .05 level) in the first-stage equation of the treatment-effects and IV models. The instruments also easily pass Newey's (1985) test for exogeneity based on overidentification restrictions. The test statistic, obtained by multiplying the sample size by the uncentered R^2 of an equation regressing the residuals of the structural model of interest on all the exogenous variables, has a χ^2 distribu-

ment-effects and IV coefficients are always larger than the corresponding OLS estimates, suggesting that reduced-form models are more likely to understate than overestimate the beneficial effect of student job-holding.

The predicted return to working in the senior year does decline somewhat when restricting the analysis to persons with substantial future work experience. However, statistically significant positive effects continue to be observed (see cols. d and e). For example, the earnings differential associated with 10 hours of reference week employment is 11% among those working at least 1,000 hours and 9% for respondents working 26 weeks annually between 1988 and 1990, versus 14% for all respondents. The corresponding gains for males are 9%, 8%, and 13%, respectively, while for females they are 21%, 18%, and 23%, respectively.

Student job-holding is likely to improve subsequent economic attainment partly by increasing future employment levels. Deleting persons with sporadic work experience eliminates a large portion of this effect and so the estimates in columns d and e probably understate the favorable effect of working by high school seniors. The continued evidence of a positive influence therefore furnishes powerful evidence that the employment provides genuine benefits. Moreover, the reduction in the estimated return to working (compared to specification a) is smaller for women than men, whereas the reverse would be expected if a more selected (and more work-oriented) sample of females than males worked in high school, and this explained the observed differences in the relative benefits of senior year employment.

There are at least three additional reasons to doubt that selection bias explains the advantages associated with working in the senior grade. First, the estimated effect falls only slightly when moving from a relatively parsimonious specification to one which controls for a broad array of regressors containing considerable predictive power (e.g., from col. c to e of table 4). Second, if high school employment is disproportionately obtained by persons with favorable unobserved characteristics, it should be associated with high levels of academic achievement rather than the opposite result observed by some researchers. Third, and most important,

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tion with degrees of freedom equal to the difference between the number of instruments and endogenous variables. For the full sample, the estimated χ^2 statistic is .116, with 2 degrees of freedom, compared to a critical χ^2 statistic (at the .05 level) of 5.99; the χ^2 statistic for males (females) is 2.62 (.599). Instead, the structural estimates have high standard errors because of the relatively weak predictive power of the instruments. For instance, the R^2 of a first-stage equation on senior year employment hours rises from .072 to .095 when the senior year geographic characteristics are added to the model, leaving most of the variation unexplained.

there is no reason why the confounding factors should be limited to job-holding in the senior grade. For instance, if differences in unobserved motivation are of key importance, stronger effects might be expected for sophomore or junior employment, since work is less common in these grades and therefore presumably occurs among a more selected group.

C. Other Measures of Economic Attainment

The effect of senior year job-holding on eight alternative outcomes is detailed in table 7. Since annual work hours are left-censored at zero and weeks employed are left- and right-censored at 0 and 52, respectively, tobit models are used in these cases.[40] The wage, compensation, and Duncan score equations are estimated by OLS, with the earnings variables expressed in natural logs and the Duncan index in levels. Finally, the last two columns show results for ordered probit models indicating whether the employer provides health insurance or retirement benefits in none, some, or all 3 of the survey years.

Employed high school seniors subsequently work and earn more and have jobs with greater prestige than their nonemployed counterparts. For example, working 10 hours in the reference week of the senior year is associated with a 94 hour per year increase in employment, a 6% differential in hourly wages, and an 8% rise in hourly compensation (see cols. a, c, and e). The difference in hourly wages does not quite reach statistical significance but the changes in hours or weeks worked, weekly wages, and hourly compensation are all significant at the .1 level or better. Similarly, senior year employment is positively and significantly associated with occupational prestige and the receipt of employer-provided fringe benefits (see cols. f–h).[41]

The table provides further evidence of substantial sex differences in the results. For boys, working in the last year of high school is significantly positively related to future employment levels and the probability of receiving pension or health insurance benefits, but it has little effect on wages and only modestly increases occupational attainment. By contrast, employed female seniors subsequently hold more prestigious occupations

[40] Cols. a and b of the table show tobit coefficients. The effects of marginal changes in work hours can be estimated by multiplying the relevant coefficients by $\Phi(.)$, the predicted percentage of noncensored observations.

[41] I also estimated the compensation and fringe benefit equations with persons self-employed (in their current or last job) at one or more of the 1988–1990 survey dates deleted from the sample. This exclusion had no effect on the predicted receipt of employer pensions or health insurance and strengthened the positive relationship between senior year employment and hourly compensation (e.g., the p-value increased from .073 to .051).

Table 7
Econometric Estimates of Future Labor Market Outcomes on Employment Hours in High School Reference Week and Other Covariates

Reference Week Employment Hours	Annual Work Hours (a)	Annual Weeks Worked (b)	Hourly Wages (c)	Weekly Wages (d)	Hourly Compensation (e)	Duncan Occupation Index (f)	Employer Health Insurance (g)	Employer Pension Plan (h)
Full sample:								
Senior hours:	10.01	.4551	.0079	.0096	.0098	.3532	.0242	.0311
	(4.880)	(.1477)	(.0042)	(.0047)	(.0044)	(.1282)	(.0095)	(.0087)
Hours^2/10	−.3690	−.0608	−.0018	−.0020	−.0023	−.0753	−.0044	−.0080
	(1.399)	(.0425)	(.0012)	(.0013)	(.0012)	(.0371)	(.0028)	(.0025)
p-value	[.000]	[.000]	[.155]	[.088]	[.073]	[.012]	[.009]	[.002]
$\Phi(\cdot)$	.979	.546						
Males:								
Senior hours:	12.91	.4368	.0041	.0074	.0056	.2342	.0245	.0238
	(5.538)	(.1585)	(.0049)	(.0051)	(.0051)	(.1688)	(.0130)	(.0116)
Hours^2/10	−1.083	−.0661	−.0010	−.0013	−.0014	−.0381	−.0038	−.0063
	(1.459)	(.0418)	(.0013)	(.0013)	(.0013)	(.0449)	(.0035)	(.0031)
p-value	[.001]	[.003]	[.707]	[.261]	[.555]	[.245]	[.055]	[.106]
$\Phi(\cdot)$	.979	.502						
Females:								
Senior hours:	10.98	.5461	.0175	.0197	.0207	.5567	.0393	.0434
	(9.094)	(.2769)	(.0083)	(.0096)	(.0087)	(.2233)	(.0173)	(.0162)
Hours^2/10	−.5920	−.0651	−.0050	−.0060	−.0059	−.1527	−.0093	−.0118
	(3.018)	(.0919)	(.0027)	(.0032)	(.0029)	(.0742)	(.0059)	(.0055)
p-value	[.018]	[.001]	[.098]	[.124]	[.053]	[.035]	[.026]	[.017]
$\Phi(\cdot)$	.972	.588						

NOTE.—See tables 4 and 5, notes. Annual weeks and hours worked are estimated as tobit models, with $\Phi(\cdot)$ indicating the predicted percentage of noncensored observations (estimated as the average value of $\Phi(X\beta/\sigma)$ in the single limit tobit case); 44 observations are left-censored at 0 hours and 394 are right-censored at 52 weeks. The wage, compensation, and Duncan score equations are estimated by ordinary least squares. Ordered probit models are used for employer health insurance and pension coverage. The dependent variables in these equations are equal to 0, 1, and 2 if the fringe benefit is provided at none, some, or all three of interview dates, respectively, with *p*-values obtained from likelihood-ratio tests. Sample sizes (in the top panel) are 1,048, 1,050, 979, 979, 977, 1,000, 961, and 957 for cols. a–h, respectively.

Table 8
Probit Estimates of High School Graduation Probabilities on Employment Hours in High School Reference Week and Other Covariates

Type of Employment	(a)	(b)	(c)
Sophomore hours:	−.0135	.0058	.0128
	(.0146)	(.0206)	(.0321)
Hours^2/10	.0020	−.0025	−.0043
	(.0037)	(.0052)	(.0073)
p-value	[.549]	[.832]	[.806]
Junior hours:		.0248	−.0004
		(.0227)	(.0354)
Hours^2/10		−.0068	.0045
		(.0075)	(.0126)
p-value		[.517]	[.683]
Senior hours:			.0501
			(.0252)
Hours^2/10			−.0085
			(.0067)
p-value			[.059]
Respondents remain in school through at least:	Sophomore year	Junior year	Senior year

NOTE.—See table 4 note. The outcomes are dichotomous variables indicating whether or not the respondent has graduated from high school by the 1991 survey date. The equations are estimated as binary probit models. The sample in col. c is restricted to persons remaining enrolled in high school through the reference week of their scheduled senior year. Col. b includes persons remaining in school through the interview week of the junior grade and col. a includes those enrolled through at least the reference week of their sophomore year. Sample sizes are 1,287, 1,185, and 1,050 for specifications a–c.

and earn higher hourly wages than their nonemployed peers, with both effects significant at the .1 level. As with males, they also work more hours and have greater probabilities of receiving health insurance or pension coverage from their companies. Additional research is needed to fully understand the nature of these disparities. However, they are unlikely to result from a selection process whereby only the most work-oriented girls hold jobs during their senior year, whereas a more random group of boys do so. In this case, the gender difference would probably be stronger for future employment levels than for wages or compensation, whereas the reverse pattern is actually observed.

D. Educational Attainment

The preceding analysis was restricted to individuals remaining in school through the interview week of their senior grade (assuming normal progress towards graduation). Since this sampling criteria eliminates some high school dropouts, the observed beneficial effect of student employment could be partially offset by a not fully accounted for negative effect of the work on educational attainment. To investigate this possibility, table 8 examines the relationship between student job-holding and high school graduation probabilities.

The sample in column a includes all high school sophomores, whether or not they subsequently continue in school. Column b is limited to those enrolled in the reference week of the junior grade, thereby eliminating respondents who drop out between the sophomore survey week and the subsequent interview. Finally, column c is restricted to youths still in school in their senior year (assuming normal academic progress), as was done in the previous investigation of labor market outcomes. Specification a therefore provides an unconditional estimate of the effect of sophomore employment, whereas models b–c condition on the respondent's remaining in school for 1 or 2 additional years. Similarly, column b provides the unconditional prediction of the effect of working in the junior year, while model c supplies a conditional expectation.

Senior job-holding is positively associated with high school graduation rates. For instance, compared to students who do not work, 10 hours of reference week employment raises the predicted likelihood of finishing high school from 95.6% to 97.7% (see col. c).[42] The coefficients on sophomore and junior employment once again fail to approach statistical significance, although the point estimates suggest that heavy work commitments in the sophomore year may reduce high school graduation probabilities. However, as noted in table 2, few sophomores work these long hours and employed juniors complete high school more often than their counterparts.[43]

Table 9 presents results for two additional indicators of educational attainment (measured at the 1991 survey date): highest grade completed and the probability of finishing 4 or more years of college. Girls who work in the last year of high school complete fewer years of education than those who do not, with college graduation rates also declining when the employment exceeds 10 hours per week. For example, compared to not working, 20 hours of reference week employment reduces predicted completed schooling by .45 years and college graduation rates by 6.5 percentage points (from 29.6% to 23.1%). Conversely, there is no evidence that senior year employment is related to the educational acquisition of boys.

These results are consistent with previous research indicating that student employment has ambiguous effects on educational achievement. Importantly, they provide little indication that the previously

[42] The very high graduation rates result from restricting the sample to persons remaining in school through the interview week of their senior year.

[43] The graduation equations were also estimated separately for men and women. The effect of sophomore or junior year employment never approached statistical significance while that for work in the senior grade was positive and significant at the .1 level for males and the .15 level for females.

Table 9
Regression and Probit Estimates of Educational Attainment on Employment Hours in High School Reference Week and Other Covariates

Type of Employment	Full Sample	Males	Females
Highest grade completed:			
Senior hours:	−.0041	.0006	−.0047
	(.0111)	(.0146)	(.0119)
Hours^2/10	−.0032	−.0023	−.0090
	(.0032)	(.0039)	(.0066)
p-value	[.006]	[.427]	[.000]
4 or more years of college completed:			
Senior hours:	−.0010	.0005	.0206
	(.0135)	(.0183)	(.0261)
Hours^2/10	−.0045	−.0025	−.0189
	(.0043)	(.0051)	(.0100)
p-value	[.020]	[.534]	[.003]

NOTE.—See table 4 note. The dependent variable in the top panel is the highest grade completed by the 1991 survey date. The outcome in the bottom panel is a dichotomous variable indicating whether or not the respondent had completed 4 or more years of college by the 1991 survey date. The college graduation equations are estimated as binary probit models. Ordinary least squares is used for highest grade completed.

described labor market benefits of work by in-school youths are substantially affected by the exclusion of some high school dropouts from the analysis.

E. Predicted Effects of Senior Year Employment

Table 10 summarizes predicted differences in several labor market and education outcomes associated with various amounts of senior year employment, relative to working 0 hours in the interview week. The predictions are obtained from equations that control for the full set of covariates (i.e., specification e of table 4) and the fourth row of each panel shows the number of hours of student employment at which the specified dependent variable is predicted to reach a maximum.[44]

Compared to nonworking seniors, 10 hours of reference week employment is associated with 14% greater future earnings, 94 hours per year of additional work, a 6% rise in hourly wages, and an 8% increase in total compensation. The predicted gains from working 20 hours per week are considerably larger—22%, 182 hours, 9%, and 11%, respectively.

[44] For the tobit models in col. b, predictions are obtained by multiplying the expected change in the latent variable by the predicted percentage of noncensored observations. For the probit models in col. f, expected outcomes are calculated by setting work hours to the specified amount and averaging predicted values of the dependent variable across individuals.

Table 10
Change in Economic Attainment and Education Associated with Employment in the Reference Week of the Senior Year in High School

Reference Week Employment Hours	Annual Earnings (a) (%)	Annual Work Hours (b)	Hourly Wages (c) (%)	Hourly Compensation (d) (%)	Highest Grade Completed (e)	4 or More Years of College (f)
Differentials for full sample:						
10 hours	14.3	94.4	6.3	7.8	−.07	−.011
20 hours	22.1	181.5	9.0	11.0	−.21	−.040
40 hours	13.7	334.2	2.8	2.4	−.68	−.136
Maximum difference	24.7	−100	21.9	21.3	. . .	1.1
Differentials for males:						
10 hours	12.9	115.8	3.1	4.3	−.02	−.004
20 hours	21.2	210.4	4.3	5.8	−.08	−.016
40 hours	20.2	335.9	.4	.0	−.34	−.064
Maximum difference	29.2	59.6	20.5	20.0	1.3	1.5
Differentials for females:						
10 hours	23.2	101.0	13.3	16.0	−.14	.003
20 hours	29.2	190.4	16.2	19.5	−.45	−.065
40 hours	−12.7	334.8	−9.5	−11.0	−1.63	−.260
Maximum difference	17.9	92.7	17.5	17.5	2.6	5.4

NOTE.—See tables 4, 5, 7, and 9, notes. Table shows difference in predicted outcomes compared to persons not working in the reference week of the senior year. Sample averages for annual work hours, highest grade completed, and college graduation rates are 1,786.7 hours, 13.64 years, and .273, respectively, for the full sample. Maximum difference refers to the number of hours of senior-year employment at which the dependent variable is predicted to reach a maximum.

For most outcomes, the maximum effect occurs at 21–24 hours of interview week employment, implying that work in the senior year yields substantial but diminishing future returns.

The decreases in educational attainment associated with student jobholding are initially modest but become substantial for persons working more than 20 hours per week. For instance, the predicted reduction in completed schooling, compared to nonworkers, is .07, .21, and .68 years for those working 10, 20, and 40 hours, respectively, in the interview week. Similarly, the probability of finishing at least 4 years of college declines from .301 for students not holding jobs to .290, .261, and .165 for seniors employed 10, 20, and 40 hours, respectively. The decline in education associated with working long hours may occur because these individuals have decided to enter the workforce full-time upon departing high school rather than continuing on to college.[45]

[45] Consistent with this, a separate set of regressions indicates that the returns to working in the senior year are substantially higher for individuals never attending

The middle and lower panels of the table indicate gender differences in the estimated effects. As discussed, the financial benefits of light to moderate amounts of senior grade employment are much higher for females than males (e.g., working 10 hours is associated with a 23% increase in future earnings and a 16% rise in hourly compensation for women vs. 13% and 4%, respectively, for men) but with more sharply diminishing returns. Thus, the maximum (positive) differential for earnings, wages, or hourly compensation occurs at around 17 hours for girls, as compared to 20–29 hours for boys. One reason for this disparity is that the negative impact of heavy work commitments on educational attainment is much greater for females. For instance, 40 hours of reference week employment is predicted to reduce completed years of schooling almost five times as much for women as for men (1.63 vs. 0.34 years), with correspondingly larger decreases in the probabilities of finishing college.

VI. Conclusion

Much of the alarm that employment hinders the long-term development of high school students has been based on analyses of nonrepresentative samples and using methods that are unlikely to account for the selection process into student job-holding. The concerns have been magnified by a belief that work by in-school youths has rapidly increased since the end of World War II. Actually, this trend is less pronounced than is often realized and appears to have ended by the late 1960s, with subsequent reductions in the employment-to-population ratios of some groups (e.g., 14–19-year-old males). Moreover, relatively few students are employed for the long hours that cause particular consternation.

This study uses data from the National Longitudinal Survey of Youth to examine the effects of student employment. Contrary to some previous research, the investigation fails to uncover any evidence of harmful effects of working during high school. Instead, jobs held during the senior year yield substantial and lasting benefits. For example, seniors employed 20 hours per week are expected to earn approximately 22% more annually, 6–9 years later, and to obtain 9% higher hourly wages and 11% greater hourly compensation than their counterparts who do not work. They are also more likely to receive pensions and health insurance from their employers and work in higher status occupations. Particularly large benefits of moderate work hours are observed for females, and the favorable effects of senior year employment persist after controlling for a compre-

university than for those completing at least 1 year of college. For instance, the earnings differential associated with working 20 hours in the reference week is 35% for the former group versus 12% for the latter.

hensive set of background characteristics and are robust across a variety of specifications, samples, and estimation techniques.

Several caveats are worth noting. First, controls for a still broader set of covariates could reduce the advantages associated with employment by high school seniors. Second, this study focuses exclusively on measurable economic outcomes. Third, most of the analysis is restricted to individuals remaining in school through the normal age of high school graduation. Finally, although the investigation covers a longer time period than previous research, there may be deleterious effects of student job-holding that do not show up until later in life.

While these qualifications imply that the conclusions of this study should be interpreted cautiously, it is doubtful that any of them account for the key finding that benefits are associated with senior year employment. The characteristics controlled for are unusually comprehensive, and there is little evidence that the addition of covariates, beyond the basic set available to previous researchers, substantially changes the results. Furthermore, the findings are unlikely to be explained by spurious correlation between senior grade job-holding and important excluded characteristics, since most such factors would also be associated with employment in the sophomore and junior years. For example, if unobserved differences in socioeconomic status increase both the probability of working in high school and the level of future economic attainment, employment in all three grades would be positively correlated with subsequent labor market status. Instead, strong benefits are observed only for working seniors.

Deleterious effects of student employment on the social development of adolescents are likely to be at least partially manifested in future labor market outcomes. The positive economic effect of working therefore suggests that these problems either do not occur, are transitory in nature, or are more than compensated for by beneficial investments in human capital.

Job-holding in the senior year does appear to reduce educational attainment. The predicted effect of light work commitments is modest—working 10 hours per week is associated with less than a 3-week decline in completed schooling and a one percentage point decline in college graduation rates—and employed seniors are actually more likely to finish high school than their nonemployed counterparts. However, work in excess of 20 hours per week has a substantial negative effect on the educational acquisition of females, which helps to explain why the economic benefits of working in the last year of high school exhibit greater diminishing returns for girls than boys. Conversely, employment in the sophomore or junior years is not statistically significantly related to either the amount of schooling acquired or to any of the labor market outcomes.

The likelihood that negative effects of high school work experience

do not show up until later ages than those studied is reduced by the strong positive correlation between senior year employment and the Duncan occupational index. Working 20 hours per week in the senior grade is associated with a 4-point increase in the Duncan score for the full sample and a more than 5-point rise among women.[46] To the extent that occupational attachments are established by the middle to late twenties, the Duncan index should reveal differences in status, which will be subsequently reflected in earnings.

This investigation indicates that student employment raises future productivity through the skills, knowledge, work habits, and experience provided on-the-job by far more than it detracts from educational human capital investments. Evidence from time-use studies suggests that this occurs because the time spent working reduces leisure pursuits much more than it decreases school or homework activities. For example, Turner's (1994) analysis of the High School and Beyond Survey illustrates that the average high school senior spent 18 hours per week watching television in 1980, compared to less than 4 hours on homework. He further estimates that working 20 hours per week reduces homework by just 3.2% (7.2 minutes per week), while decreasing television time by 19.9% (3.6 hours per week).[47] This raises the possibility that the benefits of student employment exceed the costs because the latter are typically so low. It also implies that job-holding may have less favorable effects for students who would otherwise spend relatively large amounts of time on school work, which may help to explain the lower returns for respondents continuing on to college.

Additional research on the benefits and costs of high school work experience is needed. In particular, it is important to better understand the mechanisms by which the employment raises economic attainment, the role of job characteristics of the positions held by in-school youths, and the nature and sources of demographic group differences in the returns to student employment. Based upon the current state of knowledge, however, concern that work during high school has extremely deleterious consequences appears to be misplaced. A tentative but fairly strong conclusion is that light to moderate work commitments provide important net benefits and so should be encouraged.

[46] For comparison, the Duncan score of a welder exceeds that of an assembler by 6 points.

[47] Students employed 1–16 hours per week are actually predicted to spend *more* time on homework than those who do not hold jobs.

Appendix

Table A1
Coefficients from Regression of Log Earnings on High School Employment Hours and Covariates

Regressor	Sample Mean	Regression Coefficient	Standard Error
Sophomore in 1979	.506	.0478	.0589
Ethnic status:			
Black	.115	−.2756	.1163
Hispanic	.063	−.1396	.1645
Female	.489	−.5398	.0594
Married	.451	−.0236	.0662
Resides in:			
Northeast	.180	.1857	.1027
Northcentral	.302	.0502	.0927
South	.315	.1981	.0939
SMSA	.705	−.0916	.0965
Urban Area	.749	.1423	.0997
Local unemployment rate:			
<3%	.035	2.0889	.3061
3–6%	.583	1.7228	.2350
6–9%	.245	1.4293	.2343
9–12%	.075	1.3110	.2548
>12%	.012	1.0680	.3793
Respondent is foreign born	.027	−.1240	.2179
Mother is foreign born	.062	.1902	.1654
Father is foreign born	.058	.1119	.1614
Foreign language spoken in the home	.112	.0305	.1310
Mother's education:			
High school dropout	.303	−.1800	.1526
High school graduate	.589	−.0978	.1477
College graduate	.108	−.1585	.1715
Father's education:			
High school dropout	.325	.2249	.1290
High school graduate	.491	.1964	.1255
College graduate	.184	.1823	.1436
Magazines in home (at 14)	.739	−.0057	.0757
Newspaper in home (at 14)	.843	.0278	.0866
Library card in home (at 14)	.741	−.0664	.0720
Number of siblings (1979)	3.03	.0178	.0155
Attended public school (1979)	.928	−.1571	.1217
Highest grade expected (1979)	14.3	.0348	.0167
Negative attitude concerning school (1979)	.153	−.1440	.0829
Religion (1979):			
Baptist	.182	−.0168	.0861
Catholic	.336	−.0154	.0719
Jewish	.010	.0217	.2838
Has smoked cigarette (by sophomore year)	.624	−.0482	.0616
Marijuana/hashish use (by sophomore year)	.079	−.0717	.1098
Natural log of average family income	9.98	.1520	.0633
AFQT score (1980)	45.9	.0049	.0015

NOTE.—See table 4 note. The dependent variable is the natural log of average annual earnings in 1988–90. Work hours and hours squared in the sophomore, junior, and senior year (of high school) interview weeks are also controlled for. These coefficients are shown in specification e of the top panel of table 4. Unless otherwise specified, sample means are evaluated over the same period as the outcome variables and refer to respondents interviewed in 1991. Respondents are defined to have negative attitudes towards school if they responded that either of the statements "most of my classes are boring" or "I don't feel safe at this school" are "very true" or if they said that they were "very dissatisfied" with their school. Family income is averaged over the respondent's sophomore through senior year of high school. SMSA = standard metropolitan statistical area, AFQT = Armed Forces Qualification Test.

Table A2
Coefficients from Probit Model Examining the Probability of Working in the Reference Week of the Senior Year in High School

Regressor	Probit Coefficient	Standard Error
Sophomore in 1979	.0341	.0932
Ethnic status:		
Black	−.4195	.1695
Hispanic	.3054	.2375
Female	−.0138	.0848
Married	.0508	.0953
Resides in:		
Northeast	.0413	.1427
Northcentral	.0041	.1326
South	−.3368	.1383
SMSA	.0091	.1174
Urban Area	−.0020	.1198
Local unemployment rate:		
6%–9%	−.1693	.1353
9%–12%	−.1632	.1531
>12%	−.3970	.1706
Respondent is foreign born	.1491	.3110
Mother is foreign born	.0204	.2343
Father is foreign born	.0222	.2313
Foreign language spoken in the home	−.2679	.1871
Mother's education:		
High school dropout	.2040	.2247
High school graduate	.1522	.2179
College graduate	.1384	.2511
Father's education:		
High school dropout	.0215	.1895
High school graduate	.2360	.1829
College graduate	−.0050	.2070
Magazines in home (at 14)	.0360	.1092
Newspaper in home (at 14)	−.0777	.1260
Library card in home (at 14)	.3329	.1025
Number of siblings	.0282	.0229
Attends public school (1979)	−.0016	.1758
Educational expectations	−.0081	.0243
Negative attitude concerning school	−.0975	.1205
Religion:		
Baptist	.0670	.1285
Catholic	.0189	.1040
Jewish	−.1686	.3972
Has smoked cigarette (by sophomore year)	.0708	.0889
Marijuana/hashish use (by sophomore year)	−.0453	.1603
Natural log of average family income	.2293	.0933
AFQT score (1980)	.0011	.0021

NOTE.—See tables 4, 5, and 6, notes. The table displays coefficients for a probit model where the dependent variable takes the value one (zero) if the respondent works positive (zero) hours in the reference week of the senior year in high school. All regressors are measured at the same date as those in the previous regressions, except location and local unemployment rates, which refer to the senior year in high school. SMSA = standard metropolitan statistical area, AFQT = Armed Forces Qualification Test.

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