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Chapter Author: Richard B. Freeman

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5 Economic Determinants of Geographic and Individual Variation in the Labor Market Position of Young Persons

Richard B. Freeman

Relatively high and increasing rates of joblessness and decreasing earnings for young persons relative to older persons constituted one of the major labor market problems in the United States and other countries in the 1970s. Several hypotheses have been offered to explain the deteriorated economic position of young persons. Some cite macroeconomic factors and the general weakening of the job market; others emphasize the role of the minimum wage and related market rigidities; yet others have stressed the demographic changes of the period, which took the form of sizable increases in the relative number of young workers. While the issue is one of change over time, the available time series, though useful, lack sufficient variation to provide strong tests of the competing hypotheses or to provide estimates of the impact of the full set of possible explanations.

This chapter uses evidence on the labor force activity of young persons across geographic areas (SMSAs) and across individuals to analyze the determinants of the market for young persons. The data on geographic areas provide a reasonably large sample of observations with considerable variation in both dependent and potential explanatory variables, variation that appears to provide a better "experiment" for testing various proposed causal forces for youth market problems than collinear time series. The major disadvantage of the geographic evidence is that variation across regions may reflect regional differences in "competitiveness"—the performance of one area versus another—that provide little insight into the possible causes of aggregate problems. Another potential problem is that correlations of factors across areas can give a misleading picture of the determinants of the position of individual (i.e., ecological

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correlation bias). The data on individuals in the Survey of Income and Education provide a way around the ecological correlation problem and also cast light on several other aspects of the youth labor market position.[1]

I will begin with a brief review of several proposed causes of the youth labor market problem, and then analyze the differences in youth employment, unemployment, and labor force participation across geographic areas and among individuals.

There are four basic findings:

1. Geographic variation in the employment, unemployment, and labor force participation of young workers depends in large measure on identifiable supply and demand conditions in local labor markets, including the relative number of young persons, the percentage of homes below the poverty level, the rate of unemployment of prime-age men, the rate of growth of personal income, and the proportion of jobs in young-worker-intensive industries. While classification of explanatory variables such as supply or demand related is somewhat arbitrary, the evidence appears to support the notion that inadequate demand is a prime cause of the youth joblessness problem.

2. The employment and wages of young persons are differently affected by personal and background factors. Being black or coming from a family with certain socioeconomic problems affects the probability of employment but does *not* affect wages. The different effects of variables on employment and wages highlight the extent to which there is a distinct youth *employment* problem.

3. Because determinants of youth employment often have the same directional impact on labor force participation rates as on employment, they have little effect, or occasionally a contradictory effect, on unemployment rates. This suggests that analyses focusing on unemployment can give misleading impressions about the determinants of the youth labor market position.

4. Though cross-area models tell a roughly similar story about the determinants of the youth labor market as do comparable time series analyses, neither cross-section nor time series analyses explain the behavior of the youth labor market in the 1970s, when, with the marked exception of young blacks, employment to population rates held steady and labor participation rates rose, despite adverse changes in their putative determinants.

5.1 Causes of Youth Labor Market Problems

The factors that underly youth employment problems can be examined with standard partial equilibrium models of the job market, in which supply and demand determine equilibrium employment and wages and in

which joblessness (above frictional levels) results from failure to attain market clearing wages, either because wages respond relatively slowly (for diverse reasons) to rapid changes in demand or supply or because of rigidities such as legislated minima. To illustrate the way in which dynamic shifts in demand or supply and sluggish wages adjustments can produce joblessness, consider the following simple model

(1) Supply: $\ln S = \epsilon \ln W + Bt$

(2) Demand: $\ln D = \eta \ln W + At$

(3) Wage Adjustment: $\Delta \ln W = \psi(\ln D - \ln S)$

where S = supply of labor, D = demand for labor, W = wage, A = shift in demand per unit time, B = shift in supply per unit time, ϵ = elasticity of supply, and η = elasticity of demand, Δ = change over time.

Joblessness occurs in the system (1)–(3) because wages respond to disequilibrium with a lag. Since $\ln D - \ln S = -(\eta + \epsilon)\ln W + (A - B)t$, $\Delta(\ln D - \ln S) = -(\eta + \epsilon)\Delta \ln W + (A - B)$. Solving for the "equilibrium" level of unemployment by substituting (3) for $\Delta \ln W$ and setting $\Delta(\ln D - \ln S) = 0$, we get $\ln S - \ln D = (B - A)/(\eta + \epsilon)\Psi$. When supply increases more rapidly than demand ($B > A$), the slow adjustment of wages produces unemployment in the relevant time period. Relatively slow movement in wages could result from the normal process of wage determination in an economy with long-term contracts and unexpected or uncertain shocks.

The analysis of *shifts* in the schedules directs attention to the factors that cause the supply of young workers to increase significantly or cause the demand for young workers to decrease significantly.

The major potential cause of increased supply is the sizable expansion of the youth population, which resulted from the baby boom of the fifties and sixties. Given noninfinite substitution elasticities among workers by age, the increase in supply could be expected to cause significant pressures on the youth market. If increased numbers are an important determinant of the problems of the seventies, the youth market should improve steadily in the 1980s when the number of young persons declines as a share of the total population.

Two basic types of shifts in demand are likely to contribute to the joblessness problem. The first are shifts due to changes in the overall level of economic activity, such as cyclical declines or a longer-run slowdown in the rate of growth. When aggregate demand declines or grows slowly, the reduction in hiring will have significant effects on the demand for the young. The second type of shifts involve structural changes in the mix of industries and occupations or in the supplies of workers who can substitute for the young, such as illegal aliens willing to undertake unpleasant tasks for low wages and/or adult women, who at existing wages may be preferred by employers for certain entry-level positions.

Failure of wages to attain market-clearing levels because of rigidities such as the minimum wage represents another potential cause of youth joblessness. In contrast to a failure to clear because of sluggish adjustment, failure to clear because of the minimum can produce joblessness even in periods of stable supply and demand if the minima are above the equilibrium rate.

In addition to shifts in demand and supply due to general market or demographic factors, the labor market for some groups of youths may be adversely affected by more complex social forces, the impact of which is difficult to measure with the type of data currently available. One such set of factors pertains to opportunities for work and earnings outside the mainline economy, ranging from casual street jobs to crime, which offer an alternative to normal labor force activity. Another set of factors relates to possible disparities between the skills of young persons from disadvantaged backgrounds and their aspirations and willingness to take "undesirable jobs." Yet another relates to the conditions of the individual's family or community: for diverse reasons, those from welfare homes or from communities with widespread welfare or poverty may have greater problems in obtaining jobs than other youngsters. Finally, for discriminatory or other reasons, it is well known that black youngsters face especially poor employment prospects. Under certain circumstances, moreover, the rise in the number of white youths could have adversely affected the position of black youths.

This chapter will focus largely on the contribution of differences in broad supply and demand forces to youth joblessness and touch only briefly on the more complex social factors mentioned above. The geographic data set is well suited to analyze the effect of broad market forces on youths because these forces vary substantively across areas and can be viewed as appropriate indicators of labor market conditions. The data set on individuals provides information to assess the incidence of joblessness among young persons with different characteristics but lacks the information on incentives, skills, attitudes, and employment practices that is needed to determine the *causal* forces behind many observed relations.

5.2 Geographic Variation in Youth Employment and Joblessness

The effect of some of the proposed explanatory factors on the youth labor market can be analyzed with information on the work activity of youths across SMSAs using data from the U.S. Census of Population of 1970 (see the data appendix for a detailed description). The Census has sufficiently large samples to provide information on the activity of youths by age, sex, and enrollment status in 125 SMSAs. More limited information on certain explanatory factors is available from 114 SMSAs.

The state of the youth labor market in each SMSA is measured by three related variables: the ratio of youth employment to the youth civilian population, which reflects the overall impact of supply and demand forces on the amount of work from the group; the civilian labor force participation rate of the young; and the rate of unemployment among the young. The employment to population ratio is given the greatest stress, as it is the clearest measure of objective behavior. The high mobility of young persons into and out of the work force (see Clark and Summers, chapter 7 of the present volume) and the possibility of significant encouraged/discouraged worker behavior makes the labor force and unemployment measures of activity looser and subject to greater potential error.

The analysis differentiates between males and females and among three age groups: 16–17 year olds, most of whom are in school; 18–19 year olds; and 20–24 year olds. Because of significant differences in work activity by school status, calculations relating to the total youth group always contain a variable for the proportion of the group enrolled in school. In addition, separate calculations are made for young persons out of and in school.

The three measures of youth labor market activity show considerable differences in employment and joblessness across SMSAs, providing the variation that is a prerequisite for fruitful analysis. As can be seen in line 1 of table 5.1, the standard deviation of the employment to population ratio across SMSAs for all young men range from .069 for 16–17 year olds to .059 for 20–24 year olds. The standard deviations of labor participation rates are similar while those for unemployment are lower, but with lower means.

Differences in the relative supply of young persons are measured by the ratio of the number of young civilians in a specified age-sex group to the number of civilian men 16 and over. Sizable differences in the distribution of young workers by age among industries and occupations suggest the value of separate analyses for each age-sex group.[2] The ratio of young persons to men 16 and over varies considerably across areas,[3] in part because of differing fertility, mortality, and migration patterns and in part, it should be noted, because the Census enumerates college students at their area of residence during college.

Differences in demand for young workers due to differences in the overall level of economic activity across SMSAs are measured by: the unemployment rate of 30–34 year old men and by the rate of growth of total personal income.[4] Areas with strong labor markets for adult workers or with significant growth in income over time are likely to have greater numbers of entry-level jobs for the young.

To take into account the likely impact of an SMSAs industrial mix on the demand for young workers, a fixed weight index of the favorableness

of each SMSA's industrial composition to youth employment was estimated, using national figures on youth employment in industries (see Bowen and Finegan 1969 for a similar index). Specifically, let α_i equal the ratio of the number of young persons in a specified age-sex group working in industry i to total employment in industry i in the United States as a whole; Let W_{ij} equal the share of employment in SMSA j accounted by industry i; and let α equal the ratio of the number of young persons in the age-sex group employed in the United States to total employment. Then the index of industrial mix is defined by

$$I_j = \sum_i (\alpha_i/\alpha) W_{ij} \tag{4}$$

where α is used as a scaling factor.

The federal minimum, the market imperfection most likely to affect demand, does not, of course, vary across areas. Since the minimum might be expected to have a bigger impact on low-wage than high-wage SMSAs, average hourly earnings in industry in an area can be used as a crude proxy measure of the effect of the minimum: the higher the earnings, the less effective the minimum should be. Since earnings measure other characteristics of an area, however, this provides at most a weak test of the effect of the minimum.[5] State minimum wages do of course differ across areas but have low levels and are weakly enforced. A 0–1 dummy variable for the presence of a state minimum is entered in the calculations.

Unfortunately, given current survey data, it is difficult to measure behaviorally more complex determinants of youth market problems, such as motivation, skill, and social difficulties. At best one can include measures of area characteristics which may be associated with these factors. The following measures are examined: the proportion of one-parent/female-headed homes in the area; the proportion of homes in the SMSA that are below the official poverty line; the proportion of young persons in the SMSA who are black; and the number of AFDC recipients per person in the SMSA. The proportion of impoverished homes turns out to be the most important of this set of variables. Unfortunately, the causal effect of the variable is subject to several interpretations: it could be an indicator of inadequate demand in the area in which the individual resides; it could reflect inadequate work skills and "human capital" formation in disadvantaged homes; or it could reflect "community effects" on young persons in poverty areas, of the type stressed by Loury. Because of the difficulties of interpretation and because both poverty and youth unemployment may be *simultaneously determined* by other area characteristics, the variable is deleted from some calculations.

Since the welfare, one-parent female, poverty, and black variables measure *area* characteristics, interpretation of their coefficients is subject

to the "ecological correlation" problem referred to earlier. Accordingly, their impact is also examined with the data set on individuals.

5.3 Empirical Analysis: Young Men 16–24

The effect of the explanatory variables described above on the employment to population rate, labor force participation rate, and rate of unemployment of young workers is examined with ordinary least squares (OLS) linear regressions of the following form:[6]

$$Y_i = \Sigma a_i X_i + U_i \tag{5}$$

where Y_i equals the relevant measure of labor force activity, X_i equals the explanatory variable, and U_i equals the residual.

Table 5.1 contains the basic regression results for young men aged 16–17, 18–19, and 20–24. The regressions include eight region dummies and a measure of the size of the SMSA (number of persons), as well as the explanatory factors described earlier. Regional dummies are included to control for potential omitted factors that vary among major regions. The size of the SMSA is included to evaluate the possible concentration of youth joblessness in the larger areas. The figures in the odd-numbered columns show the results of regressions which exclude one of the key variables, the proportion of homes below the poverty level, while the figures in the even-numbered columns shows results with that variable included as an explanatory factor.

Let us consider first the equations that exclude the poverty level variable. While there are some peculiarities, the general story told by these calculations is clear: both the supply and demand forces have a substantial effect on the position of youths with, however, the demand factors apparently having a more important role in explaining differences in the position of youths in their twenties and supply factors being more important for those in their mid-teens.

On the demand side, the two measures of the level of economic activity in an SMSA, the rate of unemployment of prime-age (30–34 year old) men and the rate of growth of total personal income in an area, have powerful effects on the position of young workers in nearly all of the equations. The prime-age male unemployment rate significantly reduces the employment ratio and labor force participation rate in all three age groups and raises the unemployment rates of 18–19 and 20–24 year olds though not the unemployment rate of 16–17 year olds, for whom the reduction in participation is especially large. The rate of growth variables is also accorded generally significant nonnegligible coefficients, which suggest that growing areas tend to have more jobs for the young then declining areas. The measure of the favorableness of industry mix to

youth employment also turns out to be a major determinant of the position of the young. The index is strongly related positively to the employment rate and participation rate.

On the supply side, the relative number of young people has a noticeable effect on the employment and participation rates of 16–17 and 18–19 year olds but *not* on that of 20–24 year olds. This differential impact by age probably reflects the fact that because of the minimum wage, the wages of the younger groups have less room for downward adjustment to supply increases.[7] Among 16–17 year olds, the reduction in the employment rate dominates the reduction in the participation rate so that unemployment increases; among 18–19 year olds, the change in employment and participation yield no effective change in the unemployment rate; while among 20–24 year olds, the greater reduction in participation than in employment in response to increased numbers of person actually *reduces* unemployment—which highlights possible misinterpretation from analyses that focus solely on unemployment rates.

In the absence of the poverty level variable, the percentage of homes headed by women in an SMSA also has a sizable impact on the position of young workers: youths in areas with a significant female-headed population do worse than other youths.

As for the other variables (whose coefficients are not reported in the table), the log of average hourly earnings in manufacturing and the dichotomous dummy variable for presence of a state minimum had no noticeable effect on any of the dependent variables. Neither did the size of city nor the AFDC recipients/population variable nor, more surprisingly, the percentage of blacks. Because these are measures of area characteristics rather than measures of individual characteristics, however, it should not be concluded that blacks or those from welfare homes are not especially hard hit by joblessness. By contrast the percentage in school reduced labor market activity noticeably, while the coefficients on the regional dummy variable indicate that the young tend to do better in the Midwest and New England and relatively worse in the Pacific, the South, and the North Atlantic.

The even-numbered equations, which include the percentage of families below the poverty level as an explanatory factor, tell a very different story about the determinants of the youth market. For when the proportion of families below the poverty is included, it dominates the calculations. The coefficients in the demand-side variable are reduced noticeably while those on supply factors—the relative number of young people—and social factors—the percentage of homes headed by females—generally drop to insignificance.

As noted earlier, the dominant effect of the percentage of impoverished families raises important issues of interpretation. The variable could reflect the impact of *individual* poverty, say, through inadequate

human capital formation, lack of connections, or related social ills in the homes of those in poverty, or it could reflect the impact of *community* factors on either the demand or supply side.

The difference between these interpretations is significant, for, as Loury has stressed in his analysis of communal externalities, improving the economic position of the disadvantaged is significantly more difficult when individuals are affected by communal factors than when only family background influences them.

The most efficacious way to differentiate between "individual" and "community" effects is to analyze the employment of individuals themselves using a data tape that includes *both* the position of the individual's family and whether the family lives in a poverty tract. Such an analysis is given in tables 5.8 and 5.9, and suggests that while the bulk of the observed relations appears attributable to the individual effect, there is *a separate community effect* which provides some support for the existence of community externalities, as postulated by Loury.

Finally, it should be emphasized that in many of the calculations in table 5.1 explanatory variables have a stronger impact on employment to population rates than on unemployment rates. For example, the relative number of young persons significantly reduces the employment ratio of 18–19 year olds but has no effect on their rate of unemployment, while the prime-age male unemployment rate, the percent annual growth of personal income, and the index of industrial mix have more significant effects on employment ratios than on unemployment rates. The reason for this pattern is that variables which alter employment rates have comparable, sometimes larger and sometimes smaller, effects on participation rates because of "encouraged" or "discouraged" worker behavior and thus uncertain effects on unemployment.[8] The tendency for explanatory factors to affect employment and participation in the same way and mute their effect on unemployment raises serious doubts about the emphasis usually placed on unemployment as the key indicator of the youth market and as the main dependent variable with which to study the market effects of diverse supply and demand forces.

5.4 Labor Market Position by Enrollment Status

Thus far the analysis has used a single variable, the proportion of young persons in school, to differentiate between the behavior of persons enrolled in school and persons not enrolled in school. This assumes that the major difference between the two groups lies in the level of labor force activity rather than in the effect of explanatory factors. As the response of young persons to conditions may differ depending on enrollment status and as lack of work is presumably a more serious problem for those out of school, it is important to examine the determinants of the

Table 5.1 **Regression Coefficients and Standard Errors for the Effect of Explanatory Factors on the Labor Market Position of Young Men, 1970**

	Employment ratio						Labor force participation rate						Unemployment rate					
	16–17		18–19		20–24		16–17		18–19		20–24		16–17		18–19		20–24	
Means and standard deviations	.323 (.069)		.527 (.065)		.743 (.059)		.369 (.072)		.587 (.067)		.797 (.055)		.125 (.024)		.102 (.036)		.068 (.028)	
Variables																		
Prime-age male unemployment rate	−1.50 (.55)	−1.01 (.50)	−1.28 (.47)	−1.06 (.45)	−2.01 (.37)	−1.88 (.35)	−1.59 (.60)	−1.04 (.53)	−.57 (.48)	−.38 (.47)	−.65 (.36)	−.55 (.35)	.28 (.31)	.20 (.31)	1.21 (.29)	1.11 (.28)	1.70 (.16)	1.66 (.16)
Percent annual growth personal income (×100)	.62 (.37)	.23 (.34)	1.01 (.32)	.77 (.31)	.40 (.25)	.25 (.24)	.62 (.40)	.18 (.36)	.88 (.33)	.68 (.32)	.35 (.24)	.23 (.24)	−.20 (.21)	−.14 (.21)	−.37 (.20)	−.26 (.20)	−.11 (.11)	−.07 (.11)
Index of industrial mix	.21 (.09)	.14 (.08)	.42 (.12)	.39 (.12)	.26 (.12)	.27 (.11)	.26 (.09)	.18 (.08)	.41 (.13)	.39 (.12)	.25 (.12)	.26 (.11)	.03 (.05)	.04 (.05)	−.07 (.08)	−.06 (.07)	−.03 (.05)	−.04 (.05)
Relative number of young people	−2.52 (.77)	−.82 (.75)	−1.51 (.62)	−1.36 (.59)	−.07 (.25)	−.09 (.24)	−2.16 (.83)	−.26 (.80)	−1.73 (.64)	−1.60 (.62)	−.31 (.25)	−.33 (.24)	1.78 (.43)	1.52 (.47)	−.12 (.38)	−.19 (.38)	−.29 (.11)	−.29 (.11)
Percent homes headed by females (×100)	−1.81 (.51)	−.42 (.52)	−1.43 (.41)	−.53 (.47)	−.82 (.31)	−.07 (.37)	−1.73 (.55)	−.18 (.56)	−1.17 (.42)	−.41 (.49)	−.65 (.30)	−.06 (.37)	.68 (.29)	.46 (.33)	.67 (.25)	.27 (.30)	.26 (.14)	.02 (.17)
Percent families below low income level (×100)	—	−1.61 (.30)	—	−.84 (.24)	—	.65 (.20)	—	−1.80 (.32)	—	−.71 (.25)	—	−.50 (.19)	—	.24 (.19)	—	.37 (.15)	—	.21 (.09)
Additional controls																		
Log average hourly Earnings in manufacturing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AFDC recipients/ population	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dummy for state minimum wage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Log of city size	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Percent black	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Percent in school	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region dummies	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Intercept	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Summary statistic																		
R^2	.71	.78	.77	.80	.82	.84	.69	.77	.76	.78	.80	.82	.62	.63	.71	.72	.85	.86

SOURCE: See Data Appendix.

employment/population, labor force participation, and unemployment rates for the two groups separately. Accordingly, table 5.2 presents regressions in which the dependent variables relate solely to either out-of-school or in-school youths. The independent variables are identical to those used in table 5.1, except that the percentage of youths in school is deleted as an explanatory factor.

While selected coefficients differ, the results for the out-of-school and in-school youths are qualitatively similar, suggesting roughly comparable market processes at work. The ratio of young men to all men obtains negative coefficients on the employment and participation rates of all groups save 18–19 year olds out of school. As a set, the demand side variables obtain generally comparable regression coefficients, though particular variables have different effects. One noticeable difference is that the rate of unemployment of men 30–40 tends to have larger coefficients in the regressions for out-of-school than in-school youths, which runs counter to the notion that the latter are more "marginal." A similar result was obtained by Bowen and Finegan who explained it in terms of the effect of unemployment on the percentage in school and the composition of that group (Bowen and Finegan 1969, pp. 423–31). Specifically, they show that the greater response of the out-of-school group can be explained by the hypothesis that persons who leave school in response to better job opportunities have higher labor force activity rates than the "original" members of the out-of-school group. The same explanation may account for the effect here as well. Note, however, that one demand variable, growth of personal income, has a larger impact on the in-school than the out-of-school group.

5.5 The Effect of the Market on Those Youths in School

The preceding discussion naturally raises the question of the impact of our demand and supply variables on those youths in school.

Because the Census enumerates college students by their place of college residence (whose labor market conditions presumably do not influence enrollment decisions), this important question can be analyzed with published Census data only for 16–17 year olds who are unlikely to be in college. For that group, the labor market variables obtain reasonable coefficients: a larger relative number of young persons and higher average hourly earnings in the area (interpreted as reflecting the negative of the impact of the minimum wage, as discussed on page 120) raised the proportion in school while a faster rate of growth of personal income, a favorable industry mix, a larger rate of male unemployment and a larger proportion of homes with incomes below the poverty line reduce the proportion in school, as shown in table 5.3.

Table 5.2 **Regression Coefficients and Standard Errors for the Effect of Explanatory Factors on the Labor Market Position of Out-of-school and In-school Young Men, 1970**

	Out-of-school									In-school								
	Employment ratio			Labor force Participation rate			Unemployment rate			Employment ratio			Labor force Participation rate			Unemployment rate		
	16–17	18–19	20–24	16–17	18–19	20–24	16–17	18–19	20–24	16–17	18–19	20–24	16–17	18–19	20–24	16–17	18–19	20–24
Means and standard deviations	.438 (.094)	.700 (.074)	.830 (.051)	.555 (.092)	.804 (.054)	.895 (.034)	.214 (.070)	.131 (.053)	.073 (.032)	.310 (.071)	.429 (.074)	.532 (.083)	.347 (.075)	.464 (.079)	.559 (.087)	.115 (.034)	.087 (.030)	.055 (.022)
Variables																		
Prime-age male	−2.23	−1.99	−2.22	−1.42	−.69	−.62	1.88	1.66	1.81	−.93	−.45	−1.35	−1.04	−.14	−.74	.05	.79	1.35
Unemployment rate	(1.00)	(.57)	(.35)	(1.07)	(.47)	(.29)	(.73)	(.42)	(.20)	(.46)	(.58)	(.88)	(.52)	(.63)	(.91)	(.31)	(.26)	(.17)
Percent annual growth	−.22	.01	.12	.18	−.18	−.01	.84	−.21	−.16	.37	1.41	1.37	.26	1.29	1.36	−.29	−.39	−.16
Personal income (×100)	(.67)	(.30)	(.24)	(.72)	(.32)	(.20)	(.49)	(.29)	(.13)	(.33)	(.40)	(.60)	(.35)	(.43)	(.62)	(.20)	(.18)	(.11)
Index of industrial mix	.32	.54	.33	.35	.48	.27	−.05	−.12	−.09	.14	.30	.26	.17	.29	.26	.04	−.07	−.06
	(.16)	(.14)	(.11)	(.17)	(.12)	(.09)	(.12)	(.11)	(.06)	(.08)	(.15)	(.28)	(.08)	(.16)	(.29)	(.05)	(.07)	(.05)
Relative number of young people	−1.92	.88	−.32	−.58	.87	−.38	2.81	−.17	−.05	−.95	−2.80	−1.34	−.48	−2.77	−1.33	1.45	.36	.07
	(1.45)	(.57)	(.16)	(1.55)	(.57)	(.13)	(1.06)	(.45)	(.09)	(.70)	(.63)	(.40)	(.76)	(.68)	(.41)	(.44)	(.28)	(.07)
Percent homes headed by females (×100)	−2.00	−.84	.01	−1.71	−.57	.00	.36	.36	.00	−.25	−.41	.07	−.02	−.35	−.04	.47	.29	−.12
	(1.06)	(.60)	(.36)	(1.13)	(.49)	(.31)	(.77)	(.44)	(.21)	(.51)	(.61)	(.93)	(.55)	(.66)	(.96)	(.32)	(.27)	(.17)
Percent families below low income level	−.36	−.92	−.52	−.60	−.70	−.39	.07	.42	.17	−1.66	−.71	−.72	−1.85	−.70	−.67	.23	.26	.17
	(.58)	(.30)	(.19)	(.62)	(.25)	(.16)	(.42)	(.22)	(.11)	(.28)	(.32)	(.49)	(.30)	(.34)	(.51)	(.18)	(.14)	(.09)
Additional controls																		
Log average hourly earnings in manufacturing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AFDC recipients population	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dummy for state minimum wage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Log of city size	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Percent black	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Percent in school	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Region dummies	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Intercept	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Summary statistic																		
R^2	.48	.74	.78	.39	.66	.65	.50	.72	.84	.79	.72	.46	.79	.71	.48	.63	.65	.74

Table 5.3 **Estimated Effect of Variables on Percentage in School, 16–17 Year Olds**[a]

	Coefficient	Standard Error
Relative number of young	1.25	.40
Average hourly earnings	.04	.02
Growth of personal income	−.37	.19
Industry mix	−.08	.04
Percentage with incomes below poverty line	−.56	.20
Unemployment of 30–34 year old males	.29	.28

[a]Includes all control variables used in table 5.2.

These results suggest that the proportion of young persons who drop out of school rises when the labor market is stronger. For 18–19 and 20–24 year olds, comparable regressions tell a similar story, with even larger coefficients on the labor market variables but, as noted, with less clear causal connections. I conclude that the same factors that influence the labor market for youths as a whole have roughly comparable effects on those out of school and those in school, which implies that inferences based on the entire youth population are reasonably likely to hold for either subgroup, and may also possibly affect the division between the two groups.[9]

5.6 Work Activity of Young Women

To see whether the labor market position of young women is influenced by the same factors that determine the position of young men, the employment to population rate, labor participation rate, and rate of unemployment of women age 16–17, 18–19, and 20–24 are regressed on essentially the same variables as in table 5.1 and 5.2, with two exceptions: the relative number of young persons is measured by the ratio of the number of young women in each group (rather than the number of young men) to the number of civilian men 16 and over, and the index of industrial mix is based on the ratio of young women to all workers in industry in the U.S. (rather than by the ratio of young men to all workers). For purposes of comparison, as well as issues of endogenity of family status, I have excluded measures of marital status from the calculations.

Table 5.4 summarized the results of the regressions for young women and presents comparable information from the regression for young men. The regressions reveal considerable similarities between the sexes in the labor market effects of most variables (the most noticeable exception being the relative number of young persons, which does not have as large an impact on 16–17 and 18–19 year old women as it does on 16–17 and 18–19 year old men). Most noticeably, the prime-age male unemployment rate has as sizable an impact on the employment/population, labor force participation, and unemployment rates of women as on those for

Table 5.4 **Comparison of the Effects of Major Economic Variables on the Economic Position of Young Men and Women**

	Employment ratio		Labor force participation rate		Unemployment rate	
	Male	Female	Male	Female	Male	Female
16–17						
Relative number of young people	−.82 (.75)	−.17 (.79)	−.26 (.80)	−.07 (.85)	1.52 (.47)	.26 (.58)
Prime-age male unemployment rate	−1.01 (.50)	−1.38 (.53)	−1.04 (.53)	−1.32 (.57)	.20 (.31)	.74 (.39)
Percent growth of personal income	.23 (.34)	.37 (.36)	.18 (.36)	.35 (.39)	−.14 (.21)	−.24 (.26)
Index of industrial mix	.14 (.08)	.14 (.06)	.18 (.08)	.17 (.07)	.04 (.05)	.01 (.05)
Percent of female-headed households	−.42 (.52)	−.10 (.57)	−.18 (.56)	−.07 (.62)	.46 (.33)	−.14 (.42)
Percent families below low-income level	−1.61 (.30)	−1.30 (.33)	−1.80 (.32)	−1.43 (.35)	.24 (.19)	.96 (.24)
R^2	.78	.78	.77	.77	.63	.70
18–19						
Relative number of young people	−1.36 (.59)	−.70 (.64)	−1.60 (.62)	−1.18 (.65)	−.19 (.38)	−.64 (.40)
Prime-age male unemployment rate	−1.06 (.45)	−.88 (.50)	−.38 (.47)	−.34 (.51)	1.11 (.28)	1.04 (.31)
Percent growth of personal income	.77 (.31)	.54 (.34)	.68 (.32)	.42 (.34)	−.26 (.20)	−.39 (.21)
Index of industrial mix	.38 (.12)	.26 (.11)	.39 (.12)	.22 (.11)	−.06 (.07)	−.12 (.07)
Percent of female-headed households	−.53 (.47)	.35 (.54)	−.41 (.49)	.52 (.54)	−.07 (.15)	−.16 (.17)
Percent families below low-income level	−.84 (.24)	−1.62 (.28)	−.71 (.25)	−1.51 (.28)	.27 (.30)	.02 (.34)
R^2	.80	.81	.78	.79	.72	.76
20–24						
Relative number of young people	−.09 (.24)	.16 (.21)	−.33 (.24)	.19 (.19)	−.29 (.11)	.05 (.09)
Prime-age male unemployment rate	−1.88 (.35)	−1.10 (.42)	−.55 (.35)	−.74 (.39)	1.66 (.16)	.70 (.18)
Percent growth of personal income	.25 (.24)	.27 (.29)	.23 (.24)	.15 (.27)	−.07 (.11)	−.24 (.12)
Index of industrial mix	.27 (.11)	.29 (.14)	.26 (.11)	.17 (.13)	.04 (.05)	−.21 (.06)
Percent female-headed households	−.07 (.37)	.86 (.45)	−.06 (.37)	.93 (.42)	.02 (.17)	.00 (.20)
Percent families below low-income level	−.65 (.20)	−1.55 (.23)	−.50 (.19)	−1.52 (.22)	.21 (.09)	.28 (.10)
R^2	.84	.77	.82	.74	.86	.77

men. The growth of personal income, the index of individual mix, and the proportion of families below low-income level also have roughly comparable effects, while the proportion of one-parent/female homes has a somewhat smaller effect on the employment of 16–17 year old women than on 16–17 year old men, but comparable effects in the other age groups.

Although there are differences, the overall impression given by the table is that similar area factors are associated with geographic variation in the employment of young women as of young men.

5.6 Relevance to Changes over Time

The question naturally arises as to the relevance of the cross-sectional calculations to observed changes in youth labor force activity over time. Are the estimated effects of variables in the cross-section consistent with comparable estimates from time series data? Do the estimates help explain observed trends in the youth labor market?

To compare the effect of variables in cross-section and time series data, it is best to estimate their coefficients with identical controls. Since the time series has fewer observations and less information about some variables, a relatively simple set of comparable regressions was estimated for the SMSA data set and the time series. The employment to population rate, labor force participation rate, and rate of unemployment of young male workers aged 16–17, and 18–19, and 20–24 were regressed on three explanatory variables: the rate of total male unemployment (used because of differences in the age grouping in our SMSA and time series data sets); the ratio of the number of young men in each age group relative to the number of men 16 and over; and measures of the minimum wage, the inverse of the ln average earnings in private industry in the cross-section data and ln of the federal minimum divided by average earnings in private industry in the time series. The cross-section data are taken from the basic SMSA data set. The sources of the time series data are described in the data appendix. Because of the danger of mistaking similar trends in time series variables for causal relations, the time series regressions are estimated in two different specifications: without a time trend variable and with a trend variable included.

Table 5.5 presents the estimated coefficients from the time series and cross-SMSA regressions. While there are some differences in the estimated effect of variables, the general pattern is of broad similarity in the regression coefficients. On the demand side, the unemployment rate of men reduces the employment to population ratio and tends to raise the unemployment rate of all groups by similar magnitudes and has comparable effects on the labor force participation of 16–17 year olds (though not on that of 18–19 and 20–24 year olds). On the supply side, the relative

Table 5.5 **Comparison of the Estimated Effect of Selected Variables on Youth Work Activity, 1948–77; Time Series Regressions vs. Cross-SMSA Regressions**

(A) Employment to population rate

Variable	16–17 year olds			18–19 year olds			20–24 year olds		
	Cross-SMSA	time series		Cross-SMSA	time series		Cross-SMSA	time series	
Male unemployment rate	−2.25 (.60)	−2.05 (.36)	−2.44 (.36)	−2.28 (.52)	−1.94 (.51)	−1.72 (.54)	−3.41 (.42)	−1.49 (.32)	−1.51 (.25)
Rel. no. of young persons	−3.57 (.83)	−3.33 (.48)	−6.09 (1.12)	−3.38 (.58)	−3.18 (.64)	−1.27 (1.83)	−1.66 (.21)	−.94 (.20)	−.20 (.24)
"Minimum wage" proxy[1]	−.12 (.04)	−.09 (.03)	−.11 (.03)	−.15 (.04)	−.14 (.04)	−.10 (.05)	−.11 (.03)	−.01 (.03)	.06 (.03)
Time trend	—	—	.26 (.10)	—	—	−.18 (.17)	—	—	−.19 (.05)
R^2	.25	.75	.80	.33	.60	.62	.49	.65	.79
(B) Labor force participation rate									
Male unemployment rate	−2.03 (.63)	−1.07 (.46)	−1.69 (.41)	−1.08 (.53)	.13 (.51)	.21 (.55)	−1.70 (.41)	.56 (.24)	.55 (.22)
Rel. no. of young persons	−3.10 (.89)	−1.78 (.60)	−6.19 (1.28)	−3.43 (.59)	−2.18 (.64)	−1.45 (1.85)	−1.72 (.21)	−.61 (.15)	−.15 (.20)

"Minimum wage" proxy[1]	−.15 (.05)	−.09 (.04)	−.12 (.03)	−.18 (.04)	−.13 (.04)	−.12 (.05)	−.12 (.03)	.00 (.02)	.04 (.02)
Time trend	—	—	.41 (.11)	—	—	−.07 (.17)	—	—	−.11 (.04)
R^2	.21	.42	.63	.33	.44	.44	.42	.49	.62
				(C) Unemployment rate					
Male unemployment rate	1.24 (.26)	2.32 (.18)	2.07 (.16)	2.20 (.26)	2.90 (.19)	2.70 (.18)	2.28 (.15)	2.34 (.16)	2.35 (.12)
Rel. no. of young persons	2.41 (.37)	3.65 (.24)	1.88 (.49)	.48 (.29)	1.72 (.24)	−.05 (.60)	.06 (.08)	.45 (.10)	.08 (.12)
"Mimimum wage" proxy[1]	−.03 (.02)	.02 (.01)	.01 (.01)	−.02 (.02)	.03 (.02)	.00 (.02)	.00 (.01)	.01 (.01)	−.02 (.01)
Time trend	—	—	.17 (.04)	—	—	.17 (.04)	—	—	.09 (.02)
R^2	.41	.93	.96	.44	.90	.93	.70	.90	.94

[1]The minimum wage variable in the cross-SMSA data set is the ln of the inverse of average hourly earnings in the area. The minimum wage variable in the time series data set is the ln of the ratio of the federal minimum to average hourly earnings.

SOURCE: Cross-SMSA figures based on regressions using 114 SMSA data set. Time series figures based on data described in data appendix.

number of young persons has a roughly similar qualitative impact on employment to population, labor participation and unemployment rates in the time series when trend is excluded as in the cross-section. However, inclusion of trend greatly alters the magnitude of the coefficient, a result that highlights the problem of inferring the effect of demographic factors from the time series data. The third explanatory factor, the minimum wage variable, obtains negative coefficients of comparable magnitude in the time series and cross-section regressions for 16–17 and 18–19 year olds, when it has significant effects on the employment to population and labor force participation rates, but not on the unemployment rate. The minimum wage does, however, obtain different coefficients for the 20–24 year olds in the cross-section and time series. Overall, despite these and other differences noted above, the coefficients from the two sets of regressions are roughly consistent, enhancing the believability of each.

While the cross-section and time series regressions yield roughly similar estimates, it is important to note that neither analysis explains developments in the youth labor market in the 1970s. As table 5.6 shows, from 1969 to 1977 the employment/population ratio of 16–17 year olds changed modestly while their labor force participation and unemployment rates rose. There was a marked divergence from 1969 to 1977 between actual changes in youth work activity and the changes predicted by either the cross-section or time series models. Because the adult male unemployment rate increased sharply while the relative number of young persons either changed only slightly (teenagers) or increased (20–24 year old workers), the cross section and time series regressions predict a marked decline in the employment/population and labor participation rates and a sizable increase in unemployment rates. In fact, employment/population ratios changed unevenly while labor participation rates rose sharply so that only the unemployment rates followed the predicted pattern. Despite concern over the inability of the labor market to generate jobs for youths, youth work activity, for reasons that are unclear, did not decline or decreased only slightly in the 1970s, despite adverse cyclical and other developments. While our time series and cross-section regressions yield comparable results, neither adequately tracks the performance of the youth market in the 1970s.[10]

5.7 The Impact of Supply and Demand Forces

The model presented in equations (1)–(3) suggested that the youth employment problem could be attributed, in part, to shifts in supply and demand schedules (coupled with sluggish wage adjustments). As the importance of supply and demand factors in the youth market problem has been subject to considerable debate, and since these factors imply

Table 5.6 **Predicted and Actual Changes in Youth Work Activity, 1969–77**

Explanatory factor	Actual value		Actual change	Predicted changes, 1969–77		
	1969	1977	1969–1977	Using cross-section model	Using time series model without trend	Using time series model with trend
Rate of unemployment of adult men	.015	.035	.020			
Relative no. of young persons						
16–17 year olds	.059	.057	−.002			
18–19 year olds	.051	.053	.002			
20–24 year olds	.101	.124	.023			
Ln (Minimum wage/average wage)	−.734	−.821	−.087			
Trend	22	30	8			
Dependent variables						
Employment/population						
16–17 year olds	40.8	40.5	−.3	−2.7	−2.5	−.04
18–19 year olds	59.7	61.2	1.5	−3.9	−3.7	−4.5
20–24 year olds	78.6	76.5	−2.1	−9.7	−5.1	−5.4
Labor force participation rate						
16–17 year olds	47.3	50.3	3.0	−2.1	−0.9	2.4
18–19 year olds	65.9	72.5	6.6	−1.3	0.7	0.4
20–24 year olds	82.8	85.7	2.9	−6.3	−0.3	−0.4
Unemployment rate						
16–17 year olds	13.8	19.5	5.7	2.3	3.6	4.9
18–19 year olds	9.4	15.6	6.2	4.7	6.0	6.8
20–24 year olds	5.1	10.7	5.6	4.7	5.6	5.8

different policies remedies, it is important to determine the extent to which observed differences in youth joblessness across SMSAs are attributable to supply as opposed to demand factors.

One way of gauging the relative importance of factors is to examine the extent to which youth labor force activity is altered by changes in the explanatory factors. Table 5.7 presents such an analysis. It records the beta weights (regression coefficients adjusted to measure the effect of a standard deviation change in an independent variable on a standard deviation of the dependent variable). It also presents sums of the weights according to our classification of variables into demand and supply shift factors.

The columns labeled (a) are based on calculations which exclude the percentage of families below the poverty line from the analysis, while those labeled (b) include that variable. In the (a) calculations supply factors tend to be more important than demand factors for 16–17 year olds, about equally as important as demand for 18–19 year olds, and less important for 20–24 year olds. In the (b) calculations, the percentage of families below the poverty line dominates the regressions for the younger age groups, so that its inclusion as a demand or supply variable is critical in determining the relative importance of the two sets of factors. Even with the percentage below poverty variable, however, demand factors continue to be dominant factor for 20–24 year olds and remain more important than supply factors for 18–19 year olds as well. Perhaps the safest conclusion is that supply or background factors are relatively more important determinants of the position of teenagers while demand factors are more important for those in their early twenties.

5.8 Individual Variation

The analysis thus far has treated area data which, while well-suited for investigating the effects of broad market factors in the position of youths, provide only weak information on individual differences in youth participation or unemployment. To obtain a better understanding of the incidence of youth labor market problems among individuals and of the social characteristics of the individuals lacking employment, as well as to be able to differentiate the effect of area or communal factors from individual characteristics, it is necessary to analyze data on individuals rather than on SMSAs.

The Survey of Income and Education, conducted in the spring of 1976, provides an especially valuable sample for such an investigation. The survey contains about three times as many respondents as the standard Current Population Survey monthly samples and a variety of information on family background that is unavailable in most CPS months. Of particular importance, the SIE has data on wages and hours worked over a

Table 5.7 **Effect of One Standard Deviation Change in Supply and Demand Forces on Young Male Employment and Unemployment Rates**

Measure of impact	Employment rate						Unemployment rate					
	16–17 year olds		18–19 year olds		20–24 year olds		16–17 year olds		18–19 year olds		20–24 year olds	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Demand (sum of variables)	.52	.32	.67	.56	.61	.55	−.11	−.05	−.56	−.49	−.71	−.68
Prime-age male unemployment rate	(.22)	(.15)	(.20)	(.16)	(.35)	(.32)	(−.08)	(−.06)	(−.34)	(−.32)	(−.61)	(−.60)
Percent growth personal income	(.13)	(.05)	(.23)	(.17)	(.10)	(.06)	(−.09)	(−.06)	(−.15)	(−.11)	(−.06)	(−.03)
Index of industrial mix	(.17)	(.12)	(.24)	(.23)	(.16)	(.17)	(.06)	(.07)	(−.07)	(−.06)	(−.04)	(.05)
Supply (sum of variables)	−.72	−.19	−.53	−.23	−.22	.00	.54	.37	.28	.07	−.04	−.20
Relative no. of young people	(−.23)	(−.08)	−.19	(−.17)	(−.02)	(−.03)	(.33)	(.29)	(−.03)	(−.04)	(−.19)	(−.18)
AFDC recipients/pop.	(.00)	(.10)	(.05)	(.11)	(.07)	(.13)	(.02)	(−.02)	(.00)	(−.04)	(−.06)	(−.11)
Percent female-headed homes	(−.47)	(−.11)	(−.39)	(−.14)	(−.25)	(−.02)	(.36)	(.24)	(.33)	(.13)	(.16)	(.03)
Percent black	(−.02)	(−.10)	(.01)	(−.03)	(.02)	(−.08)	(−.17)	(−.14)	(−.02)	(.02)	(.05)	(.03)
Percent below poverty line		−.86		−.47		−.41		.27		.39		.23

SOURCE: Calculated from regressions, as in table 5.1, with percentage below poverty line excluded from column (a) and included in column (b) regressions. All calculations include control variables used in table 5.1 but not listed as reflecting demand or supply factors, i.e., region dummies.

year, as well as on employment status, which permits comparison of the effect of variables on rates of pay as opposed to the amount of work activity.

The SIE data are examined in two stages. First, a linear probability model is fit linking dichotomous dummy variables for employment and for unemployment in spring 1976 to various characteristics of the individual and his or her family. Since the linear model is additive, the effect of variables on the probability of labor force participation can be obtained by adding the coefficients on employment and unemployment. While the linear model is not entirely appropriate for analysis of 0–1 variables, the advantage of a more complex curvilinear form such as the logistic is likely to be modest. Second, ln earnings equations are estimated linking hourly and annual earnings in 1975 to the same set of measures of individual characteristics. The earnings equations provide information on the wage side of the youth labor market. Comparison of the effect of variables on hourly earnings and on the probability of employment or on annual earnings (which depends critically on the probability of employment over the year) can cast considerable light on the extent to which youth labor market problems are associated with joblessness as opposed to, or in conjunction with, low rates of pay.

The analysis treats separately young male workers 16–17, 18–19, and 20–24 and examines the impact of the following characteristics of individuals on their families:

—race, measured by a dichotomous variable (= 1 when the individual is black);

—receipt of welfare by the household of residence, a dichotomous variable which takes the value 1 if the family obtained welfare in 1975;

—receipt of food stamps, a dichotomous variable which takes the value 1 if the family obtained food stamps in 1975;

—residence in public housing, a dichotomous variable which takes the value of 1 if the family was living in public housing when surveyed;

—residence in a one-parent/female home, a dichotomous variable which takes the value 1 if the individual's parental family contained a female head of household;

—years of education;

—school activity status, a dichotomous variable which takes the value 1 if the person's major activity at the time of the survey was attending school;

—other household income, a continuous measure of total family income in 1975 minus the individual's earnings in 1975;

—region of residence, consisting of seven dummy variables for region;

—urban status, a dichotomous variable which takes the value 1 if a person lived in an urban area in 1976;

—household income below the poverty line, a 0–1 variable which takes the value of 1 if the household income in 1975 fell below the official poverty line.

Since some of the respondents are no longer living with their parents or other adults, the measures of family background do not always relate to the position of the home in which they were brought up: for 16–17 and 18–19 year olds, of whom only 0.6% and 8% reside outside the home of their parent or other adult, the problem is not severe; for 20–24 year olds about half of whom are themselves heads of households and for many of those out of school, however, the family variables relate to parental homes for a significant proportion and to homes headed by the individual for a significant proportion, which confuses the interpretation. To deal with this problem, a dummy variable for those who are themselves heads of households was included in all of the calculations, and the variable was interacted with other family income. In addition, for 20–24 year olds, separate calculations for those residing in homes headed by others were estimated. The results are sufficiently similar to those reported in the table as to suggest that the head of household dummy variable suffices to deal with the problem.

To help understand the enormous impact of the percentage of impoverished families in the SMSA calculations earlier, we also examine a 0–1 dummy variable for whether the individual resides in a poverty tract, with poverty tract defined by the Census as an area with a poverty rate greater than or equal to 20%.

Not surprisingly, the calculations show that black youths, those with fewer years of schooling, and those whose major activity is school have excessively low rates of employment. The measures of family status—being in a female-headed home, family receipt of welfare or food stamps, residence in public housing, the income of the household exclusive of the young person himself, and whether the family is or is not below the poverty line—also have some effect, with a general pattern that those from more disadvantaged backgrounds have lower probabilities of employment and higher probabilities of unemployment than those from more advantaged backgrounds. The most noticeable exception to this generalization is that other household income is accorded little or no impact on employment or unemployment in the bulk of the calculations. Even with the poverty line variable omitted (not reported in table 5.8), household income appears to be essentially unrelated to labor market activity. The modest impact of being from a family below the poverty line suggests that any family income-unemployment of youth relation is decidedly nonlinear. Even so, the regressions suggest youth joblessness is concentrated among persons from disadvantaged homes and, with all other characteristics fixed, among blacks.

Table 5.8 **Linear Probability of Estimates of Determinants of the Employment of Young Men, 1976**

	All 16–17 year olds			All 18–19 year olds			Out of school[a] 18–19 year olds			All 20–24 year olds			Out of school 20–24 year olds		
Measure of	means	empl.	unemp.	means	empl.	unemp.	means	empl.	unemp.	means	empl.	unemp.	means	empl.	unemp.
background status		.47	.11		.63	.11		.75	.15		.74	.09		.81	.10
Individual status	.10	−.21	.07	.09	−.21	.11	.09	−.21	.13	.08	−.12	.05	.08	−.10	.05
black		(.02)	(.01)		(.02)	(.01)		(.03)	(.02)		(.01)	(.01)		(.01)	(.01)
years of schooling	10.0	.045	−.007	11.6	.017	−.01	11.1	.034	−.02	12.8	.012	−.005	12.2	.014	−.007
		(.005)	(.003)		(.003)	(.002)		(.005)	(.004)		(.001)	(.001)		(.002)	(.001)
major activity is in school	.67	−.20	−.10	.36	−.34	−.08	.00	—	—	13.5	−.43	−.05	.00	—	—
		(.01)	(.01)		(.01)	(.01)					(.01)	(.01)			
Family status															
female-headed home	.13	−.03	.01	.11	−.05	.02	.12	−.03	.02	.06	−.05	.05	.06	−.05	.05
		(.02)	(.01)		(.02)	(.01)		(.03)	(.02)		(.01)	(.01)		(.01)	(.01)
family receives welfare	.08	−.05	.08	.06	−.02	−.01	.08	−.04	−.00	.04	−.08	.06	.05	−.08	.06
		(.02)	(.01)		(.02)	(.02)		(.03)	(.03)		(.02)	(.01)		(.02)	(.01)
food stamps	.12	−.03	.01	.10	−.07	.07	.14	−.08	.10	.10	−.04	.08	.12	−.06	.07
		(.02)	(.01)		(.02)	(.01)		(.03)	(.02)		(.01)	(.01)		(.01)	(.01)
public housing	.02	−.02	.07	.02	−.11	.09	.02	−.16	.11	.02	−.11	.00	.02	−.12	−.00
		(.04)	(.02)		(.03)	(.02)		(.05)	(.04)		(.02)	(.02)		(.02)	(.02)
other family income	$18.90	.046	−.001	17.437	−.001	−.001	13.500	.000	−.001	11.973	−.001	.002	9.793	−.001	−.001
(in thousands of $)		(.026)	(.003)		(.0004)	(.003)		(.001)	(.0007)		(.0003)	(.0007)		(.005)	(.0004)
family below	.11	−.05	−.02	.11	−.07	.01	.14	−.04	.006	.09	−.09	.03	.08	−.08	.04
poverty line		(.02)	(.01)		(.02)	(.01)		(.02)	(.02)		(.01)	(.01)		(.01)	(.01)
Geographic status	.17	−.02	−.04	.17	−.03	.01	.19	.01	.01	.14	.01	.00	.19	.03	−.00
in poverty tract		(.01)	(.05)		(.01)	(.01)		(.02)	(.02)		(.01)	(.01)		(.01)	(.01)

Other controls										
age	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
head of household	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
interaction: head of household and other household income	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
region	8	8	8	8	8	8	8	8	8	8
urban	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
subsidized rent	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Summary statistics										
R^2	.12	.05	.17	.23	.09	.07	.17	.05	.07	.05
n	9297	9297	8476	8476	3185	3185	18,395	18,395	12,513	12,513

[a]The numbers in this column represent a smaller fraction of the youths than the proportion whose major activity is "in school." This is because a stricter definition of schooling is used. Persons out of school are *not* enrolled at all. Since some persons whose major activity is reported as other than being in school are enrolled, the numbers in the out-of-school columns represent a smaller fraction of the total than would be obtained from the major activity question.

SOURCE: Survey of Income and Education.

The results with the measure of poverty in the individual's communities of residence—whether or not he resides in a high poverty tract—are mixed. For 16–17 and 18–19 year olds, living in a poverty tract has a noticeable negative effect on employment and some impact on unemployment (to counteract the effect of lowered unemployment among 16–17 year olds). For the other groups, however, there is no strong effect, save for the odd positive impact of being in a poverty area on the employment of out-of-school 20–24 year olds. From these calculations it appears that the results with the poverty variable in tables 5.1 and 5.2 are due largely to individual factors rather than to area factors.

The ln hourly earnings in table 5.9 tell a very different story about the determinants of the wages of the young. First, *being black is not a major depressant of wages*. Among 16–17 year olds, being black is actually associated with higher wages, while in the other age groups blacks are estimated as having only a 3% disadvantage. Second, with the exception of the poverty line variable, the measures of family status also fail to evince the negative effects found in the employment and unemployment regressions. Being in school and years of schooling also have much smaller impacts on wage rates than on employment status. Since being below the poverty line is partially determined by wages, particularly for 20–24 year olds, making its strong effect on wages questionable in terms of the direction of causality,[12] the main conclusion is that the background factors that adversely affect employment changes have much diminished or in some cases opposite effects on wage rates.

Table 5.9 also yields results on residence in a poverty tract which differ greatly from those in table 5.8. In particular, residence in a poverty tract is substantially negatively related to hourly earnings and, with the exception of 16–17 year olds, to annual earnings as well. Since there is little reason a priori to expect residence in a poverty tract to affect individual wages through supply factors, this result suggests that there are substantial problems in such areas with respect to inadequate demand (possibly because of mix of industries).

Since the calculations in table 5.9 are limited to persons who worked and reported earnings in 1975 while those in table 5.8 refer to a larger sample which includes those who did not work, it is possible that some of the differential effects are attributable to differences in the samples. To check this possible bias, as well as to expand the analysis to a more continuous measure of time worked, the log of annual earnings was also regressed on the independent variables in the sample reporting earnings. Differences between the impact of variables on log of hourly and log of annual earnings reflect effects on annual hours worked. As can be seen in table 5.9, these calculations confirm the basic conclusion that rates of pay are largely unaffected or affected differently by the background factors

under study than is time worked. Whereas, for example, being black reduces the log of hourly earnings of 18–19 year old blacks by .03 ln points, it reduces the log of annual earnings by .31, implying a .28 reduction in annual hours worked.

The divergent effect of race and background factors on time-worked and rates of earnings per hour (or week) highlights an important aspect of the youth labor market: striking differences between its employment and wage dimensions. The disadvantaged groups that bear the brunt of joblessness obtain roughly similar pay to other youngsters upon receipt of employment. While it may be argued that the concentration of joblessness among certain groups, whose pay is the same as that of others, could be alleviated by wage differentials (tying the employment and wage findings together), perhaps the safest conclusion is that the labor market problem for the disadvantaged is largely one of generating jobs. Once employed, blacks and other disadvantaged youths have roughly as high earnings as other young persons.

5.9 Summary of Findings

The results of my analysis of geographic and individual differences in youth employment, unemployment, and earnings can be summarized briefly. First, the employment of young workers across areas depends in a reasonably comprehensible way on demand and supply factors, notably the overall level of economic activity, as reflected in rates of unemployment of prime-age men and growth of personal income, the industrial composition of employment, the number of young persons relative to the number of older persons (for teenagers only), and the poverty status of an area. Second, variables that influence employment often have comparable effects on labor participation, leading to smaller or even contrary effects on unemployment. Analyses that focus strictly on unemployment rates may, as a result, be highly misleading. Third, the cross-section calculations, while yielding results consistent with comparable time series regressions, do not provide an explanation of youth labor market developments in the 1970s, when employment to population rates did *not* fall and participation rates increased in the face of adverse economic changes. Fourth, the correlates of youth joblessness are *not* the same as the correlates of low wages, with blacks and others from disadvantaged backgrounds having higher incidences of joblessness but obtaining wages similar to those of other workers. Fifth, there is some indication that residence in a poverty tract has an impact on youth earnings that goes beyond the effect of low household income itself.

Table 5.9 **Regression Coefficient Estimates of the Background Determinants of the Ln of Hourly and Annual Earnings of Young Men, 1975**

Measure of background status	16–17 year olds				18-19 year olds				20–24 year olds			
	mean	ln hourly earnings	ln annual earnings	implied ln annual hours worked	mean	ln hourly earnings	ln annual earnings	implied ln annual hours worked	mean	ln hourly earnings	ln annual earnings	Implied ln annual hours worked
Individual status		.53	6.37	5.84		.80	7.36	6.56		1.16	8.29	7.16
black	.07	.17	−.15	−.33	.07	−.03	−.31	−.28	.07	−.03	−.12	−.09
		(.04)	(.06)			(.04)	(.05)			(.02)	(.03)	
years of schooling	10.2	.03	.09	.06	11.7	.02	−.01	−.03	12.8	.006	−.04	−.03
		(.01)	(.02)			(.01)	(.01)			(.002)	(.01)	
major activity is in school	.66	−.01	−.26	−.25	.34	−.05	−.50	−.45	.13	−.08	−.70	−.62
		(.02)	(.03)			(.02)	(.03)			(.01)	(.02)	
Family status												
female-headed home	.13	.08	.01	−.06	.10	.04	−.08	−.12	.06	−.00	−.08	−.08
		(.03)	(.05)			(.03)	(.04)			(.02)	(.03)	
family receives welfare	.07	.05	−.12	−.17	.05	.01	−.10	−.10	.04	−.06	−.21	−.16
		(.05)	(.07)			(.04)	(.06)			(.03)	(.04)	
food stamps	.10	.06	.07	·.01	.09	.00	−.08	−.09		−.04	−.24	
		(.04)	(.06)			(.03)	(.05)			(.02)	(.02)	
public housing	.02	.08	.26	.18	.02	.13	.12	−.02	.02	−.02	−.04	−.20
		(.08)	(.12)			(.07)	(.10)			(.04)	(.05)	

other household income	$18.994	.003	.002	−.001	17.815	.002	−.002	−.004	11.924	−.005	−.008	−.005
(in thousands $)		(.001)	(.001)			(.001)	(.001)			(.005)	(.001)	
family below 1975	.08	−.16	−.43	−.28	.09	−.37	−.71	−.25	.07	−.55	−1.23	−.79
poverty line		(.04)	(.06)			(.03)	(.05)			(.02)	(.03)	
Geographic status	.15	−.05	.03	.08	.15	−.08	−.08	.00	.13	−.09	−.11	−.02
in poverty tract		(.03)	(.05)			(.03)	(.04)			(.01)	(.02)	
Other controls												
age		✓	✓			✓	✓			✓	✓	
head of household		✓	✓			✓	✓			✓	✓	
interaction: head of household and other household income		✓	✓			✓	✓			✓	✓	
region		8	8			8	8			8	8	
urban		✓	✓			✓	✓			✓	✓	
subsidized rent		✓	✓			✓	✓			✓	✓	
Summary statistic												
R^2		.03	.10			.06	.20			.13	.34	
n		5240	5240			6727	6727			15,430	15,430	

SOURCE: Survey of Income and Education.

Data Appendix

Cross-SMSA Data

1. AFDC recipients.
   Source: Bureau of the Census, *Statistical Abstract of the United States*, 1971, section 33: Metropolitan Area Statistics.
2. Average annual rate of growth of personal income, 1958–69.
   Source: Bureau of the Census, *Statistical Abstract of the United States*, 1971, section 33: Metropolitan Area Statistics.
3. Average hourly earnings 1970 of production workers on manufacturing payrolls.
   Source: Bureau of Labor Statistics, *Employment and Earnings States and Areas 1939–74*, Bulletin 1370–11.
4. Black population as percentage of total population.
   Source: Bureau of the Census, 1970, Census of Population, *General Characteristics of Population*, 1970, table 24: Age by Race and Sex, for Areas and Places: 1970.
5. City size (population of central city).
   Source: Bureau of the Census, *Statistical Abstract of the United States*, 1973, section 34: Metropolitan Area Statistics.
6. Demographic variables.
   Source: Bureau of the Census, 1970, Census of Population, state volumes, *Detailed Characteristics*, 1970, table 164: Employment Status by Race, Sex, and Age: 1970.
   Calculations: 16–17 year olds demographic variable = 16–17 year old male civilian population/total male civilian population. Demographic variables for 18–19 year olds and 20–24 year olds calculated in the same way.
7. Employment variables (employment rate, unemployment rate, labor force participation rate).
   Source: Bureau of the Census, 1970 Census of Population, *Detailed Characteristics*, 1970, table 164: Employment Status by Race, Sex, and Age: 1970; for total group, table 166, Employment and Status and Hours Worked of Persons 14 to 34 year olds, by school enrollment, age, race, and sex: 1970; for persons not enrolled in school.
8. Female-headed households as percentage of all households.
   Source: Bureau of the Census, *County and City Data Book*, 1972: Statistical Abstract Supplement, table 3: Standard Metropolitan Statistical Areas.
9. Industry indexes.
   Sources: Percentages of civilian labor force employed in each industry, by SMSA: Bureau of the Census, *County and City Data Book*, 1972: Statistical Abstract Supplement, table 3: Standard Metropolitan Statis-

tical Areas. Persons employed in each age group as percentage of total persons employed by industry: Bureau of the Census, 1970 Census of Population, Detailed Characteristics: United States Summary, table 239: Age of Employed Persons by Industry and Sex: 1970.

Calculations: Industry index for 16–17 year old males = $\sum_{\text{all industries}}$ (industry share of labor force in SMSA × fraction of industry labor force that is 16–17 years old)/fraction of total U.S. labor force that is 16–17 years old.

10. Percent of families below low-income level.)

Source: U.S. Bureau of the Census, *Statistical Abstract of the United States 1973*, Section 34: Metropolitan Area Statistics.

11. State minimum wage laws.

Source: Bureau of Labor Statistics, *Youth Unemployment and Minimum Wages*, Bulletin 1657, 1970, pp. 133-134, chapter IX, appendix B: Basic adult minimum wage rates and specified differential rates by state, June 1969.

Time Series Data

12. Time-series average hourly earnings of production workers on private payrolls.

Source: *Employment and Training Report of the President*, 1978, p. 265, table C-3, Gross Average Weekly Hours, Average Hourly Earnings, and Average Weekly Earnings of Production or Nonsupervisory Workers on private Payrolls, by Industry Division: Annual Averages, 1947–1977.

13. Time-series minimum wage.

Source: Bureau of Labor Statistics, *Youth Unemployment and Minimum Wages*, Bulletin 1657, 1970, p. 182, table 12.2: Proportion of earnings covered by the Federal minimum wage.

14. Time-series demographic variables

Source: *Employment and Training Report of the President*, 1978, p. 183, table A-3: Civilian Labor Force for Persons 16 Years and Over, by Sex, Race, and Age: Annual Averages, 1948–1977; p. 186 table A-4: Civilian Labor Force Participation Rates for Persons 16 Years and Over, by Race, Sex, and Age: Annual Averages, 1948–1977.

Calculation: Male civilian population for each age group and total number of persons in civilian labor force for cohort × 100/Civilian labor force participation rate for cohort.

– 16–17 year olds demographic variable = 16–17 year old male civilian population. Demographic variables for 18–19 year olds and 20–24 year olds calculated in the same way.

15. Time-series labor force participation rate.

Source: *Employment and Training Report of the President*, 1978, p. 186, table A-4: Civilian Labor Force Participation Rates for Persons 16

Years and Over, by Race, Sex, and Age: Annual Averages, 1948–77.
16. Time-series unemployment rate.

Source: *Employment and Training Report of the President*, 1978, p. 212, table A-19: Unemployed Persons 16 Years and Over and Unemployment Rates, by Sex and Age: Annual Averages, 1948–77.
17. Time-series employment ratio.

Calculations: Employment Ratio = (1 − unemployment rate/100) × labor force participation rate.

Notes

1. The SMSA data set is described in the data appendix. For a detailed description of the SIE survey, see U.S. Department of Commerce and U.S. Department of Health Education and Welfare, "Assessment of the Accuracy of the Survey of Income and Education," A Report to Congress Mandated by the Education Amendment of 1974 (Jan. 1967).

2. See Freeman and Medoff, chapter 3 of this volume, table 3.6, where significant differences in the distribution of the 16–17, 18–19, and 20–24 year olds among industries and occupations are shown.

3. The coefficients of variation for the ratio of young men to men 16 and over are: 16–17 year olds, .113; 18–19 year olds, .16; 20–24 year olds, .17.

4. A more desirable measure would be the gross product in the area but that is not available on an SMSA basis. Note that the increase in personal income depends on changes in population as well as changes in income per person in the areas.

5. The information in the Census on the earnings of youth in an SMSA has too many problems to be helpful here. The available data do *not* provide figures for *hourly* pay.

6. The calculations use a linear form despite the fact that the dependent variables are ratios ranging from 0 to 1. Experiments with the variables in log odds ratio form yielded sufficiently similar results to those from the linear form to make the latter, which are easier to interpret directly, more desirable.

7. Another possible explanation is that 20–24 year olds migrate to areas with low rates of youth joblessness, which would mute or reverse any adverse effect of relative numbers on joblessness. By contrast, the bulk of teenagers reside with parents who are unlikely to migrate to areas where job opportunities are better for the young.

8. The algebra underlying different effects is direct. Let u = unemployment rate; ℓ = labor participation rate; e = employment rate (employment/population), then by definition: $u = 1 - e/\ell$
and $du/dx = e/\ell^2\, d\ell/dx - 1/\ell\, de/dx$ where x is an explanatory variable.
Assuming $d\ell/dx$ and de/dx have the same sign, then du/dx will have the same sign as de/dx when $e/\ell\, d\ell/dx > de/dx$.

9. Analysis of the in-school and out-of-school youths can be developed further through estimation of the structural supply and demand equations which presumably underly the relations examined in the text. Such an analysis would seek to determine the degree of substitutability between in-school and out-of-school youths in the job market, among other things.

10. For a similar conclusion, see Burt Barnow, "Teenage Unemployment and Demographic Factors: A Survey of Recent Evidence" (U.S. Department of Labor, March 21, 1979). While there is obviously no way to deal with changes in coverage in the cross-section regressions, in the time-series regressions it is possible to measure the minimum wage

variable in a more complex way, taking account of coverage changes. Since coverage of the minimum *grew* in the period under study, using a more complex measure would not change my conclusion: the increased coverage presumably would reduce the employment/population ratio, which makes the puzzling stability of the employment/population ratio even more puzzling.

11. As described in the table note, persons in the out-of-school group are limited to those not enrolled in school and do not include enrolled persons who report their major activity as being other than in school.

12. Regressions with the poverty variable excluded, reported in an earlier version of this paper, yield results on other variables comparable to those in tables. Hence inclusion of the variable does not mar interpretation of the other regression coefficients.

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Comment T. Aldrich Finegan

In this chapter Professor Freeman examines the socioeconomic factors affecting the labor force status and earnings of younger persons, specifically those 16 to 24 years old. To this end, three kinds of data are analyzed: (1) aggregated data for SMSAs from the 1970 Census of Population, (2) time series data (annual observations) from the Current Population Survey for 1948 through 1977, and (3) data for individuals and their families from the 1976 Survey of Income and Education (SIE). The intercity regressions seek to explain differences across SMSAs in the labor force participation rates, employment-population ratios, and unemployment rates of younger persons, classified by age, sex, and enrollment status (in the case of males). These regressions assess the role of several measures of local labor market conditions on the labor market status of the subject groups. The time-series regressions provide comparable estimates of the effects of three labor market indicators on the same dependent variables. The SIE data are harnessed to reveal associations between the labor market status and earnings of the young persons in the Survey and their own demographic characteristics along with selected socioeconomic characteristics of their families.

Reviewing a study of this scope is no easy task. The 89 regressions reported here contain a bumper crop of findings. Consequently, any discussion of particular results is bound to be highly selective, unbalanced, and perhaps even eccentric. Therefore, let me offer an overall assessment at the outset. Despite some puzzles and caveats, I believe that Freeman's paper makes an important contribution to our understanding of how labor market conditions and family characteristics shape the labor market experiences of younger persons. The empirical tests have been skillfully designed to illuminate the relationships at issue. While more effort could have been devoted to explaining and reconciling the results for different subsets, the main contours and implications of these findings have been highlighted by the author with admirable brevity.

T. Aldrich Finegan is professor of economics at Vanderbilt University.

I now turn to some of the particular results in Professor Freeman's chapter, beginning with his SMSA regressions.

First, while the labor market variables in tables 5.1 and 5.2 are generally well behaved, some results are puzzling. In table 5.1, for example, a large relative number of young people in the SMSA (RP_y) lowers the employment ratio of males 18–19 but has no effect on their unemployment rate. The prime-age male unemployment rate has similar asymmetrical effects in the case of males 16–17. More curious still, RP_y is *inversely* related to the unemployment rate of males 20–24 but has no effect on their employment ratio. Yet the subset regressions in table 5.2 for enrolled and not-enrolled males aged 20–24 tell a very different story: here RP_y is unrelated to group unemployment but negatively related to group employment. What accounts for such oddities?

Part of the answer, as Freeman points out, is that labor market variables usually affect employment ratios and labor force participation rates in the same direction (owing to the discouraged worker effect), thus reducing their impact on unemployment rates. I share his view that the employment effects deserve top billing. But I have trouble understanding a discouraged worker response so large that a group's labor force shrinks (or grows) by more than, or even as much as, its level of employment. When such results (or wrong signs) are observed, the labor market variable may be measuring more than labor market conditions (i.e., an omitted socioeconomic factor). Hence it pays to keep an eye on the unemployment coefficients for these variables in appraising the employment effects, and vice versa.

Second, some of the unexpected results for RP_y may come from the fact that only the population of the subject age-sex group is included in the numerator of this ratio. Given substitution possibilities, the competition for jobs faced, say, by 18–19 year old males in an SMSA may also be affected by the number of 16–17 and 20–24 year olds living there. If so, broader age-interval population variables might be more appropriate.

Third, as Freeman shows, labor market conditions influence not only the labor market status of youngsters in and out of school but enrollment rates as well. In general, the enrollment rate tends to be lower in SMSAs where it is easier for youngsters to find jobs. Perhaps some of the anomalies in tables 5.1 and 5.2 can be attributed to this factor.[1] In any event, school enrollment really ought to be viewed as an endogenous variable.

This leads to a suggestion for further research. For nearly all 16–17 year old males, and for those older youngsters who are still living with their parents, what matters most is that they be in school (during the school year) or have a full-time job. Whether those in school also have a part-time job, and whether those not in school are reported as unemployed or out of the labor force, are questions of lesser importance. If we

define a youngster as "active" when he is either in school or employed, an analysis of differences across SMSAs in the "activity rates" of younger males, classified by age and race, could be rewarding.[2] It would capture the most important joint effect of labor market conditions on enrollment decisions and labor market status, namely, how such conditions influence the fraction of school-age youngsters who are both out of work and out of school.[3]

My last comment on Freeman's SMSA regressions concerns the results for his poverty variable (the fraction of families in the SMSA falling below the official poverty line). As Freeman points out, this variable "could reflect the impact of *individual* poverty, say, through inadequate human capital formation, lack of connections, or related social ills in the homes of those in poverty, or it could reflect the impact of *community* factors on either the demand or supply side." Drawing on the findings of his SIE regressions, which show much larger negative employment effects from family income below the poverty line than from residence in a poverty tract, Freeman concludes that the SMSA variable appears to be measuring primarily the effects of individual poverty.

While Freeman's conclusion may be correct, I do not find his evidence entirely convincing. First, it is not obvious that area-wide community influences (whether of demand or supply) on youth employment are fully captured by comparing the employment ratios of a national sample of youngsters, classified by whether or not they live in poverty tracts; for this comparison cannot test the hypothesis that the employment ratios in *both* the poverty and nonpoverty areas of an SMSA are inversely related to the fraction of families in the SMSA living in poverty. Moreover, the sheer size of the regression coefficients for the SMSA poverty variable provides considerable support for this hypothesis. Of the nine negative coefficients for this variable in regressions explaining group employment ratios in tables 5.1 and 5.2, two are larger than -1.0, six fall between -0.5 and -1.0, and only one is smaller than -0.5. These coefficients tell us that, in eight cases out of nine, a one percentage point difference in an SMSA's poverty ratio was associated with more than a half-point difference (of opposite sign) in the all-SMSA employment ratio of the subject group. Given the small fraction of families below the poverty line in most SMSAs and the typical difference between the employment status of youngsters who live in poverty and those who do not, these variations in SMSA-wide employment ratios appear to be much too large to reflect mainly intercity differences in the extent or severity of individual poverty.

This brings me to the time-series regressions reported in table 5.5. It is a pleasant surprise to find that so many of the coefficients for the all-male unemployment rate in these regressions are similar in size to those in the comparable cross-SMSA tests. But the same thing cannot be said about the youth population variables, whose coefficients are often greatly in-

creased or reduced in size when a linear time trend variable is added to the regression. The apparent collinearity between these variables clouds the interpretation of each.

Fortunately, the coefficients for the minimum wage proxy are much less sensitive to the inclusion or omission of a trend control, and they show that the employment and participation rates of male teenagers were significantly lower during periods in which the ratio of the FLSA minimum to average hourly earnings was unusually high. If I am interpreting the coefficients in table 5.5 correctly, a 10% rise in the minimum wage ratio reduced the employment of 16–17 year old males by about 2.5% and that of 18-19 year olds by about 2%.[4] Freeman's minimum wage measure presumably picks up only the short-run effects of such changes. A permanent increase in this ratio should have larger disemployment effects, since labor demand is more elastic in the long run. Besides, as Freeman points out, growth in the coverage of the federal minimum wage has probably further reduced the job opportunities for teenagers, although the magnitude of this loss is still unknown.

It is also noteworthy that some of the negative employment effects attributed to the growth of the relative number of young persons in the time series regressions are probably due to the presence of the minimum wage. If relative earnings of teenagers were wholly flexible downward, a rise in their relative numbers would lead to lower employment ratios only insofar as fewer teenagers wished to work at lower wage rates. In fact, as Freeman and Medoff have shown in chapter 3 of this volume (table 3.8), the relative earnings of younger persons have fallen substantially since 1967; but in the absence of minimum wage legislation they would probably have fallen more. It therefore seems likely that the time-series coefficients for the youth population in table 5.5 are larger than they would have been in the absence of the FLSA.

In table 5.6, Freeman compares the actual changes in employment, labor force, and unemployment rates of younger males between 1969 and 1977 with the changes predicted by his cross-section and time-series regressions. Interestingly, both models underpredict the rise in participation rates that actually occurred and project large drops in group employment ratios that did not occur.

First let me raise one procedural issue. Unless I am mistaken, the predicted changes for 1969 to 1977 are based on the time-series coefficients in table 5.5. But these coefficients are from regressions that *include* the years 1969 through 1977. Wouldn't it have been better to rerun the time-series tests for 1948 to 1969 and use those coefficients to predict the changes from 1969 to 1977?[5] Doing so would probably have strengthened the main conclusion of this analysis by increasing the gap between the actual and predicted changes in employment and labor force participation.

The intriguing question, of course, is what accounts for this gap. Surely part of the answer lies in two supply-side developments: the decline in the size of the armed forces and in the percentage of males 18–24 attending school.[6] Both caused the civilian participation and employment rates of young men to rise more (or fall less) during the 1970s than what earlier data would have predicted. One might also speculate whether the development of a "youth culture" and new consumer goods aimed especially at younger persons (e.g., skateboards and rock concerts) might help to account for the rising labor force participation of younger persons who are attending school.

At the same time, the results in Freeman's table 5.6 suggest that the *demand* for younger males also grew at a faster than projected rate during the 1970s. Had all (or nearly all) of the unexplained growth in employment and labor force participation been supply-push in origin, one would have expected the actual increases in group unemployment rates to exceed the predicted increases, given sluggish adjustment in relative wages. But that does not seem to have occurred except for 16–17 year olds. If one compares the actual increase in group unemployment rates with the mean of the two time-series projections in table 5.6, these two figures are very similar for males 18–19 and 20–24. In the case of males 16–17, however, the actual rise exceeds the predicted rise by 1.4 points. Thus only for 16–17 year old males does the unexplained growth in employment and labor force participation appear to have been dominated by supply-side forces.

The inferences drawn from table 5.6 for all younger males may not apply to black youths. Their employment ratios have declined relative to white youths in the 1970s, as Wachter and Kim have shown (see chapter 6 of this volume.) As a first step in trying to understand this on-going decline, it would be useful if time series tests similar to those in tables 5.5 and 5.6 could be run for black males.[7]

Finally, let me offer a few comments on Freeman's analysis of the SIE data. While most of the results in tables 5.8 and 5.9 are illuminating and believable, I would like to raise some questions about the income-related explanatory variables in these tests. In addition to other family income (total family income in 1975 minus the young person's earnings, if any), dummy variables have been included for whether or not the subject's family (1) received welfare (AFDC) payments in 1975, (2) received food stamps that year, (3) lived in public housing at the time of the survey (spring of 1976), or (4) had a level of total family income falling below the poverty line in 1975. Although most of these measures are highly significant in explaining employment, I am not sure what meaning should be attached to some of them. For example, after other family income (OFI) and poverty status have been held constant, what do the welfare and food stamps variables measure? Perhaps they measure the *fraction* of other

family income from nonearnings sources, but why should that affect the employment or wages of younger persons? (Is receipt of welfare or food stamps a surrogate for greater unemployment of the head of the household?) And why does living in public housing discourage employment? (Do such persons have other handicaps, or are the available jobs simply further away?) Further research is needed to identify the underlying causes of these associations.

While Freeman is to be commended for trying to disentangle the effects of family poverty and living in a poverty neighborhood on the employment and earnings of youth, the simultaneous presence of a control for other family income (along with the trio of welfare variables mentioned earlier) makes it hard to interpret the results for the family poverty variable. The problem is not collinearity but what it means to vary one variable while holding the other constant. While one can imagine comparing families with different levels of OFI either above or below the poverty line, what really happens when we compare two families on different sides of that line but with the same OFI? Two possibilities occur to me: (1) the family below the poverty line may have more members, or (2) the subject youngster may have contributed less income to it. (Note that the poverty line variable depends on the *total* level of family income, among other things, not on OFI.) Both possibilities suggest that the comparative impact of family and residential poverty might have been sharper had OFI been omitted from these regressions.

At the same time, the large roster of income-related variables in these regressions serves to highlight one of Freeman's most noteworthy findings, namely, the large gap that remains, after all of these variables (and many others) have been held constant, between the employment ratios of white and black teenage males. The contrast between the growing relative disadvantage suffered by teenage blacks in finding work and their rough parity (or better) in hourly wages, as shown in table 5.9, could hardly be more striking. These results seem indicative of a labor market that does not clear, at least for minority groups—i.e., where background factors have a lot to do with which teenagers get jobs, and where blacks are increasingly being screened out. Finding the reasons for this disturbing trend should be high on the agenda for future research.

Notes

1. When labor market conditions simultaneously affect both enrollment decisions and labor market status, the net effects of these conditions on group employment and unemployment rates are not fully captured by controlling for the percentage in school or by running separate regressions for enrolled and not-enrolled youngsters. The behavioral responses within each enrollment category may be different, and the results for each subset also reflect the effects of labor market conditions on the relative number and socioeconomic composition of the youngsters within it.

2. An earlier study cited by Freeman (Bowen and Finegan, 1969) examined inter-SMSA variations in a somewhat different activity measure, namely, the percentage of younger civilian males who were either enrolled in school or in the civilian labor force during the census week of 1960. Thus unemployed youngsters were included in this measure while those not in the labor force were excluded. Since the distinction between these two groups is of doubtful economic significance, I believe that the activity concept proposed in the text (being in school or *employed*) would be more fruitful.

3. The chapter by Wachter and Kim in this volume (6) contains an insightful analysis of time series changes in a somewhat narrower measure of inactivity, namely, the fraction of younger persons (classified by age, sex, and race) who were neither employed, unemployed, in the armed forces, nor enrolled in school.

4. I obtained these estimates by dividing the mean of the two regression coefficients for the minimum wage variable by the mean employment ratio for the subject group and then multiplied the quotient by 10 (for a 10% change).

It is worth noting that Freeman's minimum wage ratio is less subject to questions of interpretation than the relative wage measure (W/MW) used by Wachter and Kim. Whereas the denominator of Freeman's measure (average hourly earnings in all private industries) is relatively insensitive to changes in the youth labor market, the numerator in the Wachter-Kim measure (the average earnings of workers 16–24 years old) is quite sensitive to such changes. This is not a criticism of the latter variable, for it plays a somewhat different role in Wachter and Kim's analysis. The point is that variations in Freeman's variable are more clearly attributable to changes in the minimum wage.

5. A possible problem with this alternative procedure is that some independent variables may have changed more between 1969 and 1977 than during the two preceding decades. If so, to apply the regression coefficients from the earlier period to such changes would involve some extrapolation of these effects.

6. Between 1969 and 1977, the number of males 20–24 who were in the armed forces fell by almost 1.1 million. It is interesting that while the *civilian* labor force participation rate for these males rose by 2.9 points during this period, their *total* rate rose by only one-tenth of a point (source: 1979 *Employment and Training Report of the President*, tables A-2, A-3).

The enrollment rate for 18–19 year old males in the civilian noninstitutional population declined from 59% in October 1969 to 48% in October 1977, while the rate for males 20–24 fell from 32% to 26% (source: ibid., table B-6).

7. Time-series data for nonwhites in the Current Population Survey go back only to 1954 and contain greater sampling error. There are also conceptual issues in specifying the relevant labor market variables in time-series regressions for black youngsters. But these problems do not appear to be insurmountable.