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TIME SERIES CHANGES IN YOUTH JOBLESSNESS

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ABSTRACT

This study presents a time series analysis of the youth unemployment problem stressing the cohort overcrowding effect, a result of the baby boom induced imbalance between younger and older workers. Several techniques are used to study the problem. First, reduced form unemployment equations are estimated for the disaggregated youth groups. The results indicate that secular swings in female and white youth unemployment rates do track well with the cohort imbalance hypothesis. However, relative increases in black male unemployment remain unexplained by this model. Second, alternative measures of youth unemployment are developed by treating school enrollment and military service as equivalent to employment. In addition, several employment-to-population ratio measures are explored. Third, equations for employment, unemployment, schooling and a residual category are estimated together. This allows one to analyze flows into and out of the four states with respect to changes in explanatory variables.

The results suggest that youth unemployment rates, with the exception of the black male group, peaked in relative terms in the early 1970s. A detailed analysis of the declining labor market position of blacks, however, uncovers puzzling results. Although black male unemployment rates are growing, and employment rates are declining, relative wages and school enrollment rates are increasing. In fact, at least half of the decline in black employment ratios can be associated with increasing school enrollment rates.

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Introduction

Youth unemployment has increased over the past two decades in both absolute terms and relative to prime-age male workers. More recently the unemployment rates for most youth groups have begun to level off and move in parallel with prime-age male unemployment. This is especially or primarily true for white males.

Explaining these developments in a statistical sense presents major problems. First, the underlying developments appear to be due to economic-demographic swings of intermediate-run duration. Hence, the length of the time series data base is woefully short. Second, many of the most interesting and potentially important explanatory variables, such as government policy variables, have major measurement problems.

Our view stresses the role of "cohort overcrowding" which results from an imbalance between younger and older workers. The model is based on two central assumptions. The first is that younger and older workers are imperfect substitutes for each other. The main difference between them reflects their relative amounts of specific training. Given the "putty-clay" nature of physical and human capital and the transient nature of the cohort bulge, the economy's adjustment process is slow and may be incomplete. In the short-run elasticities of substitution are relatively low so that large relative wage adjustments occur.

The second is that aspiration levels or desired standards of living are formed when the younger workers are living with their parents. This is an endogenous taste or habit formation

model where past living standards influence current desired standards. In addition, young families are assumed to treat the desired standard of living as a necessity. Hence, in the event of lower wage levels, families will increase the number of workers and/or hours worked. The increase in labor force participation rates of the young workers can thus be traced directly to the population demographics. In addition, the induced change in participation rates serves to aggravate the existing oversupply problem of younger workers, further driving down relative wages.

As relative wages fall for the oversized cohort, institutional constraints, such as government transfer programs, minimum wage levels, etc., become relevant and cause an increase in unemployment rates as well as or instead of the increase in participation rates. If the unemployment effects are large enough, employment may actually decline.

Although some previous studies have appeared to isolate the effects of government programs, for example minimum wage legislation and manpower programs, we would disagree. On the basis of the data it is almost impossible to differentiate minimum wage from transfer program variables. In addition, attempts to include a government policy variable invariably yields the wrong sign. Besides these data problem, there are important conceptual problems as well. The government's social welfare package, whether intentional or not, is an integrated program. The parameters of the various programs tend to change together reflecting common political pressures and the need to complement each other. An example is the parallel increases in minimum wage coverage and

government transfer payments (in relative terms) during the late 1960's. Since almost all studies concentrate on one government program at a time, they miss these crucial interrelationships and hence, attribute too much to the single program under study. We also find that "relative wages" have some explanatory power, but cannot separte minimum wage from government transfer affects.

Our empirical work focuses on two approaches. The first attempts to measure unemployment in different ways by altering the numerator and/or the denominator. For example, we argue that the variable which is closest to the traditional measure of unemployment would give in-school equal status with employment. Hence, the numerator would exclude those who were unemployed but whose primary activity was school and the denominator would include all of those who were in school. The second approach focuses on disaggregating youth activities into four categories - unemployment, employment, school, and other (all as a ratio to the population) for each of the age-sex-race groups. Equations are then estimated using the same explanatory variables and adding the constraint that the four ratios sum to unity.

Since black males pose a particular problem, we concentrate somewhat on the deterioration in the unemployment and employment ratios of this group. Why should this group suffer a deterioration in labor market position relative to other youth groups, including black females?

The paper is organized in the following manner. Section I presents the basic model of cohort overcrowding. Section II provides the basic age-sex-race youth unemployment equation. Section

III analyzes alternative measures of youth unemployment. Section IV provides the justification and estimates for our four activity equation system. Section V analyzes the puzzle of the deteriorating labor market position of black males, 16-24.

I. The Basic Model of Cohort Overcrowding

A. The Underlying Workings of the Model

In some earlier work by the authors and others, the unemployment problem of youth was explained in the context of a broader economic-demographic model.[1] The basis of the model is a "cohort overcrowding" effect which results from an imbalance between younger and older workers. We shall utilize this approach to explore the mechanism of youth unemployment over the past fifteen years. It was during this period that the baby boom cohort was passing through the 16-24 age category.

The model is based on two central assumptions. The first is that younger and older workers are imperfect substitutes for each other. The main difference between them reflects their relative amounts of specific training. The second is that aspiration levels or desired standards of living are formed when the younger workers are living with their parents. This is an endogenous taste or habit formation model where past living standards influence current desired standards.[2] In addition, young families are assumed to treat the desired standard of living as a necessity. In the event of lower wage levels, families will reduce their completed family size and increase the number of hours worked. The reduction in fertility increases per capita family income directly by reducing the number of family members. However, fewer children permits secondary workers to work in the labor market rather than at home.

This type of model can generate cyclical swings of intermediate length in unemployment rates. A fertility increase in generation t

causes a large cohort of entry level workers in t + 1. Given the "putty-clay" nature of physical and human capital and the transient nature of the cohort bulge, the economy's adjustment process is slow and may be incomplete. In the short-run, elasticities of substitution are relatively low so that large relative wage adjustments occur. This deterioration in the income potential of young people causes a decline in fertility and family formation rates and an increase in the labor force participation rates of secondary workers. The increase in labor force participation rates of the young workers can thus be traced directly to the population demographics. In addition, the induced change in participation rates serves to aggravate the existing oversupply problem of younger workers.

As relative wages fall for the oversized cohort, institutional constraints become relevant and cause an increase in unemployment rates as well as or instead of the increase in participation rates. If the unemployment effects are large enough, employment may actually decline.

The institutional constraints which cause unemployment can exist on both the demand and supply side of the market. For example, since minimum wage levels are informally indexed on average economy wide wages, a decline in the relative wage of youth may cause the market clearing wage to fall below the minimum wage. Youth, of course, are a heterogeneous skill group with a wage distribution rather than a single wage. The decline of relative wages, in this case, causes an adverse shift in the distribution of wages. That is, the probability of any youth having a skill and associated wage

level that falls below the minimum wage is increased by the demographic overcrowding.

On the supply side, a different institutional factor is operating but with a similar potential result. In both the neoclassical labor supply literature as well as the institutional literature, workers are viewed as having a reservation wage; such that when market wages are below that reservation wage, individuals choose not to work. The neoclassical theory tends to specify a continuous trade-off between hours of work and wage rates. It is only at the corner of the indifference map that the wage rate is sufficiently low so that individuals will offer zero hours of work. The likelihood of a corner solution is increased by the existence of public assistance and government transfers in general. These programs have high implicit tax rates. Indeed, it is generally acknowledged that the eligible poverty population for these programs faces a higher implicit marginal tax rate than do the wealthiest individuals. The result of these programs is to considerably flatten the budget constraint.[3]

The likelihood of a corner solution is also determined by the mechanism through which individuals form their reservation wage. Specifically, individuals' attitudes towards an acceptable wage are determined by wages paid elsewhere in the economy. Of particular importance in defining the indifference map, or "taste" for work is the minimum income level dictated by the government social welfare programs and minimum wage laws. These programs signal what constitutes an acceptable minimum wage to the voting public and

policymakers. That is, government programs almost certainly influence the shape of the indifference map as they alter the budget constraint. A liberalization of benefits shifts both the indifference map and the budget constraint toward the corner solution of zero work.

In the static equilibrium literature, individuals who are at the corner solution of zero hours report themselves as out of the labor force and not employed. In the nonstatic world of institutions and sequential decision making, these individuals move frequently between employed, unemployed, and out of the labor force. That is, the real world individuals change their reservation wage often in response to a change in family responsibilities, a desire to get out of the house, health, etc. Moreover, given the manner in which the BLS unemployment question is phrased, whether individuals report themselves as unemployed or out of the labor market is partly fortuitous. The BLS question only asks, of the individuals without jobs, whether they are actively seeking work. There is no mention of a wage rate at which the individual is willing to work. In addition, as shall be discussed below, the notion of "actively" seeking work is an ambiguous notion for many youth. This is particularly true for those whose primary activity is schooling; a large component of the teenage population.[4]

In the cohort overcrowding model, a large youth cohort in period t + 1, by reducing fertility rates creates the potential of a baby bust cohort which would enter the labor market in t + 2. For the baby bust cohort all of the above conditions, ceteris paribus, would be reversed; the younger workers would be in relatively short

supply, their relative income would rise, fertility would increase, and labor force participation rates of secondary workers would ease. Finally, unemployment rates for youth would decrease as the market wages of this cohort would outpace minimum wage and transfer payment increases. This later conclusion assumes that these government policy variables are indexed on overall economy-wide wages.

It should be noted that the fluctuations in unemployment discussed in this model, are solely related to changes in the equilibrium rate of unemployment. Cyclical unemployment may be positive or negative in the short-run. But the above demographic cycle is an intermediate swing and averages out the peaks and troughs of the short-run business cycle.

B. A Simple Expositional Model[5]

The major factors that we use in our empirical work can be captured in a simple expositional model. The model is oriented towards the specific empirical factors involved in the demographic shift. To start, assume a production function that recognizes two different categories of labor - older workers who have accumulated specific training (L_A) and younger workers who lack such training (L_B). For our purposes we can view L_A as skilled workers and L_B as unskilled workers. In the long run, the production function can be written as:

$$(1) \qquad X^s = f_s\ (L_A^s,\ L_B^s, K),$$

where K is the capital stock, X is the level of output, and the superscript s refers to supply. In the short-run, there appear to

be significant lags in achieving desired absolute and relative levels of factor inputs. The lags may arise for a number of reasons including adjustment and expectational factors. The literature on investment functions indicates that long lags are especially relevant to the capital input. If the capital stock is "putty-clay", the input coefficients are fixed as part of the capital endowment. These coefficients may vary for different vintages but, to the extent that they are empirically important, they impart a difficulty in substituting against scarce factors in the short run. An extreme form of the bottlenecks model is the Leontief fixed coefficient production function.

$$(2) \qquad X^s = \min \left\{ \frac{L_A}{\phi_1}, \frac{L_B}{\phi_2}, \frac{K}{\phi_3} \right\}$$

Equation (2) allows no substitution at all among factors. Output is restricted by the single limiting factor. The economy, especially at the aggregate level, has an important potential to substitute against the scarce resource. A central thrust of our argument, however, is that the demographic changes have generated empirically important bottlenecks and that general expansionary policies - which increase aggregate demand for outputs and inputs across the board - are limited in this environment.

For our purposes, aggregate demand can be viewed as being controlled by monetary (M) and fiscal (F) policies, subject to unanticipated changes in demand from the private sector (X_0):

$$(3) \qquad X^d = f_d(M, F, X_0).$$

The derived demand for labor is constrained by either the level of the demand or supply of output X and by relative factor prices. For B workers, the relevant own wage is either the minimum wage (MW) or a market wage, whichever is higher.

The labor supply for both L_A and L_B is a function of the population in each cohort and the factors that determined the labor force participation rates. For A workers, we assume that the participation rate (r_A) is constant in the short run. Abstracting from influences such as school enrollment and fertility, the main forces determining participation for B workers are the market wage rates for these workers (W_B), the government transfer payments for being unemployed (T_g), the effective minimum wage (MW), and some unspecified trend factors that capture changes in life-style. That is,

$$(4) \qquad L_A^s = L_A(r_A, POP_A),$$

and

$$(5) \qquad (L_B^s)' = L_B^{s'} (POP_B, TREND, g\{W_B, T_g, MW\}).$$

The relationship between the market wage and T_g determines the cost of being unemployed. The level of governmental transfers depends upon unemployment compensation and public assistance. The supply of labor relevant for the production function, denoted L_B^s, is,

$$(6) \qquad L_B^s = L_B^{s'} - g(W_B, T_g, MW).$$

That is, we distinguish between an observed labor supply $L_B^{s'}$ and an effective labor supply L_B^s which is available for employment. The discrepancy, measured by the g function, is a type of structural unemployment. In Eqs (4) and (5) it is assumed that experience or

skill can only be acquired with age. The result is that the number of A workers only increases with the population and participation rates of A workers. In fact, the rate of accumulation of skill can be increased by more intensive training. The cost for training is likely to be upward sloping and steeper in the short than in the long run. Consequently, the accumulation of human capital will be slowed as workers spread their training to avoid the higher short-run costs. (This factor of increasing short-run supply costs is also a factor in the lag of actual capital behind its optimal level.) Either the firm or the worker can pay to decrease the time needed to change B workers into A workers. In any case, it will only be paid when the wage differential is high enough to pay for the higher short-run supply costs.

Equations (1) through (6) indicate a number of reasons for unemployment. The most obvious is cyclical unemployment which results from $X^s > X^d$. In addition, unemployment will vary with (a) the distribution of the labor force between A and B workers, (b) the cost of being unemployed and minimum wage effectiveness, and (c) the bottlenecks of either skilled workers or capital. Over the longer run, when coefficients in production are more flexible, bottlenecks gradually lose their importance as a cause of unemployment. On the other hand, traditional wage equations indicate another source of unemployment. As bottlenecks loosen, relative wages must adjust if the surplus of B workers is to be absorbed. The evidence suggests, however, that the adjustment is very imperfect. Minimum wages prevent employers from moving down their demand curve for B workers and/or alter the reser-

vation wage of B workers. In addition, government transfer programs help to maintain a high reservation wage (relative to their market wage) for the unskilled workers. These latter workers are in the labor force, but are not willing or able to work at the market clearing wage.

II. The Reduced Form Unemployment Equation

A. Basic Considerations

Estimating an unemployment function can be done in several ways given the basic building blocks of labor supply and employment functions. For our purposes it is useful to start by estimating a reduced form relative unemployment equation. In section IV below we shall estimate both unemployment and employment functions. In this case the unemployment equations serves the role of a labor supply equation. This approach is compatible with the theory outlined above and the fact that prime-age male unemployment is an independent variable. Specifically, it highlights our view that youth unemployment is largely structural in nature and dominated by fluctuations on the supply rather than demand side of the market. For reasons associated with government policy and the dynamics of the overcrowding model, supply side shifts do not induce adjustments in labor demand.

A reduced form relative unemployment equation can be obtained from equation (6) with the additional assumption that fluctuations in $L^{s'}$ are captured by a cyclical aggregate demand variable. For most of our calculations, we used the prime-age male unemployment rate. The UGAP variable, developed in Wachter (1976a) yeilded similar results. The former was used, because UGAP contains the unemployment rate of youth and secondary workers in general.

A large number of alternative proxies were attempted for the government policy variables. None were particularly satisfactory because of measurement errors; essentially most of the data are simply not collected. Our various attempts at representing

policy impact are described below. No single policy variables provided the best fit among the 18 age-sex-race groups. Rather than use different policy variables in each equation we adopted a compromise variable that performed as well as the others but could be viewed as representing several affects. The unemployment rate equations for the various age-sex groups are estimated in the general form:

$$(7) \quad U_i = a0 + a_i \{Si\} + a_2 \ln(U_{PM}) + a_3 \ln(RPy) + a_4 \ln(W/MW) + a_5(\ln(AF/POP)) \text{ or } TREND$$

where {Si} is a vector of seasonal dummies, RPy is the percentage of the civilian population age 16 to 24 relative to the civilian population age 16-24 relative to the civilian population age 16+, AF/POP is the military population ratio (added to the male equations), and TREND is a time trend (added to the female equations).

The RPy variable represents the cohort overcrowding referred to above. Several different specifications of the RPy variable were tried, varying the treatment of the military, individuals over 65 years of age and defining youth over the age span of 16 to 34. The results were largely unchanged. Given this inability to differentiate empirically, the choice of the RPy variable was dictated by usage in earlier studies. It is important to note that this cohort variable assumes that young workers are substitutes for each other and define a distinct labor input. Needless to say, any age division of the labor market into two distinct components has to be arbitrary. The difference between a 24 and a 25 year old is not large. On the other hand, labor market attachment, employment patterns, unemployment rates, etc. differ con-

siderably for a 20 year old compared with a 30 year old.

Some recent studies have defined a supply or cohort variable (denoted RPy_i) for each of the youth age-sex groups that includes in the numerator only.[6] For example, the black males population 18-19 as a percentage of the 16+ population would be used to explain unemployment of that age-sex-race group. Our view is that this is too limiting a view of the degree of substitution across inputs. Labor market behavior over the past two decades show more similarities than differences across youth age-sex-race groups. When the RPy_i variable has been successful it is largely capturing the worsening unemployment position of black relative to white youth. As shall be discussed below, however, black youth are not doing worse than comparable white groups by all economic yardsticks. For example, for school enrollment rates and relative wages, blacks show significant relative improvement. This suggest that RPy_i will not provide a consistent answer to the changing white-black differential.

B. The Government Policy Variable

Although properly specified unemployment equation should contain separate variables to represent transfer payments, direct job creation and minimum wages, this cannot be done. If a reasonable attempt were made to collect data on these variables, perhaps some progress could be made. The data, however, are incredibly scanty given the size of the programs.

In addition, data problems are complicated by the fact that the social legislation programs including transfers minimum wages,

and direct job creation are not made independently of each other. That is, policy innovations in one program are likely to be reflected in others. Basically, the political and social pressures do not become concentrated in one area. Rather, as was clearly the case during the 1960's and 1970's, the forces that can yield changes in one policy are also likely to cause similar changes in others.

Welfare payments, especially in-kind such as food stamps, have shown substantial growth relative to average wages since the early 1960's. After having declined slightly relative to market wages between 1948 and the early 1960's, AFDC payments have increased more rapidly than market wages through the middle 1970's. For example, with 1965 as the base year, market wages have grown 88 percent through 1975, while AFDC payments have increased by 115 percent. Only in 1976 through 1978, has the relatively faster growth rate of AFDC payments been reversed. The AFDC figures, however, understate the actual change in welfare payments. The largest growth in welfare has been in income-in-kind transfers, which do not appear in the AFDC data. The growth rate in food stamp payments has not only been large, but has now reached a significant proportion of total welfare payments. Consequently, over the past ten years, there has been a major increase in total welfare payments relative to market wages. If one defines the cost of being unemployed as the ratio of the market wage to the level of transfer payments, then the data indicate that the cost of being unemployed is considerably lower in 1977 than in the mid-1960's.[7]

Government policy activism on the supply side of the labor market has been matched by its policies on the demand side. Although minimum wage levels have just kept pace with average wages in the economy, major extensions of coverage in the Fair Labor Standards Act, particularly in 1967, may have strongly affected those areas--retail, wholesale, and service sectors--that have traditionally been important sources of employment for younger workers. In addition, direct job creation has grown from a near zero base into a major source of employment. Thus, while minimum wage law changes have acted to reduce the number of low wage jobs, direct job creation has tended to work in the opposite direction. The overall impact has been to shift employment from the private to the public sector.[8]

The effect of these programs on unemployment, employment, and labor force participation is not obvious. Direct job creation may appear to be the best candidate for an unambiguous positive impact--in terms of sign if not magnitude. But on closer inspection, the effect on unemployment is not clear. For example, direct job creation could draw largely from individuals out of the labor force and indeed may be a successful enough "drawing card" to increase the labor force more than the number of slots that can be filled. The results would be an increase in unemployment. Alternatively, if direct job creation is established with high wage rates, it may attract workers from those employed in the private sector. (Rules such as those requiring a spell of unemployment immediately prior to receiving a government job are easily satisfied). In this case, it is possible that low wage private sector workers would

queue for jobs in the public job creation program.[9]

Numerous attempts have been made to include the effect of government transfer programs, minimum wage laws, and direct job creation, on unemployment rates. The problems with these studies, however, are important. The basic problem is one of data; or more precisely, a lack of data. First, very basic data on how these programs operate are often lacking. This is especially true of local-run operations such as AFDC and CETA. It is currently impossible to construct a measure of government manpower programs with respect to the number of participants, their length of stay and their demographic composition. Second, few of these programs have been subject to a serious evaluation so that their effects on unemployment behavior can be determined.

In addition to data problems there are several methodological and econometric problems in estimating the effects of government programs especially where the initiative is a discrete once-and-for-all change. An example is provided by the minimum wage laws. Minimum wages as a percentage of average hourly earnings in the private nonfarm economy changed little between 1947 and 1977. Since minimum wages are set at discrete intervals, the relative minimum wage moves in a saw-tooth pattern, but the overall secular changes have been minor. The major event in the story of minimum wages between 1948 and 1977 is the change in <u>coverage</u> that took place in 1967 (and to a lesser extent in 1961). The 1967 legislation instituted a major extension centered on low-wage workers in the retail and service sectors. Unfortunately, econometric techniques for estimating the impact of a spike (the increase in coverage) in the time

series coverage data are not well developed. The estimation problems are especially severe, since the effects of the coverage change are likely to have occurred with a relatively long distributed lag. It should be noted that the problem in isolating the effects of the change in coverage in minimum wages is aggravated by the BLS change in definition for unemployment in 1967. Given the lack of continuing overlapping data, how is it possible to separate these two discrete events--the change in definition of unemployment and the change in minimum wage coverage?

Most of the literature dealing with federal welfare initiatives investigates only one program at a time. There are studies on minimum wages, public assistance, direct job creation, etc., but few of these studies attempt to integrate the direct labor market impact of that single study into the overall package of programs. The limited range of individual studies is easily explainable given the data problems for each single study. The problem, however, in evaluating the overall effect of the various government programs on unemployment is that the programs interact. The sum of the impacts of the individual studies does not equal the overall effect of the variety of programs evaluated together.

Since these programs compose an integrated social welfare scheme, whether intentional or not, their interrelationships are important. The budget constraint facing a young, low wage worker, for example, is shifted upward by the availability of public assistance, made steeper by minimum wages and direct job creation (of high wage jobs), shifted upward but tilted somewhat downward in the lowest earnings region by food stamps, and made flatter by

the tax increase of the OASDI program. Once the individual has been employed for a short time, eligibility for unemployment compensation further alters the budget constraint. And this is a simplified single-individual, single-period budget constraint. The effect of other wage earners in the family and the inter-temporal distribution of work, unemployment and leisure pose formidable problems. Essentially, if the programs are designed to be interrelated, research efforts directed at specific programs will not permit reliable conclusions on the effects of any of the various social welfare programs.

The impact of government social welfare programs is particularly important for a study of youth. In general, it is primarily the young workers (male 16-24 and female 16-34) who have undergone a shift in their market constraint and find unemployment relatively less expensive when compared to their potential market wage. First, these workers are low wage earners, with relatively little specific training. Second, they are likely to be searching for a career or (especially teenagers) moving back and forth between school and labor force activity. Youths tend to have a relatively low attachment to a given employer or the labor force. Finally, they are often a secondary wage earner in a family. As a consequence, these workers are closer to the margin of working and not working, and the dramatic increases in the levels and coverage of transfer payments (relative to market wages) of the past ten years would be expected to increase the duration and frequency of their unemployment spells.

After considerable, but largely unsuccessful experimentation

with various proxies for the various programs, the actual government variables utilized in the equations is a "compromise variable" of the form W/MW where W is the average hourly earnings of workers 16-24 years of age and MW is the minimum wage. An alternative variable, W/MW*C, where C is the coverage rate, did not perform as well across equations. Especially given the lack of success of the coverage variable, our W/MW cannot be interpreted as a straight minimum wage effect. As indicated, it cannot be empirically differentiated, in most equations, from a supply side variable that measures changes in government transfer programs.

As mentioned above, major change in the minimum wage is the change in coverage in 1967. Until the 1978 law, little other meaningful variation in that variable is evident. Many of the increases in coverage did not affect low wage workers and the staggered catch-up increase in the minimum creaked a sooth-tooth pattern in the data with, if anything, a slightly declining trend until 1978 of the MW relative to W. That is, the time series minimum wage variable is largely a spike in 1967. This, of course, is difficult enough to represent using time series data. Suppose, however, as is likely, that firms adjusted with a lag to this sweeping change in coverage. One possibility is an exponential declining distributed lag response. Depending upon the speed of decay, this would move the mean of the response outward in time, probably to 1968 or 1969. Alternatively, firms may have responded very slowly at first. This may have included low levels of compliance or incomplete compliance in the year immediately after 1967. With a compliance lag and an employment response lag con-

ditional on compliance, the distributed lag structure could resemble a parabola with a mean lag into 1970 or beyond.

Given these possible time profiles for W/MW, and the difficulty of isolating the best fit in the various equations, it is possible for W/MW to move in near precision with transfer, supply side variables. Moreover, as mentioned above, this multicollinearity may be a conceptual as well as a data problem. To the extent that individuals form their reservation wages as a function of MW and transfer payments are adjusted to conform to the same underlying inflation and real income changes effects, the MW construct may be a good approximation to the reservation wage of workers. To the extent that the minimum wage helps to determine the reservation wage of low wage workers, the greater the difficulty in differentiating supply and demand effects.

C. Empirical Results for the Reduced Form Unemployment Equation

Given a lack of agreement or data on the control variables, especially government policy variables, to be introduced into the unemployment equation, it is useful to start with the simplest equation. Shown in Table 1, this equation only includes RPy, U_{PM} and the seasonal dummies. As can be seen, the coefficients on RPy are all positive and, as would be expected, indicate higher elasticities for females and blacks. The Durbin-Watson statistics and $\bar{R}^2$ are generally good.

Since the "cohort overcrowding" effect operates like a trend variable for half of the sample period, namely between 1958 and 1972, it is useful to see whether RPy is simply picking up a trend

effect. Prior to 1958, RPy is either stable or declining and after 1972 it remains largely unchanged. The question is whether youth unemployment, after controlling for U_{PM} is best approximated by a trend or a cohort overcrowding variable. Of the 18 age-sex-race groups, the equation with RPy instead of a trend yields a higher $\bar{R}^2$ in 15 equations. This provides mild support for the RPy variable. Given their collinearity, it is not possible to distinguish RPy and TREND to the desired extent. Beginning in the late 1970's, however, these two variables diverge sharply. The RPy variable tends to be strongest in female and white male equations and weakest in black male equations. This pattern will appear with consistency regardless of the exact specification and/or the sample period of the equation.

These results suggest that secular or intermediate swings in female and white youth unemployment rates do track well with RPy. The implication for the unemployment rates of youth groups is that they have largely peaked, relative to prime-age male unemployment rates. That is, the steady deterioration in the relative unemployment rates of most youth groups should be finished. Needless to say, we would be more comfortable with this conclusion if the data period were longer and included several complete intermediate swing cycles. The unemployment data by race, however, do not predate the 1950's and the unemployment data by age and sex are only available since the late 1940's.

The one major exception to the notion that youth unemployment rates may be peaking are black males. Their unemployment rates continue to deteriorate in relative terms in the late 1970's. It is for this reason that the trend variable has a

larger t statistic than RPy in the black male equations. A major problem is to explain this divergence between black male youth unemployment rates and those of other youth groups.[10]

III. Other Indicators of the Labor Market Status of Youth

Youth unemployment is a more complex phenomenon than is unemployment for other age groups. Essentially, the unemployment rate construct is not attuned to the unique features of the youth labor market. Rather, it is based on the type of frictional and cyclical unemployment which is most relevant to prime-age males and, in general, to workers with a strong labor market attachment.

Youth unemployment, on the other hand, is much more difficult to categorize. The key difference is that, whereas prime-age males tend to be in the labor force year-round, full-time (either employed or unemployed), youth are frequently moving among jobs or into and out of the labor force. For example, of the 4.24 million males age 18-19, only 2.37 million were in the labor force and not in school in 1978. Of the 4.23 million males age 16-17, only 1.12 million were in the labor force and not in school. Furthermore, since these numbers are annual averages, (and thus include the summer months when many youth are not in school), they overstate the number that are in the labor market and not in school the remainder of the year.

Essentially there are many options open to youth that fit into traditional roles, besides being in the labor market. Young people, for example, can be in school, in the military, or at home beginning to raise their own families. In addition, they can combine these different activities; for example, a disproportionate number of youth who are in the labor market are part-time workers. An increasing percentage of these combines being full-time students and part-time workers. Moreover, the choice of activities shifts

frequently over the years. Relatively few young people age 16 to 19, work year-round, full-time. One traditional pattern for this group is to work full-time only during the summer months. Even for those who are not in school, changes in status between being employed, unemployed and out of the labor force can occur several times over the year.

Of particular importance for an evaluation of the unemployment issue is that, from society's perspective, working year round, full-time is not necessarily the most desirable activity for a young person. For prime-age males, the social ordering of activities is clear; working year-round, full-time is the desired role. For young people, particularly for teenagers, attending school may be preferable, from society's perspective, to working To some, serving one's military obligation also ranks above civilian employment for male youth. For young females, staying home and raising a family may be viewed more favorable than working.

Given this perspective, the youth unemployment rate has four major problems. First, since many if not most youth are not in the labor force at any given point in time, the unemployment rate is a very incomplete measure of that group's economic position and well-being. Second, since youth move frequently between employment, unemployment and various non-labor market activities, and are disproportionately part-time workers when they work, their unemployment incidence should be expected to be higher than for other workers who have stronger attachments to their jobs. Third, since having a job is not necessarily the preferred activity

and for some youth age groups, is likely to be much inferior to schooling, changes in the unemployment rate may provide incorrect information as to the nature and extent of changes in the economic conditions in youth labor markets. Fourth, since many youth do not have a firm labor market attachment, the question of whether they are "actively" seeking work (and thus unemployed by the BLS definition), is often a judgment call and this leads to a considerable measurement error.

Our initial approach is to develop alternative unemployment rate indicators and analyze how they vary over time. The point is not that one is better than the other, but rather that they each provide a different and useful perspective on the problem. Our U_1 measure simply adds the military to the denominator of the unemployment rate. Including the military into U_1 is an obvious addition since that construct is used by the BLS and is referred to as the total (as distinct from civilian) labor force. Our U_2 measure is constructed by adding those in school as well as in the military to the denominator of the unemployment rate; that is $U_2 = U/(L+M+S-(S \cap L))$. Including individuals in school (but not in the labor force since they are already included in L) is controversial, but useful. Schooling can be viewed not only as a type of employment, involving general human capital training, but also as the preferred activity for many of the youth groups. Including schooling and military in the denominator, to yield an augumented labor force (ALF), helps to control for shifts among these activities which result in fluctuations in the unemployment rate that may be related to labor demand conditions. The alternative unemployment rate series for 1978, are shown in Table 2.

The U_3 construct, also depicted in Table 2, moves further in treating schooling on a par with employment. Workers, specifically those who want to moonlight and work at more than one job, can be both employed at the first job and unemployed while looking for the second job. According to the definition of unemployment, however, such a worker is counted as employed, but not counted as unemployed. The same issue arises when schooling is included. If an individual is in school, should they also be counted as unemployed if they are looking for a job as well? The U_2 measure does count them as unemployed. It is useful, however, to establish a U_3 measure which excludes this group from the unemployment pool. The U_3 variable is defined as $(U-(U \cap S))/(L+M+S-(S \cap L))$.

The justification for this is that individuals whose major activity is school are likely to be part-time workers with a relatively marginal attachment to a job. The fact that they are in school indicates that they will soon be looking for a different kind of job. Moreover, reporting errors for this group are especially large. What constitutes active job search for full-time students who are looking for part-time jobs?

Whether or not one agrees with this argument, U_3 is still an interesting measure of unemployment. Correctly interpreted, it is the unemployment rate of non-enrolled youth as a percentage of the population that is in school, the military, or the labor force. The difference between U and U3 is even larger than for U and U2. First, the unemployment rates are again reduced considerably with the largest reductions affecting the youngest age group. For example, for white youth 16-17, the unemployment rate for non-

enrollees, as a percentage of the school and total labor force, is 4 percent. If schooling is viewed as a job (an investment in human capital for future productivity), then this age group is nearly fully employed. Futhermore, one can make a good argument that U3 is closer to the meaning of unemployment for nonyouth than is the regular unemployment rate.

Essentially, white youth age 16-17 are largely in school. The school enrollment rate for white males 16-17 as an annual average is 63.7 percent in 1978. But, as mentioned above, teenage labor force statistics need to be inspected for the nonsummer period as well as an annual average. For example, during the first quarter of 1978, the school enrollment rate for white males 16-17 was 81.4 percent. The U3 rate in the first quarter of 1978 was 2.6 percent. That is, most of the 16-17 year olds are in-school in the winter and many of these are unemployed during the summer. The unemployed rate for nonenrollees during the winter is below the unemployment rate for white, prime-age males.

Even for blacks, age 16-17, unemployment while not in-school is largely a summertime activity. For black males, age 16-17, U3 is only 7.8 percent compared with a BLS measured unemployment rate of 40.7. Looking at the first quarter of 1978, instead of the annual data, the U3 rate falls to 4.0 percent.

An important result of table 2 is to show that black unemployment for 18-24 age group remains a problem even after moving from a U2 to a U3 construct. Having narrowed the definition so that it only covers the non-enrolled as a percentage of the school and work forces, it is distrubing that the resulting U3 measure is

still approximately 15 percent for nonwhites. Moreover, the black U3 rates for the 18-24 age groups are still more than double the white U3 rates for comparable groups.

The resulting basic regression equations for U and U_1 through U_3 are shown in Table 3. Since the schooling data, at the desired level of disaggregation are only available from 1962, the sample period is shortened to 1962:4 through 1978:4. For comparison purposes, the U equation of Table 1 are reestimated for the shorter time period. Over the shorter time period, RPy is close to a trend; the major deviation is that RPy stablizes in the 1970's. One result is to make RPy insignificant in 7 of the 18 equations. In the U_1 equation (the total as distinct from civilian labor force), RPy is again significant in all of the male equations. For the U_2 and U_3 equations, RPy is significant in all but a few of the black youth equations.

The notion that the alternative unemployment rate indicators, and especially U3 may be a better cyclical indicator of youth unemployment is supported by analyzing the coefficient on the U_{PM} term. For all but one male equation, the coefficient on U_{PM} is higher when U3 rather than U is the dependent variable. In the female equation, the coefficient on U_{PM} is also larger for U3 than U for all the younger groups (where the school population is a significant percentage of the total). Only for the 20-24 female age groups are the coefficients insignificantly different from each other.

IV. The Alternative Activity Equations - Employment, Unemployment, School, Other

A. Background

Analyzing the labor market and general economic status of youth by focusing on unemployment has severe problems. Of the four major activities which span the youth population, employment, unemployment, schooling, and residual (denoted Pn), the unemployment category is the smallest. Furthermore, the response error for unemployment is considerably larger than for employment and schooling. Especially for youth who may be either in school and looking for a part-time job or out of school for the summer and interested in working, the BLS question that refers to "actively" seeking work is ambiguous. Indeed, for most youth groups and particularly for teenagers, the notion of unemployment and hence labor force is sufficiently flawed as to be a weak statistic for policy purposes.

To avoid concentrating soley on unemployment, we suggest a strategy of studying employment, unemployment, schooling, and the residual category together. This allows for the observation of flows across categories. For example, it is useful to know whether a change in U_{PM} causes a net increase in the S or Pn categories.[11]

One problem with the alternative activity equation approach is that the residual category, Pn, includes both some of society's most advantaged and disadvantaged youth. At one extreme, it includes high school dropouts who have a sufficiently low skill level that they cannot find a job, youths from welfare families who would cost their families their eligibility if they accept a

job, and youths who are in poor health. On the other hand, it also includes a large number of young females who are beginning to raise their family, teenagers who are taking the summer off, and relatively skilled youth who are pursuing other activities for a short time between jobs and/or school.

There is a tendency among some researchers to interpret an increase in E/P as a positive development, especially if it does not parallel a decrease in S/P. The work ethic aside, there is little basis for this view. Although it would be an easier problem if Pn only included problem nonworkers, an inspection of the data suggests that this is not the case. The bulk of workers in the Pn category are neither discouraged nor disadvantaged.

In the equations, we disaggregate the youth age-sex-race population into four mutually exclusive categories. The categories are U/P, (E+M)/P, (S-(S∩L))/P and Pn/P. These dependent variables were regressed on the same set of independent variables, as indicated in equation (7), with the one exception that the military were included in the male equations and a time trend in the famale equations.

By construction, the sum of the four dependent variables should be equal to one. The problem when estimating these dependent variables by single equation techniques is that the linear restriction across equations may not be satisfied. In order to estimate the coefficients of the explanatory variables for these four choices, subject to the linear constraint across equations, we used the logarithm of the pairwise odds as the dependent variables. To illustrate, denote the four youth categories as

P_i, $0 < P_i < 1$, i = 1,2,3,4, and $\sum_{i=1}^{4} P_i = 1$. The dependent variables are then ln (P_i/P_1), i= 2,3,4. The regressions determine the ratios of the probabilities. The absolute values can then be estimated using the condition that the sum of probabilities is equal to unity. The implicit coefficients of the respective independent variables can be obtained by numerical estimation. Based on the coefficients from the P_i/P_1 equations, the probabilities were computed by changing one specific right-hand-side variable by one percent. These computed probabilities were compared with the corresponding original estimates to derive the implicit elasticities at a given period. These numerically derived elasticities for the third quarter of 1978 are reported in Table 4 by each variable.

For those who prefer to analyze estimated coefficients directly, the equations for the four activities, unconstrained by $\sum_{i=1}^{4} P_i = 1$ are shown in Table 5.

A. The Impact of RPy

In the unconstrained equations of Table 5, the RPy variable has a correct and significant coefficient in the U/P equation in only six of the equations. The difference between the greater success of RPy in Tables 1 and 5 reflects the fact that the dependent variable is different, the time period is longer, and the time trend or AF/POP variable is omitted in Table 1. Both TREND and AF/POP are highly collinear with RPy over the short sample period, 1962 to 1978. It is clear that data from this period are compatible with a number of alternative explanations. This is

especially the case since our emphasis is on intermediate rather than short business cycle swings.

For the constrained U/P equations, 6 of the male and 5 of the female equations had the anticipated sign on RPy. It is interesting that the incorrect signs were for the black equations in all but one case. Does this suggest that the labor market for black youths has improved with demographic overcrowding?

To analyze this puzzling result, it is necessary to evaluate the other three activity equations. They indicate that the negative coefficients on RPy in the U/P equations do not indicate an improvement in blacks' labor market position. Of particular importance are the E/P equations. For all but three of the eighteen equations, E/P is negatively related to RPy. The only equation for blacks where the coefficient is positive is females 20-24. Moreover, the implied elasticities on RPy in the E/P equations are considerably larger for blacks than for whites.

The public policy debate on youth unemployment invariably is in terms of the BLS unemployment variable, U/L. It is therefore useful to convert the U/P and E/P equations of Table 4 so that their implications for the more traditional U/L and L/P variables can be analyzed. The results are shown in Table 6. Column 1 of Table 6 shows that the elasticity of U/L with respect to RPy has the anticipated postive sign in all but two equations (black females 16-17 and 20-24).

Column 5 shows the elasticity of L/P with respect to RPy. The anticipated negative elasticity is again found in all but two equations (total males 16-17 and white males 16-17). For L/P,

elasticity is largest for the black groups (in absolute value) and second largest for the female groups. In all white and total equations the negative impact is greater for females than for comparable male groups. In two of the three black equations, the black males sufferd a larger decrease in L/P than did females.

The results of Tables 4 and 6 make it clear that both black and white youth labor market positions are adversely affected by demographic overcrowding. However, the response pattern of the two groups differs. For white youth, unemployment increases are large because of relative stability in the labor force participation rates. For black youth, the unemployment response to RPy appears low but this is mainly because of a sharp negative adjustment of L/P.

Given the linear restriction across equations, an increase in one of the P_i's requires a reduction in another. What happens to those workers who are not employed as a result of cohort overcrowding The implicit coefficients for RPy in the (S-(S∩L))/P and Pn/P equations provide an answer.

Essentially, an increase in RPy, ceteris paribus, leads to an increase in U/P, a decrease in E/P, an increase in (S-(S∩L))/P and an increase in Pn/P. The displaced employed workers largely migrate to full-time school and/or to household activities. This is not, however, the complete story of the demographic overcrowding because of the ceteris paribus assumption. That is, RPy does not reflect the full effect of demographic overcrowding; changes in other variables should also be anticipated. An obvious

secondary impact of demographic overcrowding will occur by altering the numerator in W/MW. Indeed, with the endogenous policy response assumption, discussed above, W/MW should decline because both MW is rising and U is falling (in relative terms). Finally, the TREND term poses obvious problems. Since the intermediate-run demographic swings are higly correlated with a trend variable over the estimation period, it is likely that TREND will capture some of these affects. But these cannot be identified since the TREND variable cannot be linked to any hypothesis.

B. The Impact of U_{PM}

The cyclical variable, U_{PM}, produced the anticipated results. As illustrated in Tables 4 and 5, increases in U_{PM} are associated with little change in schooling, an increase in U/P, a decrease in E/P and an increase in Pn/P.

The elasticities of U/P with respect to U_{PM} are always the largest for white males. In addition, the elasticites tend to be larger for whites than for blacks, males than for females, and older than for younger workers. For all age-sex-race categories the elasticities are less than unity.

The overall results suggest a ranking of youth groups in terms of the cyclical vs. structural sensitivity of their unemployment rates (U/P). In general, youth are more structurally than cyclically sensitive in comparison with nonyouth. Females, and the youngest youth groups are the most sensitive to structural rather than cyclical swings in unemployment.

The ranking is also reflected in industry employment. For example, the older male groups have a high concentration of employment on the high wage, cyclically sensitive industries such as mining, manufacturing and construction. The younger and female groups are more heavily represented in the low wage, a-cyclical industries such as retail and service. Industry employment patterns, however, cannot be viewed simply as a causal factor in the unemployment behavior of these groups. Rather, the underlying structural features of these groups' labor market behavior is likely to determine the industry employment. For example, the 16-17 age group, looking for part-time, after school work, is most suited for employment in the retail and service sectors. Training cost and work scheduling in industries such as manufacturing are not suitable for this group's casual labor market attachment.

The ranking of black and white groups, in terms of the cyclical vs. structural issue, is more difficult than ranking age-sex groups. Although blacks have a lower elasticity of U/P with respect to U_{PM} it is necessary to inspect the E/P as well as the U/P equation. Of particular interest is that black youth have a considerably higher E/P sensitivity to the business cycle than whites. That is, black youth have a lower U/P, but a higher E/P elasticity with respect to U_{PM}. Since blacks and whites tend to be equally employed, in percentage terms, in the high and low wage industries, the cyclical nature of different industries cannot be a factor.

A possible interpretation is that the black youth labor

market response is more closely related to fluctuations in layoffs and hires. For white youth, on the other hand, changes in labor market status, as reflected in reentrant and new entrant rates, may be relatively more important. In any case, the ranking across race are more complex than across age and sex.

Further support for this contention is implicit in the partial correlation coefficients shown in Table 7. In general, the partial correlation coefficients for U_{PM} in the white unemployment and employment equations are generally greater than for comparable black equation. Taking account of the lower $\bar{R}^2$ for the black equations, however, alters the picture. In general, the contribution to $\bar{R}^2$ of U_{PM} is relatively higher in the black employment equations and the white unemployment equations. For age-sex groups, however, the partial correlation coefficients for both U/P and E/P with respect to U_{PM} indicate a higher correlation for older and male workers relative to younger and female workers.

C. The Impact of W/MW

Although the relative wage term is only marginally significant in the unconstrained equations, it exhibits a consistent and anticipated sign in the constrained equations. For all but one demographic group, changes in schooling, unemployment and the residual category are inversely related , while changes in employment are directly related to movements in W/MW. In other words, an increase in the youth market wage, ceteris paribus, is related to a shift into employment and out of all other activities.

Of particular interest is the reltionship between unemploy-

ment (U/P) and W/MW. As suggested in the text, the unemployment rate of youth depends upon the cost of being unemployed. Interpreting MW as a proxy for the reservation wage, an increase in the market wage, W, leads to an increase in the cost of unemployment and hence a decrease in the unemployment rate. To the extent that W/MW represents a minimum wage variable, however, the decrease in U/P, following an increase in W/MW, would be intepreted as a demand side effect. These two views cannot be separately isolated on the basis of the time series data. Certainly, the absence of a significant FLSA coverage effect is a strong factor against interpreting the coefficient on W/MW as an indication of displacement due to the minimum wage policy. On the other hand, even if MW represents a combined supply-demand side government social policy variable, the result implies that policies that increase the skill level and market wage faster than the "social-economic" minimum wage are likely to reduce the youth unemployment rate.

The one category which shows a mixed pattern with respect to W/MW is Pn. For females, the three black groups and one white group are positively related, while two white groups are negatively related to W/MW. Given the composition of Pn, a priori predictions on the signs of coefficients are not obvious. One factor, however, is that the female Pn category contains many more home-workers that are raising families than the male Pn category. The resulting sign pattern is thus compatible with a demographic overcrowding interpretation. In particular, a deterioration in W/MW may reduce completed family size and lead to an exit from Pn

on the part of females. Since this household behavior response is not likely to be a factor in the male equations, the cost of unemployment argument should be dominant and explain the negative coefficient on W/MW.

D. The Impact of AF/POP

The armed forces variable has an important role in the unemployment rate patterns between whites and blacks. First, this variable has a large variance over the estimation period, rising sharply during the Vietnam War and then declining close to its pre-war levels during the mid to late 1970's. Second, the black and white male groups respond differently to AF/POP. Unfortunately, given the data period, variation in AF/POP, especially its sharp increase to a peak value in the early 1970's parallels RPy. This may reduce the confidence that can be placed in separately interpreting these two quite different independent variables.

In the constrained unemployment equations, the implicit coefficient on AF/POP was negative in each of the nine male equations. Comparing the white and black equations, however, indicates a much greater sensitivity of black unemployment to military employment. This may help to explain the fact that black youth unemployment has deteriorated, relative to white youth, since the early 1970's. Since both the percentage of the military that is black and the percentage of black in the military have increased since the change to all volunteer forces, the decline in AF/POP, however, cannot be blamed for the unemployment trends.

The major differences in employment response also reflect

the greater sensitivity of black labor market conditions to the level of military employment. For employment, the coefficient differences between whites and blacks are particularly large. Indeed, white employment in the 18-19 age group actually declines with increases in military employment. This is particularly surprising since E/P includes M as part of employment. In other words, an increase in the miltary is associated with a decline in civilian employment for whites 18-19 that is larger than the number of whites who enter the military.

The differential white-black response pattern also holds for schooling. The increase in AF/POP is associated with a much larger increase in white than in black schooling. This is probably capturing behavior during the draft period, when increases in AF/POP encouraged youth to remain or return to school to secure student deferments.

V. Considerations in the Deterioration of the Black Youth Labor Market

A. Unemployment and Labor Force Developments

Two basic factors have been isolated in the data which suggest a deterioration in the labor market for black youth during the 1970's. The first is that black youth unemployment deteriorates throughout the 1970's whereas white youth unemployment largely peaks in the early 1970's. The second is that black youth E/P ratios fall over most of the past decade while white E/P ratios were increasing. Since unemployment rate increases may be less of a problem if attributable to increases in participation rates, it is important to consider these factors together. For males, the participation rates for blacks decreased substantially for all age groups, while the rates for whites increased for all age groups. For females, the situation is somewhat different. Both whites and blacks showed increasing participation rates during the period. However, the percentage growth rates in participation rates were much smaller for blacks than for whites for all female cohorts. In sum, these changes in unemployment and participation rates translate into a sharp decline in black male youth E/P relative to white male youth. (See Table 8.)

We have generally attributed the youth unemployment developments of the past decade to supply side factors. In the case of black males, however, the data on U/L and E/P indicates a possibly different picture. Presumably, increases in U/L combined with decreases in L/P give, at least the impression, of a deterio-

ration in demand conditions. To what extent has the demand for black males shifted adversely relative to whites and black females?

B. Trends in Secular Wages

Whereas the employment situations have worsened for black relative to whites, the relative wages for blacks have increased continuously during the last decade. The overall white median usual weekly earnings of full-time, wage and salary workers increased by 6.7 percent per year between 1967 and 1977. However, the corresponding wage growth for blacks was 8.0 percent on average during the same period. The black-white wage ratios increased from 0.692 to 0.776 for males and from 0.797 to 0.936 for females during the period.

The full-time usual weekly earnings of youth whose major activities are other than school also show a similar pattern. This is shown in Table 9. Here again, the gap between black and white wage differentials has narrowed over time. Except for females age 16-17, the wage of all black groups rose more than that of the comparable white groups. The black-white wage ratios increased from 0.832, 0.735, and 0.740 to 0.973, 0.799 and 0.868 for males age 16-17, 18-19 and 20-24 groups, respectively between 1967 and 1978. For females, the corresponding ratios changed from 1.125, 0.829 and 0.830 to 0.914, 1.034 and 0.928, respectively. The puzzling question is that the black male groups, whose labor market condition measured by unemployment-employment indicators was worse than any other youth group, enjoyed relatively better earnings growth than other groups.

C. Trends in Industry Employment

To further explore the issue of deteriorating U/L and E/P rates for black youth, coupled with increasing relative wages, it is useful to explore the industry employment of black and white youth. For ease of analysis we use the percentage of each youth group who are employed in the retail and service sector, compared with total employment of each demographic group. The retail and service sectors are the major employers of youth and are the lowest wage sectors. The data, presented in Table 10, illustrate two overall developments. First, the percentage of black employment that is found in the lowest wage sectors is approximately equal to the percentage of white employment in these sectors. There are slightly more black males but many fewer black females (as a percentage), in comparison with the comparable white groups, in the low wage sectors. Second, changes in the percentage of low wage employment has worsened for black relative to white males, but improved for black relative to white females.

What is clear about these statistics is that they are not of great help in clarifying the puzzle. As a compositional issue, the improvement in black relative wages cannot be explained by the nonimprovement in their occupational status. However, there is also no evidence of a significant deterioration in the employment status of black males that could explain their declining E/P and rising U/L rates.

For those who believe that each age-sex-race group has its own RPy_i variable as the proper cohort overcrowding variable, there is no problem in explaining the declining black male

employment ratios. Specifically, the ratio of black youth employment to white youth employment (where employment includes the military) has been virtually unchanged since 1965. This is depicted in Table 11. According to the "RPy_i" model, the entire deterioration in E/P ratios for black males can thus be associated with their increasing percentage in the youth population. Since we believe that overcrowding is better defined over youth as a single group, we do find this result a compelling explanation. Moreover, the puzzle of declining E/P ratios for black males combined with increasing relative wage rates cannot be attributed to the higher growth rate of the black youth population.

D. Trends in School Enrollment

One of the main distinctive features between whites and blacks over the last decade is that the school enrollment rates for all black groups increased substantially more than for whites. Except for females age 20-24, the enrollment rates for whites decreased for all age-sex groups between 1965 and 1978. During the same period, the enrollment rates for blacks consistently increased. Furthermore, although the enrollment rates for all black age-sex groups were lower than those for the corresponding white groups in 1965, the situation was reversed by 1978. That is, by 1978, the enrollment rates for all black age-sex groups were higher than the comparable white groups.

Does the increase in school enrollment rates for black males equal the decline in their E/P rates? The answer can be seen by comparing Tables 8 and 12. The increase in school enrollment

captures almost all of the decline in E/P for black males 16-17. For black males 18-19, it picks up 4 of the 10 percentage point decline. For the 20-24 black male group, a 17 percentage point decline on E/P is reduced to 10 percentage points when S/P is added. Perhaps as important, is that the high gap between E/P rates for whites and blacks becomes a very narrow gap for most age-sex groups when $(E+(S-(S \cap E))/P$ is used as an indicator of labor market position.

The nature of the problem and the question of which group does better depends upon how one evaluates schooling vs. employment for youth. In level terms as of 1978, white youth enjoy an advantage, in the combined employment plus schooling ratio, over comparable black youth. The trend is less obvious. The increase in white employment ratios is, in part, due to their deteriorating school enrollment and increasing part-time work while in school. The decrease in black employment ratios is, in part, due to their increasing school enrollments. In addition, black enrollment has gained without a significant increase in after-school work (comparable to that found for white enrollees).

VI. Summary

In this paper we have advanced the argument that the deterioration in the absolute and relative unemployment ratio of youth is due primarily to a cohort overcrowding effect. Other variables that seem to have a role are the declines in the size of military service since the Vietnam War, the decline in market wage for youth relative to some combination of minimum wages and government transfer programs, and a cyclical variable representing changes in demand. Since we control for the business cycle, which does not have a secular trend, the deterioration in the labor market for youth over the past two decades can be ascribed to labor supply factors. That is, the increasing unemployment rate of this group represents an increase in their equilibrium unemployment rate due to overcrowding and the associated decline in market wages relative to government program variable.

The BLS measured unemployment rate usually is the centerpiece of the evidence for the declining labor market position of youth. Although we agree that an important decline has taken place, the magnitude of the job decline is overstated by the BLS statistics. Indeed, we argue that the BLS unemployment rate for youth is a very weak statistic for policy purposes. Other measures of unemployment and/or employment ratios show less of a decline than do the BLS measures. For example, the percentage of youth who are either employed or in school is only slightly down from the 1965 levels. We argue that this variable, or an unemployment rate construct which treats schooling as equilivalent in status to employment, are more useful indicators of the labor

market position of youth with respect to jobs.

Whereas the job decline is less serious than the BLS unemployment rate indicates, the decline in the relative wage of youth may be more central to the relevant issues. That is, the labor market problem of youth is more a problem of low wages than of a lack of jobs. The increasing employment-population ratio of most youth groups, in spite of the high increase in their population, is one source of evidence of the ability of the economy to create large numbers of youth jobs.

Black males are the one age-sex-race youth group that combines steadily deteriorating unemployment and employment ratios. There are problems, however, in determining to what extent the overall position of this group has declined. First, the relative wage of black youth, males and females, has improved relative to white youth. Second, the decline in employment and increase in relative wages has not been matched by a significant change in the proportion of black males in the low wage industries. The percentage of black male employment remains approximately the same as the percentage of white male employment in the low wage sectors. Finally, the school enrollment rate has been increasing for blacks and decreasing for whites. As a result, the ratios of those employed plus those in school, as a percentage of the relevant population, shows less of a difference between black and white youth than the employment ratios alone.

It is difficult to weigh the decline in employment and increase in unemployment, against the increase in relative wages and school enrollment. The increase in the percentage of black

males who are both out of school and not employed implies that a component of the black male youth population has suffered a significant decline in their relative economic status. This suggests that the variance of the black male, 16-24, labor market position may be increasing, with some gaining and others losing position relative to white youth.

Table 1

Unemployment Equations with Demographic Overcrowding Variable:

1954:1 - 1978:4

	MALE			FEMALE		
Age-race	RPy	U_{PM}	$\bar{R}^2$/DW	RPy	U_{PM}	$\bar{R}^2$/DW
16-17 Total	1.0424 (14.82)	.3347 (12.37)	.796/1.832	1.1466 (11.77)	.2382 (6.36)	.748/1.908
White	.8592 (11.22)	.3528 (11.98)	.760/1.808	1.0103 (9.34)	.2667 (6.41)	.707/2.078
Black	2.2524 (16.19)	.2879 (5.38)	.728/1.478	2.0174 (13.37)	.1515 (2.61)	.658/1.490
18-19 Total	.4446 (6.40)	.5576 (20.86)	.843/1.337	1.2097 (14.24)	.2881 (8.82)	.743/1.188
White	.2386 (3.13)	.5862 (19.97)	.836/1.404	1.1605 (11.31)	.3137 (7.95)	.675/1.200
Black	1.4952 (10.99)	.4938 (9.43)	.638/1.140	1.2334 (11.90)	.2403 (6.02)	.617/1.589
20-24 Total	.5090 (6.68)	.8548 (29.16)	.910/.702	1.1347 (19.67)	.5098 (22.97)	.891/1.360
White	.4733 (5.51)	.8629 (26.12)	.893/.728	1.2004 (18.43)	.5158 (20.59)	.874/1.388
Black	.7793 (6.06)	.8352 (16.87)	.760/.879	.9269 (8.77)	.4782 (11.76)	.652/1.101

Table 2

Alternative Measures of Unemployment: 1978

	U or BLS Unemployment Rate[a]	U_1 or Unemployment Divided by Labor Force + Military[b]	U_2 or Unemployment Divided by Labor Force + School + Military[c]	U_3 or Unemployment of Nonenrollees Divided by Labor Force + School + Military[d]
Male				
White 16-17	17.1	16.9	10.1	4.8
18-19	10.9	10.0	8.0	6.1
20-24	7.6	7.1	6.4	5.8
Black 16-17	40.7	39.9	15.4	7.8
18-19	30.9	26.3	18.5	14.2
20-24	20.1	17.3	15.2	13.6
Female				
White 16-17	17.1	17.1	9.8	4.8
18-19	12.3	12.3	9.5	7.6
20-24	8.3	8.2	7.5	6.9
Black 16-17	41.9	41.9	14.8	8.7
18-19	36.8	36.4	23.8	18.4
20-24	21.6	21.3	18.6	16.8

a) Measured as U/L where U is the number of unemployed and L is the civilian labor force.

b) Measured as U/(L+M) where M is the number in the military

c) Measured as U/(L+M+S-(S$\cap$L)) where S is the number in school and (S$\cap$L) indicates those who are both in school and in the civilian labor force.

d) Measured as (U-(U$\cap$S))/(L+M+S-(S$\cap$L)).

Table 3

Equations for Alternative Measures of Unemployment*
1962:4 - 1978:4

Table 3A

BLS Unemployment Rate: U or U/L

Age-Race	MALE			FEMALE		
	RPy	U_{PM}	$\bar{R}^2$/DW	RPy	U_{PM}	$\bar{R}^2$/DW
16-17						
Total	.5407 (3.37)	.3576 (12.08)	.807/2.056	.3550 (1.65)	.2741 (6.90)	.675/2.391
White	.3541 (1.85)	.3920 (11.11)	.771/1.971	.3506 (1.42)	.3019 (6.65)	.635/2.386
Black	1.8335 (7.48)	.2439 (5.40)	.668/1.314	.5941 (2.19)	.1969 (3.94)	.464/2.114
18-19						
Total	-.1747 (-1.15)	.5740 (20.49)	.886/1.707	.2787 (1.72)	.3222 (10.79)	.729/1.907
White	-.3711 (-1.93)	.6121 (17.23)	.847/1.469	.04079 (.20)	.3528 (9.28)	.653/1.740
Black	.7343 (3.15)	.4893 (11.39)	.735/1.505	1.010 (4.72)	.2453 (6.22)	.584/1.650
20-24						
Total	.9831 5.25	.8446 (24.45)	.929/.547	.8265 (6.54)	.5144 (22.07)	.918/1.330
White	.8541 (3.89)	.8449 (20.86)	.905/.600	.9553 (6.82)	.5681 (19.69)	.905/1.681
Black	1.5129 (5.32)	.8699 16.60)	.862/.997	.3576 (1.62)	.5373 (13.19)	.766/.656

*All the variables took logarithmic forms. A constant term and three seasonal dummies were included in the estimations.

Table 3B

BLS Total Unemployment Rate:

U_1 or U/(L+M)

Age-Race	MALE RPy	MALE U_{PM}	MALE $\bar{R}^2$/DW	FEMALE RPy	FEMALE U_{PM}	FEMALE $\bar{R}^2$/DW
16-17						
Total	.6598 (4.06)	.3538 (11.81)	.805/2.040	.3550 (1.65)	.2741 (6.90)	.675/2.391
White	.4952 (2.56)	.3858 (10.80)	.768/1.954	.3506 (1.42)	.3019 (6.65)	.635/2.386
Black	1.7378 (6.97)	.2523 (5.49)	.649/1.250	.5941 (2.19)	.1969 (3.94)	.464/2.114
18-19						
Total	.5833 (3.92)	.6006 (21.88)	.907/1.808	.2716 (1.68)	.3205 (18.74)	.727/1.906
White	.4972 (2.69)	.6444 (18.92)	.879/1.595	.03547 (.1721)	.3513 (9.25)	.651/1.740
Black	.6820 (2.90)	.4745 (10.96)	.715/1.540	.9902 (4.62)	.2413 (6.10)	.575/1.642
20-24						
Total	1.3263 (7.30)	.9840 (29.39)	.950/.659	.8124 (6.47)	.5109 (22.07)	.918/1.345
White	1.2697 (6.24)	.9945 (26.49)	.939/.764	.9440 (6.76)	.5051 (19.61)	.904/1.684
Black	1.3288 (4.64)	.9368 (17.76)	.870/1.034	.3244 (1.48)	.5311 (13.17)	.764/.668

Table 3C

Unemployment as a Percentage of
Total Labor Force + Schooling

U_2 or $U/(L+M+S-(S \cap L))$

Age-Race	MALE RPy	MALE U_{PM}	MALE $\bar{R}^2$/DW	FEMALE RPy	FEMALE U_{PM}	FEMALE $\bar{R}^2$/DW
16-17						
Total	1.4692 (7.22)	.3348 (8.92)	.853/1.917	2.2497 (7.79)	.3313 (6.22)	.866/1.929
White	1.540 (6.46)	.3818 (8.69)	.809/1.902	2.4678 (7.69)	.3669 (6.20)	.841/1.982
Black	.7970 (2.90)	.1167 (2.30)	.801/1.260	.9339 (2.75)	.1887 (3.02)	.836/2.036
18-19						
Total	.7614 (4.75)	.6433 (21.75)	.908/1.875	.6656 (4.22)	.3673 (12.64)	.868/1.977
White	.7535 (4.05)	.6967 (20.33)	.893/1.774	.5650 (2.86)	.4088 (11.22)	.816/1.886
Black	.3326 (1.34)	.4524 (9.91)	.705/1.512	.4412 (1.71)	.2172 (4.56)	.665/1.325
20-24						
Total	1.2772 (6.98)	.9919 (29.41)	.948/.685	.7772 (6.16)	.5216 (22.43)	.923/1.339
White	1.2611 (6.19)	1.0070 (26.80)	.938/.794	.9530 (6.86)	.5215 (20.36)	.914/1.740
Black	.9702 (3.51)	.9119 (17.91)	.867/1.118	-.0009927 (-.0047)	.5033 (12.86)	.754/.651

Table 3D

Unemployment of Nonenrollees as a Percentage of Total Labor Force + Schooling:

U_3 or $\frac{U-(U \cap S)}{L+M+S-(S \cap L)}$

Age-Race	MALE RPy	MALE U_{PM}	MALE $\bar{R}^2$/DW	FEMALE RPy	FEMALE U_{PM}	FEMALE $\bar{R}^2$/DW
16-17						
Total	.5121 (2.10)	.4069 (9.07)	.965/1.379	.8963 (2.79)	.4196 (7.08)	.955/1.504
White	.6618 (2.33)	.4702 (8.99)	.954/1.459	1.4595 (3.84)	.4459 (6.36)	.941/1.567
Black	-.560 (-1.22)	.1589 (1.87)	.893/1.534	-1.6290 (-3.40)	.3613 (4.09)	.903/2.005
18-19						
Total	.7421 (3.95)	.7667 (22.15)	.924/1.574	.3950 (2.49)	.3754 (12.83)	.911/1.840
White	.8106 (3.58)	.8415 (20.17)	.905/1.512	.3729 (1.99)	.4132 (11.96)	.884/1.776
Black	.02176 (.101)	.5226 (13.18)	.853/1.688	-.1406 (-.497)	.2395 (4.60)	.748/1.400
20-24						
Total	1.2597 (6.68)	1.0330 (29.69)	.949/.683	.7135 (5.37)	.5124 (20.90)	.916/1.147
White	1.3088 (6.31)	1.0605 (27.73)	.942/.742	.9430 (6.45)	.5138 (19.06)	.908/1.470
Black	.7221 (2.66)	.9074 (18.14)	.868/1.174	-.2044 (-.95)	.4883 (12.25)	.737/.805

Table 4

Implicit Coefficients Derived From Constrained Equations

Table 4A
Implicit Coefficients on RPy: 1978:3

Age-Race	MALE				FEMALE			
	$\frac{S-(S \cap L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$	$\frac{S-(S \cap L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$
	P1	P2	P3	P4	P1	P2	P3	P4
16-17 Total	-.5909	.8093	.2441	-.3843	.8157	.0371	-.0525	-.443(
White	-.9068	1.0256	.4418	-.7449	.7697	.2165	-.0864	-.380
Black	1.0749	-.3633	-1.5747	.7839	1.6187	-.6933	-.3870	-.755(
18-19 Total	.3485	.3224	-.4480	2.5670	1.7067	.3337	-.5336	.448(
White	.1132	.4435	-.3748	2.5505	1.5159	.4852	-.4748	.521(
Black	1.5348	-.5643	-1.0509	3.1120	3.5698	-.0459	-1.6399	.319
20-24 Total	1.4642	.7323	-.3295	2.6901	1.0297	-.2925	-.3222	.696
White	1.1024	.8918	-.2889	2.7870	.7907	.5532	-.4256	.837
Black	5.4521	-.1343	-.6818	2.1400	2.8986	-2.3216	.2857	.080

Table 4B

Implicit Coefficients on U_{PM}: 1978:3

Age-Race	MALE				FEMALE			
	$\frac{S-(S \wedge L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$	$\frac{S-(S \wedge L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$
	P1	P2	P3	P4	P1	P2	P3	P4
16-17 Total	.1051	.2411	-.1001	.0254	.0160	.2273	-.0958	.0500
White	.1093	.3160	-.0858	-.0097	.0271	.2710	-.0872	.0370
Black	.0897	-.1031	-.1872	.1631	-.0369	.0528	-.1830	.1201
18-19 Total	.0155	.5534	-.0963	.1544	-.0505	.3350	-.0819	.0809
White	-.0074	.6405	-.0826	.1137	-.0790	.3993	-.0728	.0896
Black	.1227	.2558	-.2043	.3296	.0835	.1556	-.1684	.0545
20-24 Total	.0600	.7820	-.0824	.1745	-.0599	.4918	-.0618	.0178
White	.0415	.8370	-.0736	.1718	-.0905	.5376	-.0440	-.0035
Black	.2345	.5909	-.1527	.2104	.1207	.3387	-.1908	.1391

Table 4C

Implicit Coefficients on W/MW: 1978:3

Age-Race	MALE				FEMALE			
	$\frac{S-(S\wedge L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$	$\frac{S-(S\wedge L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$
	P1	P2	P3	P4	P1	P2	P3	P4
16-17 Total	-.4774	-.2136	.2570	-.0707	-.5827	-.4211	.2082	.2064
White	-.4453	-.4525	.2851	-.1431	-.4966	-.4343	.1844	.1356
Black	-.7215	.6640	.2238	.1209	-1.0165	-.4865	.9728	.3898
18-19 Total	-.4771	-.6632	.1911	-.2976	-.6243	-.2121	.1622	-.036
White	-.4762	-.7328	.1491	-.1151	-.5837	-.1601	.1303	-.054
Black	-.4218	-.3860	.4460	-.7857	-.8797	-.2416	.4702	.0104
20-24 Total	-.5435	-1.2411	.1825	-.6549	-.0539	-.1235	.0831	-.1572
White	-.4791	-1.2867	.1576	-.6283	.0216	-.0401	.1137	-.2911
Black	-1.0187	-.9860	.3465	-.6807	-.5657	-.3967	-.1476	.5905

Table 4D

Implicit Coefficients on AF/POP: 1978:3

MALE

	$\frac{S-(S \cap L)}{P}$	$\frac{U}{P}$	$\frac{E}{P}$	$\frac{Pn}{P}$
	P1	P2	P3	P4
16-17 Total	.1535	-.1499	.0165	-.0944
White	.1979	-.1134	.0129	-.1351
Black	-.0022	-.3133	.1300	.0347
18-19 Total	.2845	-.1509	-.0441	.1914
White	.3158	-.1082	-.0534	.2297
Black	.1484	-.2810	.0060	.1768
20-24 Total	.2354	-.3668	.0185	-.0174
White	.2666	-.3181	.0035	.0767
Black	.0940	-.4651	.1108	-.2696

Table 5A
Unemployment/Population Equations, Unconstrained

Males 196204-197804

Age-Race	Constant	RPy	U_{PM}	AF/POP	W/MW	$\bar{R}^2$/DW
16-17 Total	-2.0684	1.0784	.2399	-.2079	.0317	.803/2.039
	(-2.56)	(3.28)	(3.93)	(-1.80)	(.08)	
White	-1.6887	1.3574	.3077	-.1640	-.1862	.764/1.960
	(-1.77)	(3.49)	(4.26)	(-1.20)	(-.40)	
Black	-4.0387	-.3904	-.0654	-.3799	.8655	.687/1.551
	(-3.92)	(-.93)	(-.84)	(-2.58)	(1.71)	
18-19 Total	-2.4397	.7053	.6229	-.0379	-.2270	.903/1.865
	(-3.75)	(2.66)	(12.64)	(-.41)	(-.71)	
White	-1.8242	.9307	.7306	.0837	-.1707	.893/1.825
	(-2.46)	(3.08)	(13.00)	(.79)	(-.47)	
Black	-4.5985	-.4065	.2728	-.3705	-.3581	.646/1.694
	(-4.53)	(-.98)	(3.55)	(-2.55)	(-.72)	
20-24 Total	-3.4063	1.1341	.8855	-.2249	-.7889	.954/.708
	(-4.93)	(4.02)	(16.90)	(-2.27)	(-2.31)	
White	-2.7873	1.3469	.9512	-.1107	-.7606	.942/.804
	(-3.49)	(4.14)	(15.73)	(-.97)	(-1.93)	
Black	-5.1830	.1883	.6743	-.4954	-.7559	.885/1.390
	(-5.18)	(.46)	(8.89)	(-3.45)	(-1.53)	

* Numbers in paratheses are t-statistics

Table 5 A (cont'd)

Females 196204-197804

Age-Race	Constant	RPy	U_{PM}	TREND	W/MW	$\bar{R}^2$/DW
16-17 Total	-5.0026 (-3.41)	-.0391 (-.05)	.2222 (3.98)	1.0527 (3.97)	-.0751 (-.15)	.845/2.399
White	-4.7544 (-2.85)	.1890 (.23)	.2621 (4.14)	1.0489 (3.49)	-.1056 (-.19)	.821/2.347
Black	-5.9539 (-3.23)	-1.0316 (-1.15)	.0616 (.88)	.9803 (2.95)	-.0189 (-.03)	.718/2.239
18-19 Total	-3.2652 (-3.68)	.2132 (.49)	.3234 (9.58)	.3702 (2.31)	.0489 (.16)	.861/2.098
White	-2.9003 (-2.56)	.4201 (.76)	.3812 (8.85)	.2335 (1.14)	.1263 (.33)	.804/1.943
Black	-3.8504 (-2.52)	-.4324 (-.58)	.1499 (2.58)	.5841 (2.12)	-.0490 (-.09)	.573/1.345
20-24 Total	-5.2203 (-7.31)	-.0675 (-.19)	.4611 (16.98)	.9322 (.7023)	.1305 (.54)	.957/1.441
White	-3.8547 (-4.52)	.6748 (1.63)	.4984 (15.38)	.7039 (4.57)	.2478 (.86)	.945/1.639
Black	-8.0263 (-7.70)	-1.9284 (-3.80)	.3308 (8.34)	1.2921 (6.86)	-.2864 (-.81)	.856/.895

*Numbers in parantheses are t-statistics

Table 5B

Employment/Population Equations, Unconstrained

Males 196204/197804

Age-Race	Constant	RPy	U_{PM}	AF/POP	W/MW	$\bar{R}^2$/DW
16-17						
Total	-.6337	.3639	-.1464	-.1132	.2779	.968/1.351
	(-2.69)	(3.79)	(-8.21)	(-3.35)	(2.39)	
White	-.3985	.5813	-.1432	-.1533	.2777	.964/1.250
	(-1.59)	(5.70)	(-7.56)	(-4.27)	(2.25)	
Black	-2.5894	-1.5095	-.1818	.2284	.4458	.899/1.663
	(-3.53)	(-5.06)	(-3.28)	(2.17)	(1.23)	
18-19						
Total	-1.6731	-.4181	-.1105	-.1777	.1343	.924/1.438
	(-8.98)	(-5.51)	(-7.83)	(-6.65)	(1.46)	
White	-1.6220	-.3363	-.1009	-.1993	.1192	.910/1.356
	(-7.87)	(-4.00)	(-6.46)	(-6.74)	(1.17)	
Black	-2.0530	-.9642	-.1959	-.0468	.2566	.796/1.034
	(-4.37)	(-5.04)	(-5.51)	(-.70)	(1.11)	
20-24						
Total	-.8036	-.3498	-.0875	-.0420	.0640	.950/.904
	(-10.00)	(-10.68)	(-14.38)	(-3.64)	(1.61)	
White	-.8562	-.3187	-.0835	-.0662	.0443	.937/.984
	(-10.41)	(-9.51)	(-13.40)	(-5.61)	(1.09)	
Black	-.4749	-.5754	-.1225	.1179	.2109	.895/.575
	(-1.91)	(-5.69)	(-6.52)	(3.31)	(1.72)	

*Numbers in parentheses are t-statistics

Table 5B (cont'd)

196204-197804

Females

Age-Race	Constant	RPy	U_{PM}	TREND	W/MW	$\bar{R}^2$/DW
16-17						
Total	-2.6303 (-5.69)	-.1395 (-.620)	-.08658 (-4.92)	.8445 (10.11)	.4145 (2.65)	.957/1.493
White	-2.6341 (-5.90)	-.08959 (-.412)	-.08128 (-4.79)	.9255 (11.47)	.3578 (2.37)	.963/1.546
Black	-3.2310 (-2.05)	-.9181 (-1.19)	-.1775 (-2.96)	.3240 (1.14)	1.3390 (2.51)	.747/1.792
18-19						
Total	-2.4362 (-7.35)	-.6075 (-3.77)	-.06950 (-5.51)	.5382 (8.99)	.2404 (2.15)	.901/1.281
White	-2.2858 (-6.50)	-.4908 (-2.87)	-.05758 (-4.30)	.5720 (9.0)	.2166 (1.82)	.908/1.313
Black	-4.5769 (-5.43)	-1.9323 (-4.71)	-.1861 (-5.81)	.5001 (3.28)	.4784 (1.68)	.654/1.428
20-24						
Total	-1.6230 (-10.77)	-.07553 (-1.03)	-.06043 (-10.55)	.5799 (21.31)	.07858 (1.54)	.983/1.473
White	-1.8547 (-11.01)	-.1637 (-2.0)	-.04350 (-6.79)	.6493 (21.34)	.1333 (2.34)	.982/1.376
Black	-.3065 -.702	.4245 (2.0)	-.1823 (-10.98)	.1741 (2.21)	-.2973 (-2.01)	.764/1.202

Table 5C
Schooling/Population Equations, Unconstrained

$$\frac{S-(S \cap L)}{POP}$$

Males 196204-197804

Age-Race	Constant	RPy	U_{PM}	AF/Pop	W/MW	$\bar{R}^2$/DW
16-17						
Total	-.3683	-.2194	.0845	.1989	-.2621	.995/1.657
	(-1.50)	(-2.19)	(4.53)	(5.64)	(-2.16)	
White	-.5262	-.4369	.0866	.2507	-.2371	.993/1.461
	(-1.87)	(-3.82)	(4.07)	(6.23)	(-1.71)	
Black	.9453	.9354	.0844	.0501	-.4003	.982/1.886
	(2.25)	(5.47)	(2.65)	(.83)	(-1.93)	
18-19						
Total	.7293	.4496	.0182	.3713	-.3467	.972/1.404
	(1.27)	(1.93)	(.42)	(4.52)	(-1.23)	
White	.6713	.2745	-.0012	.4211	-.3219	.969/1.463
	(1.08)	(1.08)	(-.03)	(4.73)	(-1.05)	
Black	1.5066	1.4336	.1219	.1928	-.3598	.938/1.457
	(2.00)	(4.67)	(2.14)	(1.78)	(-.97)	
20-24						
Total	.6975	1.3170	.0409	.2782	-.5477	.962/1.780
	(1.29)	(6.00)	(1.00)	(3.60)	(-2.06)	
White	.5719	1.0237	.0289	.3435	-.4655	.966/1.611
	(1.09)	(4.77)	(.72)	(4.55)	(-1.79)	
Black	4.0190	4.6789	.1834	-.0397	-1.0528	.828/.741
	(2.62)	(7.49)	(1.58)	(-.18)	(-1.39)	

*Numbers in parentheses are t-statistics

Table 5C (cont'd)

196204-7804

Females Age-Race	Constant	RPy	U_{PM}	TREND	W/MW	$\bar{R}^2$/DW
16-17						
Total	1.3863 (3.93)	.6655 (3.88)	.0133 (.99)	-.6305 (-9.90)	-.3517 (-2.95)	.994/1.697
White	1.6331 (4.06)	.6840 (3.50)	.0159 (1.04)	-.7695 (-10.60)	-.2986 (-2.20)	.993/1.825
Black	1.3615 (2.04)	1.0870 (3.35)	-.003010 (-.12)	-.1801 (-1.50)	-.6032 (-2.68)	.978/1.969
18-19						
Total	1.7732 (2.70)	1.4072 (4.40)	-.05056 (-2.02)	-.6273 (-5.28)	-.5562 (-2.50)	.977/1/160
White	1.7731 (2.55)	1.2867 (3.80)	-.0780 (-2.95)	-.7207 (-5.74)	-.5310 (-2.26)	.976/1.254
Black	3.4727 (2.75)	2.8728 (4.67)	.0785 (1.63)	-.4010 (-1.76)	-.7336 (-1.72)	.916/1.159
20-24						
Total	-1.3020 (-1.51)	1.0939 (2.60)	-.0781 (-2.38)	.2952 (1.89)	-.0821 (-.28)	.941/1.158
White	-1.4030 (-1.49)	.9076 (1.98)	-.1081 (-3.02)	.2176 (1.28)	-.0118 (-.04)	.930/1.105
Black	-.0961 (-.06)	2.5377 (3.53)	.1021 (1.82)	.6627 (2.49)	-.5529 (-1.11)	.896/1.070

Table 5D

Residual/Population Equations, Unconstrained

$$\frac{P-E-U-S+(S \cap L)}{P} \quad \text{or} \quad \frac{Pn}{P}$$

Males 196204-197804

Age--Race	Constant	RPy	UPM	AF/Pop	W/MW	$\bar{R}^2$/DW
16-17						
Total	-4.7535	-.1457	-.0126	-.2257	.0126	.986/1.994
	(-5.68)	(-.43)	(-.20)	(-1.88)	(.03)	
White	-5.7206	-.4487	-.0597	-.3273	-.1327	.983/1.981
	(-6.10)	(-1.17)	(-.84)	(-2.43)	(-.29)	
Black	-1.4602	.7344	.1796	.1601	.5585	.944/2.180
	(-.97)	(1.20)	(1.58)	(.74)	(.75)	
18-19						
Total	1.3361	2.4758	.1847	.2835	-.0544	.931/1.362
	(1.43)	(6.51)	(2.61)	(2.12)	(-.12)	
White	1.6987	2.5365	.1551	.3579	.1465	.906/1.617
	(1.47)	(5.40)	(1.78)	(2.17)	(.26)	
Black	1.6855	2.7491	.3196	.2219	-.5759	.643/1.285
	(.77)	(3.09)	(1.93)	(.71)	(-.53)	
20-24						
Total	-.5918	2.4304	.1741	-.0568	-.6403	.895/1.411
	(-.74)	(7.50)	(2.89)	(-.50)	(-1.63)	
White	.2046	2.5743	.1860	.1180	-.5545	.856/1.498
	(.21)	(6.53)	(2.54)	(.85)	(-1.16)	
Black	-2.6455	1.8730	.1865	-.4980	-.8004	.755/1.413
	(-2.09)	(3.63)	(1.94)	(-2.74)	(-1.28)	

*Numbers in paretheses are t-statistics

Table 5D (cont'd)

Females 196204-197804

Age-Race	Constant	RPy	UPM	TREND	W/MW	$\bar{R}^2$/DW
16-17 Total	-2.7931 (-3.57)	-.5665 (-1.49)	.0432 (1.45)	-.3456 (-2.44)	.4860 (1.84)	.990/1.624
White	-2.6885 (-3.18)	-.4288 (-1.04)	.0272 (.85)	-.3423 (-2.24)	.3695 (1.29)	.988/1.762
Black	-3.2414 (-2.61)	-1.2316 (-2.03)	.1255 (2.65)	-.4333 (-1.93)	.9144 (2.17)	.968/1.515
18-19 Total	.1107 (.21)	.3187 (1.26)	.0971 (4.93)	-.8225 (-8.80)	.1152 (.66)	.953/.986
White	.3997 (.79)	.4414 (1.80)	.1069 (5.59)	-.9293 (-10.22)	.1098 (.64)	.960/1.135
Black	-.5456 (-.57)	-.0370 (-.08)	.0575 (1.59)	-.5344 (-3.10)	.1196 (.37)	.785/1.284
20-24 Total	2.4546 (12.27)	.8662 (8.90)	.0242 (3.18)	-1.3684 (-37.87)	-.1167 (-1.73)	.993/1.272
White	2.7768 (13.01)	1.0100 (9.72)	.0058 (.72)	-1.4534 (-37.70)	-.2471 (-3.42)	.993/1.281
Black	.8899 (2.15)	.1797 (.89)	.1313 (8.36)	-.9288 (-12.44)	.6329 (4.53)	.930/1.731

*Numbers in parantheses are t-statistics

Table 6

Percent (%) Change in Unemployment and Participation Rates* due to One Percent Change in Respective Explanatory Variable in 1978:3, Derived From Constrained Equations

Unemployment Rates

Age Race	MALE RPy	MALE U_{PM}	MALE AF/POP	MALE W/MW	FEMALE RPy	FEMALE U_{PM}	FEMALE TREND	FEMALE W/MW
16-17 Total	.4694	.2844	-.1387	-.3916	.0695	.2567		-.5133
White	.4956	.3430	-.1078	-.6284	.2511	.2879		-.5268
Black	.8095	.0556	-.2928	.2896	-.1867	.1407		-.8876
18-19 Total	.6835	.5744	-.0944	-.7545	.7408	.3638		-.3109
White	.7403	.6523	-.0495	-.7951	.8408	.4122		-.2473
Black	.3703	.3472	-.2166	-.6260	1.0294	.2070		-.4498
20-24 Total	.9804	.7962	-.3548	-1.3103	.0281	.4964		-.1873
White	1.1025	.8486	-.2998	-1.3451	.9174	.5505		-.1262
Black	.4660	.6293	-.4872	-1.1259	-2.0224	.4125		-.1907

Participation Rates

16-17	MALE				FEMALE			
Total	.3383	-.0432	-.0112	.1786	-.0372	-.0372		.0900
White	.5274	-.0270	-.0056	.1770	-.0372	-.0298		.0818
Black	-1.1634	-.1587	-.0205	.3733	-.5072	-.0915		.4019
18-19 Total	-.3586	-.0209	-.0565	.0919	-.4031	-.0177		.1078
White	-.2947	-.0118	-.0587	.0628	-.3585	-.0157		.0957
Black	-.9313	-.0912	-.0645	.2415	-1.0620	-.0505		.2128
20-24 Total	-.2456	-.0141	-.0119	.0701	-.3196	-.0029		.0613
White	-.2084	-.0115	-.0184	.0591	-.3397	.0070		.1015
Black	-.5976	-.0383	.0221	.1414	-.3021	-.0717		-.2029

*Unemployment Rates ≡ U/(E+U+M)

Participation Rates ≡ (E+U+M)/(POP+M)

Table 7: Males

Partial Correlation Coefficients from Unconstrained Equations

	Unemployment/Population Equations			Employment/Population Equations		
Age-Race	Seasonal Dummies	Cyclical Variable	All other Variables	Seasonal Dummies	Cyclical Variables	All other Variables
16-17 Total	.5600	.2108	.5178	.9659	.5323	.7542
White	.4358	.2383	.4534	.9589	.5000	.8416
Black	.6667	.0106	.2791	.8611	.1509	.6342
18-19 Total	.3008	.7378	.2456	.9236	.5177	.4887
White	.2400	.7480	.2083	.9089	.4214	.5061
Black	.2668	.1792	.1073	.6403	.3477	.4365
20-24 Total	.5729	.8333	.5060	.8968	.7826	.7368
White	.5398	.8116	.4157	.9011	.7607	.6500
Black	.3290	.5820	.2917	.3562	.4268	.7194

Table 7:Females

Partial Correlation Coefficients from Unconstrained Equations

	Unemployment/Population Equations			Employment/Population Equations		
Age-Race	Seasonal Dummies	Cyclical Variable	All other Variables	Seasonal Dummies	Cyclical Variable	All other Variables
16-17 Total	.6933	.2159	.6659	.8965	.2963	.9355
White	.6187	.2319	.6403	.8862	.2826	.9490
Black	.6815	.0118	.3216	.7530	.1346	.1758
18-19 Total	.6374	.6173	.5194	.8167	.3482	.8409
White	.5308	.5783	.3470	.7914	.2407	.8658
Black	.6199	.1059	.2430	.5262	.3714	.3094
20-24 Total	.5529	.8362	.8750	.4445	.6739	.9835
White	.5051	.8063	.8478	.3044	.4286	.9817
Black	.3044	.5493	.5975	.3204	.6789	.6283

Table 8

Unemployment Rates and Employment/Population Ratio: by Age-Race-Sex

MALE

	Unemployment Rates[a]			Employment Ratios[b]		
	1965	1972	1978	1965	1972	1978
White						
16-17	14.84	16.55	17.08	38.91	42.44	46.31
18-19	11.53	12.54	10.92	63.53	65.17	69.18
20-24	5.95	8.55	7.65	83.36	79.93	82.00
Black						
16-17	27.78	36.66	40.71	28.97	22.52	20.47
18-19	20.13	26.40	30.90	56.87	48.61	46.59
20-24	9.29	14.79	20.13	83.38	72.81	66.29

FEMALE

White						
16-17	15.17	16.90	17.08	24.47	32.57	40.64
18-19	13.63	12.27	12.34	43.76	50.48	56.81
20-24	6.31	8.16	8.27	46.16	54.61	63.79
Black						
16-17	39.67	35.56	41.87	12.55	13.23	16.03
18-19	28.01	38.64	36.81	28.88	27.01	31.41
20-24	13.79	17.44	21.56	47.71	47.04	49.81

a) The unemployment rates are defined as U /L

b) The employment ratios are defined as E/P where both E and P include the military.

Table 9

Earnings of Youth*

	1967	1972	1978	72/67	78/72
MALE					
White					
16-17	61.05	77.23	119.48	26.5	54.7
18-19	78.98	96.82	147.76	22.6	52.6
20-24	107.48	131.44	203.41	22.3	54.7
Black					
16-17	50.81	54.71	116.25	7.7	112.5
18-19	58.05	82.37	118.00	41.9	43.3
20-24	79.55	110.71	176.56	39.2	59.5
FEMALE					
White					
16-17	51.00	68.34	106.11	34.0	55.3
18-19	66.29	79.86	121.00	20.5	51.5
20-24	81.17	105.43	152.29	29.9	44.5
Black					
16-17	57.40	48.36	97.00	-15.8	100.6
18-19	54.96	78.78	125.06	43.3	58.7
20-24	67.40	96.77	141.33	43.6	46.0

*Earnings data represent median usual weekly earnings of full-time wage and salary workers whose major activities are other than school.

Table 10

Proportion of Each Group's Employment that is in Low Wage Industries (i.e. Service and Retail)

	MALE			FEMALE		
	1968	1972	1978	1968	1972	1978
White						
16-17	.7270	.7392	.7290	.8239	.8422	.8706
18-19	.4763	.5298	.5105	.5440	.6554	.6810
20-24	.3232	.3787	.3804	.5287	.5975	.6148
16-21(out of school)	.3650	.4657	.4446	.4914	.6129	.6399
16-21(in-school)	.7765	.7833	.7929	.8881	.8967	.9051
16+	.3037	.3317	.3449	.5755	.6124	.6200
Black						
16-17	.6617	.7013	.7435	.8291	.7655	.8315
18-19	.4583	.4393	.5429	.5738	.6126	.6514
20-24	.3012	.3500	.3816	.5453	.5267	.5536
16-21(out of school)	.3519	.4220	.4583	.5277	.5519	.6150
16-21 (in-school)	.7603	.7831	.8167	.8537	.8511	.8513
16+	.3256	.3307	.3457	.6429	.6350	.6121

Table 11

Ratios of Black Youth Employment to White Youth Employment*

	1965	1972	1978
Male			
16-17	.106	.087	.081
18-19	.115	.117	.117
20-24	.129	.128	.130
Female			
16-17	.077	.070	.076
18-19	.091	.088	.102
20-24	.144	.133	.140

*Employment includes the military.

Table 12

$$\frac{\text{Employment + School}^{a)}}{\text{Population}}$$
1965 and 1978

	1965	1978
Males, White		
16-17	88.0	87.6
18-19	91.0	90.0
20-24	94.0	91.1
Males, Black		
16-17	83.2	82.0
18-19	83.0	77.0
20-24	88.9	78.5
Females, White		
16-17	80.0	83.1
18-19	71.0	77.6
20-24	52.7	71.2
Females, Black		
16-17	74.0	77.0
18-19	56.9	61.4
20-24	52.5	59.5

a) The specific measure is : $\frac{E+M+S-(S \wedge E)}{P}$

Sources of Data:

(1) The employment, unemployment, and population data by age-race-sex were obtained from the unpublished BLS tabulations.

(2) The military data by age-sex were obtained from Employment and Earnings, various issues. The age-race-sex breakdown was available only after 1966:1. The racial breakdown was extrapolated back to 1962 utilizing military accession data by race which was obtained from the Department of Defense.

(3) The Wage, W, data were obtained from Table 1, News Release, USDL-77-955 for the period of 1967 to 1977. The data was extrapolated back to 1960, utilizing the full-time year-round workers' median total money income as a link variable. The source of the latter variable is the Current Population Reports, Series P-60, various issues, Bureau of the Census.

(4) The minimum wage, MW, data were obtained from Minimum Wage and Maximum Hours Standards under the Fair Labor Standards Act, various issues. The W and MW data were linearly interpolated to get quarterly data.

(5) The AF, POP, U_{PM} data were obtained from Wharton E.F.A. quarterly data bank.

(6) The earnings data in Table 9 and the industry employment data in Table 10 were also obtained from the unpublished BLS tabulations.

Footnotes

[1]See, for example, Wachter (1972),(1976b), (1977), Kim (1979). This work builds upon Easterlin (1968). Several relevant studies and a detailed bibliography are contained in Espenshade and Serow, eds. (1978). More recent work which develops this approach includes Ehrenberg (1979), Welch (1979), and Reubens (1979).

[2]For a detailed discussion of the endogenous taste model for explaining economic-demographic variables, see Easterlin, Pollak and Wachter (forthcoming).

[3]See, for example, Cain and Watts, eds. (1973).

[4]The statistical problems of measuring the youth labor force is stressed by Clark and Summers (1979).

[5]This model is drawn from Wachter and Wachter (1978).

[6]See, for example, Ragan (1977).

[7]The impact of welfare programs has received relatively limited attention until recently. See, Levitan et.al.(1972), Garfinkel and Orr (1974), Saks (1975), Williams (1975), Levy (1979) and the Studies in Public Welfare of the Joint Economic Committee (1973).

[8]Major studies of minimum wage laws include Moore (1971), Kosters and Welch (1972), Goldfarb (1974), Gramlich (1976), Mincer (1976), Welch (1976), (1977), Ashenfelter and Smith (1979), and U.S. Department of Labor (1970).

[9]For several relevant models on this problem, see Perry, et.al., see Killingsworth and Killingsworth (1978) and Palmer (1979).

[10]Some of the relevant papers that provide an empirical framework for unemployment problem include Kalachek (1969), Doeringer and Piore (1971), R.A. Gordon (1973), R.J. Gordon (1977), and Adams and Mangum (1978).

[11]Recent time series studies of youth unemployment which address this same phenomenon include Freeman and Medoff (1979), Ragan (1977), Thurow (1977), and the conference on Youth Unemployment (1978).

Footnotes cont'd

[12]Relevant studies on schooling include Freeman (1976) and the recent comment by Smith and Welch (1978). Kim (1979) investigates the complexities of the military and schooling relationship with the youth labor market. A very useful collection of essays is found in the NCMP Volume, From School to Work: Improving the Transition.

[13]Conceptual problems with the definition of the unemployment rate for youth are stressed by R.A. Gordon (1973), Levitan and Taggart (1974), and Clark and Summers (1979).

[14]One of the major questions concerning the Pn category involves the issue of discouraged workers. The view that the number of disadvantaged potential workers in the Pn group is significant is stressed by, among others, Doeringer and Piori (1971) and Harrison (1972).

[15]Studies which focus on minority unemployment include Doeringer and Piori (1971), Harrison (1972),Wallace (1974), the Congressional Budget Office (1976), Adams and Mangum (1978), and Osterman (1978).

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