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ABSTRACT

Between 1950 and 1970 the labor force participation rate of southern black males aged 16-19 declined by 27 percentage points. This decline has been attributed to two demand-side shocks: the mechanization of cotton agriculture in the 1950s and extensions in the coverage of the federal minimum wage in the 1960s. We show, however, that participation rates of southern black teens fell continuously between 1900 and 1950. The proximate causes of the pre-1950 decline in black teen participation were increases in school enrollment rates and decreases in labor force participation by teens enrolled in school. Because the underlying causes of both effects had not run their course by mid-century, we conclude that about half of the post-1950 decline in black teen participation in the South would have occurred even if cotton agriculture had not mechanized in the 1950s or coverage of the minimum wage had not been extended in the 1960s.

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1.0 Introduction

In 1950, approximately 61 percent of southern black male teenagers ages 16-19, were participating in the labor force. By 1970 their participation rate had declined to 34 percent, or by 27 percentage points in two decades (see Figure 1). Perhaps the most widely accepted explanation of the post-1950 decline in black teen participation emphasizes decade-specific shifts in labor demand (Cogan 1982; Wright 1986). Between 1950 and 1960 mechanization of agriculture in the South accelerated significantly. In particular, the introduction of the mechanical cotton picker disproportionately reduced the demand for the labor of black male teenagers, who were concentrated in cotton production. Black teens displaced from southern cotton farms did not find ready work in the South's non-farm economy. Their failure to find non-farm jobs, according to Cogan, was caused by the federal minimum wage, primarily through increases in its coverage in the 1960s. The combination of mechanization and the minimum wage drastically reduced job opportunities for black male teens in the South, resulting in the sharp decline in labor force participation between 1950 and 1970.

We argue that the quantitative importance of demand-side shocks in accounting for the post-1950 decline in black teen participation has been overstated. A significant portion of the post-1950 decline appears to have been a continuation of a downward trend whose origins can be dated to the early 1900s, if

not earlier. In turn, the long-term downward trend in participation was the mirror image of a long-term upward trend in black school enrollment. Each successive generation of southern black males was more likely to be in school between the ages of 16 and 19 than out of school and in the labor force. Further, the labor force participation rate of black male teens simultaneously enrolled in school declined over time, especially before 1950. Because the factors that were responsible for the long-run increases in black schooling had not yet run their course by mid-century, a post-1950s decline in labor force participation of black male teens in the South would have happened anyway, even if mechanization in cotton agriculture had not occurred in the 1950s and had the level and coverage of the minimum wage not been increased in the 1960s.

2.0 Labor Force Participation, 1900-1970: Southern Black Males, Ages 16-19

Census data provide the basis for constructing estimates of pre-1950 labor force participation rates of black male teens in the South. Our estimates are shown in Figure 1, along with post-1950 participation rates.[1] At the turn of the century fully 86 percent of southern black male teens were participating in the labor force. Their participation rate fell by 10 percentage points between 1900 and 1920, and by an additional 15 percentage points between 1920 and 1950 -- or an average rate of decline of almost 5 points per decade between 1900 and 1950.[2] Fully 48

percent of the decline in participation between 1900 and 1970 took place before 1950.

Cogan (1982; see also Wright, 1986) attributed the post-1950 decline in black teen participation to the negative effects of mechanization on labor demand in cotton agriculture and of the minimum wage on labor demand off the farm.[3] Between 1950 and 1970 the number of man-hours required to produce a bale of cotton declined by 84 hours, principally due to the widespread adoption of the mechanical cotton picker. Because cotton production remained constant over the period, the decline in labor requirements translated into a one-for-one reduction in labor demand (p. 627). Cogan claimed that virtually the entire decline in employment of black teens in the South between 1950 and 1970 could be explained by the decline in their employment in agriculture. Although some black teens found jobs in manufacturing, their employment growth in retail trade slowed considerably in the 1960s, precisely when coverage of the minimum wage was extended over this industry (p. 630). Based on state-level regressions, Cogan concluded that technical change and the minimum wage were equally important in explaining the decline in participation between 1950 and 1970 (p. 634).

Whatever the merit of Cogan's analysis of post-1950 trends, Figure 1 demonstrates that participation rates of southern black male teens were already falling between 1900 and 1950. Indeed, had post-1950s participation rates continued to decrease at the average decadal rate experienced between 1900 and 1950 (4.96

percentage points), the predicted participation rate in 1970 would have been 51 percent. The difference between this predicted 1970 rate and the actual 1950 rate accounts for 37 percent (= 9.9/27) of the decline in participation between 1950 and 1970. If the predicted 1970 rate is calculated on the basis of the average decadal rate of decline experienced between 1930 and 1950, the percent explained increases to 49 percent. Clearly, the rate of decline in black teen participation accelerated after 1950, but a reduction in participation could have been (and was) predicted on the basis of pre-1950 trends.[4]

The diffusion of the mechanical cotton picker cannot explain the decline in black teen participation prior to 1950, because less than 1 percent of southern cotton acreage was mechanically harvested in 1950 (Cogan, 1982, p. 627). Might agricultural mechanization or the minimum wage account for any of the pre-1950 decline in participation rates?

Consider first the decline in participation before 1930. The minimum wage cannot possibly explain the pre-1930 decline in participation because minimum wage legislation was enacted in 1938. The principal type of mechanization occurring in American agriculture prior to World War Two was the diffusion of tractors (Musoke 1981). The diffusion of tractors was far slower in the South than elsewhere in the country. In 1930, only 4 percent of southern farms used tractors (U.S. Bureau of the Census 1952a, p. 226). Yet the participation rate of black teens fell by 12 percentage points between 1900 and 1920, before virtually any

tractors had been introduced into southern agriculture.[5]

In the case of cotton production before the diffusion of mechanical cotton pickers, tractors did not reduce labor requirements in farm tasks that were intensive in the use of labor (Musoke 1981, p. 350). Further, the diffusion of tractors in cotton production was comparatively slow, yet it was this sector of southern agriculture that was relatively intensive in the use of black teen labor (Musoke 1981; Alston 1985; Cogan 1982). Nevertheless, it is possible that tractorization or the minimum wage might account for some of the decline in participation rates between 1930 and 1950. The proportion of southern farms using tractors rose to 26 percent by mid-century (U.S. Bureau of the Census 1952a, p. 226). Recent research demonstrates that tractorization was associated with a decrease in sharecropping and other forms of tenancy and with a redistribution of cotton production to the Southwest and California (Musoke 1981; Alston 1985). Because tenant labor was frequently supplied in family groups, the decline in tenancy may have reduced, pari passu, the demand for the labor of black male teens on the farm, as might have the spatial reallocation of cotton production. Estimates of coverage rates of the minimum wage indicate that about 18 percent of employed southern black teens in 1950 were in covered employment.[6] The establishment of the federal minimum wage in 1938 may have reduced job opportunities for black teens even before 1950, and hence made labor force participation less likely.

To evaluate the pre-1950 impact of tractorization and the minimum wage, we estimated a pooled time-series cross-section fixed-effects regression using state-level data for 1930 and 1950. The dependent variable is the participation rate (LFPR) of black male teens; the independent variables are the proportion of farms using tractors (TRAC), the coverage rate of the minimum wage (COVER), and dummy variables for the year (1950) and for states (the state dummies are the fixed effects).[7] The results, omitting the coefficients of the state dummies, were:

$$\underset{}{LFPR} = \underset{(12.414)}{0.754} - \underset{(-0.265)}{0.042}\,TRAC - \underset{(-0.044)}{0.014}\,COVER - \underset{(-1.355)}{0.104}\,(Year=1950)$$

$$N = 32 \qquad R^2 = 0.83$$

T-statistics are shown in parentheses. If TRAC and COVER are omitted from the regression, the coefficient of the 1950 dummy is -0.116. The effects of tractorization and the minimum wage are negative as hypothesized, but are economically and statistically insignificant: tractorization and the minimum wage can explain about 10 percent [= 1 - (0.104/0.116)] of the 1930-50 decline in participation.[8] Put another way, the likelihood a black male teen would participate in the labor force fell between 1930 and 1950 throughout the South. Variations across states in the rate of decline were essentially unrelated to the diffusion of tractors or the extent of coverage of the minimum wage.

The regression and Figure 1 might be criticized, however, because of alterations in labor force statistics over the period.

In 1940 the definition of the labor force changed from the "gainful worker" concept to the "labor force week" concept. As Durand (1948) and others pointed out (Lebergott 1964), the pre-1940 participation rates are not, strictly speaking, comparable with the post-1940 estimates. Two responses to this criticism can be made. First, changes in the definition of the labor force have little bearing on the finding of a pre-1940 decline in participation, because the gainful worker definition was used in 1900 and 1930.[9] Second, Durand (1948) calculated adjustment ratios in an attempt to make the pre- and post-1940 participation rates comparable. The force of Durand's adjustments was to reduce the size of the labor force prior to 1940. Had the 1940 census question been asked in 1900 and 1930, participation rates in both years would have been lower.

Unfortunately, data limitations prevented Durand (and us) from estimating decade-specific adjustment ratios for southern black male teens, but he did estimate an adjustment ratio for all males ages 14 to 19 in 1930: 0.9756 (Durand 1948, p. 199). Multiplying our estimate of the 1930 participation rate for southern black male teens by Durand's adjustment ratio produces an adjusted participation rate of 72.1 percent, compared with the measured participation rate of 73.9 percent. Although there is reason to believe that the true adjustment ratio for southern black male teens was higher than 0.9756, even if we assume an adjustment ratio equal to the lowest estimated by Durand for any group of males (0.8953, ages 75 and over) there still was a

decline in black teen participation between 1930 and 1950.[10] In sum, it is doubtful that adjusting for definitional changes would reverse the decline in labor force participation by southern black male teens before 1950.

3.0 Labor Force Participation and Schooling: The Impact of Age-in-Grade Retardation

If the minimum wage, agricultural mechanization, or biases in census data cannot explain the majority of the pre-1950 decline in black teen participation, which factors can? Some clues are suggested by Table 1, which gives participation rates by farm-nonfarm and school enrollment status, along with the percent on farms and percent enrolled in school.

At the turn of the century over 90 percent of southern black male teens <u>not</u> enrolled in school were participating in the labor force. Participation rates of teens enrolled in school were lower than participation rates of those not in school, but were still relatively high by comparison with the rates experienced after World War Two. Despite a lower participation rate among in-school non-farm teens, the overall participation rate did not differ between the farm and non-farm population because school enrollment was more common among farm teens.

In 1950, the participation rate of farm teens not enrolled in school was essentially the same as in 1900. The participation rate of farm teens enrolled in school, however, declined by 20 percentage points and the proportion enrolled increased by 21

percentage points, between 1900 and 1950. Among non-farm teens, the percent enrolled in school increased by 34 percentage points and the participation rate of in-school black teens declined by 22 percentage points between 1900 and 1950 but, unlike the farm population, the participation rate of nonfarm teens not enrolled in school decreased by 12 percentage points. As a consequence of these changes, the overall participation rate of nonfarm teens fell 33 percentage points between 1900 and 1950, almost three times the decline experienced by farm teens. In short, the overall participation rate for nonfarm teens fell more than the rate for farm teens because of a larger rise in nonfarm school enrollment and a larger fall in participation among nonfarm teens not in school.

School enrollment rates in both sectors continued to climb between 1950 and 1970, at a quicker pace than before 1950. Among farm teens, participation rates of those enrolled in school fell by 34 percentage points, but the partipation rate of non-farm teens enrolled in school remained stable at slightly over 20 percent. In contrast to the pre-1950 period, participation rates of farm teens not in school declined sharply, by 23 percentage points between 1950 and 1970. Participation rates of nonfarm teens not in school continued to fall as they had before 1950, with the majority of decline concentrated in the 1950s. Thus, reversing the patterns for the pre-1950 era, from 1950 to 1970 the overall participation rate for farm teens fell more than twice as much as the rate for nonfarm teens.

Table 1 suggests that increasing school enrollments and reductions in labor force activity among those enrolled in school played a key role in generating the pre-1950 decline in black teen participation. This hypothesis is confirmed in Table 2, which gives counterfactual participation rates for 1900 and 1950 under various assumptions about school enrollment rates and participation conditional on enrollment status. Had enrollment rates (farm and nonfarm) in 1900 been equal to their 1950 values, the overall participation rate would have been 77 percent. Had enrollment rates and participation rates of in-school black teens in 1900 equalled their 1950 values, the overall participation rate would have been 68.2 percent. The difference between the actual 1900 participation rate and the latter counterfactual rate accounts for nearly three-quarters of the decline in participation between 1900 and 1950. By contrast changes in participation among those not enrolled were less important, explaining about 18 percent of the decrease in the overall participation rate before 1950.

Increasing school enrollments and decreasing participation rates of those enrolled in school continued to be important after 1950, but the relative significance of changes in participation rates of those not in school was greater after 1950 than before. Because nonfarm participation rates were lower than farm participation rates, the shift of population out of agriculture between 1950 and 1970 (35 percentage points) also helped to lower the overall participation rate.[11]

The sharp decline after 1950 in participation rates of farm teens not in school is prima facie evidence that mechanization reduced the agricultural demand for teen labor.[12] The shift of black labor out of agriculture, the increase in school enrollments, and the decrease in participation among those in school might also have been a response to technical change, except that downward trends in these variables, as Table 1 demonstrates, began before the mechanization of cotton agriculture. What needs to be explained are the relatively low rate of school enrollment and high participation rate of black teens in school prior to 1950.

We hypothesize that changes before 1950 in school enrollment rates and in participation rates of in-school black teens were driven by increases in educational attainment of successive generations of southern black children. Historically black parents in the South were poor and heavily concentrated in rural areas. Because black parents were poor, because the returns to schooling were perceived to be low in agriculture, and because the labor of teenagers was valued on the family farm or in the nonfarm labor market, black children were not expected to remain in school at older ages.[13] In 1910, for example, the peak age of black school enrollment in the South was age 11 (71 percent) and enrollment rates fell off sharply at age 14 (U.S. Bureau of the Census 1918, p. 384). The upshot was that southern blacks educated in the late nineteenth and early twentieth centuries typically completed very few years of schooling before reaching

adulthood -- an average of about 5 years for the birth cohorts 1886 to 1905.[14]

That completed years of schooling were so low can account for the low enrollment rate of black teens ca. 1900 but it cannot explain why the labor force participation of in-school black teens was so high in the early 20th century. A child whose education stopped at the sixth grade could, in theory, finish his schooling by age 12 or 13, and then enter the labor force. In fact, however, a significant fraction of southern black children suffered from high rates of age-in-grade retardation, and simply did not complete a given number of years of schooling in the customary amount of time. According to the 1940 census, for example, 47 percent of twelve year-old southern black males enrolled in school were attending the fourth grade or lower (U.S. Bureau of the Census 1943a, p. 126).[15] Grade retardation in the pre-teen years had many causes, including adult poverty, and employment of young children in agriculture (Bond 1934, pp. 302, 344, 352-356). But there is little doubt that a major factor retarding black educational achievement was the poor quality of segregated public schools attended by southern black children, especially the shorter school terms characteristic of the black schools (Bond 1934, pp. 344-351; Welch 1973; Margo 1990, ch. 5).[16]

As long as the demand for completed years of schooling was low, age-in-grade retardation at an early age was not a binding constraint. Completion of a given number of grades could be

spread over several years and, if necessary, combined with labor force participation at later ages. Once the desired years of schooling reached modern norms, however, enrollment rates at later ages increased and participation of in-school black teens fell. A black teen struggling to finish his schooling with the sixth grade could work and still expect to achieve his goal before leaving home. But a black teen whose parents wished him to complete high school would, under the best of circumstances, normally graduate at age 18. He could ill afford to fall several grades behind, at an early or a later age, and his parents could best accomodate by keeping him out of the labor force during his teenage years. Over time, more black parents sought to have their children complete high school, and improvements in the quality of black schools lessened the extent of early age-in-grade retardation (Margo 1990, ch.2; Welch 1973).[17]

To determine the explanatory power of this hypothesis, we estimate the following two regressions:

$$(1) \quad LFPR_{ij} = \alpha_{0}i + \alpha_{1j} + \alpha_{2}ELEM_{ij} + e_{1ij}$$

$$(2) \quad ENR_{ij} = \beta_{0i} + \beta_{1j} + \beta_{2}ELEM_{ij} + e_{2ij}$$

where:

LFPR: labor force participation rate of in-school teens

ENR: percent enrolled

ELEM: percent of enrolled black teens, ages 16-19, attending

the elementary grades

e : random error term

The subscript i refers to the urban, rural nonfarm, and rural farm sectors, and the subscript j refers to states. The dummy variables for sectors (α_0, β_0, and δ_0) and for states (α_1, β_1, and δ_1) control for a variety of factors that may have influenced participation and school enrollment but which cannot be measured directly at the sectoral level.[18] The equations are estimated using weighted least squares; the weights are the population counts (black male teens, ages 16-19). Data are drawn from the state volumes of the 1950 census (U.S. Bureau of the Census 1952a,b; see the data appendix).

The regression results are shown in Table 3. As a basis for comparisons across sectors we also report estimates of equations 1 and 2 excluding the ELEM variable. As our hypothesis predicts, the coefficient of ELEM is negative in the enrollment regression and positive in the labor force participation regression.[19] Every ten percentage point decrease in the proportion of teens enrolled in the elementary grades increases the enrollment rate (holding the sector and state constant) by 2.8 percentage points and decreases the labor force participation rate of in-school teens by 6.6 percentage points.

We use the regression coefficients to calculate counterfactual enrollment and participation rates based on different assumptions about the value of ELEM. In 1950, the

average value of ELEM for southern black male teens was 0.376 (U.S. Bureau of the Census 1952b, p. 350). Had ELEM in 1950 been equal to its value in 1970 (8.5 percent; calculated from U.S. Bureau of the Census 1973a, p. 1116) the estimated participation rate of southern black male teens in 1950 would have been 46.1 percent.[20] The difference between the actual and counterfactual 1950 participation rates accounts for 59 percent of the decline in black teen participation between 1950 and 1970.[21]

In 1940, the value of ELEM for southern black male teens was 51.2 percent (U.S. Bureau of the Census 1943a, p. 127). Comparable figures for the pre-1940 period are not available, but it is possible to estimate the value of ELEM from information on the age structure of enrollments and the number of pupils enrolled in high school. Using such data we estimate that ELEM was 58.9 percent in 1930.[22] Thus the percent of black teens enrolled in the high school grades had been increasing for at least two decades prior to 1950, producing a decline in labor force participation that predated the mechanization of cotton agriculture and the minimum wage and which could have been expected to continue after 1950.

Racial and regional differences in black teen participation can also be attributed to differences in the value of ELEM. The value of ELEM for southern white male teens was 11.8 percent in 1950 (U.S. Bureau of the Census 1952b, p. 350). Had there been no racial difference in ELEM in the South in 1950, we estimate that 48 percent of black male teens would have been participating

in the labor force, 7 percentage points less than the actual participation rate of southern white male teens in 1950.[23] The fact that black teens were less likely to participate in the labor market than white teens, holding ELEM constant, suggests that racial discrimination may have played a role in limiting labor market opportunities for southern blacks before 1950.[24]

In 1950 the average value of ELEM for nonsouthern black male teens was 15.7 percent (calculated from U.S. Bureau of the Census 1952b, pp. 345, 348, 354). Had the value of ELEM for southern black teens equalled its value outside the region, we predict a participation rate of exactly 50 percent. Since the participation rate of nonsouthern black teens in 1950 was 40.4 percent (compared with 60.8 percent in the South), the regional difference in ELEM explains 52.9 percent [=10.8/20.4] of the regional difference in participation rates.[25]

4.0 Conclusion

The decline in labor force participation of southern black male teenagers after 1950 has frequently been attributed to the effects of agricultural mechanization and the minimum wage. The post-1950 decline in participation, however, originated before the diffusion of the mechanical cotton picker and the Fair Labor Standards Act of 1938. A key factor behind the long-term decline was the long-term increase in educational attainment of successive cohorts of southern black children. Once large

numbers of black male teens desired to graduate from high school, low rates of school enrollment and high rates of in-school labor force participation were no longer feasible.

Although a significant part of the post-1950 decline in participation was the continuation of a long-term trend, census data also indicate that the decline in participation accelerated after 1950, and that this accelerated decline was reflected primarily in reductions in labor force activity of black teens who had left school. It may be, as Cogan (1982) suggests, that the post-1950 decline in participation among black teen dropouts was largely due to agricultural mechanization and the minimum wage. Black teen dropouts in the 1950s and 1960s, however, were increasingly undereducated compared with the average young worker. Recent work on the structure of earnings in the United States suggests that the demand for educated workers has risen more or less steadily in the post-World War Two period (Goldin and Margo 1990; Katz and Murphy 1990). The corresponding reduction in the demand for less-educated labor, including black teen dropouts, could have produced a decline in their participation, independent of effects of agricultural mechanization or the minimum wage.

5.0 Data Appendix

This appendix explains the calculation of (a) the labor force participation rates of black teenage males in the South and

(b) the fraction of employed black male teenagers in the South who were covered by the federal minimum wage in 1950.

5.1. Labor Force Participation Rates. Prior to 1940 the Census of Population identified persons age 10 and over who reported having a gainful occupation. The participation rates for 1900, 1920, and 1930 are the fraction of southern black males, ages 16-19, reporting a gainful occupation. The participation rate for 1900 (Figure 1) was calculated from the public use sample of the 1900 census (Center for Studies in Demography and Ecology, 1980).[26] Participation rates for 1920 and 1930 were calculated from state-level census data on population and occupations by age (U.S. Bureau of the Census 1922, pp. 189-285; U.S. Bureau of the Census 1923, pp. 446-451, 515-518; U.S. Bureau of the Census 1935, pp. 108-109; U.S. Bureau of the Census 1933, Table 9). The participation rates for 1900, 1920, and 1930 pertain to blacks.

For 1940, 1950, and 1960 the participation rates pertain to the labor force activity of nonwhite male teens in the South during the census week (the "labor force week" concept). For 1970 the participation rate pertains to black teens exclusively. Virtually no bias is introduced by the distinction between "nonwhite" and "black" because blacks accounted for the overwhelming proportion of nonwhites in the South between 1940 and 1960. The participation rate for 1940 was obtained from U.S. Bureau of the Census (1943a, p. 153). The state volumes of the 1950, 1960, and 1970 censuses are sufficiently detailed to permit us to calculate

participation rates by enrollment status, within the urban, rural non-farm, and farm sectors, at the regional level and the state level for most southern states (U.S. Bureau of the Census 1952c, Table 71; U.S. Bureau of the Census 1963, Table 117; U.S. Bureau of the Census 1973b, Table 166).

The South consists of 16 states (Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia) plus the District of Columbia.[27]

5.2. State-Level Minimum Wage Coverage Rates. For the census week in 1950 we estimated the fraction of employed black teenage males, ages 16-19, in each southern state who were covered by the minimum wage provisions of the Fair Labor Standards Act (FLSA). The published volumes of the 1950 census present data on the occupation distribution of nonwhite males, classified by age. The occupational breakdowns consist of 180 categories, including major industry subsets of operatives and laborers. A large share of black teenage males were employed in the small number of categories for which industry-occupation coverage rates could be estimated from other sources.[28]

The first step in calculating the coverage rate was to use U.S. Bureau of the Census (1956a) to identify each occupational group in the state volumes that contained at least 0.2 percent of all employed nonwhite teenage males in 1950. Second, for

occupational groups that were entirely (or almost entirely) employed in a single industry (eg. sawyers, plasterers) we assigned the coverage ratio from U.S. Department of Labor (1948). By far the biggest employer of black male teens in 1950 was agriculture, for which the coverage rate in 1950 was zero.

Third, for occupational groups that were employed in a number of industries but for which no industrial breakdown was given in the state volumes (eg. bakers, truckdrivers, janitors) we used U.S. Bureau of the Census (1956b) to estimate the industry-occupation matrix.[29] Because we know the coverage rates for each industry (and we have allocated occupations to industry) we can estimate covered employment by occupation. The overall coverage rate is the sum of covered employment across occupations divided by the number of employed black teens.

NOTES

1. We did not estimate an overall participation rate for 1910 because the census is known to have substantially overestimated participation rates for farm children in that year; see Durand (1948) and Lebergott (1964). Because southern black male teens in 1910 were concentrated in the rural areas, their participation rate in 1910 would have been artificially inflated relative to surrounding census dates.

2. Participation rates of southern white male teens also declined between 1900 and 1950. In 1900, 74.4 percent of southern white teens were in the labor force. Their participation rate fell to 65.3 percent in 1920, 57.7 percent in 1930, and 51.7 percent in 1940. White participation climbed during the 1940s, reaching 55.1 percent in 1950.

3. Cogan examined the decline in the employment-to-population ratio, not the participation rate. This ratio fell by 27 percentage points between 1950 and 1970, the same as the decline in the participation rate (Cogan 1982, p. 623). The difference between the participation rate and the employment-to-population ratio is precisely the unemployment-to-population ratio. We focus on participation rates rather than employment-to-population ratios because participation rates for southern black teens can be constructed from pre-1940 census data but employment ratios cannot.

4. Durand (1948, pp. 66, 254) did predict a decline in the participation rate of non-white males aged 14-19 of 7.6 points between 1950 and 1960, although his prediction was for the nation, not specifically for the South.

5. In 1920, the fraction of southern farms with tractors was less than one percent (U.S. Bureau of the Census 1952a, p. 226).

6. We estimated coverage rates in 1950 using published data on occupations held by black teens and 1947 coverage rates; see the data appendix for the details of the construction of the coverage rate estimates. The average coverage rate was low because most jobs held by black male teens were in agriculture or the service sector, and most jobs in these industries were exempt from the minimum wage.

7. TRAC was calculated from U.S. Bureau of the Census (1952, p. 226); see the data appendix for source information on participation and coverage rates. Observations were weighted by population counts.

8. Using the regression coefficients and the changes in the sample mean values of TRAC and COVER, the predicted decline in black teen participation is slightly larger (1.2 percentage points) but still very small.

9. The decline in participation between 1900 and 1920 may be overstated because the 1920 census was taken in January, a seasonal trough in teenage employment, while the 1900 census was taken in June, a seasonal peak; although see Durand (1948, p. 194), who on the basis of a comparison of census data and monthly

labor force estimates, speculated that "the proportion of youthful seasonal workers reported as having gainful occupations was not very much affected by their employment status at the time the census was taken". On the other hand, Osterman (1980, 174) argued that certain instructions to census enumerators may have caused youth employment to be understated in 1900, which would bias the decline in black teen participation downward.

10. Durand (1948, p. 199). Applying the adjustment ratio for males aged 75 and over, the estimated 1930 participation rate is 66.1 percent, 5 percentage points higher than the 1950 rate. As Durand (1948, p. 192) discusses, a major portion of the discrepancies between "gainful worker" and "labor force week" counts of the labor force concerns the treatment of part-time and seasonal workers, who might have reported an occupation to the census but who were out of the labor force during the census week. Since part-time and seasonal employment was likely to be more common among youths enrolled in school, the higher overall school enrollment rate of white teens would cause the adjustment ratio for all males, ages 14-19, to be less than the adjustment ratio for black teens. On racial differences in school attendance before 1950 see Margo (1990, ch. 2).

11. Although not shown directly in the table, it is clear that interaction effects were important after 1950: the fraction of the post-1950 decline in the overall participation rate attributed to increased enrollments and lower participation by those in school (87 percent), when added to the fraction

attributed to lower participation of those not in school (42 percent), exceeds 100 percent.

12. The evidence in Table 1 is less favorable to the minimum wage hypothesis. The majority of the decline in participation of nonfarm teens not in school occurred before 1960, yet increases in the coverage of the minimum wage occurred in the 1960s. Labor force participation rates of nonfarm teens in school did not decline after 1950, despite a 50 percent rise in the school enrollment rate.

13. See Margo (1990, pp. 74-80) for an econometric analysis of black school attendance in the early twentieth century South.

14. Smith (1986, p. 1227). Smith's figure pertains to the entire southern black population; it is biased upward for males because black female children were more likely to attend school than black male children around the turn of the century (Margo 1990, p. 10). For a variety of reasons, it appears that census data overstate the educational attainment of southern blacks born in the late nineteenth century. The majority of blacks were educated in ungraded schools, and the census apparently reported the number of years they attended school, which would exceed completed grades (had the schools been graded); see Margo (1986).

15. This number is likely to be biased downwards by a peculiarity of the 1940 census. Respondents in 1940 were supposed to report the highest grade completed but some may have reported the highest grade attended. The calculation of the retardation rate in 1940 assumes that everyone claiming to have completed the

fourth grade by age 12 actually did so. If some fraction were enrolled in the fourth grade the retardation rate would be biased downwards.

16. Using state-level data for southern states in 1940 and 1950 we estimated the following time-series cross-section regression:

$$RET12 = 0.632 - 0.038\ TERM + 0.956\ PT + 0.030\ (Year=1950)$$
$$(2.015)\quad (3.177)\qquad (2.145)\qquad (1.072)$$

$$N = 33 \qquad R^2 = 0.64$$

where RET12 = percent of enrolled black twelve-year olds attending the fourth or lower grade, TERM = length of public school year in days x 10^{-1} and PT = pupil/teacher ratio x 10^{-2}. Absolute value of t-statistics are shown in parentheses. Delaware is omitted in 1950 because no data on RET12 are available for that year. Data were weighted by the population counts (enrolled twelve-year olds) in each state. RET12 was calculated from U.S. Bureau of the Census (1943b) and U.S. Bureau of the Census (1952c). The sources for TERM and PT were Federal Security Agency (1947) and U.S. Department of Health, Education, and Welfare (1954). As noted in footnote 14, the estimates of RET12 are less accurate for 1940 than for 1950.

The intepretation of the regression is as follows: the longer the school year and the smaller the class size (a decrease in PT), the lower is the retardation rate at age 12. A more exacting test, however, of a link between school characteristics and retardation rates is a fixed effects (i.e. state dummies) specification. If state dummies are included in the regression the coefficient of TERM (-0.0322) remains negative and statistically significant, while the coefficient of PT turns negative (-0.0084), the wrong sign but is insignificant at the 5 percent level. The mean value of RET12 declined by 6.9 percentage points between 1940 and 1950. Using the coefficient of TERM and the change in the mean value of TERM between 1940 and 1950 (17.4 days), we estimate that 81 percent (= -0.0322 x 1.74) of the decline in RET12 between 1940 and 1950 can be explained by the increase in the length of the school year.

17. Compulsory schooling laws may have reduced early age-in-grade retardation by encouraging higher rates of school attendance; Margo (1990, p. 13) found a small, positive effect of compulsory education in a time-series cross-section regression analysis of state-level variation in black attendance rates over the period 1910-1930.

18. The inclusion of state and sectoral dummies is conceptually similar to a fixed effects time-series, cross-section regression; in our application the fixed effects are states and the sectoral dummies correspond to time dummies. That is, we seek to explain the variation in ENR and LFPR using ELEM, after controlling for

variations due to sectors and states. Preliminary regressions were also run including the black male unemployment rate as an independent variable, but the coefficients were generally insignificant and not very robust to the definition of the age group to which the unemployment rate pertained. Ideally we would like to include minimum wage coverage rates in the regression but these cannot be estimated at the sectoral level.

19. It might be argued that ELEM is endogenous in both equations for econometric and substantive reasons. The number of enrolled teens is the denominator of ELEM but is also the numerator of ENR and the denominator of LFPR. Measurement error in the number of enrolled teens would cause a spurious negative correlation between ENR and ELEM and a spurious positive correlation between LFPR and ELEM. Because ELEM was constructed from the state volumes of the 1950 census (which were based on a 20 percent random sample) there is reason to suspect measurement error. Second, labor force participation might cause some grade retardation at later ages, resulting in positive feedback between LFPR and ELEM. To examine the possibility of endogenity, we re-estimated both equations using weighted two-stage least squares, treating ELEM as endogenous. The instruments for ELEM were proxies for parents' education (the median years of schooling of females and males, ages 45-54) and one-year retardation rate at age 9 (the fraction of 9 year olds enrolled in the first or second grade). The estimated TSLS coefficients of ELEM were-0.269 (t=-1.582) in the enrollment regression and 0.917 (t=4.034)

in the participation regression. Thus the substantive conclusions are unaffected by allowing for the possible endogeneity of ELEM.

20. We use the regression coefficients in Table 3 to calculate the average value of ENR and LFPR for each sector (farm, rural nonfarm, and urban) setting ELEM = 0.085 (the value for 1970). We assume that the sector-specific labor force participation rates for black teens not in school equal their actual 1950 values. Using the 1950 proportions of black teens in each sector as weights, we then calculate an overall participation rate.

21. The predicted labor force participation rates of in-school nonfarm black teens in 1950, assuming the 1970 value of ELEM, is 15.6 percent, which is less than the actual 1970 rate. Put another way, holding constant the educational attainment of in-school nonfarm black teens, participation actually increased between 1950 and 1970. It is hard to reconcile such a finding with widespread negative effects of the minimum wage on black teen employment after 1950.

22. We calculated ELEM in 1930 by subtracting the number of southern black pupils enrolled in high school (from U.S. Department of the Interior, Office of Education 1932) from the total number of southern blacks, ages 16-19, attending school in 1930 (from U.S. Bureau of the Census 1935, p. 213). As estimated, ELEM is subject to two downward biases and one upward bias. ELEM is biased downwards (for males) because the data on enrollments by grade are not gender-specific, and black female

children were more likely to attend school than black male children. Second, ELEM is biased downwards because we assume that no fifteen year olds were enrolled in high school, when some surely were. A small upward bias is introduced, however, by the implicit assumption that no nineteen year olds were enrolled in college.

23. The calculations comparing southern black teens to southern white teens and to nonsouthern black teens are analogous to that described in footnote 20.

24. See Margo (1990, ch. 6) for evidence that racial segregation in employment in the South increased between 1900 and 1950.

25. State-level data for nonwhites on ELEM, enrollment rates (ENR), and in-school labor force participation rates (LFPR) are available for 15 nonsouthern states in 1950. We excluded Arizona and New Mexico because the fraction of Hispanics among nonwhites was high in both states. Observations were weighted by population counts. While regressions of ENR on ELEM were insensitive to the composition of the sample, scatterplots of LFPR and ELEM revealed two outliers, Kansas and New York. Including dummy variables for both states, the following regression results were obtained:

$$\underset{\quad (17.272)\ (4.451)\qquad (1.064)\qquad (0.344)}{ENR = 0.719 - 1.355\ ELEM - 0.088\ Kansas + 0.010\ New\ York}$$

$$R^2 = 0.59$$

$$LFPR = 0.085 + 0.533\ ELEM + 0.156\ Kansas - 0.050\ New\ York$$
$$(1.987)\quad (1.707)\qquad (1.841)\qquad (1.726)$$

$$R^2 = 0.27$$

Absolute values of t-statistics are shown in parentheses. The results demonstrate that the relationships between ELEM, ENR, and LFPR observed in the South were not exclusively a southern phenomenon. We are grateful to Keith Ihlanfledt for suggesting this line of argument.

26. Because the number of nonfarm black teens in the 1900 census sample was very small, their participation rates by enrollment status and the enrollment rate (see Table 1) were calculated by combining the 1900 and 1910 public use samples (Population Studies Center, University of Pennsylvania 1989).

27. Delaware is excluded in 1950 because no state-level data on nonwhites were reported.

28. These sources are: (1) Table 14 of U.S. Department of Labor (1948), which shows total nonsupervisory employment and the number of employees subject to the minimum wage provisions of the FLSA by industry group in September 1947; (2) Livengood (1951) which identifies the categories of employees who were exempt from the minimum wage provisions as of 1950; (3) Table 7 of U.S. Bureau of the Census (1956a), which cross-classifies employed nonwhite males in the U.S. by age and detailed occupation (in

1950 more than 85 percent of all employed black teens lived in the South); (4) Table 2 of U.S. Bureau of the Census (1956b) which provides a cross-classification of all employed males (all ages and races combined) by detailed occupation and a partial breakdown of industries.

29. The industrial classifications in U.S. Bureau of the Census (1956b) refer to all employed males. Because black teens are likely to be underrepresented relative to all employed males in highly covered industries (eg. durable goods manufacturing) our estimated coverage rates are biased upwards.

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Table 1

Civilian Labor Force Participation of Southern Black Male Teens, Ages 16-19: By School Enrollment Status, 1900-1970

	Not in School	In School	Total[a]
Farm			
1900 (59.5%)	90.2%	66.7% [17.7%]	86.0
1930[b]	88.5%	55.1 [29.2%]	78.7
1950 (40.1%)	89.6%	46.3% [38.4%]	72.8
1960 (18.2%)	73.6%	26.1% [57.3%]	46.4
1970 (4.7%)	66.4%	12.2% [70.9%]	28.0
Nonfarm			
1900[c]	92.8	44.0 [11.9%]	86.9
1950	80.1	22.0 [45.5%]	52.7
1960	68.9	23.3 [60.3%]	41.3
1970	61.8	20.9 [66.0%]	34.1

(): percent in farm sector
[]: percent enrolled in school
Sources: 1900, authors' calculations from 1900 and 1910 census public use samples, see note c below; 1930, U.S. Bureau of the Census (1935, p. 226); 1950, 1960, 1970: see data appendix

Notes:

[a]Civilian labor force participation rates for all black male teens shown in the "total" column were calculated from regional data; rates for enrollment subsets were calculated from state data with some missing observations (see the data appendix). Hence the total rates differ slightly from weighted averages of the rates for enrollment subsets.

[b]Participation rates for the farm population by enrollment status are available for the age group 16-19 for the entire U.S, but not the South. However, 98 percent of the rural black farm population resided in the South in 1930 (U.S. Bureau of the Census 1935, p. 51). The fraction of southern black male teens in 1930 in the rural farm sector cannot be calculated from published census data.

[c]Nonfarm 1900 combines 1900 and 1910 public use sample (see Population Studies Center 1989) because sample size in 1900 is too small to reliably disaggregate by enrollment status.

Table 2

Hypothetical Participation Rates:
Southern Black Male Teens
(percent x 100)

	Farm	Non-Farm	Total
A. 1900			
1. 1950 enrollment rates	81.2	70.6	76.9
% explained			(38.3%)
2. 1950 enrollment rates and 1950 in-school LFPR's	73.3	60.6	68.2
% explained			(73.4%)
3. 1950 not-enrolled LFPR's	85.5	76.4	81.8
			(18.5%)
B. 1950			
1. 1970 enrollment rates	58.9	42.1	48.8
% explained			(48.9%)
2. 1970 enrollment rates and 1970 in-school LFPR's	34.7	41.3	38.7
% explained			(87.4%)
3. 1970 not-enrolled LFPR's	58.8	45.2	50.6
			(42.0%)

LFPR: labor force participation rate
Note: figures outside parentheses give counterfactual labor force participation rates under various assumptions. For example, row 2, panel A calculates participation rates in 1900 assuming 1950 school enrollment rates, 1950 in-school LFPR's, and no other changes between 1900 and 1950. % explained: percent of decline in actual LFPR between 1900 and 1950 (panel A) or 1950 and 1970 (panel B) explained by difference between actual and counterfactual LFPR.
Source: calculated from Table 1.

Table 3

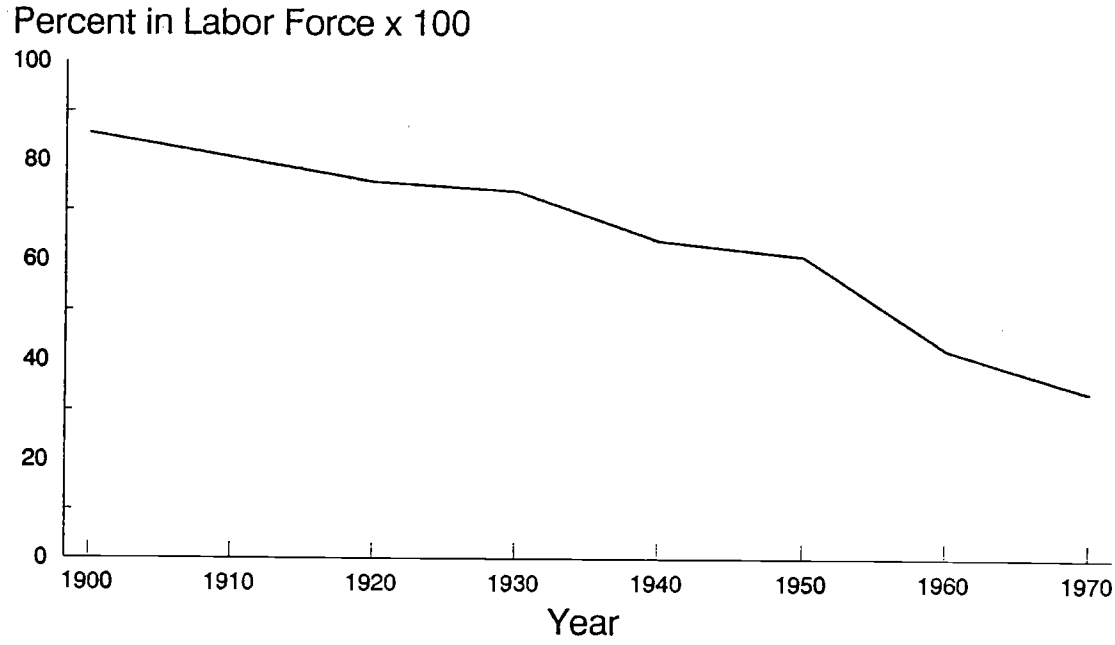
Enrollment and Labor Force Participation Regressions:
Southern Black Male Teens, 1950

	ENR		LFPR	
	ß	ß	ß	ß
Constant	0.508	0.574	0.239	0.078
	(23.989)	(13.156)	(8.372)	(1.592)
ELEM		-0.277**		0.662*
		(-1.739)		(3.692)
Rural Non-Farm	-0.094*	-0.050	0.072	-0.103*
	(-5.337)	(-1.667)	(0.030)	(-3.043)
Farm	-0.103*	-0.024	0.227*	0.038
	(-6.728)	(-0.495)	(10.989)	(0.703)
Mean value dep.var.	0.434		0.326	
R^2	0.77	0.78	0.91	0.92
N	40		40	

T-statistics are shown in parentheses.
ENR: % enrolled in school, black male teens, ages 16-19
LFPR: % of in-school teens in labor force
ELEM: % of in-school teens enrolled in elementary grades
Regressions include state dummies (not reported)
*Significant at 5 percent level
**Significant at 10 percent level

Source: see data appendix

Figure 1
Labor Force Participation Rates:
Southern Black Males, Ages 16 to 19



Source: see data appendix

Note to Figure 1. The points in the graph are as follows:

Year	Percent in Labor Force x 100
1900	85.6%
1920	75.7
1930	73.9
1940	63.9
1950	60.8
1960	42.2
1970	33.8