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Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks: A Study of South Carolina

By JAMES J. HECKMAN AND BROOK S. PAYNER*

This paper assesses the contribution of federal antidiscrimination policy to the dramatic improvement of black economic status in manufacturing that occurred in South Carolina in the mid-1960s. Using a unique data source for South Carolina on wages and employment by race, sex, and industry we evaluate competing explanations. Human capital stories, supply shift stories, and tight labor market stories do not account for the black breakthrough. Our study documents a significant contribution of federal antidiscrimination programs.

Two decades of research have failed to produce professional consensus on the contribution of federal government civil rights activity to the economic progress of black Americans. There are several reasons why this is so. In part it is due to the lack of convincing measures of federal civil rights activity. In part it is due to the reliance of much of the literature on notoriously fragile macro-time-series in which numerous plausi-

ble explanations compete for scarce degrees of freedom. Highly aggregated time-series or cross-section studies do not isolate well-defined labor markets in which supply and demand factors can be meaningfully separated, although it is the separation of these factors that is essential to the resolution of the debate on federal impact. Much valuable institutional detail may be lost in the process of data aggregation or in the fitting of "general-purpose" wage equations which constrain equality in coefficient estimates across diverse sectors.

This paper takes a new look at this old question using a unique body of data on employment and wages by race and sex for the manufacturing sector of South Carolina. Some of the data are available at the disaggregated county level affording useful cross-sectional variation. By focusing attention on well-defined labor markets, it is easier to separate out supply- and demand-side impacts on black status. Unlike most previous studies of the topic that focus exclusively on black wages, our study analyzes both black wages and employment.

Trends in black economic progress in South Carolina are typical of trends for the South as a whole. As noted by Richard Butler (1985), James Smith and Finis Welch (1986), and the U.S. Commission on Civil Rights, a sizable component of the post-1960 U.S. aggregate relative wage and occupational improvement for blacks arises from

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improvements in the South. Thus a study of black economic progress in the South is likely to illuminate the sources of southern and hence U.S. black economic progress. A study of black progress in southern manufacturing is of particular interest. Butler shows that a substantial portion of the gain in black economic status in the South (more than three-eighths) arises from the movement of blacks from traditional sectors into operative and craftsman jobs concentrated in manufacturing. Relative wage growth within these occupations accounts for an additional one-quarter of black gains in the South.

Three major—and not necessarily mutually exclusive—explanations have been advanced to explain the growth in aggregate black male relative (to white male) earnings found in the post-1964 U.S. data. 1) Some authors, seizing on the coincidence in timing between the passage of Title VII and other related federal antidiscrimination activity and the relative improvement in black wages, assign a central role to federal antidiscrimination activity. (Richard Freeman, 1973, 1981; Wayne Vroman, 1974, and Charles Brown, 1984.) Other scholars deny this claim (see, for example, Smith and Welch, 1986.) 2) Welch, 1973; Smith, 1984; and Smith and Welch, 1986, assign a central, but not necessarily exclusive, role to human capital formation and the importance of previous state government discrimination in the provision of schooling. 3) Still others (James Tobin, 1965; William Wilson, 1986; Milton Friedman, 1962) assign an important role to the rising cost of discrimination in tight labor markets associated with industrialization, the emergence of competitive markets, or demand management policies.

Few scholars dispute the importance of schooling in raising black incomes. Most acknowledge that tight labor markets favor employment of blacks although there is considerable controversy surrounding the effect of tight labor markets on racial wage differentials. Most of the disagreement in the literature centers on the contribution of federal antidiscrimination activity—the focus of this paper.

We address this question by using empirical proof by elimination. Using a variety of

data sources and measures of federal activity and eliminating other plausible explanations, we conclude that federal policy benefited black economic status in South Carolina.

Ours is a tale of two sectors. The strongest evidence of federal impact is found in the traditional manufacturing sectors of the state that were already thriving when Jim Crow laws formalized racial segregation in employment in 1915. Human capital stories cannot explain the timing of black improvement in these sectors.

There is little evidence of federal impact on black status in the more modern sectors of the state that emerged after 1945. Somewhat surprisingly, we also find no evidence of employment discrimination in state, local, or federal government hiring after accounting for individual qualifications. The growth in black employment and wages in these sectors appears to be market- or supply-side driven.

Our analysis establishes the value of more disaggregated industrial and institutional analyses in assessing the contribution of federal activity to black status. We demonstrate the importance of accounting for the relevant economic and institutional histories of industries in understanding black economic progress. Our evidence confirms the wisdom of Gavin Wright's (1986) emphasis on the role of institutions in explaining southern economic history. Our analysis also provides evidence against the widely held belief espoused by Charles Murray (1984) and other conservatives that federal government policy has not contributed to the elevation of black economic status.

We develop our argument in the following way. In Section I, we present salient features of the South Carolina labor market experience of blacks. Five striking graphs suggest that the federal government may have played an important role in improving black status. Although we sound cautionary notes against first impressions, in the remainder of the paper we demonstrate that they are correct.

Section II establishes that trends in South Carolina are like those in the U.S. South. Thus our analysis of South Carolina data contains important lessons for understanding the progress of blacks in the South and

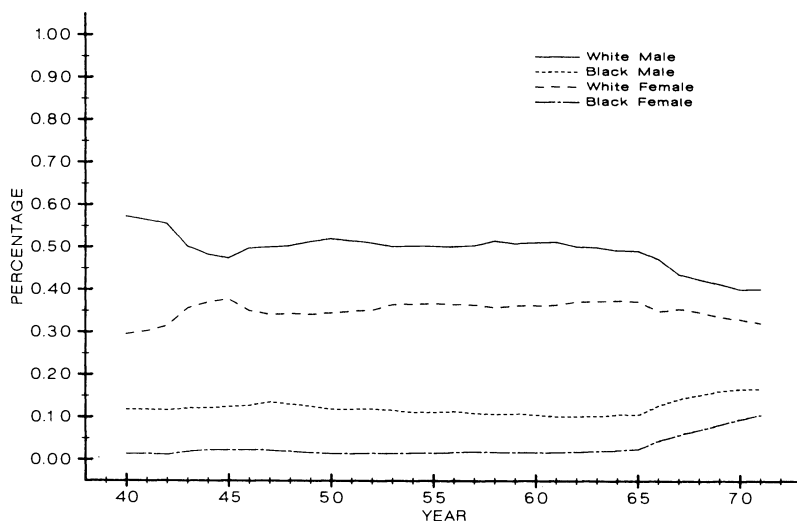


FIGURE 1. AGGREGATE EMPLOYMENT SHARES IN SOUTH CAROLINA MANUFACTURING

hence their progress in the United States as a whole.

Section III states and Section IV evaluates competing arguments using detailed analyses of the data. The paper concludes with a summary of the evidence.

I. The Black Breakthrough in South Carolina Manufacturing

Figures 1 and 2 plot South Carolina industrial data on employment and wages by race and sex for the period 1940–80. The data are from the Annual Reports of the South Carolina Department of Labor. Below, and in a companion paper (the authors and Butler), we establish the validity of this self-reported data collected from firms.

Black employment is a stable fraction of total employment between 1940 and 1965 (Figure 1). Suddenly, in 1965, the proportion of black employment begins to grow at a time when total manufacturing employment is growing. The relative wage series for black workers shows an upturn at the same time although it is less dramatic (Figure 2).

Textiles are the major industry in the state employing 80 percent of all manufacturing employment in 1940 and a still sizable 40

percent in 1980. Most of the breakthrough in black employment occurs in this industry and the related apparel industry. There is much less evidence of any dramatic breakthrough in the non-textile, non-apparel sector of manufacturing. Although there is visible growth in the share of black *female* employment after 1965 (see Figure 3), the rise in relative wages for black females starts long before 1965 (see Figure 4). The decline in the black male share in this sector and the rise in the female share for both races is largely due to the entry on a large scale of the female-intensive electrical machinery industry into the state in 1964 and the entry into the food industry of new firms employing women of both races in equal proportions. (See the authors and Butler for further evidence on this point.)

Figure 5 presents employment shares by race and sex in textiles between 1910 and 1977.¹ It confirms the impression conveyed by Figure 1. Through two World Wars, the Great Depression, and the booms of the

¹Data on wages were not collected before 1940. There are no consistent time-series data on employment in non-textile industries before that date.

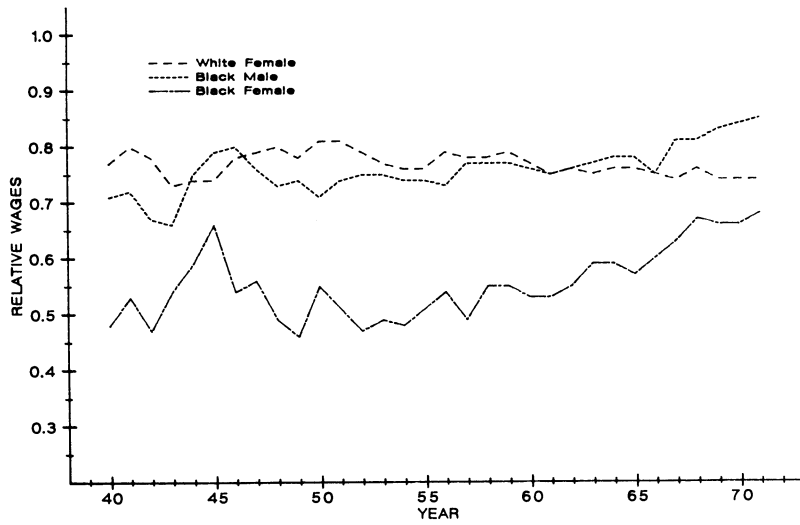


FIGURE 2. SOUTH CAROLINA MANUFACTURING' WAGES RELATIVE TO WHITE MALES

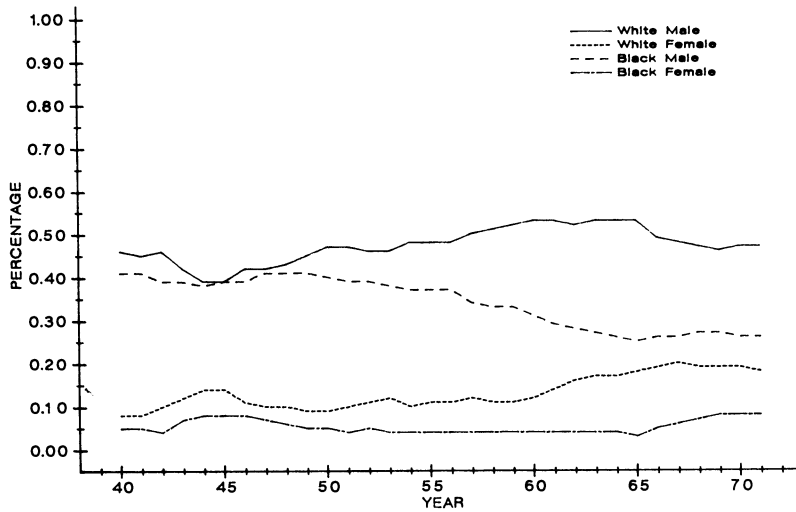


FIGURE 3. AGGREGATE EMPLOYMENT SHARES IN SOUTH CAROLINA NON-TEXTILE NON-APPAREL MANUFACTURING

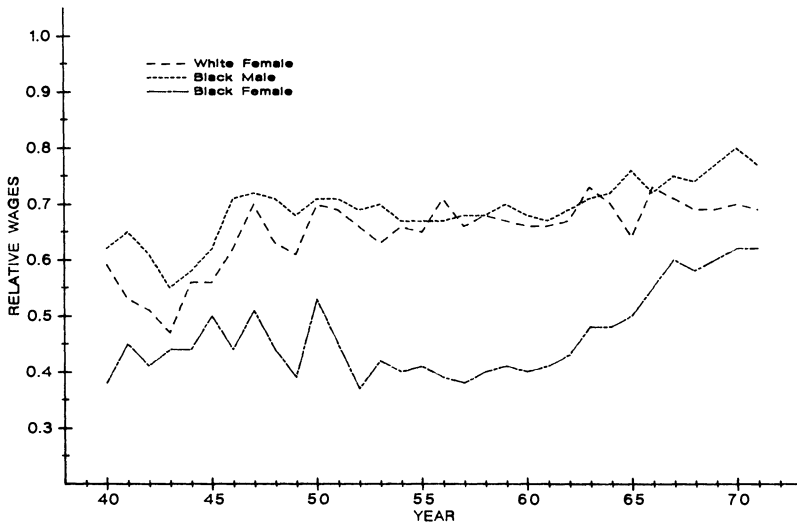


FIGURE 4. SOUTH CAROLINA NON-TEXTILE NON-APPAREL MANUFACTURING WAGES RELATIVE TO WHITE MALES

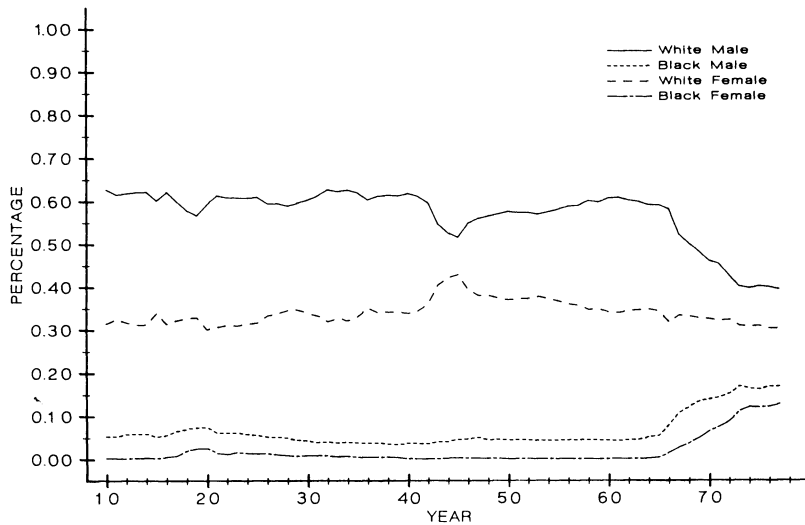


FIGURE 5. AGGREGATE EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY

1950s and 1920s the share of blacks in textile employment remains constant at a low level despite growth in the quality and quantity of black schooling and despite economic scarcity resulting from tight labor markets. Suddenly in 1965 the black share in employment begins to improve when Title VII legislation becomes effective and the Equal Employment Opportunity Commission begins to press textile firms to employ blacks and when Executive Order 11246 forbids discrimination by government contractors at the risk of forfeit of government business. Textiles sold a significant proportion of their output to the federal government in 1965.² The improvement in black employment and wages occurs at a time and in an industry that suggests a major role for government activity.

This evidence supporting government impact is reinforced by some additional background information on South Carolina textiles. That industry may well have been an ideal example of Kenneth Arrow's 1974 model of discrimination. Initial racial exclusion ratified by a 1915 Jim Crow law may have been perpetuated by fixed costs of employment coupled with fellow employee tastes for discrimination. The costs to marginal experimentation in hiring blacks may well have been raised by the geographical isolation of mills from existing supplies of black labor which required residential integration to effect industrial integration. Southern textiles was one of the few industries found by Robert Bunting (1962) to have monopsony power because of its geographical isolation from other employers.

Title VII and related antidiscrimination activity seems likely to have had its most visible effect in industries like South Carolina textiles in which exclusion of blacks was so blatant. The Equal Employment Opportunity Commission targeted Southern textiles and conducted hearings on employment discrimination in that industry in late 1966 and early 1967. These hearings were widely publicized. (See Richard Rowan,

1970.) More than 140 charges of wage and employment discrimination were filed against textile firms in North and South Carolina in 1965. (See Alice Kidder, 1972a; Kidder, Sidney Evans, Michael Simmons, and Dupont Smith, 1972b.) Any rational theory of government bureaucracy would make South Carolina textiles an inviting target for equal rights intervention. The Defense Department, which was in charge of monitoring textile affirmative-action programs, was known to be relatively vigorous in pursuit of equal opportunity. Three large textile companies in North and South Carolina had government contracts withdrawn for a brief period in 1968 because of noncompliance with the Order.

Before any conclusion about the efficacy of federal policy is embraced, however, it is important to raise some cautionary questions, the answers to which constitute the remainder of this paper.

The first argument against the obvious is that the data are suspect. Since textile and apparel firms report the basic data underlying Figures 1-5, they may have lied about the growth in black employment after 1965 to avoid federal intervention and they may have lied about the level of black employment before 1965 to avoid state intervention on behalf of Jim Crow laws.

In Table 1, we compare the South Carolina Department of Labor (SCDOL) data on demographic employment in textiles to that reported in the U.S. Census of Population for 1940, 1950, 1960, and 1970. The SCDOL data and the Census data are not expected to be the same in any year since the Census includes all employees, whereas the SCDOL includes only production workers. In addition, the Census interviews workers and the SCDOL interviews firms. Finally, the Census includes part-time workers. For these reasons we expect the Census figures to be larger except perhaps in 1970. SCDOL includes chemical industry workers with textile workers. The chemical industry expanded rapidly in the state during the 1960s, although it is a much smaller employer than textiles. Despite these numerical discrepancies, the same pattern of dramatic black improvement is found in both data sources.

²About 5 percent—120 million—1965 dollars.

TABLE 1—TEXTILE EMPLOYMENT

Year	Total	White Males	White Females	Black Males	Black Females
	(Percentage Share of Demographic Group in Parentheses)				
Total Textile Employment from United States Census					
1970	143779	68977 (47.8)	48642 (33.8)	16585 (11.5)	9575 (6.5)
1960	132166	78951 (59.5)	44601 (35.3)	6513 (5.0)	401 (0.3)
1950	131558	75613 (57.5)	49326 (37.5)	6113 (4.7)	506 (0.4)
1940	100461	61701 (61.4)	34355 (34.2)	5128 (4.1)	277 (0.3)
Production Worker Textile Employment from SCDOL					
1970	145108	68992 (47.6)	48548 (33.5)	19488 (13.4)	8080 (5.6)
1960	120665	72122 (59.8)	42903 (35.6)	5448 (4.5)	192 (0.2)
1950	124379	71065 (57.1)	42903 (37.8)	5987 (4.8)	311 (0.3)
1940	92725	57517 (62.2)	31484 (34.0)	3555 (3.8)	168 (0.2)

Sources: 1940 Census data from U.S. Bureau of the Census (1943, p. 370); 1950 Census data from U.S. Bureau of the Census (1953, p. 183); 1960 Census data from U.S. Bureau of the Census (1964, p. 346); 1970 Census data from U.S. Bureau of the Census (1973b, p. 680); SCDOL data from the Department of Labor of the State of South Carolina as described in the Appendix.

In a companion paper (the authors and Butler), we extensively document the accuracy of the data so that the faulty data argument can be dismissed.

The second argument against the obvious is harder to refute. The South Carolina labor market was unusually tight after 1964. Tightness arose from the 1960s national boom coupled with the growth in real manufacturing output (see Figure 6, in 1967 dollars), entry of firms and investment. Textile output was expanding during the period of the black breakthrough. The growth in demand for textile labor coupled with a dramatic contraction in the traditional sources of white labor supply due to the secular decline in South Carolina agriculture may have created unusual pressure for integration of the industry as a means of keeping down labor costs. Federal antidiscrimination activity may have simply facilitated the inevitable by giving employers an excuse for doing what

they wanted to do anyway. Most economists who have analyzed the desegregation of southern textiles claim that the primary source of black improvement was the tight labor market. (Rowan, 1970, and Donald Osborne, 1966).³

Other arguments can also be advanced against the obvious explanation. The first is a supply shift argument that focuses on the decline in South Carolina (and southern) agriculture as a source of growth in black industrial employment. The second argument is the "human capital" argument. One version of this argument mirrors Smith's explanation of black aggregate relative wage growth in the 1960s and claims that growth in the quality and quantity of black school-

³An exception is Kidder (1972a) who assigns a central role to changes in community mores.

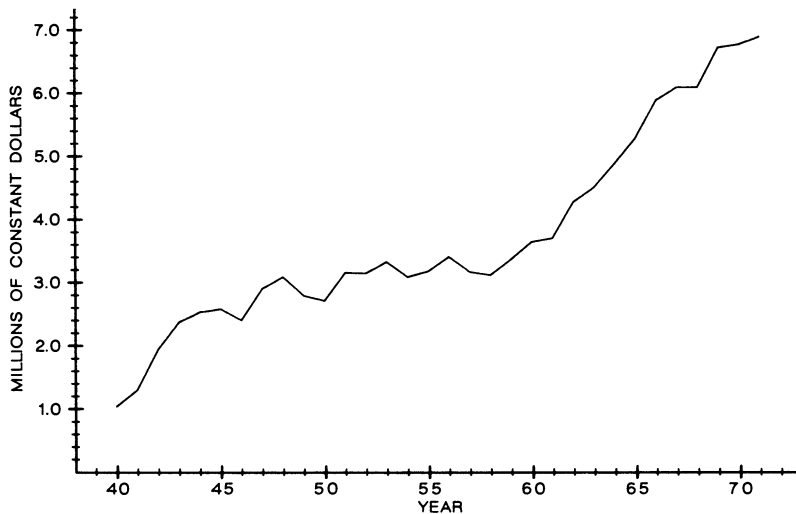


FIGURE 6. SOUTH CAROLINA MANUFACTURING TOTAL REAL OUTPUT

ing may have accounted for the black breakthrough in textiles and related industries.

We address these arguments in the remainder of the paper. We first document that trends in the status of blacks in South Carolina are typical of those in the South.

II. South Carolina in Context

Butler establishes that for the period 1960–70 more than two-thirds of the growth in the aggregate occupational index of black males relative to white males is due to improvement in relative wages or occupational standing in the South. He goes on to note that much of this improvement comes in the operative and craftsman categories that are concentrated in manufacturing. Scholars at the U.S. Commission on Civil Rights (Table 8.1) document that the rate of convergence of black male wages to white male wages in percentage terms was almost twice as fast in the South as in the non-South over the period 1960–80 for males age 25–54. Since roughly half of the black population lives in the South, these estimates imply that two-thirds of the growth in relative black status over the period is attributable to developments in the South. If it can be established that trends in black relative status in South

Carolina resemble those in the rest of the South, our study of that state acquires a more general character.

The dramatic breakthrough in black employment in South Carolina textiles was also experienced in other major southern textile states. Table 2 documents this claim using U.S. Census data. Annual data are not available for these contiguous states so it is not possible to compare the exact timing of the black breakthroughs. But we can be sure that the breakthrough in all states occurred in the same decade. It is likely that lessons learned about South Carolina textiles apply to these states as well.

South Carolina is not a microcosm of the South but the state and the region share many common trends. The proportion of the population that is black in 1940 is higher in South Carolina (44 percent) than for the South as a whole (26 percent). The black proportion declines in both geographic entities until 1970. Both South Carolina and the South experienced a substantial decline in agricultural employment between 1940 and 1980 and a substantial growth in manufacturing employment. Due to the presence of the textile industry in the state, the fraction of the work force employed in manufacturing is higher in South Carolina than in the

TABLE 2—EMPLOYMENT OF BLACKS AND WHITES IN TEXTILES IN OTHER SOUTHERN TEXTILE STATES

	1950	1960	1970	1980
		<i>North Carolina</i>		
Whites	206,383	213,161	282,935	267,207
Blacks	8,746	8,565	46,910	76,620
		<i>Georgia</i>		
Whites	95,254	88,659	143,175	145,015
Blacks	7,029	5,955	27,361	46,778
		<i>Virginia</i>		
Whites	38,249	34,804	68,702	68,195
Blacks	2,189	1,783	11,969	18,188

Source: U.S. Census, Employment by Industry, 1950, 1960, 1970, and 1980.

South as a whole. The breakout of blacks from traditional sectors was similar in the South and in South Carolina. Tables 3 and 4 reveal that trends in employment by race and sex are also similar. The convergence of the industrial distribution of black employment to that of white employment is similar in both. Employment in domestic service (personal services) and agriculture declines for black women and employment in manufacturing and professional services increases in South Carolina and in the South. The pattern of educational improvement is the same in the South as in South Carolina. (See the paper by the authors and Butler.)

Trends in southern labor markets are undeniably reflected in the labor market of South Carolina. Lessons learned about black progress in South Carolina seem likely to apply to the South as a whole.

III. The Causes of the Improvement in Black Economic Status in South Carolina Manufacturing

Various demand-side and supply-side explanations have been offered as causes of the black breakthrough in manufacturing in South Carolina. On the supply side, one explanation relates to the decline of agricultural employment in the South which was a consequence of technology and government policy and which led to shifts in the supply

of blacks available to manufacturing. In South Carolina, black employment in agriculture declined by about 98,000 workers between 1950 and 1970. Over the same decades, black employment in manufacturing increased by about 40,000 workers. The timing of these changes suggests a possible causal role with the decline of agriculture releasing supplies of black labor to the manufacturing sector.

A second supply-side explanation relates to the increasing quantity and quality of black education during the 1940s and 1950s that made blacks better qualified to compete with whites in the labor market. In South Carolina, there is considerable evidence of black educational gains relative to whites during the years leading up to 1965. Figure 7 shows the average highest grade completed by 5-year birth cohorts from 1900 to 1954.⁴ The figure shows steady convergence over the period. As documented by Welch, one year of schooling for a black student was not equivalent to one year of schooling for a white student in the system of segregated schools that existed in the south and in South Carolina prior to 1960. Measured con-

⁴These figures were calculated using the 1950 Public Use Sample for the cohorts born between 1900 and 1924 and the 1980 Public Use Sample for the cohorts born between 1925 and 1954.

TABLE 3—IN SOUTH CAROLINA INDUSTRIAL DISTRIBUTION OF EMPLOYED PERSONS (21–65) BY PERCENTAGE

Industry	1980	1970	1960	1950	1940
	Black Females				
Agriculture	2.6	8.7	24.2	39.2	39.2
Business Services	3.5	1.0	0.2	0.5	0.0
Government	3.5	0.9	0.2	0.2	0.2
Manufacturing	32.5	19.9	4.1	2.4	2.0
Mining/Construction	0.6	0.3	0.2	0.1	0.0
Personal Services	13.9	36.9	51.2	43.8	51.4
Professional Services	29.7	22.7	14.5	9.3	5.7
Trade	11.3	8.3	4.6	4.0	1.4
Other	2.3	1.2	0.7	0.6	0.1
Black Males					
Agriculture	6.4	12.6	27.2	50.6	58.3
Business Services	3.8	2.6	1.7	1.6	1.0
Government	4.5	3.7	1.8	1.3	0.7
Manufacturing	38.2	33.0	24.2	19.7	14.5
Mining/Construction	15.6	16.1	14.7	8.6	10.5
Personal Services	1.9	3.7	4.6	2.9	4.1
Professional Services	8.9	8.3	6.3	3.2	2.3
Trade	12.0	11.9	12.2	6.5	4.4
Other	8.8	8.1	7.2	5.6	4.3
White Females					
Agriculture	1.1	1.0	2.8	7.6	9.6
Business Services	8.9	6.3	5.8	2.7	1.0
Government	3.9	3.6	3.7	2.6	3.3
Manufacturing	28.8	39.3	43.3	51.9	48.2
Mining/Construction	1.7	1.3	0.6	0.9	0.9
Personal Services	3.8	4.8	4.7	4.9	7.9
Professional Services	27.8	21.8	17.1	12.9	14.7
Trade	20.3	18.8	18.5	14.4	12.4
Other	3.8	3.2	3.6	2.0	1.9
White Males					
Agriculture	3.6	4.5	8.2	20.8	26.4
Business Services	7.9	6.6	6.1	4.6	2.9
Government	5.0	6.2	4.8	5.0	4.3
Manufacturing	33.5	36.6	40.5	34.7	30.5
Mining/Construction	12.5	12.4	9.8	8.5	11.6
Personal Services	1.3	1.6	1.7	1.5	2.5
Professional Services	9.8	7.5	4.9	3.0	3.3
Trade	17.1	17.4	17.5	15.9	12.5
Other	9.2	7.1	6.4	5.9	6.0

Sources: Computed from 1940, 1950, 1960, 1970, and 1980 Public Use Samples, U.S. Census of Population.

vergence understates the true convergence because the quality of black schooling was increasing over time. Elsewhere (the authors and Butler) we document that in South Carolina, as in many southern states, elementary school expenditure per student began to con-

verge in the 1930s while high school expenditure per student began to converge in the mid-to-late 1940s.

One demand-side argument is that as the demand for labor increased, the costs of discrimination increased. Since the period of

TABLE 4—INDUSTRIAL DISTRIBUTION OF EMPLOYED PERSONS (21–65)
IN THE CENSUS SOUTH BY PERCENTAGE

Industry	1980	1970	1960	1950	1940
	Black Females				
Agriculture	1.6	3.8	15.6	16.5	17.7
Business Services	7.0	3.0	2.4	1.4	0.9
Government	8.1	4.4	2.3	1.9	0.7
Manufacturing	17.2	12.0	4.4	5.1	3.5
Mining/Construction	0.9	0.4	0.0	0.2	0.3
Personal Services	13.7	34.7	48.9	53.1	65.8
Professional Services	33.0	27.3	15.0	10.4	6.6
Trade	14.3	12.3	10.0	10.4	4.0
Other	4.2	2.1	1.3	1.0	0.5
Black Males					
Agriculture	4.9	10.1	18.8	33.2	43.6
Business Services	5.9	3.8	2.7	2.8	2.5
Government	6.4	7.5	5.4	3.6	1.5
Manufacturing	26.9	27.1	23.4	20.9	14.2
Mining/Construction	13.6	12.6	12.5	10.8	12.6
Personal Services	2.5	4.5	6.3	5.3	7.5
Professional Services	12.9	10.3	7.3	3.6	2.8
Trade	14.5	12.9	14.1	10.8	8.2
Other	1.2	11.3	9.5	9.0	7.1
White Females					
Agriculture	1.5	1.5	3.0	6.3	5.0
Business Services	12.0	8.6	7.9	5.0	4.1
Government	5.7	5.2	5.7	6.7	6.3
Manufacturing	16.7	19.7	21.6	23.0	22.9
Mining/Construction	2.2	1.7	1.4	1.1	0.9
Personal Services	4.9	6.9	8.6	9.3	16.1
Professional Services	30.0	27.0	20.7	17.0	18.8
Trade	22.2	25.0	25.9	26.7	21.7
Other	4.8	4.4	5.3	5.0	4.3
White Males					
Agriculture	4.4	5.8	11.2	22.2	30.0
Business Services	9.1	7.9	6.5	5.1	4.4
Government	7.0	7.8	6.3	6.8	5.0
Manufacturing	22.6	23.9	25.8	20.0	16.7
Mining/Construction	15.6	14.7	15.0	14.7	15.5
Personal Services	1.3	1.9	2.2	2.0	2.3
Professional Services	10.7	9.1	5.9	3.8	3.6
Trade	17.7	18.9	17.4	15.9	14.4
Other	11.6	10.0	9.7	9.4	8.3

Sources: Computed from 1940, 1950, 1960, 1970, and 1980 Public Use Samples from U.S. Census of Population

the mid-to-late 1960s was characterized by strong economic growth and low unemployment, the argument may be correct for the South Carolina market. Another demand-side explanation assigns a central role to federal government affirmative action and civil rights activity.

IV. The Evidence

A. Supply Shifts

In this section, we examine the evidence in support of each of the major hypotheses beginning with the supply shift hypothesis.

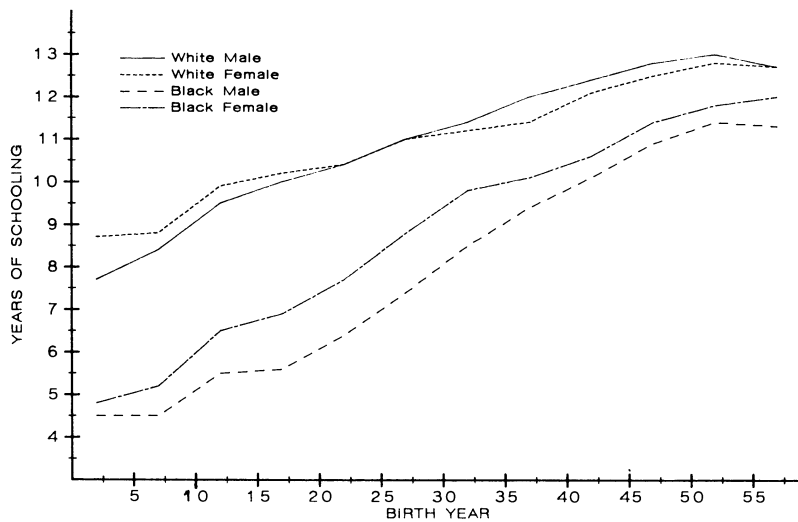


FIGURE 7. AVERAGE HIGHEST GRADE COMPLETED BY YEAR OF BIRTH

TABLE 5—MANUFACTURING AND AGRICULTURE EMPLOYMENT

Year	White Males	White Females	Black Males	Black Females
Manufacturing				
1950	110182	63883	34020	2663
1960	137357	82251	34097	3798
1970	162652	106437	50515	25819
Agriculture				
1950	72773	7730	89882	27794
1960	33318	4304	43724	14290
1970	18305	2333	15403	3737

Sources: 1950 from U.S. Bureau of the Census (1953, p. 183); 1960 from U.S. Bureau of the Census (1964, p. 346); 1970 from U.S. Bureau of the Census (1973b, p. 680).

Table 5 shows agriculture and manufacturing employment in South Carolina in 1950, 1960, and 1970 by race and sex. The numbers indicate that although black agricultural employment declined by 60,000 during the 1950s, black manufacturing employment increased by only 1,200 in the decade suggesting virtually no effect of the decline in agriculture during the 1950s on manufacturing employment. During the 1960s, black agricultural employment decreased by about 38,000 and black manufacturing employment increased by a similar amount. How-

ever, the changes by sex demonstrate that black males accounted for most of the decline in agricultural employment (28,000), but for less than half of the increase in black manufacturing employment (10,000). Most of the increase in black manufacturing employment was accounted for by females (22,000) whereas black female agricultural employment declined by only 10,000. In a companion paper (the authors and Butler) we document that only a tiny fraction of black entrants into industry came from agriculture. A simple supply shift argument can-

TABLE 6—AVERAGE AND ADJUSTED YEARS OF SCHOOL COMPLETED BY WHITE WORKERS IN TEXTILES IN 1960

Cohort	White Males		White Females	
	Average	Adjusted	Average	Adjusted
21-25	9.3	11	10.6	12
26-30	8.7	11	9.6	12
31-35	8.6	11	9.6	12
36-40	8.1	10	9.0	11
41-45	8.1	10	8.0	10
46-50	7.3	9	7.7	10
51-55	6.8	9	6.7	9
56-60	6.0	8	6.4	8

Source: Computed from 1960 Public Use Sample, U.S. Census of Population.

not account for the growth in black manufacturing employment during the 1960s or the 1950s.

B. Schooling Quality and Quantity

We next consider the schooling quality and quantity hypothesis. Table 6 gives the average education, by 5-year age cohort, of white males and white females employed in the textile industry in 1960. These averages are indicative of the education required for employment in the textile industry in 1960. Since the quality of black schooling is lower than that of whites, Table 6 also reports quality corrected or adjusted years of education. The adjusted figures are formed by adding two years to the white average and rounding to the nearest complete year or 12, whichever is greater. The purpose of this admittedly *ad hoc* adjustment is to correct for the difference in schooling quality by race to see if blacks are qualified to work in textiles on the basis of their educational attainment.

In Table 7 we show the percentage of black males and females in South Carolina with years of schooling completed greater than or equal to the white male and female adjusted averages given in Table 6 above. Already by 1960, over 25 percent of all blacks in South Carolina between the ages of 21 and 30 had sufficient education to be employed in textiles as measured by skill levels presented in Table 6. In the older cohorts, about 20 percent of black females and 15

TABLE 7—PERCENT OF BLACKS WITH AVERAGE EDUCATION LEVEL OF WHITES IN TEXTILES IN 1960

Cohort	Black Males	Black Females
21-25	25.9	31.7
26-30	25.4	22.4
31-35	17.7	18.2
36-40	15.3	20.9
41-45	8.4	21.6
46-50	14.2	20.4
51-55	10.2	11.4
56-60	16.2	18.8

Source: Computed from 1960 Public Use Sample, U.S. Census of Population.

percent of black males had sufficient education. Yet less than 1 percent of employed black females and less than 5 percent of employed black males between the ages of 21 and 65 worked in the textile industry in 1960. About 25 percent of all employed whites in the same age range worked in textiles in 1960. Lack of education is not keeping blacks out of textiles in 1960.

One implication of a pure form of the educational improvements hypothesis is that controlling for education and other individual characteristics, blacks should not be underrepresented in the textile industry in 1960 relative to 1970. Table 8 gives the coefficients on a race dummy variable from a series of linear probability regression models for males. The sample of all employed persons is

TABLE 8—RACE COEFFICIENTS FROM MALE EMPLOYMENT LINEAR PROBABILITY MODELS (*T*-STATISTICS IN PARENTHESES)

Year	Agriculture, Forestry, Fisheries				
	1940	1950	1960	1970	1980
Age					
21–25	0.19 (4.73)	0.08 (1.16)	0.16 (5.74)	0.03 (2.69)	0.01 (2.55)
26–30	0.22 (5.66)	0.28 (4.26)	0.11 (3.95)	0.05 (4.03)	0.00 (0.88)
31–35	0.19 (3.98)	0.18 (2.47)	0.08 (3.06)	0.04 (2.83)	0.01 (2.06)
36–40	0.30 (6.63)	0.17 (2.33)	0.16 (4.92)	0.02 (1.59)	0.01 (1.7)
41–45	0.24 (4.33)	-0.11 (1.09)	0.16 (4.27)	0.04 (2.34)	0.03 (3.14)
46–50	0.22 (4.04)	0.26 (2.56)	0.12 (3.14)	0.03 (1.61)	0.02 (2.49)
51–55	0.23 (3.7)	0.45 (4.26)	0.12 (2.4)	0.06 (2.46)	0.03 (2.85)
56–60	0.12 (1.73)	0.24 (1.68)	0.20 (3.83)	0.06 (2.4)	0.02 (1.69)
61–65	0.20 (2.53)	0.25 (1.66)	0.24 (2.5)	0.00 (0.04)	0.01 (0.71)
	Mining and Construction				
Year	1940	1950	1960	1970	1980
Age					
21–25	-0.03 (1.23)	0.02 (0.47)	0.07 (2.5)	-0.04 (1.99)	-0.02 (2.3)
26–30	-0.02 (0.59)	-0.05 (0.99)	0.09 (2.54)	0.01 (0.7)	-0.04 (3.39)
31–35	-0.06 (1.59)	0.07 (1.15)	0.03 (0.94)	-0.04 (1.41)	-0.01 (1.32)
36–40	0.01 (0.24)	0.03 (0.54)	-0.04 (1.25)	-0.03 (1.36)	-0.00 (0.37)
41–45	-0.04 (1.01)	0.06 (1)	0.02 (0.61)	0.06 (2.29)	0.01 (0.93)
46–50	-0.01 (0.24)	0.09 (1.26)	0.06 (1.9)	0.06 (2.5)	0.01 (0.87)
51–55	-0.05 (1.15)	-0.08 (1.42)	0.07 (1.55)	0.02 (0.62)	0.02 (1.51)
56–60	-0.01 (0.38)	-0.05 (1.05)	-0.05 (1.1)	-0.04 (1.41)	0.05 (2.64)
61–65	-0.08 (1.45)	0.08 (0.66)	-0.04 (0.69)	0.01 (0.29)	0.04 (1.71)
	Transportation, Communication, and Utilities				
Year	1940	1950	1960	1970	1980
Age					
21–25	0.01 (0.68)	0.00 (0.16)	0.01 (0.25)	-0.02 (1.07)	-0.02 (2.7)
26–30	-0.02 (0.8)	-0.02 (0.5)	0.02 (0.76)	0.00 (0.19)	-0.02 (2.27)
31–35	0.00 (0.00)	0.01 (0.14)	0.01 (0.47)	0.02 (1.05)	-0.01 (1.05)
36–40	0.01 (0.39)	0.10 (2.04)	0.04 (1.4)	-0.01 (0.69)	-0.00 (0.25)

TABLE 8—CONTINUED

Transportation, Communication, and Utilities					
Year	1940	1950	1960	1970	1980
41-45	-0.03 (1.17)	0.14 (2.03)	0.04 (1.48)	-0.00 (0.17)	-0.00 (0.22)
46-50	0.03 (1.46)	-0.03 (0.71)	-0.00 (0.04)	0.02 (1.02)	0.00 (0.07)
51-55	-0.03 (1.1)	-0.03 (1.31)	0.03 (0.83)	0.06 (2.79)	0.01 (0.81)
56-60	-0.04 (1.21)	-0.04 (1.21)	0 (0.01)	0.02 (1.21)	0.02 (1.38)
61-65	0.01 (0.59)	-0.04 (0.48)	-0.02 (0.52)	-0.00 (0.04)	0.03 (1.4)
Wholesale and Retail Trade					
Year	1940	1950	1960	1970	1980
Age					
21-25	0.03 (1.31)	-0.08 (1.39)	-0.01 (0.23)	-0.05 (2.11)	-0.05 (3.85)
26-30	-0.03 (1.43)	-0.13 (2.24)	0.02 (0.47)	-0.05 (2)	-0.07 (5.81)
31-35	0.03 (1.03)	-0.09 (1.4)	-0.03 (0.73)	0.00 (0.03)	-0.06 (4.9)
36-40	-0.05 (1.56)	-0.06 (1.02)	-0.03 (0.84)	0.04 (1.32)	-0.05 (3.42)
41-45	-0.03 (0.75)	-0.02 (0.3)	0.02 (0.42)	-0.01 (0.27)	-0.05 (3.09)
46-50	-0.10 (2.9)	-0.01 (0.16)	-0.03 (0.97)	-0.04 (1.54)	-0.05 (2.83)
51-55	-0.04 (0.93)	-0.11 (1.12)	0.02 (0.33)	-0.06 (1.91)	-0.04 (2.31)
56-60	-0.06 (1.8)	-0.14 (1.52)	-0.07 (1.48)	-0.05 (1.64)	-0.05 (2.24)
61-65	-0.02 (0.5)	-0.14 (0.95)	-0.07 (0.8)	-0.05 (1.2)	-0.11 (3.61)
Federal Government					
Year	1940	1950	1960	1970	1980
Age					
21-25	-0.04 (2.86)	. ^a . ^a	0.00 (0.01)	0.00 (0.04)	0.00 (0.88)
26-30	-0.01 (0.90)	-0.01 (0.44)	-0.00 (0.10)	0.00 (0.16)	0.00 (0.30)
31-35	0.01 (0.52)	-0.00 (0.24)	0.02 (1.00)	-0.00 (0.27)	-0.00 (0.56)
36-40	-0.01 (0.88)	0.03 (1.90)	-0.01 (0.54)	0.00 (0.20)	-0.00 (0.58)
41-45	0.00 (0.05)	-0.01 (0.19)	-0.01 (0.66)	-0.01 (0.67)	0.00 (0.24)
46-50	0.01 (0.31)	-0.00 (0.06)	-0.01 (0.65)	-0.01 (0.67)	0.00 (0.55)
51-55	0.01 (0.76)	-0.03 (0.57)	-0.01 (0.41)	0.00 (0.15)	0.01 (0.82)
56-60	-0.01 (0.73)	. .	0.01 (0.26)	0.03 (1.45)	0.01 (0.57)
61-65	0.01 (0.35)	. .	-0.03 (0.82)	0.01 (0.52)	0.01 (0.63)

TABLE 8—CONTINUED

State Government (Excluding School Teachers)					
Year	1940	1950	1960	1970	1980
Age					
21–25	–0.00 (0.63)	. ^a .	. .	–0.00 (0.18)	0.01 (2.20)
26–30	–0.00 (0.25)	–0.00 (0.38)	–0.00 (0.42)	–0.01 (0.91)	0.01 (1.13)
31–35	–0.01 (0.61)	. .	–0.00 (0.52)	–0.00 (0.48)	0.00 (0.36)
36–40	–0.01 (0.50)	. .	–0.00 (0.25)	–0.00 (0.61)	0.00 (0.89)
41–45	–0.01 (0.61)	. .	0.00 (0.04)	–0.00 (0.65)	0.00 (0.45)
46–50	–0.01 (0.90)	. .	–0.00 (0.42)	0.00 (0.75)	0.02 (2.75)
51–55	–0.03 (1.33)	–0.02 (0.54)	–0.00 (0.21)	–0.00 (0.42)	–0.01 (1.19)
56–60	–0.02 (1.01)	. .	–0.00 (0.17)	–0.01 (0.98)	0.01 (1.00)
61–65	–0.01 (0.59)	. .	–0.01 (0.41)	–0.00 (0.35)	–0.00 (0.32)
Local Government (Excluding School Teachers)					
Year	1940	1950	1960	1970	1980
Age					
21–25	. .	–0.00 (0.13)	0.01 (0.81)	–0.01 (1.08)	–0.00 (0.59)
26–30	. .	. .	–0.01 (0.60)	–0.01 (0.76)	–0.00 (0.23)
31–35	. .	0.07 (3.29)	–0.00 (0.35)	–0.00 (0.10)	0.00 (0.40)
36–40	. .	–0.01 (0.46)	0.00 (0.08)	0.01 (1.30)	0.00 (0.24)
41–45	. .	–0.04 (1.05)	0.01 (0.48)	0.01 (1.43)	–0.00 (0.12)
46–50	. .	–0.04 (1.96)	–0.03 (1.92)	–0.01 (1.28)	–0.01 (1.41)
51–55	. .	–0.02 (0.65)	0.01 (0.82)	–0.03 (2.28)	0.01 (1.84)
56–60	. .	. .	–0.04 (1.61)	–0.01 (0.76)	–0.01 (0.52)
61–65	. .	–0.03 (0.48)	–0.03 (1.03)	–0.03 (1.80)	–0.01 (0.50)
Personal Services					
Year	1940	1950	1960	1970	1980
Age					
21–25	0.02 (1.41)	0.04 (1.42)	0.02 (1.87)	0.01 (1.4)	–0.00 (0.53)
26–30	0.03 (1.58)	–0.01 (0.54)	0.02 (1.15)	0.01 (0.84)	–0.00 (1.41)
31–35	0.07 (3.08)	0.08 (2.68)	0.03 (2.29)	0.00 (0.32)	0.00 (0.76)
36–40	0.04 (2.02)	0.02 (1.11)	0.01 (0.69)	0.02 (2.02)	0.01 (2.01)
41–45	0.01 (0.38)	0.07 (2.05)	0.04 (2.99)	0.01 (1.12)	0.00 (0.96)

TABLE 8—CONTINUED

Personal Services					
Year	1940	1950	1960	1970	1980
46–50	0.01 (0.81)	0.05 (0.95)	0.05 (3.17)	0.04 (3.21)	0.02 (3.14)
51–55	0.07 (3.04)	.	–0.02 (0.9)	0.02 (1.24)	0.00 (0.07)
56–60	0.06 (2.2)	0.03 (0.46)	0.10 (3.06)	0.05 (2.73)	0.02 (2.28)
61–65	0.02 (1.67)	.	0.01 (0.34)	0.05 (2.24)	0.04 (3.72)
Professional Services					
Year	1940	1950	1960	1970	1980
Age					
21–25	0.01 (0.49)	0.05 (1.82)	0.08 (3.97)	0.03 (2.00)	0.02 (2.63)
26–30	0.04 (2.87)	0.03 (1.2)	0.07 (3.18)	0.04 (2.55)	0.04 (4.01)
31–35	0.04 (2.19)	0.01 (0.22)	0.08 (3.81)	0.05 (3.07)	0.04 (4.09)
36–40	0.03 (1.62)	0.07 (2.16)	0.05 (2.3)	0.07 (3.92)	0.03 (2.72)
41–45	0.05 (2.39)	0.03 (0.55)	0.02 (0.9)	0.04 (2.13)	0.05 (4.58)
46–50	0.03 (1.65)	0.04 (0.88)	0.05 (2.22)	0.06 (3.04)	0.06 (4.63)
51–55	0.04 (2.25)	0.09 (1.64)	0.10 (3.26)	0.08 (3.9)	0.06 (4.7)
56–60	0.04 (2.00)	0.00 (0.05)	0.02 (0.7)	0.10 (4.26)	0.05 (3.27)
61–65	0.00 (0.12)	–0.01 (0.25)	0.12 (2.13)	0.16 (4.18)	0.11 (4.95)
Recreation Services					
Year	1940	1950	1960	1970	1980
Age					
21–25	0.01 (1.03)	–0.02 (0.94)	–0.01 (1.13)	0.01 (2.28)	–0.01 (1.54)
26–30	0.00 (0.11)	0.01 (0.54)	0.01 (1.97)	–0.00 (0.54)	–0.00 (0.6)
31–35	0.01 (2.24)	.	–0.00 (0.25)	0.00 (0.76)	0.00 (1.46)
36–40	0.00 (0.03)	.	0.00 (0.55)	0.00 (0.44)	0.00 (0.01)
41–45	–0.004 (0.42)	.	.	0.00 (0.01)	0.00 (1.27)
46–50	–0.01 (0.77)	–0.01 (0.23)	0.01 (1.27)	0.01 (2.02)	0.01 (1.77)
51–55	0.01 (1.23)	–0.01 (0.33)	–0.00 (0.51)	0.00 (0.41)	0.00 (0.99)
56–60	–0.01 (0.63)	.	0.03 (2.54)	0.01 (1.16)	0.00 (0.48)
61–65	–0.00 (0.2)	.	–0.01 (0.55)	–0.00 (0.44)	0.01 (0.82)

TABLE 8—CONTINUED

Financial and Business Services					
Year	1940	1950	1960	1970	1980
Age					
21-25	-0.00 (0.37)	0.01 (0.24)	-0.04 (2.34)	-0.03 (2.18)	-0.02 (2.45)
26-30	0.01 (0.39)	-0.01 (0.28)	-0.04 (1.49)	-0.02 (1.2)	-0.02 (2.66)
31-35	-0.01 (0.76)	-0.04 (1.14)	-0.04 (1.8)	-0.01 (0.38)	-0.04 (4.38)
36-40	-0.01 (0.44)	-0.05 (1.11)	-0.04 (1.54)	-0.05 (2.7)	-0.03 (3.28)
41-45	0.02 (1.39)	0.01 (0.26)	-0.01 (0.27)	-0.05 (2.64)	-0.02 (2.03)
46-50	0.00 (0.25)	0.03 (0.53)	-0.03 (1.57)	-0.04 (2.37)	-0.04 (3.08)
51-55	-0.01 (0.34)	-0.05 (0.83)	0.01 (0.21)	-0.01 (0.67)	-0.03 (2.76)
56-60	0.05 (1.95)	0.03 (0.85)	-0.01 (0.21)	0.01 (0.33)	-0.04 (2.46)
61-65	-0.01 (0.31)	-0.01 (0.24)	0.05 (0.94)	-0.01 (0.32)	-0.05 (2.34)
Traditional Manufacturing (Non-Textile)					
Year	1940	1950	1960	1970	1980
Age					
21-25	0.04 (1.47)	0.14 (2.30)	0.06 (1.79)	0.05 (2.91)	0.02 (1.78)
26-30	0.03 (0.93)	0.14 (2.79)	0.02 (0.53)	-0.00 (0.17)	0.03 (4.07)
31-35	0.09 (2.85)	-0.00 (0.02)	0.03 (1.06)	0.02 (1.05)	0.03 (3.68)
36-40	0.03 (0.86)	0.08 (1.51)	0.14 (4.16)	0.06 (2.70)	0.01 (1.26)
41-45	0.01 (0.18)	0.03 (0.36)	-0.01 (0.29)	0.06 (2.58)	0.02 (1.48)
46-50	. (0.04)	0.03 (0.40)	0.01 (0.35)	0.06 (2.78)	0.04 (3.11)
51-55	. (0.28)	0.02 (0.33)	0.02 (0.36)	0.07 (2.63)	0.05 (3.51)
56-60	0.02 (0.50)	0.20 (2.42)	0.08 (2.02)	0.02 (0.92)	0.03 (1.96)
61-65	-0.00 (0.16)	0.06 (0.66)	-0.03 (0.52)	0.07 (2.35)	0.06 (2.93)
Nontraditional Manufacturing (Non-Textile)					
Year	1940	1950	1960	1970	1980
Age					
21-25	-0.00 (0.10)	-0.01 (0.72)	-0.02 (1.00)	0.03 (1.58)	0.01 (1.42)
26-30	-0.01 (0.99)	-0.01 (0.40)	-0.03 (1.20)	-0.03 (1.43)	0.01 (1.15)
31-35	-0.02 (1.46)	-0.03 (0.98)	-0.02 (0.80)	-0.04 (1.76)	0.01 (0.89)
36-40	-0.02 (1.68)	0.01 (0.43)	-0.01 (0.30)	-0.02 (1.01)	-0.00 (0.15)
41-45	0.02 (1.41)	0.02 (0.39)	-0.01 (0.59)	-0.03 (1.50)	-0.01 (0.62)

TABLE 8—CONTINUED

Nontraditional Manufacturing (Non-Textile)					
Year	1940	1950	1960	1970	1980
46-50	0.00 (0.26)	-0.05 (1.57)	0.02 (0.79)	-0.03 (1.53)	-0.01 (0.78)
51-55	. ^a	-0.05 (1.05)	-0.01 (0.44)	0.02 (0.77)	-0.01 (0.59)
56-60	-0.01 (0.74)	-0.04 (0.74)	-0.03 (1.07)	0.02 (0.94)	0.01 (0.94)
61-65	-0.01 (0.43)	. ^a	-0.03 (0.57)	0.01 (0.28)	-0.01 (0.26)
Chemicals					
Year	1940	1950	1960	1970	1980
Age					
21-25	0.03 (3.11)	0.00 (0.08)	-0.01 (0.76)	-0.02 (1.60)	-0.01 (1.81)
26-30	0.03 (2.58)	0.00 (0.18)	-0.00 (0.08)	-0.02 (1.28)	0.00 (0.12)
31-35	0.02 (1.68)	0.05 (1.92)	-0.01 (0.36)	-0.01 (0.69)	0.00 (0.10)
36-40	0.01 (1.76)	-0.01 (0.36)	-0.03 (1.78)	0.01 (0.52)	0.01 (1.08)
41-45	-0.00 (0.25)	0.03 (0.87)	0.02 (0.98)	-0.02 (1.43)	0.01 (0.80)
46-50	0.00 (0.75)	-0.00 (0.11)	0.01 (0.56)	0.01 (0.53)	-0.01 (0.82)
51-55	. ^a (0.48)	. ^a	-0.03 (1.35)	0.01 (0.49)	-0.02 (2.35)
56-60	0.01 (0.60)	0.04 (1.18)	0.02 (0.94)	0.01 (0.63)	-0.00 (0.41)
61-65	0.01 (0.57)	. ^a	-0.00 (0.08)	-0.00 (0.24)	0.01 (0.43)
Apparel					
Year	1940	1950	1960	1970	1980
Age					
21-25	-0.00 (0.29)	.	-0.01 (0.90)	-0.01 (1.21)	0.01 (2.83)
26-30	. ^a	.	-0.02 (1.45)	0.01 (2.34)	0.00 (1.24)
31-35	.	.	0.00 (0.99)	0.01 (0.53)	0.00 (0.24)
36-40	-0.00 (0.53)	-0.01 (0.74)	-0.00 (0.31)	-0.01 (0.93)	0.00 (0.09)
41-45	-0.00 (0.11)	-0.02 (0.91)	-0.01 (0.80)	-0.01 (1.05)	-0.00 (0.28)
46-50	.	.	-0.00 (0.20)	-0.01 (0.73)	-0.01 (1.04)
51-55	.	.	0.00 (0.15)	-0.01 (0.71)	-0.01 (0.99)
56-60	.	.	-0.02 (1.10)	-0.00 (0.38)	-0.01 (1.38)
61-65	.	.	-0.00 (0.08)	-0.00 (0.09)	0.00 (0.11)

TABLE 8—CONTINUED

Year	Textiles				
	1940	1950	1960	1970	1980
Age					
21–25	–0.26 (8.89)	–0.23 (4.04)	–0.31 (8.49)	0.02 (0.63)	0.05 (4.95)
26–30	–0.30 (9.14)	–0.22 (3.75)	–0.24 (5.87)	–0.02 (0.95)	0.05 (5.39)
31–35	–0.35 (8.76)	–0.29 (4.28)	–0.20 (5.78)	–0.06 (2.16)	0.02 (1.49)
36–40	–0.34 (9.73)	–0.38 (5.68)	–0.23 (6.13)	–0.11 (4.03)	0.01 (0.78)
41–45	–0.22 (5.93)	–0.18 (2.64)	–0.27 (5.93)	–0.07 (2.75)	–0.03 (1.89)
46–50	–0.18 (5.24)	–0.34 (3.93)	–0.22 (5.88)	–0.14 (4.80)	–0.07 (4.17)
51–55	–0.22 (5.34)	–0.18 (2.17)	–0.29 (5.04)	–0.21 (6.97)	–0.08 (4.53)
56–60	–0.13 (3.41)	–0.26 (2.89)	–0.25 (5.01)	–0.20 (5.92)	–0.11 (5.16)
61–65	–0.14 (2.93)	–0.15 (1.52)	–0.16 (2.30)	–0.20 (5.21)	–0.13 (4.87)

^a “.” indicates insufficient data to compute estimate.

broken down by sex and 5-year cohorts.⁵ The left-hand side variable is equal to one if the individual is employed in a given industry and zero otherwise. The right-hand side variables include an intercept, years of schooling, years of schooling squared, and a race dummy equal to one for blacks and zero for whites. The regressions are performed for each Census year from 1940 to 1980.⁶ A full report of these regressions is given in Heckman, Payner, and Butler (1989). The industry categories, based on SIC codes, are:

1. Agriculture, forestry, and fisheries
2. Mining and construction
3. Transportation, communication, and utilities
4. Wholesale and retail trade
5. Federal government
6. State government

⁵The regressions were also run using civilian labor force and total population as the sample instead of employed persons. The results described in the text are unaffected by these changes in the sample.

⁶Selected regressions were repeated using a probit specification to correct for heteroscedasticity. The results were qualitatively similar to those reported here.

7. Local government
8. Personal services
9. Professional services
10. Recreation services
11. Finance and business services
12. Traditional manufacturing—paper, printing, publishing, food products, stone, clay, miscellaneous manufactures, lumber, and furniture
13. Nontraditional manufacturing—transportation equipment, electrical and non-electrical machinery, metal industries and foundries and machine shops—industries that enter the state on a large scale after 1945
14. Chemicals
15. Apparel
16. Textiles.

A nonzero coefficient on the race dummy may be interpreted as arising from discrimination on the demand side. Controlling for individual characteristics, the coefficient on the dummy variable indicates whether blacks are more or less likely than whites to be employed in a given industry. Alternatively, and less plausibly, the coefficient on the dummy may be interpreted as the outcome of racial sectoral preferences on the supply

side. In either case, the coefficient tells the relative likelihood of finding a black worker in a given industry, controlling for individual characteristics.

The race dummy coefficients are reported for these industries along with the least squares *t*-statistics in parentheses. Prior to 1960, we find that adjusting for qualifications black males are not underrepresented in *any* industry except textiles. In fact, black males are overrepresented in agriculture and professional services as of 1960. It is important to note that in 1960 blacks are underrepresented in the nontraditional manufacturing industries in relation to their share in the population and the labor force. However, controlling for individual characteristics, Table 8 shows that black males are not underrepresented in these industries.

For black females compared to white females the story is quite similar. (See the authors and Butler). Besides being underrepresented in textiles, black females are also underrepresented in the closely allied apparel industry. Also, in 1960 black females are overrepresented in most industries, including nontraditional manufacturing, chemicals, government, services, and trade.

The 1970 regressions show little change from 1960 for black males except in textiles. In the younger cohorts of textile workers, blacks are no longer underrepresented and in the older cohorts, they are much less so than in 1960. For black females, the 1960 to 1970 comparison yields similar results. The younger cohorts are no longer underrepresented in textiles by 1970, and the older cohorts are less underrepresented. Also, a similar story is true for apparel workers. (See the authors and Butler). These improvements for younger workers are consistent with theories that stress the incentives of making firm-specific investments in younger workers with longer expected working lives rather than in older workers.

The regressions show that, controlling for education and other individual characteristics, blacks are significantly underrepresented in the textile industry in 1960 and before. In 1970, however, the underrepresentation disappears for the younger cohorts

and diminishes considerably for the older cohorts. If educational improvement led to the black gains in textile employment, the regressions controlling for education would have shown no underrepresentation of blacks in 1960, and no change in underrepresentation from 1960 to 1970.

In a companion paper (the authors and Butler) we examine the effect of accounting for improvements in black schooling quality on our analysis. We run regressions using quality-corrected education variables formed using data on educational expenditure by race. The qualitative results are the same as those obtained without adjusting for quality of education.

As a final test, we ask the question: what happens to the probability of finding a black employed in the textile industry as the average level of black education rises from its 1960 to its 1970 level? The results for black males are shown in Table 9 for selected industries using the 1970 linear probability model regression coefficients.⁷ For black males in most industries, including nontraditional manufacturing, chemicals, different levels of government, financial and business services and wholesale and retail trade, the effect of increasing education is to increase the probability of employment. In textiles, as well as agriculture, the effect is to actually *decrease* the probability of employment. Textiles is a low skill industry. Increasing education has the effect of decreasing the probability of employment in low skill industries.

Although blacks had already made gains in education relative to whites in the years leading up to 1965, the evidence presented here does not support the claim that educational improvements led to increased black employment and wages in the textile industry. First, the gains in schooling measured by years completed and expenditure per student per year came gradually. Second, by 1960, between one-fifth and one-fourth of the adult blacks in South Carolina had sufficient education to work in the textile industry. How-

⁷This analysis was repeated using the 1960 regression coefficients with qualitatively similar results.

TABLE 9—THE EFFECT OF INCREASING BLACK MALE EDUCATION FROM ITS 1960 TO ITS 1970 LEVEL ON THE PROBABILITY OF EMPLOYMENT (in Percents) SELECTED INDUSTRIES

Industry	Age				
	21-25	26-30	31-35	36-40	41-45
Agriculture, Forestry, and Fisheries	-3.1	-2.6	-2.2	-2.1	-6.9
Transportation, Communication, and Utilities	-.1	1.2	1.2	1.0	2.5
Wholesale and Retail Trade	1.8	1.4	2.7	2.2	4.7
Federal Government	.5	.1	.1	.1	.5
State Government					
(Excluding School Teachers)	.3	.2	.1	.1	-.4
Local Government					
(Excluding School Teachers)	6.2	.2	-.1	.2	-.4
Professional Services	2.7	1.4	.3	2.7	-3.7
Financial and Business Services	-.3	.5	1.2	.3	1.4
Nontraditional Manufacturing	9.0	1.0	1.5	0.7	1.0
Chemicals	.8	.7	.4	.5	1.0
Textiles	-1.7	-2.2	-1.5	-2.8	.1

Industry	Age			
	46-50	51-55	56-60	61-65
Agriculture, Forestry, and Fisheries	-1.9	-.6	-1.2	-1.2
Transportation, Communication, and Utilities	1.0	.5	.6	.2
Wholesale and Retail Trade	2.3	1.2	1.1	.8
Federal Government	.2	.0	.0	.0
State Government				
(Excluding School Teachers)	.2	.0	.0	.0
Local Government				
(Excluding School Teachers)	-.3	.1	.3	.1
Professional Services	-.8	-.4	.0	-.3
Financial and Business Services	.6	.3	.4	.0
Nontraditional Manufacturing	1.8	.6	.2	1.0
Chemicals	.2	.1	.1	.1
Textiles	-2.0	-.7	-1.2	-.2

Source: Based on regressions reported in Heckman, Payner, and Butler (1988). For Education, Public Use Samples, U.S. Census of Population, for 1960 and 1970.

ever, black females were practically excluded and black males were employed in very small numbers in textiles. Third, even controlling for education, blacks were found to be severely underrepresented in textiles in 1960, but much less so in 1970. Also, in all other industries with the exception of apparel, blacks were not found to be underrepresented when educational background is taken into account. Finally, if years of schooling of blacks are increased, the probability of blacks being employed in textiles actually decreases.

The evidence presented here confirms the powerful role of education in elevating black

employment in other sectors of the economy, especially government and the emerging new industrial sector of the state that apparently never discriminated against blacks (or at least black qualifications) on a statistically or numerically significant scale. As black skills improved, so did their representation in these sectors.

C. The Tight Labor Market Hypothesis

With statewide aggregate data, the tight labor market hypothesis is not testable. The black breakthrough in textiles is an event that occurs only once. Many other events

TABLE 10—SOUTH CAROLINA POPULATION AND POPULATION SHARES IN SELECTED COUNTIES IN 1960

County	Percentage		Size of Population (Thousands)
	White	Black	
Abbeville	68	32	21.4
Anderson	80	20	98.5
Cherokee	79	21	35.2
Chester	60	40	30.9
Greenville	82	18	209.8
Lancaster	73	27	39.4
Laurens	70	30	47.6
Oconee	89	11	40.2
Orangeburg	40	60	68.6
Pickens	90	10	46.0
Spartanburg	78	22	156.8

Source: U.S. Bureau of the Census (1964, p. 42)

that occur contemporaneously with the black breakthrough are equally plausible candidates for being the cause. Without more variation in the data one cannot discriminate among the possibilities. Although we do not have evidence from other comparably tight labor market episodes in South Carolina, we do have a time-series of cross sections on the black breakthrough as it occurs in different counties of South Carolina. Even with these data, the labor market hypothesis is not testable if one believes that South Carolina is a single labor market or that all counties are identical. In that case, a tight labor market could cause simultaneous effects across counties just as uniformly applied government policy could. However, if the counties of South Carolina do not form a single labor market, the two hypotheses can be differentiated. A tight labor market would affect the various counties differently, whereas uniformly applied government policy would plausibly affect all counties simultaneously. We argue that the counties of South Carolina are different labor markets and that the simultaneous breakthrough of blacks in textiles across those counties is evidence against the labor market hypothesis and in favor of the government activity hypothesis. We begin by examining data from 11 South Carolina counties for which we can form a consistent time-series on textile employment by race and sex for the period 1910–77.

Most of the 11 counties are in the Piedmont region in the northeast portion of the state. However, the south central and central portions of the state are also represented.

Table 10 shows population levels and shares respectively by race and sex for these 11 counties in 1960. The counties vary greatly in racial composition. They also vary greatly in size of the population.

Table 11 shows total employment and employment in selected industries in 1960. The county population employed varies from 34 percent to 41 percent. The proportion of the employed working in manufacturing varies from 55 percent to 20 percent. The counties vary substantially in the size of the manufacturing work force. To the extent that regional labor markets exist, we expect the effect of changing labor market conditions to be different across counties. Anthony Tang (1958) documents sharp differences among contiguous Piedmont counties in South Carolina in many indicators of economic development.

Figures 8 to 18 show employment shares by race and sex in the textile industry for these 11 counties from 1910 to 1977. In 7 of the 11 counties, the textile breakthrough for black females occurs in the fiscal-year 1965. The textile industry data are collected on a fiscal-year basis. Therefore fiscal 1966 covers July 1965 through June 1966. In the four remaining counties, the black female break-

TABLE 11—SOUTH CAROLINA COUNTY-LEVEL EMPLOYMENT BY INDUSTRY IN 1960

County	Total Employment	Percent Employed in:			Percent of Manufacturing Employees in Textiles	Percent of Population Employed
		Manufacturing	Textiles	Agriculture		
Abbeville	7763	45	27	9	59	36
Anderson	40401	47	33	6	69	41
Cherokee	12980	46	26	7	57	37
Chester	11232	44	35	10	79	36
Greenville	80944	39	20	2	51	39
Lancaster	14898	55	46	4	84	38
Laurens	17647	47	26	8	54	37
Oconee	15199	47	34	8	71	38
Orangeburg	23427	20	2	25	10	34
Pickens	18313	53	21	4	40	40
Spartanburg	61762	44	29	5	65	39

Source: All variables except textile employment from U.S. Bureau of the Census (1964, p. 42); Textile employment data from Department of Labor of the State of South Carolina as described in the Data Appendix.

Note: South Carolina Department of Labor data are average annual employment during the fiscal year July 1959 to June 1960. Census data are at a point in time during the Census survey.

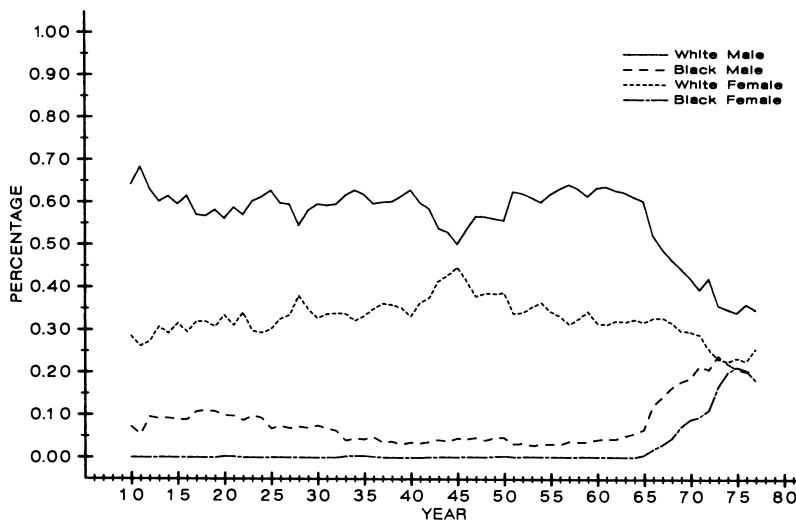


FIGURE 8. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, ABBEVILLE COUNTY

through in textiles occurs in fiscal-year 1966. Since these are fiscal years, we cannot rule out the possibility that the breakthrough occurs in calendar year 1965 in all counties.

After 55 years of near total exclusion from the industry, black females became employed in significant numbers for the first

time in the mid-1960s in each county. Similarly, after constant but low utilization in the industry prior to the mid-1960s, black males significantly increase their employment in textiles in fiscal years 1965 or 1966 in each county. If the state of South Carolina were a single homogeneous labor market with no

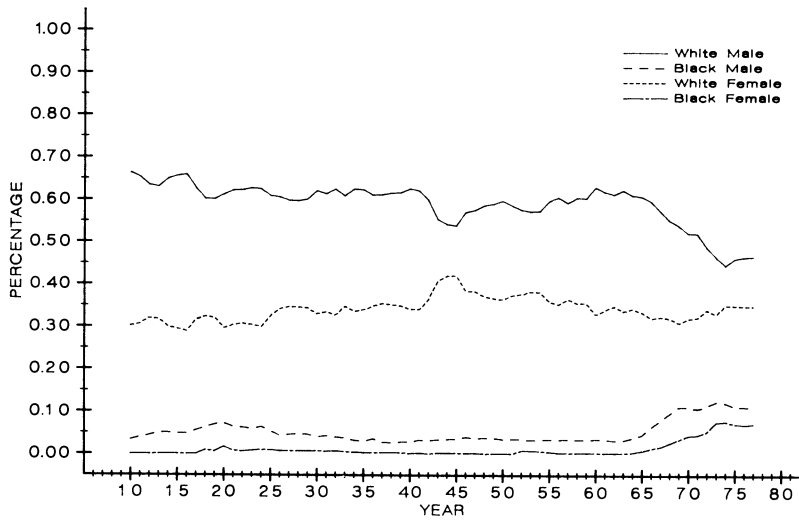


FIGURE 9. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, ANDERSON COUNTY

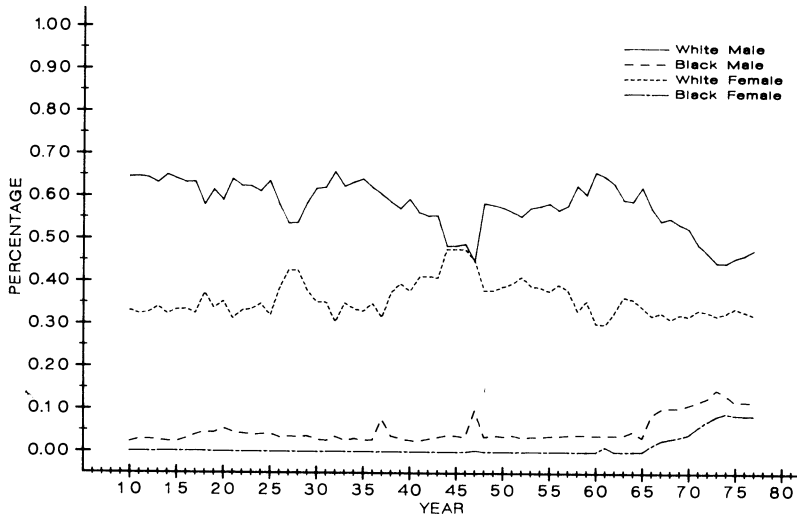


FIGURE 10. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, CHEROKEE COUNTY

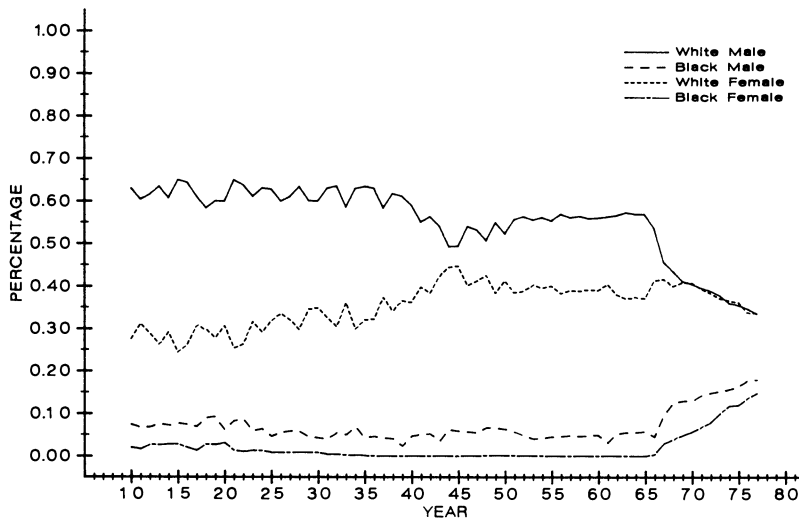


FIGURE 11. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, CHESTER COUNTY

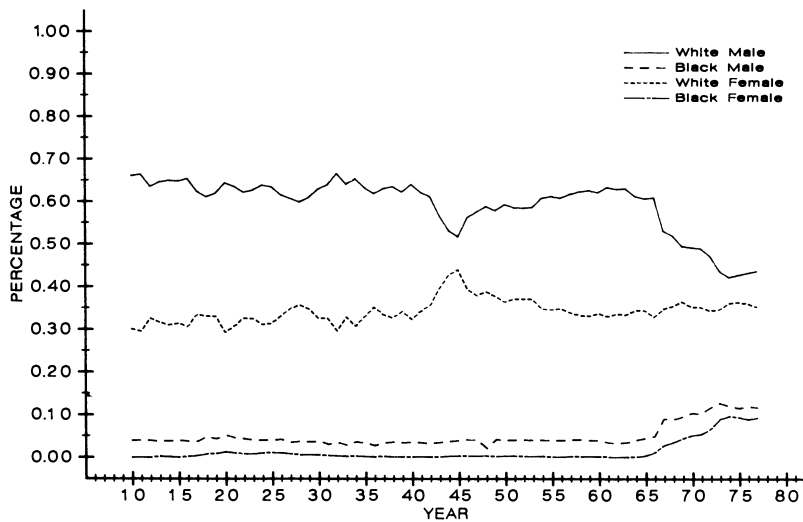


FIGURE 12. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, GREENVILLE COUNTY

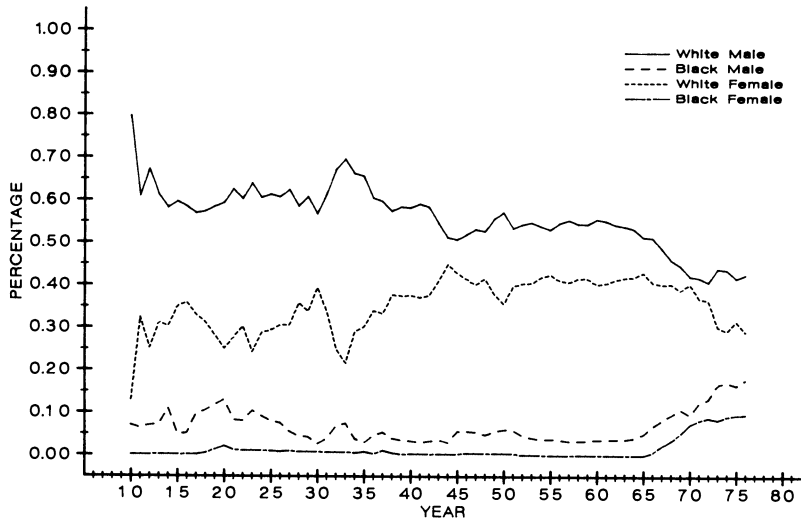


FIGURE 13. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, LANCASTER COUNTY

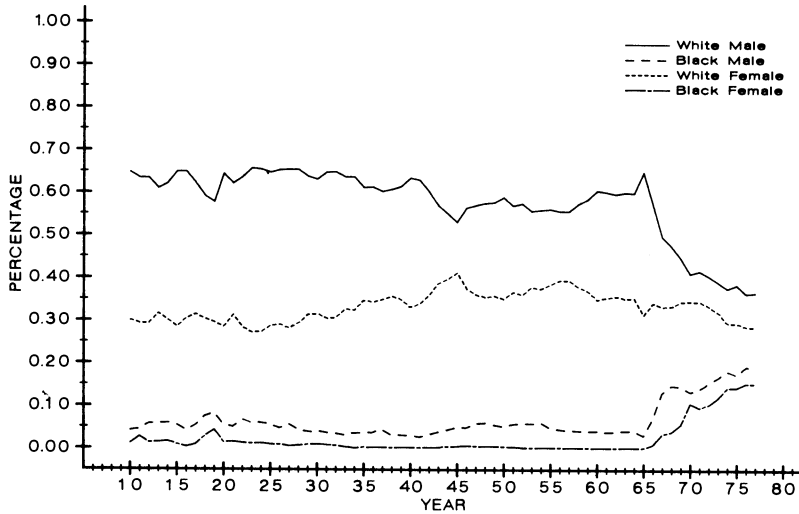


FIGURE 14. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, LAURENS COUNTY

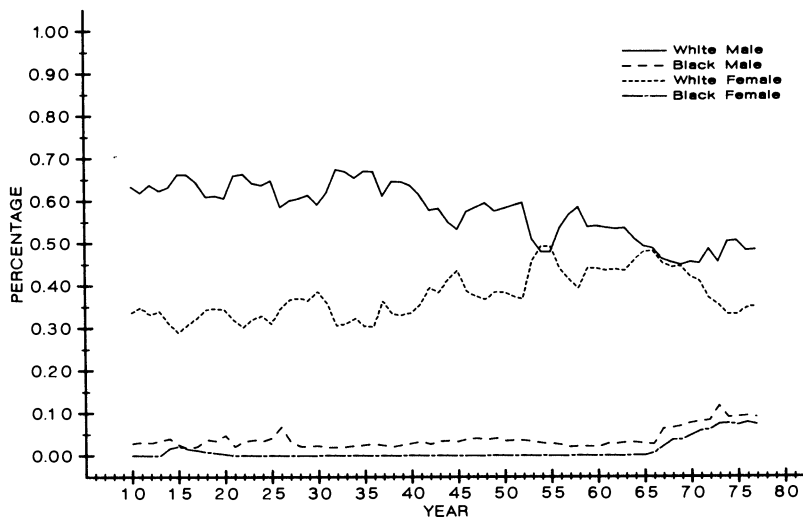


FIGURE 15. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, OCONEE COUNTY

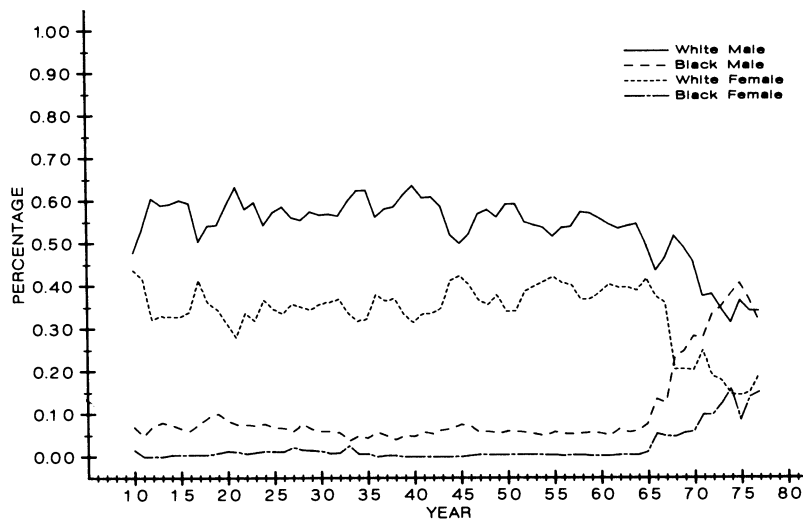


FIGURE 16. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, ORANGEBURG COUNTY

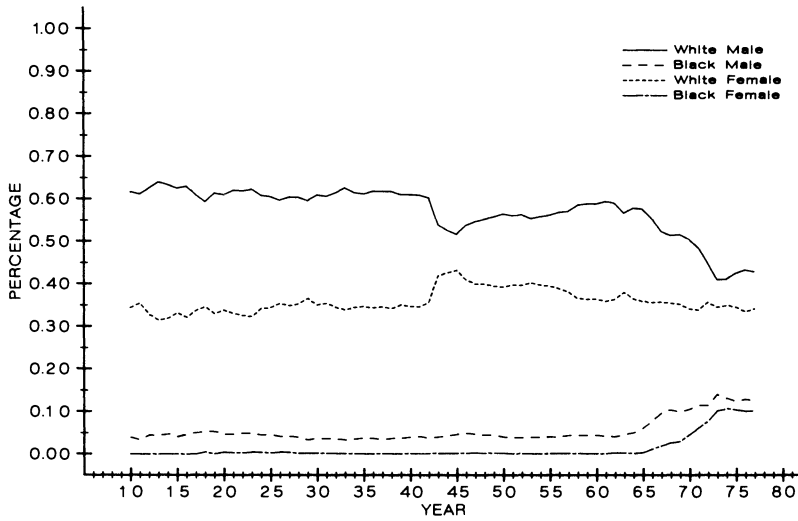


FIGURE 17. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, PICKENS COUNTY

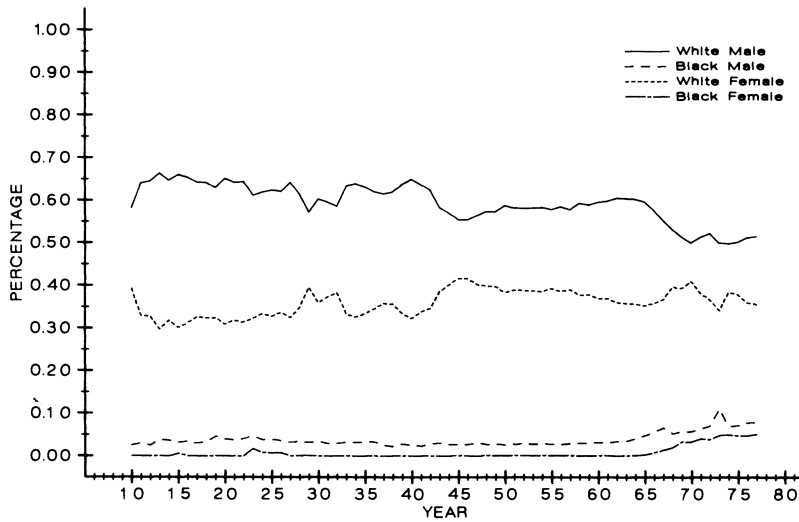


FIGURE 18. EMPLOYMENT SHARES IN THE SOUTH CAROLINA TEXTILE INDUSTRY, SPARTANBURG COUNTY

mobility costs for workers, a tight labor market might produce the simultaneous breakthrough of black employment of the type exhibited here. However, given significant differences in employment, industrialization, and racial demographics across counties, we conclude that South Carolina is not a single labor market. Therefore, we do not expect changing labor market conditions alone to have the same impact on black textile employment simultaneously across all counties.

D. *The Government Activity Hypothesis*

Evidence supporting the government activity hypothesis comes from the time-series on statewide textile employment and wages by demographic group presented above. The share of black textile employment was virtually unaffected by events that occurred from 1910 to 1965. This is especially true for black female employment. Under the tight labor market hypothesis we might expect some changes in black employment shares in the upswings of the numerous business cycles that occur prior to 1965. The government activity hypothesis predicts that significant changes in black employment shares and wages would occur after the 1964 Civil Rights Acts but has no prediction about black improvement in previous periods. The simultaneous breakthrough of blacks in counties varying in size, racial composition, and industrial composition is consistent with uniformly applied government policy.

The fact that white male textile employment begins decreasing at about the same time as black employment increases is also consistent with the government activity hypothesis. See Figure 19.⁸ On the demand side, firms complying with government policy would likely employ fewer whites per unit output expansion as their demand for blacks increased. Evidence documenting that this occurred is given below. Examination of the wage data gives a supply-side explanation for the decrease in white male textile

employment that occurred after 1965. After increasing from 1959 through 1965, white male real wages were practically unchanged from 1966 to 1971 despite growth in employment and output in the industry. See Figure 20. Real wages for blacks increased through the end of the 1960s. If textile firms were discriminating against blacks before 1965, but not in later years, then under the government activity hypothesis, white wages would stop rising as a large pool of black labor became available to textiles for the first time. Black wages would continue to rise over time as blacks become employed in higher paying occupations.

White male real wages stop growing in textiles after 1966. As their wages in textiles declined relative to those in other industries, white males left textiles for other industries. The slowing of wage growth for white males does not occur in all industries. Figure 21 shows real wages in non-textile manufacturing. For white males, real wages continue to grow after 1965 at a rate similar to that experienced prior to 1965. Wages for other demographic groups in these industries also grew throughout most of the 1960s. Thus there are plausible demand- and supply-side explanations consistent with the government activity hypothesis that account for the white male departure from textiles.

In an effort to assess the contributions of government and the tight labor market to the breakthrough in black employment, we estimate reduced form employment by race equations for textiles using the county-level data. Wage data by race and sex are not available at the county level. For the 11 South Carolina counties for which consistently defined textile data are available, we fit pooled time-series-cross-section equations for the years 1947 through 1971.

The regression equations are of the form

$$(1) \quad Y_{ijt} = X_{it}a_j + f_{ij} + g_{jt} + \eta_{ijt},$$

where i refers to the county, j refers to the demographic group, and t refers to time. The fixed-effects f_{ij} and g_{jt} , are, respectively, county-specific and year-specific inter-

⁸This decline occurs in the 11 counties analyzed in the preceding section and for the state as a whole.

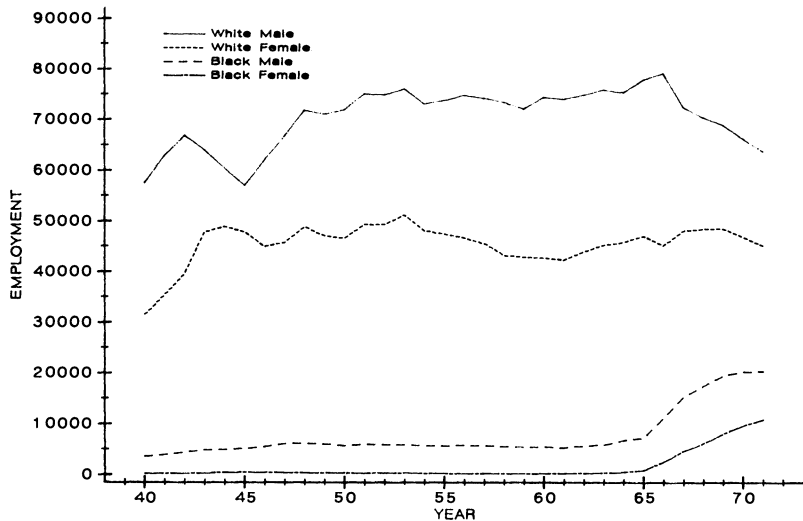


FIGURE 19. AGGREGATE EMPLOYMENT IN THE SOUTH CAROLINA TEXTILE MANUFACTURING INDUSTRY

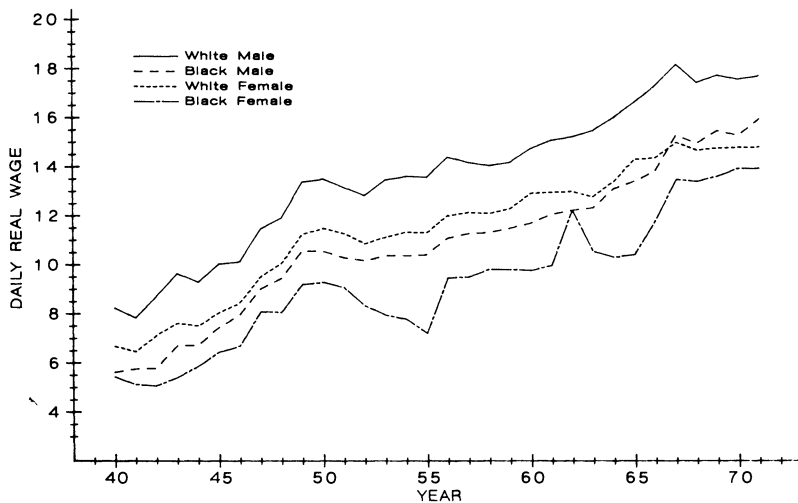


FIGURE 20. SOUTH CAROLINA TEXTILE INDUSTRY AVERAGE DAILY REAL WAGES

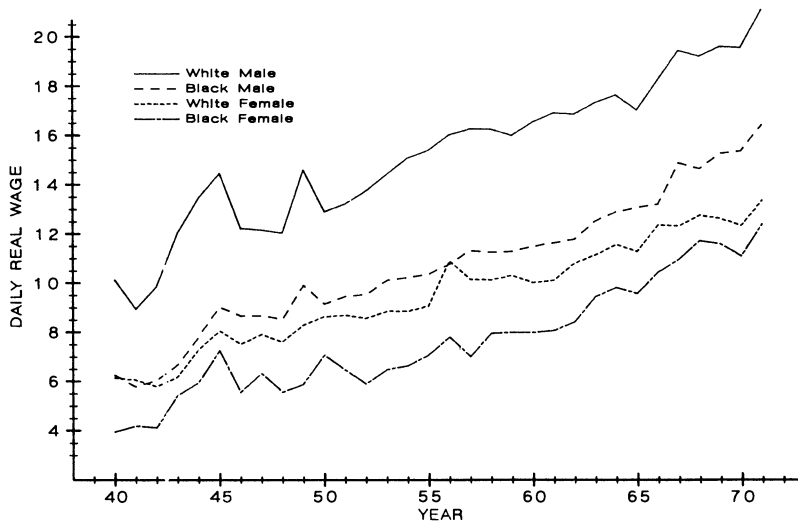


FIGURE 21. SOUTH CAROLINA NON-TEXTILE MANUFACTURING INDUSTRY
AVERAGE DAILY REAL WAGES

cepts for each demographic group. These estimated fixed effects control for a variety of omitted variables that are likely to affect demographic employment. Absorbed in g_{jt} are any time-varying uniform (across counties) statewide race- and sex-specific factors, like uniform government policy, human capital improvements or migration that plausibly affect employment by race and sex. Absorbed in f_{ijt} are any idiosyncratic time-invariant county factors like the location of the county in relation to product or labor markets or the percentage of the county that is black. " X_{it} " is a row vector of explanatory variables, not including an intercept, with associated coefficient vector a_j . The term η_{ijt} is a mean-zero error term.

The explanatory variables used in our analysis are, with one exception, taken from the Annual Reports of the South Carolina Department of Labor:

Textile Output = Real textile output in millions of dollars.

New Establishments = Number of establishments which entered the county after 1957.

Old Establishments = Number of establishments which entered the county before 1958.

Non-Textile Output = Real non-textile manufacturing output in million dollars.

Defense Contracts = Real cumulative defense contracts in million dollars.⁹

Industry demand is proxied by county textile output. Higher levels of output would be expected to lead to greater employment of workers. The number of new establishments and the number of old establishments are introduced as separate variables to test a version of the industrialization hypothesis that suggests that new entrants into South Carolina are less likely to discriminate against blacks than are older establishments. This might be so because new establishments are not encumbered by the restrictive racial legislation that regulated old establishments. Initial discrimination in employment might

⁹Defense contracts data by establishment were available after 1965. The Department of Defense gave us data on Prime Contract Awards over \$10,000 by county for South Carolina over the period 1966-71. Cumulative contracts were used because a contract award received in one year was not necessarily only for that year alone. For instance, some firms had negative values for defense contracts in years when previous contracts were canceled. A similar variable, cumulative EEOC expenditures, was used by Freeman (1973).

persist due to fixed costs of hiring and due to fellow employee discrimination. Many new establishments were northern-owned and it is possible that their owners had lower tastes for discrimination. Joan Hoffman (1975) reports evidence favoring this hypothesis. Even in the absence of an old establishment—new establishment differential, the total number of establishments is a plausible regressor which (since output is being held fixed in the regression) measures the effect of establishment size on demographic employment.

Non-textile manufacturing output in the county is the best available proxy for the tightness of the non-textile labor market. Manufacturing employed over one-third of all workers in South Carolina between 1960 and 1970. Textile workers have more mobility into non-textile manufacturing than out of manufacturing altogether.¹⁰

County-level defense contract expenditure provides a good measure of government activity for the textile industry because the office of Federal Contract Compliance and the Defense Department monitored the compliance of textile firms with the affirmative action and nondiscrimination provisions of Executive Order 11246. Orley Ashenfelter and Heckman (1976) present evidence that the presence of a government contract makes it more likely for a firm to integrate its work force and employ more blacks.

Cumulative rather than current expenditure is used to measure the long-term impact of contracts. Estimation with a distributed lag version of this variable does not affect any inference. The effects of uniform government antidiscrimination policies which cannot be directly measured are absorbed into the estimated year effects.

We also estimate an interactive version of the preceding model which permits the a_j coefficients to assume different values after 1964. This interactive specification enables us to test for the presence of structural shift in demographic employment equations which

would result from effective government antidiscrimination and affirmative action measures.

In order to determine the appropriate transformation of the dependent variable for the employment equations, we follow Takeshi Amemiya (1985) and James Powell (1981) as described in Amemiya and estimate a non-normal Box-Cox model that uses

$$(Y_{ijt}^{\lambda_j} - 1) / \lambda_j,$$

rather than Y_{ijt} as the dependent variable. The main inferences from using linear Y_{ijt} are preserved in the Box-Cox regressions but the latter fit the data better. " λ_j " is estimated along with the other coefficients of the model using nonlinear least squares. Both log and linear versions of X produce the same inference. To simplify the presentation of these results, we report only the linear X version of these estimates in Table 12. The slope coefficients are for the stated dependent variable. The sign of the estimated effect on Y_{ijt} is the same as the sign of the coefficient reported in the table. Durbin-Watson statistics for each county (reported in a companion paper by the authors and Butler) indicate few problems with serial correlation in the estimated county residuals. Corrections for heteroscedasticity using Halbert White's method do not overturn any inference obtained using least squares standard errors. For the sake of brevity we only report the results of tests based on the conventional least squares standard errors.

There is evidence of statistically significant positive effects of defense contracts on black employment and statistically significant negative effects of this variable on white male employment. Increased textile output raises employment for all demographic groups. The interacted output variables reveal a post-1964 shift in the output-employment coefficient in favor of black workers. For black females, there is little evidence of any textile output expansion effect before 1965—a result that should be obvious from inspecting Figures 8 to 18. In the noninteractive specification, higher non-textile output in a county is associated with

¹⁰ From the 1970 Public Use Sample, we calculate that of all textile workers in 1965, about 90 percent were employed in a manufacturing industry in 1970.

TABLE 12—BOX-COX DEMOGRAPHIC EMPLOYMENT EQUATIONS FIT USING THE AMEMIYA-POWELL PROCEDURE^a
(*t*-statistics shown in parentheses)

	Black Males	Black Females	White Females	White Males
λ_j	.4 (35.46)	.45 (25.5)	.50 (7.79)	.60 (11.15)
Textile Output	.0018 (16.0)	.00304 (5.98)	.0025 (15.2)	.0018 (16.89)
New Establishments	.0217 (12.4)	.0857 (12.64)	-.0180 (-8.22)	-.0108 (-7.51)
Old Establishments	.0208 (13.8)	.0422 (6.16)	-.0038 (-1.74)	.0040 (2.70)
Non-Textile Output	-.0008 (-9.28)	-.0011 (-2.74)	-.0015 (-10.70)	-.0009 (-10.65)
Defense Contracts	.0013 (3.21)	.0159 (8.81)	.0007 (1.23)	-.0035 (-10.23)
Model with Interactions				
	Black Males	Black Females	White Females	White Males
λ_j	.45 (24.14)	.45 (39.73)	.775 (13.3)	.80 (20.56)
Textile Output	.0008 (5.51)	-.0007 (-1.58)	.0036 (18.97)	.0027 (35.3)
New Establishments	.0154 (6.18)	.0631 (7.78)	-.0014 (-3.31)	-.0035 (-2.25)
Old Establishments	.0231 (15.67)	.0566 (11.94)	.0027 (1.32)	.0080 (8.415)
Non-Textile Output	-.0010 (-8.61)	-.0003 (-.654)	-.0024 (-11.57)	-.0014 (-17.82)
Defense Contracts	.0010 (2.32)	.0107 (8.67)	.0006 (1.15)	-.0034 (-15.2)
Δ Textile Output	.0014 (9.21)	.0081 (18.1)	-.0010 (-5.33)	-.0013 (-16.5)
Δ New Firms	.0025 (.912)	.0103 (1.16)	.0078 (2.07)	.0018 (1.09)
Δ Old Firms	-.0034 (-3.43)	-.0429 (-13.69)	-.0066 (-4.92)	-3.04×10^{-6} (-.005)
Δ Non-Textile Output	-.0002 (-1.69)	-.0019 (-5.46)	.0016 (8.83)	.0009 (13.72)

^aThe instruments used to fit these models are X , squares of X , and all interactions. The Y_{ijt} are divided by the grand mean employment (over time and county) for each demographic group. These are 4,082 for white males, 2,687 for white females, 396 for black males, and 78 for black females.

less employment in textiles for each demographic group. The pattern is preserved in the interactive model but the effect strengthens for blacks and weakens for whites in the post-1964 period.

In the model without interactions there is a clear effect of establishment size on employment by race. Smaller establishments (measured by output per establishment) tend to hire more blacks. Larger establishments tend to hire more white females while the estimated scale effect for white males is ambiguous. The only pronounced new establishment-old establishment effect is for black females. There is evidence that new establishments hire more black women and fewer whites than do old establishments. The interactive specifications reveal that new establishments tend to hire more blacks and fewer white males.

The estimated models show a steady increase in estimated year effects for black workers in the post-1964 period. (These esti-

mates are reported in our companion paper with Butler, 1989.) Further evidence of structural shift in the labor market is revealed by simulating the best-fitting models over the crucial period 1965-70. Such simulations allow examination of the change in employment attributable to changes in each X variable and the change not explained by the regression. The results of such a simulation are presented in Table 13, which presents results for both the interactive and the non-interactive models.

The most striking feature of Table 13 is the failure of each fitted model to account for most of the observed employment change. Much of the improvement in black status is accounted for by unexplained post-1964 year effects. The importance of such year effects is consistent with the operation of unmeasured government antidiscrimination policy. Although the estimated defense coefficient is statistically significant, the contribution of defense contracts to black employment is

TABLE 13—EFFECTS OF CHANGING VARIABLES ON TEXTILE EMPLOYMENT 1965–1970^a

	Black Males	Black Females	White Females	White Males
	From Model Without Interactions			
Actual Change	5041	4215	565	-6778
Change from All Sources	747	823	-319	-3045
From Output	307	116	2179	2131
From New Establishments	489	448	-2256	-2045
From Old Establishments	-64	-29	61	-103
From Non-Textile Output	-75	-21	-651	-608
Defense Contracts	90	310	347	-2420
	From Model With Interactions			
Change from All Sources	1241	820	1412	-1399
Change from Defense Contracts and Structural Shift	903	562	1151	-2743
From Output	126	-26	2590	2946
From New Establishments	365	329	-1292	-601
From Old Establishments	-68	-40	-38	-174
From Non-Textile Output	-85	-5	-994	-827
Defense Contracts	100	208	257	-2177
From Interaction Output	223	306	-720	-1418
From Interaction New Establishments	588	54	884	309
From Interaction Old Establishments	9	30	94	0
From Interaction Non-Textile Output	-17	-36	636	543

^aFor county *i* and demographic group *j* the effect of changing the *l*th component of X_{it} at time *t*, X_{itl} to $X_{i,t+k,l}$ is estimated by

$$\Delta Y_{jt} = Y_{j,t+k} - Y_{j,t}$$

$$= \lambda_j a_{jl} \sum_{i=1}^I (Y_{ijt})^{(1-\lambda_j)} \left\{ \left[\frac{Y_{ij,t+k}}{Y_{ijt}} - 1 \right] / \left[\left(\frac{Y_{ij,t+k}}{Y_{ijt}} \right)^{\lambda_j} - 1 \right] \right\} \Delta X_{itl}$$

where *I* is the number of counties, *t* = 1965, *t* + *k* = 1970. The coefficients from Table 12 are used.

numerically weak.¹¹ If all post-1964 interaction effects are attributed to government

policy, between 70 to 80 percent of the predicted change in black employment is attributable to this source. In any case, unmeasured components account for most of the

¹¹There are conditions under which we underestimate the contribution of defense contracts to the increase in black employment. The contract data refer to work done in the county but firms were required to comply with Executive Order 11246 in all plants, even those not producing goods for sale to the government. There are many textile firms with plants in different counties and different states. County textile defense expenditure is thus an error-ridden measure of the appropriate variable. In a simple demographic model of demand which regresses employment solely on the mea-

sured contract variable, the estimated contract effect is downward biased if the variable indicating whether the plant has a contract is independent of the disturbance term in the equation. If the demographic demand equation contains additional explanatory variables which are correlated with the indicator variable, the sign of the bias is ambiguous.

observed change. Such dramatic structural shift seems inconsistent with pure forms of the tight labor market or industrialization hypotheses. Government activity—residually defined—seems to be the most plausible source of this change.

V. Summary and Conclusions

This paper examines the sources of black economic progress in South Carolina. Lessons from that state are of general interest because trends in black progress in South Carolina resemble trends in the South as a whole and black improvement in the South accounts for a substantial component of aggregate U.S. black improvement over the period 1960–80. We focus on the manufacturing sector. Butler documents that much of the southern black progress comes through entry of black workers into craftsmen and operative occupations and improvement in relative black wages in those occupations which are concentrated in manufacturing.

Using a unique body of time-series–cross-section data on employment and wages by race and sex supplemented by a variety of U.S. government sources, we examine a number of competing explanations for the breakthrough in black employment and wages in the manufacturing sector that occurred after 1964. We demonstrate the value of disaggregating the data and establish that different factors account for black progress in different sectors.

The principal manufacturing employer in the state is the textile industry. This industry was already a substantial employer by 1915 when Jim Crow laws formalized a preexisting exclusion of blacks from the main operative and craftsman occupations of that industry. We document that over the period 1910–64, the share of black employment was low and stable despite a variety of economic circumstances in the state. Suddenly, in 1965, blacks of both sexes become employed on a large scale. That year witnessed the implementation of Title VII of the 1964 Civil Rights Act which forbade employment discrimination. Executive Order 11246 was also issued in that year. The Order forbade dis-

crimination by government contractors and required the establishment of affirmative-action programs. The South Carolina textile industry sold 5 percent of its output to the U.S. government in 1965. The Equal Employment Opportunity Commission targeted southern textiles and held hearings on the industry in 1966. The improvement in black status after 1964 is uniform across geographically diverse local labor markets. Regression analyses of black employment reveal a structural shift in employment equations that cannot be accounted for by conventional measures of output or the growth in alternative opportunities. There is some evidence of greater black employment in counties that sold more goods to the U.S. government. Both the timing evidence and the regression evidence suggest that government activity played an important role in integrating textiles. As a large new supply of black workers became available to the industry, the real wages of white workers—which had been rising for six consecutive years before 1965—suddenly flattened. A similar but less well-documented story can be told for black female progress in the closely related apparel industry.

Alternative explanations of the black breakthrough in textiles appear to be much less cogent. A supply shift story attributing the black improvement to the decline in agriculture cannot account for the timing of the black breakthrough in textiles. The human capital story of improvement in black skill also cannot account for the timing. Increases in black human capital between 1960 and 1970 should have reduced black employment because textiles is a low skill industry. By 1960, there were plenty of blacks with skill levels adequate to perform textile jobs.

The only viable alternative to the story of government as the agent of change in textiles is the story that assigns a central role to the tightness of the labor market. By the mid-1960s, South Carolina had a booming economy. New industries entered the state and the traditional reservoir of white farm labor had disappeared. Real wages in textiles increased making competition with low wage foreign firms more difficult. The incentives

to draw on a new source of low wage labor were great.¹²

What cannot be dismissed and indeed seems quite plausible is that in 1965 entrepreneurs seized on the new federal legislation and decrees to do what they wanted to do anyway. One could argue that the federal antidiscrimination and affirmative-action laws came into existence in 1964 precisely because the U.S. labor market was tight to an unprecedented degree and discrimination was becoming costly. This study cannot reject the hypothesis that it was the confluence of tight labor markets and new laws that made integration in textiles occur so rapidly. Separating these factors requires information from another episode in which comparable laws are put in place in a slack labor market.

We do not claim that federal activity accounts for black progress in other sectors of the state. A major finding of our analysis is that once skill levels are accounted for blacks were not excluded from other sectors even in 1960. Newer industries entering the state long after the institution of Jim Crow laws tended to be color-blind in their employment practices. Surprisingly, so were state and local governments by 1960. Blacks were underrepresented in these sectors only because they lacked skills. As their skill levels expanded, so did their employment in those sectors.

DATA APPENDIX

We have combined data from U.S. government sources with data published by the state of South Carolina. Three types of data were combined to form the South Carolina data base: annual county-level data, annual state-level data, and census-year data. For the period 1910–35, the data come from *Reports and Resolutions of South Carolina to the General Assembly of the State of South Carolina*. For the period 1936–71, the data come from the *Annual Report of the Department of Labor to the State of South Carolina*. In addition to the South Carolina data we collected U.S. Population Cen-

sus data for the Census South and selected southern states.

We obtain the following data, by county for each fiscal year (July 1 to June 30).

For the textile industry, the variables are: value of annual product (dollars); average number of days plants operated; total wages of production workers (dollars); by sex, average employment of production workers, by race and sex; and number of establishments.

From a listing of all textile plants by name in each county are formed: number of establishments started after 1957, number of establishments started before 1958.

Establishments are counted at the plant level, although individual plants may belong to the same firm. For total manufacturing, we collect annual data on value of annual product (dollars). Total manufacturing excludes lumber, timber, and turpentine. Non-textile output (annual product) by county is formed by subtracting textile output from total manufacturing output. The county textile data exclude totals for knitting mills and synthetics mills for the period 1910–69. In 1970 and 1971 the totals include knitting mills and synthetics. Unlike the county-level data, statewide aggregate data for the textile industry include the knitting and synthetics mills over the entire sample period.

From the U.S. Census of Population reports for 1960 for South Carolina, we obtain population, total employment, manufacturing employment, textile employment, and agriculture employment for selected counties.

We obtained defense contract data from *Prime Contract Awards Over \$10,000 by State, County, Contractor and Place* for South Carolina from 1966 to 1971. Total defense contracts for textile establishments by county by year are formed by matching firm or plant names listed in this data source with firm or plant names listed in the *Annual Reports of the South Carolina Department of Labor*.

In addition to the county data, we use aggregate statewide industry data from the South Carolina Department of Labor reports. These data are for every manufacturing industry except lumber, timber, and turpentine. The available data include: value of annual product (dollars); average number of days plants operated; average number of production workers, by race and sex; total wages, by race and sex (dollars).

Average daily wages by race and sex are computed by dividing total wages (deflated by the CPI) for each race and sex group by the product of the number of production workers in that group and the number of days plants operated.

Statewide data on employment in textiles, manufacturing total and agriculture by race and sex were obtained from the U.S. Bureau of the Census, Census of Population for 1940, 1950, 1960, and 1970. Statewide textile industry employment by race and sex were collected for 1950, 1960, 1970, and 1980 for the states of North Carolina, Georgia, and Virginia from U.S. Bureau of the Census, Census of Population: Vol. 2, for those states.

U.S. Census public use micro-data computer tapes are another source of data. The 1940, 1950, and 1960 tapes each contain a 1 percent sample, the 1970 tape

¹²However it should be noted that many employers feared that blacks were more likely to join unions. (Rowan, 1970.) In the nonunionized textile labor market this would be a serious negative consideration.

contains a 2 percent sample, and the 1980 tape contains a 5 percent sample. We use the following variables from each Census tape for South Carolina:

occupation, industry, race, sex, age, annual wage income (dollars) last year, hours worked last week, weeks worked last year, highest grade completed, and labor force status (civilian, employed, unemployed, out of labor force).

From the U.S. Bureau of the Census Public Use Samples we also obtain data for the Census South. We use 1 percent samples for 1940 and 1950, 0.1 percent samples for 1960 and 1970, and a 0.5 percent for 1980. Data on race, sex, age, industry, and labor force were obtained for each Census year.

For certain analyses, we form the following five categories of manufacturing industries: textiles, chemicals, apparel, nontraditional manufacturing, and traditional manufacturing. Chemicals and apparel were isolated because of their similarity to textiles. The other two categories were formed on the basis of a ranking of the percentage change in employment from 1960 to 1970 in the remaining manufacturing industries. The five nontraditional high growth industries are: transportation equipment, electrical machinery, nonelectrical machinery, metal working, and foundries and machine shops. The six traditional low growth industries are: food products, paper and pulp, stone and clay, lumber and furniture, printing and publishing, and miscellaneous manufacturing.

The data from the South Carolina reports are available for the fiscal year beginning July 1. The Census and Department of Defense data are available for the calendar year. We chose the following convention for matching data from the various sources. The fiscal year is defined to correspond to the calendar year in which the fiscal year ends.

A copy of the South Carolina data is available from ICPSR at the University of Michigan.

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