REFERENCES

INTRODUCTION

Studies published during the 1970s and 1980s (Bellante, 1978; Coelho and Ghali, 1971; Farber and Newman, 1987; Sahling and Smith, 1983) found that wages in the Southern United States no longer lagged those in the remainder of the country. The first of these works focused on real wages. Later findings suggested that Southern nominal wages may have reached parity by 1975.1

Our study addresses the South-NonSouth difference, both in nominal and real terms, at the occupational level of two groups of faculty in the public sector of higher education during the academic years 1975-76 (hereafter, 1975) and 1985-86 (1985): faculty in institutions offering four years or more of instruction (4YR) and faculty in community colleges (CC).2 Estimates of the South-NonSouth wage difference for specific occupations may differ from regional aggregates because markets for individual occupations are more likely to be in disequilibrium. Although information is not available to describe regional markets before 1975, our data for 1975-85 suggest the potential for regional disequilibrium. Between 1975 and 1985, 4YR and CC faculty in the South grew by 10.6 and 31.4 percent respectively. Comparable NonSouth figures were -0.5 and 1.5 percent.

Many factors, including South-NonSouth faculty salary relationships in 1975, determine whether the differential growth rates produce findings different from the regional parity of the aggregated studies. The national scope of the 4YR market and the local focus of the CC market are of particular importance. Salary information for the 4YR category is accessed at national meetings, and job openings are posted in national publications. Faculty at CC institutions do not have these same global contacts, and their wage determination interacts with the local private sector and local public school teacher labor markets. Faculty employed in vocational education are expected to have work experience and certification in their occupations (Alabama, 1986). Prior teaching experience in the public schools may also affect salary determination for these individuals (Alabama, 1980; Cohen and Brawer, 1988). The longer time required to acquire and evaluate information about job opportunities, as well as the interface with local wage structure, may slow the process of real national wage equilibration for CC faculties.

In succeeding sections of this paper, we present a model for studying regional faculty salary differentials, discuss our data sources, report our findings, and make concluding remarks.
THE MODEL

Our wage equation for estimating the South-NonSouth relationship includes independent variables for region and vectors for the characteristics of both faculty members and their jobs that may affect the level of salaries. The model takes the form:

\[ L_{i} = \beta_{0} + \beta_{1} \text{SOUTH} + \beta_{2} \text{DRPP} + \beta_{3} \text{PPEM} + \beta_{4} \text{PTEN} + \beta_{5} \text{SFRAT} + \beta_{6} \text{RASPP} + \epsilon_{i} \]

where \( i \) refers to a particular state, \( j \) is the level of college (4YR or CC), and \( t \) indicates that an observation is for 1975 or 1985.5

The dependent variable is the natural logarithm of the annual salary for full-time nine-month faculty.1 Estimations of wage differences in real terms have usually relied on the budget data published by the U.S. Bureau of Labor Statistics [1988], which in 1985 covered only 27 large cities. Because of our need for broader geographic coverage, we use an index constructed by Fournier and Rasmussen [1986] at the year 1980 for the 48 contiguous states.2

The independent variables are region (SOUTH), extent of Ph.D. production (DRPP), the percentage of female employment (PPEM) and of tenured faculty (PTEN), student-faculty ratio (SFRAT), and amount of academic support per faculty member (RASPP).3 The variable \( \epsilon_{i} \) is the random error term. The focus of the study is to measure \( \beta_{i} \), the coefficient on the dummy variable SOUTH, which is equal to one for Southern states and zero otherwise. Our expectations with respect to coefficient signs are: \( \beta_{i} \), positive in 4YR and negative in CC regressions; \( \beta_{j} \), negative in all regressions; and \( \beta_{k} \), positive in all regressions. The signs of the coefficients of \( \beta_{s} \) and \( \beta_{t} \) are ambiguous.

For the 4YR category, the variable DRPP, the ratio of non-medical doctorates awarded during the academic year to the number of full-time equivalent students, proxies the proportion of faculty employed to teach graduate students. Because of the greater emphasis on research productivity, faculty who provide graduate instruction are expected to have higher salaries; DRPP is expected to have a positive sign.

For community colleges DRPP indexes relative faculty supply. These schools do not emphasize the doctorate for employment or for higher salary grades [Alabama, 1980; Cohen and Brower, 1988]. Community colleges provide employment to Ph.D. candidates and to persons with terminal graduate degrees below the Ph.D. Since a higher value of DRPP indicates increased faculty supply, we expect a negative coefficient for CC institutions.

There are several reasons for anticipating a negative relationship on the coefficient of the percentage of females employed (PPEM) at 4YR schools. Interruptions in work careers from time allocated to children may decrease research productivity [Hansen, Weisbrod, and Strauss, 1978]. Because a smaller number of women teach in the higher paying disciplines of law, business, and engineering, salary will fall as PPEM rises. Further, gender discrimination may lower average salary at both 4YR and CC institutions. The impact from discrimination should be more evident in 1978 because it was not until 1972 that federal law became more explicit in its application to women and higher education [Hamermesh and Rees, 1984].

The available tenure measure is the percentage of faculty with tenure (PTEN). Since tenure often accompanies the move from assistant to associate professor and salaries increase with rank in the 4YR category [U.S. National Center for Education Statistics, 1988a], a positive coefficient is expected for PTEN. The expected relationship is further strengthened by longer years of service producing more instances of raises and larger raises for the distinguished faculty that universities wish not to lose to competitive bids. In addition, competing universities may respond by making offers of tenure along with higher salaries. Tenure is a more elusive term for community colleges. Cohen and Brower describe the attainment of tenure both after probationary periods of two to three years "in many cases" [1989, 73] and after one year of full-time work. At CC institutions, a shorter time requirement means that a larger segment of tenured persons are closer to entry-level salaries at any particular level of PTEN, thus weakening the tenure-salary relationship.

The variables SFRAT and RASPP describe job characteristics that may cause compensating wage differentials. The first proxies the student/faculty ratio. The second proxies institutional spending to assist faculty members in carrying out their jobs.

Casual empiricism suggests that faculty have greater job satisfaction with smaller classes that provide more opportunity for students and faculty to interact and for faculty to examine by essay instead of multiple choice. Thus, the disamenity of larger classes would induce higher salaries. This expectation may be moderated if smaller classes imply higher quality students who are taught by higher quality instructors. The proxy variable SFRAT is the number of full-time equivalent students per full-time instructional faculty member. Measurement problems add further to ambiguity in predicting the sign of SFRAT. For the 4YR category, the denominator excludes the teaching role of graduate students and the reduction of part-time worktime for faculty when graduate students assume such chores as grading. Although the numerator includes the full-time equivalent of part-time students, part-time faculty are excluded from the denominator. This omission will have a larger effect for CC than 4YR because of the greater use of part-time personnel in community colleges [Cohen and Brower, 1988; U.S. National Center for Education Statistics, 1988a].

Academic support per full-time faculty member (RASPP) comprises expenditures for computing support, academic administration, personnel development, audiovisual services, and course and curriculum development. While academic administration includes administrators' salaries, the cost of many functions classified as administrative are supportive of faculty: centralized student academic advising, preparation of research manuscripts in word processing pools, preparation of research grant submissions, and access to computerized data bases. When the dependent variable is in "real" terms, we also prior-adjust RASPP.

The sign of RASPP will be positive if higher education institutions must provide a more costly bundle of work amenities to attract faculty of greater market worth. The relationship between RASPP and faculty salaries would be negative if faculty derive nonpecuniary rewards from job characteristics that direct their effort toward teaching and research and away from record-keeping and administration. A negative sign is also suggested if relatively higher salary costs for academic administrators reduce available funds for faculty salaries.
TABLE 1
Percentage Wage Difference, South and the Remainder of the Contiguous United States
(t values in parentheses)

<table>
<thead>
<tr>
<th>Year and source of difference</th>
<th>Level of Institutions and Type of Wage</th>
<th>1975</th>
<th>1985</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Four year and Above</td>
<td>Community Colleges</td>
<td>Nominal</td>
</tr>
<tr>
<td></td>
<td>Nominal</td>
<td>Real</td>
<td>Nominal</td>
</tr>
<tr>
<td>1975</td>
<td>Observed†</td>
<td>-9.54*</td>
<td>-4.11</td>
</tr>
<tr>
<td></td>
<td>Model-adjusted</td>
<td>-5.14</td>
<td>4.71***</td>
</tr>
<tr>
<td>1985</td>
<td>Observed†</td>
<td>-5.29***</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td>Model-adjusted</td>
<td>0.01</td>
<td>10.36*</td>
</tr>
</tbody>
</table>

* This difference is obtained from the coefficient of a regression of wage on an intercept term and the regional dummy variable. † Indicates 1 percent level of significance, ‡ is at 5 percent level, *** is at 10 percent level.

DATA

The data are primarily from the Higher Education General Information Surveys (HEGIS) of the National Center for Education Statistics [1976; 1977; 1978a; 1978b; 1988]. All variables are constructed at the state level of aggregation and are specific to either the 4YR or the CC category. Geographic coverage is the contiguous United States since this was the coverage of Fournier and Rasmussen’s index. While the 4YR category has 48 observations, the CC category has only 47 because South Dakota has no public community colleges. All 1975 observations refer to the 1976-77 academic year. With the exception of PTEN and PFEM, 1985 observations refer to the 1985-86 academic year. Data for this year on tenure and gender were not available from published reports at the appropriate level of institutional distinction. We constructed PTEN and PFEM from “special run” results of the 1985-86 HEGIS survey supplied to us by the U.S. Department of Education.

MODEL ESTIMATES

We report our results in three tables. Table 1 shows a summary in nominal and real terms of the regional percentage wage difference both as observed and as estimated from the model. † “Observed” differences are obtained from regressing the natural logarithm of salary on a constant and the regional dummy. “Model-adjusted” refers to the percent indicated by the regional dummy’s coefficient when all independent variables of the model enter the wage equation. Table 2 shows the wage equations of these complete

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>4-Year and Above</th>
<th>Community Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOUTH</td>
<td>0.460***</td>
<td>0.088*</td>
</tr>
<tr>
<td></td>
<td>(1.79)</td>
<td>(3.97)</td>
</tr>
<tr>
<td>DRPP</td>
<td>0.164*</td>
<td>0.131**</td>
</tr>
<tr>
<td></td>
<td>(3.88)</td>
<td>(2.44)</td>
</tr>
<tr>
<td>PFEM</td>
<td>-0.059**</td>
<td>-0.0042</td>
</tr>
<tr>
<td></td>
<td>(-2.38)</td>
<td>(-1.18)</td>
</tr>
<tr>
<td>PTEN</td>
<td>-0.001</td>
<td>0.061*</td>
</tr>
<tr>
<td></td>
<td>(-0.10)</td>
<td>(2.52)</td>
</tr>
<tr>
<td>SFRAT</td>
<td>0.050</td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td>(1.24)</td>
<td>(0.62)</td>
</tr>
<tr>
<td>RASPF</td>
<td>0.00007</td>
<td>0.00006**</td>
</tr>
<tr>
<td></td>
<td>(1.42)</td>
<td>(2.61)</td>
</tr>
<tr>
<td></td>
<td>(77.70)</td>
<td>(44.31)</td>
</tr>
<tr>
<td>R²</td>
<td>0.45</td>
<td>0.51</td>
</tr>
<tr>
<td>n</td>
<td>48</td>
<td>48</td>
</tr>
</tbody>
</table>

* Independent variables are defined in the text.
† Indicates 1 percent level of significance, ‡ is at 5 percent level, *** is at 10 percent level.

model estimates when both the dependent variable and RASPF are measured in real terms. We examine changes over the decade and difference between institutional categories by introducing interaction terms for year or institutional category into a fully interactive model. For brevity, we report in Table 3 only the coefficients of the interaction terms.

South-NonSouth Difference

In nominal terms, observed salaries are lower in the South at both institutional levels. When variation across states in worker and job characteristics are taken into account, the regional difference for 4YR schools is insignificant. For the community colleges, the differences remains significant and, in 1975, model adjustment increases the disparity.

Adjusted for cost-of-living differences, observed faculty salaries are significantly lower in the South at only community colleges in 1975. When we use the complete model, real salaries in the 4YR institutions are higher in the South. Southern wages
remain lower in community colleges in 1975 and, again, model adjustment enlarges the difference. This increasing disparity for both nominal and real salaries arises from the combination of a gender difference favorable to women for the CC category in 1975 (Table 2), and the higher proportion of women employed in Southern community colleges (42.5 percent) than in the remainder of the country (28.7 percent). When the model is estimated for 1975 without the gender variable, the percentage wage difference falls to 6.57 percent.

According to the findings in Table 1, the regional relationship improved over the decade for faculty in Southern schools but 4YR faculty were in the better position in both years. Results from the interactive models (Table 3) consistently support only the latter of these impressions. The improvement in Southern relative wages is statistically significant only at community colleges. However, the regional wage-difference advantage of 4YR over CC schools is significant in both 1975 and 1985.

Other Independent Variables

The coefficients of other independent variables merit attention because the regional variable plays only a small role in determining salary variation. The coefficients of variation for the four sample estimates of Table 2 range from 0.41 to 0.51. The highest value of R² is 0.08 (CC, 1975) when South is the only right-hand variable.

Doctoral production (DRPF) has coefficients consistently significant and of the expected signs across the four equations of Table 2. The 4YR positive association reflects higher-priced faculty where there is more graduate instruction. Negative coefficients in the CC equations support our hypothesis that more prevalent graduate instruction produces more job applicants and subsequently depresses salaries.

The gender variable has the expected negative sign for the 4YR category and is significant in 1975. The decline in coefficient size between 1975 and 1985, although not significant, is consistent with newly instituted government programs reducing gender wage differences. The coefficient of PFEN is also negative and insignificant in 1985 for the CC category but PFEN has an unanticipated positive value in 1976. We attribute this positive value to the quick granting of tenure so that PFEN cannot calibrate differences in length of employment. Prior to 1975, markedly higher growth occurred in vocational curricula (Cohen and Brawer, 1989; U.S. National Center of Education Statistics, 1986a). For this subject area, men may have more private sector job opportunities. More opportunities create greater variation in salary offers and an accompanying increase in returns from search. Thus, more quits occur in job tenure shortages. At the same level of PFEN, more pay raises from longer years of service would increase the wages of women. Higher pay from longer service would be attributed to PFEN instead of PTEN.

The coefficient of PTEN for the 4YR category is not significantly different from zero in 1975 but is positive and significant in 1985. According to the fully interactive model (Table 3), this change between sample years is significant. National expansion of faculty prior to 1975 would weaken the relationship between tenure and salary as hiring took place at all ranks, including untenured and higher paid associates and full professors. Slower growth during the 1980s may have prompted concerns about the proportion of tenured faculty and encouraged 4YR institutions to concentrate hiring at the levels of instructor and assistant professor. These ranks would have a lower probability of obtaining tenure. More frequent hiring at lower ranks would induce a positive coeffi-

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### Table 3

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>By Year (1985=1)</th>
<th>By Type of College (4YR and Above = 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td>-0.3696</td>
<td>-0.0883</td>
</tr>
<tr>
<td></td>
<td>(-1.55)</td>
<td>(-0.49)</td>
</tr>
<tr>
<td><strong>COLLEGE TYPE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SOUTH</strong></td>
<td>0.0526</td>
<td>0.1044***</td>
</tr>
<tr>
<td></td>
<td>(1.46)</td>
<td>(2.45)</td>
</tr>
<tr>
<td><strong>DRPF</strong></td>
<td>-0.0113</td>
<td>-0.0126</td>
</tr>
<tr>
<td></td>
<td>(-0.46)</td>
<td>(-0.56)</td>
</tr>
<tr>
<td><strong>PFEM</strong></td>
<td>0.0017</td>
<td>0.0028**</td>
</tr>
<tr>
<td></td>
<td>(2.38)</td>
<td>(1.49)</td>
</tr>
<tr>
<td><strong>PTEN</strong></td>
<td>0.0052**</td>
<td>0.0012</td>
</tr>
<tr>
<td></td>
<td>(2.38)</td>
<td>(-0.84)</td>
</tr>
<tr>
<td><strong>SPFAT</strong></td>
<td>-0.0025</td>
<td>0.0077**</td>
</tr>
<tr>
<td></td>
<td>(-0.43)</td>
<td>(2.60)</td>
</tr>
<tr>
<td><strong>RASP</strong></td>
<td>-0.00002</td>
<td>-0.00009</td>
</tr>
<tr>
<td></td>
<td>(-0.27)</td>
<td>(-0.60)</td>
</tr>
</tbody>
</table>

---

* 4YR = four year and above; CC = community colleges.
* Variables are defined in the text.
* Indicates 1 percent level of significance, ** is at 5 percent level, *** is at 10 percent level.

---

The coefficient of PTEN for community colleges has the expected positive sign in both years and is significant in 1975. Class size (SPFAT) consistently exhibits a positive sign but is significant only for the 1985 CC sample. The sign relationships do suggest that larger class size leads to a compensating wage differential. However, the significant increase of 1975-85 in coefficient size between the CC samples is likely due to increasing reliance on part-time faculty in order to lower the cost of an hour of classroom instruction (Cohen and Brawer, 1989; Gupps, 1984). The higher the salaries of full-time faculties, the greater the incentive to substitute part-timers. Since the count of full-time faculty is the denominator of SPFAT, the value of SPFAT would increase more when the salaries of full-time faculty were higher.
The association between salaries and academic support services (RASPP) is always positive and significant for 4YR, 1985. The positive relationship implies that higher salaries for academic administrators (a segment of RASPP) do not adversely affect faculty salaries. Also, job amenities, proxied by RASPP, do not induce compensating wage differentials. Instead, a more costly bundle of work amenities accompanies the hiring of faculty members at higher salaries.

We interpret the significant coefficient in 1985 for the 4YR category to result from an increasing proportion of RASPP becoming faculty-member specific during the decade. Expenditures on administrators or mainframe computing facilities can be positively associated with pay per faculty member but not as directly associated as the costs of personal computers, their software, and individual office linkage to mainframe facilities. These latter non-shared research tools would become more numerous at an institution due to increasing research emphasis for all faculty. Hence, the linear assumption of the regression analysis would be better satisfied. With regard to community colleges, academic support also appears to become more faculty-member specific over the decade and accommodating of the higher student-faculty ratios (SFRAT) associated with higher faculty salaries. Deleting either SFRAT or RASPP from the estimate on CC 1975 leaves all remaining coefficients essentially as reported in Table 2. When SFRAT is deleted from the estimate for CC 1985, RASPP becomes significant (.00002, t = 2.36). If RASPP is omitted, both the coefficient and t value of SFRAT (.0059, t = 4.33) increase.

CONCLUSIONS

Studies across aggregates of occupations suggest that the South-NonSouth wage differential in real terms had ended by the early 1970s and, perhaps, in nominal terms by the end of that decade. We have investigated whether these findings are applicable to two faculty occupations, one national (at institutions granting degrees at the bachelor level and above) and the other local (community colleges) in market scope.

When we estimate the regional difference within the context of an economic model that adjusts for differences in the characteristics of faculty and their jobs, nominal salaries for public 4YR faculty do not differ significantly in either 1975 or 1985. Real salaries in the South at these institutions are above those in the remainder of the country in both years. While this real advantage appears to have increased over the decade from 1975 to 1985 (from 5 percent in 1975 to 10 percent in 1985), the increase is not statistically significant. The level of real wage advantage for 4YR faculty is similar to that observed for the 1970s in the aggregate of occupations studied by Sahling and Smith [1983].

The outcome for the local market occupation of faculty in the public community colleges is different. Community college nominal salaries were significantly lower in the South in both 1970 and 1985. In real terms, salaries were 10 percent lower in the South than in the remainder of the nation in 1975 but did reach parity by 1985. This improvement in relative position over the decade is statistically significant.

1. Sahling and Smith [1983] and Parker and Norwams [1987] expressed their findings as subregional relationships such as South/West. We have combined the subregional results using the number of employees by state on nonagricultural payrolls as weights. Combined real wage ratios from Sahling and Smith by gender in 1973 and 1978 ranged between 1.04 and 1.07. Nominal ratios for males and females in 1973 were 0.97 and 0.96 respectively, and in 1978 were 1.01 and 1.02 respectively. Parker and Norwams, who limited their study to men, estimated the real wage ratio at 1.03 in both 1973 and 1979.

2. "South" refers to the U.S. Bureau of the Census classification of 18 states. We study only the public sector because of its dominance among community colleges. Private sector, full-time equivalent enrollment was only 2.5 percent of the total for community colleges in 1985 [U.S. National Center for Education Statistics, 1986a].

3. Use of a comprehensive 4YR category results from the problem of data availability. For example, state salary data are published separately for institutions by highest degree awarded in 1985 but not in 1975.

4. Because faculty membership estimates by state are unavailable, the median-salary orientation even though it may affect faculty earnings. Using information from a variety of sources [Carnegie Council on Policy Studies in Higher Education, 1975; Chronicle of Higher Education, 1973, 1985; 1986; we have created a crude index of unemployment by state, type of school, and year. Dummy variables classify the percentage of public computers organized into one of three categories: men, less than 50 percent, and 50 percent or more. When these dummies variable enter the model, the regional differentials (coadjuvant-adjusted, real wage) remain similar to those reported in Table 1 below: 1985, 4YR, 10.47 and CC, 9.49; 1975, 4YR, 5.90 and CC, 5.60.

5. Our data source excludes fringe benefits, a type of compensation that may affect regional salary differentials. We investigated this potential effect by drawing a sample of reported salaries and total compensation for full professors at a state's major public university and the "A" and "M" school from the 1985-86 survey of the American Association of University Professors [American, 1986]. We observed no significant relationship between the size of fringe benefits in relation to salary and the independent variables of either salary (r = 0.02) or the regional dummy (r = -0.06).


7. The variables of SFRAT and RASPP are calculated on the basis of all full-time faculty, including those on twelve-month appointments. The faculty coverage for FTFTM in both years and FTFT in 1985 refer to twelve-month, full-time faculty. Coverage for FTFT in 1975 is all full-time faculty since separate data are unavailable for nine-month faculty.

8. Equation coefficients (a) are converted to percentages by the formula, 100(a'/a).
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INCOME AND POVERTY ACROSS SMSAs:
A TWO-STAGE ANALYSIS

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and

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INTRODUCTION

Among the many explanations of income and poverty levels, especially among black families, two have garnered much of the recent public and academic attention: welfare disincentives and urban deindustrialization. Although on the surface, these explanations appear quite dissimilar, they do have a common thread.

The "welfare-disincentive" explanation argues that while public assistance raises family income and reduces poverty directly, it has the opposite effects indirectly. According to this argument, welfare leads recipients to reduce their work, schooling and traditional family formation (Murray, 1984) all of whose reductions significantly affect family income and poverty adversely. Blacks are hurt more than whites because a larger percentage of blacks have only the low-wage labor market options for which public assistance is a substitute.

The "urban-deindustrialization" argument concentrates instead on the disappearance of manufacturing jobs from urban areas. The resulting deprivation and absence of meaningful work gives rise to an "underclass" (Wilson and Neckerman, 1986, Wilson, 1987). And underclass attitudes, by discouraging work, schooling and traditional family formation, further adversely affect family income and poverty. Blacks are hurt more than whites because blacks are less mobile and are subject to greater discrimination in alternative, non-manufacturing employment.

Expressed this way, the common thread is clear. Each sees some environmental influence giving rise to an underclass, thus discouraging work, schooling and traditional family formation. And each sees these underclass characteristics as adversely affecting family income and poverty. The difference is over the environmental influence most responsible for creating this underclass — welfare disincentives or urban deindustrialization.

This paper explores these arguments further. First, we develop a two-stage model to predict a city's median family income and poverty rate. The model allows the city's welfare level and industrial structure, among other things, to affect its median family income and poverty rate directly. It also allows them to affect income and poverty indirectly, through their effects on underclass creation. We estimate the model, separately for blacks and whites, using cross-sectional, Standard Metropolitan Statistical Area (SMSA)-level data. Finally, we simulate the total effects, direct and indirect, of changes in welfare and industrial structure on SMSA median family incomes and poverty rates.