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ABSTRACT

A recursive model of the level and distribution of family income in Standard Metropolitan Statistical Areas is formulated and estimated. The model is related to both human capital and job competition models. Then, the impacts of changes in racial, educational, and industrial composition on the level and distribution of income are analyzed.

DETERMINANTS OF THE LEVEL AND DISTRIBUTION OF FAMILY INCOME IN METROPOLITAN AREAS, 1969

The level and distribution of family income in 1969 varied widely across Standard Metropolitan Statistical Areas (SMSAs) in the U.S.[1] Stamford, Conn., had the highest median income, $15,862; Bristol, Conn., had the most equally distributed incomes, a Gini coefficient of .272. Of all the metropolitan areas, McAllen, Texas, was the poorest, with a median income of $4776, as well as the most unequal, with a Gini coefficient of .469. In this paper a model of the determinants of this variation in income levels and size distributions is formulated and estimated. The model emphasizes the role of the industrial structure of the area.

A MODEL OF INCOME DETERMINATION IN THE METROPOLITAN AREA

Newhouse (1971) and Thurow (1975) both assign industrial composition a major role in explaining the level and distribution of income, even though Newhouse adheres to the labor-supply-oriented human capital theory and Thurow supports the labor-demand-oriented job competition theory. Newhouse asserts:

> For the purpose of predicting area income distribution it may be best to treat the amount of human capital as a function of industry mix. If firms in an industry impart the same amounts of specific training but that amount differs by industry, the industry mix determines the amount of specific training in the labor force.... Since workers with large amounts of general education tend to be mobile and locate where highly skilled jobs are being offered, industry mix also plays a role in determining the distribution of general education among areas (pp. 56-57).

For Newhouse, industrial location determines the supply of specific and general training in the area. Workers are paid their marginal products, which depend on their skills, so that in determining the amount of training in the area, the industry mix also determines wages. Newhouse assumes that a fixed proportion of an industry's jobs fall into specific income classes so that wage structures are constant across industries. He then argues that national unions, national product markets, and similar technologies produce a constant wage level for an industry independent of its geographical location.

In the job competition model, the individual's earnings depend not on his own endowments, but on the job he acquires. The marginal product adheres not to the person, but to the job. Labor demand, not the background skills of the labor force, determines the number and types of jobs that exist. Thus, the industrial mix determines both the wage level and the wage structure. These depend on technology, interdependent preferences, and customary wage differentials in the workplace.

> Employers are anxious to establish wage structures that their employees regard as equitable since their profits depend on it. There is a profit maximizing wage structure, but it need not be a marginal productivity wage structure....The structure of wages is dependent upon the structure of interdependent preferences rather than upon the structure of marginal products....Given the need for production teamwork and the existence of interdependent preferences, wages are negotiated and set on a team rather than an individual basis....Team wage structures lead to different wages for the same skill....The net result is a structure of wages that is often more homogeneous within firms or industries than it is within occupations (Thurow, pp. 108-109).

While Thurow does not claim to understand how "equitable" wage structures are established, he does point out that they remain constant over long periods of time, and thus are relevant to the type of short-run model specified below.

Neither Thurow nor Newhouse predicts the effect of specific industries on wage levels and wage structure. Thus, one purpose of this paper is to estimate specific industrial impacts on metropolitan area incomes. The usefulness of knowledge about these impacts in formulating an urban development policy is obvious. For example, if one industry pays very high average wages but distributes them unequally, while a second pays lower, but more equally distributed, average wages, this may pose a difficult strategic problem for areas promoting economic growth. Furthermore the two labor forces will require a different mix of public services and will represent different tax bases creating a complication for development strategies which is obscured by the conventional focus on the number of jobs or the total wage bill.

Without attempting to distinguish between the human capital theory and the job competition theory, a recursive model of the level and distribution of family income that emphasizes the industrial structure of the area is specified:

(1) $\text{MEDIAN} = f_1(X)$

(2) $\text{GINI} = f_2\,(\text{MEDIAN}, Y)$,

MEDIAN = median family income

GINI = Gini coefficient of family income

X, Y = vectors of exogenous variables.

The income level influences the income distribution, but the degree of inequality does not affect the income level.[2] Farbman (1975) estimates a single-equation model like equation (2) for SMSA Gini coefficients for 1959.[3] The two-equation model proposed here has obvious advantages. Assume that a variable common to the X-vector and Y-vector has a positive impact in both equations. Assume, also, that high income levels are associated with more equally distributed incomes (the "Kuznets hypothesis", Kuznets, 1955). Then, this variable has a direct effect, estimated in the second equation, that increases inequality, and an indirect effect, operating through the higher median income, that decreases inequality. The total (net) effect can be positive or negative, but this "true" effect cannot be determined from a single-equation model.

Equations (1) and (2) are a reduced form of a system of labor supply and demand equations. The system is conceived of as being in short-run equilibrium with firms and workers exogenously located within each SMSA.[4] The elements of the X-vector and Y-vector represent the supply and demand conditions existing in each area: the industrial composition, quality of the labor force, racial composition, size, and region of the SMSA.

In this paper, the industrial structure is proxied by the percentage of employment in each of the eleven industries listed in Table 1. The sum of the percentage employed in these industries plus the percentage listed as "industry not reported" equals 100 percent. Such an aggregation can test only gross effects of industrial mix, since, for example, both oil refineries and textile firms are classified under nondurable manufacturing. A more appropriate test of industrial influences would use data at the three- or four-digit level; such a disaggregation, however, is beyond the scope of this paper.

The quality of the labor force also affects the level and distribution of income. The educational composition of the labor force, the percentage of adults with less than one year of high school, and the percentage with at least a college degree, and the disability status of the population are proxies for labor force quality. It is expected that areas in which a larger percentage of the population has completed college will have higher incomes, while those with a large proportion who are poorly educated or disabled will have lower incomes. Increases in all three variables should increase inequality.[5]

Wage differentials, due to discrimination or efficient screening by employers, exist by race and age. The greater the percentage of the population that is nonwhite and the lower the percentage of the population that is in the prime-age category (25 to 64 years), the lower will be average wages and the greater will be the degree of inequality.

The 1970 Census reports Gini coefficients for family incomes and for male wages and female wages. Gini coefficients for all wage earners are not reported. The data on industrial structure is reported as the percentage of the employed population in each industry, so it is this unreported Gini coefficient that would be the most appropriate dependent variable. Rather than compute these Gini coefficients, family income was chosen as the basis for analysis. Previous authors have also analyzed the distribution of family income (Farbman, Aigner and Heins, Sale).

The percentage of total personal income from transfer payments and the percentage from property income are included to bridge the gap between wages and family incomes. Where a greater share of personal income is in the form of transfers, income should be lower and more unequally distributed. A higher share from property income is expected to be associated with higher but more unequally distributed incomes. Both of these sources of income are distributed more unequally than wage and salary income.

The female labor force participation rate is also included as a bridge between wages and family incomes. Where this participation rate is higher, it is expected that family incomes will be higher and more equally distributed, since the participation of married women falls as husband's income increases (Thurow, pp. 5-6).

The male labor force participation rate and the unemployment rate are indicators of aggregate demand. If the model were estimated using hourly earnings, these two variables would be unnecessary, since the industrial mix would proxy demand effects. Since the model refers to yearly earnings and since industry mix is exogenous in the short run, it is expected that higher male labor force participation rates and lower unemployment rates are associated with higher and more equally distributed incomes.

Population size and density are included to analyze familiar concerns in urban economics. Larger cities are expected to offer economies of scale up to a certain point at which negative externalities and diseconomies of scale offset the benefits of diversification and specialization (Hoch, 1972). If the effect of population on income levels were negative, it would mean that cities were too large. On the other hand, a larger population might mean higher incomes, but might attract poor migrants, so that incomes rose but became more unequally distributed. In an equilibrium urban model, larger and denser areas imply higher rents and transportation costs, implying that workers in these areas must receive higher incomes to compensate for these costs.

Finally, a set of regional dummies is included in the income level equation. Money income, not real income, is our measure, so the regional dummies serve as price deflators.[6] It is assumed that the regional influences affect all incomes within a region equally, so they are not excluded from the income distribution equation.

ESTIMATION OF THE MODEL

The two-equation model discussed above is estimated here as a reduced form. The income level equation (1) is substituted into the income distribution equation (2) for the median income variable. Then, the estimation of the Gini coefficient equation by ordinary least squares produces the total effects on the Gini of each independent variable. As discussed above, this total is composed of one effect that directly alters the income distribution and a second effect that operates indirectly through the variable's effect on the income level.

The ordinary least squares equations presented by previous authors are misspecified because they include the income level as an exogenous variable in the income distribution equation. But if the model presented here is correct, then the income level should appear in the income distribution equation only as an endogenous variable, and a simultaneous equations technique should be employed. Identifying such a model would be difficult, however, since it has been suggested that most of the independent variables exert influences on both the level and the distribution of income.

The earlier authors would be correct in estimating the income distribution equation using ordinary least squares with the income level included as a regressor only if the true model were fully recursive. In such a model the direct and the indirect effects of an independent variable could be recovered from the two equations. For this to be the case, the disturbance term in the income level equation would have to be uncorrelated with the disturbance term in the income distribution equation. However, if relevant independent variables have been omitted from the model, it is probable that they, like the included variables, would influence both equations. Then, the omission of variables would mean that the disturbance terms across equations were correlated and ordinary least squares would produce biased estimates.

By neglecting the income level equation and by using ordinary least squares in a regression that includes the income level as a regressor, previous authors have obtained biased estimates of the direct effect of the independent variables on the income distribution. The approach taken here estimates the total effect of these variables without simultaneous equations bias.

Table 2 presents the results of the median income equation and the Gini coefficient equation. The model accounts for a large proportion of the variance for each regression (over 85 percent). In regression (1), mining, finance, insurance and real estate, selected services, construction, and durable manufacturing are associated with the highest median incomes while professional and related services, agriculture, forestry and fisheries, and wholesale and retail trade are associated with the lowest income levels. A 1 percentage point increase in the percentage of the labor force employed in construction increases median income by $108 on average, while 1 percentage point increase in the percentage in wholesale and retail trade reduces the median by $43.[7] Regression (2) reveals that the largest reduction in the Gini coefficient is associated with nondurable manufacturing and the smallest reduction is associated with wholesale and retail trade.

Despite the level of aggregation, several interesting patterns emerge. Where mining is an important industry, income levels are high and incomes are distributed more equally than average; where agriculture, forestry and fisheries, or wholesale and retail trade are important, income levels are low and incomes are distributed more unequally than average. Other industries offer tradeoffs between equality and income levels. Finance, insurance and real estate, and selective services are associated with high but unequally distributed incomes. Conversely, professional and related services are associated with relatively low but more equally distributed incomes. While these results should not be viewed as definitive, they do suggest that areas promoting industrial location should be concerned not only with the number of jobs an industry offers but also with its effects on the area's level and distribution of income.

Part of the industrial influences may be due to the composition of the labor force in each industry. For example, the percentage of employees that are female varies widely by industry in the U.S. as a whole. In the high-income level industries--MIN and CNS--women were only 8 and 6 percent of the labor force; in the low-income level industries (excluding agriculture)--PAD, PRS, WR--they were 30, 63, and 41 percent of the labor force (U.S. Bureau of the Census, U.S. Summary Volume, Table 236). Such compositional differences, however, may be due to industrial demands, not to the supply of characteristics in each SMSA, so they are appropriately included as industrial effects.

The educational composition has the expected effect on both the median income and the Gini coefficient. Where a greater percentage of the population has completed college, incomes are higher; where the percentage with less than one year of high school is greater, incomes are lower. Increases in either group lead to greater inequality.[8] Where a greater proportion of the population is disabled, income levels are lower and inequality is greater. This impact on the income level is quite large--a 1 percentage point increase in disability lowers median incomes by about $86.

While nonwhites earn lower average incomes than whites in each SMSA, differences across SMSAs in the percentage of the population that is nonwhite do not significantly lower median income levels. However, an increase in the percentage nonwhite does significantly increase income inequality. The composition of personal income affects the income level and income distribution in the expected manner. Where a greater percentage of personal income is received as income transfers, the median is lower, while where a greater percentage is from property income, the median is higher. Increases in both sources contribute to greater inequality. Increasing female labor force participation raises income levels but reduces inequality. The percentage in the prime-age category has the only unexpected sign that is significant in the income level equation. An increase in this group lowers median incomes and does not significantly affect the distribution of income. Unemployment and male labor force participation rates do not significantly affect either the income level or the income distribution.

Larger and denser SMSAs have higher income levels, but neither size nor density significantly affects the income distribution. The squared term for population indicates that incomes rise up to an SMSA size of about 3.5 million and then begin to decline. The regional dummies reveal that the three southern regions have significantly lower money incomes than the other regions.

Table 3 shows the magnitude of the effects of several independent variables on the level and distribution of income. Panel 1 of Table 3 shows the estimated level and distribution of income at several SMSA sizes for a high-income region, the Pacific, and a low-income region, West South Central, when all the independent variables are evaluated at their sample means (as given in Table 1). The median income in an average SMSA of 2.5 million is about 9 percent higher than that in an SMSA of 250,000 and about 1 percent higher than that in an

SMSA of 5 million. Inequality is fairly constant across SMSA size classes but rises by about 3 percent in an SMSA of 5 million.

Panels 2, 3, and 4 of Table 3 present the impact of an increase of 10 percentage points in the percentage of the population that is nonwhite, the percentage with at least a college degree, and the percentage of females who are in the labor force. A comparison with panel 1 reveals that where blacks are a greater percentage of the population, income levels fall slightly, and inequality increases by about 2 percent. Where a greater percentage of the population has graduated from college, income levels rise by about 4 percent and the Gini coefficient increases by about 8.5 percent. An increase in the rate of female labor force participation raises incomes by about 7 percent and reduces the Gini by about 2 percent. As with the industry mix variables, there is an interaction between the effects of these independent variables on the income level and distribution. Both effects can be unfavorable, (increasing percentage nonwhite), favorable (increasing female labor force participation), or offsetting (increasing percentage with college degrees).

Table 4 presents the average industrial mix for a sample of 86 large SMSAs (1960 population greater than 250,000) in 1960 and 1970. The growth industries during the decade were wholesale and retail trade, finance, insurance and real estate, and professional and related services. The relative importance of all the other industrial categories declined.

Table 5 presents the effect of this total change in average industrial mix on the level and distribution of income for the same two regions and five SMSA sizes used in Table 3. Although WR and PRS are relatively unattractive from the standpoint of income level and income distribution, the impact of their changes were small during the period. If industry mix had not changed during the period, median incomes in 1970 would have been about 3 percent higher and Gini coefficients would have been about 1 percent lower than they actually were in 1970. In fact, the largest differences in Tables 3 and 5 are between the two regions. In the Pacific Region, incomes are about 17 percent higher and Gini coefficients about 6 percent lower than in the West South Central Region.

SUMMARY

In this paper a model was developed that accounts for the variation in the level and distribution of family income across metropolitan areas. The model draws from both the human capital and the job competition theories of the labor market in the emphasis it places on the industrial structure of the metropolitan area. This paper differs most from earlier works in its emphasis on the determination of both the income level and its distribution. It is shown that many of the variables have opposing effects on the dependent variables. The results can be used, with caution, to speculate about the likely effects of changes in industrial composition and other attributes of an area and its labor force on the level and distribution of income. The results do establish the case for further analysis of the relationship between income levels and the degree of inequality across metropolitan areas.

Table 1

Variables, Means, and Descriptions

Variable	Mean (Std. Dev.)	Description
MEDIAN	9518.08 (1342.29)	Median family income
GINI	344.93 (30.93)	Gini coefficient of family income (x 1000)
AGR	2.44 (2.21)	% of employed population aged 14 years and over employed in agriculture, forestries, or fisheries
MIN	0.86 (2.26)	% of employed population aged 14 years and over employed in mining
CNS	5.62 (1.29)	% of employed population aged 14 years and over employed in construction
DM	13.75 (9.25)	% of employed population aged 14 years and over employed in durable manufacturing
NDM	9.08 (5.25)	% of employed population aged 14 years and over employed in nondurable manufacturing
TCU	6.28 (1.80)	% of employed population aged 14 years and over employed in transportation, communication, and public utilities
WR	19.79 (2.60)	% of employed population aged 14 years and over employed in wholesale and retail trade
FIR	4.56 (1.41)	% of employed population aged 14 years and over employed in finance, insurance and real estate
PRS	17.84 (4.88)	% of employed population aged 14 years and over employed in professional and related services
PAD	5.67 (3.79)	% of employed population aged 14 years and over employed in public administration

Table 1 (con't)

Variable	Mean (Std. Dev.)	Description
SSV	8.23 (2.63)	% of employed population aged 14 years and over employed in selected services
HIGHSC	25.96 (6.99)	% of population aged 25 years and over with less than one year of high school
COLLEG	11.40 (4.07)	% of population aged 25 years and over with at least 4 years of college
BLACK	10.88 (9.41)	% of population nonwhite
LFPMLE	77.26 (4.47)	% of males aged 16 and over in labor force
UNEM	4.41 (1.39)	% of civilian labor force unemployed
DSABLE	10.94 (1.61)	% of population aged 16 to 64 years with a serious illness or with a physical or mental handicap
CCDEN	4.15 (2.51)	Central City population per square mile (in thousands)
FEMLFP	42.04 (4.18)	% of females aged 16 and over in labor force
AGE	56.20 (2.58)	% of population aged 25-64
POP	512.87 (783.09)	SMSA population size (in thousands)
PROP	9.63 (2.16)	% of total personal income from transfer payments
TRAN	13.78 (2.81)	% of total personal income from property income

Table 1 (con't)

Variable	Mean (Std. Dev.)	Description
NEWENG	12	The nine census regions are entered as dummy variables: 1 if the SMSA is in the region; 0, if otherwise. The nine regions are New England, Mid-Atlantic, South Atlantic, East, South Central, West South Central, East North Central, West North Central, Mountain, and Pacific. The number of SMSAs in each region is given in the column of means.
MIDATL	21	
SOATL	37	
ESCENT	15	
WSCENT	37	
ENCENT	46	
WNCENT	18	
MOUNT	14	
PACIFIC	22	

Note: Source for all data except the industrial mix variables, PROP, and TRAN, is the 1970 Census of Population. Industrial mix variables were obtained from the Brown University Urban Analysis Group, under the direction of Benjamin Chinitz. PROP and TRAN are found in the Survey of Current Business (1972). The sample includes 222 of the 243 SMSAs reported by the Census. Information on fourteen smaller SMSAs in New England was unavailable because of the different definition of the SMSA for that region. The seven SMSAs in the New York and Chicago Standard Consolidated Areas were omitted since many workers in these areas live in one SMSA and work in another.

Table 2

Regression Results: Determinants of the Level and Distribution of Family Income

Independent Variables	Median (1)	Gini (2)
Constant	10170.3	474.34
AGR	1.19 (0.03)	-0.91 (0.96)
MIN	89.51 (2.65)	-2.70 (3.43)
CNS	108.03 (2.05)	-2.48 (2.02)
DM	79.99 (2.63)	-2.68 (3.78)
NDM	60.43 (1.88)	-2.91 (3.89)
TCU	73.32 (1.82)	-2.77 (2.94)
WR	-43.86 (1.29)	-0.32 (0.40)
FIR	81.71 (1.53)	-1.97 (1.58)
PRS	37.26 (1.11)	-2.77 (3.54)
PAD	56.88 (1.71)	-2.34 (3.02)
SSV	84.28 (1.87)	-1.08 (1.03)
HIGHSC	-46.01 (4.92)	1.49 (6.84)
COLLEG	38.10 (1.66)	3.03 (5.67)
BLACK	-8.22 (1.29)	0.77 (5.14)
LFPMLE	-4.29 (0.25)	-0.67 (1.66)
UNEM	7.98 (0.17)	-0.37 (0.35)
DSABLE	-86.01 (2.41)	1.06 (1.28)
PROP	21.15 (1.30)	0.49 (1.30)
TRAN	-103.21 (2.37)	2.70 (2.66)

Table 2 (cont.)

Independent Variables	MEDIAN (1)	GINI (2)
FEMLFP	68.02 (4.52)	-0.56 (1.61)
AGE	-75.65 (3.12)	-0.05 (0.10)
CCDEN	72.62 (2.99)	-0.54 (0.96)
POP	0.67 (4.47)	-0.20 E-02 (0.58)
POP^2	-0.95 E-04 (4.08)	0.86 E-02 (1.59)
NEWENG	-735.44 (2.58	17.44 (2.63)
MIDATL	-910.09 (3.44)	6.17 (1.00)
SOATL	-1403.00 (5.48)	21.98 (3.56)
ESCENT	-1519.33 (5.48)	25.88 (4.00)
WSCENT	-1692.06 (6.82)	22.57 (3.90)
ENCENT	-525.45 (2.17)	6.87 (1.22)
WNCENT	-963.89 (3.91)	8.06 (1.40)
MOUNT	-1239.14 (4.99)	9.57 (1.65)
R^2	.870	.867
Std. error of regression	523.13	12.20

Notes: Number of observations is 222; t-statistics appear in parentheses below regression coefficients; a t-statistic of 1.96 is significant at the 5% level (two-tailed test).

The omitted categories are: industry not reported, percentage of adults with between two years of high school and three years of college, percentage of total personal income from wages and salaries, and the Pacific Region.

Table 3

Regression Estimates of Income Level and Income Distribution for Selected Regions and SMSA Sizes

REGION	250 thousand	500 thousand	SMSA Size 1 million	2.5 million	5 million
	1. All independent variables evaluated at their means, as given in Table 1				
PACIFIC	10434	10583	10847	11351	11232
	.3313	.3309	.3306	.3321	.3431
WEST SOUTH CENTRAL	8742	8891	9155	9659	9540
	.3538	.3535	.3531	.3546	.3656
	2. All independent variables evaluated at their means, except % Black which is increased by 10% (BLACK = 20.88).				
PACIFIC	10351	10501	10764	11269	11150
	.3389	.3386	.3382	.3397	.3507
WEST SOUTH CENTRAL	8659	8809	9072	9577	9458
	.3615	.3611	.3608	.3623	.3733
	3. All independent variables evaluated at their means, except % College graduates which is increased by 10% (% COLLEG = 21.40)				
PACIFIC	10815	10964	11228	11732	11614
	.3615	.3612	.3608	.3623	.3733
WEST SOUTH CENTRAL	9123	9272	9536	10040	9921
	.3841	.3837	.3834	.3845	.3959
	All independent variables evaluated at their means, except Female Labor Force Participation which is increased by 10% (FEMLFP = 52.04)				
PACIFIC	11114	11263	11526	12031	11913
	.3256	.3253	.3249	.3264	.3374
WEST SOUTH CENTRAL	9422	9571	9835	10339	10221
	.3482	.3478	.3475	.3489	.3600

Table 4

Changes in Industrial Composition
in Largest SMSAs, 1960-1970

	1960	1970	Percentage Change
AGR	2.35	1.60	-32.1
MIN	0.64	0.54	-14.9
CNS	5.94	5.30	-10.9
DM	17.06	15.74	- 7.7
NDM	11.70	9.46	-19.1
TCU	7.40	6.60	-10.8
WR	18.96	19.63	3.5
FIR	4.81	5.20	8.1
SSV	8.28	7.79	- 6.0
PRS	12.67	16.48	30.1
PAD	5.82	5.56	- 4.4

Table 5

Regression Estimates of Changes in Income Level and Income Distribution

REGION	250 thousand	500 thousand	SMSA Size 1 million	2.5 million	5 million
	1. Industry mix at 1970 values (Table 4).				
PACIFIC	10540	10690	10953	11458	11339
	.3296	.3293	.3289	.3304	.3415
WEST SOUTH CENTRAL	8848	8998	9261	9766	9647
	.3522	.3519	.3515	.3530	.3640
	2. Industry mix at 1960 values (Table 4).				
PACIFIC	10831	10980	11244	11748	11629
	.3252	.3249	.3245	.3260	.3370
WEST SOUTH CENTRAL	9138	9288	9552	10056	9937
	.3478	.3474	.3471	.3486	.3596

Note: All other independent variables are evaluated at their means, as shown in Table 1.

NOTES

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[1] The level of income is measured by the median; the distribution, by the Gini coefficient. Census money income includes transfers but does not account for taxes. A family includes two or more persons residing together and related by blood, marriage, or adoption. The incomes of unrelated individuals are not analyzed here.

[2] The income distribution may influence aggregate consumption and savings, and, therefore, the income level (Blinder, 1975). However, national capital markets should prevent differences in consumption and savings across SMSAs from influencing SMSA income levels.

[3] Farbman reviews several other studies that have estimated similar single-equation models for states. Also, see Aigner and Heins (1967), and Sale (1974). Holmes and Munro (1970) use a simultaneous equations model for Canadian regions; Schofield (1975), for British regions.

[4] A long-run model in which industrial location and labor migration are both endogenous is beyond the scope of this paper. Such models are, in fact, extremely difficult to estimate. See, Engle (1974) for an attempt to model employment and migration for a single metropolitan area.

[5] The omitted educational variable is the percentage of the population with between two years of high school and three years of college. This group accounts for about two-thirds of the population in an SMSA, so an increase in either tail of the educational distribution should increase inequality.

[6]The Burueau of Labor Statistics publishes data on urban living costs for fewer than forty selected metropolitan areas. Hoch (1972) argues that most of the variation in these living cost indices can be explained by population size and region.

[7]The sum of the percentage employed in each industry adds to 100 percent. Thus, a one percentage point increase in employment in each industry for a given SMSA refers to a constant number of jobs. However, since different industries have different employment bases, a 1 percentage point increase in employment has a different effect on their relative shares. For example, a 1 percentage point increase in employment in mining more than doubles the number of people in mining, while a one point increase in wholesale and retail trade changes employment in that industry by only about 5 percent.

[8]Although the linear regression reported here accounts for a large portion of the variance in the Gini coefficient, a paradox is involved. When some characteristic is in the minority (for example, being nonwhite or being a college graduate), it may tend to increase inequality. If this characteristic were to become the attribute of a majority, the effect on the Gini coefficient would reverse. This reversal forms the basis for the Kuznets hypothesis (Kuznets, 1955). During the course of economic development, agricultural employment declines from a majority to a minority of the labor force. In the early stage, the movement out of agriculture increases both the income level and the degree of inequality. As the majority of the population joins the industrial

work force, income levels continue to increase, but inequality begins to decline. Nonlinearities for several variables were estimated, but only the one for population was significant and is reported in Table 2.

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