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ABSTRACT
        In response to the supposition that public support of
regional industrial development will benefit the rural poor and
unemployed, the relationship between the level of manufacturing
activities and unemployment and poverty was examined. Utilizing data
derived from the U.S. Census of Population (1960 and 1970) and the
County Business Patterns (1959 and 1970), a national sample of 276
rural counties was examined. The variables employed were: (1) the
number of county residents unemployed; (2) the percentage of families
below the poverty level in 1970 (1969 income); (3) the level of
manufacturing activity defined as the total number of manufacturing
jobs relative to the total number of jobs in the county; (4) median
age; and (5) median level of education. Data indicated that when
level of manufacturing activity was defined in terms of labor force
composition, there was not a significant amount of variation in
unemployment or poverty levels. Moreover, it was found that weak
competitors (persons 65 years of age or older, females, persons with
less than high school education, and persons not employed) did not
benefit from industrial relocation. It was concluded that the Federal
Government should consider a group-specific regional policy, directed
toward the market-relevant resources of the rural poor and
unemployed, rather than toward industry and regional development
commissions. (JC)

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LEVEL OF MANUFACTURING ACTIVITY, UNEMPLOYMENT AND POVERTY

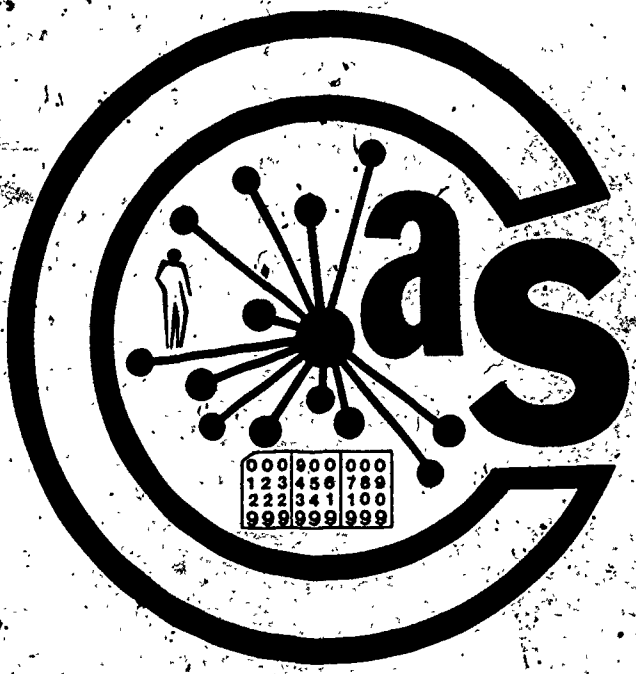Arne Selvik

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LEVEL OF MANUFACTURING ACTIVITY, UNEMPLOYMENT AND POVERTY.

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ABSTRACT

The essence of this paper is a questioning of the logic behind the policy of public support of regional industrial development. Based on the general notion of economic growth as a social panacea for lagging regions within an industrial nation, it is widely believed that increasing manufacturing activity brings down unemployment and poverty. As far as the nonmetropolitan part of the U.S. is concerned, however, this study shows that there is no such relationship between level of manufacturing activity and social problems like unemployment and poverty. Actually, part of the little effect that is demonstrated in the regression equations goes in the opposite direction. Data from a national sample of 276 U.S. counties show that level of manufacturing activity, defined in terms of labor force composition, does not explain a significant amount of variation in unemployment and poverty. Policy implications of these findings suggest that federal intervention in a free-enterprise economy should be directed towards the problem groups themselves. (i.e. the unemployed and the poor) to improve their competitive position in the labor market, and not towards their supposedly benevolent agents (i.e. industrial corporations and regional development commissions).

INTRODUCTION

The history of western industrial development can be viewed as a
constant search for an optimal spatial distribution of economic
activities, a search which is obviously a prerequisite for the
realization of a satisfizing rate of profit under a capitalist
mode of production.

This history can roughly be divided into four main phases; two of
which are parts of a concentration process: (1) The movement of labor
from farms to plant towns, and (2) The concentration of factories
in metropolitan areas. The two others are parts of a decentralization
process: (3) Regional shifts and suburbanization of manufacturing,
and (4) Nonmetropolitan industrial development. Concomitant with the
two first phases has been a rapidly developing social division of
labor, along with overurbanization and rising social problems.

The decentralization phases of industrial development include regional
shifts (Chinitz and Vernon, 1960), suburbanization of industrial
activities, and the process of nonmetropolitan industrial development
(Summers et al., 1974, ch. 2). The motivational forces underlying
this process can be summarized by a small number of factors: rising
costs of labor, land and taxes in the cities (COSTS), migration of
people to suburbs, due to improved standards of living and modern .

means of transportation (MARKET/TRANSPORTATION), the release of
surplus labor from mechanizing agriculture, and lagging industries
(like cotton and coal mining) (LABOR) (Wheat 1978), growth of
industries depending on certain types of climate e.g. aircraft
(CLIMATE) (Fuchs, 1962), and public subsidies for nonmetropolitan
industrial development (SUBSIDIES).

It has been the experience of several "advanced countries" that the
measures of most regional development policies have been insufficiently
specific with respect to area designation, type of industry and type
of technology (Duskin and Moomaw, 1967; Hansen, 1969; Smith, 1971,
ch. 4). In addition to these deficiencies, economic development plans
have not been sufficiently group-specific (Chinitz, 1971:23). This
paper concentrates on the latter aspect of regional development poli-
cies, and argues that, contrary to public expectations, the develop-
ment of manufacturing activities in nonmetropolitan areas is not
likely to solve the problems of unemployment and poverty in these
areas. The process of relocating manufacturing activities is merely
a geographical redistribution of plants necessiated by the disecono-
mies of operating non-growth industries in metropolitan areas, and
does not provide a social panacea for lagging rural areas. This
contention is concordant with observations of a number of students
in the field (Garrison, 1972; Hansen, 1971; Smith et al., 1971;
Thompson, 1968; Yantis, 1972).

In its efforts to solve the dual problem of urban crisis, charac-
terized by pollution, overcrowding, crime and discrimination; and
rural backwardness, with high rates of unemployment and persistent
poverty (Chinitz, 1969; Hansen, 1970), the U.S. Federal Government
has during the last decade encouraged the mobility of capital from
metropolitan to nonmetropolitan areas of the country.

The Public Works and Economic Development Act of 1965, which was
intended to: "help areas and regions of substantial and persistent
unemployment and underemployment" (Committee on Public Works, 1965:
17), appropriated $500 million annually during the fiscal years of
1966 to 1971, and $800 million annually for the fiscal years 1971
to 1973. The Appalachian Regional Development Act of 1965, likewise,
aimed to: "assist the region in meeting its special problems, [and]
to promote its economic development" (Committee on Public Works, 1965:
61), has appropriated a total of $2.455,5 million for the period
1969-1978 (cf. also the Economic Opportunity Act of 1964 and the Rural
Development Act of 1972).

Partly as a result of these efforts, industrialists have located a
large number of new plants in nonmetropolitan areas (Dean, 1973;
Patrick, 1973; Smith, 1971; Stuart, 1971). These areas experienced
a 22,3 percent growth in manufacturing employment between 1960 and
1970 as compared with only 3,7 percent in metropolitan areas (Hines,

Brown and Zimmer, 1975:34). The nonmetropolitan U.S. work force in 1970 was 19,6 million, out of a total work force of about 77,3 million. Of these only 3,3 million were employed in extractive industries (Hines, Brown and Zimmer, 1975:35).

The question still remains; however, of whether this nonmetropolitan growth in manufacturing employment in fact can alleviate the social problems it is assumed to resolve (Abt Associates, 1968; Gray, 1969; Wadsworth and Conrad, 1966; Yantis, 1972). The contention of this paper is that relocation of manufacturing activities within a nation is neither a necessary nor particularly helpful measure for the solution of social problems like unemployment and poverty in a free-enterprise industrial society. Hence, the billions of dollars spent by governments to induce plant location in nonmetropolitan areas can be considered as welcomed subsidies to industrial corporations, but they do not represent a well-founded investment in a better quality of life for the economically disadvantaged in rural America (Marshall, 1973).

As long as federal subsidies and local tax breaks are contingent upon a certain geographical location of plant operations, and not upon the employment policies of manufacturing corporations, rural unemployment and poverty are not likely to be resolved. As long as: "firms are free to hire workers from outside and to 'cream' by hiring the youngest and best educated people in rural areas" (Marshall, 1972:15) unem-

ployment and poverty will remain virtually unchanged (Marshall, 1973).

One can also submit indications that rural poor residents end up worse off as a result of influx of industry and workers from metropolitan areas:

> "Their employment and income opportunities are too rarely improved as a result of the factors causing population turnaround. This situation is partly a result of human resource development and manpower program deficiencies....Moreover, the poor frequently feel the brunt of local price inflation and are denied access to recreation opportunities that they once took for granted...." (Hansen, 1973:161).

(Cf. also Summers and Clemente, 1973).

.PREVIOUS RESEARCH AND THEORY

Students of social impacts upon nonmetropolitan areas from location of new manufacturing plants tend to focus mainly on economic and demographic factors (Summers et al., 1974). Some of these studies include information on unemployment and poverty, but the evidence so far is highly incomplete and unsystematic. Jordan (1967) reports a substantial increase in unemployment in an eight-county Arkansas area after a plant, which provided 750 new jobs had been located there. Abt (1968), Bryant (1969), Bender (1971), Crecinck (1970), Miernyk (1971), Petersen and Wright (1967), and Till (1973) also indicate that local labor markets operate against the indigenous poor and unemployed.

However, the limitations of variables and scope of previous research in this area are severe. Most of what has been done is case studies, monitoring a single county or a region, usually with a cross-sectional, one-shot approach (Dietz, 1972; Crecinck, 1970; Kaldor and Dahlke, 1973; for further references, see Summers et al., 1974). Most of the case studies are highly empirical, and give no theoretical guidance for the study of nonmetropolitan industrialization.

The nature of existing public intervention programs (ref. p. 3) implies a simple linear relationship between manufacturing activity on the one hand and unemployment and poverty on the other. In other words, the more manufacturing industry an area has, the less unemployment and poverty one should expect to find there. This assumption can be tested by a first-order, linear regression model of the following form:

$$Y = \beta_o + \beta_i X_i + \varepsilon \qquad , (i=1,\ldots,n) \qquad (1)$$

In equation (1) Y is the dependent variable (i.e. unemployment or poverty), the X_i's represent indicators of manufacturing activity or other variables that might affect Y. The β_i's are the parameters which depict the effects of the independent variables on Y, β_o is a constant, and ε is an error term. Restating the problem in regression terms: If the indicators (X_i) cause a reduction in unemployment and poverty, the estimates of the β_i's should be large, negative and significant. If there is no such effect, they should be negligible

in magnitude and statistically insignificant. If manufacturing
activity adversely affects unemployment and poverty, estimates of
the β's should be positive and significant.

DATA

Before estimating the parameters of model (1), we shall give a
description of the data used in this paper. In order to study a
variety of social impacts from industrial invasion upon nonmetro-
politan America, a 10 percent stratified sample was drawn from the
population of nonmetropolitan counties as of 1950. This sample,
consisting of 276 counties, does not represent the whole national
range of manufacturing activity. Within the nonmetropolitan part
of the nation; however, it includes small counties (minimum popu-
lation in 1950: 1.325), where manufacturing plants are still non-
existent (minimum number of plants in 1970: 0), as well as large
counties (maximum population in 1970: 494.510), which have a fair
amount of plants (maximum number of plants in 1967: 335). Infor-
mation on the counties has been collected from public sources for
the period from 1947 to 1972. For the present study data from the
Census of Population (1960 and 1970), and the County Business
Patterns (1959 and 1970) have been used.

As the main dependent variable "the number of county residents unem-

ployed" (U) [1] is used, rather than the unemployment rate, for the following reason. The unemployment rate might very well decrease in an area as a result of industrial development, without affecting the number of people unemployed. In cases of heavy influx of labor from outside the local unemployment rate might be drastically reduced, due to an increase in the denominator of the rate, hiding the fact that the size of the numerator remains unchanged (Walraven, 1962).

The other dependent variable is poverty (P), which is defined as "the percentage of families below the poverty level in 1970 (1969-income)". [2] In 1970 the poverty thresholds ranged from $1.487 for a "female unrelated individual 65 years old and over living on a farm" - to $6.116 for a "nonfarm family with a male head and with seven or more persons". Average poverty threshold for a "nonfarm family of four headed by a male" was $3.745 in 1970.

Level of manufacturing activity (LMA) is a concept that has technical as well as social connotations. In the present context the aspect of manufacturing activity that interests us is its ability to affect the occupational structure, or labor market composition, in nonmetropolitan counties. In accordance with the logic of economic development

1 1960 Census of Population, Vol. I, Individual State Reports, table 83, and 1970 Census of Population, Vol. I, Individual State Reports, table 121.

2 1970 Census of Population, Characteristics of the Population, table 124.

policies, then, we operationalize it (LMA) as the "total number of manufacturing jobs relative to the total number of jobs " in the county.[1]

We shall also use "median age" (MAGE) and "median level of education" (MED) in the counties to contrast their effects on unemployment and poverty with that of LMA.[2]

FINDINGS

The zero-order correlations between all the variables used in the regression equations in this section are given in table 1.

Table 1 here

The correlation between level of manufacturing activity in 1959 and unemployment in 1960 is .24. The corresponding coefficient for 1970 is .11. In 1970 the correlation between level of manufacturing and poverty was -.03. The most striking coefficient in table 1 is the one between poverty level and median education in 1970 (-.80), a relationship we shall comment more on later.

1 1959 County Business Patterns, table 3,4 and 1970 County Business Patterns, table 2.

2 1960 Census of Population, Vol. I, Individual State Reports, table 27 and 83, and 1970 Census of Population, Vol. I, Individual State Reports, table 35 and 120.

In this paper six equations of model (1) type will be estimated.
First we shall explore the relationship between unemployment and
manufacturing activity in 1960 and 1970. The estimates are given
in equation (2) and (3):

$$\hat{U}_{60} = 325,6 + \underset{(181.9)}{\overset{(.24)}{735,6}} \; LMA_{59} \pm 661,95 \qquad R^2 = .06 \qquad (2)$$

$$\hat{U}_{70} = 407,4 + \underset{(210.8)}{\overset{(.11)}{380,3}} \; LMA_{70} \pm 735,76 \qquad R^2 = .01 \qquad (3)$$

As is clear from the exceptionally low coefficients of determination
(R^2) the level of manufacturing activity explains almost nothing of
the variation in unemployment levels in U.S. nonmetropolitan counties?
In 1960, before the regional development plans were enacted, there
was even a significant (sign. level .0001) positive effect from level
of manufacturing on unemployment, i.e. the larger proportion of manu-
facturing jobs in the local labor force, the more unemployment. In
1970; however, this relationship was not significant (sign. level
.0722) at a standard statistical level.

As the next equation (4) shows, level of manufacturing activity has
even less effect on the poverty level in nonmetropolitan America;

$$\hat{P}_{70} = 18,3 - \underset{(2.8)}{\overset{(-.03)}{1,6}} \; LMA_{70} \pm 9,82 \qquad R^2 = .00 \qquad (4)$$

LMA_{70} has no significant effect (sign. level .5682) on poverty, and explains nothing of its variance. (Unfortunately, poverty data were not reported at the county level prior to 1970).

In sum, the three equations give no support to the hypothesis that a general economic effort to increase level of manufacturing activity in nonmetropolitan counties will decrease the levels of unemployment and poverty.

When discussing the lack of group-specificity in regional development programs, the age structure and the educational level of the nonmetropolitan population are often referred to as beeing crucial factors. We shall therefore include these variables in our equations to ascertain what effect they have on unemployment and poverty. The relationships between age, education, level of manufacturing activity on the one hand and unemployment in 1960 and 1970 on the other are given in equation (5) and (6):

$$\hat{U}_{60} = -532,7 + \underset{(177.4)}{\overset{(.26)}{795,8}} LMA_{59} + \underset{(29.4)}{\overset{(.25)}{124,9}} MED_{60} - \underset{(8.56)}{\overset{(-.08)}{12,0}} MAGE_{60} \pm 642,74 \quad (5)$$

$$R^2 = .12$$

$$\hat{U}_{70} = -537,7 + 436,6 \ LMA_{70} + 164,3 \ MED_{70} - 28,1 \ MAGE_{70} \pm 692,13 \quad (6)$$

$$R^2 = .14$$

For 1960 and 1970 the median education contribute significantly

to explain the variance in the amount of unemployment (sign. level

.0000).. And so does median age in 1970 (sign. level .0009), but

not in 1960 (sign. level .1638). Unexpectedly; however, the direction

of the effect indicates that high levels of median education go to-

gether with high levels of unemployment in both years, and that high

median age correspond to low levels of unemployment in 1970. The

amount of variance explained is not high in any of the equations

(.12 and .14, respectively), but there is no evident interpretation

of this relationship.

As indicated earlier, and as demonstrated in the next equation (7),

the effect from education on poverty is very strong, and in the

expected direction.

$$\hat{P}_{70} = 89,9 - \underset{(1.68)}{\overset{(-.15)}{7,2}} LMA_{70} - \underset{(.26)}{\overset{(-.81)}{5,9}} MED_{70} - \underset{(.07)}{\overset{(-.10)}{0,2}} MAGE_{70} \pm 5,79 \qquad (7)$$

$$R^2 = .65$$

Age also has a significant effect on poverty, and all taken together

the three variables explain 65 percent of the variance in poverty.

These findings seem to suggest that a general increase in the level

of manufacturing activity, as measured in this paper, is an uncertain

method for reducing levels of unemployment and poverty in nonmetro-

politan U.S. counties. Education, which is another so-called
"policy variable", seems to have an equivocal effect effect on the
two dependent variables. High general levels of education seem
to be related to high levels of unemployment, but to low levels of
poverty.

IMPLICATIONS AND CONCLUSIONS

The federal policy of intervention in the processes of industrial
relocation is partly based on a regional version of the national
myth claiming that: "economic growth is necessary to remove poverty"
(Mishan, 1971; Moore, 1965). As the results of this paper show,
public investment in nonmetropolitan infrastructure and subsidized
plant locations, supposed to sustain regional economic growth, is
not likely to change the miserable plight of the rural poor and
unemployed. And it is fairly evident why this is so.

Measures aimed at making nonmetropolitan counties attractive for
plant locations have industrial corporations and county govern-
ments as their "target population" or "clients". Based on the
fallacy that: "what is good for industry is good for people in the
areas where manufacturing plants locate" this policy takes a certain
level of individual, employment-relevant resources for granted.

But, as it has been reported by others (Bryant, 1969; Miernyk, 1971; Somers, 1958), the rural poor and unemployed are too under-educated and underskilled to benefit from such regional policies, and a substantial number of jobs are lost through "leakage" (Andrews, 1968; Bender, 1971; Lucey and Kaldor, 1969).

As Summers and Clemente have pointed out, one can, in the termi-nology of human ecology, discern between strong and weak competi-tors in a labor market. In their study of an impact area in Illi-nois, they define strong competitors as: "persons 35-49 years of age, males, individuals with post high school education, and white collar workers"; and weak competitors: "persons 65 years of age or older, females, persons with less than high school education and persons not employed" (Summers and Clemente, 1973:14). The results from this study suggest that people who are weak competitors do not improve their chances of becoming employed through the process of industrial relocation.

If solving the problem of unemployment and poverty in rural America is a societal desirable goal, and if federal intervention still is considered a viable option for attacking these problems, some policy implications can be drawn from this study. The assumption of an overall positive relationship between relocation of manufacturing activities and the economic well-being of local disadvantaged groups

has been shown to be unjustified. This finding calls for a group-
specific regional policy that directs its attention towards the
market-relevant resources of the rural poor and unemployed. This
suggestion should not be taken to mean that we oppose a regional
diversification of economic activities, but that such diversifi-
cation in its present form does not seem to improve the social con-
ditions of these groups.

TABLE 1

CORRELATION MATRIX FOR INDICATORS OF UNEMPLOYMENT, POVERTY, LEVEL OF MANUFACTURING ACTIVITY, EDUCATION AND AGE.

	U_{60}	U_{70}	P_{70}	LMA_{59}	LMA_{70}	MED_{60}	MED_{70}	$MAGE_{60}$	$MAGE_{70}$
U_{60}		.92	-.26	.24	.15	.21	.28	-.05	-.20
U_{70}			-.25	.20	.11	.24	.29	-.06	-.21
P_{70}				-.07	-.03	-.73	-.80	-.25	-.07
LMA_{59}					.71	-.09	-.03	-.04	-.16
LMA_{70}						-.21	-.13	.01	-.12
MED_{60}							.91	.15	.05
MED_{70}								.16	-.02
$MAGE_{60}$									.85

U_{60} : Number of residents unemployed in 1960.

U_{70} : Number of residents unemployed in 1970.

P_{70} : The percentage of families below poverty level in 1970.

LMA_{59} : Level of manufacturing activity in 1959.

LMA_{70} : Level of manufacturing activity in 1970.

MED_{60} : Median education in 1960.

MED_{70} : Median education in 1970.

$MAGE_{60}$: Median age in 1960.

$MAGE_{70}$: Median age in 1970.

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