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THE DISTRIBUTION OF BENEFITS FROM INDUSTRIALIZATION IN RURAL AREAS: SOME FINDINGS

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INTRODUCTION

Industrialization has long been proposed as a policy for promoting regional economic growth and reducing the incidence of unemployment, poverty and dependency in lagging regions (Smith). Such policy proposals are based on the trickle down theory. This theory holds that economic development results in an increase in the demand for skilled labor which in turn results in an upgrading of the positions of the semiskilled, unskilled, and unemployed.¹ The result is economic growth and a reduction in the incidence of unemployment, poverty and dependency and the degree of income inequality in the area.

The validity of trickle down within the context of national economic growth has been the subject of considerable debate among economists and other social scientists since the initiation of the "War on Poverty" in the 1960's. Harrington and Galbraith argued that the poor are largely immune from the benefits of economic growth, and their contention has been at least partially supported by the findings of Anderson and Aaron. However, findings by Galloway, Lampman, and Aigner and Haines lend support to the notion that economic growth does reduce the incidence of poverty and unemployment.

The validity of the trickle down theory within the regional development context has received less attention. Bryant argued that the trickle down effect may not be substantial in the case of regional industrialization because regional industrialization induces in-migration and the in-migrants may take jobs which would have been available to the indigenous poor. Smith, in comparing the problems of economic development in depressed regions of developed countries with those of underdeveloped countries, noted that depressed regions are limited in the ways that they can pursue economic development because they cannot exclude competitors from outside the region. However, relatively little empirical research has focused on examining the distribution of benefits of regional industrialization. Shaffer, using county level data for four counties in Oklahoma, found that industrialization was associated with higher levels of income, reduced poverty rates, and a decline in the degree of income inequality. However, Shaffer's study did not control for other factors, such as government income redistribution policies and in-migration, that might

have significantly influenced county income statistics. Therefore, it is impossible to sort out the net effect of industrialization. Reinschmiedt and Jones examined the impact of industrialization in six rural Texas communities on the earnings distribution of the employees in the newly created jobs. They concluded that industrialization resulted in a slight reduction in the degree of earnings inequality among the sample employees. However, their analysis suffers from the fact that it focused on the earnings of employees rather than household income. For economic security and equity policy issues, household income rather than employee earnings is the relevant variable. In addition, Reinschmiedt and Jones did not specifically examine the effect of industrialization on the indigenous population. They simply compared the earnings distribution of all sample employees (both residents and in-migrants) before and after employment in the newly created jobs. Hence, their results do not permit the reader to evaluate the impact of industrialization on the target population, viz., the indigenous population.

The objective of this study is to examine the distribution of the benefits of industrialization in Sussex County, Delaware. Specifically, the study examines the impact of industrialization on a sample of 205 employees who were employed by eight manufacturing firms which started up operations in Sussex County, Delaware, between 1974 and 1977.²

THE STUDY AREA AND DATA

Sussex County, Delaware contains a land area of 608 square miles and comprises the southern portion of Delaware. Sussex County exhibits many characteristics common to the rural American countryside. In 1970, slightly over 85 percent of the county's 80,350 residents were classified as rural and 21.6 percent of the county's gross product was accounted for by agricultural and agribusiness activity (Allred and Smith).

In 1969, 13 percent of the families in Sussex County had incomes below the poverty threshold (U.S. Bureau of the Census, 1972a). In comparison, 8.2 percent of the families in Delaware and 10.7 percent of the families in the United States had incomes below the poverty threshold in 1969 (U.S. Bureau of the Census, 1979).

The distribution of the county's employed labor force by industry of employment for the year 1970 is shown in Table 1. Employment in manufacturing accounted for 30.2 percent of the county's total employment in 1970, while employment in agriculture and related industries accounted for 8.8 percent. Between 1960 and 1970, total employment in the county increased by 21.2 percent while employment in manufacturing increased by 23.4 percent. Employment in agricul-

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This research was funded by the Cooperative State Research Service, U.S. Department of Agriculture.

¹ The concept of trickle down was first presented in a formal economic sense by Reder. However, the expression "trickle down" was coined by W. H. Locke Anderson

² A detailed description of the sampling procedure is available from the author upon request.

Table 1. Distribution of Employment in Sussex County, Delaware by Industry of Employment, 1970*

Industry	Employment 1970		Percent Change 1960-1970
	Number	Percent	
Agriculture, Forestry and Fisheries	2,876	8.83	-38.79
Mining	13	.04	-48.00
Contract Construction	2,947	9.05	36.44
Manufacturing	9,823	30.16	23.43
Transportation and Public Utilities	1,748	5.37	22.24
Wholesale Trade	1,115	3.42	43.69
Retail Trade	4,858	14.92	28.16
Finance, Insurance and Real Estate	861	2.64	33.49
Services	3,934	12.08	57.28
Government	4,394	13.49	39.42
Total	32,569	100.00	21.18

* U.S. Bureau of the Census, Census of the Population: 1970, General Social and Economic Characteristics, Final Report PC (1)-C9, Delaware, and U.S. Bureau of the Census, Census of the Population: 1960, General Social and Economic Characteristics, Final Report, PC(1)-C, Delaware.

ture and related industries declined by 38.8 percent during this period.

Between 1970 and 1978, total wage and salary employment in Sussex County as reported in County Business Patterns increased by 17.4 percent. However, employment in manufacturing declined by 8.3 percent during this period because of the decline in employment in food processing and apparel products (U.S. Bureau of the Census, 1972b and 1980).

Although there was a net loss of manufacturing jobs during the 1970's, some manufacturing firms started up operations in the county during this period. Data maintained by the Delaware Division of Economic Development indicate that eight manufacturing firms started up or significantly expanded operations in the county between 1974 and 1977. In June 1978, these firms employed 846 employees. These firms were engaged in the manufacture of: (1) canned and preserved fruits and vegetables, (2) fabricated metal products, (3) abrasive mineral products, (4) wood buildings and mobile homes (two firms), (5) miscellaneous plastic products, (6) textiles (dyeing and finishing) and (7) converted paper products. In June 1978, a random sample of 205 employees of these firms was interviewed to obtain information about their demographic characteristics and their employment, income, earnings, and dependency sta-

tus before and after being employed in the newly created manufacturing jobs.

METHODOLOGY

The study uses several criteria for evaluating the distributional impact of industrialization on the sample of 205 employees. Specifically, the study considers the effect of industrialization on: (1) poverty rates, (2) dependency rates, (3) the relative distribution of income, and (4) the black population. In addition, the study examines the effect of in-migration on the distributional impact of industrialization.

Concomitant with the initiation of the "War on Poverty" in the 1960's was the official adoption of the concept of a poverty line or index to measure the incidence of poverty among households (Lampman). Since this time, distributional questions have in most cases been evaluated using this concept. In this analysis, the impact of industrialization on poverty rates is evaluated using the 1976 poverty index adopted by the Federal Interagency Committee (U.S. Bureau of the Census, 1977). Specifically, the study estimates the percentage of households that escaped poverty as a result of the employment of a member of the household in one of the newly created jobs.

The change in poverty status was evaluated

by comparing the total household income from all sources for the year 1977 with the total household income in the most recent year prior to being employed in the present job.³ For purposes of comparison, household income in both years was converted to 1976 dollars using the Philadelphia area Consumer Price Index.

While reducing poverty rates is widely accepted as an economic goal, reducing such rates does not necessarily reduce the degree of economic dependence. For example, while the growth of income support payments since the 1960's has reduced poverty rates, these payments have not provided economic independence for those individuals who want to and are able to work (Schiller). Furthermore, in contrast to policies which promote economic independence, support payments conflict with the goals of economic efficiency and economic growth. Thus, this analysis also examines the effect of industrialization on the dependency status of the households of employees who became employed in the newly created jobs. Specifically, the following are computed: (1) the percentage of employees in the newly created jobs who were unemployed immediately prior to being employed in the newly created job, (2) the percentage of households which discontinued receiving public assistance benefits as a result of a member of the household becoming employed in a newly created job, and (3) the percentage of households which discontinued receiving unemployment insurance as a result of a member of the household becoming employed in a newly created job.

Given that the Civil Rights Act of 1964 formally committed the nation to reducing those earnings and employment disparities between blacks and whites which are attributable to labor market discrimination, the distribution of benefits from industrialization in rural areas by race is an important policy issue. Tobin argued that in slack labor markets employers are more likely to use race as a screening device for good jobs and unions and other craft groups are likely to be more discriminatory as they seek to preserve control over scarce jobs. It follows that industrialization in a local rural area could be expected to reduce the slack in that labor market, reduce the black unemployment rate and improve the relative wage rates and household incomes of blacks. To evaluate the impact of in-

dustrialization on the black population, the following are computed: (1) the distribution of newly created jobs by race, (2) the black/white hourly wage rate and annual household income ratios before and after employment in the newly created jobs, and (3) the incidence of poverty by race before and after employment in the newly created jobs.

Historically, income distribution questions have most commonly been examined in terms of the relative distribution of income (Lampman). This study examines the impact of industrialization on the relative distribution of income by computing (1) Gini coefficients for the household income of the sample employees before and after employment in the newly created jobs, and (2) the mean household income of the quintiles of the sample employees relative to the mean household income of the sample employees as a whole before and after employment in the newly created jobs.⁴

Finally, the study examines the effect of in-migration on the distributional impact of industrialization. Bryant argued that the trickle down effect may not be substantial in the case of regional industrialization because regional industrialization induces in-migration and in-migrants may take jobs which would have been available to the indigenous poor. Hence, the study examines the extent to which in-migration intervenes between industrialization and the indigenous population.

THE FINDINGS

The impact of industrialization on the poverty, employment and dependency status of the households of the employees in the newly created jobs is shown in Table 2. These data indicate that 83.1 percent of the employees were members of households that were above the poverty threshold before the employees were employed in the newly created jobs, while 16.9 percent were members of households that had incomes below the poverty threshold. Nearly all (99%) of the households below the poverty threshold escaped poverty as a result of a household member's employment in one of the newly created jobs.

Twenty-five percent of the employees were unemployed immediately prior to being employed in one of the newly created jobs. Nineteen percent of the employees were receiving unemployment insurance prior to being employed in one of the newly created jobs, and all of these individuals discontinued receiving unemployment insurance after becoming employed in the newly created jobs. Finally, 8.5 percent of the households of the employees in the newly created jobs were receiving some form of public assistance prior to employment in one of the newly created jobs, and all of these households discontinued receiving public assistance as a result of the employment.

In-migrants into the county became employed

³ In cases where the individual was employed in a newly created job for less than a full year in 1977, the earnings were annualized as follows:

$$AE_i = HWR_i \cdot \overline{HPY}_f$$

where

AE_i is the individual's 1977 annual earnings in the newly created job,

HWR_i is the individual's 1977 average hourly wage rate in the newly created job and

\overline{HPY}_f is the average hours worked in 1977 by all employees in the firm in which the individual was employed.

⁴ The relative mean income of a given quintile, as presented by Budd, is (the mean income of the quintile/the mean income of the entire population).

Table 2. Impact of Industrialization on the Dependency Status, Labor Market Status and Poverty Status of Employees by Migratory Status.

Characteristic	Migratory Status		
	Total	Residents	In-Migrants
Change in Dependency Status			
Discontinued Receiving Public Assistance (Percent)	8.5	10.2	----
Discontinued Receiving Unemployment Insurance (Percent)	18.7	18.9	17.9
Labor Market Status Before Present Job			
Working (Percent)	62.6	63.1	58.9
Unemployed (Percent)	25.2	24.3	30.8
In School (Percent)	6.9	7.8	2.6
Keeping House (Percent)	3.3	4.1	----
Other (Percent)	2.0	.7	7.7
Change in Household Poverty Status			
In Poverty -- In Poverty (Percent)	.5	.9	----
In Poverty -- Out of Poverty (Percent)	16.4	18.0	11.4
Out of Poverty -- In Poverty (Percent)	----	----	----
Out of Poverty -- Out of Poverty (Percent)	83.1	81.1	88.6
Percent of Sample	100.0	83.7	16.3

in 16.3 percent of the newly created jobs while residents became employed in 83.7 percent.⁵ Prior to being employed in the newly created jobs, the incidence of dependence on public assistance and poverty was lower among in-migrants than among residents. None of the in-migrant households were dependent on public assistance prior to a member of the household being employed in a newly created job. In comparison, 10.2 percent of the households of resident employees were dependent on public assistance prior to a member's employment in a newly created job. None of these households continued to be dependent on public assistance after employment in a newly created job. Nineteen percent of the households of resident employees were in poverty prior to the member's employment in a newly created job. In comparison, 11.4 percent of the households of in-migrant employees were in poverty prior to a member's employment in a newly created job.

Thirty-one percent of the in-migrants were unemployed immediately prior to being employed in a newly created job, and 17.9 percent discontinued receiving unemployment insurance as a result of employment in a newly created job. In comparison, 24.3 percent of the resident employees were unemployed immediately prior to being employed in

a newly created job, and 18.9 percent discontinued receiving unemployment insurance as a result of employment.

Table 3 contains data on the impact of industrialization by race. These data indicate that blacks constituted a disproportionately large share of the poor and unemployed in the study county. Specifically, in 1970, blacks constituted 20.4 percent of the county's population and 18.3 percent of the labor force. However, blacks constituted 43.6 percent of the unemployed and 34.7 percent of the families with incomes below the poverty threshold in 1970 (U.S. Bureau of the Census, 1972a).

Blacks became employed in 23.2 percent of the newly created jobs. All black employees were residents of the study county prior to employment in the newly created jobs, while 21 percent of the white employees were in-migrants. Twenty-four percent of the blacks employed in the newly created jobs were from households which had incomes below the poverty threshold prior to the member's employment in the newly created job. Nearly all (96 percent) of the previously poor black households escaped poverty as a result of a household member's employment in the newly created job.

The mean hourly wage rate and mean household income of black employees improved relative to white employees as a result of employment in the newly created jobs. Prior to employment in the newly created jobs, blacks had mean hourly wage rates that were 89 percent of resident white employees and 87 percent of all white employees, and mean annual household incomes that were 80 percent of resident white households and 76 percent of all white households. After employment in the newly created jobs, blacks had mean hourly wage rates that were 93 percent of resident white employees and 92 percent of all white employees, and mean annual household incomes that were 82 percent of resident white households and 79 per-

⁵ An employee is defined as an in-migrant if he resided in the county at the time of the survey but resided outside of the county prior to being employed in the present job. Of the total in-migrants, 33 percent previously resided in the two other counties in Delaware, 10 percent on the Delmarva Peninsula but outside of Delaware, and 57 percent outside of the Delmarva Peninsula. At the time of the survey, all of the employees resided in the county. There were no commuters from outside of the county.

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Table 3. Impact of Industrialization by Race and Migratory Status

Characteristic	Race and Migratory Status				
	White Resident	White Total	Black Resident	Black/White Resident	Black/White Total
Percent of Total Population ^{a/}	79.6		20.4		
Percent of Total Labor Force ^{a/}	81.7		18.3		
Percent of Total Unemployed ^{a/}	56.4		43.6		
Percent of Families in Poverty ^{a/}	65.3		34.7		
Percent of Total Employed in New Manufacturing Jobs	60.5	76.8	23.2		
Percent Previously Poor	14.7	13.0	24.1		
Percent Escaping Poverty	14.7	13.0	22.2		
Mean Hourly Wage on Previous Job (in \$1976's)	\$ 3.45	\$ 3.52	\$ 3.07	.89	.87
Mean Hourly Wage on Present Job (in \$1976's)	\$ 3.55	\$ 3.61	\$ 3.31	.93	.92
Mean Household Income Before Present Job (in \$1976's)	\$7,553	\$8,014	\$6,060	.80	.76
Mean Household Income Since Present Job (in \$1976's)	\$8,515	\$8,880	\$6,971	.82	.79

^{a/}U.S. Bureau of the Census, Census of the Population: 1970, General Social and Economic Characteristics, Final Report PC(1)-C9, Delaware.

Table 4. Distribution of Household Income Before and After Employment in Present Job

Income Classification	Relative Mean Income of Quintiles					Gini Coefficient
	1st	2nd	3rd	4th	5th	
Previous Household Income (Residents)	.3290	.7318	.8782	1.1838	1.8772	.2969
Present Household Income (Residents)	.4527	.7032	.8678	1.3527	1.6235	.2394
Percentage Change ^{a/}	37.60	-3.91	-1.18	14.27	-13.51	-19.37
Present Household Income (All Households)	.4395	.7070	.9018	1.1837	1.7680	.2507
Percentage Change ^{a/}	33.59	-3.39	2.69	-.01	-5.82	-15.56

^{a/}Denotes percentage change from previous household income for residents.

cent of all white households.

The impact of industrialization on the relative distribution of household income is shown in Table 4. To evaluate the effect of in-migration on the distribution of income, the distribution of household income after employment in the newly created jobs was computed with the in-migrant households alternatively included and excluded from the distribution. The data indicate that the overall distribution of household income became slightly more equal as a result of industrialization, with the lowest income quintile experiencing a 33.59 to 37.60 percent increase in the relative mean income and the highest income quintile experiencing a 5.82 to 13.51 percent decline in the relative mean income.

The effect of in-migration was to make the income distribution slightly more unequal. When in-migrants were excluded from the distribution of household income after employment in the newly created jobs, the Gini coefficient declined by 19.37 percent, the relative mean income of the lowest income quintile increased by 37.60 percent, and the relative mean income of the highest income quintile declined by 13.51 percent. When in-migrants were included in the analysis, the Gini coefficient declined by 15.56 percent, the relative mean income of the lowest income quintile increased by 33.59 percent, and the relative mean income of the highest income quintile declined by 5.82 percent.

SUMMARY AND CONCLUSIONS

The findings of this study indicate that industrialization in Sussex County, Delaware between 1974 and 1978 reduced the incidence of poverty, unemployment and dependence among employees in the newly created manufacturing jobs. The findings also indicate that the proportion of newly created jobs received by blacks exceeded the proportion of blacks in the county's labor force, but was less than the proportion of blacks among the county's unemployed workers. In addition, the black/white hourly wage rate and annual household income ratios increased as a result of employment in the newly created jobs. The findings also indicate that industrialization reduced the degree of income inequality among the households of employees in the newly created jobs.

The impact of industrialization on the county's indigenous population was dampened by the in-migration into the county which was induced by the industrialization process. In-migrants into the county became employed in 16.3 percent of the newly created jobs. The effect of in-migration was to make the distribution of household income slightly more unequal.

There are certain limitations inherent in the study. First, the findings are based on a time slice for a single county in Delaware. The distributional impact of industrialization could be expected to differ in areas which are significantly different from the study county with respect to demographic composition, poverty and unemployment rates, and location. The distributional effect could also be different under different aggregate economic conditions. In this respect, the study covered a period during which

aggregate economic activity was, on balance, in an expansionary phase. Finally, the study considers only the direct benefits of industrialization. It does not consider the distribution of the indirect and induced benefits.

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