THE NET ECONOMIC IMPACT OF NEW INDUSTRY ON RURAL COMMUNITIES IN EASTERN OKLAHOMA

By

RONALD EARL SHAFFER

Bachelor of Science

University of Nebraska

Lincoln, Nebraska

1967

Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
DOCTOR OF PHILOSOPHY
May, 1972

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Thesis Approved:

Luther R. Fowler
Thesis Adviser

Vernon R. Eidman

Wayne D Purcell

Michael R. Edgmand

D Kluckhorn
Dean of the Graduate College

PREFACE

Appreciation is extended to Dr. Luther G. Tweeten, Graduate Committee Chairman, for his assistance during this study and throughout all phases of the graduate program. Thanks are also due to Dr. Vernon R. Eidman, Dr. Wayne D. Purcell and Dr. Micheal R. Edgmand for their helpful criticisms and suggestions.

Appreciation is also extended to the Department of Agricultural Economics for their financial support throughout this study.

Thanks are made to Mr. Edward Henderson, Area Community Resource Development Agent, the Eastern Oklahoma Economic Development District staff, and Mr. James Horne for their assistance during the field work for this study.

Thanks are due to Mrs. Linda Howard for her dedication in typing preliminary drafts of this dissertation, and to Mrs. Suzanne Moon for her excellence in typing the final manuscript.

Special recognition is made to my wife, Claire, daughter, Monica, and son, David, for their faith, patience, and understanding during this study. I affectionately dedicate this dissertation to them.

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CHAPTER I

INTRODUCTION

Statement of Problem and Needs

Low incomes, high dependency rates, underemployment and a declining tax base characterize many rural areas. Two general routes to overcome these problems are moving people to other areas where jobs and incomes are more adequate and bringing jobs to depressed areas. Markets have functioned imperfectly to alleviate income differences among areas, and publically supported programs have sought to speed the spatial adjustment of human resources. Programs of counseling, job information, and subsidized labor mobility have moved workers to jobs outside depressed areas. While these programs are useful and perhaps should be expanded, they alone are inadequate.

This study deals with the second general route to rural development -- bringing jobs to people. The study estimates the economic impact of new industry on selected communities in the Ozark region of eastern Oklahoma. The study not only shows the net benefits by community sector, but also indicates maximum subsidies a community can offer industry and just break even on the investment in location incentives. It is possible that some communities have gone too far while others have not gone far enough in their effort to attract new industry. At the state and national level, policymakers are uncertain about the role and impact of job creation in rural development. Data are needed

on the benefits and costs of rural industrialization. A better understanding of the impact of industrialization on communities can help policymakers at the local, state and national levels to direct development programs toward desired objectives.

Objectives of the Study

The general objective of the study is to measure the magnitude and incidence of impact on communities from increased industrial activity.

Specific objectives of the study are to:

1. develop a theoretical model to help communities evaluate the net impact from industrialization;
2. apply the model using data from plants located in eastern Oklahoma;
3. estimate the potential limit of industrial location incentives offered by the community;
4. evaluate industrialization as a means to increase the fiscal base of rural communities; and,
5. evaluate rural industrialization in the context of the national objective of economic efficiency.

Some Previous Studies of Industrial Impact

This section evaluates previous industrial impact research on the basis of four questions that stimulated this study. Is the level of analysis a community, a county or a multi-county area? Are personal and business incomes along with revenues and expenditures of schools and municipalities included in the analysis? Are the additional benefits and costs to the study area linked to the new industry? Is an

estimate made of net gains from new industry? Previous industrial impact research can be grouped into three broad categories. The first group of studies emphasizes the effect of a new plant on the private economy. The second group of industrial impact studies examines the public sector changes caused by the new plant. The final group considers both private and public economic effects but does not combine them into a total community effect.

Private Sector Emphasized

Four of the studies reviewed on the impact of rural industrialization were completed by the USDA during the 1960's. The format for each study was similar, but the detail and emphasis varied among the studies.

Crecink's study [13] examined a plant locating in a small rural Mississippi community of less than 1,000 residents.[1] The plant seemingly had adequate financial backing from the Area Redevelopment Administration (ARA), Small Business Administration (SBA), and local and state development groups along with private financing but failed after four years because of inadequate local labor skills, raw materials and markets. The plant employed 56 people, about half of the expected level, and was estimated to generate an additional 8 jobs in the four county area and 50 indirect jobs outside the area. The management and skilled positions at the plant were filled by "imported" workers. Although Crecink enumerated the cost of the loans to the plant, he did not report any income generated from the plant. His only mention of public sector costs was that the plant "was not expected to cause any immediate increase in demand for public facilities" [13, p. 11].

Jordan [31] studied the effects of a joint industrial development venture by two adjacent Arkansas counties. The investment in the plant site, building, water system and airport was almost $750,000. This was financed by general obligation bonds, ARA grants, and Federal Aviation Agency matching funds. The plant hired 750 people, mostly women, at an annual payroll of $2.2 million. Jordan estimated the plant created 85 jobs in the eight county study area and 335 jobs elsewhere. The plant did not improve the area's unemployment situation because women previously not in the labor force were hired and there was a high job turnover rate. However, the plant reduced seasonal fluctuations in area income and contributed about 13 percent of the increase in area personal income between 1960 and 1963. Per capita incomes increased 26 percent even with a slight increase in population. Jordan did not discuss the noncapital public expenditure and public revenue effects of the new plant on a rural community of 233 people.

Of the four USDA studies, McElveen [40] did the most complete examination of industrial impact on the private sector. The $131,000 investment in the new plant by the ARA and local groups in 1963 generated a cumulative total payroll of $750,000 by 1968 plus almost $1 million spent by the plant for local goods and services. The firm hired 25 people in 1963 and secondary employment was estimated to be nine jobs in the four county study area plus one other job outside the study area. By 1968, the plant had expanded to 40 employees and an annual payroll of $160,000. The firm hired its workforce from the declining sectors of the area -- agriculture, lumbering and sawmills. This plant appeared to be highly successful and beneficial to the area by absorbing surplus labor and adding to the income base. Despite

McElveen's fine treatment of the private sector benefits, he did not include the impact of the new plant on the local public sector nor did he include the private sector costs of foregone previous income.

Hoover [28] examined the first year impact of a new plant in Kentucky. The ARA invested $371,900 in a loan for the plant's building and equipment while state and local sources invested $166,171 in the plant site and building. In its first year of operation, the plant paid $235,000 in wages to 111 workers, mostly unskilled women. Plant employment induced an estimated seven new jobs to be created in the county and an additional 132 jobs outside the county. The location of the plant required an $832,000 expansion of the municipal water and sewer system. Hoover concluded that the new plant increased income and employment levels in the area, but he did not elaborate on the revenue and noncapital expenditure impact of the new plant on the public sector.

The four USDA studies analyzed short-run industrial impact. The studies estimated gross benefits in the private sector but did not include any private sector costs other than private loans to the new plants. Two of the studies did not measure the plant's effect on income and none examined the change in municipal government and school district finances due to industrialization. The only public sector effects considered were investment in public facilities. The studies did not estimate the net gain to the study area from industrialization, nor did they focus their analysis on the community.

Saltzman [53] in a 1964 study for the SBA examined the effects of 38 new industrial firms on 18 Oklahoma communities. An objective of the study was to provide a "...basis for evaluating real costs and/or

benefits of assistance plans to develop industry" and decide whether the benefits were as great as the direct costs. Direct costs included expansion of public facilities and services (capital costs only), private costs in attracting new firms, and loans for fixed and working capital. The accumulated total tangible benefits for the 18 communities were estimated to be almost $49 million and the costs were $2 million. Saltzman did an excellent job of accounting for the costs of the industrial development programs but did not examine the private sector cost of foregone income, nor the change in noncapital public sector costs due to the new plant and/or new population. The tangible benefits of the new plant were gross payroll, which overestimated community benefits since no adjustments were made for nonlocal consumption or nonlocal taxes. Although Saltzman's analysis focused on the community, he did not estimate a community net gain from industrialization.

Moes [42] in a study during the early 1960's examined the theoretical basis for and economic returns to industrial subsidization. He relied on previously reported empirical results of efforts during the 1930's by various communities in Illinois, Mississippi, and Wisconsin to revitalize their economies. The study of 40 Wisconsin communities and 130 firms concluded that "....in general these promotions seem substantially to have accomplished their purpose in terms of employment and payroll" [42, p. 70]. Moes evaluated industrial impact in terms of the payrolls generated from the local and state investment in the plant, i.e., subsidies, loans and grants. He estimated the 130 firms in Wisconsin had an average annual return of 500 percent. An estimate of the annual rate of return to the Mississippi Balance Agriculture With Industry (BAWI) program for 1936-40 by Moes was 800

percent. The Illinois study reported a 900 percent annual rate of return on industrial subsidies. While Moes did an admirable job of relating previous work to his study, he stopped short of a complete accounting of industrial impact. No mention was made of changes in community population and its effects on public facilities and finances. The loss of income from prior jobs was included in the equation to estimate returns but "ignored" when returns to various areas were calculated. Finally, though he implied that gross payroll reflected gains to the community, he ignored the income leakages from nonlocal taxes and nonlocal consumption.

Rinehart [51] reported the rates of return on the subsidy investment in 22 firms located in 10 communities, each with less than 10,000 population. Rinehart noted that the new jobs were filled by workers from four categories: (1) in-commuters, (2) community residents who previously commuted elsewhere for work, (3) unemployed workers, and (4) underemployed farmers and farm laborers. Rinehart postulated three cases reflecting conditions of the industry's financial viability and the extent of community subsidies received. Case I represented a perpetual income stream with the plant receiving the capitalized value of all promised subsidies. In Case II the firm ceased operation in 1961 (date of the analysis) and received only the pro rata proportion of subsidies promised. The plant received the total capitalized subsidy in Case III but the income stream stopped in 1961. Industry was very beneficial to the communities in terms of returns to location incentives. The average rate of return on the subsidies in Case I was 1,140 percent, in Case II the average was 607 percent, and in Case III the average was 119 percent. By using gross payrolls rather than locally

spent disposable income, Rinehart's analysis overestimated the benefits to the community. The new industries' impact on the municipal government and school district was ignored, precluding an estimate of total community impact.

The studies mentioned above utilize time series or a comparison of pre- and post-industrialization levels of selected socio-economic variables in one area to measure industrial impact. Another approach is to compare two similar areas over time, one experiencing an increase in industrial activity while the other is a control area with no major change in industrial activity. This approach offers the possibility of measuring industrially induced changes in long-run growth trends, subject to the initial similarity between areas as well as the ability of the control area to reflect a true no-new-industry situation. At least two studies use the cross-sectional approach; one in Wisconsin and the other in Ohio.

The Wisconsin [4] study examined six communities, three of which had experienced industrialization between 1947 and 1957 and three which had not. The communities were in the 5,000 to 10,000 population range and were comparable in terms of employment, trade, and taxation at the beginning of the study. The authors concluded that there was a faster rate of change for many socio-economic factors in the more industrialized counties (MIC) than in the less industrialized counties (LIC). The rate of change in population, trade volume, and income was higher in the MIC. The MIC also had a higher employment to population ratio, more high school graduates remaining in the community and higher municipal revenues and expenditures than the LIC. The study indicated that industrialization was the causal factor for the rate of improvement of

the MIC over the LIC. The study did not deduct the previous job income from the benefits of job upgrading nor were changes in private income and public sector finances related to a particular plant. The study reached conclusions based on generalizations from secondary data that need not solely reflect the effect of new industry. No estimate of the net gain to the community was made.

A second study [5] investigated two adjoining counties in southeastern Ohio. A new plant employing 2,600 workers had located in one county in 1957. The analysis compared the counties before industrialization (1957) and five years later. The study did not emphasize the income changes of the new plant but rather examined changes in jobs, occupations, attitudes, and social participation. While the analysis did compare changes over time between the two counties, it failed to estimate the net economic gain to the private and public sectors and the total community.

Public Sector Emphasized

The majority of studies of industrial impact emphasize changes in the private sector of the community. Hirsch's work is an exception. In two separate articles Hirsch [24, 25] reports use of an input-output model to determine the primary and secondary changes on the local private economy. These changes are related to the fiscal structure of the municipal government or school district to compute the industrial impact. Hirsch develops a net fiscal resource base or net fiscal status concept to measure the impact of industry on the public sector. The net fiscal resource base is the difference between industrially induced revenues and expenditures to either the municipal government

or school district. The study of industrial impact on schools examines the changes in employment, income, tax base, school revenues and expenditures from a change in final demand for 16 industries in the St. Louis area. The impact of thirteen of the industries is negative when state aid is assumed constant. When state aid to education is allowed to change, the net fiscal change is negative for only five industries. Hirsch [25, p. 198] concludes:

> The case study confirms the claim that industrialization, on the average, improves fiscal health of a school district, but only if state aid is included as a revenue source...

The study also led to the rejection of the hypothesis "that local industry in all cases improves the net fiscal resource status of the district". While Hirsch works with a net gain concept (revenues minus expenditures) for a specific public sector, he does not extend the concept to the community and private sector.

Isard and Coughlin [12] in a study of municipal and educational functions used engineering data rather than survey data to estimate costs of increasing the community's population and/or business activity levels. They examined services for police and fire protection, streets, utilities and schools, and included both capital and noncapital costs and potential revenues. Their approach could focus on a specific community-industry situation to estimate the net gain in fiscal resources. However, the study examined just the public sector portion of the new plant's impact. The authors concluded by noting that "the additional municipal revenues generated by a new industry are frequently greater than the additional costs" [12, p. 44]. They mentioned that additional residential development can alter the new industry's effect on the municipal government fiscal position

> ...depending upon the number of new residents and their income, the magnitude of the new industrial and commercial valuations, the levels of municipal services provided, [and] the amount of unused capacity existing in municipal services [12, p. 44].

Lowenstein [38] summarized results of four empirical studies of the municipal revenue-cost ratio associated with new industry. A Connecticut and Illinois study revealed a 3 to 1 ratio, a New York study a 4 to 1 ratio and a Virginia study a 5 to 1 ratio. The public sector financial position in each of these metropolitan communities was improved with new industry, but the studies examined only part of the total community impact.

Public and Private Sector Combined

A few studies of industrialization have simultaneously considered the public and private sectors. These studies did not combine the changes in each sector into a single estimate of industrial impact on the community.

Garrison [19] examined the effects of nine new plants in five Kentucky communities. Using the economic base approach, his analysis indicated that the new plants were beneficial to the private sector. His private sector benefits were overestimated because the costs of foregone previous income and nonlocal consumption and nonlocal taxes were not deducted from the plant's gross payroll. Garrison estimated changes in primary public revenues and public expenditures arising from the new plant, new residents, and new students. Secondary effects were estimated by comparing differences in public revenues (and expenditures) between the study area and control counties. Garrison measured the net fiscal impact of the new plant on the school district, the city

government and the county government, but did not deduct the annual costs of the expansion of public facilities from the revenues in computing net fiscal impact. The net fiscal impact was sensitive to location incentives extended to the new plants and new public service demands. The net fiscal impact was the most sensitive for school districts and least sensitive for county government. Garrison concluded that industrial effects on the public sector tended to be negative when industrial property was exempted from taxes and when service requirements were increased by new residents and students.

Hagerman and Braschler [22] examined the impact of three new firms on the private and public sectors of a Missouri county. Their analysis of the private sector compared pre- and post-industrialization housing, employment and income levels, plus banking and population characteristics. The authors also examined industrial development programs and their cost. They concluded that industrialization led to an increase in economic activity but they did not separate changes due to the new plants from other causes. The second part of the analysis examined changes in public sector revenues and expenditures. The authors listed the capital improvements of public facilities but did not indicate if the expansions occurred because of new industrial activity. Changes in public sector finances were not linked to the new industry, new population or new students. The authors' conclusion was that ability to pay for city and school services increased, but the new industry's contribution to this increased ability was not isolated. The report did not measure community net gain from the new industry.

Stevens and Wallace [57] completed a study of the impact of industrial development on a rural Indiana county in 1964. They examined

changes in employment, commuting patterns, off-farm employment and population in the county since industrialization. They noted that, although in-commuters from other counties restrained local income gains from the new plant, the per capita income between 1949 and 1959 increased faster in the county than in the state. The new plant was believed to have increased the proportion of the county population receiving higher incomes. The authors examined changes in school district, municipal and county government revenues (assessed valuations and tax rates) and expenditures (capital and noncapital) between 1947 and 1960. Stevens and Wallace did not relate the gains in incomes and public sector revenues to changes in costs, nor were other changes in the county directly related to the new industry.

A study by Wadsworth and Conrad [76] emphasized the income leakages of the plant payroll from the community's private sector. The firm studied employed 100 workers with an annual payroll of $300,000. The researchers noted that after deductions for community income leakages from in-commuters, personal savings and retiring of old debts, the net income increase in the community was only $40,000. The high leakage of income from the community explained the small change in trade volume. No estimate was made of net gains to the private sector, to the public sector or to the community due to the new plant.

Summary

Prior studies revealed that industry was beneficial. However, the studies failed to provide a comprehensive framework of analysis. Most studies failed to focus on the community but rather examined a larger political unit such as a county. The studies examined only part of

the total public and private economy in the community and stopped short of providing a single estimate of net industrial impact on the study area.

The present study expands on the previous contributions in measuring industrial impact. Before turning to the theory and assumptions of this analysis in Chapter III, and the empirical results of the study in Chapter IV, a general description of the study area and results of the survey are given in Chapter II.

FOOTNOTES

[1]The numerals appearing in [ ] refer to bibliography references in the dissertation.

CHAPTER II

DESCRIPTION OF STUDY AREA AND DATA

This chapter describes the study area and outlines the data used in the empirical analysis. The primary data are from personal interviews between December 1970 and May 1971 with civic leaders, school and municipal officials, plant managers, and workers at the plants involved. The questionnaires used are shown in Appendix A.

The first section of this chapter describes the location of the study area and its general characteristics. The following section describes aspects of the community structure and how they may influence industrial impact. The next two sections discuss the structure and types of industries interviewed and labor force characteristics.

Overview of the Study Area

The communities in this study are located in the seven county Eastern Oklahoma Economic Development District (EOEDD) shown in Figure 1. The counties in the District are Adair, Cherokee, McIntosh, Muskogee, Sequoyah, and Wagoner. The Tulsa Standard Metropolitan Statistical Area (SMSA) adjoins the area at the northwest corner, and Sequoyah County at the southeast corner is in the Fort Smith SMSA. Two major four lane highways (the Muskogee and Indian Nation Turnpikes) in the District run south from Tulsa to meet Interstate 40 connecting Fort Smith, Arkansas with Oklahoma City. The recently opened Arkansas

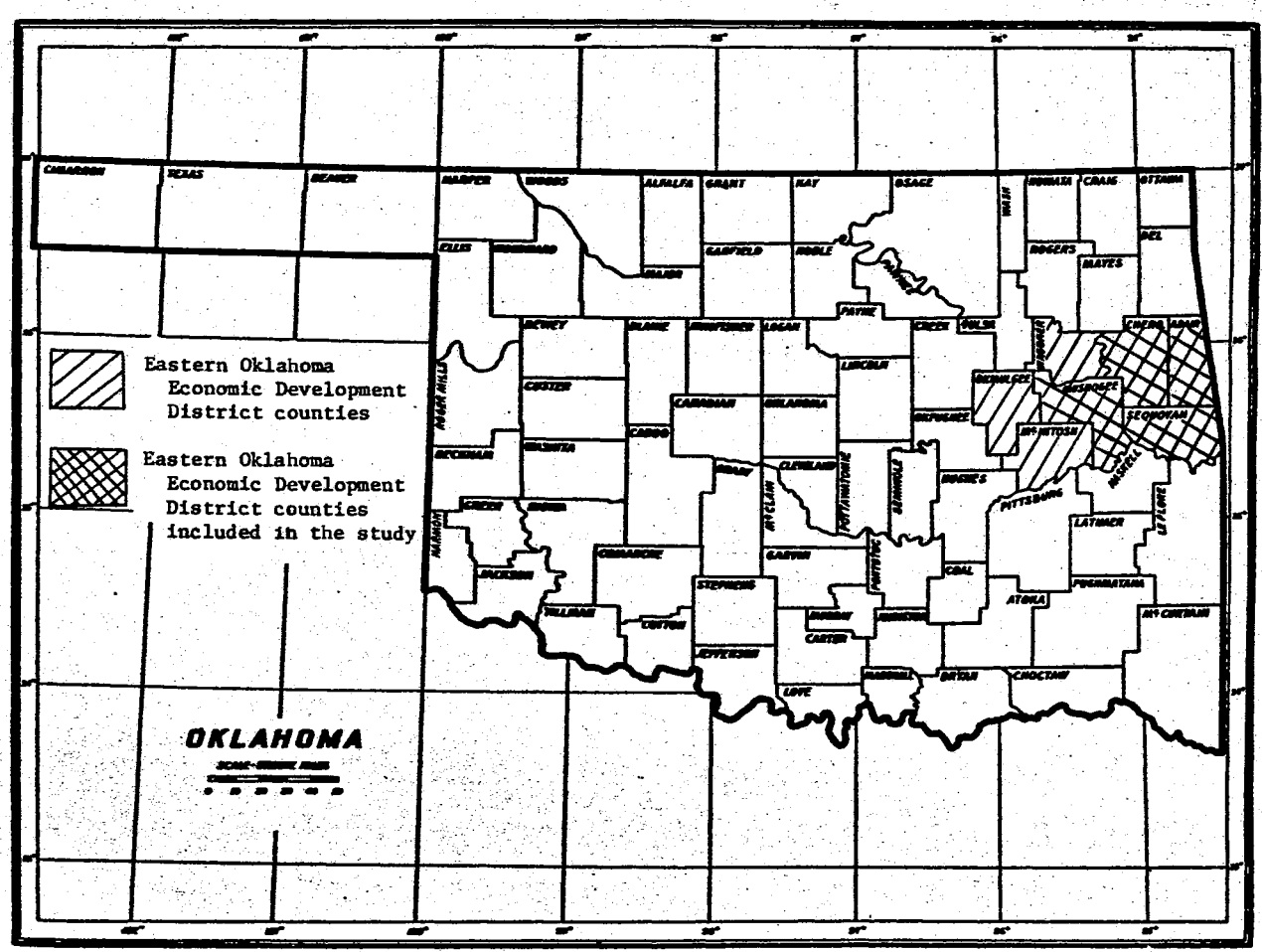

Figure 1. Eastern Oklahoma Economic Development District

River Navigation Channel runs through the district and offers barge transportation to markets along the Ohio-Mississippi Rivers.

There were two major reasons why this area was selected. First, local civic groups and officials expressed a desire to utilize industrialization as a development policy. Second, the EOEDD lies in the Ozarks region and exhibits economically depressed characteristics, such as a declining population base, high rates of outmigration, unemployment and underemployment, and low per capita and family incomes. Net outmigration between 1950 and 1960 totaled 22 percent of the District's 1950 population. County per capita incomes and median family incomes in 1960 were low relative to the state and nation. In 1960, EOEDD counties accounted for five of the eleven counties ranking lowest in per capita income in Oklahoma. Median 1960 family income by county ranged from 35 to 71 percent of the national level with a high proportion of the families concentrated in the $3,000 or less category.

Community Structure

This section provides information about the communities' ability to provide the necessary factors of production for a new industry. Population, labor force and industrial development programs are examined for their influence on industrial impact.

The size of the community population base can influence industrial impact in two ways. First, a larger population base supports a more complete consumer market in terms of goods and services offered. This reduces income leakages from the community due to imported consumer purchases. Second, a larger population and associated local labor force reduces the new plant's potential need to hire in-commuters,

another source of community income leakage. The 1970 population base ranges from 2,000 to 37,000 in the five communities studies. Population in all but one community is below 10,000 (Table I).

TABLE I

MUNICIPAL POPULATION LEVELS AND PERCENTAGE CHANGE FOR SELECTED YEARS

Community	Population Level			Intercensus Population Changes		
	1950	1960	1970	1950	1960	1970
					(Percent)	
Haskell	1,676	1,887	2,063	6.6	12.6	9.3
Muskogee	37,289	38,059	37,331	15.3	2.1	-1.9
Sallisaw	2,885	3,351	4,880	34.8	16.2	45.9
Stilwell	1,813	1,916	2,134	6.1	5.7	11.4
Tahlequah	4,750	5,840	9,254	56.9	22.9	58.5

Source: U.S. Department of Commerce, Bureau of the Census, Census of the Population, 1950, 1960, and Preliminary 1970, Characteristics of the Population, Oklahoma, Tables 7, 8, and 1.

The availability of local labor is one of the most important factors of production affecting community impact, because it determines whether community residents, new residents or in-commuters receive the primary income benefits from the new plant. The rates of unemployment, underemployment, labor force participation and out-commuting give an indication of the locally available labor.

The annual unemployment rates for the counties are as much as four times larger than the national and state averages during the 1960's (Table II). Adair County's annual unemployment rate ranges between 16 and 22 percent during the sixties. Rates of unemployment during the decade are lowest in Muskogee County, 6 to 11 percent, but they still exceed the state and national averages. These relatively high rates of unemployment indicate workers in the labor force are seeking employment and they are potential employees of a new plant.

A USDA study [33] estimates 1960 underemployment by sex and county as the difference in the county's actual median income and potential county income. The potential county income is the national median income adjusted for differences between the earning capacity of the county population and the national population. Adjustments are made for differences in age-race mix, educational attainment, labor force status (income recipient is or is not in the labor force) and employment status (worker is employed, unemployed or in armed forces). The study delineates three classes of underemployment: none (0 or less percent), mild (0 to 19.9 percent) and severe (over 20.0 percent). If the county income potential is less than the actual median income, then negative underemployment exists, implying that the county labor force is being utilized more fully than the national labor force. Rates of male underemployment are in the severe category for all counties except Muskogee, the only county in the study with a lower male underemployment rate than the state (Table III). Female underemployment in the four counties is nonexistant to mild and is below the state average. Severe underemployment of males indicates potential

TABLE II

UNEMPLOYMENT RATES FOR SELECTED YEARS

County	Year											
	1950	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Adair	3.6	16.4	17.1	21.6	21.8	19.7	19.7	19.4	17.3	18.7	15.9	17.5
Cherokee	4.0	16.2	14.0	11.3	11.5	11.8	10.8	9.3	9.3	9.4	9.0	10.0
Muskogee	5.5	8.9	10.8	10.5	10.4	9.2	8.1	6.6	6.3	7.0	6.1	7.4
Sequoyah	5.7	8.5	N.A.	12.9	10.4	11.8	10.4	10.4	9.2	7.6	6.4	8.9
State of Oklahoma	3.6	4.9	5.9	5.1	5.1	4.7	4.3	3.6	3.5	3.5	3.4	4.3
United States	5.3	5.5	6.7	5.6	5.7	5.2	4.5	3.8	3.8	3.6	3.5	4.9

Source: Oklahoma Employment Security Commission, Handbook of Labor Force Data for Oklahoma, Volumes I, II and III, and United States Bureau of the Census, The Statistical Abstract of the United States, 1964 (Table 289) and 1970 (Table 316).

to improve county income by fuller utilization of men through industrial employment.

TABLE III

UNDEREMPLOYMENT RATES FOR 1960 BY SEX[a]

County	Male	Female
Adair	40.7	-3.6
Cherokee	35.5	10.5
Muskogee	18.6	18.4
Sequoyah	29.5	-.4
State of Oklahoma[b]	25.7	20.5

[a]Ronald E. Kampe and William A. Lindamood, U.S. Department of Agriculture, Economic Research Service, Underemployment Estimates by County in the United States, 1960, Agricultural Economics Report No. 166, 1969.

[b]The State rate of underemployment is the average of the 77 counties in Oklahoma.

A related factor influencing labor availability is labor force participation rates. Labor force participation is that portion of the population, 14 years and older, actually in the labor force. Participation rates below state and national averages suggest that the labor force can be increased by new entrants without changing the population base. The four-county male labor force participation rate averages

56 percent with rates in individual counties ranging from a low of 48 percent to a high of 67 percent. The average participation rate of males in 1960 is 77 and 74 percent respectively for the nation and state. The 1960 participation rate for females averages 22 percent in the four counties, 35 percent in the nation and 30 percent in Oklahoma. The female labor force participation rate for the individual counties ranges from 17 percent to 31 percent.

In-commuters are another source of labor. The rate of intercounty commuting for the study area is higher than the average for the state and nation. An average of 17 percent of the 1960 workforce in the four counties work in a county other than the county in which they reside. The national average of workers crossing county lines to their jobs is 14 percent and the state average is seven percent. Among counties, the proportion of the labor force working in another county ranges from 6 to 32 percent.

A final factor that may influence the impact of the new plant is community activity in attracting a new manufacturing establishment as reflected by the community's industrial development program. The type and scope of programs can influence the type of industry attracted and its impact on the community. A nominally priced plant site, either for purchase or rent, along with market information is part of each community's industrial development program (Table IV). Only one community does not include some type of low interest financing as part of its program. The industrial development programs in three communities include at least one utility with an industrial rate schedule. The costs of location incentives must be deducted from the anticipated benefits of new industry. Some implications of the cost of industrial

TABLE IV

INDUSTRIAL DEVELOPMENT PROGRAMS IN THE COMMUNITIES STUDIED[a]

Program	Community Identification				
	A	B	C	D	E
Low Interest Financing					
Federal	X	X	X		X
State			X		
Local Public		X	X		
Local Private	X	X			X
Plant Site					
Free					
Low Rent or Cost	X	X	X	X	X
Industrial Building					
Free					
Low Rent or Cost					X
Already Built			X		
Will Build	X				
Market Information (labor, raw materials, and transportation)	X	X	X	X	X
Vocational or Technical Training of Labor Force	X	X	X		
Transportation Facilities Provided	X	X	X		
Utilities (special rates)					
Water	X	X	X		
Gas		X	X		
Electricity		X	X		
Sewer		X	X		
Tax Considerations					
Favorable Rate	b		b		c
Favorable Assessment	b	b			
Exemption		b			

[a]From survey taken between December 1970 and May 1971.

[b]The tax consideration was given by county, municipal governments, and school district.

[c]The tax consideration from only the county government.

development programs are examined in a later chapter.

Industry Structure

The 1970 Oklahoma Directory of Manufacturing [47] and local Chamber of Commerce officials listed seventeen firms starting or enlarging operations since 1960 and employing at least 10 persons in the area. Eleven of the plants cooperated in the completion of the management questionnaire (see Appendix A). Three plants would not complete the questionnaires for various personal and managerial reasons and the remaining three firms had either moved or ceased operations. One of the firms that declined to finish the management questionnaire did allow its workforce to complete the labor questionnaire.

General Description of New Industries Locating in the Study Area

Table V gives the four digit Standard Industrial Classification (SIC) code for the firms in the study. Three firms are in the food and kindred products group (SIC 20), four firms are in the furniture manufacturing group (SIC 25), and two firms are in the metal fabricating group (SIC 34). One firm is in the non-electrical machinery group (SIC 35) and one firm is in the electrical machinery group (SIC 36). The agricultural processing firm (SIC 07) incubates and hatches eggs and ships the poults to turkey flocks in other parts of the country.

Factors that influence the new plant's impact on the community include number of workers attracted to the community, number of new school children and needed expansion of public services.

Plants A and B were located in separate communities and produced two distinctly different products but were part of the same firm. The

TABLE V

DESCRIPTION OF FIRMS IN STUDY

Plant Identification Code	Product Manufactured	SIC Code
A	Communications Components	3679
B	Upholstery and Carpet Works	2531
C	Fruit Drinks	2086
D	Furniture Manufacturing	2511
E	Furniture Manufacturing (living room)	2512
F	Vegetable Canning	2033
G	Hatchery (turkey poults)	0723
H	Furniture Manufacturing (public building)	2531
I	Pecan Shelling	2034
J	Air Conditioning and Heating Equipment	3433
K	Chemical Feed Pumps	3561
L	Fabricated Steel Products	3441

Source: Compiled from survey taken between December 1970 and May 1971 and Office of the President, Standard Industrial Classification Manual.

firm was operated by a minority group as part of a self-help development program and was assisted by a government agency and two national corporations. No new workers or school children were brought into the communities by either plant. Plant A's production process made it necessary for the community to enlarge its electrical distribution system. Plant B's demands for public services were nominal and no additional public service capacity was required.

Plant C changed management and expanded operations in the early sixties. The city water supply was adequate to meet the increased demand for water by the plant, but the firm would like an improved water treatment and distribution system in the community. The plant's 45 man workforce contained four new community residents. The additional population attributable to the plant was 26 people and 1 school age child.

Firms D and E produce similar products and were located in the same community. Firm D was started by two businessmen from another state while firm E was started by a local resident. Firm D employed about three times as many workers as firm E. Neither firm made any demands on public services that could not be met by available service capacity. Twelve new residents including two new students came to the community because of plant D.

Plants F through L are operating in the same community. Visits with plant managers and community officials indicate that the community pursues a very favorable ad valorem taxing policy for industry. Property is either assessed at a rate below the publicized assessment rate or part of the property is not entered on the tax rolls. This favorable ad valorem tax situation is a location incentive or subsidy to

the plant and is an opportunity cost to the community that reduces the industrial benefits to the municipal government and school district sectors. The cost of the subsidy is estimated from comments by plant managers about actual ad valorem taxes paid and potential ad valorem tax responsibilities. The potential ad valorem tax responsibilities are local investment by the plant assessed at the publicized assessment rate times the ad valorem mill levy.

Plant F was owned by a firm headquartered in another state. The plant was the only firm in the study with significant seasonality in its employment, operating at capacity only about eight months of the year. The plant brought eight new workers and 19 other new residents including nine school children into the community when it purchased the assets of a firm previously located in the community.

Plant G, now a subsidiary of a large national corporation, located on a municipally owned industrial tract outside the city limits. Seven new residents, but no school children, were attracted to the community by this plant. By locating on tax exempt property, the plant received an annual ad valorem tax subsidy from the public sector.

Plant H located in a previously occupied building. The availability of the building was a major factor in its decision to locate in the community. The plant employed 25 workers and attracted 7 new residents including 3 school age children to the community. The plant required no expansion of public service.

Plant I is a subsidiary of a major national corporation. The plant has operated longer than any other plant in the study under the same management. The national corporation used municipal bonds to

purchase the plant, removing the plant's previously taxable assets from the ad valorem tax rolls of the school and city. This plant brought seven workers into the community and 15 other family members plus eight new school children.

Plant J moved into the community from another Oklahoma community bringing eleven new families and 33 new residents, including eight school children. Two-fifths of the plant's workforce were in-commuters. The plant's production process required significant amounts of municipal utilities, but the city was able to meet these increased demands without expanding its utility capacity.

Plant K was started by a local resident and expanded with the help of the local industrial development corporation. The aid consisted of a building in the industrial park and other financial help. Because of this, only the firm's equipment was on the ad valorem tax rolls. A family of three, no school children, was attracted to the community by this plant.

An Oklahoma firm, based elsewhere in the state, owned plant L. The availability of barge transportation was a major location factor. Plant L's investment was the largest of the plants studied ($4.25 million in 1970). The plant located on the site of another firm that had ceased operations in the community, precluding the need to extend municipal utilities. Nine workers and 22 other people plus 6 new students were attracted to the community because of this plant.

Structural Factors of the New Industries

Table VI summarizes information collected on employment, payrolls, and output from the management questionnaire. The 1970 sales or value

TABLE VI

CHARACTERISTICS OF PLANTS STUDIED (1967 DOLLARS)[a]

Characteristic	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Sales (000)	287	N.A.	618	430	212	1,505	1,118	430	N.A.	1,032	318	2,222
Market[b]	S	N.A.	S	S/N	S/N	N	N	N	N.A.	S/N	N	S/N
Payroll (000)	N.A.	N.A.	195	123	52	215	74	86	N.A.	559	107	457
Average Payroll Per Worker	N.A.	N.A.	4,338	4,099	4,690	4,299	3,697	3,439	N.A.	6,986	7,108	5,707
Investment (000)												
Total	263	4	N.A.	26	29	172	46	125	N.A.	632	126	3,654
Land	N.A.	N.A.	N.A.	N.A.	8	17	N.A.	17	N.A.	34	9	215
Building	N.A.	N.A.	N.A.	N.A.	13	47	N.A.	77	N.A.	494	74	3,224
Equipment	263	4	N.A.	26	8	107	46	30	N.A.	103	43	215
Average Annual Employment (1970)	80	10	45	30	11	50	20	25	108	80	15	80
Percent of Workforce												
Female	75	14	11	23	20	60	6	0	N.A.	5	27	3
Part-time	0	0	14	3	0	67	19	0	N.A.	4	0	0
Number of Imported Workers	0	0	2	2	0	0	0	0	N.A.	6	1	9
Number of Workers Responding to Labor Questionnaire	10	9	11	2	0	17	4	2	39	39	11	0
Percent Response	12.5	90.0	24.4	7.7	0	34.0	20.0	8.0	36.1	48.8	73.3	0

[a] Compiled from survey taken between December 1970 and May 1971.

[b] S = state market and N = national market.

of shipments, in constant 1967 dollars, for the firms interviewed range from a low of $287,000 to a high of $2,222,000 with sales in four plants exceeding $1 million. All of the plants consider their market as being state or nationwide. The 1970 gross pay per worker at the plants, in 1967 dollars, ranges from $3,400 to $7,100 with an average of $4,929. The per plant annual 1970 employment averages 46 workers with a range from 20 to 108 workers. Five firms employ at least 50 workers and four employ between 10 and 20 employees. Information about total plant investment is incomplete. Some plants that rent the site and/or building did not know or report the value of the rented property. The plants' 1970 equipment investment, in 1967 dollars, averages $84,500. Equipment investment ranges from a low of $4,000 for plant B to $263,000 for plant A. Total investment in land, buildings, and equipment ranges from $29,000 to $3.65 million for the six firms completing the total investment question. The plants in this study tend to hire more males than females. Females comprise more than half the workforce in only two plants. An industrial characteristic affecting impact is the seasonality of work. The number of part-time employees reflects the seasonality of work. Part-time employees comprise less than 20 percent of the workforce for all but one of the plants. The availability of local labor in sufficient numbers and with adequate skills should influence local industrial impact. The local labor force is apparently adequate as only five firms needed to import workers. "Imported workers" does not include workers who move into the community of their volition to reduce commuting distance and time. The 20 workers imported comprise less than four percent of the 1970 labor force at the plants.

Structural characteristics for the local plant and its national industry group are summarized in Tables VII and VIII. Where possible the respective four digit SIC national industry group is used for comparison. The workforce at four plants (C, H, I, and L) exceeds the national average for their industry, while the other plants tend to employ fewer workers. The labor-output ratio or labor intensity at plant E is approximately equal to its industry average, and plants D, E, H, and L are below their industry's national average. The capital-labor ratio for plants H and L exceeds their industry average, while the ratio for plants F, D, J, and K is below the respective national average for their industry. Four firms' (A, J, K, and L) capital-output ratios are greater than the national average for their industry and plants D, F, and H's ratios are below their industry average. The per employee value of shipments for firm E exceeds its industry's average and it is less for firms A, C, F, J, and K. Of the nine firms responding to the average payroll question, only one firm (J) pays a wage greater than the average for its industry, while firm L pays a similar wage.

Labor Force Characteristics

The responses by workers to a mail-in labor questionnaire (see Appendix A) are used to determine the impact of the new plant on the workforce. There are 554 workers, in 1970, at the plants visited and 26 percent or 144 returned useable replies. The management at one plant chose not to allow completion of the labor portion of the survey. Deduction of these workers from the total potential responses increases the response rate to 30 percent.

TABLE VII

PLANT STRUCTURAL CHARACTERISTICS (1967 DOLLARS)

Characteristics	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Sales Per Worker ($000)	3.6	—	13.7	14.3	19.3	30.1	55.9	17.2	--	12.9	21.2	27.8
Payroll:Sales Ratio (Labor Intensity)	--	--	.326	.286	.243	.143	.007	.200	--	.541	.336	.205
Investment:Sales Ratio (Capital:Output Ratio)	.917[a]	--	--	.06[a]	.038	.114	.042[a]	.290	--	.613	.395	1.639
Depreciable Investment Per Worker ($000)	3.3[a]	.4	—	.9[a]	1.9	3.1	2.3[a]	4.3	--	7.5	7.8	43.0
Investment:Payroll Ratio (Capital:Labor Ratio)	--	--	--	.21[a]	.80	.80	.63[a]	1.45	—	1.13	1.18	8.00

[a]Includes investment in equipment only.

Source: Compiled from Table VI.

TABLE VIII

NATIONAL INDUSTRY CHARACTERISTICS (1967 DOLLARS)[a]

Characteristics	Plant Identification										
	A	B	C	D	E	F	H	I	J	K	L
	SIC Code										
	3679	2531	2086	2511	2512	2033	2531	2034	3433	3441	3561
Average Employment Per Plant[b]	122	52	36	51	46	82	52	62	76	119	55
Average Payroll Per Employee[b]	$5,784	$5,850	$5,894	$4,689	$5,003	$4,733	$5,850	$5,225	$6,502	$7,557	$7,196
Value of Shipments Per Employee[b]	$19,138	$18,637	$25,736	$15,446	$16,841	$34,643	$18,637	$37,910	$26,330	$28,193	$26,607
Payroll:Value of Shipments Ratio (Labor Intensity)[b]	.302	.314	.229	.303	.297	.137	.314	.138	.247	.261	.268
Investment:Payroll Ratio (Capital:Labor)[c]	.890	1.290	2.738	1.190	N.A.	1.603	1.290	3.019	1.506	1.362	1.287
Investment:Value of Shipments Ratio (Capital:Output Ratio)[c]	.269	.405	.627	.360	N.A.	.219	.405	.416	.372	.355	.345
Production Workers Average Hourly Earnings[d]	$2.274	$2.387	$2.212	$1.996	$2.315	$2.243	$2.387	N.A.	$2.778	$2.973	$3.056

[a] Average national industry characteristics for plant G, SIC 0723 are unavailable.

[b] Bureau of the Census, Census of Manufacturing, 1967, Vol. I, Summary and Subject Statistics, Table 3.

[c] Robert M. Waddell, et al., Capacity Expansion Planning Factors, National Planning Association, Washington, D.C., Exhibit 2.1.

[d] U.S. Department of Labor, Employment and Earnings Statistics for the United States, 1909-1967.

Prior Characteristics

Ninety-three workers responded that they were previously employed, and 55 percent held jobs in the same community as the present job (Table IX). Thirty-four percent indicated that their previous jobs were part-time and 17 percent of the previous jobs were not refilled. Five of the 144 respondents had been on public assistance just prior to taking their present job. The plants had a cadre of experienced workers in their labor force, thirty-one percent of the workers replied they had previous experience in similar work. Fifty-eight percent of the respondents indicated that their prior residence was in the same community as the new plant, and 19 percent lived outside the county or state just prior to accepting their present job. The average personal income, in 1967 dollars, for the 71 workers answering the previous income question was $4,219 and ranged from a low of $1,477 to a high of $5,011.

Present Characteristics

The new plants caused a shift in the workers place of residence -- 69 percent of the respondents now live in the five communities (Table X). Ninety percent of the plants workforce lived in the same county as their job. The 17 workers moving into the five communities brought 53 other people including 12 school children. For the 31 percent of the workforce who commuted to work from outside the city limits, their average one-way commuting distance was 8.9 miles and it ranged from 4 to 17 miles. The per worker average wage ranged from a low of $3,500 to a high of $5,600 in 1970, with an average of $4,253 for the 140 workers responding. An interesting finding was the small change ($44)

TABLE IX

SOCIO-ECONOMIC CHARACTERISTICS OF WORKFORCE PRIOR TO EMPLOYMENT AT PLANT[a]

	All Plants	Firm Identification											
		A	B	C	D	E[b]	F	G	H	I	J	K	L[b]
Employment													
Number													
In Community	51	3	2	3	0	--	2	2	1	15	18	5	--
In County But Not In Community	10	0	1	1	0	--	0	0	0	1	7	0	--
Elsewhere	32	3	3	2	0	--	2	2	0	4	10	9	--
Part-time	23	2	0	0	2	--	1	2	0	7	8	1	--
Full-time	60	4	4	5	2	--	4	2	1	10	23	7	--
Job Not Refilled	16	1	0	0	0	--	0	2	0	4	8	1	--
Number With Prior Experience	44	0	1	4	1	--	5	2	1	7	18	5	--
Residence													
In Community	82	7	5	8	2	--	10	1	1	20	18	10	--
In County But Not In Community	32	7	5	8	2	--	4	0	1	10	11	0	--
Adjacent County	15	1	2	1	0	--	2	1	0	4	4	0	--
Elsewhere	12	0	0	0	0	--	1	1	0	3	6	1	--
Personal Income 1967 Dollars	4,219	2,611	3,467	4,053	1,477	--	4,182	4,933	--	3,570	5,011	4,232	--
Number of Workers Previously on Public Assistance	5	1	1	0	0	--	1	0	0	1	1	0	--

[a]Compiled from survey by author between December 1970 and May 1971. Because of incomplete reporting the total number of responses per question or category may not equal 144.

[b]Plants E and L did not return any usable labor questionnaires.

TABLE X

SOCIO-ECONOMIC CHARACTERISTICS OF PLANTS WORKFORCE, JANUARY 1970[a]

	All Plants	Firm Identification											
		A	B	C	D	E[b]	F	G	H	I	J	K	L[b]
Employment													
Male	85	2	8	9	2	—	7	3	2	9	35	8	—
Female	59	8	1	2	0	—	10	1	0	30	4	3	—
Part-time	9	0	0	0	0	—	7	0	0	1	0	1	—
Full-time	134	10	9	11	2	—	9	4	2	38	39	10	—
Have Second Job	7	0	0	0	0	—	0	0	0	3	3	1	—
Average Distance to Work in Miles	8.94	6.65	16.56	7.06	4.13	—	5.47	7.33	5.00	8.59	11.23	6.40	—
Residence													
In Community	99	7	5	7	2	—	12	4	2	27	23	10	—
In County But Not In Community	29	2	2	2	0	—	4	0	0	8	10	1	—
Elsewhere	15	1	2	2	0	—	1	0	0	3	6	0	—
Average Income (1967 Dollars)[c]													
From Plant	4,253	3,112	3,493	4,338	4,099	—	4,299	5,047	5,245	3,927	4,551	5,595	—
Second Job	2,276	0	0	0	0	—	0	0	0	2,465	2,622	1,014	—
Spouse	4,040	2,862	2,734	2,081	0	—	3,095	0	0	5,248	3,680	5,481	—
Family	5,711	4,829	4,404	5,270	4,099	—	4,701	5,047	5,245	6,804	5,389	7,889	—
Homeownership													
Own Home	82	5	3	8	0	—	12	2	1	26	17	8	—
Purchased Since Started At Plant	20	1	0	2	0	—	2	1	0	6	3	5	—
Rent	48	4	6	3	1	—	5	2	1	9	15	2	—
What Would Worker Have Done Without Present Job													
Continued Previous Job	27	6	3	2	0	—	1	0	1	4	7	3	—
Continued on Welfare	1	0	1	0	0	—	0	0	0	0	0	0	—
Commuted to Another City	13	1	0	5	0	—	0	0	0	2	5	0	—
Moved to Another City	8	0	0	1	0	—	0	0	0	1	6	0	—
Found Another Job This Community	78	3	4	3	1	—	12	1	1	26	20	7	—

[a] Compiled from survey taken between December 1970 and May 1971. Because of incomplete reporting the total number of responses per question or category may not equal 144.

[b] Plants E and L did not return any usable labor questionnaires.

[c] Averages are based on the number of respondents per category; therefore, the sum of personal, second job and spouse income need not equal average family income.

in average wages for the workers. This small difference could indicate that nonmonetary benefits such as better working conditions, or unreported fringe benefits induced the workers to transfer jobs. Another possible reason for the small difference was bias in reporting former income due to memory lapses, and nonrandom responses. The 1970 average family income was $5,711 with a range of $4,100 to $7,900. A high proportion of the families had both the husband and wife working. Fifty-nine percent of the married workers had working spouses, and 19 percent of the married couples worked at the same plant.

Isard and Coughlin [12, p. 44] mentioned that the development of residential property could affect the impact of the new plant on the community. Sixty-three percent of the respondents indicated they owned their home, and 24 percent of these had purchased their home since starting to work at the new plant. Rural industrialization has been advocated as a means to reduce out-commuting and outmigration. Almost 11 percent of the workers responded that if the present job had not been available, they would have commuted from the community to find employment and another six percent indicated they would have moved to another community to seek employment, indicating that these plants did help retain the population base in the area.

Summary

This chapter examined various characteristics of the communities, plants, and labor force. These characteristics were reviewed with respect to their potential influence on industrial impact. Community characteristics discussed included population base, potential labor force and industrial development programs. The communities' population

base appeared adequate to support small to medium size industry. A potential reservoir of labor was indicated by the relatively high rates of unemployment and underemployment coupled with low labor force participation rates. Industry characteristics examined included investment, payrolls, and employment by the plant in the community. The plants in the study tended to have lower levels of investment, employment, output and pay scales than the national average for their industry. Other industrial factors discussed were needed expansion of public facilities and the number of new community residents. Labor force characteristics investigated included workers place of residence, worker and family incomes along with previous income, employment and experience.

CHAPTER III

THE MODEL

The model presented in this chapter constitutes the theoretical foundation to measure the economic magnitude and incidence of industrial impact on the communities in this study. An extensive discussion of the model and assumptions for the analysis is in the second half of the chapter. Appendix B contains a detailed discussion of the procedures used in estimating industrial impact on a hypothetical community.

Theoretical Considerations

In measuring the economic changes in the community from the location of a new industrial firm, the community is defined to include only the incorporated city limits. Economic changes include both benefits and costs. Benefits are the incomes accruing to the plant's workers and other individuals, along with revenues to the municipal government and school district due to industrialization. The community costs of industrialization are the foregone incomes of the plant's workforce and other individuals and the public sector expenditures by the city government and school district.

The impact from industrialization on the community's economy is divided into primary and secondary effects. A study [39] for the Economic Development Administration (EDA) examines the impact of industrialization on regional development, but the concepts developed

also applicable to community development. For the private sector, the EDA study defines the primary income impact as the wages, salaries and profits of the new plant. Secondary income impact is divided into indirect and induced components. The indirect income impact is the change in wages, salaries, and profits and other income to businesses that supply goods and services to the new plant. The induced income impact is the change in wages, salaries, profits and other income to businesses due to the change in household consumption caused by the increase in incomes from the primary and indirect impacts [39, p. 40]. The same type of primary and secondary impact can be traced for employment. The new plant also affects the public sector, here divided into municipal government and local school district components. The primary fiscal impact on the community is the revenues accruing from and expenditures to the new plant plus the additional revenues and expenditures from new residents and students. The public sector also experiences secondary fiscal effects [39, p. 49-50].

Internalized Income

The model measures the benefits of industrialization on the community's private sector as the change in "internalized income", defined as the primary and secondary income that does not escape from the community. There are two major forms of income leakages from the community. The first source is from in-commuters, workers who reside outside the community. These workers spend part of their wages outside the community where they work. The second major leakage of community income is the purchase of "imports". The local resident working at the plant may not find desired goods and services available locally and will need to shop elsewhere, i.e., "import" goods and services into the community. The

amount of income that escapes the community as imports is a function of locally available goods and services and the distance to a larger trade center. The income leakages from in-commuters and imports can be incorporated into a single factor called the "propensity to consume locally". Nourse [45, p. 174] includes a propensity to consume locally (s) to explain changes in a region's income (∂Y) due to a change in the region's exports (∂X).

$$\partial Y = \frac{1}{1 - s} \partial X \qquad (3\text{-}1)$$

Although Nourse deals with the effects of exports on a regional economy, the autonomous injection of a plant's payroll in a community is a similar economic phenomenon. Friedly [18] in a study of community income multipliers links the local income multiplier to the propensity to consume locally

> ....to yield a reliable local income forecast. The critical variable here is the proportion of total expenditures made within a community, by local residents. This propensity to spend locally determines the size of the community income multiplier [18, p. 57].

While both authors are specifically concerned with the effects of leakages on multipliers, these same leakages also reduce the primary effect.

Secondary Effects

The location of a new industrial firm in a community directly affects the community's private economy through its employment and payroll. The workers hired by the plant spend some portion of their payroll in the community. This spending along with local purchases of goods and services by the plant generates a secondary income and

employment effect estimated by a multiplier. The multiplier shows the change in income and employment that occurs per unit change in income, employment, or investment. Tiebout [61], Little [37], Palmer [48], Nourse [45], and Doeksen [16] document the presence and mechanics of the multiple economic effects on communities and regions. Rather than resummarize their work, the necessary conditions for local multipliers will be examined. For secondary effects to be counted as an economic gain, the economy's resources need to be underemployed. This means that increased economic activity can be met by (1) resources being shifted to more productive use, (2) resources being more nearly used at their optimum levels in present use, or (3) resources previously unemployed being applied to the production process [34]. If the economy's resources are presently fully employed, then a shift of resources among uses does not increase output but merely transfers resources among equally productive activities.

Private Sector Costs

The costs of industrialization to the community's private sector are measured by foregone incomes from previous jobs. The income gain to the workers at the plant is the additional income at the new job over the income at their previous job. However, the community may not lose the workers previous income if the previous jobs are refilled. Reder's [50] segmented labor market model, with the new plant initiating the shifts between the labor market segments, is applicable to this process of refilling and up-grading of jobs. If jobs are refilled at the same income level as that of the previous worker, then the community does not lose any former income. The income foregone by a worker

transferring jobs is replaced by income to the worker filling the previous job. The community will lose income if the workers previous jobs are not refilled or do not pay at previous wage levels. In short, the loss of previous income is an opportunity cost of industrialization to the community's private sector and must be deducted from the internalized income benefits from the plant.

The loss of previous internalized income can also have secondary repercussions on the community's private sector. The same multiplier principles apply during an income decline as during an expansion. Moes [42, p. 213-232], in discussing rates of return to industrial subsidization, notes that allowances must be made for income losses from prior employment. He comments that the loss of prior income is difficult to estimate and that he ignored it. In ignoring loss of prior income, Moes concedes that it "tends to overstate" his rate of return. Hale [23, p. 33] in a West Virginia study specifies in his benefit-cost ratio formula that there is an income loss due to job up-grading. This income loss is deducted from the plant payroll to yield a net income gain to the area. Both Hale and Moes fail to consider that income from the previous job, while lost to the worker at the plant, may be transferred to another worker filling that job and not be lost to the community.

Municipal Government Effects

The impact from the location of a new plant and new residents in a community are transmitted to the municipal government. Hirsch [24] develops the "net fiscal resources model" to explain the change in municipal revenues and expenditures. If the location of new industry

results in a greater addition to municipal revenues than to expenditures, industrialization is beneficial to the municipal government. Hirsch continues his discussion by noting

> ...attention must be paid to the fact that local economic development results in direct, indirect, and income induced tax contributions as well as service requirements [24, p. 120-121].

Hirsch uses an input-output model to estimate the primary and secondary effects of the new plant on the private sector and relates these changes to the revenues and expenditures of the city government. The primary benefits are the additional property and sales taxes plus other revenues from the new plant. The workers brought in by the plant along with their families also generate similar primary revenues. The local purchases by the plant and its workers generate secondary effects for individuals and businesses in the community. The secondary private sector changes in turn affect property values, property taxes, sales taxes, and other forms of municipal government revenues. The provision of municipal services to the new plant and new residents increases the level of municipal government expenditures. The increase in secondary economic activity in the community also increases the need and demand for municipal services. The secondary municipal government costs are a result of this secondary change in demand for government services.

School District Effects

In another article, Hirsch [25] examines the impact of new industry on the fiscal resources of a metropolitan school district. An input-output model is used to trace the primary and secondary effects of the new plant on the local private economy. Hirsch translates the private sector changes into primary and secondary fiscal effects on

the school system. On the revenue side of the model, the primary effects include the new industrial and residential property investments added to the tax rolls, plus any additional inter-governmental revenues for the school district. The primary cost of industrialization on the local school district are the costs of educating any new students brought into the school system because of the new plant. The new students are from the families that move their place of residence into the local school district either at the request of the firm or on their own volition. The secondary costs to the school district are the changes in the cost, due to industrially induced changes in income, of educating the students already enrolled in the system.

Marginal Versus Average Effects

Ideally, the effect of industry on the community's public sector revenues and expenditures should be examined at the margin. An accurate estimate of the actual marginal revenues and expenditures is very difficult to obtain. Prior studies of the effects of changing population and student numbers rely on average rather than marginal revenues and expenditures. Averages will be adequate if there is little difference between the average and marginal effects. There is no agreement on the magnitude of the difference. Baumol [6, p. 8] states "...the additional population may not bear all the costs involved in its adhesion to the community". This implies that the marginal cost of adding another resident exceeds the average cost. Hirsch [26] argues that the unit cost curves for many public services are characterized by a large horizontal to slightly declining portion. If the results of Hirsch's work and the work of others reported by him are accurate,

then the use of an average public sector effect will not entail major error -- the difference between the marginal and average effect will be relatively small.

The Model

The model presented in Tables XI, XIV, XV and XVI utilizes partial budgeting to estimate economic benefits and costs of industry to the community. Net impact is defined as the difference between benefits and costs. To detail incidence of industrial net impact, the community is divided into three sectors: private, municipal government, and local school district.

The Private Sector and Internalized Income

The private sector effects are measured by primary and secondary changes in personal and business income (Table XI). The primary effects are the new plant's influence on its workers present and prior income and employment. The secondary effects are changes in local merchants sales, employment and payroll resulting from the primary effects. A multiplier expresses the magnitude of secondary effects.

Nourse [45] and Friedly's [18] discussion indicates that local consumption is a crucial factor in determining the local impact of industrialization. To provide a basis for excluding from community benefits the income that escapes as non-local taxes and non-local spending by the plant's workers, a question on the labor questionnaire asks what percentage of the workers income is spent in the community where the plant is located, what percentage is spent elsewhere in the county, and what percentage is spent outside the county. The workers

TABLE XI

NET GAINS TO THE PRIVATE SECTOR

Benefits:			
Plant Wages and Salaries Internalized in the Community	$____		
Total Primary Benefits		$____	
Internalized Plant Wages and Salaries x Community Income Multiplier	____		
Total Secondary Benefits		____	
Total Benefits to Private Sector			$____
Costs:			
Internalized Income from Previous Jobs Not Refilled in the Community	____		
Private Industrial Development Costs	____		
Total Primary Costs		____	
Internalized Income from Jobs Not Refilled x Community Income Multiplier	____		
Total Secondary Costs		____	
Total Costs to Private Sector			____
Net Gain to Private Sector:			
Total Benefits - Total Costs			____

are asked to allocate their spending among four categories: groceries, clothes, personal services, and durables. These categories are weighted by the 1961 Consumer Expenditure Survey [72, 73] to estimate the workers geographical spending pattern, and averaged for three cases relating to place of residence. The disaggregated spending responses show if the workers place of residence affects his trading patterns. Disaggregated spending responses also show the influence of the community's ability or inability to provide an adequate labor supply. Internalized income is affected if the plant must rely on in-commuters to fill its labor needs and if in-commuters have a different propensity to spend locally than community residents. However, the responses of the workers to the question on geographic spending indicate very little difference between community and county residents propensity to spend in the community (Table XII). The propensity to consume locally for in-commuters from another county is lower than county residents in four of the five communities. The exception in the community of Haskell may be a result of being located close to the county line with no close (20 miles) alternative trade center.

The propensity to consume locally by workers place of residence is the percentage of total income spent in the community. Locally spent income is total income less state and federal income taxes, social security, and adjusted for geographic spending patterns and expenditure category weights from the Consumer Expenditure Survey. Internalized primary income is the product of the propensity to consume locally and the plant payroll summed over the three places of residence. Equations (B-1) through (B-4) in Appendix B gives an example of the calculation of internalized income.

TABLE XII

PROPENSITY TO CONSUME LOCALLY: PERCENT OF TOTAL INCOME SPENT IN THE COMMUNITY[a]

Community	Place of Residence		
	In the Community	In the County But Outside the Community	Outside the County
Weighted by Southern Urban Consumer Expenditure Survey			
Haskell	55.3051	59.1004	65.8434
Muskogee	60.8750	62.3213	45.1525
Sallisaw	86.1025	0.0000[b]	0.0000[b]
Stilwell	54.6164	0.0000[b]	16.2200
Tahlequah	70.5585	72.2803	34.1516
All Communities	60.4656	62.7630	44.4123
Weighted by Southern Rural Nonfarm Consumer Expenditure Survey			
Haskell	52.0358	56.7175	62.8693
Muskogee	59.1809	60.4420	44.8927
Sallisaw	84.1624	0.0000[b]	0.0000[b]
Stilwell	54.1631	0.0000[b]	22.5518
Tahlequah	68.0882	76.8224	56.5664
All Communities	58.7052	61.3151	45.9940

[a]Compiled from survey taken between December 1970 and May 1971.

[b]No workers responded to this category by this place of residence.

In computing foregone internalized income only previous jobs in the community and county are assumed to affect community income. The geographic distribution of prior jobs and the percentage of prior jobs not refilled is determined from the worker's replies on the labor questionnaire. The employment level at the plant times the percentage of prior jobs in the community and county not refilled yields an estimate of the number of local jobs lost due to industrialization. The product of the number of jobs not refilled and previous income is the foregone income. This foregone income is adjusted by the workers geographical spending patterns to determine internalized income foregone. The present spending patterns are assumed to reflect geographic spending patterns just prior to employment at the plant. Tiebout comments on the changes over time in geographic spending patterns:

> If this proportion [local and nonlocal spending] changes widely from year to year even though total spending is stable, local spending will not be stable. Basically, this involves a question of geographic shopping habits. Here marketing studies do suggest stability. The more isolated the community, the more likely this is to be true [61, p. 63].

Kaldor, Bauder and Trautwein [32, p. 9] in a study of a rural area in Iowa report that 50 percent of their sample indicated an increase in spending in the community where the plant was located following employment at the plant. If this is the case, then assuming a stable geographic spending pattern over time will overestimate the costs of previous internalized community income foregone.

Secondary Effects

The potential impact of the new plant is some multiple of its initial injection of employment, income or investment. The secondary

effects are estimated by multipliers. Multipliers for the counties in the EOEDD are taken from a study of Planning Region Nine in Southwestern Oklahoma by Muncrief and Schreiner [54]. Their study area is similar to the EOEDD in terms of export sector composition, population base and economic activity. Counties in the EOEDD and Planning Region Nine are correlated on four criteria. These criteria in order of importance are (1) composition of the export sector, (2) size of community or trade center, (3) distance to nearest alternative trade center or labor pool, and (4) county population base. The Planning Region Nine county that most closely approximates the respective EOEDD county provides the estimate of the EOEDD intra-county multiplier.

Two major changes are made in the original Muncrief and Schreiner From-To analysis for this study. First, the household and local and state government sectors are included as endogenous sectors in the direct coefficient matrix. This change allows the multipliers estimated to reflect direct, indirect and induced effects. Second, Muncrief and Schreiner's original employment transactions matrix is converted into an income transactions matrix by assuming that the distribution of the County Building Block [80] estimates of proprietor and labor income is the same as the distribution of employment.

The intra-county multipliers are presented in Table XIII. Column 1 lists the EOEDD counties included in this study. Column 2 shows the corresponding counties from Planning Region Nine. The last four columns give the income and employment multipliers. These multipliers show the change that will occur in the county due to an autonomous injection of income or employment from the new plant. If the new plant locates in Adair County and pays wages of $1,000, the total change in

county income will be $1,851. The secondary effects are the $851 generated because of the initial $1,000 income injection.

TABLE XIII

INTRA-COUNTY INCOME AND EMPLOYMENT MULTIPLIERS FOR THE STUDY AREA

County		Income Multiplier		Employment Multiplier	
EOEDD	Planning Region Nine	Total Effect	Secondary Effect Only	Total Effect	Secondary Effect Only
Adair	Cotton	1.851	.851	1.872	.872
Cherokee	Grady	2.023	1.023	2.106	1.106
Muskogee	Stephens	2.078	1.078	2.250	1.250
Sequoyah	Caddo	2.151	1.151	2.190	1.190

Source: Compiled from Larkin Warner, Computerized County Building Block Data, Department of Economics, Oklahoma State University, and Dean Schreiner and George Muncrief, Estimating Regional Information Systems for Efficient Physical Planning with Application to Community Service Planning in South Central Oklahoma, Oklahoma Agricultural Experiment Station Journal Article Number 2313.

The intra-county multipliers include allowances for the county income leakages due to inter-county trading by county residents. However, these multiplier estimates are not directly applicable to the community. The economic activity in the county but outside the community needs to be deducted from the total intra-county effects to give

a community multiplier. The propensity to consume locally is used to adjust the intra-county multiplier in formulating the community multiplier.

Location Incentives

The cost of location incentives provided by the community to the plant must be deducted from the benefits of industrialization. The costs are charged against the sector of the community that incurs the cost. The private sector costs are travel, salary and promotional expenses by the industrial development group and individuals to attract the new plant.

Private Sector Net Gain

The primary and secondary benefits and costs to the private sector are summed and the difference between total benefits and costs is the net gain in community labor and proprietor income from the new plant.

The amount of internalized income, a function of place of residence and propensity to consume locally, is the crucial factor determining the impact of a new industry on the community's private sector.

The Municipal Government Sector

The municipal government sector (Table XIV) contains the benefits and costs of industrialization on city government. The primary benefits are municipal revenues attributable to the location of the new plant and any new families brought into the community. The primary costs are the municipal expenditures for services delivered to the new

TABLE XIV

NET GAINS TO THE MUNICIPAL GOVERNMENT SECTOR

Benefits:			
Ad Valorem Taxes New Homes	$_____		
Ad Valorem Taxes New Plant's Additional Investment	_____		
Utility Revenues from New Plant	_____		
Utility Revenues from New Residents	_____		
Sales Tax from Plant Payroll Spent Locally	_____		
Other Tax Revenues from New Residents	_____		
Total Primary Benefits		$_____	
Change in Tax Revenues from Former Residents	_____		
Total Secondary Benefits		_____	
Total Benefits			$_____
Costs:			
Services Provided New Plant	_____		
Services Provided New Residents	_____		
Services Provided New Commuters	_____		
Annual Municipal Government Incentive Costs	_____		
Total Primary Costs		_____	
Additional Services Provided Former Residents	_____		
Total Secondary Costs		_____	
Total Costs			_____
Net Gain to Municipal Government Sector:			
Total Benefits - Total Costs			_____

plant, new residents and/or new in-commuters.

Sales tax receipts are a primary municipal government benefit of the new industry. The municipal government's revenues from sales taxes are increased by the sales tax rate times the difference between present and foregone previous internalized primary income. Utilities in rural Oklahoma communities are a major source of municipal government revenues. An implicity tax is included in the utility rates when the utility rate provides surplus revenue that is used to finance other governmental services. The utility expenditures by either the plant or new residents represents both a benefit and a cost to the municipal government. The benefits are the municipal utility revenues, while the costs are the expenditures to supply the utility plus the implicit charge for municipal services. The plant's utility expenditures in the model are determined by estimates from plant managers. Local utility superintendents estimates of the average annual residential utility bill for a family of four are used for residential utilities. Only utilities provided by the municipal government are included because the effect of the plant on privately supplied utilities is included in the private sector.

Municipal revenues and expenditures, excluding utilities and sales taxes, are put on a per capita basis to allow measurement of the fiscal effects of changes in community population. Responses from plant managers and workers are used to estimate the change in community population due to the plant. Per capita selected municipal revenues and expenditures multiplied by the change in population estimate the non-utility and non-sales tax portion of the primary municipal government impact.

An in-commuter uses many city services such as police and fire protection, streets and general administration while working in the community, but does not contribute tax revenues in proportion to his municipal service cost. In the model, the municipal cost of an in-commuter is a weighted per capita cost of selected municipal services (protection, streets, and administration). The weight used is equal to the percentage of time the in-commuter spends in the community annually, assuming the in-commuter averages 10 hours per day, five days per week, each week of the year in the community.

The secondary effects on the municipal government sector arise because community residents not working at the plant experience a change in income due to plant. The secondary income change alters the revenues and expenditures for the municipal government. The product of secondary income and the municipal revenues and expenditures per dollar of income determines the secondary effects of the plant on the municipal government.

Direct and indirect location incentives to attract new industry can create a cost to the municipal government. The direct costs may occur as municipal bond financing, property tax exemptions or extension of public utilities and services without charge. Two subsidies can occur when the plant locates on property purchased with municipal bonds. The first occurs if the lease or rental payment by the firm is inadequate to retire the bonds. The cost of this subsidy is the difference between lease payments and bond amortization costs. The second subsidy is the foregone ad valorem taxes from the property purchased with the bonds. Some examples of indirect incentives are assessing the plant's investment below the quoted assessment ratio or underestimating the

fair market value of the plant's property. Another indirect subsidy not measured is the cost of foregone borrowing capacity when a municipality sells industrial development bonds. The cost of these subsidies are considered in estimating the net impact of the new industry on the municipal government sector. The municipal government net gains are the difference between the total benefits and costs to the municipal government.

The School District Sector

The local school district sector (Table XV) reflects the industrially caused primary and secondary revenues and expenditures in the community school system. The primary industrial benefits to the local school district are the school revenues from the plant's investment, the residential investment by new families and the inter-governmental aid for new students.

Ad valorem taxes are the major source of local support for schools and are also used to support municipal sinking funds. The ad valorem tax revenue is computed as the product of the respective city or school millage levy and the addition to the assessed property tax base. The total assessed value of any industrial property overcounts the ad valorem benefits by the pre-industrialization value of the property. The assessed value of the plant site is assumed not to change with the location of the plant. Hence, the addition to the ad valorem tax base is the assessed value of the plant's investment in building and equipment. If the plant moves into a building previously occupied, then the addition to the ad valorem tax base is only the assessed value of the plant's equipment.

TABLE XV

NET GAINS TO THE SCHOOL DISTRICT SECTOR

Benefits:			
Ad Valorem Taxes New Homes	$_____		
Ad Valorem Taxes New Plant's Additional Investment	_____		
Additional State Aid from New Students	_____		
Additional Federal Aid from New Students	_____		
Total Primary Benefits		$_____	
Change in Revenues from Former Students	_____		
Total Secondary Benefits		_____	
Total Benefits			$_____
Costs:			
Additional Physical Plant Due to New Pupils	_____		
Additional Educational Services Provided New Pupils	_____		
Ad Valorem Tax Reveneus Lost From Tax Breaks to the New Plant	_____		
Total Primary Costs		_____	
Additional Educational Services Provided Former Pupils	_____		
Total Secondary Costs		_____	
Total Costs			_____
Net Gain to School District Sector:			
Total Benefits - Total Costs			_____

The influx of new workers and their families influences residential housing. A question on the labor questionnaire asks if the worker built a new home in the community since starting employment at the plant. These responses are used to estimate the number of new homes built by the new plant's workforce. The value of a new home for a family of four comes from estimates by local chamber of commerce officials. This estimate of new residential property values times the quoted assessment ratio less the homestead exemption yields the net addition to the residential property tax base. The appropriate ad valorem millage levy is multiplied by the assessed property values to compute additional ad valorem tax revenues for the municipal government or school district.

The movement of new families into the community affects other school finances besides ad valorem tax revenues. Additional school age children enrolling in the local school district affect school revenues and expenditures. Intergovernmental aid, state and federal, is a significant component in the financing of local school districts. The intergovernmental aid impact of new students is computed as the product of the number of new students times the intergovernmental aid per student in average daily attendance (ADA).

Primary school district costs of the new plant are the capital and noncapital costs incurred because of increased school enrollment. To determine the primary cost effect, local school district expenses are converted to a cost per student in average daily attendance. The number of new students multiplied by the per ADA expenditure coefficients gives an estimate of capital and noncapital primary educational costs of the new plant.

Secondary benefits and costs (revenues and expenditures) for the local school district occur because of the secondary effects of the new plant on community income. The gain in secondary income affects the revenues and expenditures for students enrolled in the local school district prior to the location of the new plant. The product of secondary income and the per dollar of income school revenues and expenditures coefficient estimates the secondary effects of the new plant on the local school finances.

Industrial location incentives tied or related to the new plant's property investment can affect the fiscal impact on the local school district. Any location incentive that reduces a new plant's property tax payments is an opportunity cost and is deducted from the industrialization benefits to the school district. Net impact of industrialization on the local school district is the difference between the additional revenues and expenditures arising from the increased economic activity.

Community Net Gains

The net gains to each of the three sectors in the community show the incidence of impact from a new plant. Net economic gain to the entire community is the sum of the net gains to each sector (see Table XVI). The community net gains illustrate the maximum annual subsidy the entire community could extend to a new plant to locate and just breakeven. The individual sector net gains represent breakeven subsidies for each sector. If a plant's impact is unfavorable for the school district, then the decision might be to adjust the incentive offered to increase the new plant's ad valorem tax responsibilities. The

next chapter will discuss the size and type of location incentive in more detail.

TABLE XVI

NET GAINS TO THE COMMUNITY

Net Gain to Community's Private Sector	$_____
Net Gain to the Municipal Government Sector	_____
Net Gain to the School District Sector	_____
Net Gain to the Total Community	_____

Summary

The objectives of this chapter were to discuss the theoretical foundations of the model, present the basic framework of the model and examine the major assumptions and empirical procedures used. The contributions of various authors were examined with respect to applicability to this study. The model built utilized partial budgeting to estimate the benefits and costs to the community from industrialization. Benefits to the community were defined as the personal and business income, plus revenue to the municipal government and local school district generated by the new plant. The costs to the community from industrialization were the loss of previous personal and business incomes, and any municipal and school expenditures that were related to

the new plant. The secondary effects were the changes in the community's private and public sector that would not have occurred without the location of the new plant. The secondary effects were estimated by using community multipliers. To show the incidence of net gain from industrialization, the community was divided into three sectors: the private sector, the municipal government sector, and the local school district sector. The net gains to each sector and to the total community were estimated as the difference between benefits and costs.

CHAPTER IV

EMPIRICAL RESULTS

Two objectives of this study are to apply the theoretical model to actual communities experiencing industrialization and to evaluate the implications of rural industrialization from community and national perspectives.

The first section of this chapter analyzes industrial impact from a community perspective. The next section of the chapter relates industrial impact to various community and plant characteristics. The last two sections of the chapter analyze industrial impact within the context of firm failure and national opportunity costs.

Basic Impact Analysis

The annual industrial impact on the communities in this study is quantified in Tables XVII to XX. Four cases are presented to indicate how time, resource utilization, and resource mobility can affect community net gains.

Case I

Case I represents a short-run situation. Only primary effects are included to depict three possible circumstances or scenarios. First, insufficient time precludes the adjustment of resources to allow for secondary effects. Second, the local economy is at full employment

which means no net gains occur when resources are transferred among equally productive activities. Finally, resources from outisde the community are immobile because of institutional constraints, market imperfections, or other restraints that preclude adjustment to market signals. It is assumed that none of the jobs held previously by workers at the plant are refilled, and hence all previous labor income is lost.

The impact on the communities is positive for each plant even under the unfavorable assumptions of Case I. The average annual net gain to the community is $42,542 and net gains range from a low of $9,878 to a high of $140,388 (Table XVII). The net gain to the private sector is the increase in workers income that remains in the community. The private sector impact averages $42,385 and ranges from $10,507 to $136,672.

The annual impact on the municipal government sector is small and ranges from a net loss of $3,553 to a net gain of $1,510 with an average per plant loss of $265. The impact of seven plants on the municipal government is negative. New residents attracted to the communities by plants D, G, H, J, and K; and in-commuters in the workforce at plants A, F, H, and J cause an adverse fiscal change for the municipal government. The cost of location incentives also contributes to the negative municipal impact of plants F, G, and K.

The school district impact averages $422. The annual fiscal change ranges from a deficit of $409 to a surplus of $2,557. The positive impact of seven plants is below $1,000 annually, and is less than $100 for two plants. The net cost to the school district from plants H and I is due to increased school enrollment and associated

TABLE XVII

THE CASE I ESTIMATES OF ANNUAL INDUSTRIAL IMPACT: THE SHORT-RUN (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Primary Benefits	132,550	24,172	108,099	40,679	32,146	128,216	50,492	38,529	222,986	193,684	72,047	229,338
Secondary Benefits	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	132,550	24,172	108,099	40,679	32,146	128,216	50,492	38,529	222,986	193,684	72,047	229,338
Primary Costs	58,370	10,721	59,258	16,653	11,447	68,556	29,414	28,022	165,546	173,429	50,238	92,666
Secondary Costs	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	58,370	10,721	59,258	16,653	11,447	68,556	29,414	28,022	165,546	173,429	50,238	92,666
Net Gain	74,180	13,451	48,841	24,026	20,699	59,660	21,078	10,507	57,440	20,255	21,809	136,672
Municipal Government Sector												
Primary Benefits	5,800	143	1,185	3,580	2,225	19,271	9,489	3,563	2,385	18,719	6,314	19,514
Secondary Benefits	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	5,800	143	1,185	3,580	2,225	19,271	9,489	3,563	2,385	18,719	6,314	19,514
Primary Costs	6,139	59	1,045	3,764	2,016	22,824	9,666	3,832	2,171	19,145	6,704	18,004
Secondary Costs	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	6,139	59	1,045	3,764	2,016	22,824	9,666	3,832	2,171	19,145	6,704	18,004
Net Gain	-339	84	140	-184	209	-3,553	-177	-269	214	-426	-390	1,510
School District Sector												
Primary Benefits	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Secondary Benefits	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Primary Costs	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Secondary Costs	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Net Gain	2,557	47	156	240	71	223	-409	-360	-354	562	124	2,206
Community Net Gain	76,398	13,582	49,137	24,082	20,979	56,330	20,492	9,878	57,300	20,391	21,543	140,388

expenditures coupled with no additional ad valorem tax revenues from the plants. The exemption of plant G's investment from ad valorem taxes is a location subsidy that is an opportunity cost reducing industrial benefits to the school district even though no additional school children are enrolled. In brief, the short-run average net gains are positive except in the municipal government sector.

Case II

The short-to-intermediate-run is represented by the Case II estimates of industrial impact. No local secondary effects are assumed to occur because the new plant generates local full employment and because resources outisde the community are immobile and can not react to market signals. Only a partial loss of previous jobs and income is assumed in Case II. Responses to a question asking if the worker's previous job was refilled are used to determine the private sector opportunity costs of jobs not refilled.

The community net gains average $95,581 annually, an increase of $52,939 over the Case I average. The community change, per plant, ranges from a low of $24,410 to a high of $216,647 (Table XVIII). Net community impact is less than $50,000 for each of five firms and exceeds $150,000 for three firms.

In Case I, assuming all previous internalized income is lost, the private opportunity costs average $63,693 per plant. The private sector opportunity costs average only $11,178 per plant in Case II when only part of the previous income is assumed lost. The private opportunity costs in Case II for plants B, C, D, and E are assumed zero because the labor questionnaires indicated that all prior jobs were

TABLE XVIII

THE CASE II ESTIMATES OF ANNUAL INDUSTRIAL IMPACT: THE SHORT-TO INTERMEDIATE-RUN (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Primary Benefits	132,550	24,172	108,099	40,679	32,146	128,216	50,492	38,529	222,986	193,684	72,047	229,338
Secondary Benefits	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	132,550	24,172	108,099	40,679	32,146	128,216	50,492	38,529	222,986	193,684	72,047	229,338
Primary Costs	9,215	0	0	0	0	11,883	14,707	4,561	31,525	39,637	5,580	17,029
Secondary Costs	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	9,215	0	0	0	0	11,883	14,707	4,561	31,525	39,637	5,580	17,029
Net Gain	123,335	24,172	108,099	40,679	32,146	116,333	35,785	33,968	191,461	154,047	66,467	212,309
Municipal Government Sector												
Primary Benefits	5,800	250	1,778	3,747	2,339	19,973	9,636	4,008	3,726	20,056	6,761	20,136
Secondary Benefits	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	5,800	250	1,778	3,747	2,339	19,973	9,636	4,008	3,726	20,056	6,761	20,136
Primary Costs	6,139	59	1,045	3,764	2,016	22,824	9,398	3,832	2,171	19,145	6,704	18,004
Secondary Costs	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	6,139	59	1,045	3,764	2,016	22,824	9,398	3,832	2,171	19,145	6,704	18,004
Net Gain	-339	191	733	-17	323	-2,851	238	176	1,555	911	57	2,132
School District Sector												
Primary Benefits	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Secondary Benefits	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Primary Costs	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Secondary Costs	0	0	0	0	0	0	0	0	0	0	0	0
Total Costs	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Net Gain	2,557	47	156	240	71	223	-409	-360	-354	562	124	2,206
Community Net Gain	125,553	24,410	108,988	40,902	32,540	113,705	35,614	33,784	192,662	155,520	66,648	216,647

refilled. The Case II annual net gain in the private sector averages $94,900 per plant.

The municipal government net gains average $259 per year, or $524 more than in Case I. The increase results from additional municipal sales tax revenues, i.e., net-internalized-primary income times the municipal sales tax rate. The gain in sales tax revenues reduces the number of firms with a negative municipal government impact from seven in Case I to three in Case II. Impact from the plants on the municipal government ranges from a loss of $2,851 to a gain of $2,132. The positive impact of seven plants is less than $1,000 per year.

Since resources are assumed unable to move into the community, the change in the private sector opportunity costs between Case I and Case II does not affect the plants impact on school finances. The Case II assumption that previous internalized income is partially replaced reduces the opportunity costs in the private sector and increases net internalized income, municipal sales tax revenues, and community net gains over the Case I estimates.

Case III

Case III represents the intermediate to long-run time perspective. Secondary effects occur because of resource mobility and local underemployment. A partial loss of previous labor income is assumed. Of the four cases hypothesized, this case most nearly approximates the conditions actually found in the communities studied.

The inclusion of secondary effects increases the annual average gain to the community ($158,408) by $62,827 over the Case II average. In Case III, the impact of the various plants on communities ranges

from $40,924 to $356,212 (Table XIX). Secondary effects in the private sector contribute nearly all of the change between the Case II and III estimates of community impact. The average change in the private sector is $157,486 and the change, by plant, ranges from $40,657 to $350,696 per year.

The municipal government net gain averages $521, almost double the Case II average, and the annual net gain ranges from a negative $2,621 to a positive $3,246. The inclusion of secondary effects decreases the net municipal impact of plant A and increases the net impact for the other plants. Location of plant D causes a negative $2 change in the municipal fiscal base, a virtual breakeven point. The net change in municipal finances is relatively small, less than $500 annually, for five of the plants.

The Case III average school impact ($401) is $21 per year less than the Case II average. The net fiscal gain in the school districts ranges from a negative $815 to a positive $2,617. The fiscal impact of plants G, H and I remains negative when secondary effects are included, and plant I's annual impact on the school is made more negative. Secondary effects decrease the net contribution to the school sector for plants F and K and increase the net contribution of plants A, B and E. The difference in the Case II and III estimates of annual industrial impact is caused by the inclusion of secondary effects.

Case IV

Case IV represents the very-long-run situation. The time involved is adequate to allow readjustment of jobs and/or workers; and all previous income is maintained, reducing the private sector opportunity

TABLE XIX

THE CASE III ESTIMATES OF ANNUAL INDUSTRIAL IMPACT: THE INTERMEDIATE-TO-LONG-RUN (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Primary Benefits	132,550	24,172	108,099	40,679	32,146	128,216	50,492	38,529	222,986	193,684	72,047	229,338
Secondary Benefits	75,142	16,485	78,429	31,204	24,659	84,924	32,912	25,117	145,359	126,253	46,962	149,487
Total Benefits	207,692	40,657	186,528	71,883	56,805	213,140	83,404	63,646	368,345	319,937	119,009	378,825
Primary Costs	9,215	0	0	0	0	11,883	14,707	4,561	31,525	39,637	5,580	17,029
Secondary Costs	4,282	0	0	0	0	7,871	9,651	2,973	20,549	25,836	3,637	11,100
Total Costs	13,497	0	0	0	0	19,754	24,358	7,534	52,074	65,473	9,217	28,129
Net Gain	194,195	40,657	186,528	71,883	56,805	193,386	59,046	56,112	316,271	254,464	109,792	350,696
Municipal Government Sector												
Primary Benefits	5,800	250	1,778	3,747	2,339	19,973	9,636	4,008	3,726	20,056	6,761	20,136
Secondary Benefits	1,342	211	30	568	449	898	671	1,183	2,399	2,038	761	4,069
Total Benefits	7,142	461	1,808	4,315	2,788	20,871	10,307	5,191	6,125	22,094	7,522	24,205
Primary Costs	6,139	59	1,045	3,764	2,016	22,824	9,398	3,832	2,171	19,145	6,704	18,004
Secondary Costs	1,448	211	29	553	437	668	488	871	1,770	1,483	567	2,955
Total Costs	7,587	270	1,074	4,317	2,453	23,492	9,886	4,703	3,941	20,628	7,271	20,959
Net Gain	-445	191	734	-2	335	-2,621	421	488	2,184	1,466	251	3,246
School District Sector												
Primary Benefits	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Secondary Benefits	2,707	618	167	821	649	1,356	1,026	592	3,258	3,118	1,150	6,424
Total Benefits	5,264	665	728	1,940	720	7,618	1,130	2,480	6,010	7,357	2,373	11,683
Primary Costs	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Secondary Costs	2,647	589	164	799	632	1,392	1,008	580	3,719	3,062	1,180	6,360
Total Costs	2,647	589	569	1,678	632	7,431	1,521	2,828	6,825	6,739	2,279	9,413
Net Gain	2,617	76	159	262	88	187	-391	-348	-815	618	94	2,270
Community Net Gain	196,367	40,924	187,421	72,143	57,228	190,952	59,076	56,252	317,640	256,548	110,137	356,212

costs to zero. Secondary effects from the new plants autonomous injection of economic activity occur because of underemployment of community resources or because resources outside the community are able to react to economic signals.

The annual change in the private sector averages $175,823 and ranges from $40,567 to $378,825 (Table XX). Net gain to the municipal government averages $626, an increase of $125 per year from Case III. The plants municipal impact ranges froma minus $2,473, to a positive $3,398 with only three firms adding at least $1,000 per annum to the city governments net fiscal resource base. The increase in city sales tax revenue resulting from the complete replacement of previous internalized income causes the increase in municipal impact.

The Case IV assumptions are the most favorable for industrial benefits relative to costs. The community impact averages $176,850 annually and ranges from $40,924 to $384,493 by plant. Seven firms cause a community change of over $100,000 per year. Reducing private sector opportunity costs to zero causes the increase in community net gains between Cases III and IV.

In general the communities in this study experienced a sizable annual net gain from industrialization. However, the impact on the individual sectors in the communities varied and was negative in some instances for the public sector. The relationship between community net gains and the breakeven subsidy that a community could have offered a new plant is examined in the next section.

TABLE XX

THE CASE IV ESTIMATES OF ANNUAL INDUSTRIAL IMPACT: THE LONG-RUN (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Primary Benefits	132,550	24,172	108,099	40,679	32,146	128,216	50,492	38,529	222,986	193,684	72,047	229,338
Secondary Benefits	75,142	16,485	78,429	31,204	24,659	84,924	32,912	25,117	145,359	126,253	46,962	149,487
Total Benefits	207,692	40,657	186,528	71,883	56,805	213,140	83,404	63,646	368,345	319,937	119,009	378,825
Total Costs	0	0	0	0	0	0	0	0	0	0	0	0
Net Gain	207,692	40,657	186,528	71,883	56,805	213,140	83,404	63,646	368,345	319,937	119,009	378,825
Municipal Government Sector												
Primary Benefits	5,800	250	1,778	3,747	2,339	20,121	9,783	4,053	4,041	20,453	6,816	20,288
Secondary Benefits	1,342	211	30	568	449	898	671	1,183	2,399	2,038	761	4,069
Total Benefits	7,142	461	1,808	4,315	2,788	21,019	10,454	5,236	6,440	22,491	7,577	24,357
Primary Costs	6,139	59	1,045	3,764	2,016	22,824	9,398	3,832	2,171	19,145	6,704	18,004
Secondary Costs	1,448	211	29	553	437	668	488	871	1,770	1,483	567	2,955
Total Costs	7,587	270	1,074	4,317	2,453	23,492	9,886	4,703	3,941	20,628	7,271	20,959
Net Gain	-445	191	734	-2	335	-2,473	568	533	2,499	1,863	306	3,398
School District Sector												
Primary Benefits	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Secondary Benefits	2,707	618	167	821	649	1,356	1,026	592	3,258	3,118	1,150	6,424
Total Benefits	5,264	665	728	1,940	720	7,618	1,130	2,480	6,010	7,357	2,373	11,683
Primary Costs	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Secondary Costs	2,647	589	164	799	632	1,392	1,008	580	3,719	3,062	1,180	6,360
Total Costs	2,647	589	569	1,678	632	7,431	1,521	2,828	6,825	6,739	2,279	9,413
Net Gain	2,617	76	159	262	88	187	-391	-348	-815	618	94	2,270
Community Net Gain	209,864	40,924	187,421	72,143	57,228	210,854	83,581	63,831	370,029	322,418	119,409	384,493

Industrial Impact and Breakeven Subsidies

The breakeven subsidy is equal to community net gains. The measures of community net gains in the previous section are unadjusted for various community and plant characteristics. Community characteristics include total community population and population per worker. Plant characteristics include payroll, investment, employment, and value of shipments (sales). This section refines the estimates of breakeven subsidies by investigating the influence of various community and plant characteristics on industrial impact.

The first approximation of breakeven subsidies as a function of plant and community characteristics is the average community net gains per unit of employment, payroll, sales, or community population. Table XXI quantifies the per unit community net gains from Case III. Per capita breakeven subsidies range from $1.50 to $96.16 and average $21.62. The communities can feasibly offer a location incentive averaging $.27 per dollar of plant sales. Subsidies per dollar of sales vary from $.05 to $.67. Breakeven subsidies average $.78 per dollar of payroll and range from a low of $.46 to a high of $.96. The breakeven subsidy averages $3,772 per employee and ranges from $2,092 to $7,342 per employee. For the averages in Table XXI to be useful in predicting breakeven subsidies the dispersion of the estimates of per unit net gains from the mean should be minimal. The coefficient of variation can be used to select the plant or community factor that minimizes relative variation of the estimates. The coefficient of variation ranges from 24 percent for community net gains per dollar of payroll to 158 percent for community net gains per capita of community population. If the per unit averages (Table XXI) are used to predict

breakeven subsidies as a function of plant and community characteristics then the per dollar of payroll and per employee estimates, in that order, should be used. The relative variability of community net gains per dollar of payroll is the smallest of the four characteristics, but an accurate measure of total payroll at the new plant is often difficult to obtain, and reduces the effectiveness of this characteristic. Although the relative variation of community net gains per employee exceeds that of per dollar of payroll, there are some adjustments that should improve the per employee predictions of breakeven subsidies.

TABLE XXI

CASE III COMMUNITY NET GAINS PER SELECTED COMMUNITY AND PLANT CHARACTERISTICS[a]

Plant Identification	Characteristics			
	Per Employee	Per Dollar of Payroll	Per Dollar of Sales	Per Community Population
A	2454.587	.787	.668	91.513
B	2092.400	.909	.346	4.590
C	4164.911	.961	.300	96.163
D	2404.766	.587	.166	17.570
E	5202.545	.850	.269	13.938
F	3819.040	.912	.115	5.069
G	2953.800	.798	.047	1.573
H	2250.080	.654	.129	1.498
I	2941.111	.746	.392	8.400
J	3206.850	.457	.231	6.833
K	7342.466	.929	.341	2.924
L	4452.650	.777	.142	9.487
Average	3772.258	.781	.269	21.621
Coefficient of Variation[b]	38.41	24.43	62.34	157.94

[a]Compiled from Tables VI and XIX.

[b]Coefficient of variation = $\frac{\text{Standard Deviation}}{\text{Mean}}$ x 100%.

A generally held hypothesis is that employment, wages, sex ratio in the workforce, investment per worker, and community population per worker are important determinants of industrial impact. Table XXII presents the results of regressing community net gains on the various adjustment factors to refine the predictions of breakeven subsidies. Equations (4-1) and (4-2) use the linear form of the employment variable along with other adjustment factors to predict community net gains per employee. The variables in the equations explain only 13 and 35 percent respectively of the variation in community net gains per employee. The square root, the inverse of the square root, the square, the natural log and the inverse of the natural log are other forms of the employment variable tested to improve the predictive ability of the equations and the significance of the coefficients. The inverse of the natural log of employment is the form of the employment variable used in the model because it explains the greatest amount of variation in community net gains per employee and minimizes the standard error of the estimate. Equation (4-3), Table XXII, explains 21 percent of the variation in community net gains per employee, and the coefficient on the employment variable is significant at the .1270 level of probability. The annual wage for males, a pure wage, is used to measure the effects of wage levels and sex composition of the workforce on community net gains. The pure wage is added to the model in Equation (4-4). The equation explains 40 percent of the variation in the dependent variable. The coefficients on the employment and wage variables are significant at the .0919 and .1235 probability levels, respectively. The relative number of males in the workforce should directly influence community net gains per employee because of

TABLE XXII

REGRESSION EQUATIONS OF COMMUNITY NET GAINS PER UNIT OF SELECTED PLANT AND COMMUNITY FACTORS[a]

Dependent Variable and Equation Number	Intercept	Independent Variables						R^2	F Ratio
		Employment	$\frac{1}{\text{Ln Employment}}$	Wage	Percent Males	Equipment Investment Per Worker	Community Population Per Worker		
Community Net Gains Per Worker									
(4-1)	4492.837	-15.576 (12.864)						.128	1.466 [.2530]
(4-2)	1224.816	-21.041 (23.525)		1.003 (.971)	-11.545 (32.657)	-.057 (.907)	-.276 (1.264)	.350	.646 [.6770]
(4-3)	1153.172		8794.931 (5324.362)					.214	2.729 [.1270]
(4-4)	-2336.317		9157.801 (4897.116)	.715 (.424)				.403	3.038 [.0974]
(4-5)	-1978.941		9725.540 (5108.600)	.804 (.455)	-11.951 (17.144)			.437	2.071 [.1822]
(4-6)	-2064.180		9904.406 (5760.654)	.753 (.714)	-9.981 (27.346)	.072 (.741)		.438	1.364 [.3369]
(4-7)	-3843.934		12660.980 (8678.023)	.915 (.840)	-6.349 (30.165)	.237 (.869)	-.461 (1.030)	.456	1.006 [.4869]
Community Net Gains Per Dollar of Payroll									
(4-8)	.200		2.037 (1.055)	.00005 (.0001)	.003 (.0037)	.00006 (.0001)	.0001 (.0001)	.536	1.385 [.3474]
Community Net Gains Per Dollar of Sales									
(4-9)	.608	.002 (.0026)		-.00002 (.00011)	-.004 (.0037)	-.00003 (.0001)	.00002 (.00014)	.389	.767 [.6064]
Community Net Gains Per Community Population									
(4-10)	119.053		-35.438 (190.774)	-.023 (.018)	.046 (.663)	.061 (.019)	-.013 (.023)	.532	1.363 [.3541]

[a] All regressions use Case III estimates of community net gains with 12 observations. A two tailed "t" test is used to test H_o: B = 0. The numbers in ( ) are the standard errors of the B estimates, and the numbers in [ ] are the probability of obtaining a calculated F value less than the tabulated F value.

differences in pay scales for males and females. Equation (4-5) indicates a negative relationship between per worker impact and percent of males hired. However, the relatively large standard error of the coefficient indicates that the coefficient is not significantly different from zero; i.e., there is no relationship between the per worker impact and sex ratio. The lack of a significant relationship may be due to the plants studied rather than an incorrect hypothesis. Females comprise over 20 percent of the workforce for only five plants; in fact, males comprise 79 percent of the total workforce. The limited range of the sex ratio in the workforce at the plants studied biases the influence of the variable downward in the regression model. The level of investment per worker by the plant should be directly related to community impact through its effect on wage rates. Because of incomplete reporting of plant and property investment only investment in equipment is used. Equation (4-6) adds the equipment investment per worker to the model. The coefficient on the investment variable is not significant until the .9225 level of probability. Community net gains per employee are independent of the equipment investment per worker for the plants in this study. The variables in the regression model, Equation (4-6), predict per employee breakeven subsidies as a function of plant characteristics. Community population per worker incorporates the size of the community in the model and increases explained variation in per employee net gains to 46 percent (Equation 4-7). The negative coefficient on the community population per worker does not support the <u>a priori</u> reasoning about the sign of the coefficient. However, the coefficient is not significant below the .6712 probability level implying that community net gains are independent of

community size for the plants and communities in this study. The coefficient of the total community population variable is not as significant as the per worker measure of community size in a similar equation tested but not presented. The F test of Equation (4-7) indicates that the coefficients of the variables are significantly different from zero at the .4869 level of probability.

The breakeven subsidy per worker can be predicted by inserting the values for the variables from the plant and community in Equation (4-7). Equation (4-7) can be used to indicate the marginal breakeven subsidy per employee if only one adjustment factor is varied at a time. The marginal breakeven subsidy per employee varies with the initial employment level at the plant. If one worker is added to a 10 man workforce his breakeven subsidy is $5,280 and if one worker is added to a 50 man workforce his breakeven subsidy is $3,220. If other factors are constant, a one dollar increase in the annual wage for males increases the breakeven subsidy by $.92 per worker. A one percent increase of males in the workforce decreases the breakeven subsidy by $6.35 per worker, assuming other factors are constant. The breakeven subsidy per worker increases by $.24 for each additional dollar of equipment investment per worker. If the ratio of community population per worker increases by one, the breakeven subsidy is reduced by $.46 per worker.

The addition of the adjustment factors (Equation 4-7) more than doubles the amount of explained variation in community net gains over that of just using employment (Equation 4-3). The poor fit of the equations to the data and the insignificant coefficients of the adjustment factors indicates that the simple average community impact per

employee is about as useful in predicting per employee breakeven subsidies as Equations (4-1) to (4-7). Equations (4-8) to (4-10) in Table XXII are regression models of per unit community net gains and the adjustment factors. Equation (4-8) regresses community net gains per dollar of payroll on the inverse of the natural log of employment and the other adjustment factors. The equation explains 54 percent of the variation in the dependent variable. The coefficient on the employment variable is significant at the .1 level and other coefficients are significant at the .54 to .64 levels of probability. The F test for non-zero coefficients is significant at the .35 level of probability. The average community impact per dollar of sales (see Table XXI) predicts breakeven subsidies just as well as Equation (4-9) because of the insignificant coefficients on the independent variables. The linear form of the employment variable is used to predict the breakeven subsidy per dollar of sales (Equation 4-9). Regression equations using other forms of the employment variable do not explain as much variation in the community net gains per dollar of sales. The coefficient of the variables are not significantly different from zero below the .32 level of probability. Equation (4-9) does not improve the average community net gains per dollar of sales prediction of breakeven subsidies because only 39 percent of the variation is explained and the coefficients on the adjustment factors are insignificant. Regression Equation (4-10) does not improve the prediction by the average per capita estimate of breakeven subsidies.

The measures of community net gains and breakeven subsidies in this section are on an annual basis. The effects of industrialization over time are also needed to more fully evaluate industrial impact and

to determine the one-time value of breakeven subsidies. The next section estimates the capitalized value of community net gains and examines the effects of firm failure on the level of the breakeven subsidies.

Risk of Firm Failure

A community offers a subsidy to a new plant in anticipation that future community net gains will defray the costs. When a community offers a one-time location incentive to a plant rather than an annual subsidy, as in the preceding discussion, the risk of the firm failing must be weighed. Risk is the possibility of the firm ceasing local operations before community net gains pay for the subsidy. The capitalized value of the breakeven subsidy is equal to the present value of community net gains discounted for the number of years that the firm operates in the community. The community experiences a cost if the firm is offered a subsidy based on an earnings horizon that is longer than the number of years the firm actually operates in the community. The maximum one-time subsidy a community can offer a new plant, assuming no risk, is the present value of community net gains discounted from perpetuity. Since the firm does not continue local operations for an infinite number of years, the earnings horizon in reality must be shortened. Reducing the length of time that the plant operates in the community from perpetuity, in effect, increases the level of risk and reduces the breakeven subsidy. The estimates of community net gains include the annual cost of investment in expanding public facilities assuming continuous local operations by the firm. The risk of firm

failure reduces the breakeven investment a community can make in expanding public facilities.

Table XXIII quantifies the present value of community net gains per employee, discounted at six percent, for five earnings horizons: one, five, ten, twenty and an infinite number of years. The breakeven subsidy that the community could offer the plants on an annual basis, if it is paid at the beginning of the year, averages $3,559 per employee at the plant. The one-time breakeven subsidy assuming a five year earnings horizon averages $15,891 per employee. The one-time breakeven subsidy increases to an average of $27,772 per worker if the earnings horizon is ten years. The community can break even if it offers the plant a one-time subsidy averaging $43,780 per worker and the plant operates at least 20 years. If the plant continues local operations for an infinite number of years, the one-time breakeven subsidy averages $62,890 per employee. The cost to the community of a plant failing before future community returns pay for the subsidy is the difference in the value of community net gains actually received and the one-time subsidy based on an anticipated earnings horizon. The community cost of a firm operating five years is $27,889 per employee if the one-time subsidy assumes a twenty year earnings horizon. The costs to the community can be quite large if the plant ceases local operations before a one-time subsidy is repaid from community net gains.

This section examines the capitalized effects of industrialization on a rural community. The national effects of rural industrialization are necessary for policy makers to determine the priorities for

TABLE XXIII

PRESENT VALUE OF CASE III COMMUNITY NET GAINS
PER EMPLOYEE FOR SELECTED EARNINGS HORIZONS
(DISCOUNT RATE IS 6 PERCENT)

Plant Identification	Number of Years in Earnings Horizon				
	Infinity	20	10	5	1
A	$ 40910.	$28154.	$18066.	$10337.	$2315.
B	68207.	46940.	30120.	17234.	3860.
C	69408.	53766.	30651.	17538.	3928.
D	40076.	27580.	17697.	10126.	2268.
E	86701.	59667.	38287.	21907.	4903.
F	63650.	43804.	28108.	16083.	3603.
G	49230.	33880.	21740.	12439.	2786.
H	37501.	25808.	16561.	9476.	2123.
I	48970.	33701.	21625.	12373.	2773.
J	53448.	36783.	23602.	13505.	3025.
K	122362.	84210.	54035.	30918.	6925.
L	74211.	51072.	32772.	18751.	4200.
Average	62890.	43780.	27772.	15891.	3559.

allocating funds for rural development. The next section investigates the national effects of rural industrialization.

Rural Industrialization From A National Perspective

The analysis in this section measures the national effects of keeping people in rural areas rather than the effects on rural communities from attracting new plants. The scope of the analysis is enlarged from the preceding section in several respects. First, the private sector benefits include the total payroll from the plant, not just internalized community income. Second, the initial analysis examines only the effects on the rural community and does not include the opportunity effects of the worker and his family not moving into a metropolitan area. The national median income is assumed to be the private opportunity costs of the worker for not migrating. Workers in rural areas tend to be older and have fewer years of formal education than the average national worker. These two factors reduce the potential earning capacity of the rural worker. The age-sex-education characteristics of the plants workforce are used to adjust the 1970 national median income for differences in the earning capacity of the workers. The national private opportunity cost of workers who would not migrate are assumed to be zero. The local private opportunity costs are incomes from previous jobs not refilled.

Three lengths of run reflect the time needed for workers to move into metropolitan areas. Replies to a question on the labor questionnaire asking what the worker would have done if the present employment opportunity had not occurred are used to determine the rates of out-migration. In the short-run, only those workers who would

migrate if the plant did not locate are assumed to leave the area with their families. In the intermediate-run, the workers who would commute to other communities are also assumed to migrate. In the long-run all of the workers at the plant are assumed to leave the area with their families. This latter assumption is unrealistic in that total out-migration is highly unlikely, but this does show the extreme national effects of rural industrialization on rural out-migration.

Rural-urban migration also influences the public sector. The national public sector opportunity costs from the potential in-migrants are foregone revenue to local government in metropolitan areas. The national public sector opportunity benefits are the expenditures not incurred by local government in metropolitan areas because the workers out-migration is halted. The product of the per capita revenues or expenditures for local government in metropolitan areas from the 1967 Census of Government and the number of migrants estimates the public sector opportunity effects. Local government includes the municipal and county government plus school and special districts in the metropolitan area. The social costs of increased urbanization such as congestion and pollution are not measured in the analysis and thus public sector benefits are underestimated. The model does not measure the difference in non-labor costs of production in rural and urban areas that may alter plant profits. No secondary effects are included for two major reasons: (1) estimates of private sector multipliers for a typical metropolitan area are unavailable, (2) estimates of secondary national public sector effects are also unavailable. The levels of under-employment in metropolitan areas are less than in rural areas, therefore, the exclusion of secondary effects will bias the estimates

in favor of migration to metropolitan areas. The estimates of net gains in this section measure the economic returns to the nation from reducing rural out-migration through rural industrialization. A positive net gain means that the nation benefits from rural industrialization.

In the short-run, with only the workers who indicated they would move to employment opportunities considered as potential migrants, the per plant national net gains average $160,821 annually (Table XXIV). The short-run effects of rural industrialization are very beneficial to the nation. The net gains of reducing the rural-urban migration yields only an average gain of $869 to the public sector. This is small because of the inability to measure the social costs of increased urbanization and industrial concentration that are opportunity benefits from reducing rural out-migration.

Increasing the number of people with non-zero private opportunity costs, in the intermediate-run, reduces the average private sector impact to $133,295 and national net gain to $134,512 (Table XXV). Increasing the number of potential migrants staying in the rural area due to industrialization increases the public sector net gains to an annual average of $1,216 per plant.

In the long-run, where all workers are assumed potential migrants, the net gains to the private sector and nation are negative for all but two plants (Table XXVI). The annual impact averages a negative $82,005 per plant in the private sector and averages a negative $78,164 per plant for the nation. Increasing the number of potential migrants kept in the rural areas increases the average net gain to the public sector to $3,841 per plant. Rural industrialization yields substantial

TABLE XXIV

SHORT-RUN NATIONAL NET GAINS FROM RURAL INDUSTRIALIZATION (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Benefits												
Plant Payroll	248,960	34,930	195,210	122,910	51,590	214,950	73,940	85,975	423,576	558,880	106,635	456,560
Costs												
Income Previous Jobs Not Refilled	34,258	5,742	33,145	2,629	18,125	42,864	55,590	18,334	77,857	94,713	6,893	64,248
Foregone National Wages	21,357	4,284	18,128	7,764	5,010	12,985	8,931	13,191	25,420	37,714	5,791	39,691
Total	55,615	10,026	51,273	10,393	23,135	55,849	64,521	31,525	103,277	132,427	12,684	103,939
Net Gains	193,345	24,904	143,937	112,517	28,455	159,101	9,419	54,450	320,299	426,453	93,951	352,621
Public Sector												
Benefits												
Rural Municipal Government Revenue	5,800	250	1,778	3,745	2,339	19,973	9,636	4,008	3,726	20,056	6,761	20,136
Rural School District Revenue	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Metropolitan Local Government Cost	9,905	1,143	6,857	2,667	1,143	4,190	1,143	1,524	9,143	5,714	1,143	6,857
Total	18,262	1,440	9,196	7,531	3,553	30,425	10,883	7,420	15,621	30,009	9,127	32,252
Costs												
Rural Municipal Government Cost	6,139	59	1,045	3,764	2,016	22,824	9,666	3,832	2,171	19,145	6,704	18,004
Rural School District Cost	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Metropolitan Local Government Revenue	9,435	1,089	6,532	2,540	1,089	3,992	1,089	1,452	8,710	5,444	1,089	6,532
Total	15,574	1,148	7,932	7,183	3,105	32,855	11,268	7,532	13,987	28,266	8,892	27,589
Net Gains	2,688	292	1,264	384	448	-2,430	-385	-112	1,634	1,743	235	4,663
National Net Gains	196,013	25,196	145,201	112,901	28,903	156,671	9,034	54,338	321,933	428,196	94,186	357,284

TABLE XXV

INTERMEDIATE-RUN NATIONAL NET GAINS FROM RURAL INDUSTRIALIZATION (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Benefits												
Plant Payroll	248,960	34,930	195,210	122,910	51,590	214,950	73,940	85,975	423,576	558,880	106,635	456,560
Costs												
Income Previous Jobs Not Refilled	34,258	5,742	33,145	2,629	18,125	42,864	55,590	18,334	77,857	94,713	6,893	64,248
Foregone National Wages	56,083	11,137	47,633	19,810	12,771	33,165	22,846	33,755	64,917	99,037	14,746	104,267
Total	90,341	16,879	80,778	22,439	30,896	76,029	78,436	52,089	142,774	193,750	21,639	168,515
Net Gains	158,619	18,051	114,432	100,471	20,694	138,921	-4,496	33,886	280,802	365,130	84,996	288,045
Public Sector												
Benefits												
Rural Municipal Government Revenue	5,800	250	1,778	3,745	2,339	19,973	9,636	4,008	3,726	20,056	6,761	20,136
Rural School District Revenue	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Metropolitan Local Government Cost	26,285	3,048	18,286	6,857	2,667	11,048	3,429	4,190	23,619	14,857	3,048	18,286
Total	34,642	3,345	20,625	11,721	5,077	37,283	13,169	10,086	30,097	39,152	11,032	43,681
Costs												
Rural Municipal Government Cost	6,139	59	1,045	3,764	2,016	22,824	9,398	3,832	2,171	19,145	6,704	18,004
Rural School District Cost	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Metropolitan Local Government Revenue	25,040	2,903	17,419	6,532	2,540	10,524	3,266	3,992	22,500	14,153	2,903	17,419
Total	31,179	2,962	18,869	11,175	4,556	39,387	13,177	10,072	27,777	36,975	10,706	38,476
Net Gains	3,463	383	1,756	546	521	-2,104	-8	14	2,320	2,177	326	5,205
National Net Gains	162,082	18,434	116,188	101,017	21,215	136,817	-4,504	33,900	283,122	367,307	85,322	293,250

TABLE XXVI

LONG-RUN NATIONAL NET GAINS FROM RURAL INDUSTRIALIZATION (1967 DOLLARS)

	Plant Identification											
	A	B	C	D	E	F	G	H	I	J	K	L
Private Sector												
Benefits												
Plant Payroll	248,960	34,930	195,210	122,910	51,590	214,950	73,940	85,975	423,576	558,880	106,635	456,560
Costs												
Income Previous Jobs Not Refilled	34,258	5,742	33,145	2,629	18,125	42,864	55,590	18,334	77,857	94,713	6,893	64,248
Foregone National Wages	331,120	65,900	281,295	120,060	77,616	201,000	138,460	204,825	393,876	584,720	89,550	615,360
Total	365,378	71,642	314,440	122,689	95,741	243,864	194,050	223,159	471,733	679,433	96,443	679,608
Net Gains	-116,418	-36,712	-119,230	221	-44,151	-28,914	-120,110	-137,184	-48,157	-120,553	10,192	-223,048
Public Sector												
Benefits												
Rural Municipal Government Revenue	5,800	250	1,778	3,745	2,339	19,973	9,636	4,008	3,726	20,056	6,761	20,136
Rural School District Revenue	2,557	47	561	1,119	71	6,262	104	1,888	2,752	4,239	1,223	5,259
Metropolitan Local Government Cost	155,428	17,524	107,428	40,762	14,875	66,285	20,190	24,000	140,190	87,619	17,143	108,952
Total	163,785	17,821	109,767	45,626	17,267	92,520	29,930	29,896	146,668	111,914	25,127	134,347
Costs												
Rural Municipal Government Cost	6,139	59	1,045	3,764	2,016	22,824	9,398	3,832	2,171	19,145	6,704	18,004
Rural School District Cost	0	0	405	879	0	6,039	513	2,248	3,106	3,677	1,099	3,053
Metropolitan Local Government Revenue	148,063	16,693	102,338	38,830	14,153	63,145	19,234	22,863	133,547	83,467	16,331	103,789
Total	154,202	16,752	103,788	43,473	16,169	92,008	29,145	28,943	138,824	106,289	24,134	124,846
Net Gains	9,583	1,069	5,979	2,153	1,098	512	785	953	7,844	5,625	993	9,501
National Net Gains	-106,835	-35,643	-113,251	2,374	-43,053	-28,402	-119,325	-136,231	-40,313	-114,928	11,185	-213,547

net gains to the nation in the short- and intermediate-run. The long-run negative impact implies that rural industrialization adversely affects the nation, but as pointed out the exclusion of secondary effects underestimates the benefits of rural industrialization.

Summary

The basic analysis indicated that the communities studies benefited substantially from the location of new plants. The major portion of the benefits were in the form of increased private incomes rather than large improvements of the public sector's fiscal base. Time, resource use, and resource mobility did affect the magnitude and incidence of industrial impact. Plant employment, payroll, investment, and community population were examined as guidelines for predicting industrial impact and breakeven subsidies. The risk of a firm ceasing local operations was investigated by reducing the number of years, from infinity to one, that the firm's community impact was discounted. The national effects of rural industrialization were examined by including the opportunity effects of potential out-migrants in the analysis. An extended summary is deferred to the next chapter.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study investigated one route to community economic development -- industrialization. A model was developed and applied to determine benefits and costs to the community from the location of new industry. Three community sectors were defined to measure the distribution of industrial benefits and costs. The private effects included the primary and secondary changes in wages, salaries, and proprietor incomes remaining in the community (internalized income). The internalized income from previous jobs not refilled were considered private opportunity costs of industrialization. The municipal government effects included the primary and secondary changes in the finances of the city government. The school district effects included primary and secondary changes in school district revenues and expenditures. Net gains to each sector and the total community were measured as the difference between total benefits and costs for the sector or community.

Data collected from 12 industrial plants located in five communities in the Eastern Oklahoma Economic Development District (EOEDD) provided the empirical foundation of the study. Four assumed time horizons reflected different opportunities for resource use and mobility. In Case I, the full employment short-run situation with all previous internalized income assumed lost, the community net gains averaged $42,542 annually. The average per plant effect on the municipal

government was a negative $265 per year. Case II represented the short- to intermediate-time period with the plant bringing the local economy to full employment. Reducing private opportunity costs by assuming only a partial loss of previous jobs increased the community average impact to an average of $95,581 per year. Case III approximated the intermediate- to long-run situation with local underemployment and assumed only a partial loss of previous internalized income. The annual community net gains in this case, which most nearly represented the conditions found in the communities studied, averaged $158,408 annually. The average impact on the municipal government and school district was positive. In Case IV, the long-run time period with all previous internalized income assumed replaced, the annual community impact averaged $176,850.

Several implications can be drawn from the basic analysis. First, the communities studied received substantial net benefits from the location of new industrial plants. Although the magnitude of net gains varied with the assumptions of the analysis, community impact remained positive for all the plants in each case. The second implication was that despite sizeable net community benefits, some firms caused a negative impact on one or both of the public sectors regardless of the surrounding conditions of time, resource use and resource mobility. Plant A's negative municipal government impact was caused by a large number of in-commuters in the workforce and an enlarged utility system. There was no municipal sales tax, and therefore, the municipal government received benefits of the increased income and sales volume indirectly through state sales tax revenues returned to cities and towns. The municipal government benefits from increased sales and population

were delayed because state sales tax receipts were distributed on the basis of community population in the last decennial census. In all four cases, plant A's internalized primary income times the sales tax rate was adequate to provide a positive municipal government impact. Thus, the source of municipal revenues was an important determinant of the type and size of impact of a new plant. Plants D and F's municipal impact was negative because the additional sales tax revenues from the plants payroll were inadequate to make up the excess of municipal expenditures over non-sales tax municipal revenues. Plant F's tax exempt property and large number of in-commuters added to the problem of inadequate per capita municipal revenues in the community. The inadequate municipal government revenue base in the communities where plants D and F located was not improved by increased industrial activity. Plant G's negative school district impact was due to its exemption from ad valorem taxes. The potential revenues from the tax exempted property were considered a school district opportunity cost and other school revenue sources were inadequate to pay for the additional expenditures caused by plant G. Per ADA expenditures exceeded revenues for the new students brought into the school system by plants H and I. Plant I's investment was outside the boundaries of the school district and contributed nothing to the school tax base even though additional children were enrolled in the local school. Plant H's investment in the community was low and the additional ad valorem taxes paid were inadequate to match the excess of expenditures over inter-governmental aid revenues for the additional students enrolled. The location of some plants outside the taxing jurisdiction, on tax exempt property, or the attraction of new residents and in-commuters actually caused a

relative decline in the fiscal base for some of the municipal governments and school districts.

Third, the analysis indicated that the public sector net gains were a small part of community net gains. In Case III, the average municipal government impact was only .33 percent and the school district impact was only .25 percent of the average community net gain. The negative or small positive public sector impact did not support the view held by many that new industry greatly increased the fiscal base of a rural community.

A final implication was that while community net gains were directly related to the size of plant in terms of employment and payroll, the worker's place of residence could affect the plant's impact. This was a partial explanation of why the impact for plant J was about $100,000 less in Case III than plant L. The plants employed the same number of workers and plant J's payroll was about $100,000 larger than plant K's payroll. The difference in community impact was because 15 percent of plant J's workforce resided outside the county and another 25 percent lived outside the community while for plant L the percentage of the workforce residing at these locations was 11 and 19 percent, respectively. In-commuters from outside the county reduced the level of internalized income and community net impact.

The analysis indicated that industrialization was beneficial to the communities in the study. The value of the industrial location incentives to the plants studied could have been substantially increased. However, the type of incentive used to attract industry to rural areas should be re-evaluated in the context of community objectives. If the communities were using rural industrialization to

maintain or attract population then present incentives appeared satisfactory. If community objectives were to add to and increase the public fiscal base other forms of location incentives may be needed. The public sector net gain was very sensitive to subsidies that reduced the tax responsibilities of the new plant. It appeared that the plants with a more favorable impact on the community hired locally available labor rather than bringing in new residents and in-commuters. The plants making small additional demands on the capacity of public services were also more beneficial to the communities. The industrial impact on the community was directly related to the level of employment and the amount of payroll remaining in the community.

The community net gains were equated with the annual breakeven subsidy and the estimates were put on a per unit basis to show the variation in breakeven subsidy as the size of the community and plant changed. The breakeven subsidy averaged $3,772 per employee, $.78 per dollar of payroll, $.27 per dollar of plant sales, and $22 per capita of community population. These averages provided the first approximation of the breakeven subsidy as a function of plant and community characteristics. The extreme variation in per unit subsidy between plants indicated that other factors may be important determinants. Regression analysis was used to investigate the influence of the level of employment, annual wages for males, percent of males in the workforce, equipment investment per worker, and community population per worker on the breakeven subsidy. These adjustment factors explained 46 percent of the variation in net impact per employee, 54 percent of the variation in net impact per dollar of payroll, 39 percent of the variation in net impact per dollar of sales and 53 percent of the variation in net impact

per dollar of payroll, 39 percent of the variation in net impact per dollar of sales and 53 percent of the variation in impact per capita. The regression equations incorporating the adjustment factors did not improve on the estimates of breakeven subsidies provided by the averages per employment, per capita and per dollar of payroll and sales. The insignificant coefficients on the adjustment factors prevented a clear delineation of the effects of the adjustment factors on the breakeven subsidies.

The maximum one-time location incentive a community can offer a new plant was measured by discounting community net gains, at six percent, from perpetuity. This measured the present value of expected community returns from industrialization assuming the plant did not fail (cease local operations). The community cost of the new plant ceasing local operations, before expected community net gains paid for the one-time subsidy, was measured as the difference in actual community returns and the cost of the subsidy. The capitalized breakeven subsidy averaged $62,890 per employee when the firms were assumed to operate through infinity. If the firms operated only 20 years the one-time-breakeven subsidy averaged $43,780 per employee. If the firm failed after ten years of local operation, the breakeven subsidy averaged $27,772 per employee. The average-breakeven-subsidy was $3,559 per employee if the plants operated only one year in the community. If the community offered a new plant a subsidy based on perpetual local operations and the plant failed after only one year there would be a $59,331 per employee loss to the community. Thus, careful evaluation of the plants viability was necessary to prevent potential significant community losses.

The national effects of rural industrialization reducing rural to urban migration were examined by measuring the opportunity effects of the potential migrants. It was assumed that potential out-migrants, by remaining in the rural area, had an opportunity cost equal to the national median income adjusted for age-sex-education differences in earning capacity. Potential local government revenues and expenditures in metropolitan areas from the migrants were also included in the analysis. Positive net gains meant that the national effects of rural industrialization were beneficial. In the short-run, with only about six percent of the workers considered potential migrants, the national net gains averaged $160,821 annually per plant. About 16 percent of the workforce were assumed to be potential migrants in the intermediate-run. The national net benefits for this case, approximating the 1950-60 EOEDD out-migration rate of 22 percent, averaged $134,512 annually. The long-run situation assumed that all the workers left the rural area and national net costs averaged $78,164. Increasing the number of potential migrants decreased the private sector net gains from rural industrialization. This was expected as increased concentration of production and markets should generate economies of size. The increase in public net gains may have reflected diseconomies in public services from increased metropolitan concentration. The public sector net gains from reducing migration were underestimated because the social effects of further urbanization, pollution, and industrial concentration were not measured. The analysis indicated that rural industrialization was a feasible national alternative to rural-urban migration in the short- and intermediate-run. The negative national effects of rural industrialization, in the long-run, implied that alternative rural development programs

such as general and technical education, and subsidized labor migration may be more beneficial to the nation.

Limitations and Future Research Needs

This study, just as others before it, uses averages to measure changes at the margin. Further research is needed on the cost functions of public services by level of population, by types and level of business activity, and by utilization of public service capacity to quantify the average and marginal effects in the public sector. In the private sector the multipliers used were averages aggregated over a wide range of industrial sectors. The refinement of the multipliers to more specific industrial groupings would increase the accuracy of the estimates of secondary effects.

The study provides part of the information needed to derive the demand curve for industrialization, i.e., the maximum price (subsidy) a community can pay a new industry to locate. The results of this study measure the maximum allowable bid, assuming that the plant locates. A measure of the rate of success by communities in attracting industry and the costs of unsuccessful efforts to attract industry are not examined in this study. Nor does the study measure the returns to the community from the dissemination of information to prospective new plants. The supply curve of industrialization (minimum price to attract industry) is not estimated by this study. To estimate a supply curve of industrialization, a measure of the minimum price entrepreneurs will accept to move or locate their plant is needed.

Further research on the private income gains, adjusted for differences in workers earning capacities, coupled with the quantifying of

the costs to all levels of government from rural industrialization is needed to aid in determining priorities for allocating public monies for rural development between industrial subsidization, education, public employment, and subsidized labor migration.

The study did not evaluate the effects of industrialization on the level and distribution of personal wealth in the communities. The change in the personal wealth should be related to the change in income. A measure of the change in personal wealth and asset position before and after the plant locates is needed to better evaluate the effects of industrialization on individuals.

Further research on an equitable method of financing the location incentives for rural industrialization is needed. The study indicates that the benefits of industrialization do not fall equally on all sectors of the community. This holds important policy implications for financing industrial subsidization. The municipal government and school district do not experience a large enough improvement in their tax base to feasibly finance the increase in the value of the subsidy to the breakeven level for the total community. Because of this, it may be necessary to use state and federal income taxes to finance location incentives. This would shift the burden of the subsidy cost from the local government sector to a governmental unit with a larger fiscal resource base. It also would tax those who receive the increased incomes.

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APPENDIX A

A COPY OF THE QUESTIONNAIRES USED

CONFIDENTIAL

LABOR QUESTIONNAIRE

1. Name of plant where you work _____

2. Date of birth: month _____ year _____
   Sex: male _____ female _____

3. Years of schooling completed (Circle the last year or degree completed)

   Grade school. 1 2 3 4 5 6 7 8
   High school 9 10 11 12
   College 13 14 15 16
   Advanced degree . . . . . Masters
   Doctorate
   Vocational or Technical school. 1 2 3 4 5
   Other (specify) . . . . . _____

4. When did you start work at this plant? month _____ year _____

5. What position do you hold presently? _____

6. What were your estimated annual earnings last year at this job?
   $_____

   Is your job: full time _____ part time _____
   Wage rate in dollars per hour $_____

7. Did you have previous experience elsewhere at this type of work?
   Yes _____ No _____

   If yes:

   Where were you employed: town _____ state _____
   When were you employed: from _____ to _____

8. Where did you live prior to accepting this job?

   _____in this community. (Your post office address is in the town where the plant is located).
   _____in this county but not this community.
   _____elsewhere (Specify). town _____ county _____ state _____

9. Where do you presently live?

   _____same as your answer to question 8.
   _____if not, please specify. town _____ county _____ state _____

10. Were you employed just prior to this job? Yes _____ No _____

If yes:

Were you employed in this community? Yes _____ No _____
If no, were you employed in this county? Yes _____ No _____
Was your previous job filled after you left? Yes _____ No _____

Describe your previous job: _____

_____

Was your previous job part time? Yes _____ No _____
Estimate your annual income at your last job. $_____
Wage rates at your last job in dollars per hour. $_____

If no:

Did you receive some form of public assistance? Yes _____
No _____
If yes, what was it and from which county?
_____unemployment compensation; _____ county.
_____aid to families with dependent children; _____ county.
_____aid to the disabled, _____ county.
_____other (Specify) _____, _____ county.

If you or your family received some form of public assistance, what were the estimated total annual benefits? $_____

11. If the opportunity to work at this plant had not occurred what would you have done?

_____continued as you answered in question 10.
_____commuted to another community to work.
_____moved to another community to work.
_____found another job in this community.

12. How far do you drive to work? _____miles

13. Are you married? Yes _____ No _____

If yes:

Does your spouse work? Yes _____ No _____
If your spouse also works, what is his or her estimated annual income? $_____
Does your spouse work at this plant? Yes _____ No _____

14. How many children and/or dependents (excluding yourself and your spouse) live in your household?

_____when you first started work at this plant.
_____at the present time.

15. How many children in your family are in the following groups?

	Number when you started to work at this plant	Number at the present time
Number in grade school (ages 5-13)		
Number who attend grade school in the same community as the plant at which you work		
Number in high school (ages 14-17)		
Number attending high school in the same community as the plant at which you work		

16. Do you presently hold another job or farm part time? Yes _____ No _____

If yes:

Where is this job located? city_____, county_____
What is your estimated annual income from this second job?
$_____

17. Do you presently rent or own your home? Rent _____ Own _____

If you rent your home would you please estimate the monthly rent:

When you first started work at the plant? Dollars per month _____
Rent paid at the present time? Dollars per month _____

Did you build or buy a <u>new</u> house since starting to work at the plant? Yes _____ No _____

If you owned your home prior to taking this job, would you estimate the amount of property taxes paid by you on your house and lot when you started work at this plant? Dollars per year _____, last year (1969)? Dollars per year _____

18. In the table on the next page please estimate the percentage of your paycheck that you spend in the given geographic locales. (Community means the town or city in which the manufacturing plant you work is located).

Item	Percent purchased in the			Total
	Community	County but outside this community	Elsewhere	
Groceries				100%
Clothing				100%
Durables (autos, furniture, appliances, etc.)				100%
Personal services (medical, dental, toiletries, etc.)				100%

CONFIDENTIAL

MANAGEMENT QUESTIONNAIRE

1. Firm's name _____
   SIC code _____ Fiscal year ends _____

2. Community name _____

3. What does the firm produce? _____

4. Is this firm a branch plant? Yes _____ No _____
   If yes, where is the company headquarters? city _____
   state _____

5. When did the firm start the following in this community?

   Construction: month _____ year _____
   Production: month _____ year _____

6. What is the value of the following items for your firm in this community?

	First year of operation	Total as of last fiscal year
Building		
Plant Site		
Equipment		
Total		

7. In the table below estimate the total value of the item on the left for the last fiscal year of this plant's operation. Also estimate what percentage of the item goes or comes from the specified geographic locales.

   NOTE: COMMUNITY means the town and surrounding farms and residences with a post office address in the town in which the plant is located. LOCAL means the rest of the county in which the plant is located.

Item	Total Value (in $)	Percentage Distribution				
		Community	Local	State	National	Total
Output (sales)						100
Inputs Labor (number)						100
Labor (wages)						100
Taxes						100
Utilities						100
Insurance						100
Raw Materials						100

8. Estimate the volume of sales for this plant the first fiscal year of production in this community. _____

9. In the table below indicate the number of workers employed in each category. The term "brought in" means the workers hired by the firm from outside this area when it located in the community.

	First Fiscal Year	
	Total	"Brought In"
Management		
Sales		
Clerical		
Production Workers		
Skilled		
Unskilled		

10. In the table below indicate the number of workers in each category for the last fiscal year.

	Female		Male	
	Full time	Part time	Full time	Part time
Management				
Sales				
Clerical				
Production Workers				
Skilled				
Unskilled				

11. What is the minimum level of skill or training required of your production workers at the time of hiring? Please check the appropriate blank.

_____grade school education
_____high school graduate
_____college training
_____college graduate (bachelor's degree)
_____technical school training
_____technical school graduate
_____apprenticeship (what trade? _____)
_____journeyman (what trade? _____)
_____other (specify. _____)

12. Did the labor force in this community initially have the necessary skills required by your firm? Yes _____ No _____

If not, did your firm provide:

	Average hours per employee	Average cost per employee
_____on-the-job training	_____	_____
_____formal schooling or classes	_____	_____
_____other (specify)	_____	_____
_____	_____	_____
_____	_____	_____

PLANT LOCATION FACTORS

A. Access to markets
B. Access to raw materials
C. Cost of raw materials
D. Availability of labor
E. Labor costs
F. Lack of unionization

G. Availability of needed skills
H. Transportation costs
I. Transportation facilities
J. Availability of water transport
K. Availability of plant site
L. Area for future expansion
M. Climate
N. Living conditions
O. Personal reasons of the owner (ex. home of the owner)
P. Utilities
Q. Availability of industrial power supplies
R. Cost of industrial power supplies
S. Community size
T. Schools
U. Recreational and cultural facilities
V. Favorable taxes
W. Promotional activities or state and/or local development groups
X. Attitude of community towards industry
Y. Decentralization
Z. Availability of supporting business services
AZ. Area already established as a center for this industry
AY. Waste disposal
AX. State legislation and regulations (zoning, sanitation codes, etc.)
AW. Local legislation and regulations (zoning, sanitation codes, etc.)
AV. Financial incentives from the state
AU. Financial incentives from the community
AT. Financial aid from local private sources.

13. From the above list what were the five most important locational factors in your firm's selection of Oklahoma for the site of this plant?

1.
2.
3.
4.
5.

14. Given that Oklahoma was selected for the site of this plant, from the list of locational factors indicate what the five most critical factors were in the selection of this specific community?

1.
2.
3.
4.
5.

15. Since your plant has located in this community, what are the major factors or things you and/or your firm would like to see changed in the community?

16. Did this community offer your plant any special incentives to locate here? Yes _____ No _____

If yes, what were the incentives and estimate their monetary value?

LOW INTEREST FINANCING: Did your firm receive a low interest (below the market rate) loan to locate in this community? Yes____ No ____
If yes, who financed the loan and what was the amount of the loan?
_____Federal government, amount $_____
_____State government, amount $_____
_____County government, amount $_____
_____Municipal government, amount $_____
_____Private source, amount $_____

Your firm's annual payment to retire this loan is: _____
Principal $_____
Interest _____%
Total $_____
What is the length of the loan? _____months _____years

PLANT SITE (excluding building): Did your firm receive a locational inducement in the form of a plant site? Yes ____ No ____
Does your firm have title to the plant site? Yes ____ No ____

If yes:

Did the firm purchase the site? Yes ____ No ____
Was all or part of the value of the site contributed to the firm? Yes ____ No _____
What percentage of the value of the plant site was contributed?
_____%

If no:

Does the firm rent or lease the site? Yes ____ No ____
Length of lease _____years _____months
Annual payments $_____
Does the firm have a purchase option on the site? Yes ____ No ____
If yes, please specify_____

BUILDING: Did your firm receive a locational incentive in the form of a building? Yes ____ No ____

Does your firm have title to the building? Yes ____ No ____

If yes:

Did the firm purchase the building? Yes ____ No ____
Was all or part of the value of the building contributed to the firm? Yes ____ No ____
What percentage of the value of the building was contributed?
_____%

If no:

Does the firm rent or lease the building? Yes ____ No ____
If yes, what is the:
Length of the lease _____months _____years
Annual payment $_____
Does the firm have a purchase option on the building? Yes ____
No ____
If yes, please specify_____

UTILITIES: Did the firm receive any special rates of the utilities? Yes ____ No ____
What rates does this plant pay for the following?

Gas	$_____	per 1000 cu. ft.
Electricity	$_____	per kw. hr.
Water	$_____	per cu. ft.
Sewage	$_____	per month

VOCATIONAL TRAINING: Did any agency or organization train all or part of the locally hired workers in your labor force? Yes ___
No ____

If yes:

What organization financed this training?_____
What do you estimate this training would have cost your firm?
$_____
How many were trained? _____

TAXES: Did your firm receive any special tax considerations in the form of exemptions or low assessments? Yes ____ No ____
If yes, which level of government was involved and how long will this special consideration last?

	length of consideration
_____local municipality	_____
_____county government	_____
_____state government	_____
_____school district	_____

If the firm had property exempted from taxation, which levels of government were affected and which items?

Please check the appropriate blank(s).

	Plant Site	Building	Equipment	Inventory	
				Materials	Finished product
School					
Municipality					
County					
State					

17. Did your firm require any special services from this community before it would locate here? Yes _____ No _____

If yes:

_____streets and roads
_____fire and/or police protection
_____sewer and sanitation
_____schools
_____railroad spur or access road
_____other (specify _____)

18. Were special financial incentives to locate in this community decisive in your firm's decision to locate here? Yes ____ No ____

19. Did other communities offer your firm special incentives to locate your new plant there? Yes _____ No _____

20. Would this plant have been built or operated elsewhere if it had not been located in this community? Yes ____ No ____

CONFIDENTIAL

CHAMBER OF COMMERCE QUESTIONNAIRE

1. Name of community _____

2. Does this community have an industrial development corporation or any other civic group whose primary interest in attracting new industry to the community? Yes ____ No ____ If yes:

   What is the group's name? _____
   Did the community have this organization when _____
   located here? Yes ____ No ____
   How is this industrial development group financed?
   _____membership fees
   _____public funding
   _____private contributions
   _____other (specify _____)

   Estimate the annual budget for the organization.
   First year operated. . . . . $_____
   1960 . . . . . $_____
   When _____ located . . . . . $_____
   1969 . . . . . $_____

3. What industrial location incentive programs does your community have: (Please check the appropriate blank).

   _____Low interest financing
   federal_____ state_____ local public_____ local private_____
   _____Plant sites
   free_____ low rent_____
   _____Industrial buildings
   free_____ low rent_____ will build_____ already built_____
   _____Market information on
   raw materials_____ labor_____ product_____ transportation____
   other (specify _____)
   _____Vocational or technical training for the labor force
   _____Transportation facilities provided (ex. railroad spur, access road)
   _____Utilities (Check appropriate boxes)

	special rates	no hook up charge	special services
water			
gas			
electricity			
sewer			

_____Tax considerations (Check appropriate boxes)

	municipal	school	county
favorable rate			
favorable assessment			
exemption			
other (specify)			

4. What type of location incentive programs were granted _____ _____ when it located in your community and estimate the monetary value of these programs?

5. Would you please list the major capital improvements the community has had since 1960? The items that might be considered are sewer, water, school system, streets and roads, etc.

Item	Date	Value of Improvement

6. Did the community negotiate with firms other than _____ about locating here? Yes_____ No_____

   If yes, what were the reasons negotiations were terminated?

7. Estimate how many firms have expressed an interest in locating in your community since 1960? _____ How many actually located? _____

8. Did your community "acquire" this firm by its individual effort? Yes ____ No ____

   If no, did your community cooperate with neighboring communities? Yes ____ No ____

If yes, please specify.

9. If any of the agencies below helped in your community's effort to locate _____ please check. If their assistance was adequate, please check "yes".

_____Municipal government Yes ____ No ____
_____County government Yes ____ No ____
_____Economic Development District Yes ____ No ____
_____State Industrial Development and Parks Department Yes ____ No ____
_____State Employment Commission Yes ____ No ____
_____Utility companies Yes ____ No ____
_____State Industrial Finance Authority Yes ____ No ____
_____Railroads Yes ____ No ____

Sanitation

Type of sewerage treatment plant - primary____ secondary____

Volume in	Capacity	Average Load
1960	_____GPD	_____GPD
19__	_____GPD	_____GPD
1970	_____GPD	_____GPD

Natural Gas

Service available Yes ____ No ____

Volume (1000 cu. ft. per ___)	Capacity	Actual Use
1960	_____	_____
19__	_____	_____
1970	_____	_____

Electricity

Volume in	Capacity	Actual Use
1960	_____	_____
19__	_____	_____
1970	_____	_____

Water

	Unit	1960	19__	1970
Capacity of water supply	GPD			
Pumping capacity	GPM			
Storage capacity	GAL			
Use	GPD			

APPENDIX B

ANALYSIS PROCEDURES

Introduction

A hypothetical industrial impact study will be analyzed in this appendix to show the computational procedures used.

The Plant

Local citizens in their negotiations with a potential industry must determine various characteristics of the new firm to estimate its impact on the community. The plant's equipment investment in the community in this example is $80,000. This is the plant's only addition to the property base in the community as it located in a previously occupied building in the municipally owned industrial park. The plant requires an expansion of the municipally owned and operated electrical and sewage treatment facilities. The annual cost of repaying the bond for this expansion is $1,000. The management at the plant estimates that the plants annual utility bill is $4,000.

The Workforce

The firm is able to hire 30 of the 50 workers needed from residents in the community, five workers are brought into the community, ten workers reside elsewhere in the same county and five workers commute to work from homes located outside the county. Five workers are seeking employment at the plant because their previous jobs are about to be eliminated. The average wage at the previous jobs is $4,500 versus an average of $5,000 at the new plant. The five "imported" workers

bring another 15 persons into the community with them including eight children who are enrolled in the local school district. Adequate housing is available for only two families, forcing the other families to build new homes. The average value of the new homes, excluding the lot, is $20,000.

The Community

Community factors influencing the new plant's impact include population, propensity to consume locally, and public fiscal structure. The community population is 5,000 people. The propensity to consume locally varies from 40 percent for noncounty residents, to 50 percent for county residents, and 60 percent for community residents. The intra-county multiplier is estimated to be 1.8.

The municipal government utilizes a one percent sales tax and 10 mill ad valorem tax rate for part of its revenues. Property is assessed at 20 percent of its fair market value. The third major municipal revenue source is utilities. The average annual per family municipal utility bill is $250. Per capita municipal revenues, excluding sales tax and utility revenues, are $35. The per capita current and capital municipal expenditures, excluding utility expenditures, are $45. Municipal revenues and expenditures per dollar of personal income are $.025 and $.024 respectively.

The local school district taxes property at the rate of 40 mills. Per average daily attendance (ADA) inter-governmental aid is $250 (state) and $50 (federal). Noncapital education expenditures are $450 per ADA and capital expenditures average $20 per ADA. The school

revenues and expenditures per dollar of income are $.030 and $.028 respectively.

Private Sector Analysis

The amount of new income remaining in the community (internalized income) is determined by weighting the plant payroll by the workers place of residence and propensity to consume locally. Equations (B-1) through (B-4) show the calculation of primary internalized income:

Number of workers by place of residence		Average annual income		Propensity to consume locally by place of residence		Internalized Income	
							(B-1)
35	x	5,000	x	.60	=	105,000	(B-2)
10	x	5,000	x	.50	=	25,000	(B-3)
5	x	5,000	x	.40	=	10,000	(B-4)
		Total primary internalized income				$140,000	

Of the plant's $250,000 payroll only $140,000 remains in the community. Equations (B-5) and (B-6) calculate the internalized secondary income impact of the new plant. It is assumed that the recipients secondary income reside in the community and exhibit the same propensity to consume locally as do the workers at the plant who reside in the community:

Internalized primary income		Intra-County income multiplier		Propensity to consume locally		Internalized secondary income	
							(B-5)
140,000	x	.8	x	.6	=	$67,200	(B-6)

The $67,200 represents the change in income of community residents who do not work at the new plant. The total income change in the community because of the new plant is $207,200.

The private sector costs of the new plant are the primary and secondary income lost because some previous jobs are not refilled. The calculation of income loss from previous jobs not refilled is similar to the calculation of internalized plant payroll. The propensity to consume locally by the workers place of residence is used to weight income from previous jobs. Three of the previous jobs not refilled are held by community residents and the remaining two jobs are held by a county resident and a noncounty resident (no affect on community income) respectively. The loss of internalized primary income is computed in equations (B-8) and (B-9):

Number of workers by place of residence		Average annual previous job		Propensity to consume locally		Previous internalized income lost	
3	x	4,500	x	.60	=	$ 8,100	(B-8)
1	x	4,500	x	.50	=	2,250	(B-9)
		Total primary income lost				$10,350	

The loss of the primary income affects the volume of trade in the community and this loss of secondary income is given by equation (B-10).

$$10,350 \times .8 \times .6 = \$4,968 \qquad \text{(B-10)}$$

Local chamber of commerce and other private individuals estimate the costs of travel, entertaining and other expenses in negotiating with the new plant are about $5,000. These private sector industrial development program costs are deducted from private sector benefits.

The primary and secondary benefits and costs are summed to give total benefits and costs to the private sector. The net gains to the private sector are the difference between total benefits and costs.

Table XXVII summarizes the industrial impact on the community's private sector.

Municipal Government Sector Analysis

The changes in population, income, and property values are the means by which the new plant transmits its impact to the public sector.

The three new homes built by "imported" workers add to the community's property base. The homes are assessed at 20 percent of their fair market value and after deducting the $1,000 homestead exemption per house the addition to the assessed residential property tax base is $9,000. The municipal ad valorem tax rate is 10 mills yielding $90 in ad valorem tax revenues from the new homes. The location of the plant on tax exempt property and in a building already on the property tax rolls means that only the assessed value of the plant's equipment is added to the tax base. The assessed value of the plant's equipment is $16,000 and the municipal 10 mill property tax rate yields another $160 to the city's ad valorem tax revenues. Utility revenues are assumed to be adequate to cover the noncapital costs of producing and delivering the utilities. The utility impact of the new plant is $4,000 and for the five new families in the community it is $1,250. These are entered as both benefits and costs. The annual costs, $1,000 in this example, of the capital improvement to the utility system because of the new plant or new residents are entered as a cost to the municipal government. The injection of primary income into the community's economy creates additional sales tax revenues for the municipal government. The sales tax revenue gain is the product of the sales tax rate and the net gain in primary income, equation (B-12).

TABLE XXVII

NET GAINS TO THE PRIVATE SECTOR

Benefits:			
Plant Wages and Salaries Internalized in the Community	$140,000		
Total Primary Benefits		$140,000	
Internalized Plant Wages and Salaries x Community Income Multiplier	67,200		
Total Secondary Benefits		67,200	
Total Benefits to Private Sector			$207,200
Costs:			
Internalized Income from Previous Jobs not Refilled in the Community	10,350		
Industrial Development Program Costs	5,000		
Total Primary Costs		15,350	
Internalized Income from Previous Jobs not Refilled x Community Income Multiplier	4,968		
Total Secondary Costs		4,968	
Total Costs to Private Sector			20,318
Net Gain to Private Sector:			
Total Benefits - Total Costs			186,882

[Present internalized primary income	-	Previous internalized primary income lost]	x	Sales tax rates	=	Net gain in municipal sales tax revenue	(B-11)
[140,000	-	10,350]	x	.01	=	$1,296.50	(B-12)

The primary non-utility and non-sales tax municipal government revenues and expenditures are based on the number of new residents in the community, see equations (B-14) and (B-15), respectively.

New population	x	Municipal government financial coefficient	=	Primary impact	(B-13)
20	x	35	=	$700	(B-14)
20	x	45	=	$900	(B-15)

The 15 workers who reside outside the city limits and commute into the community to work at the plant create municipal service costs. The in-commuters receive the use of selected municipal services while they are in the city limits but their only municipal revenue contribution is sales taxes. The cost of in-commuters is computed as a weighted per capita non-utility municipal expenditure. The weight is the percentage of time spent in the community by the worker assuming he spends 10 hours per day five days a week for 52 weeks a year in the community. Equation (B-17) shows the computation of the municipal government costs of in-commuters.

Number of in-commuters	x	Per capita expenditures	x	Weight for time at work	=	Cost of in-commuters	(B-16)
15	x	45	x	.2976	=	$201	(B-17)

The location of the new plant generates secondary public sector effects similar to those occurring in the private sector. The

secondary public sector effects are a function of the secondary income changes caused by the new plant. Equations (B-19) and (B-20) show the calculation of the secondary municipal fiscal impact.

Internalized secondary income	x	Per dollar municipal fiscal coefficient	=	Secondary municipal impact	
67,200	x	.025	=	$1,680	(B-19)
67,200	x	.024	=	$1,613	(B-20)

The foregone ad valorem tax revenue from the tax exempt plant site is an opportunity cost to the municipal government; equation (B-22).

Value of plant site	x	Assessment ratio	x	Mill levy	=	Property tax revenues lost	
10,000	x	.20	x	10	=	$50	(B-22)

The primary and secondary benefits and costs are summed to determine total benefits and costs to the municipal government sector. Net gains to the municipal government sector are the difference in total benefits and costs. Table XXVIII summarizes the industrial impact on the municipal government sector.

The School District Sector Analysis

The investment by the new plant and new residents along with changes in school enrollment are the channels by which the new plant's impact is transmitted to the local school district. Equations (B-23) and (B-24) calculate the additional school district ad valorem tax revenue from the new plant's equipment investment and new residential investments.

TABLE XXVIII

NET GAINS TO THE MUNICIPAL GOVERNMENT SECTOR

Benefits:			
Ad Valorem Taxes New Homes	$ 90		
Ad Valorem Taxes New Plant's Additional Investment	160		
Utility Revenues from New Plant	4,000		
Utility Revenues from New Residents	1,250		
Sales Tax from Plant Payroll Spent Locally	1,279		
Other Tax Revenues from New Residents	700		
Total Primary Benefits		$7,479	
Change in Tax Revenues from Former Residents	1,680		
Total Secondary Benefits		1,680	
Total Benefits			$9,159
Costs:			
Services Provided New Plant	5,000		
Services Provided New Residents	2,150		
Services Provided New Commuters	201		
Annual Municipal Government Incentive Costs	50		
Total Primary Costs		7,401	
Additional Services Provided Former Residents	1,613		
Total Secondary Costs		1,613	
Total Costs			9,014
Net Gain to Municipal Government Sector:			
Total Benefits - Total Costs			145

$$\$80{,}000 \times 20\% \times .040 = \$640 \quad \text{(B-23)}$$

$$[(\$20{,}000 \times 3 \times 20\%) - (3 \times \$1{,}000)] \times .040 = \$360 \quad \text{(B-24)}$$

In equation (B-24) the three families that build new homes, valued $20,000 each, are assumed to take their homestead exemption ($1,000 each).

The change in ADA affects the primary school revenue from intergovernmental school aid. Equations (B-26) and (B-27) calculate the primary revenue effect from state and federal government aid.

New student	x	School intergovernmental aid financial coefficient	=	Intergovernmental aid	(B-25)
8	x	250	=	$20,000	(B-26)
8	x	50	=	$ 400	(B-27)

The primary capital and non-capital expenditures resulting from the location of the plant are functions of the change in enrollment. Equation (B-29) gives the non-capital expenditures and equation (B-30) gives the capital expenditures impact of the new students enrolled in the school district because of the new plant.

New students	x	School district financial coefficient	=	Primary cost	(B-28)
8	x	450	=	$2,800	(B-29)
8	x	20	=	$ 160	(B-30)

The school district also extends an implicit location incentive to the new plant when the plant locates on the municipal trust owned site. The opportunity cost of this location incentive to the school district is $80 per year.

Value of plant site	x	Assessment ratio	x	Mill levy	=	Lost ad valorem taxes	(B-31)
10,000	x	.20	x	40	=	$80	(B-32)

The location of the new plant in the community generates both primary and secondary changes in the school district fiscal position. The secondary fiscal effects are a function of secondary income in the private sector. The secondary revenue and expenditure effects are calculated from equations (B-34), revenues, and (B-35), expenditures.

Secondary income	x	Per dollar of income financial coefficient	=	Secondary school fiscal impact	(B-33)
67,200	x	.030	=	$2,016	(B-34)
67,200	x	.028	=	$1,882	(B-35)

The sum of primary and secondary school benefits and costs gives the total benefits and costs of the new plant on the school district. The net gains of industrialization on the local school district is the difference between total benefits and costs. Table XXIX summarizes the industrial impact on the local school district.

Total Community Analysis

The net impact of the new plant on the entire community is the sum of the net impact on each of the three community sectors (see Table XXX). The new plant's estimated average annual impact on the private sector is $186,882. The average annual industrial impact on the municipal government ($145) and school district ($884) sectors are much smaller. The sum of the net gains to each sector gives a total community net gain of $187,911.

TABLE XXIX

NET GAINS TO THE SCHOOL DISTRICT SECTOR

Benefits:			
Ad Valorem Taxes New Homes	$ 360		
Ad Valorem Taxes New Plant's Additional Investment	640		
Additional State Aid from New Students	2,000		
Additional Federal Aid from New Students	400		
Total Primary Benefits		$3,800	
Change in Revenues from Former Students	2,016		
Total Secondary Costs		2,016	
Total Benefits			$5,816
Costs:			
Additional Physical Plant Due to New Pupils	160		
Additional Educational Services Provided New Pupils	2,800		
Ad Valorem Tax Revenues Lost from Tax Breaks to the New Plant	80		
Total Primary Costs		3,040	
Additional Educational Services Provided Former Pupils	1,882		
Total Secondary Costs		1,882	
Total Costs			4,922
Net Gain to School District Sector:			
Total Benefits - Total Costs			844

TABLE XXX

NET GAINS TO THE COMMUNITY

Net Gain to Community's Private Sector	$186,882
Net Gain to the Municipal Government Sector	145
Net Gain to the School District Sector	884
Net Gain to the Total Community	187,911

VITA

Ronald Earl Shaffer

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE NET ECONOMIC IMPACT OF NEW INDUSTRY ON RURAL COMMUNITIES IN EASTERN OKLAHOMA

Major Field: Agricultural Economics

Biographical:

Personal Data: Born near Humboldt, Nebraska, August 9, 1945, the son of Earl and Doris Shaffer.

Education: Graduated from Humboldt High School, Humboldt, Nebraska, in May, 1963; received the Bachelor of Science degree from the University of Nebraska in June, 1967, with a major in Agricultural Economics; completed requirements for the Doctor of Philosophy degree at Oklahoma State University in May, 1972.

Professional Experience: National Defense and Education Act Fellow, Department of Agricultural Economics, Oklahoma State University, from September, 1967 to August, 1970. Graduate Research Assistant, Department of Agricultural Economics, Oklahoma State University, from September, 1970 to January, 1971.