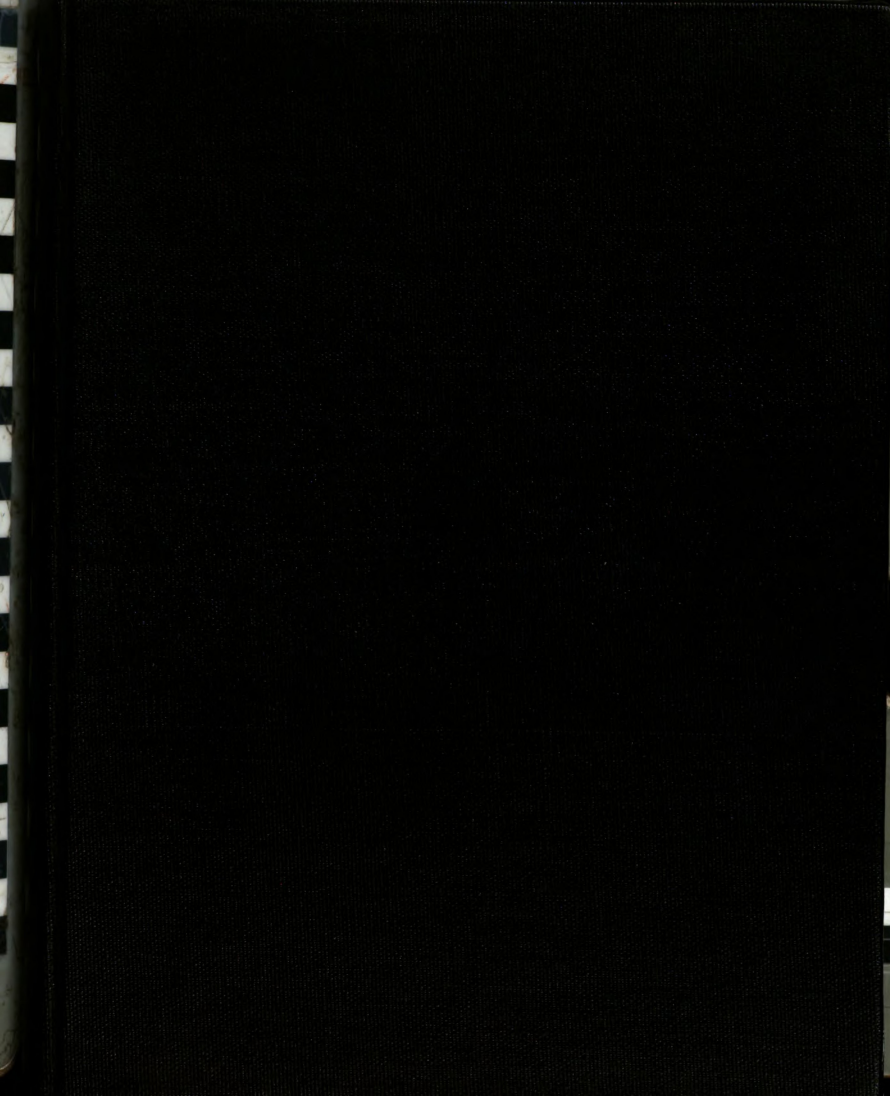






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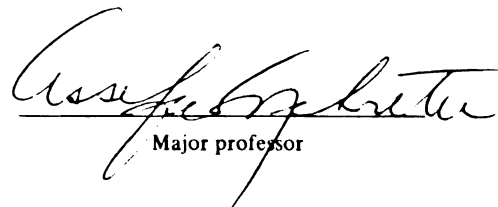
"Industrial Structure and Regional Employment Change:
A Shift-Share Analysis of Michigan's SMSA's 1962-1982."

presented by

Lasford E. Douglas

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Major professor

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INDUSTRIAL STRUCTURE AND REGIONAL EMPLOYMENT CHANGE
A SHIFT-SHARE ANALYSIS OF MICHIGAN'S SMSA'S
1962-1982

By

Lasford E. Douglas

A THESIS

Submitted to
Michigan State University
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1988

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ABSTRACT

INDUSTRIAL STRUCTURE AND REGIONAL EMPLOYMENT CHANGE A SHIFT-SHARE ANALYSIS OF MICHIGAN'S SMSA'S 1962-1982

By

Lasford E. Douglas

Industrial activity has long been associated with the concept of development ever since the initial stages of the industrial revolution. A major consequence of the industrial growth is the creation of a significant number of new employment opportunities in a region. Therefore, a region's growth can be interpreted in terms of its industrial structure.

The attention of this research is directed towards the examination and analysis of the patterns of change within the economic structure of Michigan's Standard Metropolitan Statistical Areas over the period 1962-1982. The study shows how each SMSA exhibited various degrees of cyclical sensitivity, and which local economic activities appear to be most sensitive to national economic trends.

The results of the analysis suggests that areas specializing in auto-related industries, experienced greater than average relative employment loss, during periods of slow economic growth. Typically the effects of the national recessions have been deeper and more prolonged in Michigan

than nationally. Clearly, the state's heavy reliance on the auto industry has been the principal factor responsible for the large declines in employment opportunities. In part, the cyclical nature of employment in the region during the movement towards a more diversified industrial composition, results from a basic connection between manufacturing and non-manufacturing employment.

This study provides an excellent take-off point for identifying industries in terms of competitiveness and growth. It pinpoints, in a general way, industries that are growing in the region or in specific areas faster than similar industries in the nation, and those that have enjoyed a relatively competitive advantage compared to national standards.

FOR MY WYFE:
VILMA DOUGLAS.

CHILDREN:
KEYLA, SHEYLA, EMILIO, LEYLA, ALBY ANN.

PARENTS:
CLARENCE AND MARJORIE DOUGLAS.

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Above all...

"Thanks to you Lord"

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CHAPTER ONE

INTRODUCTION

The purpose of this research is directed towards the examination and analysis of the patterns of change within the economic structure of Michigan's Standard Metropolitan Statistical Areas over the period 1962-1982. This study will also show how each SMSA exhibited various degrees of cyclical sensitivity, and which local economic activities appear to be most sensitive to the national economic trend.

The concept of development emphasizes some aspect of improvement and growth. When applied to a nation, region, or community, there is an implication that the improvement is not only good and desirable but necessary.

For most economic geographers, development and growth are seen as comparable goals for the area to which their energies are directed. However, Friedmann distinguishes between development and growth. He suggests that development is "an innovative process leading to the structural transformation of social systems," while growth," refers to an expansion of the system in one or more dimensions without a change in its structure " (Friedmann, 1964).

Industrial activity has long been associated with the concept of development ever since the initial stages of the industrial revolution in Great Britain in the second half of the eighteenth century. The industrial revolution brought not only an intensification of production, but also an expanded distribution of the benefits of such innovations.

Through simultaneous improvements in transportation facilities, new locational possibilities for industrial expansion in manufacturing were created, strengthening even more the association between industrial growth and regional economic development. This happens when a new manufacturing plant enters a city and its region because the location provides cost related advantages for the firm to operate and obtain reasonable profits (Moriarty, 1980).

A major consequence of the industrial growth is the creation of a significant number of new employment opportunities in the community, through what is known as (1) "circular and cumulative process" (Pred, 1966) and (2) the "multiplier effect" both of which produce a need for additional enterprises in business, services, construction, and transportation. This will lead to an enlarged labor force. Industrial growth creates basic sectors and non-basic or service activities in the community. In order for a community to sustain its development, it must manufacture and export goods and services to regions beyond its own area or in some way engage in activities that will bring "new money" into its own economy (Isard, 1960).

A region's growth can be interpreted in terms of the dynamics of its industrial structure. For the purpose of this study economic structure will be defined " as the economic organization of a community in which each sector's behavior is influenced by national economic forces". In consequence, growth performance of an individual region or

community can be assessed against the background of developments in national economy.

A. STATEMENT OF THE PROBLEM

For many years Michigan has enjoyed economic growth well above the national average. Currently, as shown by the U.S. census, personal income in Michigan exceeds thirty other states. Average hourly earnings of production workers is the highest in the country. In addition, production per worker is higher than the U.S. average. The developmental advantages of Michigan may be largely attributed to its automotive industry, which dominates all other activities in the State.

Michigan, however, has had two traditional problems:

(1) higher than national average unemployment and (2) extreme economic cyclical fluctuations. One of the most persistent problems to arise from Michigan's economic instability is the exceedingly high percentage of labor force of the state that is unemployed as a result of the closings or relocation of manufacturing plants. Table 1 shows that Michigan as a whole experienced a loss of 232,000 manufacturing jobs, a percentage decline of 26.2 percent during the period 1977-1982.

Table 1
Michigan Manufacturing
1977-1982

Item	1977	1982	%change
Number of establishments:	15,627	15,158	-3.1
Total Employment:	1,115,900	883,900	-26.2

Source: U.S. Census of manufacturers, Michigan 1977 & 1982

Every state is affected by the fluctuations and swings of the national economy. Generally, a state which has a diversified industrial structure will be less affected by national fluctuations than a state which has a more specialized pattern of activity. Michigan, which relies heavily on the automobile industry, is affected by national fluctuations in demand for cars and related products.

The automotive industry is subject to the effects of what is known as the product life cycle: introduction, growth, maturation, saturation, and decline. Each stage of the life cycle contains its inherent unstable characteristics. In the initial stages, the automotive industry gives rise to considerable productivity and growth as it did to the U.S. in the 1940's and currently for Japan and Korea. When it enters the maturation/saturation stage it becomes a slow growth/no growth industry. Currently, Michigan is showing signs of maturation and saturation with plant closings and rising unemployment. One of the most

persistent problems to arise as a result of Michigan's economic instability is the exceedingly high percentage of labor force of the state that is unemployed. This is mostly caused by closings or out-of-state relocation of manufacturing plants. All regions in the state have felt the effects of industrial unemployment, particularly those with a high percentage of their labor force employed in the auto related industry.

B OBJECTIVES OF THE STUDY

This study is intended to examine the patterns of change of the economic structure within Michigan's SMSA, as reflected by the patterns of change in industrial employment levels.

Under this main objective, this thesis will focus on the economic activity in the metropolitan areas over a twenty-year period, from 1962 to 1982. This period was marked with a fairly high degree of cyclical instability. Inflationary pressures, four recessions, and the energy crisis, made this period a particularly trying one for all sectors of the economy. Michigan has nearly always been a "feast-or-famine" state and one of the reasons of this is its heavy dependence on the volatile automobile industry which is concentrated in the metropolitan areas.

In order to contribute to the understanding on the effects of these cyclical swings in the economy of the

state's metropolitan areas, this study will focus its attention on the following research questions:

(1) What were the changes that occurred in employment and in the economic structure in Michigan's SMSA's during the twenty-year period ?

(2) What industrial sector in the local economy of each SMSA's economic structure appears to be the most sensitive to the swings in the national economy?

(3) What characterizes those SMSA's which exhibit the greatest degree of cyclical sensitivity?

(4) How did the degree of concentration or industrial specialization of an area correlate with differences in performance in a cyclical economy?

C. THE STUDY REGION

In 1985, Michigan's population was estimated at 9.1 million. About 81 percent of Michigan residents live in the states 12 metropolitan areas. All of Michigan's SMSA's are located in the southern half of the lower peninsula (see Map 1). These areas, as defined by the Bureau of Management and budget are "areas comprising a county containing a central city (or twin cities) of 50,000 inhabitants or more, plus contiguous counties that are socially and economically integrated with the central city".

These 12 metropolitan areas can be viewed as small, open, regional economies which vary in size, industrial structure, and rates of growth. The Detroit SMSA, which includes six counties, had in 1985 a population of 4,187,800, more than seven times the size of the second largest SMSA, Grand Rapids. As shown in Table 2, the other metropolitan areas have relatively small populations with each having less than half-million residents.

Industrial activity in Michigan is concentrated in these twelve metropolitan areas. In 1982, 88 percent of total manufacturing jobs were located in these areas. The Detroit SMSA, as the dominant industrial area accounts for 49.9 percent of total wage and salary employment in the state, 48.8 percent of manufacturing, 52.3 percent of non-manufacturing, and 38 percent of total government employment. The Detroit SMSA also accounted for 50.1 percent of all jobs in durable goods industries.

The concentration of industrial activity in the metropolitan areas, therefore, suggests that the state's cyclical behavior emanates from swings in business activity within those areas.

D. DATA COLLECTION AND METHOD OF ANALYSIS

The data used by this study were obtained from publications and reports of the Bureau of Research and statistics, Michigan Employment Security commission, Business employment patterns statistics, and the U.S. Bureau

of the Census. The data are available in two-digit SIC (Standard Industrial Classification) aggregation by SMSA for Michigan as well as for the U.S. Data for the period 1962-1982 was used for the analysis. For the purpose of this study it was judged that the two-digit level of aggregation would best suit the input requirements, although it was recognized that a higher level of disaggregation will be required for manufacturing.

The method used in the analysis is known as Shift-Share Analysis. This technique has been widely used in the study of Regional economic growth. (Ashby 1968, Floyd 1975, Bendavid-val 1983) This method divides the growth of a regional variable, such as employment, into three components. The first is referred to as the Nationalp Growth Effect Component (NGE). It may be regarded as the amount by which total employment in the region would have grown during the period studied if it grew at precisely the same rate as total employment in the nation as a whole. The equation for the NGE is as follows:

$$NGE = \sum_i E_{i,j} \times \frac{\sum_{i,j} E_{i,j}^*}{\sum_{i,j} E_{i,j}} - \sum_i E_{i,j}$$

where:

$E_{i,j}$ = base year employment in industry i and region j

$E_{i,j}^*$ = employment in terminal period *

$\sum_j E_{i,j}$ = national employment in i industry (E_i)

$\sum_{i,j} E_{i,j}$ = total regional employment ($E_{.j}$)

$\sum_i \sum_j E_{ij}$ = total national employment in all industries.

The national growth component will measure the potential change in local (SMSA's) employment as compared with national levels. This component is calculated by multiplying the base year employment, by the national rate of growth and then summing over all sectors. The results will show how many jobs were created or lost in each of Michigan's SMSA's due to national economic trends.

The second measure is the Industrial Mix Component (IM) or (Proportionality Shift). This may be thought of as the degree by which employment in the region has grown or declined as a result of the region specializing in nationally fast-growing or slow-growing industries. The industry mix (IM) will be positive for regions specializing in fast-growing industries and negative for regions specializing in slow-growing industries. The equation for IM is as follows:

$$IM = \sum_j \left(\frac{\sum_i E_{ij} *}{\sum_i E_{ij}} \right) - \left(\frac{\sum_i \sum_j E_{ij} *}{\sum_i \sum_j E_{ij}} \right) \times E_{ij}$$

Symbols as defined above.

The industrial mix will help determine whether the local economy is concentrated in industries that are growing slower or faster than the national average. The industry mix component is determine by multiplying the local employment

of each economic sector by the difference in the national growth rate for the sector and the growth rate for the whole economy.

The third measure is the Competitive Share Component (CS) (or Differential Share) This item reflects the relative shift in employment growth in the region resulting from industries in the region that grow at a faster or slower rate than the national growth rate. A region in which employment grew faster than its industrial mix would suggest a positive competitive share , while the share would be negative in the case of a region in which employment grew more slowly than its industrial mix would suggest. The equation for the Competitive Share (CS) is as follows:

$$CS = \sum_i (E_{ij} * \frac{\sum_i E_{ij} *}{\sum_i E_{ij}} - E_{ij})$$

Symbols as defined above.

This third component will measure the ability of each SMSA to capture an increasing or decreasing share of a particular sector's growth. It is computed by multiplying the local employment in each economic sector by the difference in the growth rate of that sector nationally and locally.

The three components, therefore, are exhaustive of the actual regional growth of total employment. In summary, this technique will attempt to: measure how many new jobs were created locally due to national economic trends, determine

whether the local economy is concentrated in industries that are slower or faster than the national average, and determine whether local businesses are growing faster or slower than similar businesses in the nation, i.e., more competitive or less competitive.

E. RELEVANCE OF STUDY

There are literally thousands of organizations of different sizes working at various levels (national, regional, state, and local) engaged in community development activities who would be interested in the relative performance of various regions in industrial employment. Urban and economic geographers also are aware of the need of examining patterns of change of the economic structure within urban areas as reflected by the patterns of change in employment in specific industries (Perloff 1961, Ashby 1968, Hale 1971, Stokes 1974, Floyd 1975).

At a time when it is crucial for Michigan in general, and the southeastern region in particular to stabilize its economy and become more competitive, this study will help explore the regional and sectoral patterns of decline in employment and provide some clues about past trends of economic performance which in terms may enable planners to prepare for the challenges of tomorrow. Understanding the structural weaknesses of a community's industrial organization will assist those interested in its development

to correct them by improving the economic well-being of the community they serve.

CHAPTER TWO

PATTERNS OF EMPLOYMENT CHANGE IN MICHIGAN 1962-1982.

The purpose of this chapter is to examine the structure of the Michigan economy and changes it has gone through over the period of 1962-1982. The first part of this chapter will focus on the composition of employment in Michigan with emphasis on manufacturing. The study will also compare employment patterns in the state during the three major recessions of 1973-1975, 1979-80, and 1982.

In the second part, this chapter will focus on sectorial employment changes by sector that have occurred in Michigan SMSA's (hereafter called Michigan Industrial Region) with special attention on long term employment trends in the region.

1. The Michigan Trend in Wage and Salary Employment.

The main reference point throughout the analysis of Michigan's total employment change pattern and its change will be the national economic trends. Employment in manufacturing has experienced a steady decline at the national level as well as in Michigan. This can be seen from Table 2.1 which presents a breakdown of total employment between manufacturing, non-manufacturing, and government sectors for selected years. During the study period, employment in the state has been more concentrated in

sectors for selected years. During the study period, employment in the state has been more concentrated in manufacturing industries than the national average. In 1982, 27 percent of total wage and salary employment of the state was in manufacturing, the lowest proportion in over forty years, yet it was still six percent higher than the corresponding national proportion. The relatively high concentration of Michigan's employment in slow-growing manufacturing sector contributed significantly to the state's slow growth in total employment. The breakdown of total manufacturing employment into durable and non-durable goods shows that both the national and state patterns have been stable over the study period. However, there have been significant differences between the national and the state shares. Manufacturing employment in Michigan, is much more concentrated in durable goods. Indeed, in 1982, Michigan's share in durable manufacturing employment was approximately 20 percentage points higher than the U.S. An even more dramatic illustration of the relatively low degree of diversification in Michigan's economy is obtained by comparing the national/state levels in the manufacture of motor vehicles (SIC 371) (Table 2.1). The single most important fact that characterizes the state's economy and the one that underlies employment instabilities in the state

Table 2.1

Percent Distribution of Total Wage and Salary Employment
in the Michigan and the U.S. Selected Years.
1962-1982

Region	Sector	Percent of Total Employment						% Change 1962-1972
		1962	64	66	68	70	1972	
U.S.	MANUFACTURING	30	29	30	29	27	25	-16.6
	Durable	56	57	59	59	58	58	
	-Motor Vehicle	17	17	18	18	16	16	
	Non Durable	44	43	41	41	42	42	
	NON-MANUFACTURING	54	55	54	54	56	57	5.6
	GOVERNMENT	16	16	16	17	17	18	12.5
Michigan	MANUFACTURING	41	41	41	39	36	35	-14.6
	Durable	79	80	81	81	80	80	
	-Motor Vehicle	42	42	41	43	41	43	
	Non Durable	21	20	19	19	20	20	
	NON-MANUFACTURING	44	44	43	45	47	48	9.1
	GOVERNMENT	15	15	16	16	17	17	13.3

Region	Sectors	Percent of Total						% Change 1972-1982
		Employment						
		1972	74	76	78	80	1982	
U.S.	MANUFACTURING	25	25	23	23	22	21	-16.0
	Durable	58	59	58	60	60	59	
	-Motor Vehicle	16	15	16	16	16	16	
	Non Durable	42	41	42	40	40	41	
	NON-MANUFACTURING	57	57	59	59	61	61	7.0
	GOVERNMENT	18	18	18	18	17	18	0.0
Michigan	MANUFACTURING	35	34	32	33	29	27	-23.0
	Durable	80	80	80	81	80	78	
	-Motor Vehicle	43	42	43	45	43	44	
	Non Durable	20	20	20	19	20	22	
	NON-MANUFACTURING	48	49	50	50	53	54	12.5
	GOVERNMENT	17	17	18	17	18	25	47.1

Source: U.S. Department of Labor and Michigan Employment
Security Commission.

is that Michigan had in 1982 three times more in share of employment concentrated in motor vehicles production than the nation as a whole.

Although the manufacturing sector in Michigan's economy accounts for no more than one third of total employment, its importance lies in its sensitivity to cyclical changes of the business climate. This is clearly demonstrated by the drastic drop in manufacturing employment relative to total employment during the recession years. In the 1973-1975 recession, while total wage and salary employment dropped by only 4.5 percent, manufacturing employment fell 17.5 percent, 13 percentage points higher than the drop in total employment.

B. Relative Differences in Employment Patterns Between Manufacturing and Non manufacturing Sectors.

Much of the growth in National employment during the period 1962-1982 is attributable to the private non-manufacturing sector. During this period, the average annual growth rate in private non-manufacturing employment was 3.2 percent, 0.6 percentage points above the growth rate for wage and salary employment. Over the same period, Michigan's annual average growth in this sector was 2.7 percent, which is considerably lower than the national figure, but 1.2 percentage points higher than the state's average rate of growth in total wage and salary employment. The number of

new jobs created by non-manufacturing industries during these 20 years reflected an increase of 13.6 percent nationally and 22.7 for the state of Michigan.

In addition, to enjoying stronger growth than their respective manufacturing counterparts, employment in non-manufacturing industries for the state has been generally less sensitive to fluctuations in business climate. During the recession of 1982 while the state's employment in manufacturing fell by 10.4 percent, non-manufacturing industries fell by only 2.7 percent. A more striking difference was experienced during the severe 1973-1975 recession. In that recession, employment in manufacturing declined by 16.8 percent while non-manufacturing employment experienced only less than one percent decline.

During the study period, both state and national employment rates in government have experienced the most rapid growth. When state/national levels in all three employment categories, manufacturing, non-manufacturing and government are compared, only in government employment has the state kept pace with that of the nation (see Table 2.1). An examination of government employment figures during the three recession periods mentioned above, reveals that the government employment sector is remarkably "insensitive" to the fluctuations in economic activity. In fact, during the 1973-1975 and 1980 recessions, while all other sectors experienced decline in employment the government sector

experienced a relative gain by 9.1 and 3.2 percent respectively.

The Michigan economy has experienced slow growth in total employment during the 1962-1982 period. The most important problem in the state's employment has been its sensitivity to fluctuations in economic activity along the business cycle largely due to its relative concentration of employment in durable goods manufactures especially in motor vehicles and related industries. Much of Michigan's variation in total employment can be accounted for by the swings in employment in the durable goods sector.

C. Differential Impact of Recessions on Michigan Employment Behavior.

In 1982, Michigan experienced unemployment rate in excess of 10 percent while the national rate remained below 10 percent (Table 2.2). This was the third time in twenty years (others are 1975 and 1980) in which state unemployment rates exceeded of the nation. The nature of Michigan's economic structure and why its manufacturing sector is oversensitive, causing it to sustain a high degree of downturn whenever the national economy experiences anything more than a mild recession (see Table 2.2), has been of interest to researchers and policy makers.

Table 2.2

Civilian Unemployment Rate in Michigan and the U.S.
1962-1982

Years	Michigan	U.S.	Years	Michigan	U.S.
1962	7.0	5.5	1973	5.9	4.9
1963	5.6	5.7	1974	7.4	5.6
1964	4.8	5.2	1975**	12.5	8.5
1965	3.9	4.5	1976	9.4	7.7
1966	3.5	3.8	1977	8.2	7.1
1967	4.5	3.8	1978	6.9	6.1
1968	4.3	3.6	1979	7.8	5.8
1969	4.0	3.5	1980**	12.4	7.1
1970	6.7	4.9	1981	12.3	7.6
1971	7.6	5.9	1982**	15.5	9.7
1972	7.0	5.6			

** Recession Year.

Source: Michigan Statistical Abstract, 1984.

Although the 1980 recession was declared "the briefest on record" by the National Bureau of Economic Research, the unemployment rate in Michigan averaged to 12.4 percent, more than double the average national rate. This disparity between the state and the nation within just one year, indicates the rapidity in which Michigan manufacturing responds to national trends. The longer recessions of 1973-1975 and 1979-80 produced the same patterns, with employment in manufacturing suffering substantial losses (see Table 2.3).

Table 2.3
Percent Change of Employment in Michigan During
Recessions
(1973-1975, 1979-80 and 1982)

Sector	1973-75	1979-80	1982
MANUFACTURING	-16.5	-15.3	-10.4
Durable Goods	-18.4	-16.6	-12.0
Motor Vehicle	-20.0	-19.7	-10.1
Non-Durable Goods	-9.4	-10.1	-4.2
NON-MANUFACTURING	-.08	-.1	-2.7
Construction	-19.1	-16.0	-16.2
Transportation	-6.2	-2.4	-3.1
Wholesale	.3	-2.1	-3.0
GOVERNMENT	9.1	3.2	-3.4

Source: Michigan Employment Security Commission. 1984

Employment in motor vehicle and transportation equipment (SIC 3700) suffered the highest rate of decline in 1973-1975 and 1980. Losses in motor vehicle employment accounted in 1973-1975 for 48.1 percent, 53.1 percent in 1980 and 34.4 percent in 1982. Table 2.3 clearly shows that non-manufacturing activities and the government sector have remained the least sensitive to cyclical downturns in economic activity. Although the aggregate non-manufacturing sector was less affected by the economic recessions some subsectors exhibited significant declines in employment (Table 2.3). Construction (SIC 15-17) declined by 19.1 percent during the largest recession (1973-1975) and 16.2 percent during the shortest recession (1980).

Transportation and Public Utilities (SIC 40-42,44-49) declined in all three periods with 6.2, 2.4 and 3.1 percent respectively. Employment in the government sector experienced growth during the longest and worst recession (1973-1975) (9.1 percent) the following 1979-80 recession (3.2 percent), but it also suffered a decline in the latest recession by 3.4 percent.

Even though some sectors of the state's economy fared better in the 1979-80 and 1982 recessions than in the 1973-1975 crisis, the decline in total employment was somewhat worse in the more recent period (Table 2.3). As a result, the growth rate in personal income in 1982 at only 2.3 percent, was significantly less than the growth in 1980 at 6.2 percent and 1975 5.6 percent.

D. Sectoral Employment Changes in Michigan Industrial Region.

Michigan industrial activity is largely concentrated in its metropolitan areas. In 1982, for example, 86 percent of total wage and salary workers were located in the state's twelve metropolitan areas, accounting for 85 percent of all jobs in durable goods industries. As a result, these areas are considered the economic hearth of the state. For the purpose of this study, Michigan SMSA's, as described in Chapter 1, will be referred to as Michigan Industrial Region (M.I.R.).

During the twenty years covered by this analysis, the total salary and wage earning employment in the industrial region increased from 1,997,500 workers in 1962 to 2,728,600 workers in 1982. This constituted a total employment gain of 37.0 percent during this period (Table 2.5). This was about the same rate of growth experienced by the state as a whole (36.9 percent). However, it is lower than the nationwide total employment gain of 77.7 percent. When sectorial patterns are examined more closely, several significant and differential developments have occurred.

First, the total employment growth rate of the region (MIR) during the first ten years (1962-1972), was 34.3 percent (Table 2.4), almost the same as the 35.7 percent for the nation. On the other hand, the employment rate during the 1972-1982 decade experienced a dramatic change registering a slight increase of only 1.6 percent. As shown on Table 2.4 the change was more than 30 percentage points lower than the growth experienced during the previous decade. The nation, on the other hand, increased its employment by 31 percent.

Table 2.4

Absolute Employment and Percent Change in
Michigan Industrial Region: 1962-72 and 1972-82

Sectors	(Employment in thousands)			%Change	%Change
	1962	1972	1982	1962-72	1972-82
MANUFACTURING	848.1	969.3	766.4	14.3	-20.9
-Durable Goods	692.3	797.8	617.8	15.2	-22.6
-Non-durable	155.6	171.5	148.3	10.2	-13.5
NON					
MANUFACTURING	874.7	1283.5	1498.8	46.7	17.4
-Construction	74.0	104.7	71.2	41.4	-32.9
-Transportation	110.8	126.4	123.9	14.1	-1.9
-Wholesale Trade	366.8	509.4	600.4	38.9	17.8
-Finance	78.5	139.8	136.6	78.1	-2.3
-Services&Mining	244.6	403.2	566.7	65.0	40.5
GOVERNMENT	274.7	430.7	463.4	56.7	7.6
TOTAL EMPLOYMENT	1997.5	2683.5	2728.6	34.3	1.6

Source: Michigan Employment Security Commission.

Second, looking at the results produced by the shift/share method, two important developments seem to have been partially responsible for the differential between MIR and the national patterns. These are --the industrial composition and the competitive position of the region. During the 1962-1972 decade the favorable competitive position was not enough to offset the unfavorable industrial structure of the region. Manufacturing, for example, lost 166,373 jobs by itself, indicating that the concentration of employment in this slow growth sector did not help the region in its overall economic performance. The total net effect for this period was a loss of 23,859 jobs. However

during the 1972-82 decade the employment situation worsened primarily by the effects of the recessions. As it was mentioned before, manufacturing activities, especially the durable goods production is the most sensitive sector to economic downturns. Michigan industrial region with one third (34.5 percent) of its employment located in manufacturing suffered severally. Between 1972 and 1982 the region experienced a net loss of more than 1 million jobs (1,185,750), more than it would if it had a more diversified employment.

Now let us examine some of the significant employment changes that occurred among the various industrial sectors of the region. In terms of changes in absolute numbers of employees between 1962 and 1982, the most affected sector was durable goods manufacturing, particularly the motor vehicle and transportation equipment subsector. However, the employment growth rates for these industry sectors were significantly different (see Table 2.4). While professional and related services employment expanded by 131.6 percent during the 1962-1982 period; wholesale trade and finance increased by 64 percent and 74 percent respectively, manufacturing as a whole shrank by 9.6 percent. Within manufacturing, the durable goods employment declined by 10.8 percent, particularly in motor vehicles and transportation equipment sector (SIC 371) where employment declined by 22.5 percent. Furthermore, Textile, and mill products (SIC 220) decline by 61.2 . Chemical and allied products suffered a

loss of 45 percent. Contract construction employment showed a high degree of sensitivity particularly during the 1972-1982 decade. During this period construction employment fell by 33 percent, more than 70 percentage points below its performance during the previous decade (Table 2.4).

In summary, Growth in employment in the Michigan Industrial Region during the twenty years period was significantly influenced by the high concentration of employment in durable goods manufacturing, particularly in the motor vehicle and equipment manufacturing. The unfavorable employment situation of the region during the periods analyzed was largely a result of the drop in demand for automobiles, particularly during recession, coupled with a trend towards decentralization in that industry.

CHAPTER THREE

INDUSTRIAL COMPOSITION AND EMPLOYMENT BEHAVIOR

INTRODUCTION

The content of this chapter will focus on the industrial composition and its impact on employment growth in the Michigan Industrial Region over the period 1962-1982. In the first section, this chapter will examine the region's industrial mix component as well as the patterns of employment in specific sectors. Special attention will be given to the influence that manufacturing activities have had over the region's performance. In the second part, the study will look at each subregion (each SMSA) to establish differences in performance related to:

- (1) concentration of employment in fast or slow growing industries,
- (2) employment behavior during economic crises and cyclical sensitivity and
- (3) economic recuperation process.

The economic growth of a region is the result of a complex interaction of various forces. One of the variables that will influence the region's performance in both short and long terms is the distribution of, in this case, employment in either slow or fast growing industries. Regions that are highly concentrated in industries experiencing a slower growth than the national average will suffer higher than average unemployment and overall economic decline, particularly, during economic slowdowns and

will have the opposite outcome of increasing employment opportunities.

However, it is important to understand that shifts in demand for certain products affected by price, taste, technology and economic restraints, can transform industries considered fast growing in one period of time into slow growing and declining in another. Therefore, diversification as opposed to concentration seems to be in the best interest of a region's economic well-being.

A. MIR INDUSTRIAL MIX AND PATTERNS OF EMPLOYMENT.

Looking at the MIR's distribution of employment among industrial sectors, Table 3.1 shows the distribution of employment between manufacturing, non-manufacturing and government sectors for 1962, 1972, and 1982. Throughout the period, we can observe steady patterns of growth or decline in terms of employment distribution among the sectors presented. In the MIR, manufacturing experienced a steady decline throughout the 1962-1982 period from 42 percent to less than 30 percent (28 percent) of total wage and salary employment, a decline of 33.3 percent. The overall decline in manufacturing was largely offset by increases in non-manufacturing employment, which increased from 44 percent of total employment in 1962 to 55 percent in 1982. Government employment remained relatively constant. This sector registered a 21.4 percent increase from the 1962 employment levels.

TABLE 3.1

Percent Distribution of total Wage and Salary Employment
Michigan Industrial Region
1962-1982

Sector	Percent Distribution of Employment		
	1962	1972	1982
.....			
Manufacturing	42	36	28
-Durable Goods	(82)	(82)	(81)
-Non Durable	(18)	(18)	(19)
Non Manufacturing	44	48	55
Government	14	16	17

Source: Michigan Employment Security Commission. 1984

A fundamental question is, how has the region's economic structure or industrial mix affected its employment behavior throughout the period 1962-1982? Also, which sectors of the economic structure of the region are responsible for either its growth or decline in employment. These questions can be addressed by measuring the proportional shift or mix effects of the shift-share analysis. As stated earlier in this study, the mix effect component of the analysis shows how regional or local growth or decline in employment has been stimulated because of a regional concentration of industrial activities in relatively faster or slower economic sectors.

The industry mix factor of MIR over the period 1962-1982 was negative (Table 3.2a and Table 3.2b). This negative mix result suggests that the region's economy had 186,059 less jobs than it would that if its economic structure was identical to that of the nation. Independent

from national influences or national effect, the local sectors, on balance, grew slower than the national average causing a decline in local employment. The unfavorable industry mix deteriorated drastically during the period of 1972-1982. The effects of two recessions (1980 and 1982) were accentuated in the region's performance primarily because of the high concentrations of employment in slow growth industries. The unfavorable elements of the region's industry mix evolved around the reduction of over 86,000 job opportunities. As noted in Table 3.2b, all sectors of the region's economy did not register a negative mix effect. However, the concentration of employment in fast growing sectors like services and mining, finance and wholesale trade were not enough to offset the poor performance of manufacturing, contract construction and transportation. These three sectors together accounted for a reduction of 303,942 job opportunities. However, interesting enough, 75 percent (277,229 jobs) of the decline in jobs was primarily the result of the MIR concentration in manufacturing activities, particularly in the highly recession-sensitive, durable goods manufacturing. The leading position of durable goods and manufacturing, in general, has been reduced over the years as noted from Table 3.1.

Table 3.2A
Industry Mix Factor
Michigan Industrial Regions
Between 1962-1972

Area	Const.	Manftg.	Transp.	Fin.	Svc.	Total
A. Arbor	107	-5406	-147	100	1629	-1053
B. Creek	64	-4631	-147	191	1474	-2119
Bay City	47	-1729	-102	41	853	-443
B. Harbor	47	-1729	-102	91	1241	186
Detroit	1847	-97707	-4568	4637	41550	-32784
Flint	189	-15145	-333	241	2973	-10094
Jackson	47	-3260	-250	83	1008	-1609
G. Rapids	334	-12939	-615	448	4913	-5669
Kalamazoo	137	-6380	-154	149	1784	-2985
Lansing	167	-6678	-237	299	3051	348
Muskegon	64	-5048	-135	100	1189	-3132
Saginaw	107	-4909	-269	133	1577	-2417
MIR	2261	-166701	-6440	7719	60364	-66243

Source: Michigan Employment Security Commission, 1984.

As mentioned earlier, through the 1962-1982 period, employment located in manufacturing activities declined over 33 percent. During the same twenty-year period, durable goods manufacturing employment also experienced decline, while on the other hand, non-manufacturing employment increased its size. However, it seems that the relative decline in durable goods manufacturing and the consequent increase share of employment by other sectors did not reduce the tendency for the region to experience an overall negative proportional shift (industry mix effect) and greater than average cyclical unemployment. A relative decline in the employment share in durable goods activities in the region has been observed as a potential cure for the well known cyclical nature of the states employment; however, the rate at which diversification is taking place, is not fast enough to correct the susceptibility of the region and the state to cyclical downturns. In addition, part of the reason for the cyclical character of the region's poor performance in relation to employment growth, during the movement towards a more diversified wage and salary structure, probably results from a basic connection between manufacturing and non-manufacturing employment.

Table 3.2B
Industry Mix Factor
Michigan Industrial Regions
Between 1972-1982

Area	Const.	Manftg.	Transp.	Fin.	Svc.	Total.
A. Arbor	-507	-11143	-253	199	4405	-9343
B. Creek	-283	-7754	-277	279	3447	-3823
Bay City	-179	-2931	-241	56	1762	-196
B. Harbor	-671	-9219	-240	128	3064	-414
Detroit	-9232	-172666	-10231	5889	97446	-43561
Flint	-880	-23842	-770	383	7776	-12208
Jackson	-283	-5403	-530	120	2758	-2191
G. Rapids	-1447	-23323	-1083	622	13445	-3804
Kalamazoo	-552	-10252	-361	223	4826	-4599
Lansing	-850	-12303	-457	559	8580	-5060
Muskegon	-268	-12303	-325	112	2873	-3363
Saginaw	-462	-10105	-3659	247	4060	-7364
MIR	-13333	-277229	-13380	9224	145306	-86820

Source: Michigan Employment Security Commission, 1984.

Layoffs in durable goods industries reduce the personal income stream which in turn has a negative impact on the demand for non-manufacturing goods and services. A decline in the region's major durable goods industry (motor vehicle, SIC 3700) creates a negative multiplicative effect in the whole complex of related industries. Declines in auto production reduces the demand for steel, glass, plastic, rubber, machine tools, electric components, metal finishing and component auto parts that further reduce the income stream and employment prospects for the region.

B. LOCAL INDUSTRIAL MIX AND SUB-REGIONAL DIFFERENCES.

The twelve metropolitan areas which make up what we have defined as Michigan's Industrial Region (MIR), vary in population size, industrial diversification and rate of growth. These local economies have exhibited, due to their particular industrial structure varying degrees of sensitivity to the swings of the national economy, during recessionary periods. During the 1973-1975 recession, manufacturing employment exhibited sizable downswings in the Ann Arbor, Flint, Benton Harbor, Detroit, Jackson, Lansing-East Lansing, and Saginaw SMSA's (Table 3.3). This is not at all surprising, considering that each of those areas is heavily dependant on the automobile industry. In that recession, manufacturing employment fell 19.1 percent in Ann Arbor, 19.4 percent in Flint, 20 percent in Lansing-East

Lansing, and 17 percent in Saginaw SMSA's. These areas exhibited the most severe cyclical sensitivity in their manufacturing sector. In contrast, three areas least dependent on durable goods, Bay City, Kalamazoo and Battle Creek experienced the lowest degree of cyclical sensitivity within their manufacturing sectors. During the 1973-1975 recession, manufacturing employment fell by 8.8 percent in Bay City, 10.9 percent in Kalamazoo and 13.1 in Battle Creek. Manufacturing employment in Lansing-East Lansing SMSA area exhibited the most cyclical sensitivity, while Bay City SMSA exhibited the least. Note that despite having highly volatile manufacturing sectors, contractions in total wage and salary employment in Ann Arbor, Grand Rapids, and particularly Lansing SMSA's were relatively mild, due to the moderate influence of the large and fairly stable non-manufacturing and government sectors in each area.

Using the 1973-1975 recession, one has to show the differences that exist among Michigan SMSA's in their response to downward swings in the national economy; we may observe that metropolitan areas in Michigan which have a large and highly volatile manufacturing base are also susceptible to sizable swings in unemployment. The Ann Arbor and Flint SMSA's on the one hand, and the Kalamazoo SMSA on the other hand are excellent examples. Ann Arbor and Flint SMSA's are good examples of local instability. Both areas experienced sharp declines in manufacturing employment during the 1973-1975 recession (Table 3.3)

resulting from the fall off in activity mainly in the automobile industry. As a result, the unemployment rate between 1973 and 1975 increased from 4.2 to 13.9 percent in the Ann Arbor SMSA and from 5.4 percent to 17.3 percent in the Flint SMSA, during the same period. The latter represents the highest quarterly jobless rate among the Michigan metropolitan areas during that recession. At the other extreme, is the Kalamazoo SMSA which experienced one of the mildest downswings in manufacturing employment in its jobless rate from 4.5 percent to 11.7 percent, between 1973 and 1975. Although the latter was well above the national average, it was below the statewide high of 13.4 percent in 1975 and was the lowest among the 12 Metropolitan areas. Beside the degree of sensitivity to the swings in the national economy and the varying effects that this phenomenon has for each local economy, there is another aspect that makes distinctions among the 12 sub-regional economies. Each area has its particular industrial structure with varying rates of diversification. A index for testing the diversification of employment in a region that was developed by Gibbs and Martin (1962) was used to examine this problem. If the labor force in a region is concentrated wholly in one industry the index is zero; if it is evenly distributed throughout every industry (i.e., maximum diversification) the index approaches 1 (Clements and Sturgis, 1971). Using this method, Table 3.4 summarizes the level of diversification of each subregion.

Table 3.3
Total Wage and Manufacturing Employment
Michigan Industrial Region
1973-1975

SMSA	Manufacturing Employment	Total Employment
Ann Arbor	-19.1	-3.9
Battle Creek	-13.1	-5.8
Bay City	-8.8	-0.9
Benton Harbor	-19.4	-10.0
Detroit	-18.0	-5.7
Flint	-19.4	-8.8
Jackson	-18.0	-7.0
Grand Rapids	-15.4	-1.9
Kalamazoo	-10.9	2.3
Lansing-East Lansing	-20.0	-1.2
Muskegon	-9.0	0.1
Saginaw	-17.1	-5.5

Source: Michigan Employment Security Commission, 1984.

In order to make adequate comparisons among areas, the city size must be taken into consideration because of the direct relationship that exist between city size and extent of the diversification of its industrial structure (Duncan, 1960; Thompson, 1967). A comprehension of differences in level of diversification among Michigan SMSA's can be obtained by comparing similar size subregions (in terms of population). Flint, Grand Rapids, and Lansing-East Lansing SMSA's can be grouped together as large areas. However, Flint SMSA with the lowest level of diversification (.63) in 1962, among the three SMSA's has registered the highest diversification rate during the 1962-1982 period (21 percent), more than 20 percentage points above the national

area rate (1.2 percent). On the other hand, the Lansing-East Lansing SMSA, highly dependent on the automobile industry, registered the highest level of diversification in 1962, but the lowest (1.3 percent) diversification rate increase within all the SMSA's of the state.

Table 3.4
Index of Diversification for Michigan SMSA's
1962-1982

SMSA	Index			rate		
	1962	1972	1982	1962-72	1972-82	1962-82
Ann Arbor	.71	.73	.77	2.8	5.4	8.4
Battle Creek	.72	.75	.79	4.2	5.3	9.7
Bay City	.76	.78	.79	2.6	1.3	3.9
Benton Harbor	.67	.71	.77	5.9	8.4	15.0
Detroit	.75	.79	.79	4.2	0	5
Flint	.63	.72	.76	14.3	5.5	21.0
Grand Rapids	.73	.76	.77	4.1	1.3	5
Jackson	.74	.78	.81	5.4	3.8	9.4
Kalamazoo	.71	.76	.78	7.0	2.6	9.8
Lansing-E. Lansing	.76	.77	.77	1.3	0	1.3
Muskegon	.65	.74	.78	13.8	5	20.0
Saginaw	.73	.74	.78	1.3	5.4	6.8
Complete Concentration=.0				Complete Diversification=.86		

Source: Michigan Employment Security Commission, 1984.

In fact during the 1972-1982 decade while Flint SMSA registered a 5.5 percent increase and Grand Rapids SMSA a 1.3 percent increase Lansing-East Lansing SMSA registered absolutely no variation in diversification levels in the ten year period. Controlling population size, the rate at which each sub-area is diversifying its economy is another factor that can assist in establishing measurable differences among the metropolitan areas in Michigan.

Finally, there are significant differences among the 12 subregions in relation to per capita income (Table 3.5). The SMSA's with the highest per capita income are those with a high concentration of the well-paid auto related jobs. However, the process of diversification that is taking place at different rates in each local economy is producing notable differences. Ann Arbor with a 8.4 percent change in diversification level during the 1962-1982 period produced a 112.8 percent change in per capita income for the period of 1976-1984, 26 percentage points higher than Flint which registered twice the rate of diversification but with a per capita income change of only 86.5 percent. In other words diversification does not necessary mean higher wages.

C. LOCAL INDUSTRIAL STRUCTURE AND ECONOMIC PERFORMANCE.

This section of the study will analyze the industrial structure of each subregion (SMSA's) to establish differences in performance related to the proportional share of employment among fast/slow growing industries, cyclical sensitivity and economic recuperation. However, to facilitate the analysis all metropolitan areas have been grouped into three clusters, based on the magnitude of their employment loss (or gain), related to industry mix and the employment behavior of each SMSA during the 1973-1975 recession. The latter was included because of its relative severity and length.

Table 3.5
Per Capita Income
Michigan Industrial Region
1976-1984

SMSA	1976	1984	% Change
Ann Arbor	6895	14670	112.8
Battle Creek	6713	11729	74.8
Benton Harbor	5907	11149	88.7
Detroit	7482	13943	86.3
Flint	7066	13181	86.5
Grand Rapids	6293	12385	96.8
Jackson	6154	11166	81.4
Kalamazoo	6656	12817	92.6
Lansing-E. Lansing	6504	12325	89.5
Muskegon	5665	10498	85.3
Saginaw	6564	11757	79.1

Source: Bureau of Economic Analysis.

1.0 First Cluster Characteristics.

The first cluster is made up of those SMSA's that exhibited the highest cyclical sensitivity and the greatest losses of employment in proportion to total employed labor force. This group includes: Benton Harbor, Flint, Lansing-East Lansing, Detroit, and the Jackson SMSA's.

1.1 General Characteristics

a. Benton Harbor SMSA

The Benton Harbor SMSA, is a relatively small metropolitan area encompassing the single county of Berrien. In 1985, 163,800 people lived in the area, making it the fourth smallest metropolitan area in the state. Between 1980 and 1985, Benton Harbor SMSA's experienced a decline in population of 4.3 percent, the third largest decline

exceeded only by Jackson and Saginaw SMSA's with 5.1 percent and 4.8 percent respectively. In terms of per capita income, the Benton Harbor SMSA ranked 10th among all metropolitan areas of the state. This area increased its per capita income from \$5,907 to \$11,149, representing a 88.7 percent over the eight year period.

b. Flint SMSA

The Flint SMSA is located South of Saginaw SMSA and East of the Lansing-East Lansing SMSA. This Metropolitan area is made up of the Shiawasee and Genesee counties. In 1985, this area had a population 502,400 people, the third largest behind Detroit and Grand Rapids SMSA'S. In terms of per capita income, the Flint SMSA ranked third in 1984 with \$13,181, representing a 86.5 percent increase since the 1976 level of \$7,066. It should be noted, however, that because of its heavy dependence on automobiles, more than in any other Michigan metropolitan area, personal income in the Flint SMSA varied considerably over the business cycle

c. Lansing-East Lansing SMSA.

Four counties make up the Lansing-East Lansing SMSA: Ionia, Eaton, Clinton and Ingham. In 1985, the population of this area was estimated at 471,200, people making this metropolitan area the fourth largest in the state. Between 1980 and 1985, the population of this area increased by .07 percent, this area had one of the lowest declines of population among Michigan metropolitan area. Although four counties comprise this metropolitan area, about 60 percent

of the population lives in Ingham county where the central cities of Lansing and East Lansing are located. In terms of per capita income, this metropolitan area ranked sixth in 1984. The Lansing-East Lansing SMSA increased its per capita income from \$6,504 in 1974 to \$12,325 in 1984, representing a 89.5 percent change over the eight year period, and the fourth highest increase among all twelve metropolitan areas of the state.

d. Detroit SMSA

The Detroit SMSA is composed of six counties in southeastern Michigan, it is by far the largest urban area in the state with a population of 4,187,800 in 1982. In that year, 46 percent of the state's residents lived in the Detroit SMSA. The Detroit SMSA is one of the major metropolitan areas in the nation. However, this area has experienced negative population growth during the 1970's and 1980's. Between 1980 and 1985, this area's population had fallen from 4,353,413 to 4,187,800 a 3.8 percent decline. In terms of per capita income, the Detroit SMSA ranked second in 1984 with \$13,943, following the Ann Arbor SMSA with a per capita income of \$14,670. Between 1976 and 1984, this area experienced a income growth of 86.3 percent similar to the state's increase of 86.4, but the fifth lowest among all 12 metropolitan areas of the state.

e. Jackson SMSA

The Jackson SMSA is composed of the single county of Jackson. One of Michigan's smallest metropolitan areas, it

ranks eleventh among the state's twelve metropolitan areas. In 1985, this area had a population of 143,700, only the Bay City SMSA was smaller. In addition, this county experienced a drop in population between 1980 and 1985 of 5.1 percent, the highest decrease among the twelve metropolitan areas. In 1976, the Jackson SMSA had a per capita income level of \$6,154, at this time, it was the second lowest among metropolitan areas. This situation improved in 1984 with a per capita income of \$11,166, ranking ninth among the states SMSA. However, in terms of per capita growth as in the case of population, only the Bay City SMSA had a lower income growth than Jackson, 79 percent and 81.4 percent, respectively.

1.2 Employment Distribution and Trends

a. Benton Harbor SMSA

Looking at the employment distribution in the Benton Harbor area, we find that this area's employment compared to that of the state is heavily concentrated in manufacturing activities (see Table A.1 in Appendix A). In 1982, Benton Harbor SMSA had 35 percent of its total wage and salary employment located in manufacturing. In fact, the Benton Harbor metropolitan area had the second highest concentration of employment in manufacturing among the state's 12 metropolitan areas. Only the Flint SMSA manufacturing had a higher share of total employment (37 percent) with more than a third of its employment located in the highly recession sensitive manufacturing sector. The

Benton Harbor industrial structure imparts a high degree of cyclical volatility particularly during economic recessions. Several indicators of employment behavior in the Benton Harbor SMSA reveal the sensitivity, particularly the behavior of manufacturing employment.

Between 1962 and 1982, total wage and salary employment increased from 45,500 workers in 1962 to 56,200 workers in 1982, representing a 23.5 percent increase in twenty years. However, this increase was significantly lower than the state's average, ranking eleventh among the twelve metropolitan areas of Michigan. The behavior of total wage and salary employment is largely determined in the Benton Harbor metropolitan area by the performance of the manufacturing sectors. During the 1973-1975 recession, manufacturing employment experienced a decline of 19.4 percent, ranking second along with the Flint SMSA, exceeded only by the 20 percent drop experienced in the Lansing-East Lansing SMSA. On the other hand, non-manufacturing employment fell by 6.2 percent in this recession, the highest drop in the MIR. Consequently, during this recession, total wage and salary employment in the Benton Harbor SMSA shrank by 10 percent, which was much less than that of manufacturing employment, but still the most severe downswing in the MIR. Not surprisingly, SMSA's with high concentration of employment in manufacturing, such as, Flint, Detroit and the Battle Creek SMSA's, experienced similar trends.

In addition, the employment expansion in the area following the 1973-1975 recession had been very weak. During the expansion period (1976-1978), total wage employment in the Benton Harbor SMSA increased by only 2.3 percent. Moreover, this increase was the second lowest expansion rate only ahead of the Muskegon SMSA. The Benton Harbor total employment did not reach, much less surpass, its pre-recession peak by the end of 1978.

b. Flint SMSA

The employment distribution in the Flint SMSA, shows that employment is heavily skewed toward manufacturing (see Table A.2 in Appendix A). In 1982, despite a decline in its share, manufacturing had 36 percent of total employment, 9 percentage points higher than the state. Moreover, nearly all manufacturing employment in the Flint SMSA was located in the durable goods manufacturing, particularly in the motor vehicle industry. In 1982, for example, 95 percent of all manufacturing labor was in durable goods activities, compared to 78 percent of the state. Within the durable goods manufacturing, 77 percent of its labor were employed by the transportation equipment industry, this represented more than 30 percentage points above the state's share. The auto-related production is largely dominated in this area by General Motors. Flint had the highest concentration of employment in transportation equipment (SIC 37) in the MIR, followed by the Lansing-East Lansing SMSA, with 75 percent. The heavy concentration in automobile production in the

Flint SMSA explains the area's relatively high per capita income because of the high wages and long work week in the automobile industry. However, this area has a boom or bust reputation, due to a highly cyclical economy and an industrial structure that is greatly sensitive to economic slowdowns. Between 1962-1972, total employment in the Flint area grew from 133,900 workers in 1962 to 173,500 workers in 1972, representing a 29.6 percent increase relatively close to the state's average of 33.0 percent. The effects of the three recessions that affected the economy between 1972 and 1982, caused employment to shrink in many of its sectors. In 1982, total employment in the Flint SMSA was 172,900 workers, a decrease of 0.3 percent since 1972 levels, this was among the three worst performances of the MIR. The deterioration of Flint SMSA labor market during the 1972-1982 decade revealed the high degree of cyclical sensitivity that characterized this area's economy. The behavior of total wage and salary employment in the Flint SMSA is largely determined by changes in the manufacturing sector. During the 1973-1975 recession, employment in manufacturing activities fell by 19.4 percent, this decline was higher than the state's drop (16.5 percent) and the second most severe decline among the states 12 metropolitan areas, just behind the Lansing-East Lansing SMSA.

The Flint SMSA economic structure proved to be one of the most sensitive metropolitan areas of the states. For example, during the shortest recession on record (1980),

manufacturing employment in the Flint area shrunk by 17.2 percent, the highest in the MIR. On the other hand, non-manufacturing activities fell by 2.9 and 2.3 percent during the 1973-1975 and 1980 recession respectively.

Consequently, total wage and salary employment in the Flint sub-region declined during the above-mentioned recessions by 8.8 and 7.6 percent respectively, less than that of manufacturing employment, but still the most severe downswing in the MIR. During the twenty year period total wage and salary employment in the Flint sub-region increased by 29.1 percent, slightly slower than the state. However, the performance from one decade (1962-1972) to the other (1972-1982) was markedly different. Between 1962 and 1972, total employment vigorously increased by 30 percent, in contrast, during the economic slowdowns of the 1972-1982 period total employment grew by less than 1 percent, a shrink in rate of more than 30 percent in 10 years.

c. Lansing-East Lansing SMSA

The most notorious aspect of the Lansing-East Lansing SMSA employment structure is the large government sector compared to most other metropolitan areas (see Table A.3 in Appendix A). This high concentration of employment in the government sectors is explained by the fact that the city of Lansing is the state's capital and East Lansing, on the other hand, is the hometown for Michigan State University. In 1982, 35 percent of total wage and salary employment was located in public funded jobs compared to 25 percent of the

state, as a whole. In fact, it was the highest in the MIR. The manufacturing sector accounts for a smaller proportion of wage and salary employment in the area than the state, as a whole. In 1982, 20 percent of total wage and salary employment in this area was accounted for by manufacturing industries lower than the statewide average. Within manufacturing, 88 percent of all workers were located in durable goods activity. In 1982, 75.5 percent of the durable goods employment were involved in the automobile industry. Among the state's metropolitan areas, only the Flint SMSA had a higher percentage of its manufacturing workers employed by the transportation equipment industry. The Lansing-East Lansing SMSA has a relatively high wage structure and a relative long work week, similar to the other metropolitan areas in the state that are heavily dependent upon the automobile industry. As a result, it is this industry that largely accounts for the sizable cyclical swings in manufacturing employment in this part of the state. The employment behavior during recessions reveal a fairly high degree of cyclical sensitivity in local manufacturing employment and relative stability in non-manufacturing and government employment.

During the 1973-1975 recession, manufacturing employment in the area fell by 20 percent, compared to 16.5 percent decline statewide. In fact, the employment contraction experienced by the manufacturing sector in this area was the highest (Table 3.3) among all 12 metropolitan

areas in the state. During the "brief" 1980 recession, manufacturing in this area was adversely affected, dropping by 15.2 percent, again, significantly higher than the state as a whole. As a result, total wage and salary employment experienced a 1.4 percent decline during the 1973-1975 recession. However, the area's decline was relatively lower than the state's drop of 4.3 percent. Total wage and salary employment did not experience a higher degree of cyclical sensitivity due to the contribution of the relatively stable non-manufacturing and government sectors. The latter was unaffected by the 1973-1975 recession and continued to grow. Between 1973 and 1975, government employment increased by 10 percent. Non-manufacturing employment in the Lansing-East Lansing SMSA increased during this recession. Similar to government employment, the areas of non-manufacturing activities also increased by 10 percent compared to a statewide decline of 0.8 percent. Despite the declining experience of the manufacturing sector, the Lansing-East Lansing SMSA experienced a vigorous recuperation. Between 1976 and 1978, this area's manufacturing had a strong recovery, increasing by 15 percent. This increase was only exceeded by the Ann Arbor and Grand Rapids SMSA's with 19.5 percent and 17.4 percent respectively.

d. Detroit SMSA

The industrial structure of the Detroit SMSA is concentrated in manufacturing (see Table A.4 in Appendix A). In 1982, 27 percent of the area's total wage and salary

workers were employed by manufacturing firms, primarily durable goods producers. The durable goods sector, which accounted for about 83 percent of manufacturing employment in the Detroit SMSA, is dominated by automobile producers. In 1982, the transportation equipment industry accounted for 50.1 percent of employment in the local durable goods manufacturing sector, compared to 44 percent statewide. Overall, the distribution of employment of the Detroit SMSA is quite similar to that of the state, although the former has a smaller government sector and slightly larger manufacturing and non-manufacturing sectors. However, the state's employment distribution is affected significantly by the Detroit SMSA, due to its size and economic importance. In 1982, the six-county area accounted for 48.1 percent of the state's manufacturing employment, 52.1 percent of non-manufacturing employment and 39.1 percent of government employment. Thus, the Detroit SMSA's absolute and relative size in terms of population, income and employment makes it the dominant region in Michigan. In addition, its industrial structure with heavy concentration in durable goods production, particularly automobiles, lends a great deal to cyclical instability to the local area and inevitably contributes significantly to the total economic performance in the state. Within the industrial structure of the Detroit SMSA, the manufacturing sector exhibits the most cyclical sensitivity and largely accounted for the downswings in total wage and salary employment during the

national recessions, particularly the 1973-1975, considered the most dramatic. Local manufacturing employment during the 1973-1975 recession experienced in this area a 18 percent decline. While that drop exceeded the 16.5 percent decline statewide, it ranked sixth in relative severity in the MIR. The Lansing-East Lansing SMSA ranked first with a decline in manufacturing employment of 20 percent, followed by Benton Harbor and the Flint SMSA's both with 19.4 percent, and the Jackson SMSA with a decline of 18.1 percent. However, because of the size of the Detroit SMSA, job losses in manufacturing amounted to approximately 106,000 or about 55 percent of total decline in manufacturing employment in Michigan during this recession. Non-manufacturing employment in the Detroit SMSA fell only by 1.1 percent, slightly higher than the state's decline of 0.8 percent. Government employment rose by 8.9 percent and continued to increase until 1979. The cyclical contraction in local employment, particularly in manufacturing produced a 5.7 percent decline in total wage and salary employment during the 1973-1975 recession. This was the fifth most severe contraction among the twelve metropolitan areas and slightly above the 5.5 percent decline statewide. As was the case in all of the state's SMSA's, the relative stability of non-manufacturing and government employment tempered the severity of the contractions in the manufacturing sector in the Detroit SMSA. Following the 1973-1975 recession, total wage and salary employment

expanded 11.7 percent between 1976 and 1978, compared to 11.1 percent statewide increase during the same period. This represented a fairly high rate of increase during expansion years, typical of those SMSA's with a large share of employment in the motor vehicle industries.

e. Jackson SMSA

The Jackson SMSA employment distribution is very similar to the state's (see Table A.5 in Appendix A). In 1982, 25 percent of total wage and salary employment was accounted by manufacturing industries. Both in the state and in the Jackson SMSA, 78 percent of all manufacturing employment was engaged in durable goods production. Within the durable goods manufacturing, transportation equipment (SIC 37) had the largest share (27 percent), followed by fabricated metal (SIC 34) with 26 percent and non-electrical machinery accounting for 22 percent of total durable goods employment. A sizable portion of the activity of these industries is closely related to the volatile automobile industry.

The Jackson SMSA had one of the smallest labor markets in the MIR. In addition, this area had one of the slowest growth rates in the region, in terms of employment. Total wage and salary employment grew by only 22.9 percent during the 1962-1982 period, compared to 37 percent increase of the state. This area's performance in manufacturing was unfavorable between 1962-1982. While the state's manufacturing employment declined by 7.9 percent, in the

Jackson area manufacturing employment dropped by 25 percent, this was more than triple the statewide decrease.

Looking at employment behavior during recessions, the performance of the local manufacturing was particularly weak during the 1973-1975 recession. Employment in this sector fell by 18 percent compared to metropolitan areas of similar size and structure such as the Bay City SMSA that registered a decline of only 8.8 percent in its manufacturing employment. During the 1972-1982 decade, the most unstable of the periods analyzed, the Jackson SMSA manufacturing employment shrank by 30 percent, more than 10 percentage points higher than the state's average. This represents the second fastest downtrend among the twelve metropolitan areas, exceeded only by the Lansing-East Lansing SMSA and the Grand Rapids SMSA areas which showed increases in their manufacturing employment during the 1972-1982 period by only 8.6 and 10.6 percent respectively.

Although, the drop in the Jackson SMSA manufacturing employment suffered during this recession was lower than that suffered by the Ann Arbor SMSA (19.1 percent) and the Lansing-East Lansing SMSA (20 percent), unlike those two areas, where manufacturing employment recovered and then expanded to levels above pre-recession peaks, the recovery in manufacturing employment in this area was quite weak. At the end of 1978 two years after the recession, manufacturing employment was only 11.5 percent above the low registered in 1976 compared to Ann Arbor's SMSA which had 19.5 percent and

the Lansing-East Lansing SMSA which had 16 percent. As a result, total wage and salary employment in the area performed poorly compared to other metropolitan areas in the state. The Jackson SMSA total wage and salary employment was reduced by 7.1 percent during the 1973-1975 recession, the third highest decline in the MIR. Again, the recovery was weak, as total wage and salary employment rose by only 7.6 percent compared to 10 percent increase statewide.

1.3 Industrial Mix and Employment Behavior

a. Benton Harbor SMSA

During the 1962-1982 period, the analysis of the Benton Harbor SMSA revealed that the majority of its employment was located in slow growing industries, which gave it a negative industry mix factor as a result of an unfavorable industrial structure. In terms of the creation of job opportunities in the area, all sectors combined produced a loss of 7,913 jobs (Table 3.2a). Between 1962-1972, the Benton Harbor SMSA's total wage and salary employment grew from 45,500 workers to 64,000 representing a 40 percent increase over the ten year period one of the fastest growth rates in the MIR. This area produced a positive industry mix factor. During this decade, this area's manufacturing employment lost over 1,700 job opportunities, more than 95 percent of all job loss in the area. However, the combined contribution of the non-manufacturing sectors were enough to offset the manufacturing loss and as a result, produced a total of 186 new job opportunities. Although the number of jobs created

seems low, this was a clear indication that the industrial structure of the Benton Harbor SMSA between 1962 and 1972 grew faster than the national average. Within the non-manufacturing sector, the services component made the highest contribution. On the contrary, Table 3.2b shows that during the following decade (1972-1982), the Benton Harbor SMSA did not grow at the same pace as the nation. Due to an unfavorable industrial structure, this area lost 5,259 job opportunities. During this economically unstable period, manufacturing exhibited a high degree of cyclical sensitivity. As a result, manufacturing activities reduced its employment share, losing 9,219 employment possibilities, making more than 96 percent of all employment loss within the economical structure of Benton Harbor of that period. The construction sector, also exhibited cyclical sensitivity within the industrial structure by losing 671 job opportunities.

In summary, the Benton Harbor industrial structure proved to be extremely sensitive to economic slowdowns and recessions. During the 1972-1982 period, this area experienced the most severe decline in total wage and salary employment. In addition, during post-recessional periods, the expansion rate had been below the state average and one of the lowest among the twelve metropolitan areas of the state.

b. Flint SMSA

During the 1962-1972 decade, the Flint SMSA experienced an unfavorable industry mix factor. Table 3.2a shows that during this decade, a high percentage of the area's employment was concentrated in slow growing industries, in this case, the motor vehicle manufacturing. The manufacturing sector, as a whole, was responsible for the loss of 15,145 jobs during the 1962-1972 period, indicating that this sector of Flint SMSA economic structure grew at a slower rate than the national average. In addition to manufacturing, the transportation and public utilities (SIC 40) also presented an unfavorable industry mix factor by losing 333 job opportunities during the same period. Although all sectors of the non-manufacturing component produced a positive industry mix factor, the number of employment opportunities generated by non-manufacturing activities were not enough to offset the losses produced by manufacturing. During the 1972-1982 decade the analysis of the Flint SMSA industrial structure shown on Table 3.2b produced a negative mix factor. The deterioration of this area's economy was almost exclusively the result of the decline in the motor vehicle and equipment manufacturing production. This sector was responsible for a net loss of 23,842 employment opportunities in the area. Not surprisingly, construction with a high cyclical sensitivity had a net loss of 880 job opportunities. All sectors combined, the Flint SMSA industrial structure during the

1972-1982 decade proved to be disadvantageous, especially because of the marked reductions in employment potential of the motor vehicle manufacturing and the slow pace at which this sector grew in the area.

c. Lansing-East Lansing SMSA

During the 1962-1982 period, the Lansing-East Lansing SMSA had an unfavorable industrial structure. The industrial mix factor was negative, indicating that the area lost 6,024 job opportunities due to a high concentration of employment in industries that grew slower than the national average. Not surprisingly, the manufacturing sector with 88 percent of its employment located in the highly cyclical sensitive durable goods activities was chief responsible for these results. This sector lost a total of 20,631 job opportunities or 82 percent of all job loss registered in this metropolitan area over the twenty year period. Between 1962 and 1972, total employment in the area grew from 108,500 workers to 159,500 workers respectively, this represented an increase of 47 percent. Unlike most other metropolitan areas in the state, the Lansing-East Lansing SMSA had a positive industry mix factor. Manufacturing during this period grew at less than the national average, resulting in the loss of 6,678 job opportunities. However, non-manufacturing and the government sectors grew faster generating more than 7,000 job opportunities, enough to offset the loss from manufacturing. As a result, 348 job opportunities materialized in the Lansing-East Lansing SMSA

particularly by the favorable contribution of the services sector and new government employment openings.

On the other hand, Table 3.2b shows that during the 1972-1982 decade, the Lansing-East Lansing SMSA industry, as a whole grew at lower rates than the national average. Due to an unfavorable industrial factor, this area lost over 5,000 job opportunities, again, the highly cyclical manufacturing sector caused the heavier losses with a decline of 12,303 jobs in this ten year period. The high concentration of employment in the durable goods activities, particularly, in the auto related industry contributed to the area's low performance in terms of job creation. The construction sector, also exhibited high cyclical sensitivity, this was reflected by its negative industry mix factor and by the loss of 850 job opportunities. The non-manufacturing sector (wholesale trade, finance and services) grew faster than the national average, however, this increase was not enough to offset the losses produced by manufacturing and by the government sector.

In summary, the Lansing-East Lansing SMSA exhibited a good deal of variation in growth and fluctuation among local economic activities. Total wage and salary employment was characterized by relative cyclical stability and fairly strong growth compared to the other metropolitan areas in the state with high dependence on durable goods manufacturing. On the other hand, the manufacturing sector

exhibited a good deal of cyclical volatility, with employment experiencing sizable cyclicality.

d. Detroit SMSA

In 1982, the Detroit SMSA's total employment was estimated at 1,500,800 workers, this represented an increase of 29.1 percent over the 1962 level of 1,201,200 workers. This area is the largest labor market in the state, containing 49.4 percent of total employment of Michigan.

During the 1962-1982 period, this area had a negative industry mix factor indicating that industrial structure of the Detroit SMSA grew at a slower rate than the nation's average. The area lost 76,345 job opportunities over the twenty year period. In the 1962-1972 period, more than 98 percent of all the employment opportunities lost were produced by the manufacturing sector. Transportation and public utilities also had an employment setback with a loss of 4,568 job opportunities in the rest of the sectors registered a positive industry mix factor, indicating that these were fast growing activities; however, the rate of increase within the non-manufacturing sector was not enough to offset the loss produced by the manufacturing sectors, resulting in a total loss of 32,784 jobs, due to the concentration of the majority of its employment in slow growing industries.

In the 1972-1982 decade, things became worse for the Detroit SMSA, when total wage and salary employment declined by 2 percent compared to a 2 percent increase in the state.

In addition, manufacturing employment experienced a 25.8 percent decline, higher than the statewide average. The industry mix results shown on Table 3.2b show a significant loss of job opportunities during the period. This area experienced a drop of 43,561 in job opportunities. Not surprisingly, manufacturing had the greatest responsibility in this loss, with a drop of 172,666 job opportunities. The loss in manufacturing jobs in the Detroit area was the largest among all metropolitan areas of the state. The construction sector also lost more than 9,000 job opportunities between 1972 and 1982. During the twenty year period under analysis, total employment in this area expanded from 38,900 workers in 1962 to 47,800 workers in 1982, a modest growth increase of 22 percent.

e. Jackson SMSA

The Jackson SMSA only exceeded two other metropolitan areas in terms of employment growth, the Bay City SMSA and the Muskegon SMSA with 18.2 percent and 18.6 percent, respectively. In fact, the area's rate of employment change was considerably lower than the average rates of the state and the nation.

In terms of the creation of job opportunities in the area, the Jackson SMSA increased its job market during the 1962-1982 period with the addition of 8,900 jobs. These new openings were however not the result of a favorable industry mix or an outstanding competitive performance of its economic sectors. These jobs were due to national economic

trends independent from local performance. The analysis of the industrial structure of the Jackson SMSA shows that this area had a negative industry mix factor and an unfavorable competitive position, over the twenty year period.

During the 1962-1972 decade, the area had the majority of its employment engaged in slow growing industries. The manufacturing sector was responsible for 93 percent of the loss in job opportunities during the 1962-1972 decade. Non-manufacturing activities in the area grew faster than the national average, with the only exception of transportation and public utilities. However, the additional new job opportunities by the non-manufacturing sector was not enough to offset the loss produced by manufacturing.

Table 3.2b shows that between 1962 and 1972, the Jackson SMSA had 1,609 less jobs than it would have had if its economic structure had grown at the same pace as a national economy. Similar to the experience of the previous decade, the area produced a negative industry mix factor. This very unstable decade worsened the situation for the Jackson SMSA. The highly cyclical sensitivity of the manufacturing sector caused the greatest loss. In fact, this sector experienced a loss of more than 5,000 jobs (Table 3.2b). Within non-manufacturing, the construction sector experienced a loss of 283 job opportunities in the area, on the other hand, the wholesale trade sector and the service sectors generated together more than 5,000 new job openings in the area; however, this gain did not surpass the

loss produced by the slow growing sectors, such as manufacturing and construction. All sectors combined, the area experienced a loss of 2,191 jobs during the 1972-1982 decade, mainly due to losses in durable goods manufacturing employment.

In summary, overall economic activity in the Jackson SMSA has been relatively weak, particularly over the 1972-1982 decade. The area has experienced slow growth in wage and salary employment, attributable largely to the decline in its manufacturing base. Certainly, this area has been severely hurt by the several recessions that affected the nation, particularly, the one between 1973-1975. Based on the analysis covered in this study, the economic recovery and expansion since the recession have not been vigorous. In fact, compared to other metropolitan areas in the state the economic expansion after 1975 has been rather weak.

2.0 Second Cluster Characteristics.

The following analysis describes the SMSA's that experienced a moderate cyclical sensitivity during recessions and a fair loss of employment. This cluster is made up of: Ann Arbor, Saginaw, Battle Creek and the Muskegon SMSA's.

2.1 General Characteristics

a. Ann Arbor SMSA

The Ann Arbor economic subregion is the sixth largest among Michigan's 14 metropolitan areas in terms of

population. In 1985, this area had a population of 262,300 people which represented 3.6 percent of all of MIR. In 1984, the per capita income in Ann Arbor exceeded all metropolitan areas in the state (Table 3.5) with \$14,670 compared to Michigan's average of \$11,112 (\$11,259 nationwide). The relatively high increase levels in the Ann Arbor subregion were the result of above average level wages paid by the durable goods industries including the auto-related manufacturing firms located there.

b. Saginaw SMSA

The Saginaw SMSA is a single-county metropolitan area. In 1985, the population of this area was 216,900, making it the seventh largest among the 12 metropolitan areas. Between 1980 and 1985, the area's population dropped 4.8 percent. In terms of per capita income, the Saginaw SMSA ranked seventh among the state's metropolitan areas, with a level of \$11,757 in 1984. Average hourly earnings of manufacturing workers in Saginaw are among the highest in the state, due to the heavy dependence on the automobile industry. As in the Flint SMSA to the south, General Motors is the largest employer in the Saginaw SMSA, given those two adjacent metropolitan areas the highest hourly wage rates in Michigan.

c. Battle Creek SMSA

The Battle Creek subregion encompasses Barry and Calhoun counties. This area ranks eight in population size among the 12 metropolitan areas of Michigan. In 1985, the

Battle Creek SMSA had a population of 183,400 approximately 2.5 percent of the MIR (Table 3.6). This area had one of the lowest per capita income of all metropolitan areas in Michigan, in 1984 (Table 3.5).

d. Muskegon SMSA

The Muskegon SMSA is one of the smallest Metropolitan areas in Michigan, in terms of population. In 1985 the areas had a population of 179,200 people, the fourth smallest metropolitan in the state. Between 1980 and 1985, this two county metropolitan area (Muskegon and Oceana) had a slight 2 percent decrease in its population, only two other counties had a more stable population performance, the Grand Rapids and the Kalamazoo SMSA's. In 1976, the Muskegon metropolitan area had a per capita income level of \$5,065, the lowest among all 12 metropolitan areas. The income per capita levels increased to \$10,498 in 1984, representing a 85.4 percent increase. Again, this was the lowest per capita income registered in all metropolitan areas of the state.

2.2. Employment Distribution and Trends

a. Ann Arbor SMSA

In terms of employment, the Ann Arbor SMSA contains the fifth largest labor marked in the state with a civilian wage and salary employment of 149,200 workers. In 1985, more than half (57 percent) of the population was employed, representing a 3 percent increase over the 1980 labor force figure, compared to the states increase of only 1 percent.

Over the period of 1962-1982, the Ann Arbor SMSA has had constant changes in its employment profile. The economy has ranged from a high concentration of employment in the manufacturing sector in 1962, to a fairly diversified structure in 1972, to a skewed distribution towards non-manufacturing in 1982 as shown in Table A.6 of Appendix A. The distribution of employment in this area, particularly in the government sector is affected by the fact that two state universities are located there, the University of Michigan and Eastern Michigan University.

In 1972, manufacturing industries in the Ann Arbor SMSA employed 36,800 persons, an increase of 34.2 percent over the workers employed in 1962. This increase was above the state's average increase of 15.4 percent and the nation's 15.9 percent. During the period, 1962-82 employment change within each sector has varied significantly particularly between manufacturing and non-manufacturing activities. While manufacturing share of employment has declined by 40 percent during those twenty-years, non-manufacturing activities have increased their numbers by 68 percent. For the same period total wage and salary employment and its major components manufacturing-non-manufacturing, and government employment-varied significantly. In other words, these two employment series increased during national expansion periods and declined during recessions. While non-manufacturing employment displayed a slight, cyclical sensitivity government employment did not. The size of the

government employment in the Ann Arbor SMSA remained relatively the same in the period between recessions.

Manufacturing in this subregion is heavily weighted toward the highly recession-sensitive durable goods production. Consequently, manufacturing employment in the area experienced a severe contraction during the 1973-1975 recession, falling by 19.1 percent. That was the fourth largest relative decline in manufacturing employment in the MIR.

b. Saginaw SMSA

The Saginaw SMSA is heavily concentrated in manufacturing. In 1982, 32 percent of the area's wage and salary workers were employed by manufacturing industries. Manufacturing employment is predominantly in durable goods industry (see Table A.7 of Appendix A). In 1982, 90 percent of the area's manufacturing employment was located in durable goods activities. Only the Flint SMSA had a higher proportion of workers in durable goods manufacturing. Within durable goods production, the transportation equipment and the primary metal sectors accounted for 87 percent of total durable goods employment. As a result, similar to the Flint SMSA, this area has an industrial structure dominated by the cyclical sensitive, but high wage automobile industry. Over the 1962-1982 period, the Saginaw SMSA experienced a slightly higher growth rate than the state in terms of total wage and salary employment. For the twenty-year period, the Saginaw's SMSA total wage and salary

employment grew by 37.4 percent compared to 37 percent of the state. This represents the fifth largest expansion among all twelve metropolitan areas of Michigan.

During the 1962-1982 period, Saginaw SMSA experienced a 0.4 percent decline in its manufacturing employment compared to 7.9 percent decline statewide. However, looking at the 1972-1982 decade period in which the economy was affected by the recessions, manufacturing employment declined by 25.6 percent, compared to the state's 20 percent decline.

Behavior in manufacturing employment was not steady, but was subject to sizable cyclical swings, of course this is not surprising, giving the area's heavy dependence on the automobile industry. During the 1973-1975 recession, local manufacturing employment fell by 17.1 percent, slightly higher than the state's 16.5 percent decline and contributing substantially to the 5.5 percent drop in the area's total wage and salary employment. It should be noted, however, that the downswing in manufacturing employment in the Saginaw SMSA ranks as the seventh most severe, behind the decline of the Lansing-East Lansing, Flint, Benton Harbor, Detroit, Ann Arbor and Jackson SMSA's. During the 1973-1975 recession, the non-manufacturing sector did not show any change. In contrast, government employment rose by 16 percent during this recession, as it did in most metropolitan areas and in the state, as a whole. Employment in the Saginaw SMSA has expanded substantially since the 1973-1975 recession. By the end of 1978, manufacturing

employment, which suffered the largest setback during the recession, was up 26 percent over its recession low, and as a result was 5.1 percent above its pre-recession peak. Combined with the steady increases of non-manufacturing and government employment, the recovery in manufacturing resulted in a level of total wage and salary employment at the end of 1978 that was 11 percent above its previous cyclical high, which occurred in 1973.

c. Battle Creek SMSA

In terms of employment, the Battle Creek SMSA is one of the slowest growing labor markets in the state, containing 2.2 percent of total wage and salary employment in the MIR. Since the 1960's, the employment profile of Battle Creek SMSA has constantly changed. In 1962, 46 percent of its labor was located in manufacturing activities. Twenty years later, this was reduced to 30 percent (see Table A.8 in Appendix A). Non-manufacturing activities increased its employment share from 40 percent to 50 percent. A very significant difference between the area's industrial structure and that of the larger metropolitan areas and the state is that there is a more even distribution of employment within the manufacturing sector. Durable goods and non-durable goods Manufacturing are more evenly divided in the Battle Creek area. In 1982, non-durable goods manufacturing employed close to 50 percent of all manufacturing labor, compared to 17 percent in Detroit, 28 percent in Grand Rapids and 11 percent in Lansing.

Statewide, the non-durable manufacturing share of employment was 22 percent in 1982.

The food and kindred products industry (SIC 20) accounted for the largest share of non-durable manufacturing employment. In 1982, for example, 75 percent of local non-durable workers were employed in that sector. The importance of employment in the non-durable manufacturing sector is shown by the presence of the two largest cereal companies in the world, the Kelloggs Company and General Foods in Battle Creek, giving it the notoriety as the cereal capital of the world. For this reason, we would expect that the industrial structure of the Battle Creek area would be less cyclically sensitive when compared with larger metropolitan areas and the state as a whole.

During the recession period of 1972-1982, manufacturing employment in Battle Creek was the most cyclically sensitive, falling by 30 percent, more than 10 percentage points above the states average. Within the manufacturing sector in Battle Creek, the durable goods manufacturing experienced a decline 3 times larger than the non-durable manufacturing sector. Between 1972 and 1982, the area's manufacturing employment registered an increase of 12.6 percent, lower the state's 16.3 percent increase. Total wage and salary employment increased during the 1962-1982 period by 17.7 percent, significantly lower than the 36 percent of the state and the 77.7 percent nationwide. The expansion in the area's total wage and salary employment (17.7 percent)

resulted largely from increases in the manufacturing and government sectors. With the exception of Jackson SMSA, the Battle Creek area represents the poorest performance in manufacturing employment in MIR.

d. Muskegon SMSA

The Muskegon SMSA is highly dependent on the manufacturing sector for employment. In 1982, this area had 32 percent of all salary employment located in manufacturing (see Table A.9 of Appendix A). In fact, it was only exceeded by the Flint and Benton Harbor SMSA's by 36 percent and 35 percent respectively. The Muskegon SMSA is also heavily concentrated in durable goods. Within the manufacturing industries, the non-electrical machinery (SIC 35) and the primary metal (SIC 33) are the major employers in the area, accounting for slightly more than 60 percent of durable goods manufacturing employment in 1982. However, these industries have not been expanding in the Muskegon SMSA and as a result, the areas manufacturing base has been shrinking.

The most notable feature of total wage and salary employment in the Muskegon area during the 1962-1982 period is its relatively slow growth. Total wage and salary employment grew by 17 percent, compared to the 37 percent of the state, as a whole. Moreover, the employment growth in the Muskegon SMSA only ranks ahead of the Bay City SMSA which had a growth rate for wage and salary employment of 18.2 percent, over the twenty year period.

Between 1962 and 1982, the Muskegon SMSA experienced a negative growth in manufacturing employment. Table A.9 (see Appendix A) shows that the Muskegon SMSA had a decline of 30 percent compared to a 7.9 percent drop in statewide manufacturing employment. During the 1973-1975 recession local manufacturing employment fell by 9.0 percent (Table 3.3), this was the second mildest cyclical decline among the state's 12 metropolitan areas, and was followed by a weak recovery. By the end of 1978, local manufacturing employment was 9 percent above its recession low. This area had the lowest recovery among all metropolitan areas of Michigan.

The relative stability of manufacturing employment and the rise in government employment during the 1973-1975 recession helped total wage and salary employment to perform comparatively well, declining by only one percent from peak to trough. That was one of the mildest contraction among the state's metropolitan areas, ranking just behind the Kalamazoo metropolitan area. Construction employment, a well known sector for its cyclical sensitivity, experienced a fairly low decline during the 1973-1975 period. From peak to trough, construction employment fell by 9 percent compared to 19.1 percent decline of the state, as a whole.

2.3 Industrial Mix and Employment Behavior

a. Ann Arbor SMSA

Looking at the results of the shift-share analysis for the period 1962-1982, Table 3.2a shows that the Ann Arbor subregion had experienced a negative industrial mix component. These results indicate that the area had a high concentration of employment located in slow growing industries or industries that were growing at a slower pace than the national average for those sectors. Independent from national influences, the local sectors, on balance, produced a reduction in employment opportunities of 10,469 jobs due to the unfavorable industrial structure of the area. A breaking down of the twenty-year period into two ten-year periods (1962-1972 and 1972-1982 will yied a better picture of the area's employment behavior.

Between 1962-1972 Ann Arbor SMSA's total wage and salary employment grew from 73,700 in 1962 to 106,900 workers in 1972. This constituted a total employment gain of 45 percent. As a result, this area was one of the fastest growing within the region. In 1972, manufacturing industries in the Ann Arbor SMSA employed 36,500 persons, an increase of 34.2 percent over the workers employed in 1962 but the region experienced a negative shift in manufacturing employment. The Ann Arbor region has a relatively high concentration of durable goods manufacturing. In 1972, the region had 88 percent of its total manufacturing employment in durable goods, compared to 80 percent for the state and

58 percent nationwide. Manufacturing of transportation equipment (SIC 37) constitutes the major durable goods activity in the area. During the 1972-82 period, the effects of several national recessions will be felt in Michigan's economy. Manufacturing shrank by 12.3, as well as its two major components durable goods (13.9 percent) and non-durable goods (2.4 percent). The non-manufacturing sectors grew despite the recession slowdown, as a whole it experienced an expansion of 66.2 percent. Within the non-manufacturing industries the service and the construction sectors were the two extremes. On one hand, construction employment in the area exhibited a high degree of cyclical sensitivity with a net loss of 15 percent of its employment opportunities at the end of the decade. On the other hand, the service sector, apparently the less recession sensitive sector, experienced a remarkable increase of 109 percent in employment, more than double the states increase (41.5 percent) and more than 40 percentage points higher than the national growth rate (69 percent).

The Ann Arbor SMSA during the 1972-82 period had a negative industry mix factor (Table 3.2b), indicating that the majority of local employment was concentrated in the slow growth industries, particularly in the durable goods manufacturing. Despite a fairly high rate of diversification during the period 1972-82 (Table 3.4), this area had 9,343 less jobs than it would if its economic structure was less concentrated in slow growing industries

In summary, the behavior of the manufacturing sector within the economic structure of the Ann Arbor SMSA reveals its highly cyclically sensitive nature. The negative industry mix factor obtained for the whole twenty year period is a clear indication of the unfavorable structure of the areas economy.

b. Saginaw SMSA

During the twenty-year period under analysis, total employment in this area expanded from 56,100 workers in 1962 to 77,100 workers in 1982. This was an increase of 37.4 percent over the period, representing the fifth largest increase among the states metropolitan areas. In terms of the creation of job opportunities in the area, the Saginaw SMSA during the 1962-1982 period, this area had a negative industry mix factor, indicating that the majority of its employment was located in slow growing industries. As a result, 6,541 job opportunities were lost in this area. Manufacturing accounted for over 90 percent (4,909) of the total loss in job opportunities. On the other hand, the non-manufacturing sector had a combined increase of 2,205, plus the government contribution of 536 jobs for a total of 2,741 new jobs created due to a growth rate higher than the national average. Despite this vigorous increase in the non-manufacturing sector and government sector employment, these were not enough to offset the drop in the slow growing industries. As a result, the area loss 2,417 job opportunities.

During the 1972-1982 decade, the analysis of the Saginaw SMSA industrial structure showed a negative industry mix factor. The deterioration of the area's economy is almost exclusively the result of the decline in the motor vehicle and equipment manufacturing. This sector was responsible for a loss of over 10,000 job opportunities in the Saginaw area. The effects of the recession, particularly the 1973-1975 recession also caused the construction sector to suffer a loss of 462 jobs. The transportation sector declined severely in terms of job offerings losing more than 3,800 jobs. All sectors combined, the Saginaw SMSA industrial structure proved during the 1972-1982 period to be disadvantageous, especially because of the labor reduction in the motor vehicle industry and the slow pace at which this sector (durable goods) grew in this area.

In summary, the Saginaw SMSA exhibited relatively rapid growth and a comparative higher degree of stability in total wage and salary employment. Manufacturing, on the other hand, was characterized by sizable cyclical swings, not unexpected results for an area with such a heavy concentration of employment in auto-related production. Therefore, similar to other metropolitan areas in the state, with a heavy dependence on the automobile industry, the Saginaw SMSA experienced large declines in manufacturing employment during recession, but these slumps were followed by vigorous expansions.

c. Battle Creek SMSA

Total employment in the Battle Creek SMSA increased from 50,200 workers in 1962 to 59,100 workers in 1982. On employment basis, Battle Creek was one of Michigan's slowest growing areas during the 1962-1982 period. During the twenty year period, this area experienced a negative industry mix factor, indicating that the majority of Battle Creek's salary and wage employment was concentrated in slow growing industries. The unfavorable industrial composition of the area produced a reduction of 6,581 employment opportunities.

During the 1962-1972 decade, Battle Creek's total wage and salary employment grew by 24.1 percent, below the statewide average change of 33.5 percent. During this ten year period, this area registered a negative industry mix (Table 3.2a). Manufacturing, in both decades, was mainly responsible for the loss of employment opportunities in Battle Creek. As noticed in Table 3.2a, all sectors did not have an unfavorable mix factor, wholesale trade, finance and specially the service sector were moving faster than the national average, however that growth was offset by manufacturing and transportation resulting, in a total of 2,119 fewer jobs in the area.

During the 1972-1982 decade, a similar situation is observed, however, worsen by the effects of several economic recessions. The Construction grew at a slower rate than the nation's performance. Total construction in Battle Creek

SMSA exhibited high degree of cyclical sensitivity. During the 1973-1975 recession, construction employment fell 21 percent from its level in 1973, which exceeds the statewide decline of 17 percent.

In summary, taken by itself, the industrial structure of the Battle Creek area was less cyclically sensitive than the state as a whole. Figures for the three recessions show that in total wage and salary employment the economic slowdowns affected Battle Creek less intensively than the state. Manufacturing and construction exhibited a moderate degree of sensitivity to cyclical downturns in the national economy.

d. Muskegon SMSA

In terms of industry mix and employment behavior, the analysis show in Table 3.2a that the Muskegon area had a negative industry mix factor for the 1962-1982 period. These results indicate that the area had majority of its employment located in slow growing industries. Separate from national effects all sectors combined produced during the twenty year period a reduction of 9,152 in job opportunities due to the unfavorable industrial situation of the area.

Between 1962 and 1972 the Muskegon SMSA total wage and salary employment grew from 46,800 workers in 1962 to 54,200 workers in 1972, representing a 17 percent increase. Manufacturing produced the highest employment loss in this area, this sector lost more than 5,000 job opportunities,

far more than the gains produced by the non-manufacturing and the government sectors. Wholesale trade (SIC 50) and the services sectors grew faster than the national average. Both produced 1,450 job opportunities in this area.

However, their continuation was not enough to offset the loss in manufacturing, transportation and public utilities (SIC 40). Between 1972 and 1982, the Muskegon SMSA lost 3,363 job opportunities. Again, manufacturing carried the heavier loss with a decline of 6,960 jobs. As mentioned before, the high concentration of employment in the durable goods manufacturing (84 percent) contributed to this area's low performance in terms of job creation. Within non-manufacturing, the construction sector exhibited a moderate degree of cyclical sensitivity, this was reflected by the loss of 268 jobs during this period. On the other hand, the wholesale trade, finance and services sectors increased rapidly above the national average, however, their performance was shadowed by the declines in manufacturing and government employment.

In summary, the high concentration of employment in manufacturing activities in the Muskegon area, has affected its employment behavior during the twenty-year period analyzed. However, the stability of this labor market is the result of significant contribution by the non manufacturing sector particularly the service industries. In relation to the other metropolitan areas of the state, the Muskegon SMSA labor market behaved comparatively well.

3.0 Third Cluster Characteristics

The third cluster is made up of those SMSA's that exhibited the least cyclical sensitivity, thus, the areas with the most stable industrial structure.

3.1 General Characteristics

a. Bay City SMSA

This area consists of Bay County with Bay City as its urban center. Compared to the rest of Michigan's metropolitan areas, Bay City SMSA is the smallest in terms of population. In 1985, it had a population of 115,300 which represented only 1.6 percent of Michigan's metropolitan area's population.

b. Grand Rapids SMSA

The Grand Rapids SMSA is the second largest among Michigan's 12 metropolitan areas in terms of population, exceeded only by the Detroit SMSA. This metropolitan area, which encompasses Ottawa and Kent counties, experienced a population increase of 5.5 percent from 601,686 in 1980 to 635,000 in 1985, it was the fastest growing metropolitan area in the state. The area also experienced relatively strong growth of per capita income. From \$6,293 in 1976 to \$12,385 in 1984, an increase of 96.8 percent, the second highest increase rate behind the Ann Arbor SMSA. However, in terms of absolute dollars, in 1984 this area's per capita income ranked fifth, below Ann Arbor (\$14,670), Detroit (\$13,943), Flint (\$13,181) and Kalamazoo (\$12,817). The

relatively low per capita income level in the Grand Rapids SMSA is attributable largely to the fact that it is not a high wage area. This of course, is due to a local industry mix that is not heavily dependent on the high-wage automobile industry. In fact, in 1982, the average weekly wage in this area's manufacturing was the second lowest (\$364.49), exceeding only that of Benton Harbor SMSA (\$350.14).

c. Kalamazoo SMSA

The Kalamazoo SMSA is made up of Kalamazoo and Van Buren counties, with the Battle Creek SMSA bordering on the east and Lake Michigan to the west. In 1985, the Kalamazoo SMSA had a population of 282,100 making it the fifth largest metropolitan area in the state. Between 1980 and 1985, the two-county area's population increased by 13 percent, the second fastest growing metropolitan in the state, behind the Grand Rapids SMSA. The Kalamazoo SMSA ranked fourth among the state's metropolitan area's in terms of per capita income. In 1984, this area had a per capita income of \$12,817 which represented a 92.6 percent growth since 1976 levels. The Kalamazoo SMSA is not a high wage area. In 1982, the Kalamazoo SMSA had a total average wage earning of \$449.36, this was below the statewide average of \$449.00 and one of the lowest in the MIR. This, of course, is due in part to the fact that the automobile industry accounts for a relatively small share of the manufacturing case in the

area.

3.2 Employment Distribution and Trends

a. Bay City SMSA

The employment distribution in the Bay City SMSA is very similar to that of the state. During the twenty year period over 50 percent of all wage and salary workers in the area worked in non-manufacturing activities, the highest proportion in the MIR (see Table A.11 in Appendix A). The majority of manufacturing workers in Bay City SMSA are employed by the durable goods industries.

Despite the similarity of Bay City SMSA's economic structure to that of the state in general, this area has exhibited less cyclical sensitivity than the state as a whole. During the 1973-1975 recession while Bay City's total wage and salary employment declined by less than 1 percent the states total employment declined by 4.5 percent. Manufacturing in this metropolitan area was only reduced during this recession by 8.8 percent, compared to the 16.5 percent reduction in the state's manufacturing employment. In fact, this area's manufacturing experienced the lowest sensitivity during recession among all 12 metropolitan areas.

Over the twenty year period (1962-1982), the area's labor market grew by 35 percent, the sixth fastest increase among the state's metropolitan areas. All sectors of the economy did not grow at the same rate. Non-manufacturing employment grew by 50 percent, compared to the state's

growth by 67 percent. Over those twenty years, manufacturing employment experienced a different behavior in each of its two components. Durable goods manufacturing declined by 13 percent while the durable goods employment in the Bay City area grew by 28 percent.

Similar to other metropolitan areas previously described, the relative cyclical sensitivity of the manufacturing sector, particularly the durable goods activities, were offset to some degree, by the relative cyclical stability of the non-manufacturing and government sectors. As noted above, this area's high concentration of employment in the durable goods industries in a similar proportion to the state caused the area not to have a markedly different cyclical behavior of employment over the period 1962-1982. However, the local area did experience somewhat greater growth of employment, particularly in the non durable manufacturing sector.

b. Grand Rapids SMSA

Employment distribution in the Grand Rapids SMSA, does not differ greatly from the state configuration, except that the government sector is substantially smaller in the Grand Rapids area.

In 1982, the proportion of total wage and salary employment accounted for by manufacturing activities was similar to that of the state. Within manufacturing, the durable goods industry was relatively higher in the state by 7 percentage points. However, the aggregate shown in Table

A.12 (see Appendix A), masks the mayor difference between this area and the state: the key durable goods industries in the Grand Rapids SMSA are not linked to automobile production. In 1982, the transportation equipment industry accounted for only 6 percent of all durable goods manufacturing employment in the area, compared to 44.2 percent of the state.

Within the durable goods industries in the Grand Rapids area the highest percent of employment was located in furniture and fixtures (SIC 25), which accounted for 25.1 percent of total durable goods manufacturing, compared to 3.1 percent of the state as a whole (see Table A.13 in Appendix A). In fact, 70.1 percent of all furniture and fixture employment of the state was located in the Grand Rapids SMSA. The fabricated metals industry (SIC 34) accounted for 22 percent of total durable goods activities in the area, followed by machinery (SIC 35) with 20 percent. Thus, the industrial composition of the Grand Rapids SMSA is substantially different from most other metropolitan areas in Michigan. In terms of growth and cyclical stability, the Grand Rapids SMSA had an outstanding performance during the 1962-1982 period. The manufacturing sector in this area outperformed all other metropolitan areas of the state in the twenty year period. As a whole, manufacturing grew in this area by 30 percent, the highest increase in the MIR. In fact, only two other metropolitan areas experienced an increase in manufacturing employment, the Ann Arbor SMSA and

the Lansing-East Lansing SMSA with 17.6 percent and 10 percent, respectively. During the 1973-1975 recession, manufacturing employment shrank in this area by 15.4 percent, and that largely accounted for the area's 1.9 decline in total wage and salary employment. On the other hand, non-manufacturing and government employment were relatively stable during the 1973-1975 recession. The former experienced a 4 percent increase compared to a slight statewide decrease of .08 percent. The Grand Rapids SMSA had the second best performance in non-manufacturing employment during the 1973-1975 recession, only behind the 10 percent increase of the Kalamazoo SMSA.

c. Kalamazoo SMSA

There is one outstanding differentiated between the industrial structure of the Kalamazoo SMSA and that of the state's. While, manufacturing employment in the state is heavily concentrated in durable good industries (78 percent of manufacturing employment), in contrast, durable goods industry accounted for only 45 percent of all manufacturing jobs in the Kalamazoo SMSA as shown in Table A.14 (see Appendix A). Furthermore, the major manufacturing activity in the area is in the non-durable sector. Chemicals and petroleum (SIC 28,29) is the largest employer in the area, it holds 46 percent of all jobs in non-durable goods activities in the area. As a result, the Kalamazoo SMSA has been characterized by a relatively high degree of cyclical stability. Similar to the Grand Rapids SMSA, the Kalamazoo

area is not heavily concentrated in automobile production. In 1982, the transportation equipment industry accounted for only 9.1 percent of manufacturing employment in the area, well below the 35.1 percent share of the state. Fabricated metal production (SIC 34) accounted for 14 percent of the areas manufacturing employment in 1977 with the bulk of activity linking to the automotive industry. Nevertheless, the Kalamazoo SMSA has one of the most diversified manufacturing bases among the metropolitan areas in Michigan. In addition, a large state university, Western Michigan University, and several colleges (Kalamazoo's College, Kalamazoo's Valley Community College, etc) are located in this area. This heavy concentration of higher educational institutions makes the Kalamazoo SMSA similar to the Lansing-East Lansing and Ann Arbor SMSA's in this respect.

In terms of growth and cyclical stability the several indicators analyzed in this study show that the Kalamazoo area has a relatively high degree of cyclical stability and fairly strong growth. Looking at employment behavior in the area during the severe recession of 1973-1975, we find that during these unstable years total wage and salary employment increased by 2.3 percent in the Kalamazoo area, compared to a statewide drop of 4.3 percent. In fact, Kalamazoo was the only SMSA that experienced a significant growth in total employment among all 12 metropolitan areas. The relatively low decline in manufacturing employment during this

recession was offset to a large extent by increases of employment in non-manufacturing activities (10 percent) and 11 percent in government employment. This area experienced the highest increase in non-manufacturing employment during 1973-1975 recession in the MIR. While the size and stability of the non-manufacturing and government sectors contributed to the overall stability of wage and salary employment in this area, it should be noted that it exhibited less severe cyclical swings compared to other metropolitan areas in Michigan. As noted above, this is due to the fact that the area does not specialize in the highly sensitive durable goods manufacturing, particularly in auto-related production, to the extent evident in most other Michigan metropolitan areas.

3.3 Industry Mix and Employment Behavior

a. Bay City SMSA

Over the twenty year period, the Bay City SMSA had a negative movement in employment, indicating that the area had 639 fewer jobs than it would have had if it had kept pace with the national growth rate. The main sector responsible for this negative performance was manufacturing, which for that period lost 4,660 employment opportunities. Despite the overall unfavorable structure of the area's economy, not all sectors had a negative performance.

Wholesale trade, finance and the services sectors had a positive factor, indicating that these sectors grew faster than the national average. During the 1962-1972 decade, Bay

City SMSA total wage salary employment grew from 23,900 workers in 1962 to 30,500 workers in 1972. This constituted a 27.6 percent increase, lower than the state's 33 percent growth. During this decade the area registered a negative industry mix factor due to a high concentration of employment in durable goods manufacturing. Manufacturing employment grew slower than the nation's average. This sector was responsible for 94 percent of all the employment opportunities lost between 1962 and 1972. The non-manufacturing component, had a positive industrial mix factor, as an indication that these sectors (wholesale trade, finance and services) grew faster than the national average. The results of the industry mix factors for the 1972-1982 decade, show that the unfavorable structure of Bay City worsened under the economic pressure of the several recessions that affected the nation in this period. Manufacturing, appeared as the most recession sensitive of all sectors. Within the non-manufacturing activities, the construction sector (SIC 15) exhibited a high degree of cyclical sensitivity, measured by total employment in the local construction industry. During the 1973-1975 recession declined in construction employment was more severe than in all other sectors of the Bay City structure. While manufacturing employment fell by 8.8 percent, construction employment declined by 23.0 percent, four percentage points higher than the state. In fact, this was the most severe

drop in construction employment in the MIR. Between 1972-1982 construction lost 179 jobs opportunities in the area.

b. Grand Rapids SMSA

Between 1962 and 1972 period, the Grand Rapids SMSA total wage and salary employment grew from 148,500 workers in 1962 to 203,700 workers in 1972. However, the economic structure of this area had a high concentration of its employment in slow growing industries, particularly manufacturing. Employment in the manufacturing sector grew slower than the national average, producing a negative industry mix factor. This sector was responsible for 96 percent of all the employment opportunities lost during this ten year period. Despite the rapid increase of non manufacturing employment in the area, Grand Rapids SMSA had a total net loss of 5,669 job opportunities between 1962 and 1972.

The results of the analysis for the 1972-1982 decade, shows that the economic structure of Grand Rapids did not worsen under the effects of the economic recession occurred during this period. A lower concentration of employment into the highly cyclical sensitive motor vehicle transportation equipment sector and a rapid increase in services sector, tempered negative trends in employment. Due to an unfavorable economic structure, the Grand Rapids SMSA obtained a negative industry mix factor, however, the loss of 3,804 job opportunities in the area was relatively lower compared to the losses in the 1962-1972 period. Again,

manufacturing had the greatest responsibility in producing this negative result, due to its sensitivity to cyclical slowdowns. Within non-manufacturing, transportation, public utilities and the construction sector exhibited a negative industry mix factor. Overall, construction loss a total of 1,447 job opportunities showing a high degree of cyclical sensitivity. The service sector produced a positive industry mix factor indicating that it grew faster than similar activities nationwide. As a result, 13,445 job opportunities were created in the area.

The general behavior of total employment suggests that the Grand Rapids SMSA was one of the most cyclically stable metropolitan areas in Michigan. Such stability appears to be tended to industrial diversification and less reliance on the automobile industry than in most other metropolitan areas in the state, at the expense of having the second lowest average weekly wages among all 12 metropolitan areas of Michigan.

c. Kalamazoo SMSA

In terms of industrial mix and employment behavior, the analysis show in Table 3.2a that the Kalamazoo SMSA had a negative industrial mix factor for the period 1962-1982. These results indicate that the area despite its increasing rate of diversification still had the majority of its employment located in slow growing industries. Separate from national affects, all sectors combined produced during the twenty-years of the study a reduction in job

opportunities of over 10,000 jobs, due to the unfavorable industrial structure of the area.

Between 1962 and 1972 the manufacturing sector lost more than 6,000 job opportunities far more than the gains produced by the non-manufacturing sectors combined. Wholesale trade, finance and the service sectors appeared to be growing faster than similar sectors at a national level, however, their contribution was shadowed by the poor performance of manufacturing. During the 1972-1982 decade, the effects of several recessions made the situation worse for the economy of all SMSA's of the state, particularly those with a large share of employment located in manufacturing. Fortunately, the Kalamazoo metropolitan area with a diversified economy appeared to suffer less than most other areas. Total employment in the area increased from 89,300 workers in 1972 to 105,500 workers in 1982, representing an increase of 18.1 percent. Total wage and salary employment in its area proved to be the least recession sensitive among all metropolitan areas of the state.

Despite this advantage over other metropolitan areas of the state, during the 1972-1982 decade this area lost 4,599 jobs. Manufacturing lost 10,257 job opportunities in the area reflecting its sensitivity to changes in the economy. Within, the non-manufacturing sector, both the construction and the transportation and public utilities also experienced job decreases. During the 1973-1975 recession, the

construction sector (SIC 15) experienced a drop in its employment by only 7.1 percent compared to a statewide decline of 15.5 percent.

Overall, then, the Kalamazoo SMSA was in terms of wage and salary employment the most cyclically stable metropolitan area in the state. However, the employment distribution in the area appears to be concentrated in slow growing industries, particularly manufacturing.

In summary, the behavior of employment in the MIR during the 1962-1982 period, appears to be closely linked to the degree of concentration in durable goods manufacturing, particularly auto related industries. As a consequence, areas such as the Flint SMSA and the Benton Harbor SMSA, exhibited extreme sensitivity to economic slowdowns. In addition, these areas experienced a great deal of variation in terms of economic growth and creation of job opportunities. On the other hand, areas less specialized in automobile production were characterized by relative cyclical stability compared to the other metropolitan areas in the state.

CHAPTER FOUR
THE IMPACT OF SECTORIAL COMPETITIVENESS
ON THE EMPLOYMENT OF THE MIR

INTRODUCTION

This chapter will focus its attention on the comparative advantage of Michigan Industrial Region (MIR) in relation to the rest of the nation during the 1962-1982 period. The first part of this chapter will examine the regional competitive performance, as well as the comparative advantage of each employment sector within the regional economy. In its second part, this chapter will look at the inter-metropolitan area differential in sectorial competitiveness and relative position in terms of:

- a. attracting growth
- b. locational advantages
- c. total net employment shifts.

The competitive share component of the shift-share analysis allows us to measure the ability of a region's industry and to expand or shrink its share of growth in a particular sector. Share differential or efficiency differences will occur between regions due to the fact that some regions are expanding in certain employment sectors more rapidly than other regions. The rate of growth at which a given region or area expands is directly related to its access to markets for its production at competitive costs. Thus, regions/areas that show a positive competitive share of employment are those with a better access to basic inputs or to markets compared to other regions/areas engaged

in the same activity. An upward share of employment would suggest that the area has a greater locational (comparative) advantage for the operation of giving activities or industries. The results of each sector's performance can be aggregated to estimate if the region is more/less competitive in securing additional employment over that due to national growth and its industry mix.

A. COMPETITIVE SHARE OF EMPLOYMENT IN THE MIR.

During the period of 1962-1972, Michigan industrial region experienced an overall positive comparative advantage. In this ten year period, the region gained 40,340 jobs over that due to national economic trends and its industrial composition. However, not all sectors analyzed had an increase of employment share during this time (Table 4.1). The region experienced several advantages in relation to the nation, particularly in the non-manufacturing sector. Comparative advantages were observed for employment located in the fast growing construction, finance, and services industry. The finance sector (SIC 60-67) made the highest contribution, producing 26,689 jobs, followed by the services sector (SIC 70-89) with 7,801 new jobs gained for the region. On the other hand, the manufacturing sector had a negative contribution in terms of competitive share. This sector lost 13,820 jobs. The transportation and public utilities and wholesale trade sectors together lost more than 14,000 job opportunities.

The employment gains of the fast growing and more competitive sectors did however offset the loss produced by the less competitive sectors. It is important to note, however, that most of these new jobs created in the area during the 1962-1972 period, due to a favorable competitive position, were relatively low paying. Furthermore, the competitive advantage of construction activities during this period may not be sustainable, due to the fact that this sector is closely tied to the volatility of the market. Therefore, construction represents a highly sensitive industry with substantial unemployment rates during recessionary periods.

The Michigan's Industrial Region experienced a negative net shift of employment between 1962 and 1972. This is the result of a negative industry mix component that produced a loss of 64,199 employment opportunities, outweighing the effects of the favorable competitive position which generated 40,340 in the area. As a result, the total net-effect of both components produced a loss of 23,859 jobs during this period.

During the 1972-1982 decade, Michigan Industrial region experienced a significant deterioration in terms of the comparative advantage of its industries. The region's performance was greatly affected by the three recessions that hit the national economy during this period. In fact,

Table 4.1
Competitive Share Factor
Michigan Industrial Region
Between 1962-1972

Area	Const.	Manftg.	Transp.	Fin.	Svc.	Total
A. Arbor	-102	4970	-876	771	1316	7873
B. Creek	-201	-1609	-676	186	-214	-3748
Bay City	-341	-4859	-70	-20	-734	-1511
B. Harbor	2959	20115	-70	15	241	25656
Detroit	1525	-4264	-7255	-6746	-5374	-16093
Flint	-264	-10231	-328	621	1710	1629
Jackson	359	-1311	-646	59	896	-1517
G. Rapids	-1226	936	-3421	19	4386	7914
Kalamazoo	-783	-3610	-105	206	1446	-2501
Lansing	237	1351	-987	1813	3325	11680
Muskegon	-301	-6644	-17	-329	64	-6793
Saginaw	-402	4468	-1734	795	7399	4501
MIR	1045	-13820	12355	26689	7801	40340

Source: Michigan Employment Security Commission.

the competitive advantage that the region posed in the previous decade was completely reversed. All sectors that made up the industrial composition of the region suffered severely. None were able to match the growth in similar sectors nationwide. Within the non-manufacturing sector, we find that sectors like finance that experienced relatively high growth in the past decade had a drastic reverse performance and lost more than 57,000 jobs during this period (Table 4.2).

The wholesale trade sector had the largest decline within non-manufacturing employment, losing 194,416 jobs during this highly unfavorable period. Manufacturing also had its share of responsibility in the negative competitive performance of the region, by losing 206,529 jobs during this period. As a result of this highly unfavorable competitive performance, the origin had an overall loss of 688,391 work opportunities during the 1972-1982 period. In addition to this competitive disadvantage that the region experienced during the 1972-1982 period, it also had an unfavorable industry mix factor, indicating that majority of employment was located in slow growth industries. As a result, the combination of both components of the analysis show that the region had a net total employment loss of 783,610 jobs.

Table 4.2
Competitive Share Factor
Michigan Industrial Region
Between 1972-1982

Area	Const.	Manftg.	Transp.	Fin.	Svc.	Total
A. Arbor	-1043	-4629	704	628	4544	130
B. Creek	-803	-7790	-633	-760	-3627	-18716
Bay City	-492	-1334	-777	428	-1083	-7324
B. Harbor	-3319	-10907	-177	-322	-1735	-22306
Detroit	-32484	-148301	-25319	-14979	-77509	-476481
Flint	-3442	-15776	-1706	-565	-5945	-42070
Jackson	-1103	-5463	-129	-483	-2581	-15057
G. Rapids	-2049	7830	304	169	-7384	-2063
Kalamazoo	-991	-2719	435	112	483	-6779
Lansing	-2810	-3543	984	-220	-7998	-39259
Muskegon	113	-5081	-309	-444	-1989	-11281
Saginaw	-1795	-8617	303	-405	-3634	-21362
MIR	-50218	-206329	-26320	-57527	-115458	-688391

Source: Michigan Employment Security Commission.

B. Differential Shifts and Employment Behavior

This section of the study will examine the competitive share component of Michigan's Standard Metropolitan Areas (SMSA) to establish differences in performance related to the efficiency of each area to secure employment compared to other areas nationwide. Also, sectorial competitiveness will be examined to understand which sectors within the local structure had a negative/positive contribution in the overall performance of the local economy. To facilitate this presentation, all metropolitan areas have been grouped into three clusters, based on the percentage of employment lost in proportion to total local employment in 1982.

1.0 First Cluster Characteristics.

The first cluster is made up of those SMSA's that experienced employment loss above 30 percent: Benton Harbor, Battle Creek, Jackson and the Detroit SMSA's.

1.1 Benton Harbor SMSA Competitive Performance

The Benton Harbor SMSA exhibited during the 1962-1972 decade a positive competitive position. The largest employment contribution was produced by the manufacturing sector with a gain of 20,115 jobs (see Table B.3 in Appendix B). Within non-manufacturing activities we find that the main contributors were wholesale trade and construction with 2,062 jobs and 2,959 jobs, respectively. On the other hand, the transportation and public utilities sector showed a loss

of 70 jobs, due to a slight unfavorable competitive position. The large gains produced by the rest of sectors largely outweighed the minor loss produced by transportation.

During the 1972-1982 decade, the Benton Harbor SMSA fell short of its performance in the previous decade. All sectors exhibited a negative competitive performance when compare to national standards. There is no doubt that the economic instability caused by the recessions affected severely the economy of this area. The greatest loss was produced by manufacturing with 10,907 jobs, followed by wholesale trade with a decline of 5,695. All sectors combined, produced a reduction of 22,306 jobs in the area due to the unfavorable competitive position of its economic sectors during the 1972-1982 period.

In summary, the Benton Harbor SMSA suffered the most severe reversals among the 12 metropolitan areas of the state. This area had between 1962 and 1972 both a favorable industry mix and a positive competitive position, but in the following decade (1972 -1982) the situation was reversed in both components. During this period this area experienced a highly unfavorable industry mix and an economy unable to meet competitive standards of other sectors nationwide..

1.2 Battle Creek Competitive Performance

The Battle Creek SMSA exhibited a very unfavorable competitive position during the twenty years analyzed in this study. Between 1962 and 1972, this area lost 3,748 jobs due to a weak competitive performance.

In fact, all but one sector (Finance) experienced decline in terms of employment opportunities (see Table B.5 in Appendix B). Among those with a negative competition performance, we find that wholesale trade and manufacturing experienced the lowest competitiveness by losing 1,846 and 1,609 jobs respectively. On the other hand, the finance sector gained 186 jobs because of a favorable competitive position. The government sector also contributed to the area with 612 jobs. As a result of the favorable competitive position combined with a negative industry mix, the Battle Creek SMSA had a net total employment loss of 5,867 jobs between 1962 and 1972. The poor competitive performance of this highly industrialized area was made worse during the 1972-1982 period. Between 1972 and 1982, the Battle Creek SMSA competitive position deteriorated drastically, losing a total of 18,716 jobs (see Table B.6 in appendix B). In summary, the economic structure and sectoral competitiveness of the Battle Creek SMSA during the 1962-1972 and 1972-1982 periods did not enjoy a favorable position. In both decades the poor competitive performance of the industrial body accelerated the areas employment situation in a downward trend.

1.3 Jackson Subregion Competitive Performance

The Jackson SMSA exhibited a negative performance in terms of competitive position between 1962 and 1982. During the 1962-1972 decade, most of the sectors of this area's economy had a negative competitive status (see Table B.7 in appendix B). Typical of all metropolitan areas of the state highly skewed towards durable goods production, we find that manufacturing had the worse performance. The manufacturing sector loss 1,311 jobs. Transportation and public activities and the wholesale trade sector also produced losses, in terms of competitiveness. Together, those two sectors lost 1,160 jobs opportunities. On the other hand, the service sector gained 896 jobs. The favorable competitive position of the service sector was the most significant in terms of employment gain in the Jackson SMSA. Construction activities in the area also exhibited a positive competitive position. However, the employment gains achieved by the service and the construction sector were not enough to outweigh the losses produced by the other sectors. As a result, the area lost a total of 1,517 job opportunities due to a negative competitive status (see Table B.7 in Appendix B).

Between 1972 and 1982 the Jackson SMSA competitive position was made worse, to a point where there was not a sector that appeared with employment gains. The ability of the area to secure employment in terms of competitiveness was weakened significantly during this recessionary period (see Table B.8 in Appendix B). Again, manufacturing had the

worse performance and experienced a loss of 5,463 job opportunities. The wholesale trade sector did not perform better than similar activities nationwide, declining its share of employment by 4,099 jobs. As a whole, the Jackson SMSA loss 15,057 jobs due to a negative competitive performance during the 1972-1982 period. The interplay of a negative competitive position and an unfavorable industry mix produced a net total employment loss of 17,248 jobs. It is important to note, that the majority of employment loss in the Jackson area during the twenty years period (1962-1982) was mainly determined by the very unfavorable competitive performance of its industries.

1.4 Detroit Competitive Performance

As it was mentioned earlier, the Detroit Metropolitan area is the most important SMSA in the state. During the 1962-1972 period, this area experienced a negative competitive position. The wholesale trade experienced a negative competitive performance, producing a loss of 13,807 jobs. The loss of employment in the whole trade sector was the most significant in terms of absolute numbers. The manufacturing sector experienced a loss of 4264 jobs, the lowest employment decline among those sectors that experienced a negative competitive performance. The construction sector was the only activity besides government that increased its employment share. Overall, the combined effect of the competitive performance of the Detroit SMSA economic activities, produced a loss of 16,093 jobs between

1962 and 1972. shows that the competitive situation for the Detroit SMSA worsened during the 1972-1982 period (see Table B.10 in Appendix B). At this time, we find that there was not an industry in the area that had a positive competitive performance. The manufacturing sector had a decline of 148,301 jobs, representing more than 32 percent of the total employment loss of the area. In summary, during the 1962-1972 decade, the Detroit SMSA had both a negative competitive position and an unfavorable industry mix producing a total net loss of 48,877 jobs. Between 1972 and 1982, again we find this area had a negative competitive situation and a negative industry mix producing a net total employment loss of 520,042 jobs.

2.0 Second Cluster Characteristics

The second cluster is made up of those SMSA's that experienced a moderate loss of employment (between 20 and 30 percent) in proportion to total labor.

2.1 Saginaw SMSA Competitive Performance.

During the 1962-1972 period, the Saginaw SMSA exhibited a positive competitive position. This area was able to increase its share of employment due to a competitive advantage over similar activities in the nation (see Table B.11 in Appendix B).

The manufacturing sector had the largest employment contribution, increasing its share of employment with 4,468 new jobs. The combined effect of several non-manufacturing sectors were also significant in terms of employment contribution. The finance sector produced 795 jobs followed by the gain of 739 jobs in the service sector. On the other hand, we find that the construction sector and the transportation and public utilities sector exhibited a negative competitive position. The former had an employment decline of 402 jobs while the latter lost 1,734 job opportunities in this area. The performance of the Saginaw SMSA, produced a total gain of 4,501 jobs due to the overall competitive advantage of the industrial structure of the area during the 1962-1972 period.

Between 1972 and 1982, the competitive situation of this area changed significantly. During this period the Saginaw SMSA experienced a negative competitive position (see Table B.12 in Appendix B). The transportation and public utilities sector had the most severe decline in employment opportunities experiencing the loss of 31,429 jobs. The manufacturing sector suffered from this unfavorable competitiveness losing 8,617 jobs. Overall, the Saginaw SMSA had a net total loss of 53,094 jobs between 1972 and 1982. This represents one of the largest drops in employment opportunities for a metropolitan area of this size in this state.

In the twenty year period covered in this analysis, we find that the competitive position have been a determining factor, both in the net total employment gain of the 1962-1972 period and in the net total employment loss during the 1972-1982 decade.

2.2 Flint SMSA Competitive Performance

During the 1962-1972 period the Flint SMSA exhibited a positive competitive position, indicating that the area gained additional jobs over that due to national economic trends. The wholesale trade sector increased its employment share by gaining 6,653 new jobs opportunities for the area. The manufacturing sector was highly uncompetitive during this period. This sector loss a total of 10,231 jobs or 96 percent of all jobs loss in the area (see Table B.13 in Appendix B). Fortunately, the job gains produced by wholesale trade, finance (621), services (1,710) and government 3,468 were enough to offset the losses produced by construction (264), transportation 328 and manufacturing. As a result, the area as a whole, had a positive competitive position gaining 1,629 new jobs. During the 1972-1982 period the Flint SMSA had a negative performance both in competitive position and in industrial mix (see Table B.14 in Appendix B). The economic instability of this period greatly affected the economy of the Flint SMSA due to its high concentration of employment in the recession sensitive durable goods manufacturing. All sectors of the economic structure of this area exhibited a negative competitive

position. The manufacturing sector was the most affected by losing 15,776 jobs, followed by wholesale trade activities with a total loss of 13,706 employment opportunities. The combined effect of the Flint SMSA competitive position and industry mix between 1972 and 1982 produced a net total employment loss of 54,278 jobs.

In summary, between 1962 and 1972, Flint SMSA enjoyed a favorable competitive position but the unfavorable industry mix outweighed the competition advantage of the areas economy. Between 1972 and 1982 the competition advantage was loss and the negative industry mix factor was maintained, producing greater employment losses in the area.

3.3 Bay City SMSA Competitive Performance

The Bay City SMSA exhibited a negative performance in terms of competitive position between 1962 and 1982. During the 1962-1972 decade, we find that all sectors of the economy, with the exception of government, had a negative competitive status. The Wholesale Trade and the finance activities failed to capture their share of employment when compared to national standards of efficiency. Together, these sectors lost more than 1,500 jobs, representing 63 percent of total employment decline in the area. The manufacturing sector appeared to be less competitive in this area reducing employment opportunities by 485 jobs. The employment gains of the government sector (877) did not alleviate the situation for the Bay City area because of the low performance of all the other sectors. Overall, the Bay

City with the negative competitive position of its economy, combined with losses produced by a unfavorable industry mix had a net total employment loss of 1,954 jobs between 1962 and 1972 (see Table B.15 in Appendix B). Looking at the following decade (1972-1982), Table B.16 (see Appendix B) shows that the employment situation in the area did not improve, in terms of competitive position. The ability of each sector to increase its share of the national growth was weakened severely, particularly the manufacturing sector. As a whole, the Bay City SMSA declined by 7,324 jobs its share of employment.

In summary, the Bay City SMSA experienced during the 1962-1982 period an industrial structure that was unfavorable both in terms of competitiveness and industrial mix. However, the employment loss in the area was more intensively determined by the weak competitive performance of its economic sectors.

2.4 Lansing-East Lansing SMSA Competitive Performance

During the 1962-1972 decade, the Lansing-East Lansing SMSA exhibited a positive competitive position. The largest employment contribution was in the service sector with a gain of 3,325 jobs. The wholesale trade sector also exhibited employment gains of over 3,000 jobs. On the other hand, the only sector that did not experience a positive competitive position was transportation and public utilities with an employment decline of 987 jobs. All sectors combined produced for the area a total gain of 11,687 jobs.

In consequence, the effects of the competitive position, added to the favorable industry mix, produced a net total employment gain of 12,028 new jobs in the area (see Table B.17 in Appendix B). It is evident that this increase in employment opportunities was controlled by the competitive position of the Lansing-East Lansing SMSA industries.

During the 1972-1982 decade, the Lansing-East Lansing SMSA competitiveness fell short of its performance during the past decade. The majority of the area's industries experienced an unfavorable competitive performance. The service sector exhibited the most dramatic change, from a gain of over 3,000 jobs in the 1962-1972 period to a loss of 7,998 jobs between 1972 and 1982. Another sector that suffered a loss in employment was wholesale trade with a shrink in its employment opportunities of 8,276 jobs. On the other hand, the only sector that experienced employment gains due to a favorable competitive position was the transportation and public utilities sector. It is interesting to note, that this was the only sector that had a negative competitive performance in the previous decade, but improved its competitive situation during the 1972-1982 period by gaining 984 new jobs. The combined effect of all sectors of the Lansing-East Lansing SMSA produced a total loss of 17,396 employment opportunities during this unstable decade.

In summary, the Lansing-East Lansing SMSA was blessed with an employment gain of more than 12,000 jobs during the

1962-1972 period, due to a highly favorable competitive position of its economic sectors. In contrast, this situation changed between the 1972 and 1982 period where we find both a negative competitive position and an unfavorable industry mix. It is important to note that in the twenty year period, the behavior of employment in the Lansing-East Lansing SMSA was controlled by the competitive performance of its industries.

2.5 Muskegon SMSA Competitive Performance.

During the 1962-1972 decade, the Muskegon SMSA exhibited a negative competitive position (see Table B.19 in Appendix B). The manufacturing sector experienced the worst performance losing 6,644 jobs during this period. The wholesale trade activities in the area, also declined in employment opportunities by 810 jobs. On the other hand, the service and government sector exhibited an employment increase due to favorable competitive performance. Service activities gained only 64 new jobs, while the government sector contributed with 1,244 jobs. The combined performance of all sectors produced a total net loss of 6,793 jobs in the Muskegon SMSA.

During the 1972-1982 decade, the competitive situation of the Muskegon SMSA did not improve, in fact, it became worse (see Table B.20). Only the construction sector produced gains in terms of competitiveness. This activity gained 113 jobs during the 1972-1982 decade due to a favorable competitive performance. The combined performance

of the major economic activities in this area, produced in terms of competitiveness a net total employment loss 14,644 jobs.

In summary, the Muskegon SMSA had a negative competitive position and an unfavorable industry mix during the twenty years here analyzed. Through the whole period manufacturing had the worse competitive performance and due to its size was the controlling sector in this areas general employment behavior.

3.0 Third Cluster Characteristics.

The third cluster is made up of the SMSA's that experienced the smallest amount of employment loss (below 10 percent) in proportion to total employment, in terms of competitive advantage.

3.1 Kalamazoo SMSA Competitive Performance

During the 1962-1972 decade, the Kalamazoo SMSA exhibited a negative competitive position, indicating that the combined competitive performance of the economic activities of this area were below the national standards (see Table B.21 in Appendix B). The manufacturing sector had the worst competitive performance. This activity lost 3,610 jobs, more than 80 percent of the total employment lost in this area. The construction sector also exhibited a negative competitive position, by losing 783 jobs. On the other hand, the service sector made the highest contribution of employment by increasing its share with 1,446 new jobs.

Adding the contribution of all sectors of the Kalamazoo SMSA, we find that the area lost 2,501 jobs due to overall unfavorable competitive performance. Between 1972 and 1982, the competitive situation did not improve, (see Table B.22 in Appendix B) but it did not get significantly worse, as in most metropolitan areas of the state. In fact, manufacturing activities in the area improved their competitiveness by losing less jobs during this period than in the previous decade, a highly unusual situation among the metropolitan areas in the state. The wholesale trade and the manufacturing sectors experienced the major losses with 3,121 jobs and 2,719 job loss, respectively. The modest gain of employment opportunities by the service sector (483) and the transportation and public utilities sectors were not enough to offset the losses produced by wholesale trade and manufacturing. As a result the Kalamazoo SMSA lost 6,779 job opportunities due to the overall negative performance of its economic sectors.

3.2 Grand Rapids SMSA Competitive Performance

During the 1962-1972 period the Grand Rapids SMSA exhibited a positive competitive position, indicating that this area was able to increase its share of employment by gaining additional jobs over those due to national trends and industrial mix (see Table B.23 in Appendix B). The service sector experienced the largest gains, increasing its employment share with 4,386 new jobs. Another positive contribution came from the wholesale trade sector which

produced 4,213 jobs due to a favorable competitive performance. The contribution of manufacturing activities in the area (936) was not as large but nevertheless important, in terms of new high paying jobs for the area. On the other hand, there were two sectors that did not produce employments gains in relation to their competitiveness. These were the construction and the transportation and public utilities sector with a decline of 1,226 job opportunities and 3,421 jobs opportunities respectively. The total contribution of all sectors produced for the area a net increase of 7,914 job opportunities.

During the 1972-1982 period we find that the Grand Rapids SMSA lost the competitive advantage that many of its sectors enjoyed in the past decade (see Table B.24 in Appendix B). While the manufacturing sector decreased its competitive gains of employment in most of the state metropolitan areas during this recessionary period, we find that in the Grand Rapids SMSA it exhibited increase. The low concentration of manufacturing employment in the highly sensitive motor vehicle in this area is partly responsible for the favorable performance of the manufacturing sector in this area. On the other hand, the service sector experienced the most severe employment decline by losing 7,384 jobs. Overall, the Grand Rapids SMSA experienced a net lost 2,063 job opportunities during the 1972-1982 decade.

In summary, the Grand Rapids SMSA had between 1962 and 1972 a favorable competitive position that outweighed the

losses produced by a negative industry mix, as a result producing a net total employment gain of 2,245 jobs. Between 1972 and 1982, both the industry mix and the competitiveness position were unfavorable, resulting in a net total employment loss of 5,867 jobs.

3.3 Ann Arbor SMSA Competitive Performance

During the 1962-1972 decade, this area had a favorable competitive share of employment. This suggests that the Ann Arbor SMSA gained an additional 7,873 jobs beyond the ones produced in the area by the effects of the national trend and its industrial mix component (see Table B.25 in Appendix B). This greater share of employment was the result of an above average performance of its economic activities compared to similar sectors nationwide. This area experienced a superior competitiveness over the rest of the nation in most of its economic sectors. Manufacturing activities exhibited the best performance, contributing 4,970 jobs. In fact, this sector produced 64 percent of all new jobs created in the Ann Arbor SMSA between 1962 and 1972. Within the non-manufacturing sector, we find that wholesale trade and service activities were highly competitive. The latter gained 1,316 jobs while the former exhibited an upward share of its employment with 2,115 new job opportunities. On the other hand, we find that the construction sector and transportation and public utilities sector exhibited a downward share of employment, in terms of competitiveness. The combined effect of the Ann Arbor SMSA

competitive position and industrial mix between 1962 and 1972 produced for the area a total net employment gain of 7,873, independent from national economic trends. During the 1972-1982 period, the Ann Arbor SMSA exhibited an overall upward shift in its sectoral competitiveness (see Table B.26 in Appendix B). All sectors combined produced 130 new job opportunities in the area. Though few in number, these jobs represent a significant contribution compared to the poor performance of the region and the state, as a whole. The economic instability of this decade had its toll on those sectors with high degree of cyclical sensitivity. Therefore, manufacturing and construction exhibited drastic downward shifts in their competitive positions, these sectors had a combined loss of 5,672 jobs. Despite the poor performance of manufacturing and construction, the service activities increased their share of employment by 4,544 jobs, due to a favorable competitive performance, compared to similar activities nationwide.

In summary, during the 1962-1972 decade, the Ann Arbor SMSA enjoyed a net total employment gain due to a favorable competitive position that was able to outweigh the losses produced by an unfavorable industry mix. However, during the 1972-1982 period, the effects of the unfavorable industry mix outweighed the effect of the favorable competitive position of the areas economy. Therefore, while the region grew faster than the nation as a whole between

1962 and 1972, it fell behind the nation between 1972 and 1982.

(In summary, the analysis of the sectoral competitiveness of the MIR during the 1962-1982 period showed that the area did not enjoy a favorable position. In the twenty year period the poor competitive performance of the region's industrial body accelerated the area's employment in a downward trend. At the SMSA level, the analysis showed a close link between industrial diversification and employment growth. In general, areas with a high concentration in auto-related manufacturing experienced a higher proportion of job losses compared to the other SMSA's. The lack of competitiveness in the manufacturing industries is probably related to technological change (primarily automation) which is essential for the region, in order to keep pace with increased industry-wide competition.

CHAPTER FIVE

CONCLUSIONS

The four major objectives of this study were:

- (1) What were the changes that occurred in employment and in the economic composition of Michigan and in its industrial region ?
- (2) What industrial sectors in the local economy of each subregion (SMSA) appeared to be the most sensitive to the swings in the national economy ?
- (3) Which subregions (SMSA) exhibited the greatest degree of cyclical sensitivity?
- (4) How did the degree of concentration or industrial specialization of an area correlate with differences in performance in a cyclical economy ?

The major findings are as follows:

First, the study has indicated that total wage and salary employment in the Michigan Industrial Region (MIR) grew significantly slower than the nation between 1962 and 1982. Breaking down the analysis by decades it was discovered that the region distanced itself from the national growth pace between 1972 and 1982. During this period, the region's employment grew by less than 2 percent, while the nation increased its total employment share by 31 percent during the same period. This situation is not all together surprising due to the high concentration of employment in the -- highly recession sensitive-- manufacturing, particularly in the durable goods production.

manufacturing, particularly in the durable goods production.

Over the study period, employment in the region has been shifting towards the non-manufacturing sector, while manufacturing employment have been steadily declining.

However, the durable goods component of manufacturing have not changed significantly between 1962 and 1982. This situation increased the chances of the region and the state to see its employment suffer severely any time the nation experienced an economic slowdown. The unfavorable employment situation of the region during the period analyzed was largely a result of the drop in demand for automobiles coupled with the unfavorable competitive position of manufacturing as a whole , particularly during recession years. Moreover, the competitive position that the region enjoyed between 1962 and 1972 radically changed in the following decade, producing a loss of more than a half - million jobs. On the other hand, professional and related services (including mining) appeared the least sensitive to recessions, in fact it was the only sector in the region that increased its net total share of employment during the 1972-1982 period, besides the government sector.

Second, the behavior of the durable goods manufacturing sector within the economic structure of M.I.R. during the period studied, reveals its highly cyclical sensitivity inducing relative large cyclical swings in that sector. This was also true at a subregional level, where these fluctuations contributed significantly to short-run swings

in each area's jobless rate. The size and relative stability of the non-manufacturing sector helped minimize the amplitude of cyclical swings in total employment, overall employment behavior among Michigan SMSA's was quite sensitive over the period examined. Within the non-manufacturing, construction employment exhibited a high degree of cyclical sensitivity, especially striking was the magnitude of contractions which were higher than declines experienced by total manufacturing employment during the three recessions that occurred in this period. The transportation and public utilities sector also experienced cyclical sensitivity during recession years but to a lesser degree than construction and manufacturing. The evidence provided by the shift-share analysis indicated that, as a whole, M.I.R. did not enjoy a favorable industry mix. The Majority of the area's employment was located in slow growing industries. The analysis revealed that the region did not keep pace with growth in the nation, particularly in the manufacturing sector. The drop in demand for automobiles and equipment brought a substantial decline in manufacturing employment compared to the rest of the nation. Industries that provided most of the new jobs created during the 1962-1982 period were service & mining, wholesale trade and finance, however, the new employment opportunities produced by these sectors were not enough to outweigh the losses by manufacturing, construction and transportation.

The third objective was to determine which subregions exhibited the greatest degree of cyclical sensitivity. The analysis of the employment data for each subregion showed variations in response to unfavorable swings of the national economy. The results of the analysis also indicated that there are three distinct groups among the state's metropolitan areas, in terms of sensitivity to recessions. The first group is made up of those areas with heavy dependence on manufacturing activities, particularly the auto related industry. These areas experienced the highest degree of cyclical sensitivity and a severe drop in employment. In this category we find the Benton Harbor SMSA, Flint SMSA, Lansing-East Lansing SMSA, Detroit SMSA and the Jackson SMSA. Among these areas we find that the Benton Harbor SMSA experienced the most drastic decline in total employment (35 percent) during the 1972-1982 period and the weakest economic recuperation during expansion years, making it the metropolitan area of the state with the worst employment performance during the study period. In the second group we find metropolitan areas with an industrial structure that showed a relatively moderate degree of cyclical sensitivity : the Ann Arbor SMSA, Saginaw, Battle Creek SMSA, and the Muskegon SMSA. The third group includes areas that experienced the least sensitivity to recessions and below average relative employment loss. The overall behavior of employment in manufacturing and local total wage and salary employment suggests that the Grand Rapids and the

Kalamazoo SMSA's were the two most cyclically stable metropolitan areas in the state, over the period covered in this study. Such stability appears to be directly related to industrial diversification and a lower concentration of employment in the automobile industry.

In addressing the final objective of this study, the analysis indicated that the degree of dependence of an area's economy on motor vehicle related industries, the higher are the chances of suffering above average unemployment rates during national economic recessions. Clear examples of this fact are the Flint and Grand Rapids SMSA's. The former, experienced sharp declines in total wage and salary employment during the 1972-1982 decade, resulting from the fall off in activity, especially in the auto-related industry. The high dependency on the automobile industry, produced an overall economic crisis and instability in the Flint area with above average unemployment rates. In contrast, the more diversified structure of the Grand Rapids SMSA experienced growth in its manufacturing sector, during the 1972-1982 period. In addition, it had the highest increase in total wage and salary employment and the steeper gain in manufacturing employment among all 12 metropolitan areas of the state between 1962 and 1982. Moreover, this area registered the second strongest economic recuperation during post-recession years, coupled with one of the lowest unemployment rates among Michigan's metropolitan areas.

The shift-share analysis suggests that areas specializing in auto-related industries, experienced greater than average relative employment loss, during periods of slow economic growth. The vigorous expansion of non-manufacturing employment (services, wholesale trade and finance) partially alleviated the effects of the slow growth in manufacturing. However, the movement towards non-manufacturing, e.g. services, does not guarantee continued economic growth. Declines in manufacturing typically dampened the local service sector's expansion as wage income declines. Reduced growth reduces capital goods production as does the overall shift from goods to services. This negative ripple effects from the slow growing manufacturing to the fast growing non-manufacturing could result in reduced demand for locally derived goods and services. Therefore, continued growth of local non-manufacturing industries and employment is dependent upon the continued vitality of M.I.R. to compete in national and international markets. Overall, the region experienced a pattern of slow growth in manufacturing industries over the 1962-1982 period, while employment in non-manufacturing industries experienced a stronger pattern of economic growth and relative comparative advantage.

IMPLICATIONS OF STUDY

Throughout 1962-1982 the state of Michigan faced severe economic difficulties in each of the recessions that

occurred in that period. Typically the recessions have been deeper and more prolonged in this state than nationally as output of automobile products fell much more sharply than total industrial product. Clearly, Michigan's heavy reliance on the auto industry has been the principal factor responsible for the large amplitude of the fluctuations. Michigan, perhaps more than any other state in the nation, must be concerned about the future of durable goods manufacturing, and more specifically motor vehicle manufacturing. The evidence provided in this study, demonstrates that variations in the state's total wage and salary employment closely followed those of durable goods manufacturing. Motor vehicle employment dominates the Michigan economy to a degree that is unsurpassed by any other industry. About 45 percent of total durable goods manufacturing employment is accounted for by automobile and related manufacturing. The unstable characteristic of the motor vehicle, causes the residents of the state but more directly those employed in this industry, to lose grounds in terms of per capita income during recessions when compared to the U.S. average, but to gain during periods of expansion.

In part, the cyclical nature of employment in the Michigan Industrial Region during the movement towards a more diversified industrial composition, results from a basic connection between manufacturing and non-manufacturing employment. Layoffs in durable goods industries, reduce the

personal income stream which impact negatively on the demand for non-manufacturing goods and services. Reductions in the region's major durable goods industry such as automobiles, created negative ripple effects in a whole complex of related industries. Reductions in the demand for automobiles reduces the demand for steel, glass, plastic, rubber, machine tools, electric components, and general auto parts that further reduced the income stream and employment prospects not only for the region but also for supplier industries in other areas of the state. Therefore, it is not clear what would be required to reduce the cyclical vulnerability of the region other than a complete restructuring of the state's industrial base.

A wider range of industrial activity is needed to mitigate the swings in production and employment in the auto industry and in certain other durable industries. Efforts should be directed toward increasing the rate of growth in the non-durable industries so that the share of all manufacturing jobs accounted for by these more stable industries can increase and thus soften the effects of economic slowdowns in the state.

The report on the shift-share analysis for M.I.R. and for each metropolitan area within the region, provides an excellent take-off point for identifying industries in terms of competitiveness and growth. It pinpoints, in a general way, industries that are growing in the region or in specific areas faster than similar industries in the nation,

and those that have enjoyed a relatively competitive advantage compared to national standards. The analysis has also indicated particular industrial areas which have experienced growth, despite economic adversities. A more detailed study of these areas and their economic structure should be carried out with a higher disaggregation in order to provide useful guidelines in exploiting their locational advantages and promoting development of those industries that seem to hold promise for the state.

Finally, agencies involved in economic development programs should initiate a full scale research effort at a three, possibly four digit SIC level to determine the industries for which M.I.R and state, as whole, are best suited. Analyze with special care the locational advantages of these firms by pinpointing promotional efforts towards expanding firms in these industries. Perhaps, one of the criteria of selection would be the choice of industries which serve to diversify the economy of the state.

APPENDICES

Appendix A

TABLE A.1

Percent Distribution of total Wage and Salary Employment
Benton Harbor SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	52	47	35
-Durable Goods	(76)	(76)	(76)
-Non Durable	(24)	(24)	(24)
Non Manufacturing	38	42	51
Government	10	11	14

Source: Michigan Employment Security Commission. 1984

TABLE A.2

Percent Distribution of total Wage and Salary Employment
Flint SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	57	45	36
-Durable Goods	(94)	(94)	(95)
-Non Durable	(06)	(06)	(05)
Non Manufacturing	33	41	52
Government	10	14	16

Source: Michigan Employment Security Commission. 1984

TABLE A.3

Percent Distribution of total Wage and Salary Employment
Lansing-East Lansing SNSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	31	25	20
-Durable Goods	(89)	(89)	(88)
-Non Durable	(11)	(11)	(12)
Non Manufacturing	37	42	45
Government	32	33	35

Source: Michigan Employment Security Commission. 1984

TABLE A.4

Percent Distribution of total Wage and Salary Employment
Detroit SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	41	36	27
-Durable Goods	(83)	(83)	(83)
-Non Durable	(17)	(17)	(17)
Non Manufacturing	47	49	58
Government	12	15	15

Source: Michigan Employment Security Commission. 1984

TABLE A.5

Percent Distribution of total Wage and Salary Employment
Jackson SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	42	30	25
-Durable Goods	(81)	(81)	(78)
-Non Durable	(19)	(19)	(22)
Non Manufacturing	43	54	58
Government	15	16	17

Source: Michigan Employment Security Commission. 1984

Table A.6

Percent Distribution of Total Wage and Salary Employment
Ann Arbor SMSA

Item	Percent Distribution		
	1962	1972	1982

Total wage and salary employment	100%	100%	100%
Manufacturing	40	34	24
Non-Manufacturing	25	31	42
Government	35	35	34

Source: Michigan Employment Security Commission (MESCC), 1984.

TABLE A.7

Percent Distribution of total Wage and Salary Employment
Saginaw SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	44	42	32
-Durable Goods	(88)	(92)	(90)
-Non Durable	(12)	(08)	(10)
Non Manufacturing	45	46	54
Government	11	12	14

Source: Michigan Employment Security Commission. 1984

TABLE A.8

Percent Distribution of total Wage and Salary Employment
Battle Creek SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982

Manufacturing	46	41	30
-Durable Goods	(56)	(61)	(51)
-Non Durable	(44)	(39)	(50)
Non Manufacturing	40	42	50
Government	14	17	20

Source: Michigan Employment Security Commission. 1984

TABLE A.9

Percent Distribution of total Wage and Salary Employment
Muskegon SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	54	42	32
-Durable Goods	(85)	(86)	(84)
-Non Durable	(15)	(14)	(16)
Non Manufacturing	36	43	51
Government	10	15	17

Source: Michigan Employment Security Commission. 1984

Table A.10

Manufacturing Employment Growth Rates
Michigan SMSA's
1962-1982

Area			

Ann Arbor	17.6	Grand Rapids	29.8
Battle Creek	-24.6	Jackson	-25.0
Bay City	-4.5	Kalamazoo	-3.4
Benton Harbor	-18.4	Lansing-E.L.	9.8
Detroit	-14.7	Muskegon	-30.0
Flint	-17.8	Saginaw	-.4

State Rate=-7.9

Source: Michigan Employment Security Commission, 1984.

TABLE A.11

Percent Distribution of total Wage and Salary Employment
 Bay City SMSA
 1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	36	31	26
-Durable Goods	(79)	(80)	(72)
-Non Durable	(21)	(20)	(28)
Non Manufacturing	54	53	59
Government	10	16	15

Source: Michigan Employment Security Commission. 1984

TABLE A.12

Percent Distribution of total Wage and Salary Employment
 Grand Rapids SMSA
 1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	44	38	32
-Durable Goods	(76)	(75)	(71)
-Non Durable	(24)	(25)	(29)
Non Manufacturing	47	51	57
Government	09	11	11

Source: Michigan Employment Security Commission. 1984

TABLE A.13

Employment Distribution of Durable Goods Manufacturing
Grand Rapids SMSA and Michigan

Sector	Grand Rapids	Michigan
Lumber and Wood Prod. (SIC 24)	2.0	1.4
Furniture and Fixtures (SIC 25)	25.1	3.1
Primary Metals (SIC 33)	6.0	7.6
Fabricated Metals (SIC 34)	22.0	14.8
Machinery (SIC 35)	20.0	19.2
Electrical & Electron. (SIC 36)	6.0	4.4
Transportation (SIC 37)	6.0	44.2

Source: Michigan Employment Security Commission, 1984.

TABLE A.14

Percent Distribution of total Wage and Salary Employment
Kalamazoo SMSA
1962-1982

Sector	Percent Distribution		
	1962	1972	1982
.....			
Manufacturing	46	38	29
-Durable Goods	(42)	(48)	(45)
-Non Durable	(58)	(52)	(55)
Non Manufacturing	37	42	53
Government	17	20	18

Source: Michigan Employment Security Commission, 1984

Appendix B

TABLE B.1

SHIFT-SHARE ANALYSIS
MICHIGAN INDUSTRIAL REGION
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	1040	3363	4403	26297	30700
MANUFACTURING	-13820	-166373	-180193	301393	121200
TRANSPORTATION	-12355	-11421	-23776	39376	15600
WHOLESALE TRADE	-1652	13901	12249	130351	142600
FINANCE	26689	6714	33403	27897	61300
SERVICES	7801	63875	71676	86924	158600
GOVERNMENT	32637	25742	58379	97621	156000
TOTAL	40340	-64199	-23859	709859	686000

Source of Data: Michigan Employment commission.

TABLE B.2
SHIFT-SHARE ANALYSIS
MICHIGAN INDUSTRIAL REGION
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-50218	-15615	-65833	32333	-33500
MANUFACTURING	-206329	-295908	-502237	299337	-202900
TRANSPORTATION	-26320	-15214	-41534	39034	-2500
WHOLESALE TRADE	-194416	128105	-66311	157311	91000
FINANCE	-57527	11155	-46372	43172	-3200
SERVICES	-115458	154443	38985	124515	163500
GOVERNMENT	-38123	-62185	-100308	133008	32700
TOTAL	-688391	-95219	-783610	828710	45100

Source of Data: Michigan Employment commission.

TABLE B.3
SHIFT-SHARE ANALYSIS
BENTON HARBOR SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	2959	47	3006	394	3400
MANUFACTURING	20115	-1729	18386	3114	21500
TRANSPORTATION	-70	-102	-172	572	400
WHOLESALE TRADE	2062	219	2281	2219	4500
FINANCE	15	91	106	394	500
SERVICES	241	1241	1482	1718	3200
GOVERNMENT	334	419	753	1647	2400
TOTAL	25656	186	25842	10058	35900

Source of Data: Michigan Employment commission.

TABLE B.4
SHIFT-SHARE ANALYSIS
BENTON HARBOR SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-3319	-671	-3990	1390	-2600
MANUFACTURING	-10907	-9219	-20126	9326	-10800
TRANSPORTATION	-177	-241	-418	618	200
WHOLESALE TRADE	-5695	2691	-3004	3304	300
FINANCE	-322	128	-194	494	300
SERVICES	-1735	3064	1329	2471	3800
GOVERNMENT	-151	-1011	-1162	2162	1000
TOTAL	-22306	-5259	-27565	19765	-7800

Source of Data: Michigan Employment commission.

TABLE B.5
SHIFT-SHARE ANALYSIS
BATTLE CREEK SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-201	64	-137	537	400
MANUFACTURING	-1609	-4631	-6240	8340	2100
TRANSPORTATION	-676	-147	-823	823	0
WHOLESALE TRADE	-1846	283	-1563	2863	1300
FINANCE	186	191	377	823	1200
SERVICES	-214	1474	1260	2040	3300
GOVERNMENT	612	647	1259	2541	3800
TOTAL	-3748	-2119	-5867	17967	12100

Source of Data: Michigan Employment commission.

TABLE B.6
SHIFT-SHARE ANALYSIS
BATTLE CREEK SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-803	-283	-1086	586	-500
MANUFACTURING	-7790	-7754	-15544	7844	-7700
TRANSPORTATION	-633	-277	-910	710	-200
WHOLESALE TRADE	-4511	2339	-2172	2872	700
FINANCE	-760	279	-481	1081	600
SERVICES	-3627	3447	-180	2780	2600
GOVERNMENT	-592	-1574	-2166	3366	1200
TOTAL	-18716	-3823	-22539	19239	-3300

Source of Data: Michigan Employment commission.

TABLE B.7
SHIFT-SHARE ANALYSIS
JACKSON SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	359	47	406	394	800
MANUFACTURING	-1311	-3260	-4571	5871	1300
TRANSPORTATION	-646	-250	-896	1396	500
WHOLESALE TRADE	-514	244	-270	2470	2200
FINANCE	59	83	142	358	500
SERVICES	896	1008	1904	1396	3300
GOVERNMENT	-360	519	159	2041	2200
TOTAL	-1517	-1609	-3126	13926	10800

Source of Data: Michigan Employment commission.

TABLE B.8
SHIFT-SHARE ANALYSIS
JACKSON SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-1103	-283	-1386	586	-800
MANUFACTURING	-5463	5403	-10866	5466	-5400
TRANSPORTATION	-129	-530	-659	1359	700
WHOLESALE TRADE	-4099	2288	-1811	2811	1000
FINANCE	-483	120	-363	463	100
SERVICES	-2581	2758	177	2223	2400
GOVERNMENT	-1199	-1141	-2340	2440	100
TOTAL	-15057	-2191	-17248	15348	-1900

Source of Data: Michigan Employment commission.

TABLE B.9
SHIFT-SHARE ANALYSIS
DETROIT SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	1525	1847	3372	15428	18800
MANUFACTURING	-4264	-97707	-101971	175971	74000
TRANSPORTATION	-7255	-4568	-11823	25523	13700
WHOLESALE TRADE	-13807	8253	-5554	83654	78100
FINANCE	-6746	4637	-2109	20009	17900
SERVICES	-5374	41550	36176	57524	93700
GOVERNMENT	19828	13204	33032	51868	84900
TOTAL	-16093	-32784	-48877	429977	381100

Source of Data: Michigan Employment commission.

TABLE B.10
SHIFT-SHARE ANALYSIS
DETROIT SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-32484	-9232	-41716	19116	-22600
MANUFACTURING	-148301	-172666	-320967	174667	-146300
TRANSPORTATION	-25319	-10231	-35550	26250	-93000
WHOLESALE TRADE	-135301	78412	-56889	96289	39400
FINANCE	-14979	5889	-9090	22790	13700
SERVICES	-77509	97446	19937	78563	98500
GOVERNMENT	-42588	-33179	-75767	70967	-4800
TOTAL	-476481	-43561	-520042	488642	-31400

Source of Data: Michigan Employment commission.

TABLE B.11
SHIFT-SHARE ANALYSIS
SAGINAW SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-402	107	-295	895	600
MANUFACTURING	4468	-4909	-441	8841	8400
TRANSPORTATION	-1734	-269	-2003	1503	-500
WHOLESALE TRADE	174	388	562	3938	4500
FINANCE	795	133	928	572	1500
SERVICES	7399	1577	2316	2184	4500
GOVERNMENT	461	556	1017	2183	3200
TOTAL	4501	-2417	2084	20116	22200

Source of Data: Michigan Employment commission.

TABLE B.12
SHIFT-SHARE ANALYSIS
SAGINAW SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-1795	-462	-2257	957	-1300
MANUFACTURING	-8617	-10105	-18722	10222	-8500
TRANSPORTATION	303	-445	-142	1142	1000
WHOLESALE TRADE	-6985	3898	-3087	4787	1700
FINANCE	-405	247	-158	958	800
SERVICES	-3634	4060	426	3274	3700
GOVERNMENT	-229	-1343	-1572	2872	1300
TOTAL	-21362	-4150	-25512	24212	-1300

Source of Data: Michigan Employment Commission.

TABLE B.13
SHIFT-SHARE ANALYSIS
FLINT SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-264	1892	-75	1575	1500
MANUFACTURING	-10231	-15145	-25376	27276	1900
TRANSPORTATION	-328	-333	-661	1861	1200
WHOLESALE TRADE	6653	696	7349	96289	14400
FINANCE	621	241	862	1038	1900
SERVICES	1710	2973	4683	4117	8800
GOVERNMENT	3468	1285	4753	5047	9800
TOTAL	1629	-10094	-8465	47965	39500

Source of Data: Michigan Employment Commission.

TABLE B.14

SHIFT-SHARE ANALYSIS
FLINT SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-3442	-880	-4322	1822	-2500
MANUFACTURING	-15776	-23842	-39618	24118	-15500
TRANSPORTATION	-1706	-770	-2476	1976	-500
WHOLESALE TRADE	-13706	8576	-5130	10530	5400
FINANCE	-565	383	-182	1482	1300
SERVICES	-5945	7776	1831	6269	8100
GOVERNMENT	-930	-3451	-4381	7381	3000
TOTAL	-42070	-12208	-54278	53578	-700

Source of Data: Michigan Employment Commission.

TABLE B.15
SHIFT-SHARE ANALYSIS
BAY CITY SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-341	47	-294	394	100
MANUFACTURING	-4859	-1729	-2214	3114	900
TRANSPORTATION	-70	-102	-172	572	400
WHOLESALE TRADE	-738	219	-519	2219	1700
FINANCE	-20	41	21	179	200
SERVICES	-734	853	119	1181	1300
GOVERNMENT	877	228	1105	895	2000
TOTAL	-1511	-443	-1954	8554	6600

Source of Data: Michigan Employment commission.

TABLE B.16
SHIFT-SHARE ANALYSIS
BAY CITY SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-492	-179	-671	371	-300
MANUFACTURING	-1334	-2931	-4265	2965	-1300
TRANSPORTATION	-777	-241	-1018	618	-400
WHOLESALE TRADE	-3926	1987	-1939	2439	500
FINANCE	428	56	484	216	700
SERVICES	-1083	1762	679	1421	2100
GOVERNMENT	-140	-650	-790	1390	600
TOTAL	-7324	-196	-7520	9420	1900

Source of Data: Michigan Employment Commission.

TABLE B.17
SHIFT-SHARE ANALYSIS
LANSING-EAST LANSING SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	237	167	404	1396	1800
MANUFACTURING	1351	-6678	-5327	12027	6700
TRANSPORTATION	-987	-237	-1224	1324	100
WHOLESALE TRADE	3000	629	3629	6371	10000
FINANCE	1813	299	2112	1288	3400
SERVICES	3325	3051	6376	4224	10600
GOVERNMENT	2941	3117	6058	12242	18300
TOTAL	11680	348	120228	38872	50900

Source of Data: Michigan Employment commission.

TABLE B.18
SHIFT-SHARE ANALYSIS
LANSING-EAST LANSING SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-2810	-850	-3660	1760	-1900
MANUFACTURING	-3543	-12303	-15846	12446	-3400
TRANSPORTATION	984	-457	527	1173	1700
WHOLESALE TRADE	-8276	6991	-1285	8585	7300
FINANCE	-220	559	339	2161	2500
SERVICES	-7998	8580	582	6918	7500
GOVERNMENT	-17396	-7580	-3113	16213	13100
TOTAL	-39259	-5060	-22456	49256	26800

Source of Data: Michigan Employment commission.

TABLE B.19

SHIFT-SHARE ANALYSIS
MUSKEGON SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-301	64	-237	537	300
MANUFACTURING	-6644	-5048	-11692	9092	-2600
TRANSPORTATION	-17	-135	-152	752	600
WHOLESALE TRADE	-810	261	-549	2649	2100
FINANCE	-329	100	-229	429	200
SERVICES	64	1189	1253	1647	2900
GOVERNMENT	1244	437	1681	1719	3400
TOTAL	-6793	-3132	-9925	16825	6900

Source of Data: Michigan Employment Commission.

TABLE B.20
SHIFT-SHARE ANALYSIS
MUSKEGON SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	113	-268	-155	555	400
MANUFACTURING	-5081	-6960	-12041	7041	-5000
TRANSPORTATION	-309	-325	-634	834	200
WHOLESALE TRADE	-3723	2389	-1334	2934	1600
FINANCE	-444	112	-332	432	100
SERVICES	-1989	2873	884	2316	3200
GOVERNMENT	152	-1184	-1032	2532	1500
TOTAL	-11281	-3363	-14644	16644	2000

Source of Data: Michigan Employment commission.

TABLE B.21
SHIFT-SHARE ANALYSIS
KALAMAZOO SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-783	137	-646	1146	500
MANUFACTURING	-3610	-6380	-9990	11490	1500
TRANSPORTATION	-105	-154	-259	859	600
WHOLESALE TRADE	-201	413	212	4188	4400
FINANCE	206	149	355	645	1000
SERVICES	1446	1784	3230	2470	5700
GOVERNMENT	546	1066	1612	4188	5800
TOTAL	-2501	-2985	-5486	24986	19500

Source of Data: Michigan Employment commission.

TABLE B.22
SHIFT-SHARE ANALYSIS
KALAMAZOO SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-991	-552	-1543	1143	-400
MANUFACTURING	-2719	-10257	-12976	10376	-2600
TRANSPORTATION	435	-361	74	926	1000
WHOLESALE TRADE	-3121	4049	928	4972	5900
FINANCE	112	223	335	865	1200
SERVICES	483	4826	5309	3891	9200
GOVERNMENT	-978	-2527	-3505	5405	1900
TOTAL	-6779	-4599	-11378	27578	16200

Source of Data: Michigan Employment commission.

TABLE B.23
SHIFT-SHARE ANALYSIS
GRAND RAPIDS SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-1226	334	-892	2792	1900
MANUFACTURING	936	-12939	-12003	23303	11300
TRANSPORTATION	-3421	-615	-4036	3436	-600
WHOLESALE TRADE	4213	1014	5227	10273	15500
FINANCE	19	448	467	1933	2400
SERVICES	4386	4913	9299	6801	16100
GOVERNMENT	3007	1176	4183	4617	8800
TOTAL	7914	-5669	2245	53155	55400

Source of Data: Michigan Employment commission.

TABLE B.24
SHIFT-SHARE ANALYSIS
GRAND RAPIDS SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-2049	-1447	-3496	2996	-500
MANUFACTURING	7830	-23323	-15493	23593	8100
TRANSPORTATION	304	-1083	-779	2779	2000
WHOLESALE TRADE	-4665	11115	6450	13650	20100
FINANCE	169	622	791	2409	3200
SERVICES	-7384	13445	6061	10839	16900
GOVERNMENT	3732	-3133	599	6701	7300
TOTAL	-2063	-3804	-5867	62967	57100

Source of Data: Michigan Employment commission.

TABLE B.25
SHIFT-SHARE ANALYSIS
ANN ARBOR SMSA
1962-1972

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-102	107	5	895	9000
MANUFACTURING	4970	-5406	-436	9736	9300
TRANSPORTATION	-876	-147	-1023	823	-200
WHOLESALE TRADE	2115	286	2401	2899	5300
FINANCE	771	100	871	429	1300
SERVICES	1316	1629	2945	2255	5200
GOVERNMENT	-321	2378	2057	9343	11400
TOTAL	7873	-1053	6820	26380	33200

Source of Data: Michigan Employment commission.

TABLE B.26
SHIFT-SHARE ANALYSIS
ANN ARBOR SMSA
1972-1982

SECTOR	COMPETITIVE SHARE	INDUSTRIAL MIX	NET TOTAL SHIFT	NATIONAL EFFECT	REGIONAL CHANGE
CONSTRUCTION	-1043	-507	-1550	1050	-500
MANUFACTURING	-4629	-11143	-15772	11272	-4500
TRANSPORTATION	704	-253	451	649	1100
WHOLESALE TRADE	-408	3370	2962	4198	7100
FINANCE	628	199	827	773	1600
SERVICES	4544	4405	8949	3551	12500
GOVERNMENT	334	-5414	-5080	11580	6500
TOTAL	130	-9343	-9213	33013	23800

Source of Data: Michigan Employment commission.

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