

Automotive and Other Manufacturing Industries in Michigan: Output, Employment, Earnings, and Collective Bargaining, 1980–2001

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Introduction

As part of the complex of durable manufacturing arrayed around the southern rim of the Great Lakes, Michigan has been a preeminent manufacturing state for more than one hundred years. Dominated by the domestic automotive industry, the state has benefited from the success and consequent wealth of that industry, as well as from the success of manufacturing as a whole. The relative high pay and benefits of manufacturing workers have provided a strong economic foundation for residents and for generous public services. The last quarter century has, however, seen relative stagnation of the manufacturing sector in Michigan, with slower growth of output and declining employment. This trend reflects the slower growth in the manufacturing sector of the United States. It also reflects the concentration of Michigan manufacturing in mature sectors that have not experienced the rapid growth characteristic of new industries, and a shift in investment in new automotive plants to other states and countries, primarily Mexico. The poor performance of manufacturing over the last two decades has implications for the prosperity of citizens and the state of Michigan.

This chapter is divided between an overview of manufacturing in Michigan (Part 1) and a more

detailed consideration of collective bargaining in the automotive industry (Part 2). Part 1 begins with a review of the current state of manufacturing in Michigan. It then considers trends in output, employment, and compensation since 1977 and compares these to trends in the broader Michigan economy, U.S. manufacturing, and other manufacturing states. Part 2 includes an overview of unionization in manufacturing with particular attention paid to the automotive industry. The shift in bargaining from wage and benefit increases to increased job security is explored, as are the declining fortunes of Flint. Part 3 provides a summary and conclusions.

Part 1: Manufacturing in Michigan, 1980–2000

Manufacturing in Michigan. Manufacturing remains an important, if declining, sector of the Michigan economy. In 1999, manufacturing accounted for \$80.7 billion of the \$308.3 billion gross state product of Michigan, or 26.2% of total Gross State Product (see table 8.1). It provided employment to 979,800 of Michigan's 4,679,300 employees, 20.9% of Michigan's workforce (see table 8.4).

Manufacturing is well compensated relative to other sectors. The average annual earnings of

TABLE 8.1**Manufacturing Output: Michigan and the United States, 1977–1999**

Year	Michigan Gross Product (in billions of current dollars)			U.S. Gross Product (in billions of current dollars)			Ratio MI to U.S. Gross Mfg.
	Mfg.	All Sectors	Ratio Mfg. GP/GSP	Mfg.	GDP	Ratio	
1977	\$34.4	\$98.1	35.0%	\$463	\$2,031	22.8%	7.4%
1980	\$32.0	\$113.3	28.3%	\$588	\$2,796	21.0%	5.4%
1985	\$51.6	\$161.1	32.0%	\$804	\$4,213	19.1%	6.4%
1990	\$53.1	\$194.2	27.4%	\$1,041	\$5,803	17.9%	5.1%
1995	\$74.5	\$265.1	28.1%	\$1,289	\$7,401	17.4%	5.8%
1997	\$75.1	\$291.6	25.8%	\$1,380	\$8,318	16.6%	5.4%
1999	\$80.7	\$308.3	26.2%	\$1,497	\$9,269	16.1%	5.4%

sources: Data on United States gross product from The Economic Report of the President. Washington, D.C.: U.S. Government Printing Office, 2002, table B-12. Michigan state product data from Bureau of Economic Analysis, Gross State Product, Regional Accounts Data, Gross State Product for State and for Manufacturing (in millions of current dollars), <http://www.bea.gov/bea/regional>.

manufacturing workers were 56% higher than those of the typical Michigan employee, at \$63,404 for manufacturing as compared to \$40,731 for all employees (see table 8.5). Manufacturing is, however, not homogeneous, and averages conceal large variation in employment and wages. In 1999, hourly earnings ranged from \$11.36 in textile mills (with 3,061 employees in 1997) and \$12.60 in petroleum and coal products manufacturing (with 1,785 employees in 1997) to \$24.62 in transportation equipment (with 268,015 employees). Although Michigan is less dependent on durable goods and automotive manufacturing now than in the past, durables accounted for 74.1%, and automotive for 33.5%, of Michigan's gross manufacturing sales in 1999.

A Look Back. The double dip recession of 1980–82 had a profound effect on manufacturing, and particularly on durable goods. During this recession, which bottomed out in July 1980 and again in November 1982, national unemployment rose from 5.8% in 1979 to 9.7% in 1982.¹ Nationally, manufacturing suffered a 12.5% decline in employment between 1979 and 1983. The decline in employment was accompanied by permanent closure of older manufacturing facilities and restructuring of the employment relationship within the manufacturing sector. Although job loss was less severe in Michigan than in some states, the recession permanently affected Michigan manufacturing. We begin our analysis in 1977, the Census of Manufactures prior to the recessions.

Manufacturing Output: Levels and Trends. Manufacturing grew more slowly than the balance of both the national and the Michigan economy between 1977 and 1999 (see table 8.1). Slower growth in national manufacturing caused gross product originating in manufacturing to decline from 22.8 to 16.1% of GDP. Trends in Michigan closely paralleled national trends. Manufacturing's share of state output declined from 35.0% to 26.2% of gross state product. Michigan's share of national manufacturing also declined, falling from 7.4% to 5.4% of the gross national manufacturing product between 1977 and 1999.

Despite these trends, Michigan remains a leading manufacturing state. While manufacturing accounted for 16.1% of national GDP in 1999, 26.2% of Michigan's gross state product originated in manufacturing. Further, Michigan's third-ranked position among the states in value of manufacturing shipments remained unchanged from 1977 to 1997.

Trends in Real Manufacturing Output. Between 1977 and 1999, manufacturing prices rose by 202.4%.² Using 1999 dollars, Michigan's real manufacturing gross output increased by 16%, or by 0.7% per year, between 1977 and 1999 (see table 8.2). In contrast, the real state economy grew at an annualized rate of 1.2%, to 135.3% of its 1977 level.³

The severity of the recession of the 1980s is illustrated by trends in real output. Measured in 1999 dollars, real gross manufacturing product fell from \$62.3 to \$48.9 billion between 1979 and

1981. It did not return to its 1979 level until 1994, and has increased only slowly since. This pattern is more pronounced in motor vehicles, in which gross output has declined “permanently” from its 1977 peak of \$34.4 billion. Gross product in the Michigan motor vehicle industry bottomed out at \$18.9 billion in 1980. It recovered to nearly 90% of the 1977 value in 1984–85, but declined to \$16.6 billion by 1991, further than in the recession of the early 1980s. Despite sustained growth in the late 1990s, 1999 motor vehicle gross product was \$27.0 billion, or 78.5% of 1977 production.⁴

A Closer Look at Output: Disaggregating the Manufacturing Sector. Manufacturing is not homogeneous but is composed of differentiated industries. Some are closely linked (such as primary and fabricated metals and transportation equipment), while others are largely independent of other manufacturing industries (such as food and beverage products). Attention to manufacturing as a whole conceals considerable differences in industry performance within manufacturing.

At the broadest level, manufacturing can be divided into durable goods and nondurable goods. Michigan manufacturing has been dominated by durable goods manufacturing, and, within the durable goods sector, by motor vehicle production. In 1977, durable manufactures accounted for 83.1%, and transportation equipment for 45.6%, of gross manufacturing product. By 1999, durables and transportation equipment accounted for 74.1 and 33.5% of manufacturing gross product, respectively (see table 8.3). Despite this decline, durable goods and transportation equipment remain central to Michigan manufacturing.

TABLE 8.2

**Nominal and Real Gross Product in Michigan Manufacturing
(in millions of dollars)**

Year	Manufacturing			Motor Vehicle		
	Nominal	PPI	Real	Nominal	PPI	Real
1977	\$34,355	62.5	\$69,535	\$15,675	64.6	\$34,407
1979	\$37,258	75.7	\$62,261	\$15,239	75.3	\$28,697
1980	\$31,999	88.0	\$45,999	\$11,051	82.9	\$18,903
1981	\$37,631	97.4	\$48,874	\$15,097	94.3	\$22,702
1982	\$35,854	100.0	\$45,355	\$15,203	100.0	\$21,558
1983	\$42,180	101.1	\$52,777	\$19,847	102.8	\$27,377
1984	\$49,823	103.3	\$61,013	\$23,044	105.2	\$31,061
1985	\$51,610	103.7	\$62,957	\$22,570	107.9	\$29,661
1990	\$53,145	115.8	\$58,056	\$16,881	121.5	\$19,701
1995	\$74,541	125.5	\$75,135	\$27,110	139.7	\$27,518
1997	\$75,100	127.7	\$74,394	\$24,212	141.6	\$24,246
1999	\$80,740	126.5	\$80,740	\$27,028	141.8	\$27,028

SOURCES: Nominal Product Data from Bureau of Economic Analysis, Gross State Product, Regional Accounts Data, Gross State Product for Manufacturing and Motor Vehicles (in millions of current dollars), <http://www.bea.gov/region/>. Data on Producer Price Indices (PPI) from *The Economic Report of the President*. Washington, D.C.: U.S. Government Printing Office, 2002, table B-67. Producer Price Index Data from the Bureau of Labor Statistics, U.S. Department of Labor, <http://www.bls.gov/ppi/>.

A next step in disaggregation breaks the durable and nondurable goods sectors into their twenty component major Standard Industrial Classification (SIC) industries (see appendix table 1).⁵ This table includes information on the number of establishments, value of shipments, and value added by SIC industry in Michigan, for industries that reported employment in the 1977, 1982, 1987, or 1997 Census of Manufactures (CM). The first three columns on the left side of the table provide, from left to right, the SIC code, the North American Industrial Classification System (NAICS)

TABLE 8.3

Michigan Gross Product: Total, Manufacturing, and Subsectors (in millions of current dollars)

	Manufacturing Gross Product	Durable	Nondurable	Durable as a % of Mfg.	Motor Vehicle Gross Product	Motor Vehicle as a % of Mfg.
1977	\$34,355	\$28,551	\$5,804	83.1%	\$15,675	45.6%
1980	\$31,999	\$25,327	\$6,673	79.1%	\$11,051	34.5%
1985	\$51,610	\$41,481	\$10,129	80.4%	\$22,570	43.7%
1990	\$53,145	\$38,684	\$14,461	72.8%	\$16,881	31.8%
1995	\$74,541	\$55,479	\$19,062	74.4%	\$27,110	36.4%
1997	\$75,100	\$55,463	\$19,637	73.9%	\$24,212	32.2%
1999	\$80,740	\$59,832	\$20,908	74.1%	\$27,028	33.5%

SOURCES: Nominal Product Data from Bureau of Economic Analysis, Gross State Product, Regional Accounts Data, Gross State Product for Manufacturing, Durable Goods, Non-Durable Goods and Motor Vehicles (in millions of current dollars), <http://www.bea.gov/region/>.

code, and a descriptive title for the industry. There are nineteen two-digit SIC industries with employment in Michigan, and between 5,380 (1977) and 5,753 (1997) manufacturing establishments (locations at which manufacturing takes place) in Michigan.

Industries vary considerably in size and economic importance. Measured by the number of establishments, the leading industries are printing, with 812 establishments; fabricated metals, with 1,272 establishments; and industrial machinery, with 1,141 establishments. At the other end of the scale are textiles, apparel, petroleum and coal products, and leather and allied products, with between 13 and 34 establishments in 1997. Transportation equipment falls between these extremes, with 689 establishments.

A better measure of the economic importance of an industry is value added, the difference between industry revenue and the costs of production, exclusive of capital costs. Ranked by 1997 value added, transportation equipment remains the largest industry in Michigan (\$39.0 billion in value added). Industrial machinery is second (\$9.6 billion) and fabricated metal products ranks third (\$7.8 billion). Food products (including beverages and tobacco) and chemical manufacturing are closely tied for fourth (\$6.0 and \$6.0 billion, respectively). The next-largest industries are plastics and rubber products (\$4.9 billion) and primary metal products (\$4.0 billion). At the other end of the scale are apparel manufacturing (\$90 million), textile manufacturing (\$139 million), and leather and allied products (\$213 million). Transportation equipment is Michigan's dominant manufacturing industry, accounting for 41.6% of total manufacturing value added.

Measured by value added, transportation equipment's share of manufacturing output has increased from 37.1% to 41.6% from 1977 to 1997. This is due primarily to the large decline in value added in metal products and industrial machinery. Primary metal products declined from 7.8% to 4.3% of Michigan value added; fabricated metal products declined from 12.1% to 8.3%; and industrial machinery declined from 13.2% to 10.2% in this period. In addition to transportation equipment, plastic and rubber products and furniture increased their share of Michigan value added by 3% and 2%, respectively.

Output by Major Industry: Michigan and the United States. Changes in value added are an imperfect metric of industry performance, as this

measure combines changes in output with changes in the price of output. An alternative is to compare the performance of Michigan manufacturing industries with that of their national counterparts. This approach differentiates between issues specific to Michigan and those associated with the national industry. Appendix table 1 (three furthest right columns) compares 1977 and 1997 value added by SIC major industries in Michigan and the United States. Michigan manufacturing has generally underperformed its national counterparts. Nominal value added in transportation equipment increased by 180% in Michigan against a 254% increase for the nation; fabricated metal products grew by 72% in Michigan against 193% for the nation. Even the Michigan industries that performed well over the last two decades grew more slowly than their national counterparts. Printing grew by 235% in Michigan but by 366% nationally; electric and electronic equipment grew by 190% in Michigan against 400% nationally. The exceptions to this among larger industries are furniture and plastic and rubber products: value added rose by 434% in the furniture industry in Michigan against a 291% increase nationally, while the Michigan plastic and rubber products industry grew by 446% against 312% growth for the United States.

Judged by output, Michigan remains an important manufacturing state. Although manufacturing plays a declining role in the Michigan economy, the relative economic impact of manufacturing remains substantially greater in Michigan than for the United States as a whole. Disaggregation of the manufacturing sector into its component major industries indicates that the motor vehicle industry has retained its dominant position in Michigan manufacturing. Along with many other manufacturing industries, however, value added in transportation equipment is growing more slowly within Michigan than in the country as a whole.

Manufacturing Employment in Michigan

Levels and Trends in Employment. The decline in the importance of manufacturing as an employer parallels its decline as a source of gross state product. Although employment in Michigan rose by 36%, from 3.4 million to 4.7 million, between 1977 and 2000, employment in manufacturing in the state declined by 13% in this time period, from 1.1 million to just under 1 million.

TABLE 8.4**Employment (in millions): Michigan and the United States, 1977–2000**

Year	Michigan			U.S.		
	Mfg.	All Sectors	Ratio Mfg./Total	Mfg.	All Sectors	Ratio Mfg./Total
1977	1,128.4	3,442.3	32.8%	19,682	92,017	21.4%
1980	998.9	3,442.8	29.0%	20,285	99,303	20.4%
1985	1,002.4	3,561.5	28.1%	19,248	107,150	18.0%
1990	943.6	3,969.6	23.8%	19,076	118,793	16.1%
1995	979.7	4,273.9	22.9%	18,524	124,900	14.8%
1997	966.3	4,448.2	21.7%	18,675	129,558	14.4%
2000	979.8	4,679.3	20.9%	18,469	135,208	13.7%

SOURCES: U.S. Employment Data from *Handbook of Labor Statistics: Employment, Earnings, Prices, Productivity and Other Labor Data*, edited by Eva E. Jacobs. Washington, D.C.: Bernan Associates, 2001, table 1-1 and 2-1. Michigan Employment Data from Bureau of Labor Statistics, U.S. Department of Labor, Employment, Hours, and Earnings from the Current Employment Statistics survey, series SAS2600000000001 (n), SAS2600000000001, <http://www.bls.gov/ces>.

This mirrors national trends; while national employment rose by 47%, employment in manufacturing fell by 6.2% (table 8.4). Despite the decline in manufacturing employment in Michigan, however the industry continues to provide employment for 20.9% of the state workforce, well above the 13.7% of the national workforce employed in manufacturing. Michigan currently employs 5.3% of the U.S. manufacturing workforce, close to the 5.7% it accounted for in 1977.

Michigan has been more successful in maintaining manufacturing employment than have some other prominent manufacturing states. While Michigan lost 287,000 total jobs and 160,000 production jobs in manufacturing between 1977 and 1997, New York lost 739,000 total jobs and 425,000 production jobs, and Pennsylvania lost 509,000 jobs total and 341,000 production jobs in manufacturing. As a result, Michigan has moved from sixth to fifth position nationally in total employment in manufacturing, from sixth to fourth in the number of production workers, and from seventh to fourth in total production worker hours. Among the eleven leading manufacturing states, only California, Georgia, and Wisconsin gained production employment since 1977, and only the first two realized increases in total manufacturing employment.

Disaggregating Employment by Industry. There is considerable variation in the level and trends of employment among major SIC industries in Michigan. Transportation equipment is the largest major industry in Michigan, with 268,000 employees and 32.3% of manufacturing employ-

ment in 1997 (appendix table 2). The next-largest industries are industrial machinery, with 106,400 employees and 12.8% of manufacturing employment, and the similarly sized fabricated metal, with 104,300 employees and 12.7% of employment. Although both are smaller than the transportation equipment industry, the difference in scale is far smaller when measured by employment than by value added. Plastic and rubber products employs 67,700 (8.1% of manufacturing employment) and printing, which was not among the seven largest industries measured by value added, employs 46,700 (5.6% of employment). Taken together, the five largest industries account for 71% of employment in manufacturing, the largest three for 58% of employment.

The broad trend in manufacturing employment has been downward, declining from 1.1 million in 1977 to 966,000 in 1997, a decline of 12.2%.⁶ The largest losses were in transportation equipment, where employment fell by 16.5%, from 321,200 to 268,000; primary metals, where employment fell by 54.6%, from 83,000 to 37,700; fabricated metals, where total employment declined by 26.8%, from 142,600 to 104,400; and industrial machinery, with a decline of 26.9%, from 145,900 to 106,400. Large declines in employment were not confined to large industries. Employment in apparel fell from 25,500 to 1,600, signaling the industry's effective exit from Michigan. Not all Michigan industries lost employment. Reflecting a shift from metal to plastic parts in the automotive industry, employment in plastics and rubber manufacturing increased by 90%, from 35,600 to 67,700. Printing and publishing and furniture both experienced growth: the former

TABLE 8.5**Wage and Salary Disbursements, Number of Jobs, and Annual Earnings for Manufacturing and All Michigan Employees, 1977-1999**

Year	Wage & Salary Disbursements (in millions)		Number of Jobs (in thousands)		Employment (in thousands)		Nominal Earnings				Real Earnings in 1999 Dollars			
							Annual Earnings Per Job		Annual Earnings Per Employee		Annual Earnings Per Job		Annual Earnings Per Employee	
	All	Mfg.	All	Mfg.	All	Mfg.	All	Mfg.	All	Mfg.	All	Mfg.	All	Mfg.
1977	\$56,208	\$25,500	3544.2	1122.2	3442.3	1128.4	\$15,859	\$22,723	\$16,329	\$22,598	\$43,285	\$62,020	\$44,568	\$61,678
1980	\$69,892	\$29,082	3550.1	986.3	3442.8	998.9	\$19,688	\$29,487	\$20,301	\$29,114	\$39,519	\$59,189	\$40,750	\$58,440
1985	\$87,192	\$39,752	3696.4	993.8	3561.5	1002.4	\$23,588	\$40,000	\$24,482	\$39,657	\$36,259	\$61,487	\$37,633	\$60,960
1990	\$120,305	\$42,931	4150.8	945.7	3969.6	943.6	\$28,984	\$45,396	\$30,307	\$45,497	\$36,679	\$57,448	\$38,353	\$57,576
1995	\$159,086	\$59,579	4449.7	985.4	4273.9	979.7	\$35,752	\$60,462	\$37,223	\$60,814	\$38,802	\$65,620	\$40,398	\$66,002
1997	\$170,494	\$56,793	4609.7	975.9	4448.2	966.3	\$36,986	\$58,194	\$38,329	\$58,774	\$38,115	\$59,971	\$39,499	\$60,568
1999	\$186,629	\$62,250	4761.5	986.3	4582.0	981.8	\$39,195	\$63,115	\$40,731	\$63,404	\$39,195	\$63,115	\$40,731	\$63,404

SOURCES: Nominal Product Data from Bureau of Economic Analysis, Gross State Product, Regional Accounts Data. Compensation of Michigan Employees (in millions of current dollars), <http://www.bea.gov/bea/regional>. Employment Data from Bureau of Labor Statistics, U.S. Department of Labor, Employment, Hours, and Earnings from the Current Employment Statistics survey, <http://www.bls.gov/ces/home.htm>, Statewide Non-farm Employment for Michigan, series SAS2600000000001 (n)

added 13,300 jobs and increased employment by 40%, while the latter added 11,800 jobs, and increased employment by 54.4%.

How did the change in Michigan employment compare with that in the United States as a whole? Two of Michigan's larger industries, furniture and plastics, outperformed their national industries. Total employment in furniture grew by 54% in Michigan, but by only 30% nationally. Employment grew by 90% in plastics in Michigan against an increase of 42% nationally. Lumber and wood products; petroleum and coal products; stone, clay and glass products; and instruments also grew more rapidly in Michigan than nationally. More typically, employment growth as a whole was less robust in Michigan than in the United States. Transportation equipment, which lost 16.6% of its Michigan employment between 1977 and 1997, grew by 4.2% nationally. Similarly, employment in Food products shrank to 84% of 1977 employment in Michigan, while increasing by 3.9% nationally. Paper products, primary metals, fabricated metals, and electronic and electric Machinery experienced slower employment growth, or more rapid decline, in Michigan than nationally.

Employee Earnings

Manufacturing pays well relative to the balance of Michigan industries and remains a disproportionately important source of labor income for

Michigan residents. In 1977, manufacturing accounted for 32.8% of Michigan employment but 45.4% of Michigan wages and salaries (table 8.5). In 1999, manufacturing provided 21.4% of employment and 33.4% of wages and salaries. As suggested by these data, manufacturing jobs pay considerably better than do jobs in other sectors. Annual earnings for manufacturing and for the full state labor force can be constructed as the ratio of wage and salary disbursements to the number of jobs or employees in the sector. The number of jobs is the number of positions reported by employers and, since some employees hold multiple jobs, is somewhat larger than the number of employees (table 8.5 columns three through five).⁷ Measured in 1999 inflation adjusted dollars, average annual earnings per job in manufacturing rose from \$62,020 to \$63,115 or by 1.8% from 1977 to 1999 while average annual earnings per job for the Michigan labor force declined from \$43,285 to \$39,195, or 9.4%. Real earnings per employee followed a similar track, with earnings in manufacturing rising by 2.8%, from \$61,678 to \$63,404, and average employee earnings declining by 8.6%, from \$44,568 to \$40,731. In combination with the large decline in overall state earnings, the relative stability of manufacturing earnings acted to widen the earnings gap between manufacturing and other sectors. While manufacturing jobs paid 43% more than the average job in Michigan, and manufacturing employees earned 38% more than the average Michigan employee in 1977, by 1999 the

advantage for manufacturing had risen to 61% per job and 56% per employee.⁸

Earnings by Major Industries. In 1999, the average Michigan production worker earned \$18.38 per hour and \$812.40 per week. The magnitude of wage increases varies considerably by industry within Michigan manufacturing (appendix table 3). The largest increases were in transportation equipment, where hourly earnings rose by 188%, from \$8.44 to \$24.32, and weekly earnings rose by 199%, from \$378.11 to \$1,130.88. Hourly wages in paper and allied products, the median industry when ranked by hourly earnings in 1999, rose 163%, from \$6.25 to \$16.44. Weekly earnings rose 159%, from \$282.90 to \$733.22. Hourly wages in printing, an industry near the bottom of the 1999 wage distribution, rose by 109%, from \$6.56 to \$13.73, while weekly earnings rose by 115%, from \$248.78 to \$535.47. Only in transportation equipment did the increase in hourly wages exceed the rate of inflation. In most industries hourly earnings fell behind inflation, and the decline was particularly large in printing, food manufacturing, primary and fabricated metals, electronic equipment, and furniture, where hourly wages lagged inflation by at least 30 percentage points.⁹

Average weekly hours in Michigan manufacturing increased from 43.3 in 1977 to 44.2 in 1999. The increase in weekly hours was particularly large in food products, where hours rose from 41.9 to 44.4 per week, furniture (increasing by 1.4 hours to 42.2 hours), printing (increasing by 1.1 hours to 39 hours), primary and fabricated metals (rising by 1.4 hours to 45.2 hours), industrial machinery (rising by 1.4 hours to 44.5 hours), and transportation equipment (rising by 1.7 hours to 46.5 hours). An important incentive to employers to use increased hours may be the relatively high level of fixed cost fringe benefits, which make new hiring more expensive than paying overtime rates.

Summary: Manufacturing in Michigan over the Last Two Decades

Despite a decline in the relative size of the manufacturing sector in Michigan between 1977 and the present, Michigan remains an important manufacturing state, and manufacturing remains an important sector within the state. Between 1977 and 2000, the manufacturing share of gross state product declined from 35.0 to 26.2%, while its share of employment fell from 32.8 to 20.9%.

Much of this decline can be attributed to the absolute decline in the transportation equipment industry, the dominant industry within manufacturing, in the state. Despite this decline, manufacturing continues to provide a fifth of Michigan's employment and a disproportionate share, 33.4%, of state wage and salary income. Historically, annual earnings in manufacturing have been above those of the average Michigan wage and salary earner, and this differential has widened from a 38% advantage in 1977 to a 56% advantage in 1999. Particularly because manufacturing has been a source of well-paid employment for Michigan citizens, its decline poses long-term economic challenges for the state.

Part 2: Unionization and Collective Bargaining in Michigan Manufacturing and the Michigan Automobile Industry, 1981–2000

Michigan continues to be a highly unionized state, especially in manufacturing. To a substantial extent, this is due to the high levels of unionization in auto assembly. These two institutional facts provide the basis for part 2. The first section of part 2 will provide basic data on unionization in manufacturing in Michigan. The second section of part 2 will focus on collective bargaining and labor relations in the automobile industry during the past twenty years.

Overall Levels of Manufacturing Unionization

Michigan manufacturing is highly unionized relative to manufacturing nationally. Table 8.6 presents data on unionization and employment in manufacturing for Michigan and the United States for selected years. For the period 1986–2000, the manufacturing unionization rate in Michigan (union members as a percentage of manufacturing employment) was approximately 1.8 times greater than the manufacturing unionization rate nationwide. The average manufacturing union membership rate in Michigan declined from 42.5% to 28.8% from 1986 to 2000; nationally it declined from 24% to 14.8%. The ratio of Michigan manufacturing unionization to national manufacturing unionization was generally stable from the mid-1980s through the early 1990s, and grew in the mid-1990s, before starting a slight decline in the late 1990s. It was higher in 2000 than in 1986.

TABLE 8.6**Union Membership Rates, Union Membership (in thousands), and Employment (in thousands), Manufacturing, United States, and Michigan, Selected Years, 1986–2000**

	1986	1989	1992	1995	1998	1999	2000
U.S. manufacturing membership rate	24.0%	21.6%	19.7%	17.6%	15.8%	15.6%	14.8%
Michigan manufacturing membership rate	42.5%	38.5%	36.0%	33.9%	32.2%	30.2%	28.8%
Ratio, Michigan/U.S. mfg. membership rate	1.77	1.78	1.83	1.93	2.04	1.94	1.95
U.S. manufacturing union membership	4869	4467	3749	3440	3127	3024	2832
Michigan manufacturing union membership	453.9	415.5	353.2	361.4	368.8	338.9	311.2
Pct. of mfg. union members in Michigan	9.32%	9.30%	9.42%	10.51%	11.79%	11.21%	10.99%
U.S. manufacturing employment	20296	20690	19076	19520	19763	19323	19167
Michigan manufacturing employment	1068.2	1079	980.3	1067	1147.1	1122.7	1079.5
Pct. of mfg. employment in Michigan	5.26%	5.22%	5.14%	5.47%	5.80%	5.81%	5.63%

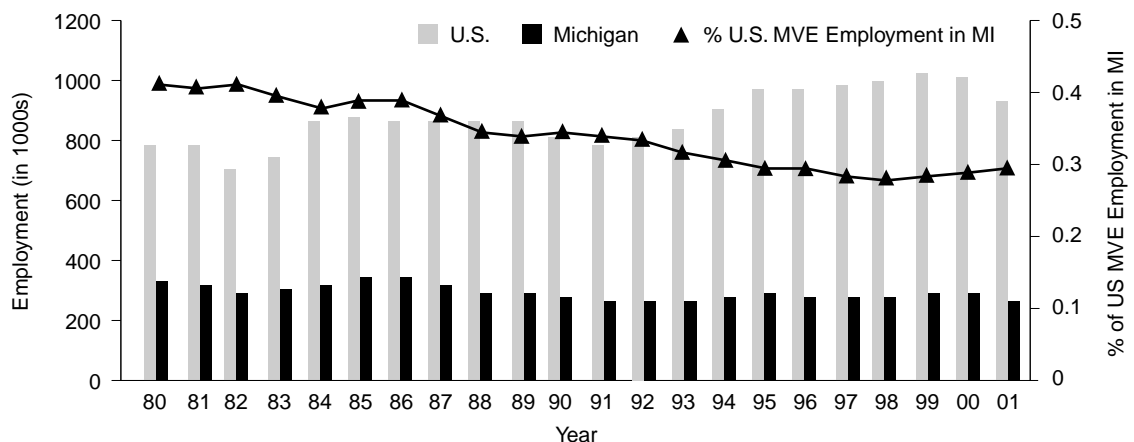
Table 8.6 also presents data on actual union membership in manufacturing, nationally and in Michigan, as well as employment in manufacturing. During the period 1986–2000, from 9% to 12% of manufacturing union members worked in Michigan. During this same period, Michigan never accounted for more than 6% of manufacturing employment nationally.

Collective Bargaining in the Automobile Industry

Introduction. As shown in part 1 of the chapter, Michigan is highly dependent on manufacturing, and that manufacturing is heavily auto-related.

For the period 1980–2001, the percentage of Michigan manufacturing employment in the (three-digit) motor vehicle and equipment (MVE) industry averaged 30.9%. The highest annual percentage was 34%, in 1983 and 1985; the lowest annual percentage was 28.5% in 1998. The percentage exhibited a downward trend during the period from 1980 to 2001. The mean annual percentage from 1980–90 was 32.4%, while the mean annual percentage from 1991–2001 was 29.4% (Bureau of Labor Statistics, undated-a; Bureau of Labor Statistics, undated-b).

The downward trend, however, was not due to declining employment in the (two-digit) transportation equipment (TE) industry in Michigan

FIGURE 8.1**Employment in Motor Vehicles and Equipment, U.S. and Michigan (in thousands); Percentage of U.S. Motor Vehicle Equipment and Employment in Michigan, 1980–2001**

during the 1990s. Between 1991 and 2001, TE employment in Michigan increased from 266,000 to 275,000, with a high of 293,000 in 2000. Rather, over the period, overall manufacturing employment in Michigan increased faster than did TE employment (Bureau of Labor Statistics, undated-b).

The auto industry in Michigan is highly unionized, and since compensation and working conditions in the auto industry affect compensation and working conditions throughout the state, collective bargaining trends in that industry are extremely important to Michigan.¹⁰ Some sense of the importance of auto industry collective bargaining to Michigan can be obtained by examining figure 8.1, which presents data on U.S. and Michigan employment in MVE. As can be seen, although Michigan's percentage of national employment in motor vehicle equipment has declined by almost a third since 1980, Michigan still remains a "center" of employment in the industry nationally. In 2001, 29.4% of all employees in the industry were employed in Michigan.

Collective Bargaining and Earnings in the Auto Industry. At least partially as a result of collective bargaining and unionization, Michigan autoworkers are well paid. Some sense of how well paid can be obtained by examining table 8.7. This table exploits the fact that during the last twenty years, foreign auto manufacturers have established nonunion plants in the United States: Toyota in Kentucky, Nissan in Tennessee, Mercedes in Alabama, and Honda in Ohio.¹¹ Thus, one can compare MVE and TE average hourly employee earnings (AHE) in Michigan with AHE in those same industries in other auto-producing states to obtain a very rough estimate of the impact of collective bargaining on the wages of Michigan workers in the auto industry.

Data are also included for Ohio, which is characterized by four distinct pockets of auto manufacturing. Three, Cincinnati, Cleveland, and Toledo, are unionized, but Columbus, where Honda is located, is not unionized. Thus, Ohio provides an opportunity to obtain a sense of the impact of collective bargaining on wages while controlling for geographic distance, which is one factor that may impact the union effect on a wage differential between Michigan and other states.

Finally, it should be noted that this table does not claim to be an accurate estimate of the union wage differentials within the industry, because it does not control for such factors as employee

human capital (e.g., education, experience, skills) and firm differences in such factors as production processes, product mix, and capital stock. Although the data are presented for selected years, the means are for all years during the twenty-two-year period for which data were available.

As can be seen from table 8.7, (unionized) Michigan autoworkers earn substantially more than their counterparts in other states and cities in which a substantial percentage of autoworkers are not represented by a union. First, examining the data for MVE, for the full twenty-two-year period, the average hourly earnings of Michigan workers were roughly 4.7% higher than those of their Ohio counterparts. Yet the data for largely nonunion Columbus, which began to be published at the three-digit level in 1989, demonstrate that this differential in favor of Michigan was due primarily to the nonunion pocket in Columbus. For the period 1989–2001, Michigan (unionized) MVE employees earned on average, on an hourly basis, 36.9% more than MVE employees in nonunion Columbus.

Use of two-digit industry data for TE permits a comparison between Michigan and a broader range of states than could be done at the three-digit MVE level, although the two-digit level includes non-auto firms. For the period 1992–2001, which coincides most closely with the establishment of nonunion auto assembly plants by foreign firms, Michigan workers in TE earned 26.8%, on an annual basis, more than their counterparts in Alabama, and 16.2% more than their counterparts in Kentucky. Both Alabama and Kentucky have nonunion auto plants. For the period 1992–2001, Michigan workers had hourly earnings that were 40.1% higher than their counterparts in Tennessee, also with a large nonunion auto workforce. The Ohio data for TE are similar to the data for MVE, with a large differential for Columbus, and much smaller differentials for the unionized areas of Cincinnati, Cleveland, and Toledo.

An inspection of the data indicate that the percentage differential in favor of Michigan in AHE in TE increased vis-à-vis Kentucky and Columbus during the twenty-year period, and stayed stable vis-à-vis Alabama. It increased vis-à-vis Tennessee during the 1990s. This suggests that, over the last twenty years of the twentieth century, any increased production among nonunion foreign producers or declining market share among the domestic (Michigan) producers did not close the differential in wages.

TABLE 8.7**Average Hourly Earnings in Motor Vehicle and Transportation Equipment, Michigan and Other Automotive States**

	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Mean 80-01	Mean 89-01
Motor Vehicle Equipment																
Michigan	\$11.01	\$15.01	\$17.39	\$18.43	\$18.54	\$19.81	\$21.15	\$21.03	\$21.34	\$22.31	\$23.67	\$24.62	\$26.07	\$26.61		
Ohio	\$10.39	\$14.74	\$16.86	\$17.83	\$18.35	\$19.39	\$20.20	\$20.36	\$20.33	\$20.84	\$21.14	\$22.05	\$23.04	\$23.89		
Cincinnati	\$10.80	\$15.17	\$18.26	\$19.14	\$20.90	\$21.70	\$22.70	\$22.81	\$22.52	\$22.60	\$24.02	\$25.13	\$25.42	\$26.19		
Cleveland	\$10.98	\$15.36	\$18.41	\$19.20	\$19.19	\$20.31	\$21.25	\$21.28	\$21.22	\$21.81	\$22.92	\$24.18	\$24.85	\$25.30		
Columbus			\$14.81	\$15.29	\$11.67	\$11.95	\$13.03	\$12.68	\$11.70	\$12.38	\$12.90	\$13.38	\$13.35	\$13.43		
Percentage Difference, Michigan and . . .																
Ohio	5.6%	1.8%	3.0%	3.3%	1.0%	2.1%	4.5%	3.2%	4.7%	6.6%	10.7%	10.4%	11.6%	10.2%	4.7%	5.7%
Cincinnati	1.9%	-1.1%	-5.0%	-3.9%	-12.7%	-9.5%	-7.3%	-8.5%	-5.5%	-1.3%	-1.5%	-2.1%	2.5%	1.6%	-4.2%	-4.6%
Cleveland	0.3%	-2.3%	-5.9%	-4.2%	-3.5%	-2.5%	-0.5%	-1.2%	0.6%	2.2%	3.2%	1.8%	4.7%	4.9%	-1.1%	-0.5%
Columbus			14.8%	17.0%	37.1%	39.7%	38.4%	39.7%	45.2%	44.5%	45.5%	45.7%	48.8%	49.5%		36.9%
Transportation Equipment																
Michigan	\$10.93	\$14.81	\$17.11	\$18.19	\$18.33	\$19.61	\$20.94	\$20.85	\$21.13	\$22.08	\$23.40	\$24.32	\$25.73	\$26.24		
Alabama	\$7.64	\$12.63	\$12.90	\$13.82	\$13.29	\$14.20	\$15.34	\$15.95	\$16.31	\$16.62	\$16.62	\$17.05	\$18.12	\$19.24		
Kentucky	\$9.35	\$13.74	\$13.61	\$14.37	\$15.03	\$15.58	\$15.98	\$16.19	\$16.87	\$17.42	\$18.54	\$19.19	\$20.59	\$21.91		
Ohio	\$10.02	\$14.18	\$16.37	\$17.33	\$17.80	\$18.77	\$19.67	\$19.89	\$19.95	\$20.45	\$20.81	\$21.71	\$22.69	\$23.59		
Cincinnati	\$9.97	\$14.24	\$16.90	\$17.58	\$18.91	\$19.53	\$20.76	\$21.01	\$21.05	\$21.55	\$22.49	\$23.63	\$24.30	\$25.25		
Cleveland	\$10.56	\$14.54	\$16.79	\$17.57	\$18.94	\$19.18	\$20.11	\$20.27	\$20.28	\$20.74	\$21.77	\$23.15	\$23.74	\$24.11		
Columbus	\$9.02	\$12.32	\$14.73	\$15.11	\$11.91	\$12.16	\$13.06	\$12.71	\$11.72	\$12.40	\$12.93	\$13.40	\$13.37	\$13.46		
Toledo	\$10.38	\$14.99	\$17.62	\$18.02	\$18.93	\$20.16	\$21.13	\$21.29	\$20.96	\$21.04	\$22.28	\$24.02	\$24.36	\$25.11		
Tennessee					\$12.60	\$12.51	\$12.51	\$12.64	\$12.79	\$13.24	\$13.37	\$14.03	\$14.07	\$14.61		
Percentage Difference, Michigan and . . .																
Alabama	30.1%	14.7%	24.6%	24.0%	27.5%	27.6%	26.7%	23.5%	22.8%	24.7%	29.0%	29.9%	29.6%	26.7%	25.2%	26.8%
Kentucky	14.5%	7.2%	20.5%	21.0%	18.0%	20.6%	23.7%	22.4%	20.2%	21.1%	20.8%	21.1%	20.0%	16.5%	16.2%	20.4%
Ohio	8.3%	4.3%	4.3%	4.7%	2.9%	4.3%	6.1%	4.6%	5.6%	7.4%	11.1%	10.7%	11.8%	10.1%	6.2%	7.5%
Cincinnati	8.8%	3.8%	1.2%	3.4%	-3.2%	0.4%	0.9%	-0.8%	0.4%	2.4%	3.9%	2.8%	5.6%	3.8%	2.4%	1.6%
Cleveland	3.4%	1.8%	1.9%	3.4%	-3.3%	2.2%	4.0%	2.8%	4.0%	6.1%	7.0%	4.8%	7.7%	8.1%	3.2%	4.3%
Columbus	17.5%	16.8%	13.9%	16.9%	35.0%	38.0%	37.6%	39.0%	44.5%	43.8%	44.7%	44.9%	48.0%	48.7%	27.3%	42.4%
Toledo	5.0%	-1.2%	-3.0%	0.9%	-3.3%	-2.8%	-0.9%	-2.1%	0.8%	4.7%	4.8%	1.2%	5.3%	4.3%	0.2%	1.2%
Tennessee					31.3%	36.2%	40.3%	39.4%	39.5%	40.0%	42.9%	42.3%	45.3%	44.3%		40.1%

SOURCE: Bureau of Labor Statistics

Collective Bargaining Outcomes in Autos, 1980–2000. Through the 1970s, auto industry pattern bargaining generally focused on wage and benefit increases.¹² Buffeted by employment declines in the industry in the early 1980s, however, the focus of bargaining and the content of the pattern shifted from wage increases to long-term job security. This shift of the focus of bargaining from increasing wages to enhanced job security is the

salient feature of collective bargaining in the auto industry during the last two decades.¹³

The 1979 UAW-GM and UAW Ford agreements had no provision on job security. This is to be expected, as production worker employment in the industry had been generally increasing over the previous two decades. From a recession-trough low of 452,500 in 1958, production worker employment in MVE climbed to 708,000 in 1969,

and to a historical high of 782,000 in 1978 (Bureau of Labor Statistics, undated-b). While there were short-term fluctuations during this period, these were covered by the Supplemental Unemployment Benefit Plans that had been negotiated in 1955 (Katz 1987, 24–26).

There was a drop in employment in 1979 to 764,000, but the bottom fell out in 1980. In that year, production worker employment was only 575,000, a 25% decline from the previous year. Believing that this decline was not a familiar cyclical fluctuation in employment, but rather a structural decline in the number of production employees in the industry, the UAW sent a message to the automakers that job security was high on its agenda (“Job Security . . .” 1981).

The economic crisis in the auto industry spurred the parties to early negotiations. The UAW and Ford signed a thirty-one-month agreement in February 1982, seven months prior to the scheduled expiration date of the existing contract. The agreement included a twenty-four-month moratorium on plant closings. As a disincentive for Ford to reduce employment, the parties also agreed on a Guaranteed Income Stream, which provided workers with greater than fifteen years’ seniority up to 95% of forty-hour take-home pay, with the percentage increasing with the employee’s length of service (“Pay Concessions . . .” 1982; “Joint UAW-Ford Summary . . .” 1982; “Auto Workers Ratify . . .” 1982).

Significantly, Ford obtained relief on monetary employee compensation. Although there would be no reductions in wage rates paid on the date of the agreement, the Annual Improvement Factor (AIF) was eliminated. (In principle, the AIF was designed to provide workers with real wage increases as national productivity increased.) In addition, cost-of-living adjustments were deferred, employees would not receive their twenty-six paid personal holidays during the agreement, and a special December holiday would not be paid. The UAW also broke with tradition and modified its long-time opposition to profit sharing, opposition that had been based on the principle that employee compensation should be certain (Joint UAW-Ford Summary . . .” 1982).

The February 1982 agreement with Ford established the industry model that would eventually apply to GM, Ford, and, in 1996, Chrysler. Employees would obtain enhanced levels of job security and the company would receive relief on monetary compensation to employees. Although it would evolve over the next decade through the

principle of incrementalism, the basic bargain had been struck.

A month later, consistent with pattern bargaining, a similar but not identical agreement was struck with General Motors. The major difference between the two agreements was that GM agreed to rescind four plant closings that had been announced and agreed to an experimental “Lifetime Job Security Program” at four plants. The plan used attrition and alternative assignments both within and outside GM to provide job security to 80% of the facilities’ workforce (“General Motors and Auto Workers . . .” 1982; “UAW Council . . .” 1982; “UAW Summary . . .” 1982).

The pattern was not extended to Chrysler. In order for Chrysler to obtain loan guarantees from the U.S. government in 1979, the UAW was required to make wage concessions (Pine 1979; Pine and Brown 1979; Block 2001). In 1983, the UAW and Chrysler agreed on a contract that restored wage parity with Ford and GM. Reflecting the continuing precariousness of Chrysler’s financial condition, no job security provisions were incorporated in the Chrysler agreement, and the agreement expired in 1985, one year after the Ford and GM agreements, thereby giving Chrysler a twelve-month advantage vis-à-vis the pattern applied to Ford and GM (“New Agreements . . .” 1983).

In the 1984 negotiations, the UAW, Ford, and GM agreed on enhanced job security with identical programs at the two companies: the Protected Employee Program (PEP) at Ford and the Job Opportunity Bank-Security Program (JOBS) at GM. PEP and JOBS provided job security for employees with at least one year of seniority in the event of technological change, outsourcing, productivity improvements, transfer of operations, and production consolidations. A decline in employment due to volume declines would be addressed through Supplemental Unemployment Benefits (SUB) (*Agreement between General Motors Corporation and the UAW* 1984 [hereafter cited as *Agreement-GM*]; *Agreements between Ford Motor Company and the UAW* 1984 [hereafter cited as *Agreements-Ford*]).

In addition, the parties for the first time agreed upon a dedicated maximum financial commitment. Ford promised \$280 million over the life of the agreement and GM promised \$1 billion (*Agreement-GM* 1984; *Agreements-Ford* 1984). This had the effect of institutionalizing the program while minimizing financial uncertainty for the companies and converting a component of

TABLE 8.8**Estimated Cost of Job Security Provisions Negotiated in Collective Agreements between UAW and GM, UAW and Ford, and UAW and Chrysler, 1984–96**

	1984	1987	1990	1993	1996
Estimated Covered Employment					
GM	347,500	312,500	295,000	260,000	243,000
Ford	107,000	100,000	100,000	97,667	105,025
Chrysler					66,000
Maximum Job Security Commitment (in millions)					
GM	\$1,000	\$1,300	\$1,700	\$1,700	\$1,700
Ford	\$280	\$500	\$586	\$586	\$586
Chrysler					\$280
Estimated Hourly Job Security Cost					
GM	\$0.461	\$0.667	\$0.924	\$1.048	\$1.121
Ford	\$0.419	\$0.801	\$0.939	\$0.962	\$0.894
DCX/Chrysler					\$0.680
Median Negotiated Base Wage, Ford-UAW Agreement					
	\$11.94	\$14.33	\$15.97	\$18.20	\$21.50
Estimated Hourly Job Security Cost as a Percentage of Median Negotiated Base Wage					
GM	3.86%	4.65%	5.78%	5.76%	5.21%
Ford	3.51%	5.59%	5.88%	5.28%	4.16%
Chrysler					3.16%

SOURCES: News Reports; Agreements between UAW and Ford Motor Company, 1984–96.

discussions regarding the program into traditional negotiations over labor costs.

The 1987 agreements converted these security promises into numbers. These agreements established Guaranteed Employment Numbers (GEN) at Ford and Secured Employment Levels (SEL) at GM. The initial GEN/SEL for a unit (generally a plant) was the number of active employees with at least one year of seniority in the unit on the date the agreement was signed. The GEN/SEL was to be reduced by one position for every two employees who left the company because of normal attrition (resignation, death, or retirement). This permitted employees to be shifted to jobs from the PEP and JOBS programs. The agreements also prohibited plant closings. The financial commitment was increased to \$500 million for Ford and \$1.3 billion for GM (*Agreements-Ford* 1987; *1987 National Agreement-General Motors* 1987; *UAW-Ford Report* 1987; “UAW-GM Pact . . .” 1987; “Excerpts . . .” 1987).

The sales volume exception in the agreements was addressed in 1990. The agreement limited layoffs for volume reasons to thirty-six weeks over the life of the agreement, with the employee either being recalled or shifted to the JOBS Bank/PEP, and off the SUB fund, if no job was available. Maximum funding was increased to \$586 million at Ford and \$1.7 billion at GM (*National Agreement-General Motors* 1990; *Agreements-Ford* 1990; “General Motors, UAW . . .” 1990; “UAW-Provided . . .” 1990; “UAW, Ford . . .” 1990).

By 1993, the system architecture for GM and Ford was basically complete and no major changes were made from 1990. The funding maximum remained at \$586 million in the Ford-UAW agreement and \$1.7 billion in the GM-UAW agreement (*Agreements-Ford* 1993; *UAW-GM Report* 1993).

The UAW then turned its attention to Chrysler, the smallest of the Big Three. After discussing the issue in 1993, the 1996 UAW-Chrysler agreement included a Memorandum of Understanding on the Employment Security System (ESS) program, which essentially mirrored the programs in the Ford-UAW and GM-UAW agreements. Base Employment Levels (BEL), determined by a “snapshot” of employment on the effective date of the agreement, would generally be guaranteed, with attrition replacement at one for two if employment in the unit was between 95% and 105% of BEL, no replacement if unit employment was 105% or more of BEL, and one-for-one replacement at 95% of BEL. The program was funded at a maximum of \$280 million for 1996 (“Letters, Memoranda . . .” 1996 . . . ; *Agreements-GM* 1996).

TABLE 8.9**Percentage Change in Average Hourly and Average Weekly Earnings in Motor Vehicles and Equipment, Michigan, Selected Years, 1977–2000**

	Mean % Change Average Hourly Earnings	Mean % Change Average Weekly Earnings
1977–84	8.3%	8.8%
1977–79	9.4%	7.8%
1980–84	7.7%	9.4%
1985–2000	3.8%	4.0%
1985–92	3.3%	2.4%
1993–2000	4.4%	5.7%

SOURCE: Bureau of Labor Statistics.

Outside of the 95% “floor,” there were no major changes negotiated in the programs at GM and Ford in 1996. Funding levels over the life of the agreements remained stable; \$1.7 billion at GM and \$586 million at Ford (*Agreement-GM* 1996).

Further adjustments were made in the 1999 agreements.¹⁴ The major change was the creation of benchmark employment (SEL at GM, GEN at Ford, BEL at DaimlerChrysler¹⁵) minimums that would be reduced by .333% each quarter so that at the end of the agreement, benchmark levels in the agreements would be at 95% of benchmark levels at the commencement of the agreements. Funding levels over the life of the agreement were increased to \$2.107 billion at GM, \$944 million at Ford, and \$451 million at DaimlerChrysler (*Agreement-GM* 1999; *Agreements-Ford* 1999; “Letters, Memoranda . . .” 1999).

What was the cost of these provisions? An upper-bound estimate of these costs (on the dates that the 1984–96 contracts were signed) can be obtained by examining table 8.8. These estimates assume a workweek of 2,080 hours; inclusion of overtime would reduce the hourly job security cost. They also assume that the company will spend to the maximum. To the extent employees would have otherwise remained employed, actual expenditures are likely to be less than maximum expenditures. In that sense, the estimated hourly cost is truly an upper bound, and is likely to be lower than that in the table.¹⁶

Examining the table, the estimates suggest that, at an absolute maximum, the job security provisions added 5.88% annually to the hourly wages actually paid by the companies. When one realizes that this is truly an upper bound, and that the actual percentage on the true hourly wage received by the employee is likely to be less, it appears that the job security system created by the parties was able to provide job security at a fairly reasonable cost to the companies.

Wage moderation appears to have been associated with job security. As can be seen in table 8.9, nominal wage increases in the pre-job security period, 1977–84, were roughly twice those of the post-job security period, 1985–2000.¹⁷

The Case of Flint. While Michigan has managed to weather the auto industry changes, this has not been the case for the Flint metropolitan area. Table 8.10 presents a picture of the disproportionate share of the employment adjustment that Flint has borne. In the early 1980s, approximately 15% of Michigan’s transportation equipment employ-

TABLE 8.10
Transportation Equipment Employment in Michigan, Michigan Excluding Flint MSA, and Flint MSA, 1980–2001 (in thousands)

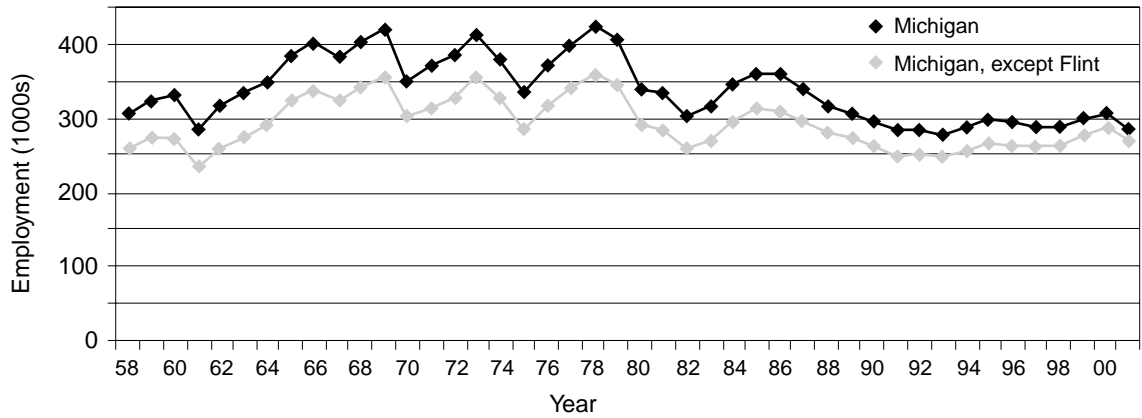
	Michigan Statewide	Flint MSA	MI, Outside Flint MSA	% in Flint MSA
1980	340.2	49.8	290.4	14.6%
1981	334.9	52.4	282.5	15.6%
1982	302.7	45.3	257.4	15.0%
1983	317.5	47.6	269.9	15.0%
1984	343.7	50.8	292.9	14.8%
1985	361.3	49.4	311.9	13.7%
1986	359.7	49.8	309.9	13.8%
1987	337.6	41.5	296.1	12.3%
1988	314.4	34.1	280.3	10.8%
1989	307.1	35.9	271.2	11.7%
1990	295.0	34.9	260.1	11.8%
1991	281.6	32.6	249.0	11.6%
1992	286.0	31.6	254.4	11.0%
1993	278.4	30.3	248.1	10.9%
1994	289.0	32.1	256.9	11.1%
1995	298.6	32.7	265.9	11.0%
1996	294.9	29.8	265.1	10.1%
1997	289.2	26.8	262.4	9.3%
1998	287.7	23.7	264.0	8.2%
1999	299.7	21.3	278.4	7.1%
2000	304.8	17.1	287.7	5.6%
2001	285.4	15.9	269.5	5.6%
Absolute Change, 1980–2001				
	–54.8	–33.9	–20.9	
Percent Change, 1980–2001				
	–16.1%	–68.1%	–7.2%	

SOURCE: Bureau of Labor Statistics

ment was in the Flint area. By 2001, that percentage had dropped by almost two-thirds, to only 5.6% of Michigan’s transportation equipment employment. Between 1980 and 2001, TE employment in Michigan declined by approximately 54,800, from 340,200 to 285,400. Of these 54,800 employees, 33,900 were in the Flint area. While during this twenty-year period Flint never accounted for more than 15.6% of TE employment in Michigan, Flint accounted for 61.9% of the decline in Transportation Equipment employment during this period.¹⁸ During this period, auto employment declined by 16.1% statewide, by 68.1% in the Flint area, but by only 7.2% in Michigan outside the Flint area.¹⁹

FIGURE 8.2

Transportation Equipment Employment, Michigan Statewide and Michigan Excluding Flint MSA, 1958–2001 (in thousands)



The change in Flint’s situation during the last two decades is supported by a trend analysis, taking into account the preceding forty-four year period. This is depicted graphically in figures 8.2 and 8.3. Figure 8.2 graphs the level of TE employment in Michigan, statewide, and Michigan, excluding Flint, for the twenty-two-year period from 1958 to 2001. Figure 8.3 graphs the level of TE employment in the Flint MSA from 1958 to 2001. Observation of the data that underlay the figures indicates a break point in the early 1980s. The slope coefficients of the 1958–79 trend lines for Michigan statewide, Michigan excluding Flint, and Flint are .112, .129, and .356, respectively, suggesting that, for this period, TE employment in

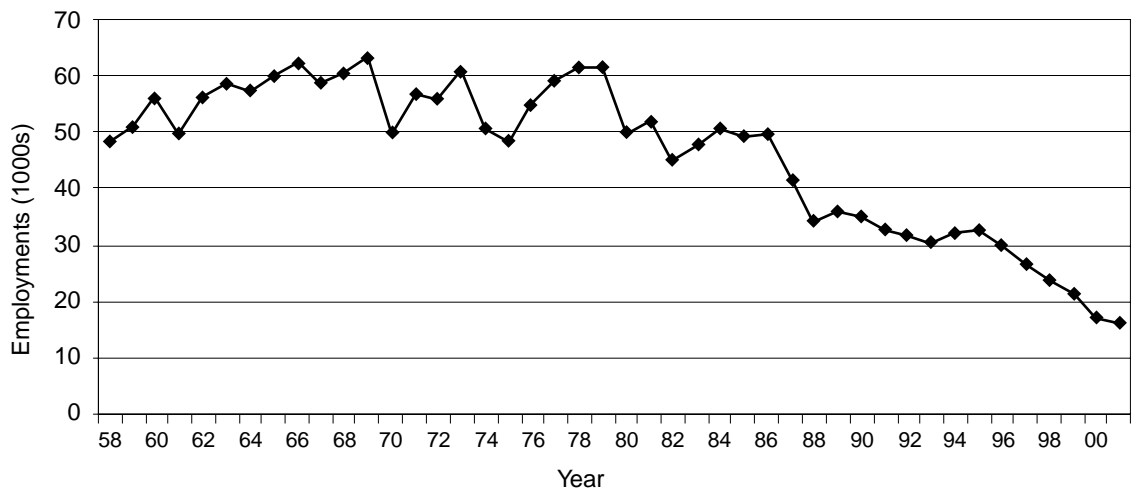
Flint increased roughly three times faster than overall TE employment in Michigan.

For the period 1980–2001, the slope coefficients for Michigan statewide, Michigan excluding Flint, and Flint are -0.175 , -0.129 , and -0.554 , respectively. In contrast to the earlier period, TE employment in Flint declined approximately 3.5 to 4 times faster than overall state TE employment.

What contributed to this disproportionate decline in Flint TE employment? Two factors seem to be important. The first is the major reorganization that took place in GM in the early 1980s. The second is the history of conflictual labor relations in Flint.

FIGURE 8.3

Transportation Equipment Employment, Flint MSA, 1958–2001 (in thousands)



The GM reorganization in the early 1980s shifted design and production decisions from the divisions to the corporate central office. Under the pre-reorganization system, each of the divisions controlled its design and manufacturing facilities, in effect acting as an independent company, with overall corporate oversight. Each division, with corporate oversight, designed its own cars and assigned them to its plants for manufacture. Divisions and plants were linked (Block and Berg, forthcoming).

The reorganization separated the design and plants from the divisions. Design and production would be determined at the corporate level, with the old divisions becoming primarily marketing nameplates, with products assigned by the corporation. Thus, each of the plants was in a type of internal "competition" with all other corporate plants for product allocation from the corporation. Corporate product allocation would, in turn, determine plant survival.

A second major factor in Flint's decline appears to be the history of conflictual labor relations in the city. Some sense of this conflict can be obtained by examining table 8.11. This table is based on GM data on "crisis situations" provided to the author. A crisis situation under the collective agreement occurs when a dispute arises between GM and the union in the relevant unit over an issue in the collective agreement not subject to the grievance and arbitration procedure, for example, production and health and safety issues. At the first level of the dispute, the parties enter the stage of "concerted negotiations." If the concerted negotiations are unable to resolve the dispute, the union issues a "five-day strike letter" informing GM management that it reserves the right to strike within five days if the matter is not resolved.

Table 8.11 presents a summary of the data, comparing Flint and all other GM plants. First, looking at concerted negotiations, the less serious of the two crisis situations, 14.8% of the units in which at least one crisis situation occurred, and 14.8% of the crisis negotiations, occurred in Flint. These negotiations, however, lasted longer in Flint than in other units. While Flint accounted for only 14.8% of the incidents, Flint accounted for 23.7% of the days of concerted negotiations, suggesting that it took more time to resolve the matter in Flint than at other locations. The average Flint concerted negotiation took 42.25 days to resolve, while the average concerted negotiation outside of Flint took 23.7 days to resolve.

TABLE 8.11**General Motors and UAW Crisis Situations, Flint, Outside Flint, and Total, 1984–2000**

	GM, Flint	GM, Except Flint	Total	% in Flint
Concerted Negotiations, 1984–2000				
No. of units	4	23	27	14.8%
No. of negotiations	4	23	27	14.8%
No. of days	169	544	713	23.7%
5-Day Strike Letters, 1984–2000				
No. of units	11	94	105	10.5%
No. of strike letters	11	114	125	8.8%
No. of strike days*	112	356	468	23.9%

* Estimated for "GM, Except Flint"

SOURCE: Data provided by General Motors and UAW.

The situation in Flint is more dramatically demonstrated by the data on the five-day strike letters. The data indicate that while Flint units accounted for only 10.5% of the occurrences and 8.8% of the letters, it is estimated that Flint accounted for almost 24% of the strike days. Flint averaged over 10 strike days per strike letter, while the non-Flint estimate is only 3.1 days per strike letter.

Taking these data together, it is clear that for GM and the UAW, labor disputes are not uncommon occurrences. It is also clear, however, that the disputes in Flint facilities generally lasted longer than those at other GM facilities, and were generally more difficult to resolve in Flint facilities than in other GM facilities. Given the strong GM presence in Flint, and the reorganization of GM, it is necessarily true that employment declines in Flint were the result of GM decisions to allocate product to plants other than those in Flint. It is also reasonable to believe that the labor relations situation in Flint contributed to these GM product allocation decisions.

It is important to realize, however, that the drop in employment in Flint through GM product allocation decisions resulted in retirements or the exercise by Flint GM workers of interplant transfer rights. Flint GM workers have likely experienced disruptions to their family lives as a result of these decisions. New labor force entrants in the Flint area will not have the option of working for GM, as did their parents and grandparents. Other firms and businesses in Flint that depended on Flint GM employees have also been harmed.

Part 3: Summary and Conclusions

The focus of this chapter was twofold. First, it provided an analysis of manufacturing in Michigan during the last twenty years. Second, because of the importance of the auto industry in Michigan manufacturing, and because the Michigan auto industry is highly unionized, the chapter also provided an overview of collective bargaining and labor relations in Michigan manufacturing in general, and autos in particular. Special attention was paid to the unique situation in Flint.

Manufacturing output in the United States grew more slowly than GDP during the period from 1977 to 2000. Michigan manufacturing, with its concentration of mature manufacturing industries, grew even more slowly than manufacturing nationally. Michigan, however, continues to be a leading manufacturing state. While manufacturing accounted for 16.1% of national GDP in 1999, it accounted for 26.2% of Michigan's gross state product. Measured by the value of shipments, Michigan manufacturing continues to be dominated by durable goods in general, and transportation equipment in particular. Industrial machinery and fabricated metals are the next-largest industries. Food manufacturing is the largest nondurable goods industry.

Manufacturing continues to be an important employer in Michigan. Although absolute and relative employment in manufacturing in Michigan has declined, as has manufacturing employment throughout the United States, at the new millennium manufacturing employed one in five Michigan workers, more than the 13.7% employed in manufacturing nationally. Michigan has done better than other traditional manufacturing states, such as New York and Pennsylvania, in retaining manufacturing jobs. During the last twenty years, the state has moved from sixth to fifth in total employment in manufacturing. As expected, transportation equipment is by far the largest employing industry.

The decline in manufacturing employment has not resulted in reduced earnings in manufacturing. In 1999, manufacturing in Michigan accounted for 33.4% of Michigan wages and salaries but only 20.9% of Michigan employment. As suggested by these percentages, manufacturing jobs in Michigan pay better than do nonmanufacturing jobs. Annual earnings per employee in Michigan manufacturing in 1999 were \$63,404, while average annual employee earnings in Michigan overall were \$40,731. The bulk of the

advantage to manufacturing employees resulted from relatively high hourly pay, although a part of the advantage resulted from manufacturing employees working more hours than other Michigan employees.

Regarding collective bargaining and unionization, Michigan manufacturing continues to be highly unionized relative to manufacturing in the rest of the country. During the period from 1986 to 2000, levels of manufacturing unionization in Michigan were a little less than twice those of the country as a whole.

What has been the effect of collective bargaining in Michigan? This is most easily addressed for the auto industry. Earnings data suggest that Michigan autoworkers covered by collective bargaining agreements are paid more for similar work than their nonunion counterparts in other states.

Collective bargaining in the auto industry during the last two decades has focused on employment security, with the evidence suggesting that the parties have provided employees job security in return for wage moderation. In essence, it appears that the UAW has purchased a type of employment security insurance policy for its members through reduced wage increases. This has likely eased the transition of these workers out of the industry, as this transition has occurred in association with retirement. As such, the cost of industry structural changes has been internalized, and has not been borne by the public. Much of the human burden of transition has been borne by new labor force entrants, who have not had the job opportunities in the industry that were available to earlier generations. On the other hand, because they had not invested their lives in the auto industry-specific human capital, it is likely that new labor force entrants could more easily obtain non-auto jobs than could their older counterparts.

This chapter also has shown that the Flint area has borne a disproportionate share of the burden of employment adjustment in Transportation Equipment relative to the rest of Michigan. The evidence suggests that the early 1980s GM reorganization which centralized production allocation decisions, in combination with higher-than-average labor relations conflict in Flint GM facilities, encouraged GM to allocate production to locations other than Flint.

The job security provisions as well as the necessity of considering the interests of the UAW in production allocation decisions will likely

result in Michigan continuing to account for a substantial share of domestic auto industry employment. The job security provisions have made labor costs fixed to a far greater extent in the auto assembly industry than in other industries, and, therefore in Michigan, relative to other states. These fixed costs are likely to encourage the domestic auto companies to produce in areas where they are paying employees in any event, that is, in or near their current facilities, many of which are in Michigan. Thus, we would predict that Michigan plants and Michigan UAW locals will be allocated a substantial share of future production by the domestic automakers.²⁰ Suppliers will continue to serve this production. Thus, we would not expect to see a substantial decline in auto employment in Michigan over the next decade. We would expect the trend from the 1990s, a very gradual decline with small cyclical variations, to continue.

In conclusion, it is clear that manufacturing continues to be the single most important contributor to the wealth and economic well-being in Michigan. Although the importance of manufacturing has declined over the past twenty years, this sector still dominates the employment and income landscape in Michigan.



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NOTES

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1. Dating of recessions may be found at www.nber.org/cycles.htm. Information on national unemployment and employment by sector may be found at www.bls.gov. Manufacturing employment is from series EEU30000001; data on employment status can be found at www.bls.gov/cps/cpsaat1.pdf.
2. Prices are adjusted with the producer price index.
3. State gross product was deflated using the GDP chain type price index, table B-3, *Economic Report of the President* (2002).

4. For discussion of the automobile industry from the perspective of an earlier time period, see the articles by Mordechai E. Kreinin and Frank P. Stafford in Brazer and Laren (1982).
5. The recent conversion of the SIC system to the North American Industrial Classification System (NAICS) has entailed the redistribution of subindustries within manufacturing and the movement of some industries out of manufacturing. The data on major industries in this chapter are based on the SIC system, and where possible, 1997 data has been reallocated to be consistent with the SIC system.
6. We use the Census of Manufactures data on employment for Major Industries to assure consistency with major industry data in other sections. As the most recent Census is 1997, this may not include all of the robust growth of the late 1990s.
7. The number of jobs and employees track very closely over the period under study; there were relatively few dual job holds in Michigan and particularly in manufacturing. Only 180,000 Michigan employees held more than one job in 1999, and there were only 5,000 dual job holders in manufacturing.
8. A small part of this gain is attributable to a modest increase in weekly hours of work in Michigan manufacturing, from 43.3 to 44.2 hours per week. Data on weekly hours for the Michigan labor force are not available. However, national average weekly hours of work declined from 36.0 to 34.5 between 1977 and 2000 (AVERAGE Weekly Hours Of Production Workers: series EEU00500005).
9. Series Id: ___CUUR0000SA0; Not Seasonally Adjusted; Area: U.S. city average Item: All items: Base Period: 1982–84 = 100.
10. For further discussion of unions and the Michigan labor force, see chapter 4 of this volume.
11. The unionized GM Saturn plant is also located in Tennessee, and Ford has a plant in Louisville. Thus, statewide earnings data in MVE and TE in these states are a blend of unionized and nonunion employees.
12. Under pattern bargaining, the UAW would negotiate a pattern-setting collective agreement with a (target) firm and then attempt to apply that same agreement to the other firms. Although there were occasional deviations from the pattern, such as a profit-sharing agreement with AMC in 1961 and wage concessions at Chrysler in 1993, as a rule, terms and conditions of employment were virtually identical for all UAW-represented employees of the auto companies in Michigan (Katz 1987).
13. Another important trend in the industry was the development of new flexible work practices at the plant level, often in negotiations with the local union. See Katz and McDuffie (1994).
14. The 1999 agreements have a four-year duration, expiring in 2003.
15. Chrysler Corporation and Daimler Benz Corporation merged in 1998 to form DaimlerChrysler.
16. Details of the calculation are available from the authors upon request.
17. Increases are presented as changes in nominal wage rates rather than changes in real wage rates because negotiations were carried out in nominal dollars rather than real dollars.
18. The employment decline in the Michigan auto industry over the last two decades, when viewed in the light of the relatively high wage rates in the Michigan auto industry, raises the question of whether the relatively high wage rates in the auto industry, wage rates that could be attributed at least in part to unionization and collective bargaining, were a cause of the employment decline, as would be predicted by conventional economic theory. While the high wage rates may have been a factor encouraging the domestic producers to produce in Mexico, it is not likely that new market entrants, primarily nonunion foreign auto manufacturers, would have located in Michigan in any event. Observations of their location decisions suggest that they generally prefer to locate in rural, less-developed areas where they can be the largest employer and act as monopsonists or, at least, oligopsonists in the labor market. As a result, they are wage setters rather than wage takers in the local labor market.
19. The employment decline in Flint, on a percentage basis, was much greater than the employment decline in cities that are geographically proximate to Flint and contain concentrations of GM facilities. Saginaw-Midland-Bay City, comparable to Flint in terms of concentration of blue-collar workers, experienced only a 29.9% decline in employment from 1980 to 2001 (Bureau of Labor Statistics, undated-b). Lansing experienced a 45.4% decline during the period 1980–2001 (Bureau of Labor Statistics, undated-b). Lansing, however, is not as comparable to Flint as is Saginaw because of a concentration in Lansing of white-collar and engineering employees associated with Oldsmobile. GM transferred these employees to the Detroit area in the mid-1990s.
20. GM's newest auto plant is in Lansing, Michigan. See Block and Berg (forthcoming).

APPENDIX TABLE A.1

Major Manufacturing Industries in Michigan, 1977–1997, Number of Manufacturing Establishments, Value of Shipments and Value Added

SIC	NAICS	Industries*	Michigan					United States				
			No. with > 20 Ee's		Value of Shipments [†]		Value Added [†]		Change in Value Added	Value Added [†]	Change in Value Added	
			1977	1997	1977	1997	1977	1997				
		<i>Total</i>	5,380	5,753	\$93,757	\$241,901	\$37,566	\$93,810				
20	+311, 312	Food mfg. (1997 including beverage and tobacco-NAICS 312)	337	258	\$5,587	\$12,158	\$2,114	\$5,960	182%	\$60,396	\$220,109	264%
22	313, 314	Textile mills (includes 1997 category textile product mills [314])	15	34	\$196	\$336	\$98	\$139	42%	\$16,105	\$37,310	132%
23	315	Apparel mfg.	81	17	\$1,757	\$220	\$821	\$90	11%	\$19,671	\$33,780	72%
24	321	Lumber & wood products (wood product mfg.-NAICS 321 and logging)	182	189	\$684	\$2,215	\$304	\$938	209%	\$16,223	\$39,659	144%
25	337	Furniture and related product mfg.	132	161	\$1,099	\$5,811	\$670	\$3,582	434%	\$8,922	\$34,839	291%
26	322	Paper mfg.	170	143	\$2,026	\$4,878	\$816	\$2,263	177%	\$22,171	\$70,300	217%
27	323	Printing & publishing-1997: Printing and related support activities	294	812	\$1,477	\$6,739	\$960	\$3,215	235%	\$31,980	\$149,149	366%
28	325	Chemical mfg.	146	179	\$3,761	\$11,477	\$1,876	\$5,971	218%	\$56,721	\$224,685	296%
29	324	Petroleum & coal products	24	19	\$1,081	\$1,235	\$185	\$318	72%	\$16,378	\$37,611	130%
30	326	Plastics & rubber products	317	537	\$1,795	\$9,547	\$892	\$4,868	446%	\$19,740	\$81,349	312%
31	316	Leather & allied product mfg.	14	13	\$143	\$656	\$73	\$213	191%	\$3,719	\$5,408	45%
32	327	Stone, clay, and glass products, 1997: Nonmetallic mineral product mfg.	158	177	\$1,443	\$3,821	\$745	\$2,119	185%	\$19,130	\$49,426	158%
33	331	Primary metal mfg.	329	214	\$7,050	\$8,984	\$2,924	\$4,016	37%	\$37,568	\$68,750	83%
34	332	Fabricated metal product mfg. 1060	1272	1060	\$9,373	\$13,725	\$4,557	\$7,817	72%	\$45,512	\$133,493	193%
35	333	Industrial machinery & equipment; 1997: Machinery mfg. (for 1982, category entitled "Machinery except electrical")	1206	1141	\$9,117	\$18,048	\$4,962	\$9,581	93%	\$67,223	\$137,935	105%
36	334, 335	Electronic & other electronic equipment (incl. 1997 computer and electronic product mfg. [334] and electric lighting equipment mfg. [335])	201	203	\$2,071	\$6,425	\$1,059	\$3,068	190%	\$50,366	\$251,561	400%
37	336	Transportation equipment mfg.	304	689	\$44,094	\$108,942	\$13,924	\$39,045	180%	\$64,291	\$227,511	254%
38	Misc. Combo	Instruments & related products	96	152	\$542	\$2,106	\$333	\$1,249	276%	\$18,762	\$88,898	374%
39	339	Miscellaneous mfg.	89	111	\$463	\$1,495	\$255	\$863	239%	\$10,291	\$30,839	200%

* All 3-digit mfg. less those with fewer than 10,000 employees. † In millions. SOURCE: Census of Manufacturers: 1977, 1982, 1987, 1997

APPENDIX TABLE A.2**Employment in Michigan Manufacturing, 1977–1997**

SIC	Industries*	Production Employment							
		Michigan		United States		Michigan		United States	
		1977	1997	1977	1997	1977	1997	1977	1997
20	Food mfg.	46.2	38.63	1,580.6	1,642.7	32.5	28.2	1,122.4	1,210.6
22	Textile Mills	2.6	3.06	875.7	627.3	2.0	2.5	764.6	627.3
23	Apparel and other textile products	25.5	1.57	1,334.3	711.0	21.9	1.3	1,156.6	710.8
24	Lumber and wood products	15.0	15.65	692.4	653.2	12.4	11.1 [†]	594.8	592.3
25	Furniture and fixtures	21.7	33.50	463.8	603.7	16.4	24.4	383.6	484.6
26	Paper and allied products	23.1	19.66	628.7	574.3	17.5	14.8	486.3	440.1
27	Printing and publishing	33.4	46.67	1,092.2	1,573.1	19.6	NA	625.8	+607.6
28	Chemical and allied products	33.9	33.23	880.2	882.6	20.8	17.9	543.8	512.2
29	Petroleum and coal products	2.2	1.79	146.8	107.6	1.4	1.0	101.1	71.6
30	Rubber and misc. plastics products	35.6	67.67	721.3	1,023.1	27.8	52.3	563.7	805.7
31	Leather and leather products	2.9	3.13	242.5	85.1	2.6	2.7	211.5	68.7
32	Stone, clay, and glass products	20.1	18.01	613.7	501.5	15.2	13.2	484.4	388.9
33	Primary metal industries	83.0	37.69	1,113.6	605.1	67.5	29.7	885.3	479.6
34	Fabricated metal products	142.6	104.37	1,555.7	1,763.8	116.1	79.7	1,191.6	1,327.1
35	Machinery, except electrical	145.9	106.39	2,083.3	1,420.5	105.0	71.6	1,413.8	936.0
36	Electric and electronic equipment	33.9	39.67	1,723.1	2,284.9	26.4	22.8	1,191.4	1,309.3
37	Transportation equipment	321.2	268.02	1,768.2	1,842.3	268.2	223.5	1,284.4	1,340.7
38	Instruments and related products	11.6	13.56	559.1	250.4	7.9	7.3	347.2	185.3
39	Miscellaneous mfg. industries	10.8	10.80	440.7	475.0	8.1	8.4	338.7	307.3

* 3-digit mfg. > 10,000 EEs. † Plus logging. SOURCE: Census of Manufactures: 1977 and 1997

APPENDIX TABLE A.3

Earnings and Hours of Work for Major Michigan Manufacturing Industries, 1977–1999, Using NAICS Classification Titles with [NAICS] SIC Groupings

Year	Mfg. Average Hourly Wages	Food Mfg. + Beverage & Tobacco Products [311, 312] 20	Furniture & Fixtures [337] 25	Paper & Allied Products [322] 26	Printing & Related Activities [323] 27	Chemical Mfg. [325] 28	Plastics & Rubber Products Mfg. [326] 30	Nonmetallic Mineral Prod. Mfg. [327] 32	Primary Metal Mfg. [331] 33	Fabricated Metal Product Mfg [332] 34	Machinery Mfg [333] 35	Computer & Electronic Products + Electrical Equipment, Appliance	Transportation Equipment [336] 37	Misc. [Instruments & Related Products+ Others] [MISC] Misc.
Average Hourly Earnings														
1977	\$7.54	\$6.29	\$5.45	\$6.25	\$6.56	\$7.29			\$8.15	\$7.58	\$7.41	\$6.63	\$8.44	
1987	\$12.97	\$10.77	\$10.14	\$12.45	\$10.42	\$12.91		12.08 ¹	\$12.95	\$12.83	\$13.10	\$11.29	\$15.17	\$9.22
1997	\$17.18	\$13.79	\$12.78	\$15.55	\$13.26	\$17.69	\$11.03	\$15.00	\$16.47	\$16.70	\$16.60	\$14.15	\$22.08	\$12.68
1999	\$18.38	\$14.55	\$13.31	\$16.44	\$13.73	\$19.39	\$11.52	\$15.88	\$17.46	\$17.36	\$17.57	\$15.01	\$24.32	\$13.65
Average Weekly Earnings														
1977	\$326.27	\$263.38	\$222.20	\$282.90	\$248.78	\$309.61			\$357.01	\$324.34	\$319.50	\$284.96	\$378.11	
1987	\$547.33	\$436.18	\$394.45	\$556.51	\$397.00	\$539.64		\$540.29	\$556.85	\$536.29	\$565.92	\$468.53	\$650.79	\$380.79
1997	\$757.64	\$525.40	\$545.71	\$693.53	\$503.88	\$765.98	\$446.72	\$673.74	\$757.62	\$736.47	\$751.98	\$628.26	\$1,031.14	\$526.22
1999	\$812.40	\$646.02	\$561.68	\$733.22	\$535.47	\$814.38	\$470.02	\$741.60	\$789.19	\$755.16	\$781.87	\$654.44	\$1,130.88	\$569.21
Average Hours Per Week														
1977	43.3	41.90	40.80	45.30	37.90	42.50			43.80	43.80	43.10	43.00	44.80	
1987	42.2	40.50	38.90	44.70	38.10	41.80		44.80	43.00	43.00	43.20	41.50	42.90	41.30
1997	44.1	38.10	42.70	44.60	38.00	43.30	40.50	45.40	46.00	46.00	45.30	44.40	46.70	41.50
1999	44.2	44.40	42.20	44.60	39.00	42.00	40.80	46.70	45.20	45.20	44.50	43.60	46.50	41.70

SOURCE: Data on Earnings and Hours from United States Bureau of Labor Statistics, State and Area Employment, Hours and Earnings: www.bls.gov

APPENDIX TABLE A.4**Motor Vehicle and Equipment (MVE) Employment, 1980–2001, Michigan and the United States
(in thousands)**

Year	United States	Michigan	Percentage of U.S. MVE Employment in Michigan
1980	788.8	326.3	41.4%
1981	788.7	319.4	40.5%
1982	699.3	286.5	41.0%
1983	753.6	299.7	39.8%
1984	861.5	324.7	37.7%
1985	883.1	341.1	38.6%
1986	871.8	338.5	38.8%
1987	865.9	316.5	36.6%
1988	856.4	294.7	34.4%
1989	858.5	289.5	33.7%
1990	812.1	278.7	34.3%
1991	788.8	266.7	33.8%
1992	812.5	272.4	33.5%
1993	836.6	266.1	31.8%
1994	909.3	278.3	30.6%
1995	970.9	287.8	29.6%
1996	966.8	284.2	29.4%
1997	985.6	278.7	28.3%
1998	995.3	276.3	27.8%
1999	1018.3	287.9	28.3%
2000	1013.0	293.0	28.9%
2001	932.5	274.3	29.4%

SOURCE: United States Bureau of Labor Statistics.