

# COMPARISON: MICHIGAN AND OTHER REGIONS

## Manufacturing / Real Output

Although the difference between the growth in services and the growth in total manufacturing is occurring to varying degrees across the entire U.S., it is much more pronounced in Michigan and the Midwest than in other regions. Moreover, compared to other regions and to the U.S. as a whole, between 1977 and 1996 Michigan did not achieve a very high level of growth in manufacturing or in total real output. However, Michigan did manage a brief period between 1992 and 1995 when manufacturing grew faster in Michigan than it did in many other states.

Other comparisons include:

- ◆ The value of total real output between 1977 and 1996 grew less in Michigan than in any other region. This partially reflects the trend in Michigan to diversify into sectors other than manufacturing — sectors that do not add as much value per worker.
- ◆ Between 1992 and 1996, Michigan increased total real output at a higher rate than most other regions. In other years, however, Michigan has grown more slowly than other regions.
- ◆ Michigan has exhibited significant cyclical swings in real output over the years, sinking lower than other regions in recessionary periods, and increasing more quickly in expansionary periods.

Compared to other regional sectors in the U.S., Michigan economic output continues to be volatile. This is especially evident in the manufacturing sector. **Tables 6 and 7** illustrate these points by comparing real output and employment growth by industry in Michigan to growth in the U.S. and other regions.

Table 6

REAL OUTPUT PERCENT CHANGE BY INDUSTRY AND REGION  
1996 OVER 1977

<u>Region</u>	<u>Total</u>	Manufacturing				<u>Services</u>	<u>Whole- sale Trade</u>	<u>Retail Trade</u>
		<u>Durable</u>		<u>Non- durable</u>	<u>Total</u>			
		<u>Total</u>	<u>Motor Vehicle</u>					
Michigan	32.0%	5.0%	-39.4%	66.1%	15.4%	55.2%	150.6%	50.0%
UnitedStates	65.8%	80.5%	-4.8%	49.5%	66.2%	88.5%	145.5%	77.9%
New	80.0%	82.1%	-5.9%	28.5%	62.7%	101.7%	170.8%	79.7%
Mideast	50.4%	28.6%	-38.9%	21.5%	24.0%	70.1%	102.4%	54.8%
GreatLakes	43.2%	42.3%	-21.8%	47.9%	43.0%	58.6%	124.3%	48.5%
Plains	55.7%	101.8%	14.7%	68.8%	86.2%	66.3%	117.0%	59.1%
Southeast	83.8%	129.9%	130.4%	58.0%	86.3%	116.7%	180.6%	110.2%
Southwest	77.9%	227.6%	100.4%	73.5%	146.4%	113.3%	175.6%	102.9%
Rocky Mtn	84.6%	181.8%	312.1%	88.3%	141.6%	111.7%	165.5%	99.5%
FarWest	80.1%	105.2%	-19.7%	63.2%	89.7%	102.2%	174.6%	88.0%

Source: Bureau of Economic Analysis

Table 7

**WAGE & SALARY EMPLOYMENT PERCENT CHANGE BY INDUSTRY AND REGION  
1996 OVER 1969**

<i>Region</i>	<b>Manufacturing</b>					<i>Services</i>	<i>Whole- sale Trade</i>	<i>Retail Trade</i>
	<i>Total</i>	<i>Durable</i>		<i>Non- durable</i>	<i>Total</i>			
		<i>Total</i>	<i>Motor Vehicle</i>					
Michigan	41.0%	-23.4%	-29.9%	10.4%	-16.9%	159.5%	55.5%	70.7%
UnitedStates	61.7%	-9.6%	5.2%	-7.0%	-8.5%	169.8%	74.9%	96.1%
New	36.8%	-28.2%	-34.9%	-38.3%	-32.2%	145.7%	59.6%	63.1%
Mideast	21.4%	-48.6%	-37.3%	-41.2%	-45.2%	116.1%	23.6%	41.4%
GreatLakes	39.1%	-24.8%	-14.6%	-4.2%	-19.1%	151.2%	53.5%	66.2%
Plains	62.3%	14.8%	28.2%	15.9%	15.3%	156.1%	77.2%	77.5%
Southeast	89.1%	41.5%	285.2%	2.1%	18.5%	192.4%	121.8%	160.1%
Southwest	115.1%	52.5%	137.2%	39.5%	47.2%	233.3%	109.9%	153.5%
RockyMtn	131.4%	94.4%	503.5%	58.7%	79.5%	282.6%	132.5%	169.5%
FarWest	87.7%	5.5%	5.8%	36.9%	15.4%	213.3%	104.9%	116.0%

Source: Bureau of Economic Analysis

## ***Personal Income Growth***

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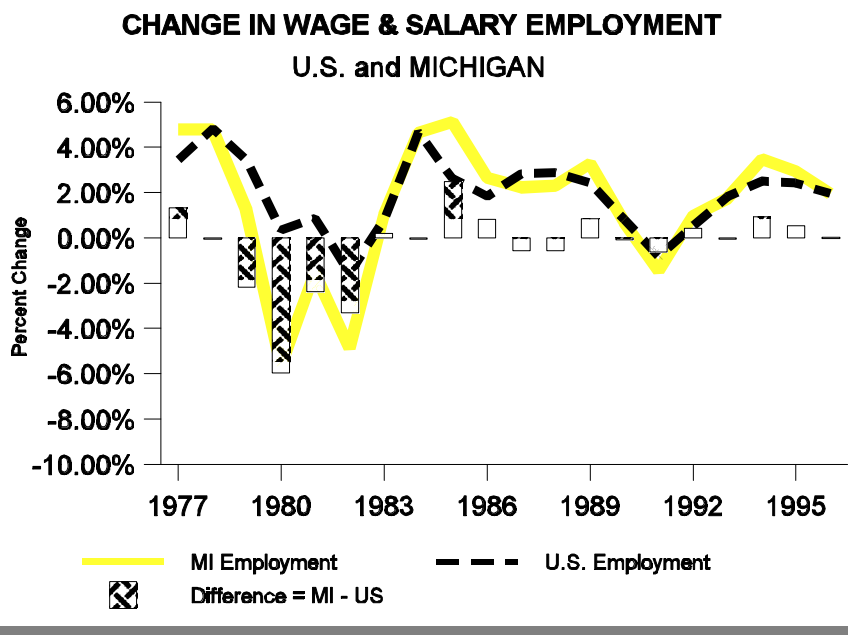
State personal income growth is directly related to state revenue growth and is an important indicator of state economic momentum. State personal income growth compared to other states is an indicator of how the state economy is performing relative to the rest of the nation. As the data reported in **Table 9** (page 36) demonstrate, Michigan's relative ranking for personal income growth from 1976 to 1997 fluctuated between 50 (which means income growth was the slowest in the nation) and 6 (a ranking of 1 indicates that growth is the fastest in the nation). What typically happens over the course of the business cycle is that as Michigan's economy slows down and precedes the nation into recession (see next section, "Michigan and the Business Cycle," for an explanation of why the Michigan economy has behaved in this manner), light vehicle sales slow, the state unemployment rate increases relative to the nation, and, quite naturally, personal income growth relative to other states slows dramatically.

Something unique, however, appears to be happening during the current expansion. Michigan's unemployment rate has been consistently below the national average since 1995 and light vehicle sales are maintaining reasonably high levels. Yet despite consistently low unemployment rates, reasonably robust light vehicle sales, and no recession, Michigan personal income growth has been among the slowest in the nation since 1995. This phenomenon may indicate that, as discussed elsewhere in this report, the structural changes that have occurred in Michigan's employment base will lead to slower, albeit less volatile, growth in personal income and slower state revenue growth.

# MICHIGAN AND THE BUSINESS CYCLE

While state employment levels remain sensitive to national recessions, diversification of the state's industrial base continues to decrease employment volatility.<sup>1</sup> In the recessions of 1980 and 1981-1982, declines in state employment were more severe than the declines in national employment (in percentage terms), and during that period the decline in state employment levels began before the decline in national employment levels. A decade later, in the recession of the early 1990s, the decline in Michigan employment was less severe than in the previous recession, and Michigan employment levels did not begin to decline until national employment levels began to decline (Figure 11).

Figure 11



*Recession Periods: 1980, 1981-82, 1990-91*

<sup>1</sup> Volatility is defined as the percent deviation from trend.

State real output levels,<sup>2</sup> however, have been and apparently continue to be highly responsive to national economic fluctuations. In the recessions of 1980 and 1981-1982, the reductions in state real output (like those in state employment) were more severe than the reductions in national real output, and they preceded the decline in national real output.

In the recession of the early 1990s, Michigan real output (unlike Michigan employment) again showed a greater rate of decline than that of the national economy and again declined before national real output began to decline (Figure 12).<sup>3</sup>

Figure 12

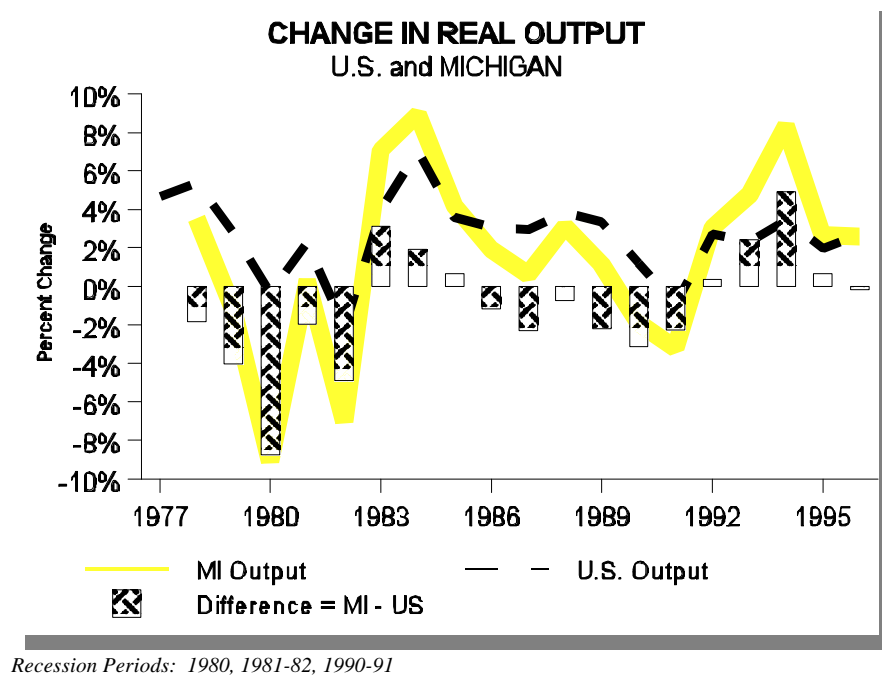


Table 8 shows that the recession of 1991-1992, like the recessions in the 1980s, affected Michigan industrial output more severely than it did the nation as a whole. In each recession, Michigan's decline in real output was steeper and longer-lasting than the national decline.

In general, Michigan's economy has evolved differently with respect to employment than it has with respect to industrial output. Over time, state employment levels have become

<sup>2</sup> Output refers to gross state product, which is the state counterpart to the national gross domestic product. Gross state product is a measure of the value of all final goods and services produced in the state over a given time period.

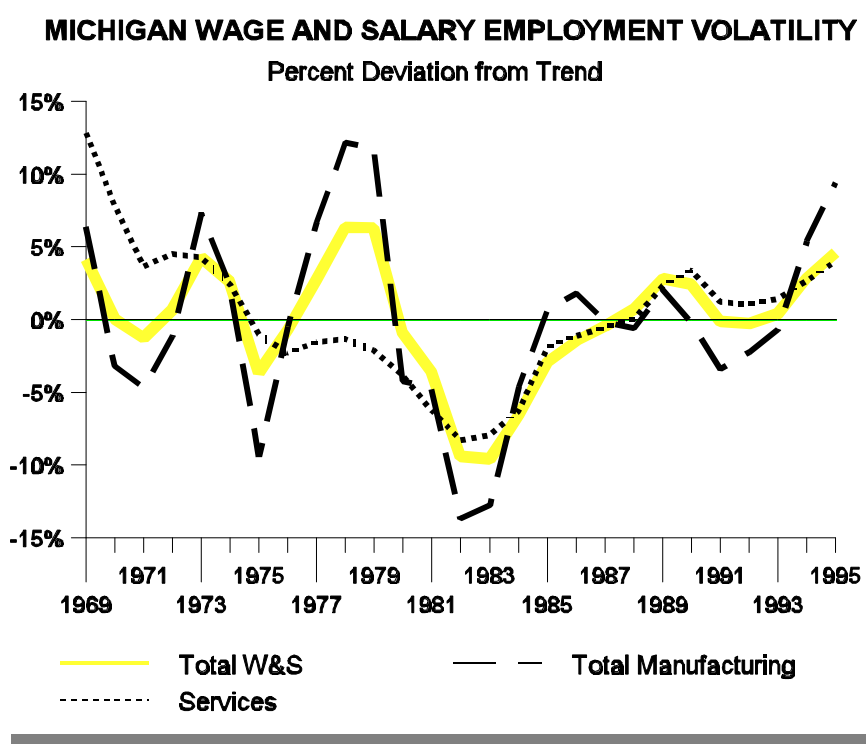
<sup>3</sup> Based on annual averages of total Michigan gross state product and U.S. gross domestic product. Quarterly averages are not available.

less sensitive to the business cycle because there is a growing share of employment in less volatile sectors. On the other hand, state real output has not experienced a change in composition to the same extent as employment (Figure 13) and thus its sensitivity to the business cycle has not been reduced to the same degree as employment (Figure 4, page 13, and Table 8).

Table 8

<b>MICHIGAN AND U.S. COMPARISON OF PAST RECESSIONS</b>				
<i>Period</i>	<i>Average Annual Percent Decrease</i>			
	<i>Output</i>		<i>Employment</i>	
	<i>Michigan</i>	<i>U.S.</i>	<i>Michigan</i>	<i>U.S.</i>
1979-80	-9.1%	-0.3%	-4.6%	+ 0.8%
1981-82	-7.0%	-2.1%	-3.9%	-0.7%
1979-82	-15.2%	-0.2%	-9.4%	+ 1.1%
1990-91 (1989-90)	-3.2% (-1.9%)	-0.9% (+ 1.2%)	-1.1%	-0.3%

Figure 13



Michigan continues to maintain a strong presence in those industries (such as durable goods manufacturing) that tend to react early to economic downturns. This causes Michigan to respond before national economic fluctuations (be procyclical) more than most other regions.

By way of illustration:

- ◆ In 1979, three sectors (mining, durable goods manufacturing, and retail trade) experienced declines in national real output in the year prior to the official start of the national recessions of the early 1980s. At that time, these three sectors contributed 34.0% to Michigan's real output, compared to just 21.0% to total U.S. real output.
- ◆ In the 1990-91 recession, these sectors again were procyclical and experienced a decline in real output (**Figure 12**, page 32) in the year before the national recession officially began. This time, these industries accounted for approximately 31.0% of Michigan real output compared to just 20.0% of total U.S. real output.

Considering the relative concentration Michigan continues to have in procyclical industries, it is not surprising that the state experiences an economic downturn prior to a national economic downturn, and there is no reason to expect that this will not continue in the foreseeable future. More often than not, any leading economic indicators will provide no more warning than the downturn itself. Because Michigan continues to lead the nation into recessions, forecasting future state economic downturns will continue to be difficult.



# PERSONAL INCOME AND WAGES

The effect on Michigan's personal income and wage growth of the trends discussed in this **Fiscal Focus** has manifested itself in two major ways: the growth of nominal<sup>4</sup> wages and personal income has declined moderately over the past 2½ decades (**Table 9**), and wage and income volatility also has decreased somewhat (**Figures 14 and 15**). The reasons for this are twofold: the shift toward employment in service industries, and a decrease in the average size of the firm in the manufacturing sector.<sup>5</sup>

Data on personal income and wages in Michigan show that although average wages are lower in service industries, service employment is more robust during economic downturns. This tends to decrease wage volatility. From 1991 to 1995, during which time manufacturing employment as well as service employment was increasing, personal income growth in Michigan was among the highest in the nation.

Since 1995, manufacturing employment has resumed its sluggish growth, and personal income growth in Michigan has slowed accordingly. Michigan personal income growth ranked 14th in the U.S. in 1993, 6th in 1994, 23rd in 1995, 48th in 1996, and 41st in 1997.<sup>6</sup>

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<sup>4</sup> Nominal wages are not adjusted for inflation. Real wages are adjusted for inflation.

<sup>5</sup> Firm size and wages are positively correlated in the manufacturing sector, but not in the services sector.

<sup>6</sup> Bureau of Economic Analysis.

Table 9

## MICHIGAN ECONOMIC INDICATORS

<u>Year</u>	<u>Unemployment Rate</u>		<u>U.S. Light Vehicle Sales</u>	<u>Michigan Nominal Personal Income Growth</u>	
	<u>Michigan</u>	<u>U.S.</u>	<u>(Millions of Units)</u>	<u>Percentage</u>	<u>Rank *</u>
1976	9.4%	7.7%	13.0	13.2%	10
1977	8.2%	7.1%	14.5	13.0%	7
1978	6.8%	6.1%	15.0	11.6%	33
1979	7.8%	5.9%	13.8	10.2%	42
1980 <i>Recession</i>	12.4%	7.2%	11.2	6.9%	46
1981 <i>Recession</i>	12.3%	7.6%	10.6	6.9%	50
1982 <i>Recession</i>	15.5%	9.7%	10.4	1.7%	48
1983	14.2%	9.6%	12.1	6.2%	28
1984	11.2%	7.5%	14.2	10.8%	22
1985	9.9%	7.2%	15.4	8.5%	14
1986	8.8%	7.0%	16.1	6.3%	22
1987	8.2%	6.2%	14.8	4.1%	41
1988	7.5%	5.5%	15.4	6.8%	27
1989	7.1%	5.3%	14.5	6.5%	40
1990 <i>Recession</i>	7.6%	5.6%	13.9	4.7%	44
1991 <i>Recession</i>	9.3%	6.9%	12.1	2.7%	41
1992	8.9%	7.5%	12.8	5.3%	38
1993	7.1%	6.9%	13.9	6.3%	14
1994	5.9%	6.1%	15.0	7.4%	6
1995	5.3%	5.6%	14.8	5.7%	23
1996	4.9%	5.4%	15.1	3.3%	48
1997	4.2%	5.0%	15.0	4.6%	41

\*Ranking among states: fastest growth ranked 1, slowest growth ranked 50

Source: Bureau of Economic Analysis and Bureau of Labor Statistics

Figure 14

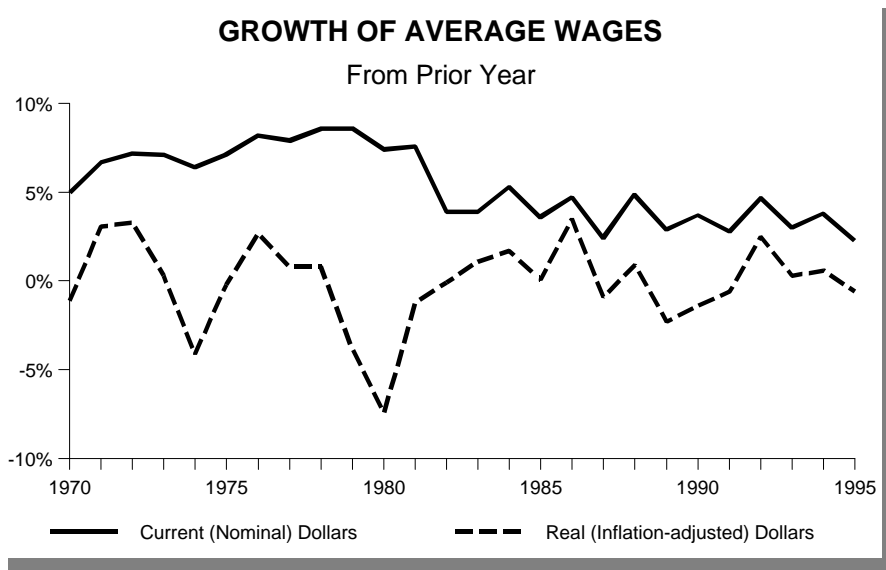
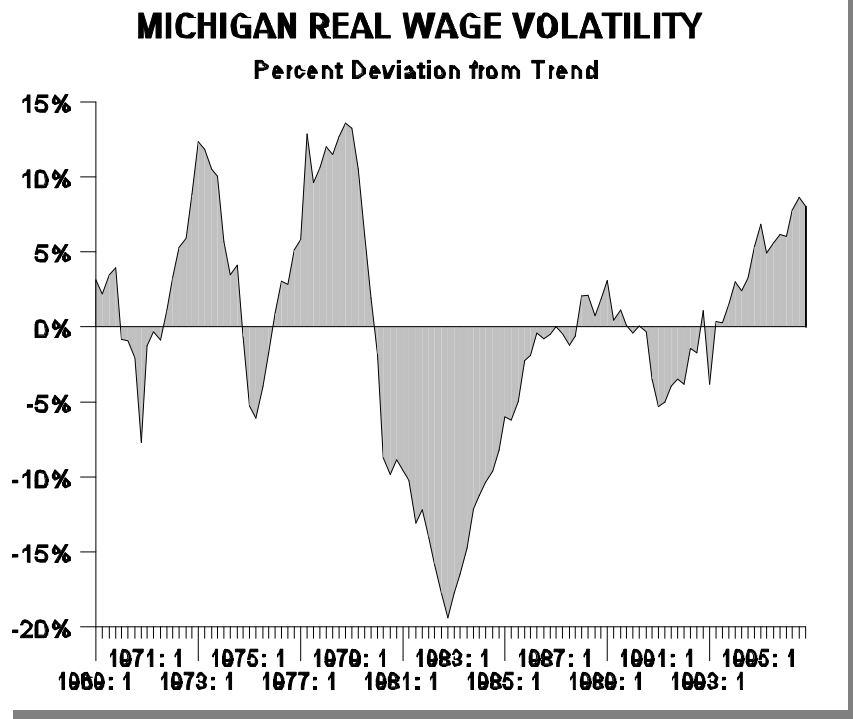


Figure 15



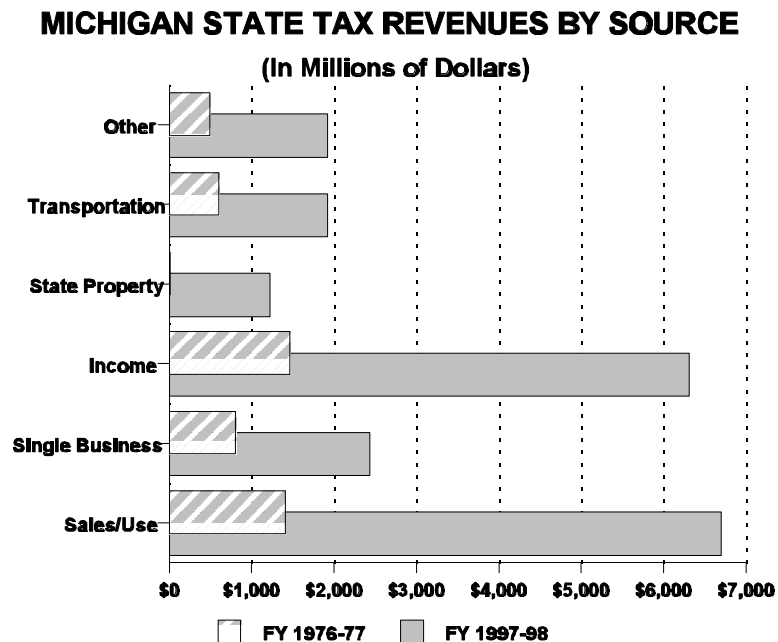


# TAX REVENUE

The difficulty of predicting turning points in the Michigan business cycle means that it is also difficult to forecast significant swings in the state's tax revenue. Overall, the trends toward less employment concentration in the durable goods sector and greater overall employment diversity may help alleviate the impact of a recession on Michigan tax revenue. However, slower growth in personal income will also lower the overall growth rate of tax revenue.

There are five major revenue producing taxes in Michigan: income, consumption (sales and use), business (single business tax [SBT]), transportation, and property<sup>7</sup> (Figure 16), which together account for over \$18.5 billion of the estimated \$20.0 billion in state tax revenues in FY 1997-98.<sup>8</sup>

Figure 16



<sup>7</sup> State education tax (SET) was enacted in 1993 PA 331.

<sup>8</sup> Based on the May 1998 Revenue Estimating Conference.

If the trends examined in this publication continue, the revenue streams from these taxes can be expected to react to economic fluctuations in the following ways.

### ***Income Tax***

Income tax revenues made up approximately 30.0% of state tax revenues in 1976-77, and today that figure is about the same (\$6.3 billion in estimated revenue in FY1997-98).<sup>9</sup> Income tax revenue may become less sensitive to economic fluctuations because income itself will be less vulnerable. Curbing the loss of jobs in a recession will help maintain wage and income levels and, in turn, income tax revenue collections. Thus, income taxes should be somewhat less volatile in the future. One thing to note, however, is that shifting employment to lower-paying service jobs may, over time, tend to decrease income growth and, in turn, income tax growth.

### ***Consumption / Sales and Use Tax***

Sales and use taxes contribute about 33.0% to total state tax revenues today (\$6.7 billion in FY1997-98) compared to about 30.0% in FY 1976-77.<sup>10</sup> In a recession, consumption declines less than income because people tend to dip into their savings to buy goods. Retention of income levels (resulting from fewer job losses) also helps boost consumption. Because consumption is tied to income, if income growth slows over time, consumption growth, as well as sales and use tax revenue growth, will tend to slow down as well.

### ***Business / Single Business Tax***

Single Business Tax (SBT) revenues have always been volatile and will continue to be so. Single Business Tax revenues currently contribute about 12.0% to total state tax revenues (\$2.2 billion in FY1997-98), compared to about 17.0% in FY 1976-77.<sup>11</sup> The SBT is a value-added tax that derives revenues primarily from employee compensation and business income (the tax base). Employee compensation composes about 70.0% of the tax base, and this component of SBT revenue may become somewhat less volatile because of less fluctuation in employment.

Real output continues to be sensitive to the business cycle. Because a loss of real output in the economy will decrease both business activity and business income, the business income portion of SBT tax revenue should continue to be volatile — offsetting declines in volatility of the compensation portion of the SBT. Hence, a recession will continue to have a significant negative impact on business tax

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<sup>9</sup> The income tax rate created under 1967 PA 281 was originally 2.6% with a personal exemption of \$2,200 per dependent. Between 1982 and 1998, as the result of amendments to the Public Act, the rate varied between 4.6% and 6.35%, but was lowered to the current rate of 4.4% in 1994 by 1993 PA 325 (Proposal A). The exemption was \$2,500 in 1997.

<sup>10</sup> The sales and use tax rates were 4.0% in 1977, and increased to their current rate of 6% effective May 1, 1994 under Proposal A.

<sup>11</sup> The Single Business Tax rate was 2.0% in 1977 and is 2.3% today, but now has more deductions. See "The Michigan Single Business Tax, 1993-94", July 1997, Department of Treasury.

revenues. Moreover, since wage and income growth may tend to slow over time as the employment mix shifts toward lower-paying service jobs, growth in employee compensation and, in turn, growth in SBT revenue may slow as well.

A prominent feature of the SBT is the capital acquisition deduction (CAD). This tax option allows a business to deduct from its tax base an amount equal to most of its capital investment in Michigan. The revenue reduction attributable to CAD varies from year to year and depends on the business cycle; as the economy expands and capital investment grows accordingly, the CAD grows — and vice versa. This contributes to SBT revenue instability. According to the Department of Treasury, CAD reduces the tax base by 15.0% to 20.0% on average.<sup>12</sup>

Another feature of the SBT is the apportionment formula. Michigan firms doing business in other states use this formula to prorate their SBT liability based on a ratio of in-state business activity to out-of-state business activity. The formula uses a weighted average of three factors — sales, payroll, and property — to calculate the ratio. The formula was changed recently so that after tax year 1998, the sales factor will be weighted much more heavily than the other two: 90.0% for sales and 5.0% each for payroll and property. The effect of this change on the sensitivity of the apportionment formula and SBT revenue is indeterminate because sales (consumption) is likely to be less volatile than payroll (which depends on employment) and more volatile than property.

### ***Transportation***

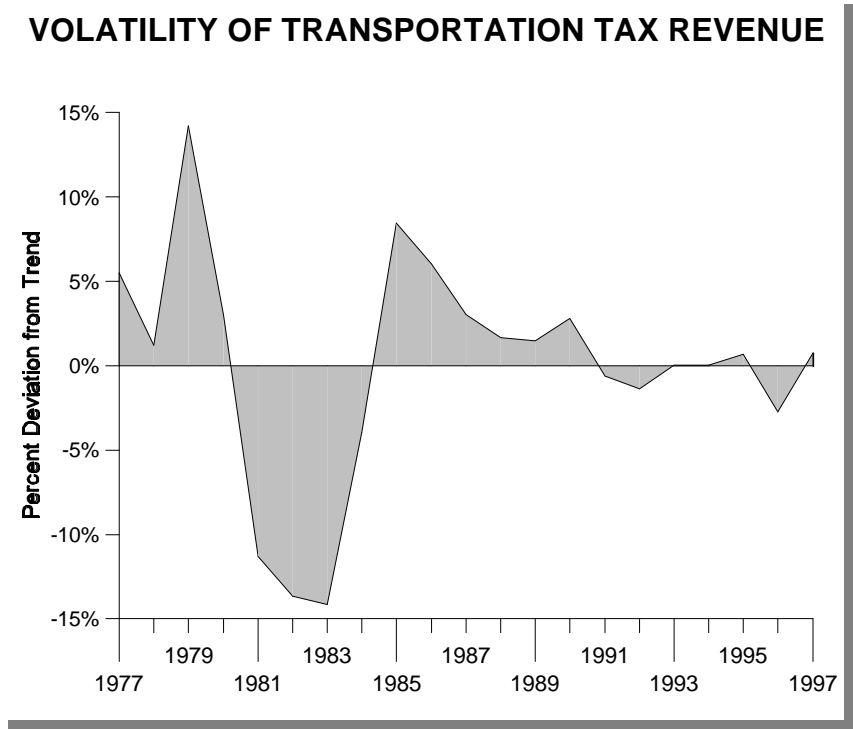
Transportation taxes currently contribute about 7.5% to total state tax revenues (\$1.3 billion in FY1997-98), compared to about 12.0% in FY 1976-77.<sup>13</sup> Because most transportation taxes are types of consumption taxes, economic trends should have similar effects on transportation tax revenues and sales and use tax revenues. In the past, transportation revenues were fairly volatile, but in recent years they have been more stable (**Figure 17**). This trend is expected to continue.

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<sup>12</sup> The CAD was changed in 1995 so that it can only be used on assets located in Michigan. It has been suggested that this provision is unconstitutional. Out-of-state firms paying SBT have lost deductions for most of their out-of-state investments, resulting in an increased tax liability. This has provided incentives for out-of-state firms to challenge CAD in the courts. If this provision of the CAD is struck down, revenues will be adversely affected.

<sup>13</sup> Transportation taxes include the gasoline tax, diesel fuel tax, motor carriers fuel tax, motor carriers privilege tax, liquefied petroleum tax, aviation gasoline tax, marine vessel fuel tax, aircraft weight tax, watercraft registration tax, and motor vehicle weight or value tax. Tax rates increased from \$0.09 per gallon in 1977 to the current rate of \$0.15 per gallon in 1994.

Figure 17



### ***Property / State Education Taxes***

The state education tax (SET), based on the taxable value of all real and personal property, was implemented in 1994 and currently contributes about 7.5% to total state tax revenues (\$1.3 billion in FY1997-98). The impact of economic trends on SET and local property tax revenue should not be overly severe. The taxable value of property is not significantly affected by the business cycle, in part because constitutional limits placed on the growth of taxable value in Michigan tend to slow the growth of property tax revenue.<sup>14</sup> The trends noted in this report likely will not affect property tax revenue in any significant way.

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<sup>14</sup> The passage of Proposal A on March 15, 1994 imposed a constitutional limit on the growth of property assessments from one year to the next. Growth in assessments is limited to 5% per year or the rate of inflation, whichever is lower. Taxable value will be lower than state equalized value (SEV = market value divided by 2) where market values are rising faster than the limit. Taxable value is repegged to SEV when ownership of the property changes hands. The limit currently does not apply to special assessments, which are levied in local areas for special purposes.



# CONCLUSION

## *Employment*

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Over the past two decades, Michigan has experienced a structural change in its industrial base. Employment, once heavily concentrated in the durable goods manufacturing sector has shifted toward other sectors — most notably the service sector. This employment shift is part of a continuing process which is diversifying the state's employment base. Michigan's employment base, therefore, is becoming more similar in composition to the national employment base. This has the effect of decreasing the volatility of employment in Michigan over the business cycle.

Michigan's changing employment base has also contributed to the lower unemployment rates the state is experiencing today. Since the mid-1960s, Michigan's unemployment rate had been higher than the national unemployment rate, with the gap between them widening in each succeeding year until the early 1980s when the gap began to narrow. In 1994, the Michigan unemployment rate fell below that of the national rate for the first time since the 1960s, and it has been there ever since.

The shift toward greater employment diversity seems to have intensified in the last few years, resulting in an increase in the share of state employment in nonmanufacturing industries. An annual study of employment in the Detroit area supports this finding:

"The classic example of a transformation into a more diverse metropolitan area leading to decreased (employment) volatility is that of Detroit. A combination of a sharp decline in the share of workers manufacturing automobiles, and recent success in cultivating trade and services employment has helped Detroit's economic make-up move closer towards the national mean."<sup>15</sup>

What is true of Detroit is true for Michigan as a whole.

The superb employment record of the last few years is not merely a response to the recovery of the light vehicle market. Approximately 45% of the increase in jobs between

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<sup>15</sup> Regional Financial Associates (1997).

1991 and 1996 can be attributed directly to service industries, and 17% can be directly attributed to retail trade. In contrast, durable goods industries, in the aggregate, accounted for approximately 12% of the employment gains during this period, and the automotive manufacturing industry itself accounted for only 4.3% of the employment gains. Thus, although the automotive industry's strength certainly contributed to employment gains, it does not appear to be the only factor.

## ***Industrial Output***

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Michigan's changing industrial base has not had as large an impact on the state's output as it has had on state employment. State output still is fairly heavily concentrated in those industries that are sensitive to the business cycle (such as durable goods manufacturing). As a result, Michigan output is still vulnerable to economic fluctuations.

The recession of 1990, like the recessions in the early 1980s, affected Michigan industrial output more severely than it did the nation as a whole. In each recession, Michigan's decline in real output was steeper and longer-lasting than the national decline.

In general, Michigan's economy has evolved differently with respect to employment than it has with respect to industrial output. Over time, state employment levels have become less sensitive to the business cycle because there is a growing share of employment in less volatile sectors. On the other hand, state real output has not experienced a change in composition to the same extent as employment, and its sensitivity to the business cycle has not been reduced to the same degree as employment.

One byproduct of the difference in evolution between employment and output in Michigan is an increase in labor productivity in the manufacturing (and wholesale trade) sector and a decrease in labor productivity in the service sector.

## ***Personal Income***

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The decrease in employment volatility, due in part to an increasingly diverse employment base, has led to a corresponding decrease in the volatility of personal income growth. Unfortunately, the decline in employment volatility has been accompanied by a moderate decrease in the average rate of growth of personal income.

A decline in the average growth rate of personal income also corresponds to the shift toward employment in the service sector and a decrease in the average size of firms in the

manufacturing sector. The average size of manufacturing firms is important because employees in smaller firms tend to receive lower average wages.

Whether these trends in the volatility and growth rate of personal income continue will depend upon whether the shift toward service jobs continues and what kinds of service jobs are produced by Michigan's economy. If job opportunities in the service sector are high-paying, professional positions, then the decline in personal income growth may be reversed. If, however, most jobs created in the service industry are low-paying, unskilled jobs, the rate of growth of personal income in Michigan will continue to decline.

Another factor that may be affecting the growth rate of personal income in Michigan is a shortage of skilled labor. Michigan's unemployment rate has been lower than the national average since 1994 and is currently below 4% (3.6 % in June 1998). This has led to a shortage of skilled labor that may be restricting personal income growth.

## ***State Tax Revenues***

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There are three types of state taxes: direct taxes on income, consumption taxes, and business taxes. Personal income growth is an important determinant of revenue growth for every major tax revenue source. There is a direct correlation between income growth and the level of income tax collections and the level of sales and use tax collections. In addition, compensation (which is directly correlated to personal income) accounts for about 70% of the tax base of the single business tax.

Employment in Michigan has shifted from the durable goods manufacturing sector toward other sectors, most notably the service sector, and manufacturing employment has shifted to smaller firms that pay lower average wages. Although employment volatility appears to be waning, wage and income growth have slowed as well. If these trends continue, state revenues will be less sensitive to downturns in the economy, which implies that the consequences of a national recession on the state budget process will be less severe. However, state revenues will grow more slowly during economic expansions, which limits resources available for the state's budgetary responsibilities.



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