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MINNESOTA'S ECONOMIC OUTLOOK TO 2000

Wilbur Maki



**Department of Agricultural and Applied Economics**

University of Minnesota  
Institute of Agriculture, Forestry and Home Economics  
St. Paul, Minnesota 55108

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## MINNESOTA'S ECONOMIC OUTLOOK TO 2000

### Summary

Minnesota's economic outlook to the year 2000 depends in large measure on the success of its manufacturing industries. Manufacturing in Minnesota is trade-dependent and also cyclically-sensitive. It can be, and has been, Minnesota's nemesis.

Manufacturing growth brought unprecedented prosperity to Minnesotans in the 1970s. But manufacturing decline brought a sharp reversal in the state's growing share of US industry employment in the early 1980s as export markets declined and foreign imports edged out US products in their own domestic markets.

Conversely, a declining US dollar in foreign exchange and much needed productivity improvements in US manufacturing re-opened foreign markets and reduced the competitive advantage of foreign products in US domestic markets. By 1987 manufacturing had regained its earlier role as the expanding edge of Minnesota's economic base.

Manufacturing in 2000 will have become more important to Minnesota's economy than agriculture was in 1950. More than three-fourths of this reversal of roles had been achieved by 1985.

In 1985, manufacturing employment reached 389 thousand--16.7 percent of total employment. Manufacturing labor earnings were \$10.7 billion, or 24.1 percent of total labor earnings. By 2000, manufacturing employment is projected at 502 thousand, or 17.4 percent of total employment and labor earnings are projected at \$17.5 billion, or 25.9 percent of total earnings.

The critical role of manufacturing in Minnesota's economic outlook to the year 2000 is illustrated by comparing manufacturing growth with other industry

growth in total and basic--meaning export-related--employment, as follows:

<u>Industry</u>	<u>Total Jobs</u>		<u>Basic Jobs</u>	
	<u>1985</u>	<u>2000</u>	<u>1985</u>	<u>2000</u>
	---thousand---		----percent---	
Manufacturing	389	502	41.6	48.5
Agriculture	154	149	23.1	15.4
Mining	9	12	1.8	1.9
Construction	108	139	0	0
Regulated industries	114	137	3.9	4.0
Wholesale & retail trade	534	672	11.7	13.0
Finance, insurance & real estate	176	224	3.3	1.7
Private services	552	769	14.2	15.5
Government	291	284	0.3	0
All industry	2327	2889	100.0	100.0

The growing dominance of manufacturing is even more pronounced in basic employment than total employment because of the large proportion of manufacturing employment engaged in producing goods for sale outside Minnesota.

Comparison of the growth in labor earnings (in 1985 dollars) among major industry groups again shows manufacturing's importance to Minnesota's economic future, as follows:

<u>Industry</u>	<u>Total Earnings</u>		<u>Avg Earnings</u>	
	<u>1985</u>	<u>2000</u>	<u>1985</u>	<u>2000</u>
	---billion\$---		---thousand\$---	
Manufacturing	10.7	17.5	27.5	34.9
Agriculture	1.4	1.6	9.3	10.4
Mining	0.3	0.6	37.4	51.1
Construction	2.7	4.0	24.7	28.9
Regulated industries	3.4	5.2	29.8	37.7
Wholesale & retail trade	7.6	10.8	14.3	16.0
Finance, insurance & real estate	2.9	4.5	16.3	20.1
Private services	9.2	15.9	15.9	19.9
Government	6.2	7.7	20.0	24.2
All industry	44.4	67.8	18.7	23.0

With projected growth of \$23.4 billion (1985 dollars) in total labor earnings from 1985 to 2000, manufacturing would contribute \$6.8 billion, or 29.1 percent of the total. Its basic employment would account for an even larger proportion of the labor earnings of all workers engaged in producing goods and

services for sale to non-resident customers.

The economic importance of manufacturing grows even more when accounting for the personal income of Minnesotans. Net (total less personal contributions, plus residence adjustment) labor earnings, as a proportion of total personal income, is projected to increase from 69.2 percent in 1985 to 71.8 percent in 2000. Even then, per capita income would fall relative to US per capita income without further increases in labor force participation, that is, the proportion of the total population 16 years and older that is remuneratively employed. The projected increase of 113.2 thousand manufacturing jobs, because of its large basic multiplier relationships, would account for more than 50 percent of the new jobs in residentiary industries, which is an essential part of the personal income equation for Minnesotans that allows Minnesota per capita income to rise two-percent or more above US levels. Without the new residentiary jobs that offer a wide range of remunerative employment opportunities for Minnesotans with varying job skills, above-average increases in Minnesota labor force participation rates could not be sustained and per capita income growth would lag, rather than lead, US per income growth.

Manufacturing, because of its vaguely perceived, but nonetheless critical, importance in Minnesota's economic future, together with its high sensitivity to the US business cycle and the world trade cycle, is a demanding partner in the economic life of all Minnesotans. Its unique requirements for success in a new world economic order are neither clearly-perceived nor, when perceived, wisely and effectively addressed. Yet, the increasingly important strategic choices in building a successful, world-class manufacturing economy are encompassed in the daily activities of all Minnesotans, like education and infrastructure development that involve many public choices and that are best

served by an active and well-informed citizenary.

Minnesota's economic outlook to the year 2000 is reviewed in this report--the fifth in a series on education and the economy. Industry employment trends are presented, first, with a comparison of alternate statistical series used in monitoring and forecasting employment levels over the 18-year period starting in 1982. Employment growth is attributed to three change sources--national growth, industry mix and regional share, with national growth accounting for three-fourths or more of total employment change in most industries. Forecasts of labor earnings from industry employment are reviewed, also, along with projections of personal income and its principal components--property income and transfer payments as well as labor earnings.

## MINNESOTA'S ECONOMIC OUTLOOK TO THE YEAR 2000

Wilbur Maki

In this report, post-World War II trends are extended to the year 2000 from their base year--1982. The base-year marks the end of the 1981-82 recession and the beginning of what is now the second longest period of U.S. economic recovery since World War II.

Projected trends from 1982 to 1990 and 2000 are compared with the actual industry employment and personal income payments for the intervening period to 1985. Because the projections approximate a moving average, the actual values will show positive differences during the recovery period of a business cycle and negative differences in the recession period. Actual employment levels in 1989 and 1990, for example, are likely to be lower than projected, given the increasing probability of recession as the U.S. economy moves beyond its sixth year of recovery.

### Industry Employment Trends

Industry employment estimates are derived from the periodically reported U.S. Department of Commerce Regional Economic Information System (REIS) state and local series, of which the 1985 series is the latest available for this report. Reported earnings refers to the earnings of wage and salary and self-employed workers. Income payments received by these workers from industry employment, along with transfer payments and property income, make up the total personal income payments received by Minnesota residents.

### Alternate Employment Series

Industry employment trends projected for the 15-year period beyond the historical series to 1985 are based on three sets of related assumptions.

- o Firstly, demographic factors will account for a reduced rate of growth of new entrants into the Minnesota labor force. The proportion of young people in the total population will gradually decline while the

proportion of the population 55 years of age and older will gradually increase.

- o Secondly, the projected output per worker in most industries will rise above their very low levels in the early 1980s. Even then, growth in Gross State Product, adjusted for inflation, is likely to fall below the three percent that was typical of the 1950s and the 1960s which thus would reduce future growth rates in real earnings.
- o Thirdly, the turnaround in the foreign exchange value of the US dollar that started in the mid 1980s and that reduces the cost of exports and increases the cost of imports will result in an excess of exports over imports in the commodity categories of US export-producing industries.

The large trade deficits of the 1980s would be reduced with widening cost differentials between exports and imports, coupled with the increasing productivity per worker that is now occurring among US exporting industries. These two conditions lead to a net competitive advantage for US products in foreign markets. Indeed, the US trade balance must achieve a dramatic turnaround if the US is to reduce its rapidly increasing foreign indebtedness now approaching \$800 billion.

Because of Minnesota's disproportionate share of US exporting industries, above-average employment growth is likely for the remainder of the current period of recovery that started in November 1982 and even in recession. Projected employment levels, however, are biased downward from actual trends by the weight of history. They provide a numerically conservative outlook for Minnesota industry in a period of above-average growth, but not necessarily over an entire business cycle.

Total industry employment growth in Minnesota in the 10-year period from 1990 to 2000 is projected at a 1.4 percent annual rate, as shown in Table 5.1. This compares with rates of 3.3 percent for the 1982-85 period and 1.6 percent for the 1985-1990 period. The average weekly increase in net new jobs has dropped from the post-1982 high of nearly 1400 in the 1982-85 period to below 700 in the 1985-87 period. With renewed economic recovery, new job creation

Table 5.1

Total industry employment, including self-employed, dropped to near 2.1 million during the 1981-82 recession with slightly more than 600 thousand in goods-producing employment and slightly more than 1.5 million in services-producing employment. For much of the 18-year period from 1982 to 2000, the fast-growing industries are in manufacturing and business-related services while the slow-growing industries are primarily natural resource oriented. Industry growth rates vary from -6.8 percent in mining to 11.9 percent in services. Total industry employment growth is projected at 775 thousand--an average weekly increase of 842 new jobs over the 18-year period.

Industry	Estimated			Projected			Annual Change				
	1982	1985	1987R	1987	1990	2000	1982-85	1985-87R	1987R-90	1990-00	1982-00
	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)
1 Agric. for. fish.	148.2	154.1	152.3	152.3	146.5	148.9	1.3	- .6	-1.3	.2	.0
2 Mining	11.5	9.3	6.2	9.5	10.6	12.3	-6.8	-18.8	19.8	1.5	.4
3 Construction	90.8	108.1	122.3	116.5	119.7	138.9	6.0	6.4	- .7	1.5	2.4
Manufacturing, total	356.9	389.0	388.4	412.9	440.9	502.2	2.9	- .1	4.3	1.3	1.9
Nondurable goods	142	154	159	161	165	178	2.8	1.6	1.3	.7	1.2
4 Food products	46.6	44.7	45.8	44.3	45.1	41.9	-1.4	1.3	- .6	- .7	- .6
5 Textile & apparel	6.1	6.3	6.4	6.5	6.6	6.1	1.1	1.1	1.2	- .8	.0
6 Paper products	31.3	33.6	33.9	34.4	35.2	36.4	2.4	.4	1.3	.3	.8
7 Printing & publishing	37.3	45.7	47.5	49.5	51.3	61.4	7.0	1.9	2.6	1.8	2.8
8 Petroleum & chemical prod	9.1	10.3	11.0	10.6	10.5	11.6	3.9	3.7	-1.7	1.0	1.3
9 Rubber & leather products	11.7	13.9	14.6	15.2	16.7	20.4	6.0	2.7	4.4	2.1	3.2
Durable goods	214.7	234.6	229.1	252.3	275.5	324.3	3.0	-1.2	6.3	1.6	2.3
10 Wood products & furniture	16.3	19.9	23.5	21.4	22.3	25.6	6.8	8.7	-1.7	1.4	2.5
11 Stone, clay & glass produ	9.5	9.5	8.5	10.0	11.7	12.9	- .0	-5.5	11.3	1.0	1.7
12 Primary metal products	5.6	6.3	6.5	6.6	6.6	7.2	3.7	2.2	.6	.9	1.4
13 Fabricated metal products	34.1	36.5	36.5	39.4	44.0	52.5	2.2	.0	6.5	1.8	2.4
14 Nonelectrical machinery	82.6	91.1	81.7	98.4	105.8	126.4	3.3	-5.3	9.0	1.8	2.4
15 Electrical machinery	26.2	28.0	28.0	29.6	32.0	32.3	2.2	.0	4.5	.1	1.2
16 Transportation equipment	5.5	7.6	8.2	8.4	8.7	9.9	10.9	4.3	1.8	1.3	3.2
17 Instruments & miscellaneo	34.7	35.8	36.2	38.4	44.3	57.6	1.0	.6	7.0	2.6	2.9
Total goods producing	607.3	660.5	669.2	691.2	717.6	802.2	2.8	.7	2.4	1.1	1.6
18 Trans. comm. utilities	106.8	113.6	113.3	118.3	120.8	136.8	2.1	- .1	2.2	1.3	1.4
Trade, total	497.5	534.1	551.3	586.1	590.1	672.1	2.4	1.6	2.3	1.3	1.7
19 Wholesale trade	119.9	124.3	126.3	129.4	134.0	149.2	1.2	.8	2.0	1.1	1.2
20 Eating & drinking places	112.1	125.5	128.1	142.2	138.5	158.7	3.9	1.0	2.6	1.4	2.0
21 Other retail trade	265.5	284.2	296.9	314.5	317.7	364.2	2.3	2.2	2.3	1.4	1.8
22 Fin. ins. real estate	150.1	175.9	190.4	185.6	187.8	224.1	5.4	4.1	- .5	1.8	2.2
Private services	475.0	551.5	592.3	611.3	624.2	769.3	5.1	3.6	1.8	2.1	2.7
23 Personal & repair service	114.4	135.9	145.6	146.3	142.6	175.3	5.9	3.5	- .7	2.1	2.4
24 Business services	75.3	105.5	114.0	131.6	120.3	155.5	11.9	3.9	1.8	2.6	4.1
25 Health care services	143.5	149.1	160.7	158.7	178.1	213.4	1.3	3.8	3.5	1.8	2.2
26 Legal & miscellaneous ser	15.6	18.4	20.6	20.9	22.9	31.0	5.5	6.1	3.5	3.1	3.9
27 Educational services	24.3	27.4	29.1	29.0	31.5	35.7	4.1	3.0	2.6	1.3	2.2
28 Other services	101.9	115.2	122.3	124.7	128.8	158.4	4.2	3.0	1.7	2.1	2.5
Government, total	276.6	291.1	303.0	294.6	286.2	284.2	1.7	2.0	-1.9	- .1	.2
29 Federal, civilian	30.8	31.7	32.7	32.1	31.8	32.0	1.0	1.6	-1.0	.1	.2
State and local	245.9	259.4	270.2	262.5	254.5	252.2	1.8	2.1	-2.0	- .1	.1
30 State government	67.5	71.4	74.0	71.9	69.2	70.9	1.9	1.8	-2.2	.2	.3
31 Local government	178.3	187.9	196.2	190.6	185.2	181.3	1.8	2.2	-1.9	- .2	.1
Total services producing	1506.0	1666.1	1750.2	1795.9	1809.1	2086.5	3.4	2.5	1.1	1.4	1.8
All industry	2113.3	2326.6	2419.4	2487.1	2526.7	2888.7	3.3	2.0	1.5	1.3	1.8
32 Federal, military	15.6	17.7	17.7	17.7	16.6	16.6	4.4	.0	-2.2	.0	.3

is expected to rise to near 800 in the 1987-1990 period. It is expected to decline again to slightly above 700 in the 1990-2000 period.

More than three-fourths of the overall projected increase in new jobs is attributed to the services-producing industries, primarily business services and health services. Another 14 percent of the increase is attributed to the above-average growth of durable goods manufacturing.

The total employment series is shown in an alternate form in Table 5.2 as the new REIS (U.S. Department of Commerce Regional Economic Information System) series published in late 1986. It shows total 1983 employment at 2181.2 thousand--nearly nine thousand more than reported in the old series. The difference is even larger for the widely used 1985 OBERS projections series because of its lower estimates of self-employed job holders, particularly in private services and retail trade.

Recognition of the numerical differences among the several employment series is important because of their differential coverage of self-employed and, also, part-time job holders. For example, the OBERS 1983 Minnesota estimates range from 25 percent below the new REIS series to 20 percent above, while the old REIS 1983 estimates are generally below the new series, except for agriculture and agricultural services. The corresponding US series generally show smaller percentage differences among individual industries than the Minnesota series, although industry-to-industry differences are generally comparable.

Projected year 2000 employment levels in the 1985 OBERS series and the new REIS series are identical, except for the adjustment to 1983 industry differentials. Thus, the projected OBERS figure of 2753.4 thousand jobs in 2000 is equivalent to the projected REIS-based figure of 2972.8 thousand jobs, given the differences in the 1983 base-year estimates of self-employed and

Table 5.2

Projected employment levels for the period from 1985 to 2000 are based on the 1985 OBERS BEA Regional Projection Series published by the U.S. Department of Commerce, but adjusted to the Regional Economic Information System (REIS) State employment estimates to 1985. The OBERS Minnesota total employment estimate is five-percent below the REIS estimate for 1983. In comparison, the OBERS US total employment estimate is 6.5 percent below the REIS estimate. The OBERS-to-REIS individual industry ratios for 1983 were retained in adjusting the original 1985 OBERS projection series to the revised REIS industry employment totals.

Industry	United States								Minnesota							
	1983				2000				1983				2000			
	Total		Proportion New	Total	Total		Proportion New	Total	Total		Proportion New	Total	Total			
	OBERS	REISOLD			OBERS	REISNEW			OBERS	REISOLD			OBERS	REISNEW		
(thou.)	(thou.)	(thou.)	(pct.)	(pct.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(pct.)	(pct.)	(thou.)	(thou.)			
1 Farm, total	3904	3900	3695	105.7	105.5	3755	3554	163.3	148.5	136.7	119.5	108.6	146.9	122.9		
2 Agr. serv.,	830	1042	1085	76.5	96.0	1412	1846	11.9	15.3	16.3	73.0	93.9	19.0	26.0		
3 Mining	979	1212	1216	80.5	99.7	1261	1566	9.0	9.8	9.9	90.9	99.0	10.9	12.3		
4 Construction	5098	5327	5448	93.6	97.8	7020	7502	86.2	91.0	92.0	93.7	98.9	130.1	138.9		
5 Manufacturin	18822	18816	18887	99.7	99.6	23321	23395	356.3	356.9	358.3	99.4	99.6	499.5	502.1		
6 Tran., comm.	5313	5497	5535	96.0	99.3	6974	7274	100.8	105.1	105.5	95.3	99.6	130.0	136.8		
7 Wholesale tr	5610	5714	5753	97.5	99.3	7230	7414	114.2	115.7	116.5	98.0	99.3	146.2	149.2		
8 Retail trade	17284	18172	18504	93.4	98.2	23299	25173	354.9	372.9	380.1	93.4	98.1	480.8	522.9		
9 Fin., ins.,	6169	6031	6164	75.6	98.4	8845	11437	115.4	153.0	155.5	74.2	98.4	168.5	224.1		
10 Private serv	24164	26777	27370	88.3	97.8	35534	42210	469.9	513.0	519.2	90.5	98.8	705.0	819.8		
11 Federal, civ	2951	2953	2947	100.1	100.2	3068	3064	30.6	30.6	30.6	100.0	100.0	32.0	32.0		
12 Federal, mil	2651	2655	2657	99.8	99.9	2693	2699	16.6	16.6	16.6	100.0	100.0	16.6	16.6		
13 State and lo	13116	13120	13050	100.5	100.5	13926	13856	242.8	243.9	243.9	99.5	100.0	268.0	269.2		
Total	106891	113217	114311	93.5	99.0	138338	150991	2071.8	2172.4	2181.2	95.0	99.6	2753.4	2972.8		

part-time workers.

Each of the three job-count employment series in Table 5.2 differ, also, from the nonagricultural wage and salary jobs reported by the Minnesota Department of Jobs and Training and the employed persons reported in the 1980 U.S. Census of Population. Nonagricultural wage and salary employment by industry is used monthly while the person count employment by industry is reported every 10 years. Because of a quarterly reporting frequency, the nonagricultural wage and salary employment is used in quarterly economic forecasting.

Forecasts of Minnesota's economic future may differ, also, because of the assumptions and methodology used in the preparation of the forecasts. The new OBERS-based total employment forecasts are compared with the DJT-based nonagricultural wage and salary forecasts for 1990, as shown in Table 5.3. Reported wage and salary employment ranges from less than 70 percent of total employment to more than 100 percent because of differences in (1) the inclusion of self-employed and part-time workers and (2) industry classifications. Using 1985 differentials between the two employment series, an alternate 1990 forecast is shown for each employment series. Overall the adjusted (to wage and salary) total employment-based forecast for 1990 is 29.2 thousand more than originally estimated while the adjusted (to total employment) wage and salary-based forecast is 15.7 thousand less than originally estimated. Total goods-producing OBERS-based total employment forecast is over-estimated by 41.6 thousand relative to the DJT-based wage and salary-based forecast, while the wage and salary employment forecast is under-estimated by 39.4 thousand relative to the total employment forecast.

#### Employment Change Sources

The total employment forecast series is used in the derivation of the

Table 5.3

The Minnesota total (OBERS-based) employment series includes agricultural employment and non-agricultural self-employed workers, which largely accounts for the reported 1985 difference of 465.7 thousand between this series and the nonagricultural (DJT-based) wage and salary employment series. Projected 1990 total employment levels, when based on the 1985 relationships between the two series, are lower by 29.2 thousand while projected 1990 nonagricultural wage and salary levels are higher by 15.7 thousand.

Industry	Total				Wage & Salary				Proportion
	1985	1990	Adj1990	Diff	1985	1990	Adj1990	Diff	
	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(pct.)
1 Agric. for. fish.	154.1	146.5	146.5	.0	.0	.0	.0	.0	.0
2 Mining	9.3	10.6	5.9	4.7	8.2	5.2	9.3	-4.1	88.2
3 Construction	108.1	119.7	119.4	.3	72.0	79.5	79.7	-.2	66.6
Manufacturing, total	389.0	440.9	404.2	36.7	372.6	387.1	422.1	-35.1	95.8
Nondurable goods	154.4	165.4	164.0	1.4	149.3	158.5	159.8	-1.3	96.7
4 Food products	44.7	45.1	46.3	-1.2	44.7	46.4	45.1	1.2	100.1
5 Textile & apparel	6.3	6.6	6.5	.1	4.8	4.9	5.1	-.1	76.2
6 Paper products	33.6	35.2	34.1	1.1	33.0	33.5	34.6	-1.1	98.3
7 Printing & publishing	45.7	51.3	50.2	1.1	42.5	46.7	47.6	-1.0	92.9
8 Petroleum & chemical prod	10.3	10.5	11.7	-1.2	10.2	11.7	10.4	1.2	99.4
9 Rubber & leather products	13.9	16.7	15.1	1.5	14.1	15.4	16.9	-1.6	101.7
Durable goods	234.6	275.5	240.2	35.3	223.3	228.6	262.3	-33.8	95.2
10 Wood products & furniture	19.9	22.3	24.2	-1.8	17.5	21.2	19.6	1.6	87.6
11 Stone, clay & glass produ	9.5	11.7	9.9	1.8	7.9	8.2	9.7	-1.5	83.3
12 Primary metal products	6.3	6.6	6.9	-.3	6.1	6.8	6.5	.3	97.8
13 Fabricated metal products	36.5	44.0	36.8	7.2	33.7	34.1	40.7	-6.6	92.5
14 Nonelectrical machinery	91.1	105.8	87.0	18.7	86.4	82.5	100.3	-17.8	94.8
15 Electrical machinery	28.0	32.0	29.7	2.3	27.2	28.9	31.1	-2.2	97.0
16 Transportation equipment	7.6	8.7	8.3	.4	8.3	9.1	9.5	-.4	109.9
17 Instruments & miscellaneo	35.8	44.3	37.4	7.0	36.2	37.8	44.9	-7.1	101.3
Total goods producing	660.5	717.6	676.0	41.6	452.8	471.8	511.2	-39.4	68.6
18 Trans. comm. utilities	113.6	120.8	117.1	3.7	98.4	101.4	104.6	-3.2	86.6
Trade, total	534.1	590.1	581.2	9.0	466.3	506.5	514.8	-8.3	87.3
19 Wholesale trade	124.3	134.0	131.1	2.9	116.3	122.7	125.4	-2.7	93.6
20 Eating & drinking places	125.5	138.5	133.4	5.1	118.4	125.9	130.6	-4.8	94.3
21 Other retail trade	284.2	317.7	316.6	1.0	231.6	258.0	258.8	-.8	81.5
22 Fin. ins. real estate	175.9	187.8	207.0	-19.2	111.6	131.3	119.1	12.2	63.4
Private services	551.5	624.2	625.9	-33.1	430.4	512.7	490.6	22.1	78.0
23 Personal & repair service	135.9	142.6	161.2	-18.6	63.1	74.9	66.2	8.6	46.5
24 Business services	105.5	120.3	127.4	-7.0	78.6	94.8	89.6	5.2	74.4
25 Health care services	149.1	178.1	179.1	-1.0	135.4	162.7	161.9	.9	90.9
26 Legal & miscellaneous ser	18.4	22.9	24.0	-1.1	12.5	16.3	15.6	.8	68.1
27 Educational services	27.4	31.5	.0	.0	.0	.0	.0	.0	.0
28 Other services	115.2	128.8	134.2	-5.4	140.7	164.0	157.3	6.6	122.2
Government, total	291.1	286.2	317.3	-31.1	301.4	328.7	296.4	32.2	103.6
29 Federal, civilian	31.7	31.8	33.9	-2.2	31.9	34.2	32.0	2.2	100.6
State and local	259.4	254.5	283.4	-28.9	269.5	294.5	264.5	30.0	103.9
30 State government	71.4	69.2	77.1	-7.9	74.2	80.1	72.0	8.2	103.9
31 Local government	187.9	185.2	206.3	-21.0	195.3	214.4	192.5	21.9	103.9
Total services producing	1666.1	1809.1	1848.5	-70.8	1408.1	1580.6	1525.5	55.1	84.5
All industry	2326.6	2526.7	2524.5	-29.2	1860.9	2052.5	2036.7	15.7	80.0
32 Federal, military	17.7	16.6	16.6	.0	17.7	16.6	16.6	.0	100.0

three change sources--regional share, industry mix and national growth--for the 18-year forecast period from 1982 to 2000 as shown in Table 5.4. Except for the 1980-82 recession period, the above-average competitive position of Minnesota industry (represented by the above-average aggregated regional-share effect) accounts for an overall projected employment growth that exceeds the contribution of US national growth by 63.2 thousand. Total employment is projected to increase by 806 thousand from 1982 to 2000 of which 92 percent is attributed to the national-growth effect. The positive differential growth, however, is attributed to the positive regional-share and industry-mix effects of the service industry. The negative differential growth, on the other hand, is attributed to negative regional-share and industry-mix effects of agriculture. Thus, above-average growth is projected for the services industries in Minnesota while below-average (actually negative) growth is projected for Minnesota agriculture and food products manufacturing in the 18-year period from 1982 to 2000. Agriculture, without the agricultural services sector, shows a net decline in total employment.

Period-to-period changes in the contributions of the Minnesota regional-share effect and the US industry-mix effect to total employment change in the 18-year period from 1982 to 2000 is summarized in Table 5.5 for major industry groups. For example, the large negative US manufacturing industry-mix effect is reduced by a positive 27.3 thousand Minnesota manufacturing industry effect (from -29.2 thousand to -1.9 thousand) but in the 1987-90 period, the projected large positive US industry-effect is reduced by a projected negative regional-share effect. The underlying influence of the general business cycle is apparent in the oscillating values of the US industry-mix effect and, also, in the switching between manufacturing and services in their negative and positive phases of industry employment cycles.

Table 5.4

Above-average growth is projected for Minnesota in total industry employment in the 18-year period from 1982 to 2000 as a result of an above-average (62.4 thousand) regional-share effect. However, the industry-mix effect is near zero (0.6 thousand). Manufacturing accounted for much of the above-average regional-share effect while government contributed much of the low industry-mix effect.

Industry	Regional Share	Industry Mix	Relative Change	National Growth	Total Change
	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)
1 Agric. for. fish.	-37.4	-22.0	-59.4	60.1	.7
2 Mining	.1	-2.2	-2.1	2.9	.8
3 Construction	16.3	3.9	20.2	28.0	48.1
Manufacturing, total	36.4	-18.1	18.3	127.0	145.3
Nondurable goods	18.5	-29.0	-10.5	46.1	35.6
4 Food products	-3.4	-15.3	-18.7	13.9	-4.8
5 Textile & apparel	.4	-2.5	-2.0	2.0	.0
6 Paper products	3.1	-8.0	-4.9	9.9	5.1
7 Printing & publishin	14.0	-1.7	12.3	11.8	24.1
8 Petroleum & chemical	1.3	-2.6	-1.2	3.7	2.4
9 Rubber & leather pro	3.0	1.0	4.0	4.8	8.8
Durable goods	17.9	10.9	28.8	80.9	109.6
10 Wood products & furn	3.5	-.3	3.2	6.1	9.3
11 Stone, clay & glass	-4.4	5.9	1.6	1.8	3.4
12 Primary metal produc	.1	-1.2	-1.1	2.7	1.6
13 Fabricated metal pro	5.3	1.7	7.0	11.4	18.4
14 Nonelectrical machin	10.4	.6	10.9	32.8	43.8
15 Electrical machinery	-.7	-1.4	-2.1	8.2	6.1
16 Transportation equip	2.2	-.2	2.0	2.3	4.3
17 Instruments & miscel	1.5	5.8	7.3	15.6	22.9
Total goods produc	15.3	-38.3	-23.0	217.9	194.9
18 Trans. comm. utiliti	-3.9	-3.1	-7.1	37.1	30.0
Trade, total	8.6	13.0	21.6	153.0	174.6
19 Wholesale trade	-1.6	-5.7	-7.3	36.5	29.3
20 Eating & drinking pl	-6.6	17.8	11.2	35.5	46.7
21 Other retail trade	16.8	.9	17.7	81.0	98.7
22 Fin. ins. real estat	6.2	15.1	21.3	52.7	73.9
Pvt services, total	49.3	83.5	132.8	192.2	324.9
23 Personal & repair se	53.9	-3.7	50.2	41.4	91.6
24 Business services	-17.0	43.9	26.8	53.3	80.2
25 Health care services	-15.9	35.1	19.2	50.7	69.9
26 Legal & miscellaneou	3.4	7.0	10.4	5.0	15.4
27 Educational services	-.3	2.4	2.1	9.3	11.5
28 Other services	25.2	-1.0	24.1	32.3	56.5
Government, total	-13.0	-69.4	-82.4	90.0	7.6
29 Federal, civilian	.4	-8.3	-7.9	9.1	1.2
State and local	-13.4	-61.1	-74.6	80.9	6.4
30 State government	-.4	-18.0	-18.4	21.8	3.4
31 Local government	-13.0	-43.1	-56.2	59.2	3.0
Total services produ	47.1	39.0	86.2	524.9	611.1
All industry	62.4	.7	63.2	742.8	806.0
32 Federal, military	-.3	-4.6	-4.9	5.9	1.0

Table 5.5

Period-to-period changes in the US industry-mix effect and the Minnesota regional-share effect from 1982 to 2000 are generally counter-balancing over the business and trade cycles, except for agriculture and government with only additive negative effects in one or more periods, and trade, finance, and services with only additive positive-effects in one or more periods. The remaining industry groups experience both double negative and double positive effects over the business cycle, thus emphasizing again the pervasive influence of external factors in making Minnesota industry increasingly sensitive to the business and the trade cycles.

Industry	Regional Share				Industry Mix					Total
	1982-85	1985-87	1987-90	1990-00	Total	1982-85	1985-87	1987-90	1990-00	
	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)	(thou.)
Agric. for. fish.	3.1	-5.1	-14.8	-20.6	-37.4	-11.3	-2.5	3.2	-11.3	-22.0
Mining	-1.1	-1.3	1.8	.7	.1	-2.2	-2.2	2.4	-.1	-2.2
Construction	-1.3	6.7	-.5	11.4	16.3	10.0	3.5	-6.8	-2.8	3.9
Manufacturing, total	27.3	9.0	-15.6	15.7	36.4	-29.2	-24.2	53.2	-28.8	-18.1
Nondurable goods	8.2	2.7	.7	6.9	18.5	-9.5	-3.7	-.7	-15.1	-29.0
Durable goods	19.1	6.2	-16.3	8.8	17.9	-19.7	-20.5	53.9	-2.8	10.9
Total goods produc	28.0	9.3	-29.1	7.1	15.3	-32.7	-25.4	51.9	-43.0	-38.3
Trans. comm. utiliti	1.1	-3.0	1.4	-3.4	-3.9	-4.5	-1.6	1.8	1.1	-3.1
Trade, total	-18.6	-5.5	22.1	10.6	8.6	7.7	2.6	-4.3	7.0	13.0
Fin. ins. real estat	1.9	14.6	-14.4	4.2	6.2	9.6	-6.6	4.4	7.7	15.1
Pvt services, total	9.5	-6.2	13.1	32.8	49.3	21.7	26.2	-3.9	39.5	83.5
Government, total	5.0	.8	-2.3	-16.5	-13.0	-17.0	-.9	-24.8	-26.7	-69.4
Total services produ	-1.0	.6	19.9	27.6	47.1	17.6	19.7	-26.8	28.5	39.0
All industry	27.0	9.9	-9.2	34.8	62.4	-15.1	-5.8	25.1	-14.5	.7

The contribution of each of the three change sources--regional share, industry-mix and national-growth--to Minnesota industry growth from 1982 to 2000 is illustrated in Figure 5.1. All major industry groups are projected to increase in total employment, including the combined agriculture and agricultural services, forestry and fisheries group (because of projected growth in agricultural services). Either the regional-share effect or the industry-mix effect is negative, however, for 10 of the 17 major industry groups. The sources of change in total employment are summarized as follows:

<u>Change Source</u>	<u>Goods Producing</u>	<u>Services Producing (thousands)</u>	<u>All Industry</u>
Regional share	15.3	42.1	62.4
Industry mix	-38.3	39.0	-0.7
Relative change	-23.0	86.2	63.2
National growth	217.9	524.8	742.8
Total change	194.9	610.0	806.0

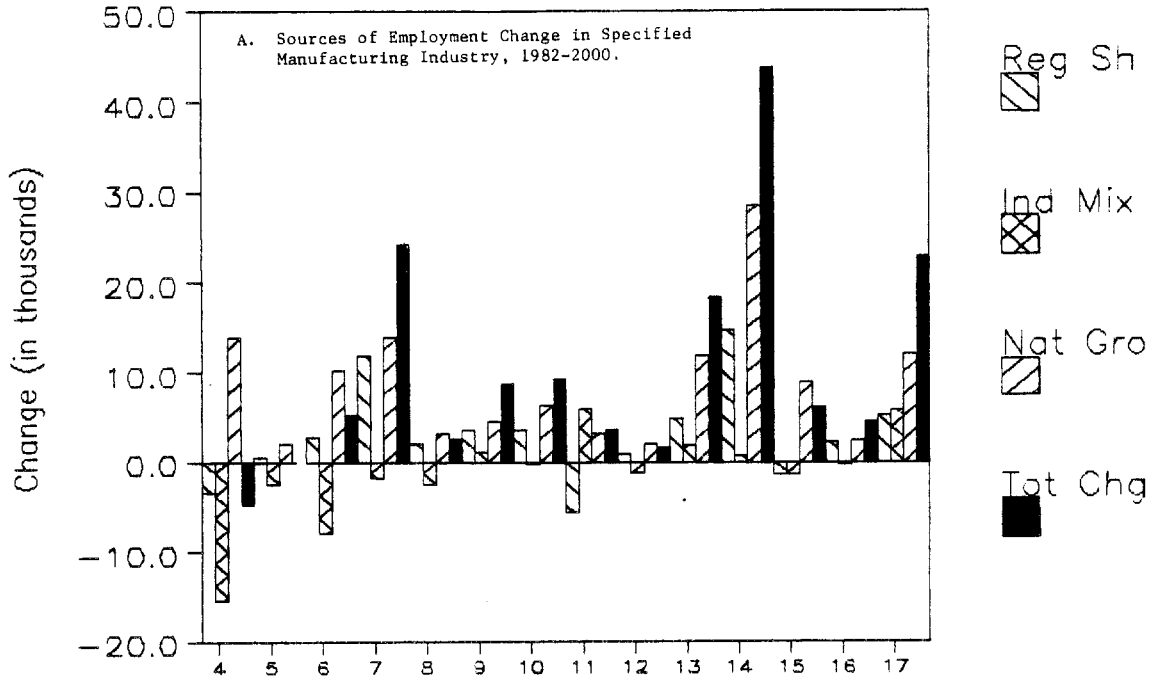
Thus, national growth accounts for 91 percent and 89 percent of the positive total change in goods-producing employment and services-producing employment, respectively.

Inasmuch as the national-growth effect accounts for most of the projected net employment change in Minnesota industry for the 18-period from 1982 to 2000, Minnesota's economic future is thus closely associated with overall national economic growth. However, the above-average growth of both goods-producing and services-producing sectors has exceeded and is projected to exceed the state-level negative effect of below-average growth of the goods-producing sector in the US economy.

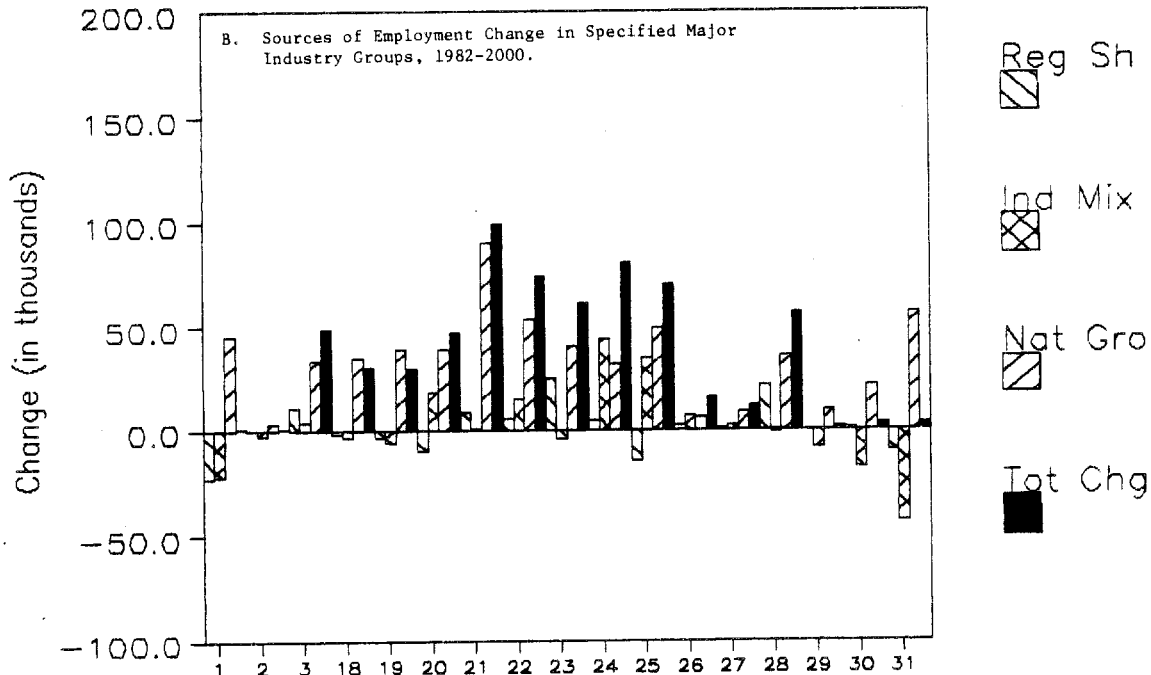
Regional-share effects and industry-mix effects in 14 manufacturing industries are illustrated in Figure 5.2. The regional-share effect is generally positive in 11 of the 14 manufacturing industry groups and generally negative in two manufacturing industry groups. The industry-mix effect is

Figure 5.1

Total change in projected employment levels for the 18-year period from 1982 to 2000 exceeded the change due to overall national growth in eight of the 14 individual manufacturing industries (Part A) and in eight of the 17 major industry groups (Part B). Below-average employment growth is attributed largely to a negative industry-mix effect for every one of the lagging industries groups with the largest negative industry-mix effects projected for agriculture and nondurable goods manufacturing (primarily food products and paper products), other (than eating and drinking places) retail trade, personal and repair services, and educational services.



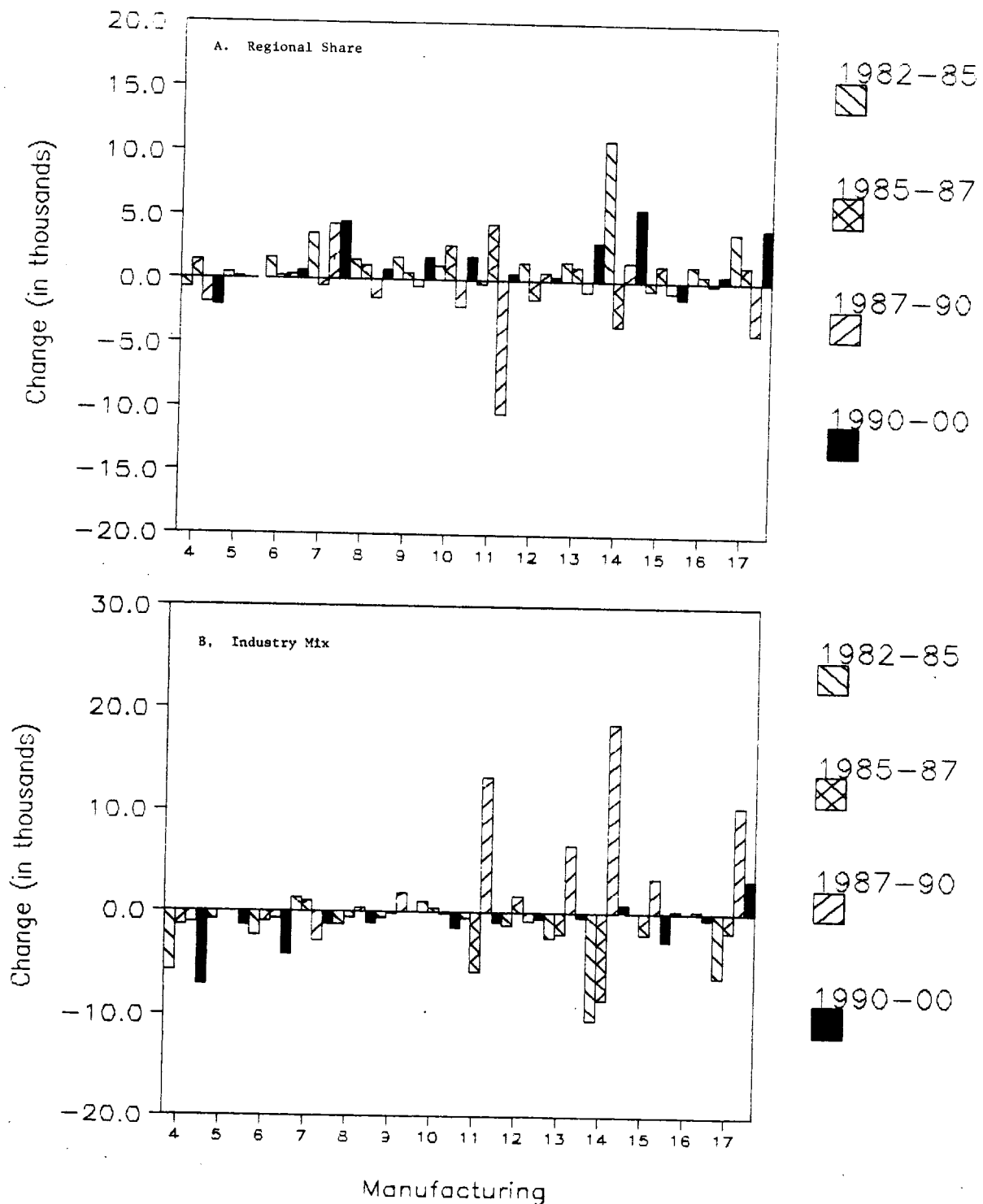
A. Manufacturing



B. Major Industry Groups

Figure 5.2

Regional share effects (Part A) are generally positive (three of four time periods) in seven of 14 manufacturing industries, namely, paper products (6), printing and publishing (7), wood products and furniture (10), stone, clay and glass (11), fabricated metal products (12), transportation equipment, and instruments and miscellaneous manufacturing (17), while industry-mix effects (Part B) are generally negative in food products (4), textile and apparel (5), paper products (6), printing and publishing (7), and petroleum and chemicals (18).



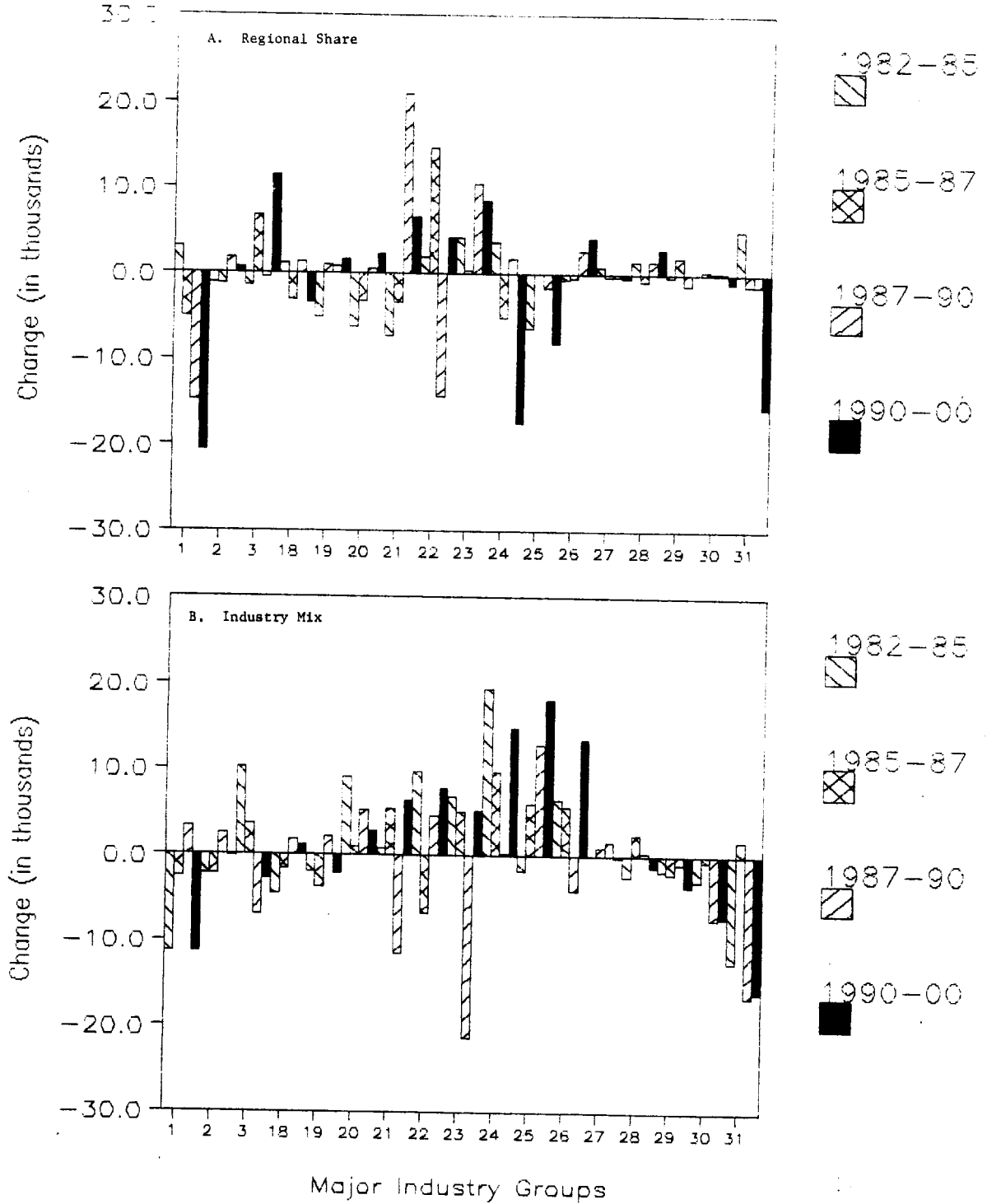
generally negative in nine of the 14 manufacturing industry groups. Despite widely varying regional-share and industry-mix effects, the net result is a positive relative-change effect of 18.3 thousand jobs that re-enforces earlier trends in above-average employment growth in Minnesota manufacturing industries.

Projected industry employment trends summarized earlier for the 11 manufacturing industry groups, starting with the 1987-90 period, show above-average growth because of an expected turnaround in the US manufacturing industries. For Minnesota, the projected regional-share effect is negative despite positive regional-share effects in the two earlier periods. This apparant anamoly occurs because of the above-average growth of Minnesota manufacturing during the 1982-87 periods that was not fully anticipated in the preparation of the currently available forecast series. In case of a severe recession, however, Minnesota manufacturing growth is likely to sharply to a decline in US manufacturing growth, except for its export-producing industries, which may counter domestic decline with an expanding foreign export market (unless foreign economies also are in recession or slow growth).

If Minnesota manufacturing were to repeat its 1982-85 growth patterns, then the 1990 manufacturing employment projection may underestimate new job growth by more than 50 thousand, with subsequent additional employment increases due to the positive multiplier effects on residentiary, services-producing industries. Even with the low projection, Minnesota manufacturing industries would probably experience above-average growth in the 1987-90 period, as indicated in Figure 5.3. Recurrence of positive differential Minnesota industry growth, along with above-average US industry growth, would result in manufacturing employment growth comparable to that experienced from the export trade boom of the 1970s. Much depends, of course,

Figure 5.3

Projected employment changes due to regional-share effect are generally (three of four periods) positive for six of the 17 major industry groups, namely, construction (3); nondurable goods manufacturing (mn); other retail trade (21); finance, insurance and real estate (22); personal and repair services (23); business services (32); and legal and miscellaneous professional services (26). Industry-mix effects are generally positive among six major industry groups in the 18-year period and generally negative among nine major industry groups.



on the value of the US dollar in foreign exchange and the productivity of Minnesota manufacturers that, together, would affect the competitive position of Minnesota manufacturers in US and world markets.

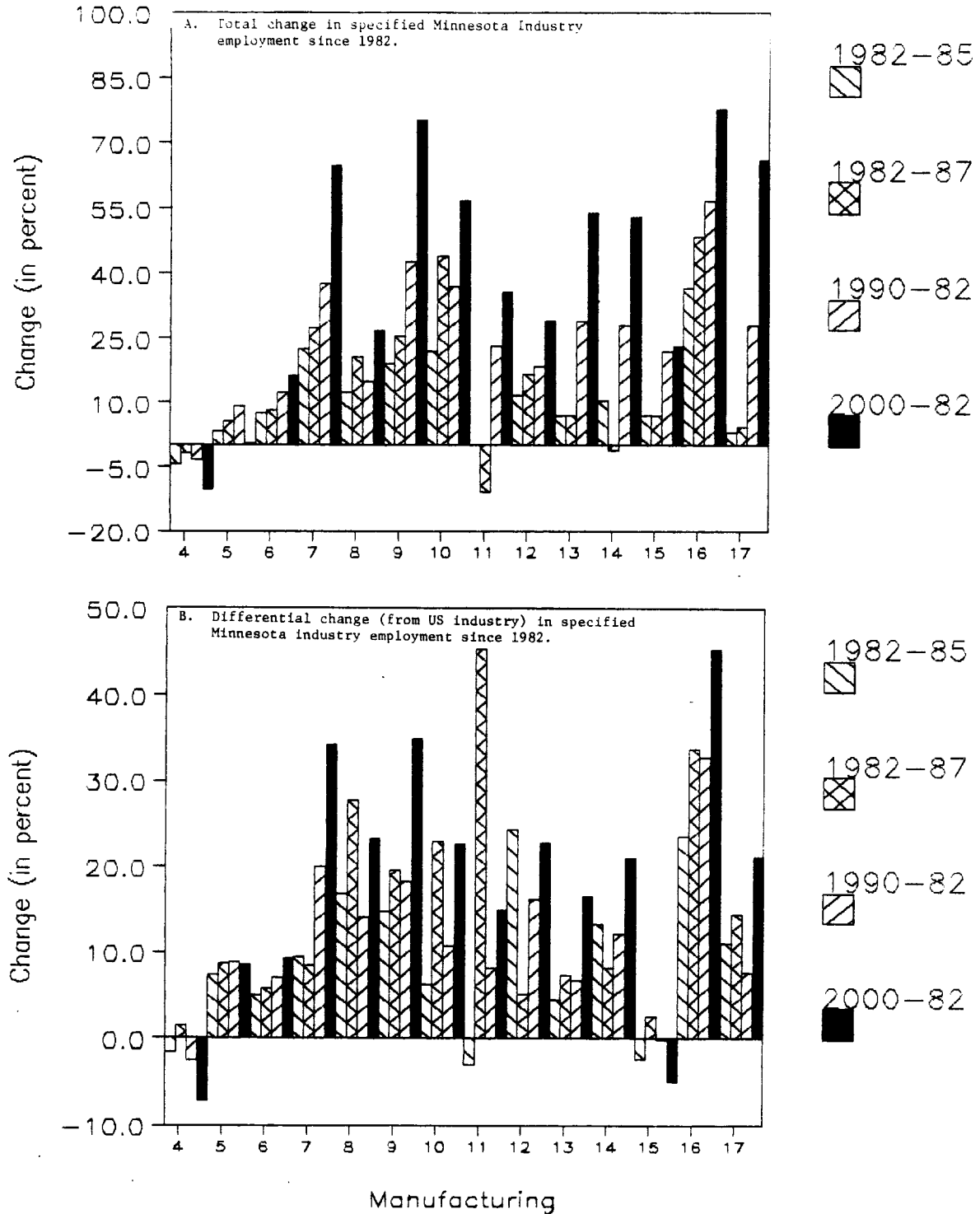
Part A of Figure 5.4 shows total employment change in each of the 11 manufacturing industry groups since the 1981-82 recession trough. Manufacturing employment in Minnesota is projected to increase 40.7 percent above its 1982 recession trough. This compares with a 21.6 percent projected increase for US manufacturing--a difference of 19.1 percent. The largest percentage increase is projected for transportation equipment, which accounted for less than 5.5 thousand of the 356.9 thousand manufacturing jobs in 1982. Nonelectrical machinery, with an employment of 82.6 thousand in 1982, is projected to increase by 53 percent in the 18-period from 1982 to 2000. Thus, the differential change, in Part B of Figure 5.4, refers to the Minnesota industry percentage change relative to the percentage change for the corresponding US industry. Total and differential changes are specified for individual industries as follows:

No.	Industry	Employment	Change, 1982-2000	
		in 1982 (thou.)	Total (pct.)	Differential (pct.)
4	Food products	46.6	-10.2	-7.1
5	Textile & apparel	6.1	0.4	8.5
6	Paper products	31.3	16.2	9.2
7	Printing & publishing	37.3	64.5	34.2
8	Petroleum & chemical	9.1	26.7	23.2
9	Rubber & leather pro	11.7	75.1	34.9
10	Wood products & furn	16.3	56.7	22.6
11	Stone, clay & glass	9.5	35.5	14.9
12	Primary metal produc	5.6	28.8	22.7
13	Fabricated metal pro	34.1	53.0	20.9
14	Nonelectrical machin	82.6	53.0	20.9
15	Electrical machinery	26.2	23.1	-4.9
16	Transportation equip	5.5	77.8	45.2
17	Instruments & miscel	34.7	66.0	8.2
	Total or Average	356.9	40.7	19.1

Regional-share and industry-mix effects for each of four time

Figure 5.4

Total employment growth in specified Minnesota manufacturing industry (Part A) for the 18-year period from 1982 to 2000 is strongly positive both in actual and projected values. Differential growth, relative to growth corresponding in corresponding US manufacturing industry (Part B), also is strongly positive—a result, in part, of the above-average cyclical sensitivity of Minnesota manufacturing industry at its low levels of employment in 1982 relative to US totals.



periods--1982 to 1985, 1985 to 1987, and 1990 to 2000--in major industry groups are illustrated in Figure 5.2. The regional-share effect is generally positive for five of the 17 major industry groups and generally negative in four groups. The industry-mix effect is generally positive in eight of the 17 major industry groups and generally negative in six groups. Future growth in much of the non-manufacturing industry groups is contingent on manufacturing industry growth because of its growing importance in Minnesota's economic base.

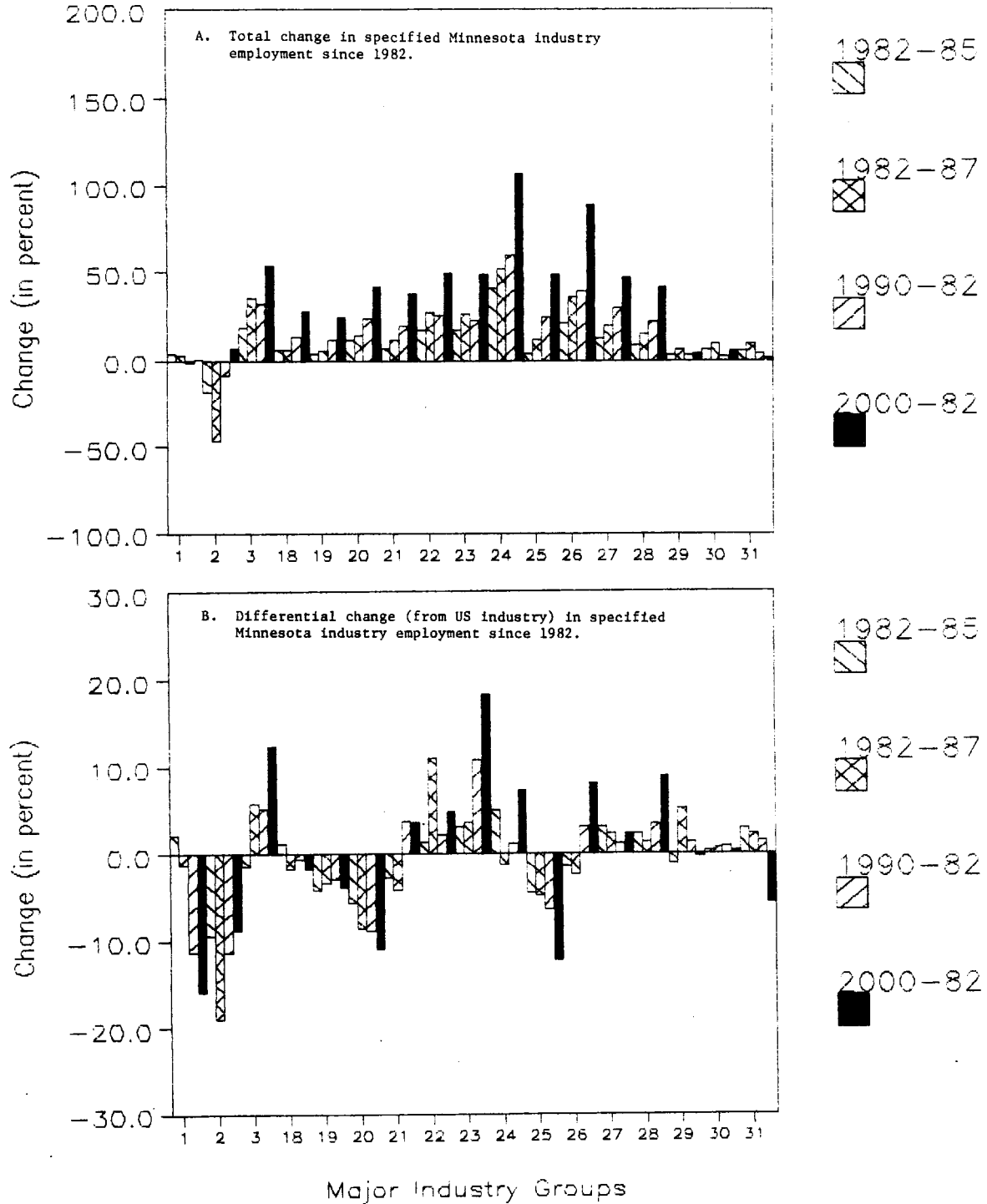
Total and differential percentage changes in nonmanufacturing industry groups are represented in Parts A and Part B, respectively, of Figure 5.5. Lagging growth in Minnesota's trade and service industry is highlighted by large negative changes, which result in large negative absolute differentials in employment growth in specific industries. Total employment in 1982 and its percentage change from 1982 to 2000 are summarized for the 17 nonmanufacturing industry groups as follows:

No.	Industry	Employment	Change, 1982-2000	
		in 1982 (thou.)	Total (pct.)	Differential (pct.)
1	Agric. for. fish.	148.2	0.5	-15.9
2	Mining	11.5	6.8	-8.0
3	Construction	90.8	53.0	12.4
18	Trans. comm. utiliti	106.8	28.1	-1.8
19	Wholesale trade	119.9	24.4	-3.8
20	Eating & drinking pl	112.1	41.7	-11.1
21	Other retail trade	265.5	37.2	3.5
22	Fin. ins. real estat	150.1	49.3	4.8
23	Personal & repair se	114.4	53.3	23.1
24	Business services	75.3	106.5	7.2
25	Health care services	143.5	48.7	-12.4
26	Legal & miscellaneou	15.6	98.3	18.3
27	Educational services	24.3	47.2	2.3
28	Other services	101.9	55.5	22.9
29	Federal, civilian	30.8	3.9	-0.3
30	State government	67.5	5.0	0.3
31	Local government	178.3	1.7	-5.5
	Total or Average	1780.8	39.5	2.0

Because change is measured from the more severely depressed Minnesota 1982 employment levels, the percentage increases industry employment are

Figure 5.5

Major Minnesota industry groups are expected to grow in varying degree over the entire 18-year period from 1982 to 2000 (Part A). However, relative to corresponding US industry groups (Part B), several Minnesota industries will show below-average growth, specifically, agriculture (1), mining (2), transportation, communications and utilities (18), wholesale trade (19), eating and drinking places (20), other retail trade (21), health care services (25), federal government (29), and local government (31).



larger than change measured from a moving average of several years. The consistently positive differences are to be viewed, therefore, as an overstatement of Minnesota's current standing in the expansion of its manufacturing and nonmanufacturing sectors.

From this brief review of Minnesota employment trends to the year 2100, including the alternative employment series showing these trends, several conclusions emerge, which are summarized as follows:

1. Minnesota's manufacturing industries account for much of Minnesota's above-average economic performance in the recovery phase of the US business cycle.
2. Minnesota's manufacturing industries also account for much of Minnesota's below-average economic performance in the recession phase of the US trade cycle.
3. Minnesota's overall economic performance has lagged the Nation since 1982 because of above-average dependence on the dollar-sensitive exports of its manufacturing industries.
4. Minnesota's overall economic performance is likely to lead the nation in 1988 and even 1989 with growth of export markets, both foreign and domestic.
5. Short-term economic fluctuations resulting from the general business cycle and the foreign trade cycle, together with the uncertainties of US economic policies that affect both the business cycle and the trade cycle, obscure long-term trends affecting Minnesota's economic outlook to the year 2000.
6. Minnesota's employment outlook is affected, finally, by the productivity of its human resources that, in turn, is affected by the investment decisions of its industry and government to facilitate productivity improvements in any and all work places.

Not only job trends but also the income created by new and existing jobs are important measures of an industry's contribution to economic growth and well-being. The total earnings derived from industry employment and the contribution of these earnings to total personal income are examined, next, in the context of Minnesota's employment outlook to the year 2000.

#### Labor Earnings

Labor earnings of the remuneratively employed Minnesota work force grew at a four-percent annual rate in the first three years of economic recovery from the 1981-82 recession. A 3.3 annual growth rate is projected for the 18-year period from the 1982 recession trough to the year 2000.

Much industry-to-industry variation in total labor earnings occurs among the 31 industries listed in Table 5.6. Among major industry groups, manufacturing is the largest, accounting for \$12 billion of the \$49.3 billion in total labor earnings in 1985. Private service industries closely followed with \$10.4 billion in total labor earnings. Farming and mining together accounted for less than \$2 billion of the total.

Total real earnings are projected to increase over the 18-year period, relative to the corresponding US industry, in 21 of the 31 industries listed in the industry share column in Table 5.6. These increases in industry share are among the largest for business services and other (i.e., social and nonprofit) services. Thus, the growth in earnings in the private services industry groups parallels the above-average growth of earnings in manufacturing.

Annual rates of change in total real earnings in each of the four periods listed in Table 5.6 vary sharply because of the varying sensitivity of individual industries to the business and trade cycles. The largest increases are projected for the 1985-87 period with subsequent reductions in the annual rate to below 3.1 percent--the annual rate for the entire 18-year period.

Most of the growth in real earnings is attributed to employment growth which increased at a 3.3 percent rate in the 1982-85 period and is projected to increase at a 1.4 percent annual rate over the 18-year projection period. The residual growth is attributed to gradual, but differential, increase, in earnings per worker among the individual industries.

Table 5.6

Total earnings of the industry employed work force in Minnesota is projected to increase from \$35.1 billion (in 1985 dollars) in 1982 to \$67.8 billion (in 1985 dollars) in 2000, or \$28.3 billion in 1985 dollars. The annual growth rate of 3.3 percent for the 18-year period is exceeded by the growth rates for the 1982-85 and 1985-87 recovery periods because of the above average growth of construction, durable goods manufacturing, and private services industries in the US that is transferred, in part, to Minnesota during the two periods.

No. Industry	Total Earnings					Industry Share		Annual Change			
	1982	1985	1987	1990	2000	1982	2000	1982-85	1985-87	1987-90	1982-00
	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)
1 Agric. for. fish.	1082	1430	1593	1459	1555	2.71	2.49	5.5	5.6	-2.9	1.4
2 Mining	412	349	389	480	628	.99	.95	-9.0	5.5	7.3	1.7
3 Construction	2000	2665	3009	3261	4014	1.72	1.83	5.8	6.3	2.7	3.3
Manufacturing, total	8570	10692	12024	13608	17537	1.92	2.14	3.5	6.0	4.2	3.4
Nondurable goods	3368	4072	4459	4932	5902	2.04	2.21	2.5	4.6	3.4	2.5
4 Food products	1078	1134	1186	1301	1351	2.90	2.62	-2.2	2.2	3.1	.6
5 Textile & apparel	82	80	86	105	109	.33	.33	-4.6	3.9	6.8	.9
6 Paper products	1003	1259	1362	1449	1696	5.82	6.00	3.8	4.0	2.1	2.3
7 Printing & publishin	724	962	1095	1229	1609	2.73	3.46	5.8	6.7	3.9	3.9
8 Petroleum & chemical	254	330	373	427	551	.61	.78	5.0	6.2	4.7	3.7
9 Rubber & leather pro	228	307	357	421	587	1.31	1.59	6.2	7.8	5.6	4.7
Durable goods	5201	6620	7565	8676	11635	1.85	2.11	4.2	6.9	4.7	3.9
10 Wood products & furn	314	451	510	527	653	1.72	1.85	8.6	6.4	1.0	3.5
11 Stone, clay & glass	184	212	239	302	392	1.36	1.60	.9	6.0	8.1	3.6
12 Primary metal produc	147	182	206	229	295	.51	.64	3.4	6.2	3.7	3.3
13 Fabricated metal pro	892	1082	1241	1484	1988	2.65	2.89	2.6	7.1	6.1	3.9
14 Nonelectrical machin	2188	2844	3250	3607	4882	3.72	4.26	5.0	6.9	3.5	3.9
15 Electrical machinery	558	678	764	879	1048	1.18	1.13	2.7	6.1	4.8	2.9
16 Transportation equip	147	240	286	301	388	.26	.34	13.3	9.1	1.8	4.9
17 Instruments & miscel	772	931	1069	1349	1989	3.13	3.60	2.4	7.2	8.1	4.7
Total goods produc	12064	15137	17015	18808	23735	1.88	2.04	3.7	6.0	3.4	3.2
18 Trans. comm. utiliti	2801	3386	3725	4070	5158	1.90	1.82	2.5	4.9	3.0	2.8
Trade, total	6362	7647	8310	8897	10787	2.03	2.00	2.3	4.2	2.3	2.3
19 Wholesale trade	2804	3289	3575	3758	4516	2.19	2.07	1.4	4.3	1.7	2.0
20 Eating & drinking pl	701	870	965	1102	1344	1.80	1.78	3.4	5.3	4.5	3.0
21 Other retail trade	2857	3488	3769	4038	4927	1.95	2.00	2.8	3.9	2.3	2.4
22 Fin. ins. real estat	1984	2863	3201	3418	4512	1.81	1.84	8.7	5.7	2.2	4.0
Pvt services, total	6877	9209	10440	11673	15928	1.78	1.84	6.0	6.5	3.8	4.1
23 Personal & repair se	1206	1668	1853	1999	2812	1.64	1.72	7.2	5.4	2.6	4.1
24 Business services	1001	1624	1985	2344	3466	1.37	1.66	13.0	10.5	5.7	6.4
25 Health care services	2464	3085	3432	3857	5061	1.96	1.84	3.7	5.5	4.0	3.4
26 Legal & miscellaneou	1002	1389	1541	1544	2082	1.46	1.51	7.2	5.3	.1	3.5
27 Educational services	322	371	415	502	646	1.85	1.85	.8	5.7	6.5	3.3
28 Other services	882	1072	1214	1427	1860	3.09	4.29	2.6	6.5	5.5	3.6
Government, total	5037	6184	6577	6592	7699	1.60	1.61	3.0	3.1	.1	1.7
29 Federal, civilian	729	868	924	978	1100	1.03	1.04	1.9	3.2	1.9	1.7
30 Federal, military	83	114	120	111	123	.26	.27	6.8	2.5	-2.5	1.5
31 State and local	4225	5203	5533	5503	6476	2.00	1.99	3.1	3.1	-.2	1.7
Total services produ	23062	29290	32252	34650	44084	1.81	1.83	4.2	4.9	2.4	3.0
All industry	35126	44427	49267	53458	67819	1.83	1.90	4.0	5.3	2.8	3.1
Deflator(1982=1.000)	1.000	1.124	1.182	1.337	2.000	100.00	100.00	4.0	2.5	4.2	3.3

The projected increase in total earnings from employment in individual industries can be attributed to the three change sources cited earlier, namely the US national-growth effect, the US industry-mix effect, and the Minnesota regional-share effect as shown in Table 5.7. Fast-growing and slow-growing industries are differentiated by the proportion of total change attributed to the US national-growth effect, whether below or above 100 percent. The fast-growing industries in labor earnings occur generally in four industry clusters, as follows:

<u>Industry</u>	<u>Tot Chg</u> (mil.\$)	<u>Nat Gro</u> (pct.)	<u>Ind Mix</u> (pct.)	<u>Reg Sh</u> (pct.)
Business, legal & misc. prof. serv.	3296	56	30	14
Durable goods manufacturing	5788	72	15	13
Fin., ins., real estate	2340	73	17	10
Personal, health & social services	4902	77	22	1
Total or average	16326	70	20	10

Thus the business, legal and miscellaneous professional services cluster, with only 5.6 percent of its total growth attributed to US aggregate growth, is fast-growing in Minnesota and it is fast-growing in the US. Generally, the fast-growing Minnesota industry clusters are also fast-growing in the US.

Conversely, slow-growing industry clusters in Minnesota generally are slow-growing in the US. The slowest growing of the four slow-growing industry clusters is other industry, namely, agriculture, mining, construction and government, which compares with other slow-growing industry clusters as follows:

<u>Industry</u>	<u>Tot Chg</u> (mil.\$)	<u>Nat Gro</u> (pct.)	<u>Ind Mix</u> (pct.)	<u>Reg Sh</u> (pct.)
Tran., comm., & pub. utilities	2009	101	-6	5
Nondurable goods manufacturing	2116	116	-33	17
Trade (wholesale and retail)	3636	124	-21	-3
Other (agr., mining, const., gov.)	4250	142	-43	1
Total or average	12011	126	-27	1

Large period-to-period fluctuations in total earnings are attributed to the US industry-mix effect and the Minnesota regional-share effect as shown in

Table 5.7

Total real earnings of job holders in Minnesota industries are projected to increase by \$28.3 million (in constant 1985 dollars) with 94 percent and 6 percent of the increase, respectively, being attributed to US aggregate growth, as represented by national-growth effect and the Minnesota regional-share effect. From an industry perspective the growth is shared equally by manufacturing, the transportation, trade and finance industry, industry cluster, and private services with 28 percent of the total increase being attributed to each of the three industry groups.

No. Industry	Region Share	Industr Mix	Relativ Change	Nation Growth	Total Change
	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)
1 Agric. for. fish.	-40	-404	-444	783	339
2 Mining	-81	12	-68	183	115
3 Construction	202	-31	171	1595	1766
Manufacturing, total	1121	186	1307	6598	7905
Nonurable goods	363	-700	-336	2453	2116
4 Food products	-126	-412	-539	678	139
5 Textile & apparel	3	-39	-36	52	17
6 Paper products	31	-194	-163	733	569
7 Printing & publishin	293	-87	206	590	796
8 Petroleum & chemical	90	-29	61	204	265
9 Rubber & leather pro	72	62	134	196	330
Durable goods	757	886	1643	4145	5788
10 Wood products & furn	17	23	40	260	301
11 Stone, glass & clay	52	-7	45	141	185
12 Primary metal produc	36	-18	18	112	130
13 Fabricated metal pro	124	161	285	700	985
14 Nonelectrical machin	372	305	677	1745	2422
15 Electrical machinery	-27	25	-3	424	421
16 Transportation equip	68	12	80	142	223
17 Instruments & miscel	116	384	500	621	1121
Total goods producun	1208	-251	957	9217	10175
18 Trans. comm. utiliti	-113	89	-25	2034	2009
Trade, total	-117	-761	-878	4514	3636
19 Wholesale trade	-223	-346	-569	1934	1365
20 Eating & drinking pl	-16	37	21	535	556
21 Other retail trade	122	-452	-330	2046	1715
22 Fin. ins. real estat	232	393	615	1667	2282
Pvt services, total	533	2054	2587	5611	8198
23 Personal & repair se	62	417	478	978	1457
24 Business services	409	885	1294	1046	2340
25 Health care services	-288	698	410	1882	2292
26 Legal & miscellaneou	61	111	172	784	956
27 Educational services	13	31	44	240	284
28 Other services	276	-88	188	681	869
Government, total	-38	-1396	-1434	3472	2037
29 Federal, civilian	3	-225	-223	503	281
30 Federal, military	3	-33	-31	60	29
31 State and local	-43	-1138	-1181	2908	1727
Total services produ	486	379	865	17297	18162
All industry	1694	128	1822	26514	28337

Table 5.8. Generally, the short-term changes in real labor earnings are larger than long-term changes attributed to the regional-share effect because of close correlation between the two change sources and the general business cycle. Large positive changes are at least partially cancelled by later negative changes that occur as a result of changes in (1) total employment and (2) annual per worker increments in labor earnings.

The relative importance of the three change sources in real labor earnings growth over the 18-year period from 1982 to 2000 is shown graphically in Figure 5.6. Fast-growing industry groups, while dominantly in the manufacturing sector, have a larger impact when in the non-manufacturing sector because of their greater initial importance in accounting for the total labor earnings of Minnesota industry. Manufacturing nonetheless "drives" the major industry groups insofar as much of the manufacturing sector is engaged in export-producing activity and, hence, is part of Minnesota's economic base from which ensues the large long-term multiplier effects of continuing growth in real labor earnings.

Period-to-period volatility of labor earnings in manufacturing shown in Figure 5.7 is closely linked to the stage of the US business cycle and occasionally to the US foreign trade cycle, particularly in the most recent period in which a portion of the manufacturing sector is on the verge of regaining its former dominance in world trade. Because an above-average share of this sector is located in Minnesota, its resurgence is being noted immediately in larger labor earnings attributed to a larger US industry-mix effect and a larger Minnesota regional-share effect.

The positive consequences of the growth in exports are only partially incorporated in the underlying statistics. They are biased downward by the large decline in manufacturing employment attributed to the dollar-based

Table 5.8

Minnesota regional-share and US industry-mix effects are generally counter-balancing as changes sources for labor earnings originating from individual industry groups as illustrated by an above-average Minnesota regional-share effect of \$131 million for the agriculture industry group that is offset by a below-average industry-mix effect of \$14 million in the 1982-85 period, but with each source experiencing a reversal of algebraic values in the following period. Trade and government, however, experience consistently negative US industry-mix effects for the entire 18-year period.

Industry	Regional Share				Industry Mix-					
	1982-85	1985-87	1987-90	1990-00	Total	1982-85	1985-87	1987-90	1990-00	Total
	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)
Agric. for. fish.	131	-29	-138	-4	-40	-64	81	-159	-262	-404
Mining	22	0	-100	-3	-81	-156	7	135	27	12
Construction	47	97	-32	90	202	99	38	-22	-146	-31
Manufacturing, total	580	372	-360	528	1121	-683	121	720	28	186
Nondurable goods	95	150	-9	128	363	-265	-83	28	-380	-700
Durable goods	485	222	-351	400	757	-418	204	691	409	886
Total goods produc	777	445	-628	615	1208	-837	247	689	-350	-251
Trans. comm. utiliti	59	64	-198	-39	-113	-202	9	163	118	89
Trade, total	-318	199	36	-35	-117	-49	-137	-295	-281	-761
Fin. ins. real estat	39	81	-35	136	222	324	32	-73	111	393
Pvt services, total	-117	359	53	237	533	664	149	117	1125	2054
Government, total	-14	153	-156	-22	-38	-148	-245	-499	-504	-1396
Total services produ	-351	858	-298	277	486	590	-192	-587	568	379
All industry	426	1302	-926	892	1694	-247	56	101	218	128

Figure 5.6

Change from 1982 to 2000 in the total real labor earnings (in 1985 dollars) from Minnesota industry is attributed largely to the US national-growth effect, which exceeds total change in three of 14 manufacturing industries (Part A), but in only eight of 17 other major industry groups (Part B). Moreover, growth of labor earnings in the manufacturing industries is supported by an above-average Minnesota regional-share effect and an above-average US industry-mix effect in six manufacturing industries but only four major industry groups. Thus, much of the projected growth in total labor earnings in Minnesota is attributed to a rapidly-growing manufacturing sector.

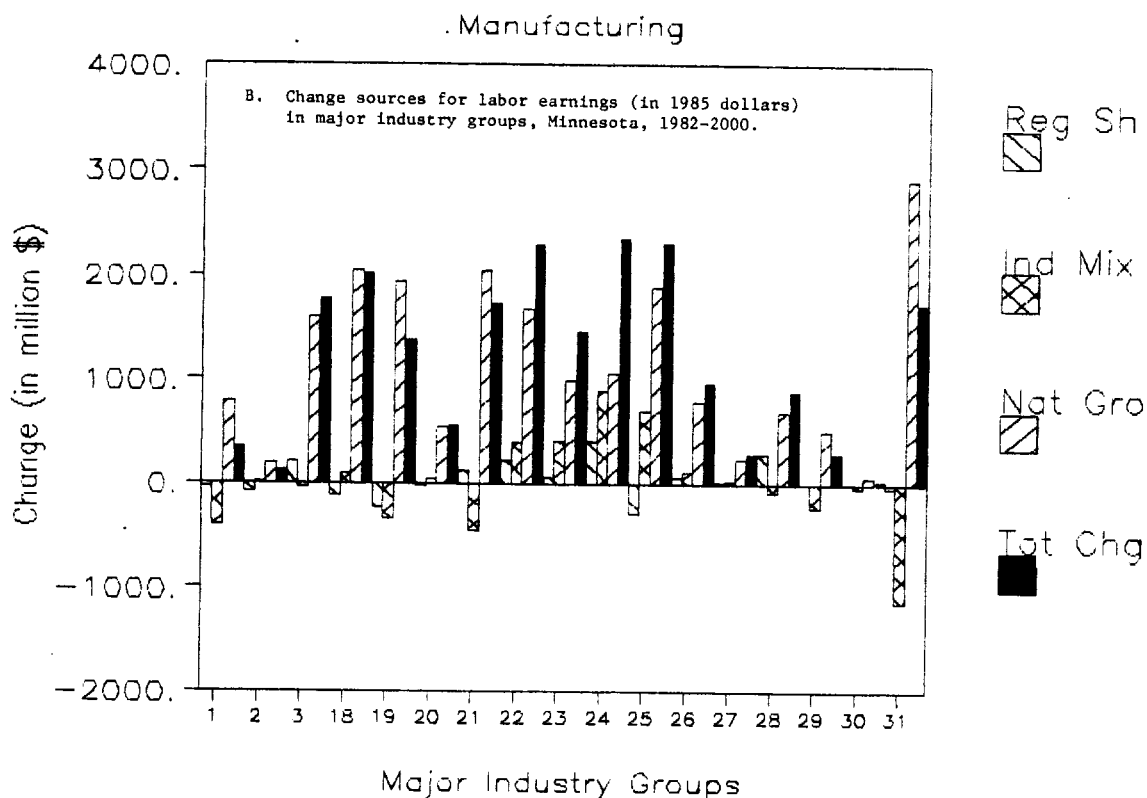
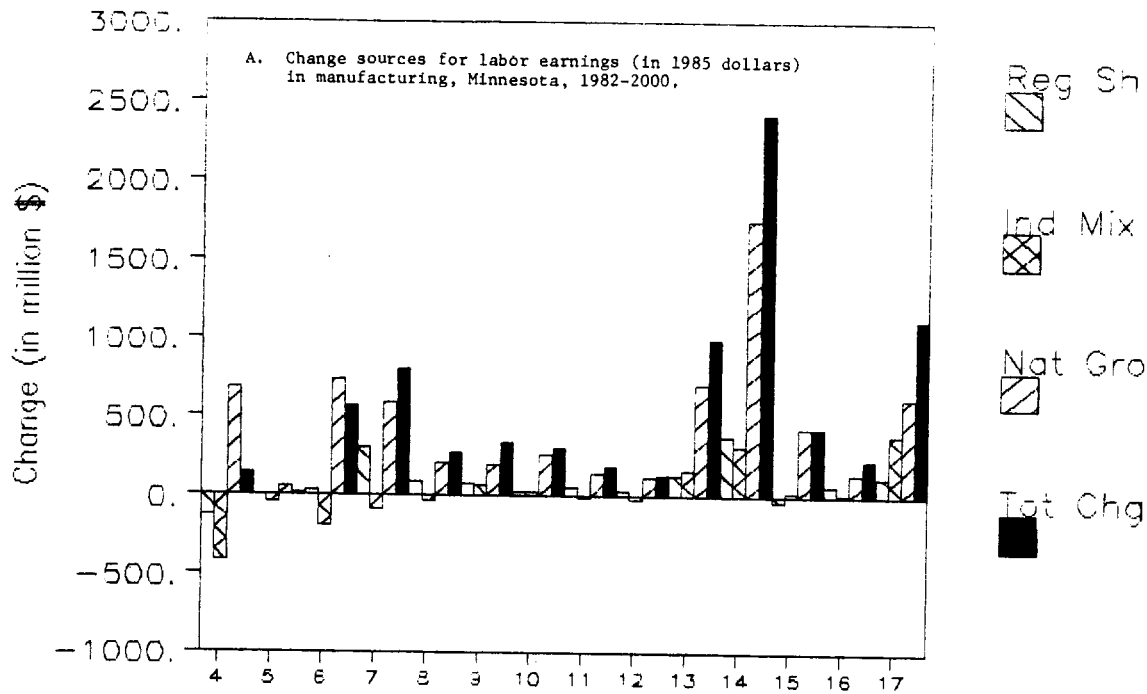
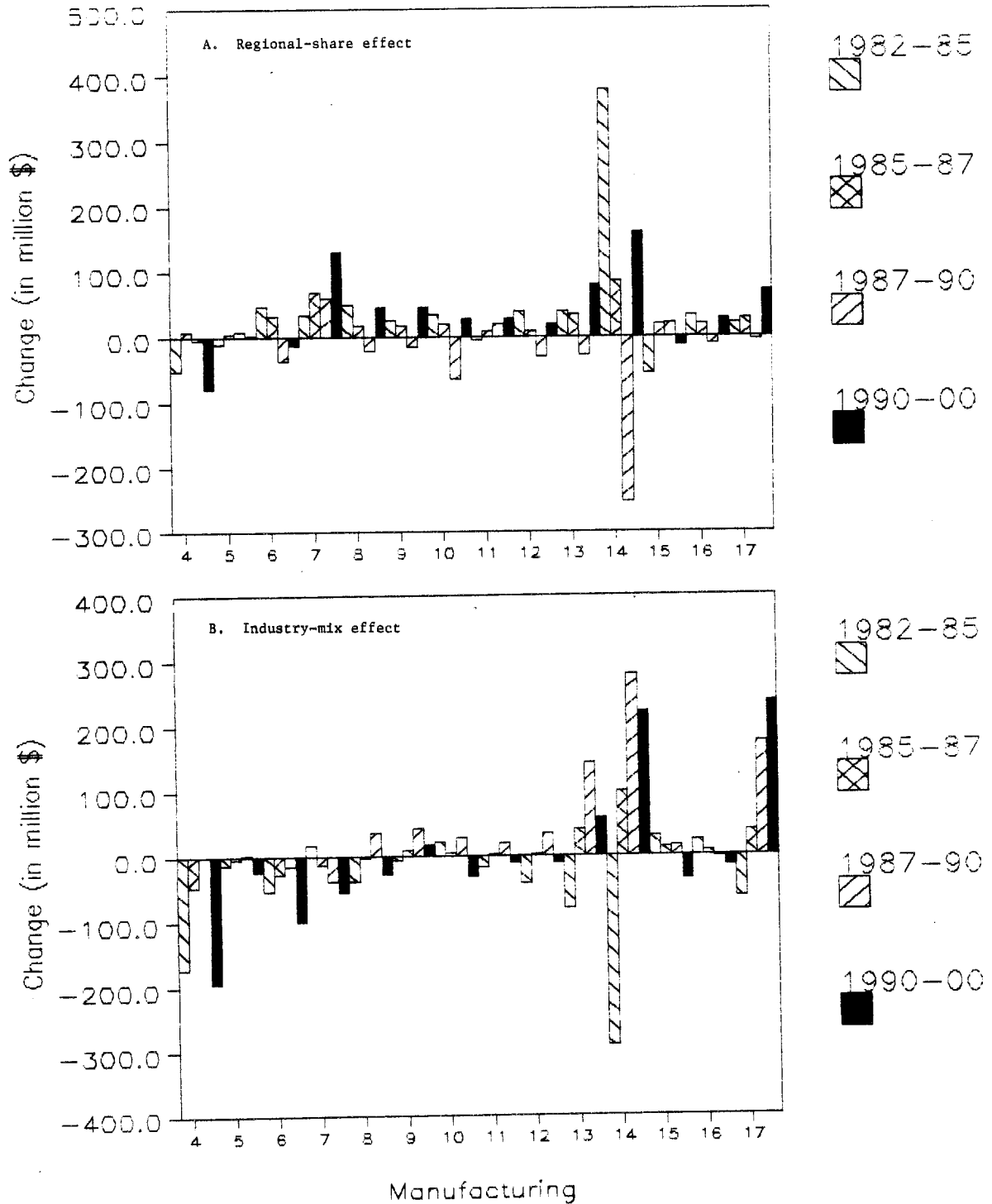


Figure 5.7

Period-to-period fluctuations in total real labor earnings that are attributed to the Minnesota regional-share-effect (Part A) and the US industry-mix effect (Part B) are generally less than \$100 million, except for the three most dynamic growth industries in Minnesota manufacturing--printing and publishing (7), nonelectrical machinery (14), and scientific and controlling instruments and miscellaneous (17)



erosion of export markets that occurred at the time the present projection series was prepared.

Volatility of total labor earnings is a characteristic also of nonmanufacturing industry groups, as shown in Figure 5.8. Much of this volatility is counter-balancing both among change sources and over the several stages of the business cycle. Moreover, the initial employment base is large, which results in smaller percentage fluctuations for the same absolute levels of total change as in the case of individual manufacturing industries. Because of the long-term multiplier effect from export-producing to residentiary industries, however, the volatility of manufacturing industries eventually affects the nonmanufacturing industry groups with their own induced volatility.

Earnings per job are projected to increase from \$16.3 thousand in 1982 to \$23 thousand (in 1985 dollars) in 2000--an annual rate of 3.9 percent. Much variability is projected, both industry-to-industry and period-to-period, as shown in Table 5.9. Also much variability exists among Minnesota industries relative to the earnings per job in corresponding US industries, with industry share in 1982 ranging from 15.1 percent below the US average in agriculture to 23.3 percent above the US average in paper products manufacturing. Both industry-share difference are projected to decline over the 18-year period, although at different rates of individual industry decline.

Total change in real earnings per job is positive for all manufacturing industries while relative (to corresponding US industry) change is more negative than positive. Based on historical relationships, earnings per manufacturing job are projected to drop from 3.7 percent above in 1985 to 0.3 percent below the US average in 2000.

Much of the variability in earnings per job in nonmanufacturing

Figure 5.8

Change in real labor earnings originating in the 17 major industry groups attributed to the Minnesota regional-share effect is less than \$200 million over the 18-year period from 1982 to 2000, but the US industry-mix effect is generally more than \$2000 million. The largest fluctuations are shown for the 1985-87 and the 1987-90 periods, with 1987 being a pivotal year in labor earnings for most industry groups.

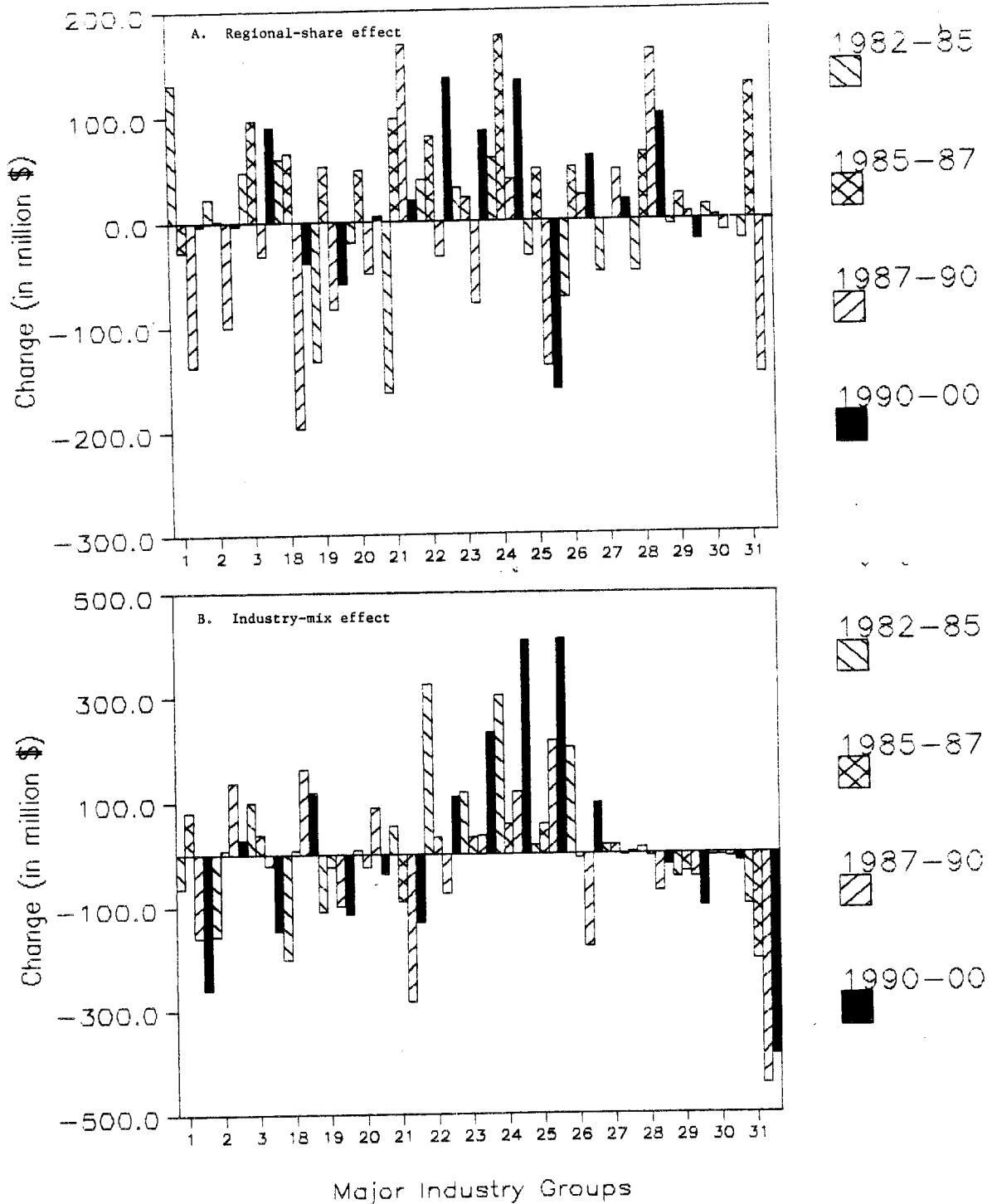


Table 5.9

Real earnings per worker were generally negative in the 1982-85 recovery period, with the largest percentage losses occurring in the manufacturing industries, but including, also, government-related service industries, except health care services. Earnings per job vary widely, ranging in 1985 from \$6900 in eating and drinking places to \$37400 in mining, the two industries being the most extreme in both actual earnings per worker and their percentage difference from the US average. Mining is projected at 16.9 percent to 20.9 percent above the US industry average while workers in eating and drinking places are projected at 16.5 percent to 10.9 percent below the US industry average over the 18-year period. However, annual increases are expected generally to converge, but in varying degree, towards the overall average of \$23000 by 2000.

No. Industry	Earnings per Job					Industry Share		Annual Change			
	1982	1985	1987	1990	2000	1982	2000	1982-85	1985-87	1987-90	1982-00
	(thou.\$)	(thou.\$)	(thou.\$)	(thou.\$)	(thou.\$)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)
1 Agric. for. fish.	7.3	9.3	10.5	10.0	10.4	-15.1	-9.8	4.2	6.2	-1.6	1.3
2 Mining	35.8	37.4	40.8	45.3	51.1	16.9	20.9	-2.4	4.4	3.5	1.3
3 Construction	22.0	24.7	25.8	27.2	28.9	1.1	-1.0	- .1	2.3	1.8	.9
Manufacturing, total	24.0	27.5	29.1	30.9	34.9	3.7	- .2	.6	2.9	2.0	1.4
Nondurable goods	23.7	26.4	27.8	29.8	33.2	13.4	6.3	- .3	2.6	2.4	1.2
4 Food products	23.1	25.4	26.7	28.8	32.2	7.4	4.5	- .7	2.6	2.6	1.2
5 Textile & apparel	13.5	12.7	13.4	15.8	17.8	4.4	-3.1	-5.6	2.4	5.8	.9
6 Paper products	32.0	37.4	39.6	41.2	46.6	23.3	17.0	1.3	2.8	1.3	1.4
7 Printing & publishin	19.4	21.0	22.1	24.0	26.2	- .8	- .5	-1.1	2.5	2.7	1.0
8 Petroleum & chemical	27.7	32.2	35.1	40.7	47.5	-14.3	-10.8	1.1	4.5	5.0	2.4
9 Rubber & leather pro	19.6	22.1	23.4	25.3	28.7	3.6	.1	.2	2.9	2.6	1.5
Durable goods	24.2	28.2	30.0	31.5	35.9	-2.1	-3.4	1.2	3.1	1.6	1.5
10 Wood products & furn	19.2	22.6	23.8	23.6	25.5	17.8	8.5	1.6	2.6	- .3	.9
11 Stone, clay & glass	19.4	22.3	23.9	25.8	30.4	-13.2	-9.5	.9	3.5	2.5	1.9
12 Primary metal produc	26.2	29.2	31.2	34.6	40.8	-14.6	-12.1	- .3	3.5	3.4	1.8
13 Fabricated metal pro	26.1	29.7	31.5	33.7	37.9	12.5	9.5	.3	3.0	2.3	1.4
14 Nonelectrical machin	26.5	31.2	33.0	34.1	38.6	2.7	1.5	1.6	2.9	1.1	1.5
15 Electrical machinery	21.3	24.2	25.8	27.5	32.5	-9.1	-9.3	.5	3.3	2.1	1.7
16 Transportation equip	26.5	31.7	33.8	34.7	39.3	-17.0	-20.1	2.1	3.3	.8	1.6
17 Instruments & miscel	22.2	26.0	27.8	30.4	34.5	6.1	6.7	1.3	3.4	3.0	1.8
Total goods productin	19.9	22.9	24.6	26.2	29.6	-5.6	-3.9	.9	3.6	2.1	1.6
18 Trans. comm. utiliti	26.2	29.8	31.5	33.7	37.7	- .6	-3.1	.4	2.8	2.3	1.4
19 Wholesale trade	23.4	26.5	27.6	28.0	30.3	5.8	2.7	.2	2.2	.5	.8
20 Eating & drinking pl	6.3	6.9	6.8	8.0	8.5	-16.5	-10.9	- .5	-1.1	5.4	1.0
21 Other retail trade	10.8	12.3	12.0	12.7	13.5	-5.4	-5.3	.5	-1.2	2.0	.6
22 Fin. ins. real estat	13.2	16.3	17.2	18.2	20.1	-4.6	-6.0	3.1	2.9	1.8	1.7
Private services	13.8	15.9	16.3	17.9	19.9	-6.8	-5.3	.9	1.3	3.1	1.4
23 Personal & repair se	8.7	10.2	10.6	11.8	13.7	-8.8	-15.9	1.6	1.9	3.4	1.9
24 Business services	13.3	15.4	15.1	19.5	22.3	-13.7	.3	1.0	-1.0	8.9	2.2
25 Health care services	17.2	20.7	21.6	21.7	23.7	-11.6	-10.2	2.4	2.2	.1	1.2
26 Legal & miscellaneous	20.0	23.0	24.1	22.3	22.2	-13.4	-14.4	.7	2.5	-2.6	-.1
27 Educational services	13.3	13.5	14.3	16.0	18.1	18.0	15.8	-3.2	2.7	3.7	1.1
28 Other services	13.1	14.7	14.9	17.3	19.5	25.2	63.0	- .1	.7	5.3	1.6
Government, total	17.2	20.0	21.1	21.8	24.2	1.9	- .6	1.1	2.5	1.1	1.2
29 Federal, civilian	23.7	27.4	28.8	30.8	34.4	-1.5	- .6	.9	2.6	2.2	1.4
30 Federal, military	5.3	6.4	6.8	6.7	7.4	-56.6	-56.6	2.3	2.5	-.3	1.2
31 State and local	17.2	20.1	21.1	21.6	24.1	5.9	2.2	1.3	2.5	.9	1.2
Total services produ	14.9	17.1	17.5	18.7	20.5	-3.7	-4.8	.7	1.1	2.2	1.1
All industry	16.3	18.7	19.5	20.8	23.0	-4.0	-3.8	.7	1.9	2.2	1.3
PCE Deflator(1982=1)	1.000	1.124	1.182	1.337	2.000	.0	.0	4.0	2.5	4.2	3.9

1/ Current dollars, 1982-1985; 1985 dollars, projected 1987-2000.

industries is confined to the fast-growing industries in the US which experience, also, above-average increases in earnings per worker. However, the relative change for Minnesota nonmanufacturing industries is more often negative than positive, which indicates a dominantly below-average industry-specific labor earnings growth rate.

#### Personal Income

Labor earnings account for a major part of total personal income. In 1982, total labor earnings of \$35.1 billion accounted for 73.4 percent of total personal income, while in 1985, \$44.4 billion of labor earnings accounted for 74.8 percent of total personal income. Net labor earnings (total, less personal contributions to social insurance, plus residence adjustment) of \$32.7 billion and \$41.1 billion were, respectively, 68.3 percent and 69.2 percent of total personal income in the two years. Projected total labor earnings of \$67.8 billion (in 1985 dollars) would account for 77.1 percent of total personal income in 2000, as shown in Table 5.11. Projected net labor earnings of \$62.9 billion would account for 71.9 percent of total personal income in 2000. The large percentage increase in labor earnings as a source of personal income in Minnesota is attributed to a decline in US transfer payment share and the US property income share of Minnesota residents.

Labor earnings per job, as shown in Table 5.11, is projected to increase from \$16.3 thousand in 1982 to \$23 thousand (in 1985 dollars) in 2000--a 1.3 percent annual increase in real terms. (With a projected price level increase of 3.9 percent annually, the nominal annual increase is projected at 5.2 percent.) On an overall per capita basis, labor earnings are projected to increase from \$7.9 thousand in 1982 to \$13.6 thousand (in 1985 dollars) in 2000--a 2.4 percent annual increase in real earnings per resident. Per capita

Table 5.10

Total labor earnings, by place of work, less personal contributions for social insurance, plus residence adjustment, equals net labor earnings by place of residence, to which is added property income and transfer payments to equal total personal income. Minnesotans share of US total personal income is projected to increase from 1.88 percent in 1982 to 1.83 percent in 2000 while both total and net earnings are projected to increase by 7 to 8 percentage points.

No. Industry	Total Earnings					Industry Share		Annual Change				
	1982	1985	1987	1990	2000	1982	2000	1982-85	1985-87	1987-90	1990-00	1982-00
	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(mil.\$)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)
1 Total earnings by wo	35126	44427	49267	53458	67819	1.83	1.90	4.0	5.3	2.8	2.4	3.1
2 Pers. contributions	2309	3094	3271	4070	5257	2.06	1.99	6.0	2.8	7.6	2.6	4.0
3 Residence adjustmen	-116	-238	-218	-117	-106	20.73	18.30	22.3	-4.2	-18.9	-1.0	-1.2
4 Equals: net resident	32702	41095	45778	49271	62456	1.81	1.89	3.8	5.5	2.5	2.4	3.0
5 Div. int. rent	8284	10084	10706	12750	14093	1.85	1.80	2.7	3.0	6.0	1.0	2.3
6 Transfer payments	6875	8184	8289	8927	10447	1.67	1.58	1.9	.6	2.5	1.6	1.7
7 Total personal income	47860	59362	64774	70949	86995	1.80	1.83	3.3	4.5	3.1	2.1	2.7
8 Wages and salaries	28525	35707	40746	44870	56914	1.81	1.91	3.7	6.8	3.3	2.4	3.2
9 Other labor income	2796	3515	3954	4309	5496	1.71	1.87	3.8	6.1	2.9	2.5	3.2
10 Proprietors' income,	3318	4822	4566	4865	5990	1.92	1.97	8.9	-2.7	2.1	2.1	2.7
11 Farm proprietors	676	1000	849	873	885	3.15	3.92	9.6	-7.9	.9	.1	.9
12 Nonfarm proprietors	2642	3822	3717	3991	5105	1.75	1.81	8.8	-1.4	2.4	2.5	3.1
13 Farm income, total	924	1236	1380	1195	1211	3.00	3.02	6.0	5.7	-4.7	.1	.9
14 Nonfarm income, tota	34202	43191	47886	52264	66608	1.81	1.88	4.0	5.3	3.0	2.5	3.1
15 Private income, tota	30089	38243	42690	46867	60119	1.88	1.94	4.2	5.7	3.2	2.5	3.2

Table 5.11

Labor earnings per person, by place of work, are projected to increase from \$16.3 thousand in 1982 to \$23 thousand, or 1.3 percent annually, while net labor earnings per resident are projected to increase from \$7.9 thousand to \$12.9 thousand--a 2.1 percent annual increase, the difference being the continuing large increases in labor force participation rates, which also accounts for above-average growth in total personal income per resident.

No. Industry	Income per Job pr Person					Industry Share		Annual Change				
	1982	1985	1987	1990	2000	1982	2000	1982-85	1985-87	1987-90	1990-00	1982-00
	(thou.\$)	(thou.\$)	(thou.\$)	(thou.\$)	(thou.\$)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)	(pct.)
1 Total earnings by wo	16.3	18.7	19.5	20.8	23.0	-4.0	-3.8	.7	1.9	2.2	1.0	1.3
2 Less: pers. contribu	1.1	1.3	1.3	1.6	1.8	8.1	1.0	2.7	-.5	7.0	1.2	2.2
3 Plus: residence adju	-.1	-.1	-.1	-.0	-.0	980.0	800.0	18.1	-7.3	-19.4	-2.2	-2.9
4 Equals: net resident	7.9	9.8	10.7	11.2	12.9	1.8	4.5	3.3	4.7	1.3	1.5	2.1
5 Plus: div., int., re	2.0	2.4	2.5	2.9	2.9	3.9	-.1	2.2	2.2	4.8	.1	1.5
6 Plus: transfer payme	1.7	2.0	1.9	2.0	2.2	-6.0	-12.7	1.4	-.2	1.3	.7	.8
7 Total personal incom	11.6	14.2	15.2	16.1	18.0	1.0	1.3	2.8	3.6	1.9	1.2	1.8
8 Wages and salaries	16.0	18.3	19.2	20.6	22.6	-2.0	-2.7	.6	2.6	2.3	1.0	1.3
9 Other labor income	1.6	1.8	1.9	2.0	2.2	-7.2	-3.8	.7	1.9	2.2	1.0	1.3
10 Proprietors' income,	9.0	11.6	11.0	11.8	13.0	-17.4	-6.3	4.5	-2.5	2.1	1.0	1.4
11 Farm proprietors	6.3	9.6	8.4	9.0	9.3	-27.6	3.4	10.5	-6.5	2.4	.3	1.5
12 Nonfarm proprietors	10.0	11.4	11.9	12.7	14.0	-12.2	-3.8	.7	1.9	2.3	1.0	1.3
13 Farm income, total	7.0	9.2	10.5	9.5	9.9	-18.0	-12.6	5.3	7.0	-3.2	.3	1.3
14 Nonfarm income, tota	16.9	19.3	19.9	21.4	23.5	-2.0	-2.6	.5	1.6	2.3	1.0	1.2
15 Nonfarm private, tot	16.2	18.5	19.2	20.7	22.8	-4.9	-4.1	.7	1.8	2.4	1.0	1.3
1 Agric. for. fish.	7.3	9.3	10.5	10.0	10.4	-15.1	-9.8	4.2	6.2	-1.6	.5	1.3

1/ Current dollars, 1982-1985; 1985 dollars, projected 1987-2000.

personal income is projected to increase at a 2.1 percent annual rate--from \$11.6 thousand in 1982 to \$18.9 thousand (in 1985 dollars) in 2000.

The growing economic dependence of Minnesota households on labor earnings is illustrated in Figure 5.9 for the 15-year period from 1985 to 2000. Historically, approximately 50 percent of Minnesota personal income is derived from net transfer payments, property income and labor earnings of goods-producing industries--agriculture, mining, construction and manufacturing. Over the 15-year period from 1985 to 2000, goods-producing industries account for an increasing proportion of the first 50 percent of total personal income, as shown earlier. The remaining 50 percent of personal income is split equally between the regulated industries, trade, and finance on the one hand and private services and government on the other. The projected income distribution shows a declining role for trade and government.

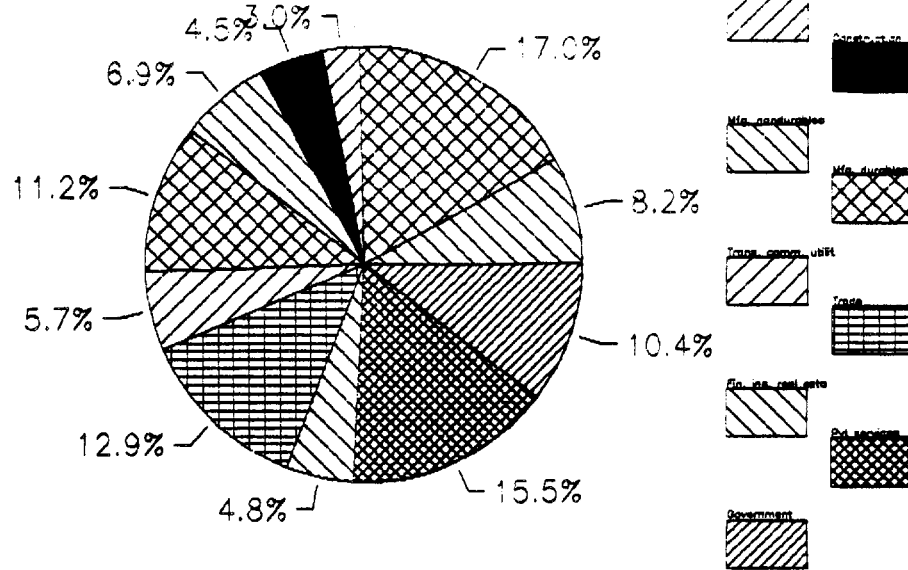
The regulated industries, finance and private services are increasingly important sources of basic dollars in the Minnesota economy, along with manufacturing. Projected growth in services-producing industries is largely related to growth in manufacturing.

The contribution of manufacturing jobs to Minnesota's economic base is represented by individual industry employment in excess of the US industry employment distribution for 1985 and 2000, as shown in Figure 5.10. In 1985, 41.5 percent of all jobs were attributed to manufacturing. Only 24.9 percent of the total was attributed to agriculture and mining. Thus, the four goods-producing industries (construction not included because of its wholly residuary role) accounted for 66.4 percent of total basic employment. Over the 15-year period from 1985 to 2000 Minnesota's dependence on basic jobs in manufacturing grew while its dependence on mining and agriculture declined. In 2000, manufacturing is projected to generate 48.5 percent of all basic jobs

Figure 5.9

Total personal income payments are derived from transfer payments (less employee contributions to social and medical insurance and other delayed benefit programs, plus residence adjustment), property income (dividends, interest and rent), and labor earnings, with net transfer payments and property income accounting for 25.2 percent of personal income payments in 1985 and 21.9 percent in 2000. Labor earnings from agriculture and mining are projected at 3 percent. Construction and manufacturing industries are projected to increase their total income contribution from 22.6 percent to 24.6 percent of personal income in the 15-year period.

A. Income 1985



B. Income 2000

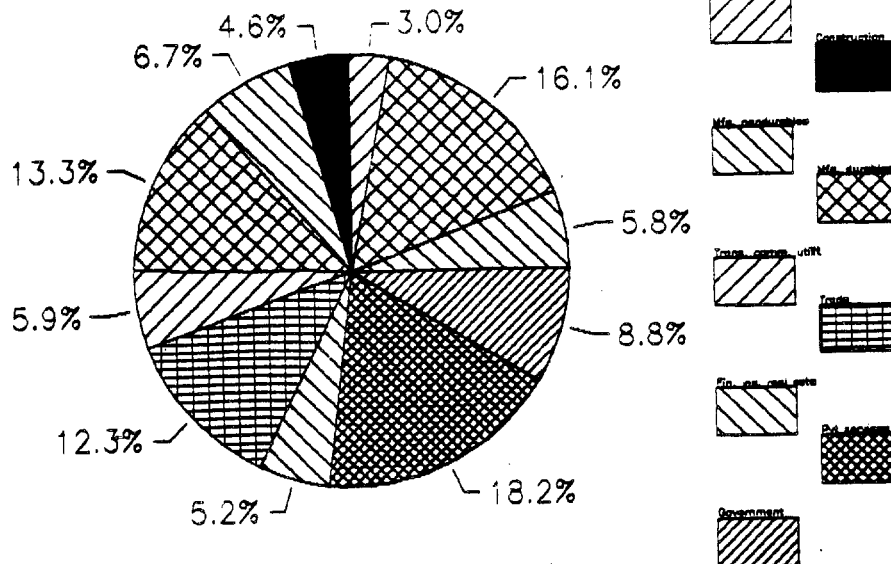
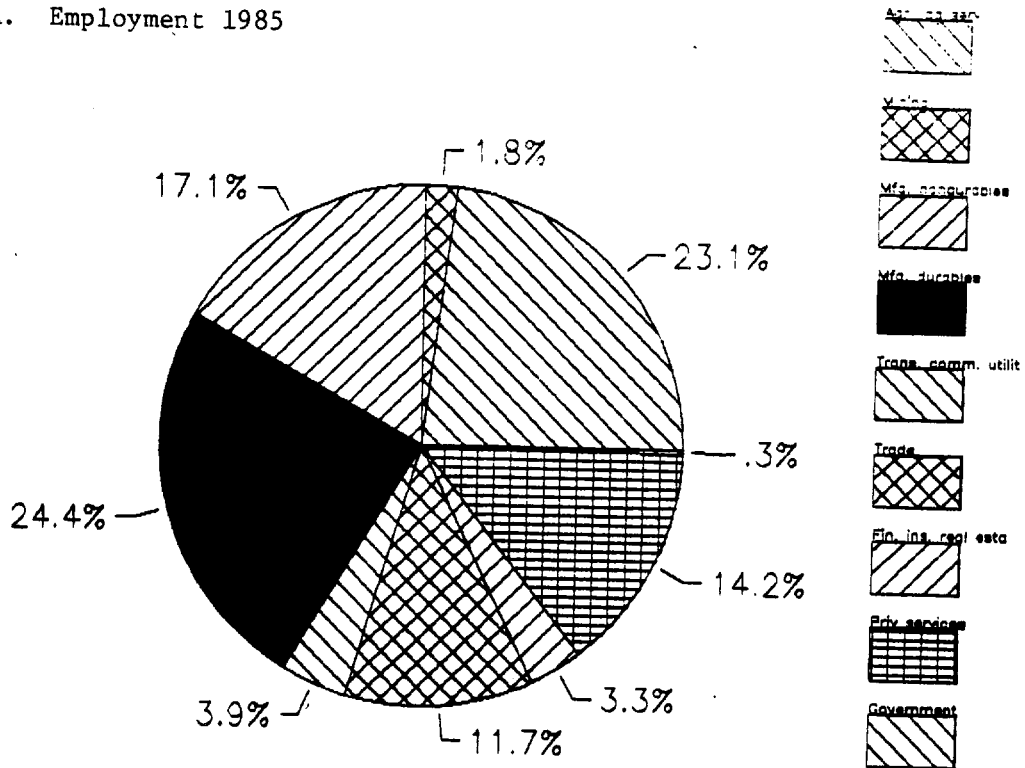


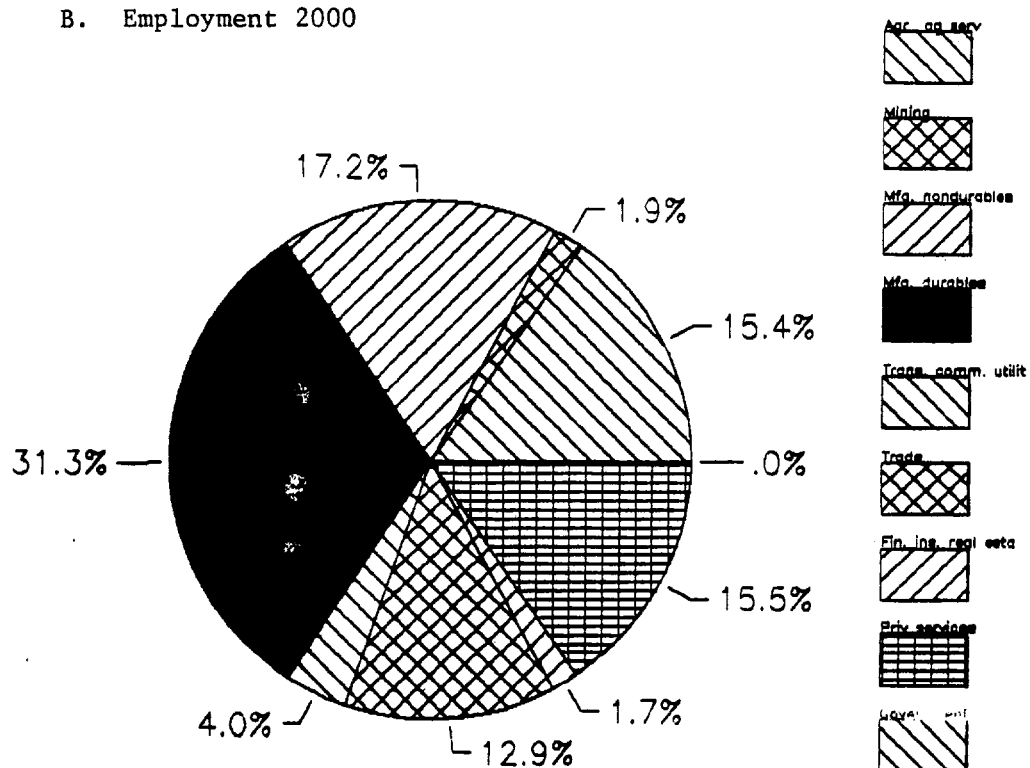
Figure 5.10

Total basic, export-producing industry employment is shared disproportionately to total industry employment, with the goods-producing industries accounting for 27.9 percent of total employment in 1985 and 66.4 percent of basic employment. Basic goods-producing jobs are projected to drop slightly to 65.8 percent in 2000 as private services increase their share of the base. The manufacturing share of basic employment is projected to increase from 47.1 percent to 48.5 percent while the combined agriculture and mining share would decline from 24.9 percent to 17.3 percent of the total in the 15-year period.

A. Employment 1985



B. Employment 2000



while agriculture and mining is projected at 17.3 percent of the base. Private services, regulated industries and finance account for the remainder of the shift away from agriculture and mining to other sources of basic employment in the Minnesota economy.

The shift in basic employment from primary production to secondary and tertiary production is illustrated by the distribution of excess employment (that correlates with basic employment) in 1985 and 2000, as follows:

Industry Group	1985		2000	
	Total	Basic	Total	Basic
	percent			
Agriculture	6.5	23.1	5.0	15.4
Mining	0.4	1.8	0.4	1.9
Construction	4.6	0.0	4.7	0.0
Mfg., nondurables	6.5	17.1	6.0	17.2
Mfg., durables	9.9	24.4	11.0	31.3
Total goods-producing	27.9	66.4	27.2	65.8
Tran., comm., utilities	4.8	3.9	4.6	4.0
Trade	22.5	11.7	22.8	12.9
Fin., ins., real estate	7.4	3.3	7.6	1.7
Private services	24.4	14.2	27.1	15.5
Government	13.0	0.3	10.8	0.0
Total services-producing	72.1	32.6	72.8	34.2
All industry	100.0	100.0	100.0	100.0

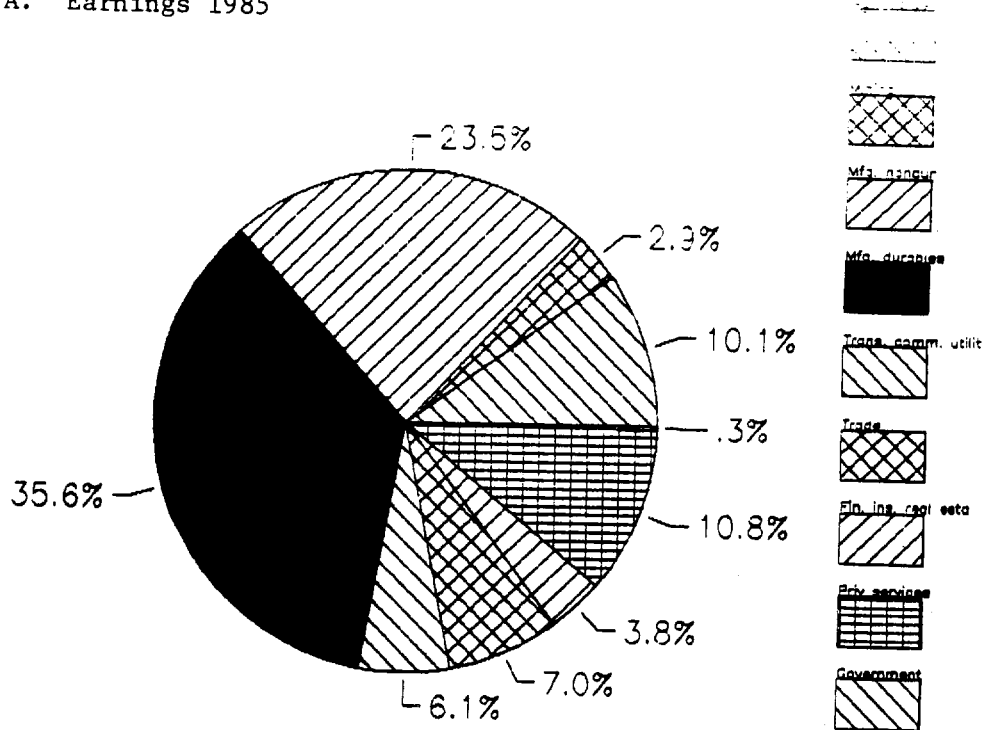
Manufacturing, with 16.4 percent of total employment in 1985, is the largest source of jobs in Minnesota, next to private services, and it accounts for half of Minnesota's economic base. Its role in job creation is therefore second to none with any one of several individual manufacturing industries, like nonelectrical machinery, accounting for more new basic jobs than any non-manufacturing industry within the major industry groups.

Above-average labor earnings in manufacturing--50 percent above the overall average--enhance even further its dominant role in the Minnesota economy. If the Minnesota economy is highly dependent on manufacturing for its basic jobs, it is even more dependent on manufacturing for its labor earnings, as illustrated in Figure 5.11. Manufacturing now generates more

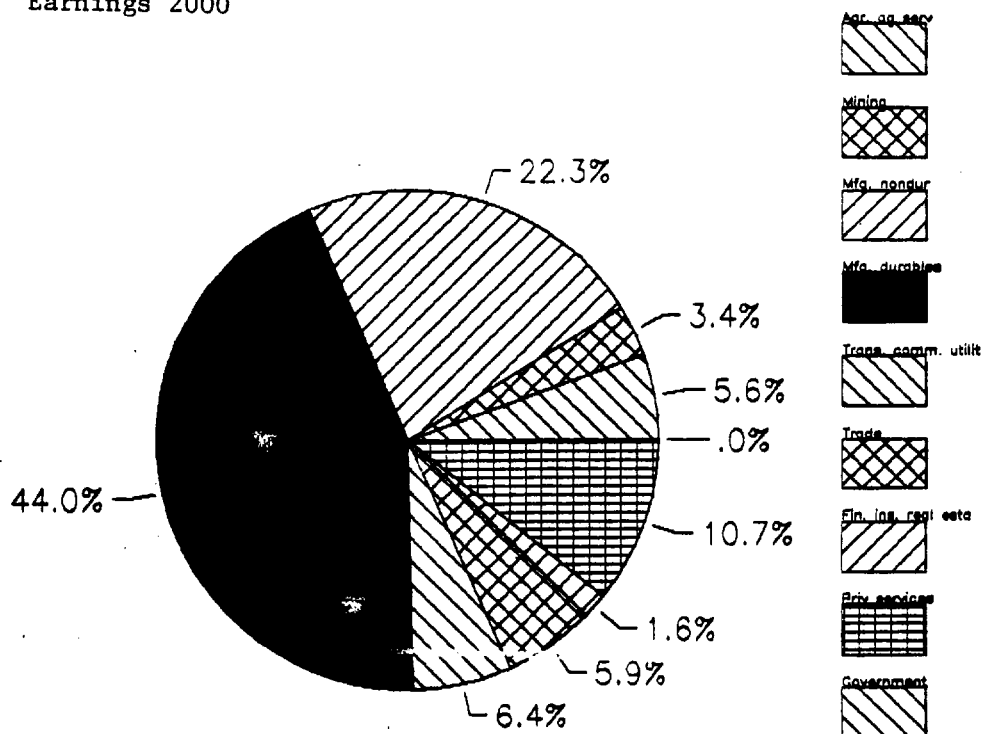
Figure 5.11

Labor earnings in excess of their percentage distribution for US industry correlate with the distribution of basic employment in Minnesota. In 1985, manufacturing accounted for 59.1 percent of the total excess earnings as compared with 13 percent for agriculture and mining. The projected 2000 distribution shows manufacturing with 66.3 percent of the total and agriculture and mining with 9 percent. Minnesota's dependence on manufacturing will increase as its economic base increases in its diversity of industry employment.

A. Earnings 1985



B. Earnings 2000



than 50 percent of Minnesota's basic dollars--a role attributed to agriculture, mining and related manufacturing in 1950. This shift in export-base dependence is illustrated by the percentage distribution of total earnings and basic earnings in 1985 and 2000, as follows:

<u>Industry Group</u>	<u>1985</u>		<u>2000</u>	
	<u>Total</u>	<u>Basic</u>	<u>Total</u>	<u>Basic</u>
	-----percent-----			
Agriculture	3.2	10.1	2.3	5.6
Mining	0.8	2.9	0.9	3.4
Construction	6.0	0.0	5.9	0.0
Mfg., nondurables	9.2	23.5	9.6	22.3
Mfg., durables	14.9	35.6	17.2	44.0
Total goods-producing	34.1	72.1	35.0	76.3
Trans., comm., utilities	7.6	6.1	7.6	6.4
Wholesale & retail trade	17.2	7.0	15.9	5.9
Fin., ins., real estate	6.4	3.8	6.7	1.6
Private services	20.7	10.8	23.5	10.7
Government	13.9	0.3	11.4	0.0
Total services-producing	65.9	27.9	65.0	23.7
All industry	100.0	100.0	100.0	100.0

Comparison of basic jobs with basic dollars further illustrates the declining importance of Minnesota's traditional basic industries and further enhances the already overwhelming importance of manufacturing in Minnesota's economic future. While directly or indirectly accounting for most of Minnesota's basic job and basic earnings, it also represents a source of increasing income instability for households, business and governments.

Variability in period-to-period growth in total personal income payments is increased by labor earnings and reduced by transfer payments. While individual components of personal income are generally increasing over the 18-year projection period, their relative change is highly variable, with increases in per job and per resident earnings being above the projected increases in corresponding US income components. As labor earnings account for a larger share of total personal income, year-to-year income fluctuations will become of increasing importance to Minnesota residents and governments

insofar as they lead to corresponding fluctuations in consumer expenditures and tax receipts.