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MINNESOTA'S ECONOMIC GROWTH IN RECESSION AND RECOVERY: PART I

Wilbur R. Maki, Carlo del Ninno and Peter L. Stenberg

Department of Agricultural and Applied Economics

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Acknowledgements

Abstract

This report presents statistical reference series for the study and projection of Minnesota's economic outlook in the 1980's. The reference series serve as baseline forecasts for the assessment of Minnesota's job and income prospects in its basic industries, including agriculture, forestry, mining, manufacturing, and services for nonresidents in work and leisure activities. In Part I, two sets of baseline forecasts are presented, namely, short-term quarter-year and long-term five-year forecasts of industry employment and personal earnings and income. A description and an explanation of the underlying rationale of the baseline forecast series are included, also.

In brief, the two baseline forecasts show prolonged negative effects of the 1980 and 1981-82 recessions which are equivalent to a loss of 40,200 jobs and of $16.3 billion in total earnings over the four-year period from 1980 through 1983. The earnings loss is the direct result of fewer jobs, a shorter average work week, and reduced growth in earnings per hour.

Summary and Conclusions

Minnesota's economic growth lags in recession and lags, also, in recovery. It lags initially in recovery, but it eventually surpasses the U.S. before reaching its next peak.

Contrary to popular perceptions, the Minnesota economy is closely linked to the U.S. economy. It is, indeed, an immediate victim, and, also, an immediate beneficiary, of national and world economic conditions. Moreso than dominantly agricultural neighboring states, Minnesota's prosperity is increasingly dependent on U.S. economic recovery and growth.

It must occur as no surprise by now to even the casual observer that Minnesota state income and revenue receipts drop sharply when the U.S. economy declines in output. If to find fault is the name of the game, then fault is readily found in U.S. economic performance, which Minnesota's economy responds to even more sharply now than in previous recessions.

Since November 1981, two additional revisions of U.S. industry projections for 1982 and 1983 have been received for use in projection of Minnesota's economy. With each new and more pessimistic U.S. projection, Minnesota's economic prospects decline, also. When U.S. economic recovery actually starts, however, Minnesota's economic recovery will start soon thereafter and it will again gain on the U.S. recovery, provided that the 1980's are in substantial ways like the 1970's.

Minnesota's economic future will differ from its past, not only quantitatively, but qualitatively, too. Minnesota's labor force in the 1980's will differ from its labor force in the 1970's in total number and composition, including skills and attitudes. Markets for Minnesota industries also will change from the 1970's to 1980's as will the priorities and responsibilities of government -- federal, state, and local. Also, looming large as a potential threat to Minnesota's economic recovery is inflation, which

reduces real earnings and income. This report provides essentially Part I of economic baselines for monitoring Minnesota's economic performance in the 1980's and for signaling potentially troublesome departures from expected or projected performance levels.

In 1970, the number of jobs in Minnesota industry totaled about 1.6 million and total earnings were $12 billion, or $7,900 per job, in constant 1972 dollars. By 1980, these figures were 2.1 million, $30.3 billion and $8,120, respectively, and they are projected at 2.5 million, $27,244 billion, and $11,902, respectively, by 1990, according to the latest U.S. Department of Commerce projection series. During this period the Minnesota economy would overtake and exceed the U.S. economy in the annual rates of growth in total jobs, earnings, and earnings per worker.

The general business cycle accounts for the current reduced rates of economic growth. Total employment in 1981 was 2,051,000 rather than the projected 2,092,100 -- an employment shortfall of 41,700. Total earnings, in current dollars, were $32,537 million, rather than the projected $36,767 million -- a total earnings shortfall of $4,230 million. Projected employment and total earnings shortfalls in 1982 are even larger than the corresponding 1981 shortfalls. The 1980 and 1981-82 recessions are projected to account for a reduction, relative to long-term trends, of 40,200 in average annual employment and of $16,342 million in total earnings in the four-year period from 1980 through 1983.

The 1980 and 1982-82 recessions, when combined with near double digit inflation, reduced real earnings per worker by 10 percent per year over the 1980-83 period. This reduction in the principal source of personal income reduced, not only its growth, but, also, state and local government revenues. Recent past and projected future state revenue shortfalls are attributed largely to reduced real personal earnings and expenditures and the related decline in business activity.

Typically, Minnesota's recovery from a recession is delayed relative to U.S. recovery. This delay was followed by above-average growth in the basic industries in both the 1970-73 and the 1975-79 recovery periods. During each recovery period, earnings per worker increased in the months immediately preceding the recession trough and continued well into the recovery stage. This increase in earnings is attributed to an increase in average weekly hours worked, coupled with reduced levels of part-time employment and rising levels of industry sales.

State and regional economic issues stemming from the currently lagging rates of economic growth can be listed according to their effects on population, industry, and income distribution. If the currently lagging rates of economic growth persist in Minnesota and neighboring states, like Iowa and Wisconsin, then actual levels of population, employment, and income in these states are likely to fall short of their projected levels. Much depends on the duration and frequency of the current and future recession and the place-specific effects of counterbalancing influences, particularly those arising from (1) federal government purchases and transfer payments and (2) private sector capital expenditures in new job creation. Federal intervention in job-creation, which has emphasized community infrastructure and services, is shifting to new forms of regional economic development, the foremost being national defense and related federal procurement practices. Transfer of existing federal programs to state governments also changes regional economic prospects by the differential burdens placed on the new order of revenue-rich and revenue-poor states. Revenue-poor states are confronted usually by a narrow range of financing options which thus further accentuate the state differentials in fiscal burdens. Minnesota, fortunately, has more options in both job-creation and public financing than the revenue-poor states, but its current favorable position would erode in the less promising of its alternative futures.

MINNESOTA'S ECONOMIC GROWTH IN RECESSION AND RECOVERY: PART I

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Minnesota's economic growth is measured by increases in industry output, employment, investment and income. In its simplest form, more jobs and higher per capita income translate into economic growth.

In the 1970's, Minnesota's economy outpaced the overall U.S. economy in both jobs and income, thanks to its basic industries -- agriculture, mining, manufacturing, and services for non-resident work and leisure activities. Total employment increased from 1.6 million in 1970 to 2.1 million in 1979, while total earnings, i.e., wages and salaries, other labor income, and proprietorial income, increased from $12 billion in 1970 to $26.6 billion in 1979 -- increases of 30 percent and 136 percent, respectively. These increases compare with U.S. increases in total employment and total earnings of 22 percent and 132 percent, respectively.

Much pessimism exists about future prospects in jobs and earnings when general business conditions turn from recovery to recession and an area's geographic position is perceived as peripheral, isolated, and energy-deficient. Most clearly perceived is the recent experience of a sharp reversal in Minnesota's economy. In 1981, employment growth had ceased entirely and real earnings actually declined. This trend was even more pronounced here than in the rest of nation.

From the painful present to a promise of future recovery and revival in Minnesota is not a matter of faith, but the results of past investment, especially in its basic industries. For parts of Minnesota's economy, future growth prospects may actually improve insofar as businesses surviving a recession

acquire the essential capacity for successfully coping with economic adversity. Projected long-term growth of the Minnesota economy is also more promising than its short-term condition because of its economic diversity and vitality, already demonstrated in the 1975-79 pre-recession period.

The preparation of the statistical underpinnings for portraying Minnesota's economic futures is a task nearing completion. As part of this task, a series of short-term quarter-year and long-term five-year forecasts of Minnesota industry employment and earnings have been prepared. This report offers a preliminary review of the baseline, or reference, forecast series, namely, those short-term and long-term forecasts which are keyed to corresponding "concensus" forecasts of the U.S. economy.

First, Minnesota's experience in other recessions, and in the longer period of economic recovery following the six-month to 16-month periods of decline in income and employment, is reviewed. Finally, the possible use of alternative U.S. and Minnesota forecast series in state economic and fiscal planning is discussed briefly in the context of exploring Minnesota's alternative economic futures and their implications for individual and collective well-being.

What Happened in Other Recessions?

In its totality, simply focusing on the aggregate measures of economic well-being and not on the many individuals without a job, the Minnesota economy, like the U.S. economy, barely felt the recessions of December 1969 to November 1970 and the November 1973 to March 1975. Nonetheless, fluctuations in total personal income of Minnesota and U.S. residents show, as in Table 1.1, not slight, but moderate sensitivity of the state's economy to the general business cycle. Careful examination of detailed industry

Table 1.1. Total personal income and its principal components in current and constant 1972 dollars, and total population, Minnesota and U.S., 1969-1980. 1/

Year	Total Personal Income		Net Earnings		Property Income		Transfer Payments		Total Popu-lation
	Current Dollars	Constant Dollars	Current Dollars	Constant Dollars	Current Dollars	Constant Dollars	Current Dollars	Constant Dollars	
	(mil.$)	(mil.$)	(mil.$)	(mil.$)	(mil.$)	(mil.$)	(mil.$)	(mil.$)	(thou.)
Minnesota:									
1969	13,664	15,440	10,638	12,020	1,887	3,132	1,168	1,320	3,758
1970	14,851	15,374	11,479	11,883	2,009	2,080	1,391	1,440	3,815
1971	14,851	16,292	12,016	12,439	2,130	2,205	1,619	1,675	3,852
1972	17,145	17,145	13,122	13,122	2,265	2,265	1,787	1,787	3,867
1973	20,371	19,309	15,658	14,842	2,698	2,557	2,047	1,940	3,885
1974	21,581	18,540	16,236	13,948	2,964	2,546	2,408	2,069	3,898
1975	23,093	18,270	17,011	13,458	3,231	2,556	2,874	2,274	3,926
1976	25,017	18,810	18,324	13,777	3,571	2,685	3,143	2,363	3,957
1977	28,259	20,085	21,196	15,065	4,041	3,322	3,322	2,361	3,980
1978	31,766	21,135	23,726	15,786	4,540	3,021	3,540	2,355	4,005
1979	36,048	22,211	26,645	16,417	5,520	3,401	3,929	2,421	4,038
1980	39,744	22,216	28,574	15,972	6,560	3,667	4,661	2,605	4,087
United States:									
1969	747,536	844,673	577,983	653,088	103,079	116,473	66,650	75,311	201,298
1970	803,922	832,217	612,612	634,174	111,347	115,266	80,149	82,970	203,799
1971	861,904	892,240	650,012	672,890	117,667	121,808	94,435	97,759	206,817
1972	944,852	944,852	714,370	714,370	126,045	126,045	104,681	104,681	209,274
1973	1,058,902	1,003,699	796,672	755,139	142,980	135,526	119,512	113,282	211,349
1974	1,162,203	998,456	856,288	735,643	164,976	141,732	141,221	121,324	213,333
1975	1,259,430	996,384	905,313	716,229	176,145	139,355	178,308	141,066	215,456
1976	1,386,772	1,042,686	1,000,315	752,117	192,542	144,769	194,273	146,070	217,553
1977	1,533,768	1,090,098	1,111,373	789,888	215,325	153,038	207,472	147,457	219,760
1978	1,717,816	1,142,925	1,251,320	832,548	243,665	162,119	223,272	148,551	222,095
1979	1,939,486	1,195,001	1,401,770	863,691	288,700	177,880	249,382	153,601	224,567
1980	2,162,936	2,209,020	1,525,532	853,344	342,503	191,449	294,240	164,472	227,169

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1/ U.S. Department of Commerce, Regional Economic Measurement Division, "Revised State Personal Income, 1969-1980", Survey of Current Business, 61(7): 29-72, 1981.

statistics would show even more variability, but the aggregate statistics
of total personal income, like total earnings, property income, and trans-
fer payments, are counter-balancing. In the 1973-74 period, for example,
real earnings declined 3.5 percent in Minnesota. This compares with a
decline of 2.6 percent for the U.S. Total personal earnings declined less
rapidly -- by 1.5 percent in Minnesota and only 0.2 percent in the U.S. Both
net earnings and property income increased more rapidly in Minnesota than
in the U.S. as a whole over the entire period from 1969 to 1980.

Far more variability in the Minnesota economy is revealed in its
industry breakdown of total employment and total earnings than its total
personal income. To illustrate this variability, the farm and the nonfarm
sectors are separated from the total economy and, in turn, the construction
industry and the two manufacturing subsectors -- nondurable goods and dur-
able goods -- are separated from the total nonfarm sector (Table 1.2).
With the exception of mining, these four sectors and subsectors include
the principal export-producing industries in the Minnesota economy.[1] In
addition, the service industry is included because of its rapid, but steady,
growth in 1970's, which reduced the overall income fluctuations.

Nonetheless, yearly fluctuations in farm income were larger in Minnesota
than in the U.S. during the 1970's. These fluctuations were larger, also,
in total earnings of nonfarm workers, particularly, construction and manufac-
turing. While real earnings increased each year in the service industry
group, the total increase in Minnesota was larger than for the U.S. as a
whole. Unlike the nonfarm goods-producing industries, total real earnings

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[1] The basic manufacturing industries depend on rest-of-nation intermediate
(i.e., industry) and final (i.e., household and government purchases
and business capital purchases) markets for their livelihood. When the
rest-of-nation suffers an economic recession, so do these basic indus-
tries. Their negative ripple effects subsequently are felt throughout
a state's economy.

Table 1.2. Comparison of year-to-year fluctuations in total personal income (in constant dollars) from specific sources, Minnesota and U.S., 1969-1980.

Year	Total Personal Income	Property Income	Transfer Payments	Net	Farm	Earnings Total	Con-struc-tion	Manufacturing Non-Durable	Durable	Services
						(percent)				
Minnesota:										
1969	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1970	99.6	97.6	109.1	98.9	109.4	97.9	93.8	96.8	92.6	104.4
1971	100.5	103.4	126.9	103.5	101.8	103.9	138.4	99.4	89.9	107.8
1972	110.0	106.2	135.4	109.2	119.3	108.8	105.4	105.3	96.9	112.6
1973	125.1	119.9	147.0	123.5	261.7	114.2	98.8	109.3	106.8	117.8
1974	120.1	119.4	156.7	116.0	174.5	113.3	95.8	108.2	107.0	118.5
1975	118.3	119.9	172.3	112.0	124.6	112.7	92.8	104.1	100.2	121.7
1976	121.8	125.9	179.0	114.6	74.1	119.3	102.1	112.3	106.5	129.9
1977	130.1	134.7	178.9	125.3	148.0	125.2	102.9	116.5	116.3	139.1
1978	136.9	141.7	178.4	131.3	132.9	133.0	118.3	120.7	128.1	146.7
1979	143.9	159.5	183.4	136.6	120.7	140.0	123.1	124.6	139.0	155.9
1980	143.9	172.0	197.3	132.9	83.4	138.9	112.7	121.7	137.6	164.7
U.S.:										
1969	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1970	98.5	99.0	110.2	97.1	91.5	97.3	96.2	95.4	90.6	100.7
1971	105.6	104.5	129.0	103.0	95.1	103.5	104.9	98.9	91.4	106.7
1972	111.9	108.2	139.0	109.4	110.1	109.7	111.2	102.8	98.3	113.3
1973	118.8	116.4	150.4	115.6	173.0	114.8	117.3	105.5	106.7	118.7
1974	118.2	121.7	161.1	112.6	132.8	113.2	111.6	103.3	105.0	117.9
1975	118.0	119.6	187.3	109.7	119.8	110.5	101.6	98.5	96.3	119.4
1976	123.4	124.3	194.0	115.2	100.0	116.8	106.9	105.8	103.6	126.3
1977	129.1	131.4	195.8	116.4	96.6	131.9	113.4	110.4	111.6	133.5
1978	135.3	139.2	197.3	127.5	112.6	129.2	124.0	113.9	119.4	139.5
1979	141.5	152.7	204.0	132.2	120.2	134.2	130.3	115.8	125.2	150.0
1980	143.1	164.4	218.4	130.7	87.1	133.6	121.3	114.2	121.1	155.1

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of the employed work force in the service industry group increased in both
the 1969-70 recession and the second year of the 1973-75 recession.

The net effect of counterbalancing responses in total earnings in
the goods-producing and the services-producing industries was the gradually
increasing level of total personal income illustrated in Figure 1.1.
Except for the sharp upturn in net farm earnings in 1973, which sustained
above-average real income levels in Minnesota in 1973, 1974 and 1975, and
thus reduced the adverse impact of the 1973-75 recession on the state's
economy, total personal income levels increased each year in the 1970's.
Indeed, these increases in Minnesota exceeded the corresponding increases
in U.S. income levels because of the rapid growth in net earnings and pro-
perty income. However, growth in transfer payments (largely retirement
benefits) to Minnesota residents lagged behind the U.S. totals.

Study of the 1970 to 1980 trends helps focus on some problems in
correctly anticipating future changes in the Minnesota economy. Because
coming events cast uneven shadows, the task of accurately and precisely
forecasting these events has been approached often but never completely
fulfilled. No wonder that much support exists for changing the forecast
practice from an emphasis on the single forecast to an assessment of alter-
native futures stemming from a particular governmental policy and/or market
assumption. This shift from the single forecast to a series of alternative
policy-and-market assumption-related forecasts, though widely supported,
is repeatedly delayed in efforts to simplify the reporting of economic
forecasts, especially those of the coming year.

Why Look at Alternative Futures?

In this report, Minnesota's economic options are keyed, of course, to
U.S. economic options, which, in turn, are keyed to general economic
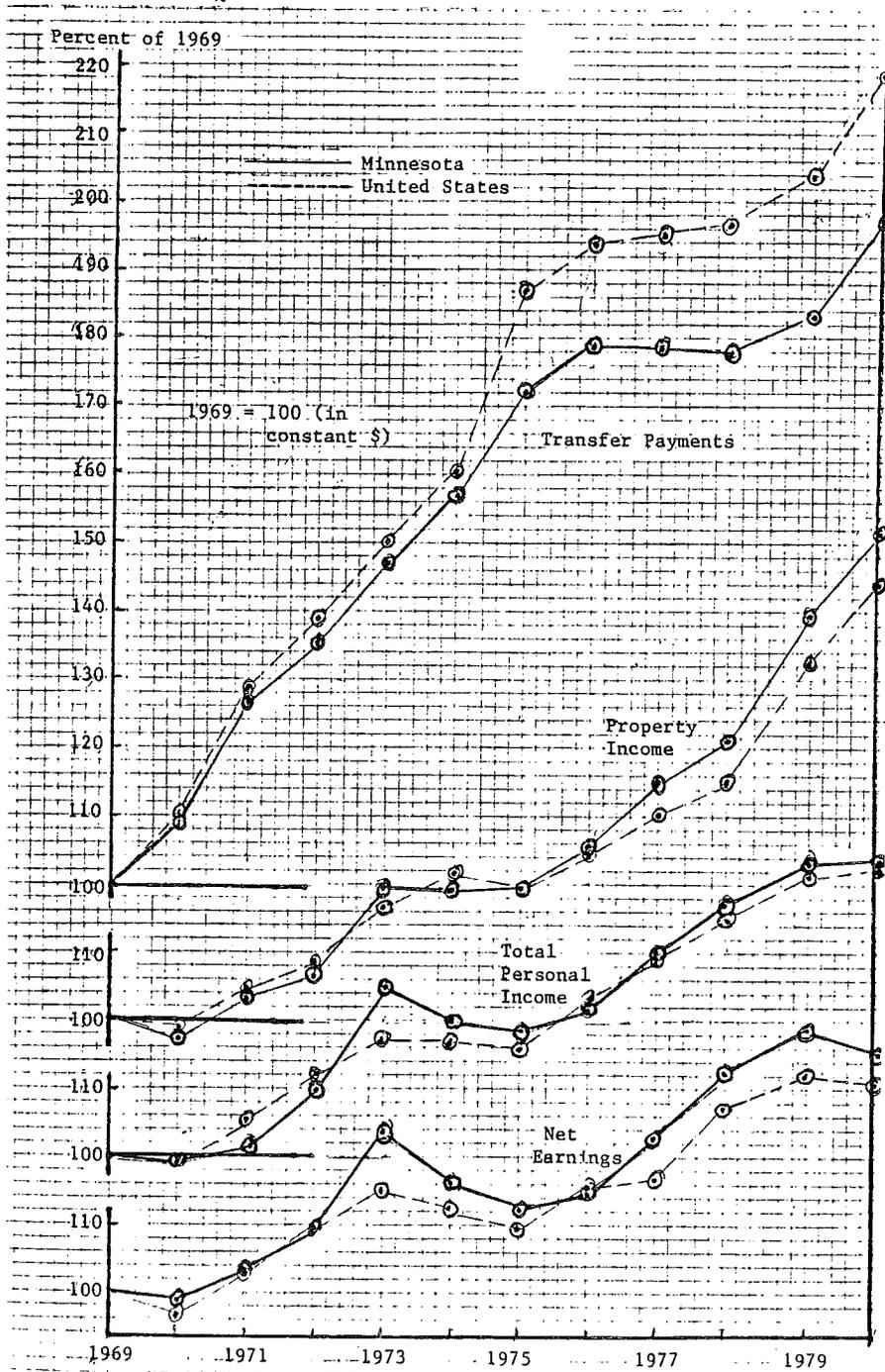
Figure 1.1. Comparison of year-to-year fluctuation in total personal income and its principal components (in constant dollars), Minnesota and U.S., 1969-1980.

conditions. Minnesota's economic options depend, also, on its internal economic and social conditions. Not readily recognized or, perhaps, admitted, is the high degree of dependence of Minnesota's economy on the U.S. economy, on the one hand, and on the other, the high degree of external independence of some industries and institutions, especially those which are indigeneous to Minnesota and which ultimately account for its long-term economic growth and viability. Both sets of linkages -- external and internal -- must be appropriately considered in the assessment of Minnesota economic options in the 1980's.

Minnesota's economic options are delineated and discussed for the purpose of exploration and discovery -- exploration of the dependencies which exist among industries and sectors in the Minnesota economy and discovery of the relationships between public and private decisions and their economic consequences. We wish to explore such questions as how dependent is Minnesota on the U.S. economy and how vulnerable is the Minnesota economy to the business cycle, energy imports, inflation and declining real earnings.

Real earnings per worker declined in each recession period of past business cycles. They have declined, also, because of the productivity-lessening effects of inflation. They may decline further because of large energy imports, or a small share of defense-related federal expenditures, or lagging growth in local industries with above-average earnings. Economic decline relative to other regions will depend, however, upon a region's energy resource endowments, its political influence in affecting the geographical distribution of federal outlays, and the uniqueness of its work force and economic environment for achieving high industry productivity, coupled with a high quality of life.

The thrust of federal intervention in job-creation is already shifting from the construction of basic community facilities and infrastructure to defense-related industries and from public assistance for the poor to an emphasis on the more skilled and well-to-do, and, also, the more strategically located in the new regional politics. This shift in federal intervention, coupled with a shift in a region's energy balance, become critical determinants of future economic growth and well-being. The regional growth implications of new federal policy and energy resource access can be presented as alternative scenarios of a region's economic development prospects.

Minnesota's long-term economic prospects are presented in this report in the context of its current economic position, which is affected by the general business cycle. Although the Minnesota economy lagged in its response to the 1980 downturn in general economic conditions, its response to the current recession has been much quicker and deeper. If the recovery phase of the current business cycle is delayed, Minnesota's long-term growth prospects for the mid-1980's may be eroded. Whether or not Minnesota's future is diminished by lagging economic growth depends on the ultimate effects of recession, inflation, energy imports, and federal outlays on Minnesota's economy, including the effects of shifting many federal programs to individual states, some of which already have tax surpluses from their energy abundance and, also, are benefitting disproportionately from the new programs of regional economic development, now labeled "national defense". The assessment of Minnesota's economic performance initiated in this report includes, therefore, considerations of the diverse determinants of its economic growth, both external and internal.

INDUSTRY EMPLOYMENT

Industry employment is reported monthly for Minnesota and the U.S.
Over 40 individual industries are identified in the monthly series. These
series are prepared in the Minnesota Department of Economic Security and
the U.S. Department of Commerce and reported in their monthly and quarterly
periodicals.[2/] The monthly series are compiled by quarter-year and year
for use in this report.

Two employment forecast series are presented in this report -- a nine-
industry short-term forecast and a 33-industry long-term forecast. The
short-term forecast is for the period from 1981 Quarter IV to 1983
Quarter II while the long-term forecast is to 1985, 1990 and later years.
First, the quarterly industry employment forecast series is presented.

Quarterly Forecast

Quarter-year total employment estimates presented in Table 2.1
for the 17-quarter period from 1977 Quarter III to 1981 Quarter III are
based on the monthly wage and salary employment series prepared in the
Minnesota Department of Economic Security. These data show the wage and
salary positions in nonagricultural industries and they correspond to
the monthly estimates of "employees on payroll in nonagricultural es-
tablishments". The seven-quarter forecast series is based on a cor-
responding U.S. industry employment forecasts published by Data

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2/ For example, Review of Labor and Economic Conditions and Current
    Minnesota Labor Market Conditions (a monthly supplement to the quar-
    terly Review) are published by the Research and Statistical Service
    Office, MN Department of Economic Security, 390 N. Robert St., St.
    Paul, MN 55101. Corresponding monthly U.S. employment series are
    available in Survey of Current Business which is published monthly
    by the U.S. Department of Commerce. Delay in publication results in
    approximately a two-month lag in the general availability of the
    monthly series. For example, the November, 1981 employment estimates
    were available on January 20, 1982.

Table 2.1. Total employment in specified industry, Minnesota, 1977 Qtr. III - 1983 Qtr. II.

Industry	1977 Qtr. III	1977 Qtr. IV	1978 Qtr. I	1978 Qtr. II	1978 Qtr. III	1978 Qtr. IV	1979 Qtr. I	1979 Qtr. II	1979 Qtr. III	1979 Qtr. IV	1980 Qtr. I	1980 Qtr. II
						(thousands)						
1. Agricultural Prod.	147.5	131.6	118.9	123.1	148.1	115.6	95.5	140.9	146.7	105.4	98.1	139.7
2. Agr.Serv.,For.,Fish.	10.2	10.3	10.3	10.4	10.4	10.3	10.3	10.2	10.2	10.1	10.1	10.0
3. Mining	8.5	5.5	14.5	16.6	17.4	18.0	17.2	16.9	17.1	17.0	16.5	14.9
4. Construction	83.1	89.2	105.2	103.0	101.8	106.2	112.0	109.3	114.2	115.5	119.0	100.9
5. Mfg., Nondurables	136.3	135.6	146.2	145.5	146.4	147.9	150.2	149.5	147.5	149.8	153.1	151.8
6. Mfg., Durables	200.6	202.7	214.3	219.5	220.8	225.4	232.7	230.9	235.7	239.3	246.3	233.9
7. Tran.,Comm.,Util.	97.5	97.2	100.7	98.2	97.4	101.8	103.6	105.0	105.9	106.2	106.1	105.0
8. Trade	429.1	411.3	454.4	456.2	457.7	467.3	473.5	417.2	470.7	480.3	492.7	484.3
9. Fin.,Ins.,Real	85.8	87.6	93.3	93.9	95.5	96.6	97.7	97.9	98.4	100.1	103.3	103.5
10. Services	377.3	346.7	400.1	404.1	410.5	416.6	423.7	426.7	435.4	439.1	454.9	456.1
11. Government	273.1	284.7	284.2	285.4	282.6	286.3	286.7	286.5	286.8	290.4	293.5	298.2
12. Total	1,848.7	1,832.4	1,942.1	1,955.9	1,988.6	,992.0	2,003.2	2,040.0	2,068.6	2,053.2	2,093.6	2,089.3

Industry	1980 Qtr. III	1980 Qtr. IV	1981 Qtr. I	1981 Qtr. II	1981 Qtr. III	1981 Qtr. IV	1982 Qtr. I	1982 Qtr. II	1982 Qtr. III	1982 Qtr. IV	1983 Qtr. I	1983 Qtr. II
1. Agricultural Prod.	145.4	104.2	95.6	138.4	143.1	103.0	93.2	137.1	140.8	103.6	94.4	137.8
2. Agr.Serv.,For.,Fish.	10.0	10.1	10.1	10.2	10.2	10.3	10.3	10.4	10.4	10.5	10.5	10.6
3. Mining	14.7	13.8	15.8	15.4	15.0	12.6	11.7	10.7	13.7	14.5	13.8	16.7
4. Construction	96.7	94.9	96.2	80.8	81.8	91.0	89.3	78.5	92.6	90.3	90.8	88.6
5. Mfg., Nondurables	148.9	147.4	149.6	150.1	149.8	149.1	150.4	150.1	149.8	150.4	152.7	154.8
6. Mfg., Durables	227.6	227.1	226.4	228.3	227.5	222.6	218.1	219.0	221.6	230.8	241.1	246.4
7. Tran.,Comm.,Util.	101.5	101.4	101.3	101.0	100.9	101.3	99.7	100.2	102.3	101.8	101.9	103.4
8. Trade	483.2	484.1	471.4	468.8	470.2	474.6	463.2	465.9	471.6	476.9	470.1	476.3
9. Fin.,Ins.,Real	104.8	104.7	104.4	104.2	104.1	104.6	102.9	103.5	105.6	105.1	105.2	105.7
10. Services	463.8	465.4	464.3	467.9	475.4	476.8	475.8	475.8	480.6	494.6	501.4	509.0
11. Government	287.7	294.6	298.6	298.6	296.3	286.7	288.6	295.5	292.0	263.3	273.3	272.0
12. Total	2,084.3	2,047.7	2,033.6	2,063.7	2,074.3	2,032.6	2,003.2	2,046.7	2,081.0	2,041.8	2,055.2	2,121.4

Resources, Incorporated.[3/]

Quarter-to-quarter fluctuations in selected industry employment in
Minnesota and the U.S. are compared in Table 2.2. Total nonagricultural
wage and salary employment in Minnesota and the U.S. is represented as a
percent of its average 1978 levels. According to these figures, total non-
agricultural wage and salary employment increased slightly faster in Minne-
sota than in the U.S. Starting with the 1981 recession,however, the Minnesota
employment level is projected to decline more rapidly and for a longer period
than U.S. employment, but, again, the recovery from recession, although
delayed, would be accompanied by above-average growth in total employment.
Implicit in this measure of Minnesota's economic performance is the expec-
tation that a significant portion of its basic industries would respond
strongly in added sales and employment as general economic conditions im-
prove.

Above-average employment growth in the 1977-1980 period occurred in the
Minnesota construction, manufacturing and service industries. In 1981,
however, the vigorous employment growth ceased and by the first quarter of
1982 its decline is expected to exceed the U.S. average rate. This employ-
ment decline would continue through much of 1982, even if U.S. industry
employment were to increase. The delayed negative employment effects of the
current recession on Minnesota industry are attributed to prolonged decline
in basic industry activity, particularly in agriculture, mining, and durable
goods manufacturing, and the ripple effects of this decline on the entire
services-producing industry group. Conversely, a sharp upturn in basic
industry activity would be accompanied subsequently by correspondingly

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[3/] Underlying assumptions of this forecast series are discussed later
     in this report under "Economic Determinants".

Table 2.2. Comparison of total wage and salary employment (1978 = 100) in specified nonagricultural industries, Minnesota and U.S., 1977 Qtr. III – 1983 Qtr. II.

Year and Quarter-Year	Minnesota							United States						
	Total	Mining	Con-struc-tion	Manufacturing		Trade	Ser-vices	Total	Mining	Con-struc-tion	Manufacturing		Trade	Ser-vices
				Non-durable	Durable						Non-durable	Durable		
	(percent)													
1977 III	92.6	51.5	79.9	95.0	91.2	93.5	92.5	96.7	98.2	92.1	98.8	95.2	95.5	96.5
IV	92.2	33.1	85.8	94.5	92.2	96.2	94.0	97.1	95.5	93.1	99.0	96.2	96.1	97.4
1978 I	98.9	87.6	101.1	99.8	97.4	99.0	98.1	98.2	84.0	93.6	99.8	98.2	99.7	98.6
II	99.5	100.0	99.0	99.3	99.8	99.4	99.1	99.8	106.4	101.4	100.6	99.2	98.6	99.8
III	99.8	104.7	97.9	99.9	100.4	99.7	100.7	100.5	104.0	101.5	99.5	100.3	101.4	100.2
IV	101.8	108.3	102.1	101.0	102.5	101.8	102.2	101.5	105.9	103.4	100.1	102.3	102.3	101.4
1979 I	103.4	103.0	107.7	102.5	105.8	103.2	103.9	102.6	107.4	104.1	101.0	104.3	103.5	102.4
II	103.2	101.2	105.1	102.0	105.0	102.7	104.6	103.3	109.1	108.0	100.9	104.3	103.9	103.8
III	104.1	102.4	109.8	100.7	107.1	102.6	106.7	104.7	113.5	110.4	101.0	105.2	104.7	107.1
IV	105.6	101.8	111.1	102.2	108.8	104.7	107.7	105.3	116.1	111.6	101.1	104.3	105.5	108.1
1980 I	108.1	99.4	114.5	104.5	112.0	107.4	111.5	105.9	117.9	113.6	100.9	104.2	106.5	109.2
II	106.2	89.9	97.0	103.6	106.3	105.5	111.8	105.7	117.9	104.5	99.5	100.4	106.5	110.1
III	105.2	88.8	93.0	101.6	103.4	105.3	113.7	105.2	119.9	103.0	98.8	100.4	106.5	110.1
IV	105.4	83.4	91.3	100.6	103.2	105.5	114.1	106.1	124.0	103.0	98.8	97.9	106.9	111.1
1981 I	105.2	95.3	92.5	102.1	102.9	102.7	113.8	106.9	128.5	105.6	99.5	100.1	107.3	112.2
II	104.4	92.9	77.7	102.4	103.8	102.2	114.7	106.8	118.1	107.5	99.9	100.6	108.5	113.5
III	104.2	90.5	78.7	102.2	103.4	102.5	116.6	107.3	135.1	102.4	99.6	101.0	107.5	115.6
IV	104.6	75.7	87.5	101.7	101.2	103.4	116.9	106.8	137.6	101.0	100.1	101.7	108.4	116.7
1982 I	103.8	70.4	85.9	102.7	99.1	100.9	116.7	106.6	139.6	99.9	98.8	98.5	108.3	117.6
II	103.2	64.5	75.4	102.4	99.5	101.5	116.7	106.5	142.9	98.3	97.7	97.0	108.3	118.1
III	103.1	82.2	89.0	102.2	100.7	102.8	117.9	106.8	145.9	97.2	96.8	96.4	108.5	118.7
IV	105.2	87.6	86.8	102.7	104.9	103.9	121.3	107.3	147.6	96.8	96.4	97.0	138.7	119.5
1983 I	106.1	82.8	87.3	104.3	109.6	102.4	123.0	108.1	149.5	96.8	96.6	98.4	139.1	120.4
II	107.2	100.6	85.2	105.7	112.0	103.8	124.8	108.9	150.5	97.6	97.1	100.4	110.2	119.8
										98.8	97.4	102.2	110.3	122.7

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large increases in services-producing employment, particularly in the
service industry itself.

Long-Term Projections

Further disaggregation of the industry employment series is repre-
sented in the total employment series in Table 2.2. Both proprietoriers
and wage and salary workers are included in total employment, which accounts
for differences in the industry employment totals in both Table 2.1 and
Table 2.2 and in the employment reports cited earlier. These differences
in 1978 are identified, by industry, as follows:

	Wage & Salary	Total
	(number)	
Agriculture	---	136.8
Nonagriculture, total	1,681.6	1,832.8
Mining	16.9	16.6
Construction	80.2	104.0
Manufacturing	358.6	366.5
Tran., comm., util.	94.8	99.5
Trade	425.0	458.9
Fin., ins., real est.	87.5	94.8
Services	329.3	407.8
Government, civilian	287.4	284.6

Some construction workers are included in the mining industry as presented
in the wage and salary employment series reported by the Minnesota Depart-
ment of Economic Security but not in the total employment series reported
by the U.S. Department of Commerce. Also, estimation procedures differ for
the two series.

The industry-specific Minnesota employment changes summarized in Table
2.3 are attributed to a national-growth effect, an industry-mix effect,
and a regional-share effect.[4/] The industry-mix effect and the regional-share

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4/ Long-term industry employment projections for Minnesota and the U.S.
in Table 2.2 were prepared by the Bureau of Economic Analysis (BEA)
in the U.S. Department of Commerce for the U.S. Water Resources
Council. They update the 1972 OBERS projection series for water re-
sources planning and they now provide a key reference series for state
and substate economic forecasts.

Table 2.3. Total employment and employment change in specified industry, Minnesota and U.S., 1978 - 1985. 1/

	Minnesota		United States		Total	Minn. Change, 1978–85 Relative Change Industry Mix	Regional Share
Industry	1978	1985	1978	1985			
			(thousands)				
1. Agr. production	126.4	122.4	3,757	2,527	4.0	-27.9	6.5
2. Agr. serv.,for.,fish.	10.4	12.0	660	756	1.6	0.1	0.1
3. Mining	16.6	17.2	901	1,091	0.6	1.2	-2.9
4. Construction	104.0	126.0	5,387	6,275	22.0	2.9	4.9
Manufacturing, Nondurable Goods;							
5. Food & kindred	50.7	47.0	1,758	1,717	-3.7	-8.1	-2.5
6. Tobacco products	0	0	69	58	0	0	0
7. Textile mill., prod.	3.3	3.5	913	906	0.2	-0.5	0.2
8. Apparel & other fab.	7.3	7.5	1,358	1,468	0.2	-0.4	-0.4
9. Paper & allied prod.	31.8	36.1	701	745	4.3	-2.4	2.3
10. Printing & publ.	32.1	38.8	1,245	1,405	6.7	-0.3	2.6
11. Chemical & allied	6.8	7.8	1,102	1,244	0.1	-0.1	0.1
12. Petroleum refining	1.6	1.7	205	223	0.1	-0.1	0
13. Rubber & misc. plast.	10.9	13.7	760	939	2.8	1.1	0.2
14. Leather & products	2.1	2.0	265	230	-0.1	-0.6	0.2
Total mfg., nond.	146.5	158.9	8,377	8,935	12.4	-11.4	2.7
Manufacturing, Durable Goods:							
15. Lumber & wood	14.2	17.3	835	890	3.1	-1.0	2.2
16. Furniture & fixtures	3.7	4.3	507	549	0.6	-0.2	0.3
17. Stone, clay & glass	10.2	11.7	714	796	1.5	-0.2	0.3
18. Primary metals	7.0	7.4	1,228	1,282	0.4	-0.7	0.1
19. Fabricated metals	36.0	45.9	1,681	1,913	9.9	0.0	4.9
20. Nonelectrical mach.	76.4	92.4	2,361	2,813	16.0	4.2	1.4
21. Electrical mach.	27.6	36.0	2,023	2,418	8.4	1.6	3.0
22. Transp. equip.,exc.	5.3	5.8	1,009	1,084	0.5	-0.3	0.1
23. Motor vehicles	6.8	7.8	1,010	1,094	1.0	-0.4	0.4
24. Instruments	23.6	29.2	656	790	5.6	1.6	0.8
25. Misc. mfg.	9.2	10.9	496	533	0.3	-0.6	1.0
Total mfg., dur.	220.0	268.7	12,519	14,162	48.7	4.0	14.5
26. Tran.,com.,util.	99.5	111.0	5,159	5,681	11.5	-3.6	1.4
27. Wholesale trade	117.2	137.8	5,248	6,079	20.6	2.5	2.0
28. Retail trade	341.7	390.0	16,198	18,820	48.3	8.5	-7.0
29. Fin.,ins.,real est.	94.8	119.4	5,190	6,436	24.6	9.8	1.8
30. Services	407.8	495.6	20,630	24,851	87.8	27.6	4.4
31. Federal civilian	30.0	31.2	2,881	2,985	1.2	-3.0	0.1
32. Federal military	19.2	19.2	2,351	2,342	0.0	-2.7	0.1
33. State and local	254.6	279.6	12,862	14,025	25.0	-11.8	2.0
34. Total	1,988.8	2,289.0	101,118	114,965	300.2	-15.2	30.6

1/ U.S. Department of Commerce, 1980 OBERS BEA Regional Projections, U.S. Government Printing Office, Washington, D.C. 1981.

effect represent the relative change in employment, that is, relative to aggregate U.S. employment growth. For example, the projected growth in total employment in Minnesota is 300.2 thousand, of which 15.4 thousand is attributed to relative change, leaving 285.8 thousand as attributed to the aggregate national-growth effect. The negative industry-mix is due partly to the high proportion of total employment in agriculture -- an industry with below-average employment growth. However, in Minnesota, the projected regional-share effect for agriculture is positive, which means that its projected growth exceeds the U.S. projected growth. Indeed most industry employment growth in Minnesota is projected to exceed the rate of growth for the corresponding industry in the U.S., according to the 1985 BEA projections.

The long-term projections provide a baseline for the evaluation of the quarterly employment estimates and forecasts (Table 2.4). When the quarterly employment series for the 1978-80 period are compared with the interpolated 1979 and 1980 values of the 1978-85 long-term forecasts, a positive employment difference is indicated for practically all Minnesota industry. Only government employment in 1979 and mining and construction employment in 1980 were below the projected long-term trend. By 1981, 1982 and 1983, all but the service industry is projected with deficit employment. Six above-average growth years, like 1979 and 1980, would be needed to balance the employment losses of the three below-average growth years.

Table 2.4.   Comparison of estimated employment in specified industry, Minnesota,
1978 - 1983.

Forecast Method and Industry	1978	1979	1980	1981	1982	1983
			(thousand)			
Quarterly Forecast:						
1. Agricultural prod.	126.4	122.1	121.8	120.0	118.7	120.9
2. Agr. serv., for., fish.	10.4	10.2	10.0	10.2	10.4	10.6
3. Mining	16.6	17.0	15.0	14.7	11.9	16.3
4. Construction	104.0	112.8	103.0	86.9	87.7	89.7
5. Mfg., nondurables	146.5	149.3	150.3	149.7	152.0	154.5
6. Mfg., durables	220.0	234.7	233.8	226.2	222.1	247.3
7. Tran.,comm.,util.	99.5	105.2	104.9	102.9	101.2	103.2
8. Trade	458.9	473.9	486.1	470.8	469.5	476.9
9. Fin.,ins.,real estate	94.8	98.6	104.0	104.2	104.2	106.8
10. Services	407.8	431.2	459.9	471.1	481.7	512.3
11. Government	284.6	287.6	293.5	293.7	281.1	273.6
12. Total civilian	1,969.5	2,046.7	2,086.5	2,047.5	2,046.8	2,115.6
Long-Term Projection:						
1. Agricultural prod.	126.4	125.8	125.2	124.7	124.1	123.5
2. Agr. serv.,for.,fish.	10.4	10.6	10.8	11.1	11.3	11.5
3. Mining	16.6	16.7	16.8	16.9	16.9	17.0
4. Construction	104.0	106.9	109.9	112.9	116.1	119.3
5. Mfg., nondurables	146.5	148.2	149.9	151.7	153.5	155.3
6. Mfg., durables	220.0	226.4	232.9	239.7	246.6	253.8
7. Tran.,comm.,util.	99.5	101.1	102.7	104.3	105.9	107.6
8. Trade	458.9	468.2	477.6	487.3	497.1	507.1
9. Fin.,ins.,real estate	94.8	98.0	101.3	104.7	108.2	111.8
10. Services	407.8	419.3	431.2	443.3	455.9	468.7
11. Government	284.6	288.2	291.9	295.5	299.3	303.1
12. Total civilian	1,969.5	2,009.4	2,050.2	2,092.1	2,134.9	2,178.7
Forecast/Projection Difference:						
1. Agricultural prod.	0	-3.7	-3.4	-4.7	-5.6	-2.6
2. Agr. serv.,for.,fish.	0	-0.4	-0.8	-0.9	-0.9	-0.9
3. Mining	0	0.3	-1.8	-2.2	-4.3	-0.7
4. Construction	0	5.9	-6.9	-26.0	-28.4	-29.6
5. Mfg., nondurables	0	1.1	0.4	-2.0	-1.5	-0.8
6. Mfg., durables	0	8.3	0.9	-13.5	-24.5	-6.5
7. Tran.,comm.,util.	0	4.1	2.2	-1.4	-4.7	-4.4
8. Trade	0	5.7	8.5	-16.5	-27.6	-30.2
9. Fin.,ins.,real estate	0	0.6	2.7	-0.5	-4.0	-5.0
10. Services	0	11.9	28.7	27.8	25.8	43.6
11. Government	0	-0.6	1.6	-1.8	-18.2	-29.5
12. Total	0	33.2	32.1	-41.7	-88.1	-63.1

EARNINGS AND INCOME

Each of the three principal sources of personal income -- total

earnings, property income, and transfer payments -- are included in the

baseline, or reference, statistical series. Of the three, total earnings

is most critical to forecast accuracy because of its importance and vola-

tility. It is a major personal income source and it is, also, a major

source of direct taxes for the public sector.

In this report, the total earnings figures are disaggregated into wage

and salary payments, other labor income, and proprietorial income, with

both total earnings and wage and salary income being further disaggregated

into their individual industry sources. The individual components of total

personal income in 1978 were estimated for Minnesota and the U.S. as follows:

Personal Income Component	Minne-sota	United States
	(mil. $)	
Wage and salary income	20,018	1,100,827
Other labor income	1,037	102,124
Farm proprietor's income	1,534	26,590
Nonfarm proprietors' income	1,590	91,023
Total earnings, by place of work	25,079	1,320,564
Less: Pers. contr. soc. ins.	1,353	69,244
Net earnings, by place of work	23,726	1,251,320
Plus: Residence adjustment	-40	-441
Net earnings by place of residence	23,686	1,250,879
Plus: Property income	4,540	243,665
Plus: Transfer payments	3,540	223,272
Total personal income, by residence	31,766	1,717,818

Thus, net earnings, by place of residence, were 74.6 percent and 72.8 percent

of total personal income in Minnesota and the U.S., respectively, in 1978.

Property income was 14.3 percent and 14.2 percent, respectively, and transfer

payments were 11.1 percent and 13.0 percent, respectively, of total personal

income. For Minnesota, therefore, the more volatile and more important net

earnings component accounted for a slightly more variable total personal

income level than for the U.S.

Quarterly Forecast

The quarterly forecast of total personal income starts with estimates
of total wage and salary income, by industry source, or, alternatively,
total earnings, by industry source. If wage and salary income is derived,
first, then other labor income and proprietorial income must be derived,
also, in order to obtain the net earnings component of total personal in-
come. In this report, the alternative approach is used in presenting both
the quarterly forecasts and the projections of industry earnings.

Total earnings of the total employment work force increased from an
annual rate of $22,498,000,000 in 1977 Qtr. III to over $32 billion in 1981
Qtr. II, as shown in Table 3.1. Total personal income increased from
$28,369,000,000 to nearly $42 billion in the same 16-quarter period.

When total earnings are converted to constant 1972 dollars, the short-
term impact of the business cycle and the long-term impact of inflation are
readily demonstrated in the lagging growth of individual industry time series.
During the 1977 Qtr. III to 1981 Qtr. II period, a decline in real total
earnings in nondurable goods manufacturing signaled the start of the 1980
recession. In the construction, durable goods manufacturing, trade, and
service industries, the decline in total earnings in 1980 roughly coincided
with the 1980 recession. For the construction industry, however, its decline
in total earnings in 1981 lead the start of the 1981 recession. If monthly
data were used, the individual industry series would, of course, more fre-
quently lead the business cycle turning points than the quarterly series.

The 1981-83 total earnings series, include the 1981 Qtr. III estimates,
are presented in both current and constant 1972 dollars to show both the
cyclical turning points and depressive effects of inflation on real earnings
(table 3.2). The individual industry series are based on the total employ-
ment forecasts in Table 2.1 and the earnings per worker forecasts shown

Table 3.1. Total earnings of employed work force in specified industry and other personal income (in current dollars), Minnesota, 1977 Qtr. III – 1981 Qtr. II.

	1977		1978				1979	
Industry	Qtr. III	Qtr. IV	Qtr. I	Qtr. II	Qtr. III	Qtr. IV	Qtr. I	Qtr. II
1. Agr. prod.	1,505	2,090	1,788	1,851	1,644	2,004	1,909	2,187
2. Agr. serv.,for.,fish.	75	80	80	86	86	87	90	95
3. Mining	235	156	309	367	434	458	441	418
4. Construction	1,410	1,422	1,599	1,656	1,693	1,751	1,840	1,869
5. Mfg., Nondurable	2,189	2,245	2,309	2,372	2,431	2,514	2,575	2,681
6. Mfg., Durable	3,254	3,337	3,508	3,636	3,805	3,946	4,150	4,256
7. Tran.,comm.,util.	1,736	1,804	1,852	1,866	1,863	2,024	2,162	2,214
8. Trade	4,092	4,164	4,374	4,500	4,668	4,875	5,031	5,339
9. Fin.,ins.,real	1,279	1,320	1,371	1,410	1,467	1,503	1,557	1,576
10. Services	3,465	3,535	3,699	3,789	3,895	4,063	4,168	4,323
11. Government	3,259	3,338	3,151	3,443	3,564	3,645	3,724	3,800
12. Total	22,498	23,490	24,299	24,975	25,501	26,871	27,646	28,759
13. Less: Pers. contr.	1,172	1,182	1,300	1,318	1,342	1,372	1,501	1,531
14. Plus: Res. adj.	-31	-28	-42	-40	-40	-45	-50	-53
15. Plus: Property inc.	3,712	3,760	3,832	3,923	4,076	4,233	4,394	4,535
16. Plus: Tran. pay.	3,361	3,391	3,451	3,485	3,596	3,687	3,791	3,869
17. Total pers. inc.	28,369	29,431	30,240	31,026	31,841	33,372	34,279	35,579

	1979		1980				1981	
Industry	Qtr. III	Qtr. IV	Qtr. I	Qtr. II	Qtr. III	Qtr. IV	Qtr. I	Qtr. II
1. Agr. prod.	1,903	1,975	1,207	1,182	1,131	1,168	1,168	1,404
2. Agr. serv.,for.,fish.	98	100	100	101	101	101	109	108
3. Mining	474	530	465	407	438	442	463	471
4. Construction	1,895	1,960	2,087	1,794	1,821	1,843	1,940	1,625
5. Mfg., Nondurable	2,677	2,827	2,778	2,872	2,852	2,950	3,098	3,194
6. Mfg., Durable	4,497	4,644	4,749	4,593	4,603	4,721	4,874	5,036
7. Tran.,comm.,util.	2,334	2,364	2,413	2,438	2,481	2,555	2,603	2,640
8. Trade	5,307	5,541	5,603	5,507	5,665	5,828	5,480	6,016
9. Fin.,ins.,real	1,658	1,692	1,778	1,781	1,879	1,935	1,981	2,019
10. Services	4,501	4,893	5,058	4,991	5,198	5,297	5,496	5,659
11. Government	3,791	3,882	3,986	4,085	4,034	4,171	4,250	4,289
12. Total	29,134	30,407	30,223	29,750	30,202	31,011	31,961	32,462
13. Less: Pers. contr.	1,547	1,607	1,692	1,660	1,688	1,716	1,921	1,923
14. Plus: Res. adj.	-50	-58	-53	-46	-48	-45	-45	-44
15. Plus: Property inc.	4,680	4,903	5,173	5,424	5,574	5,717	6,050	6,304
16. Plus: Tran. pay.	4,066	4,178	4,357	4,496	4,901	5,012	5,046	5,114
17. Total pers. inc.	30,284	37,823	38,009	37,964	39,001	39,978	41,091	41,913

Table 3.2. Total earnings (in current and 1972 dollars) of employed work force in specified industry, Minnesota, 1981 Qtr. III - 1983 Qtr. II.

	1981		1982				1983	
Industry	Qtr. III	Qtr. IV	Qtr. I	Qtr. II	Qtr. III	Qtr. IV	Qtr. I	Qtr. II
In Current Dollars:								
1. Agr. prod.	899	1,017	941	1,130	944	1,091	941	1,114
2. Agr. serv.,for.,fish.	113	112	122	127	129	134	137	145
3. Mining	489	414	405	372	485	523	507	627
4. Construction	1,705	1,922	1,991	1,784	2,153	2,131	2,200	2,179
5. Mfg., nondurable	3,269	3,339	3,459	3,525	3,520	3,736	3,890	4,032
6. Mfg., durable	5,120	5,125	5,194	5,469	5,724	6,105	6,541	6,808
7. Tran.,comm.,util.	2,714	2,767	2,826	2,929	3,046	3,116	3,211	3,331
8. Trade	6,225	6,470	6,507	6,723	6,980	7,270	7,339	7,574
9. Fin.,ins.,real	2,100	2,087	2,176	2,312	2,314	2,371	2,453	2,594
10. Services	5,978	5,024	6,200	6,308	6,717	6,958	7,245	7,506
11. Government	4,123	4,220	4,375	4,578	4,579	4,300	4,637	4,692
12. Total	32,735	33,494	34,196	35,257	36,691	37,735	39,101	40,598
In 1972 Dollars:								
1. Agr. prod.	460	509	462	544	446	505	427	496
2. Agr. serv.,for.,fish.	48	59	60	61	61	62	62	63
3. Mining	250	207	199	179	229	242	230	279
4. Construction	872	962	978	859	1,017	986	998	970
5. Mfg., nondurable	1,672	1,671	1,699	1,697	2,704	1,729	1,765	1,795
6. Mfg., durable	2,619	2,565	2,551	2,633	1,439	2,825	2,968	3,031
7. Tran.,comm.,util.	1,388	1,385	1,388	1,410	3,297	1,442	1,457	1,483
8. Trade	3,184	3,239	3,196	3,237	3,364	3,364	3,330	3,372
9. Fin.,ins.,real	1,074	1,042	1,069	1,113	1,093	1,097	1,113	1,155
10. Services	3,058	3,015	3,045	3,037	3,173	3,220	3,287	3,342
11. Government	2,109	2,112	2,149	2,204	2,163	1,990	2,104	2,089
12. Total	16,744	16,766	16,796	16,974	17,332	17,462	17,741	18,075
13. Income Deflator, 1972 = 100	195.5	199.8	203.6	207.7	211.7	216.1	220.4	224.6

later in Table 4.4. Related discussion of this series is included in the
discussion of the earnings per worker forecasts.

Long-Term Projection

Minnesota's long-term income growth prospects are illustrated in pro-
jected total and per worker earnings in the 33 industry breakdown of the
Minnesota economy presented in Table 3.3. These data show slightly above
year-to-year growth in the 1978-85 period for most industries, as summarized
below:

		Minnesota		United States	
		Total	Per Worker	Total	Per Worker
			(percent)		
1.	Agr. production	2.4	2.8	1.2	2.5
2.	Agr. serv.,for.,fish.	4.1	2.0	4.0	2.0
3.	Mining	2.5	1.9	5.8	3.0
4.	Construction	4.5	1.6	4.1	1.9
5.	Mfg.,nondurable	3.4	2.2	3.1	2.2
6.	Mfg.,durable	5.3	2.3	4.1	2.3
7.	Tran.,com.,util.	3.9	2.3	4.1	2.7
8.	Wholesale trade	4.3	1.9	4.0	1.8
9.	Retail trade	3.9	1.9	3.8	.16
10.	Fin.,ins.,real est.	5.0	1.6	4.9	1.7
11.	Services	5.6	2.7	5.2	4.1
12.	Fed.,civilian	2.9	2.3	2.8	2.3
13.	Fed.,military	2.2	2.2	2.2	2.2
14.	State and local	3.1	1.7	3.0	1.7
15.	Total	4.2	2.2	4.0	2.1

In this breakdown, the trade and government industries are subdivided
into retail and wholesale trade, and federal civilian, federal military, and
state and local government because of the large differences in total earnings
per worker. The annual growth rates, although different, are more nearly
alike than total earnings.

The long-term projections of total earnings show large differences
between Minnesota and the U.S. in total earnings per worker (as percent of
U.S. average) in both 1978 and 1985, as follows:

Table 3.3. Total earnings and earnings per worker (in 1972 dollars) in specified industry, Minnesota and U.S., 1978 and 1985. 1/

	Minnesota				United States			
	1978 Earnings		1985 Earnings		1978 Earnings		1985 Earnings	
Industry	Total	Per Worker	Total	Per Worker	Total	Per Worker	Total	Per Worker
	(mil.$)	($)	(thou.$)	($)	(mil.$)	($)	(thou.$)	($)
1. Agr. production	1,208,9	9,566	1,424.5	11,636	22,125.4	8,025	24,059.0	9,521
2. Agr. serv., for.,fish.	54.8	5,283	72.7	6,063	3,636,7	5,514	4,798.3	6,347
3. Mining	261.1	15,725	309.5	17,984	13,701.4	15,215	20,397.3	18,696
4. Construction	1,114.4	10,712	1,511.7	11,998	53,248.1	9,884	70,653.0	11,259
Manufacturing, Nondurable Goods:								
5. Food & kindred	541.1	10,681	592.9	12,417	17,467.4	9,991	20,108.2	11,711
6. Tobacco products	0	0	0	0	813.3	11,787	837.6	14,442
7. Textile mill., prod.	23.7	7,214	28.7	8,194	6,698.7	7,336	7,602.7	8,391
8. Apparel & other fab.	46.0	6,256	50.9	6,757	7,946.0	5,850	9,284.1	6,324
9. Paper & allied prod.	463.1	14,545	619.1	17,168	8,542.0	12,184	10,669.1	14,321
10. Printing & publ.	302.3	9,429	417.3	10,753	11,724.7	9,415	15,087.3	10,738
11. Chemical & allied	79.3	11,680	110.6	14,097	14,996.0	13,507	20,029.5	16,101
12. Petroleum refining	27.2	16,919	35.2	20,298	3,724.7	18,169	4,771.2	21,396
13. Rubber & misc. plast.	99.1	9,116	146.0	10,686	7,636.7	10.045	10,629.7	11,320
14. Leather & products	18.4	8,901	19.2	9,692	1,625.3	6,137	1,568.3	6,819
Total mfg., nondurable	1,600.2	10,921	2,019.8	12,714	81,064.7	9,677	100,587.8	11,258
Manufacturing, Durable Goods:								
15. Lumber & wood	134.7	9,514	194.2	11,208	7,418.0	8,882	9,428.0	10,593
16. Furniture & fixtures	32.7	8,743	42.9	10,006	3,859.3	7,615	4,856.1	8,845
17. Stone, clay & glass	111.7	10,960	155.5	13,267	7,932.7	11,116	10,560.9	13,267
18. Primary metals	93.5	13,349	129.0	17,320	18,725.4	15,250	24,270.6	18,932
19. Fabricated metals	430.5	11,969	632.5	13,782	18,786.7	11,175	25,318.5	13,235
20. Nonelectrical mach.	918.8	12,019	1,308.8	14,162	28,843.4	12,219	40,172.1	14,281
21. Electrical mach.	281.3	10,206	433.1	12,039	22,045.3	10,898	29,879.4	12,357
22. Transp. equip., exc.	47.0	8,808	61.8	10,824	13,519.4	13,395	17,116.8	15,790
23. Motor vehicles	98.7	14,449	139.6	17,926	17,491.4	17,324	22,537.5	20,601
24. Instruments	263.0	11,155	368.3	12,616	7,137.3	10,887	9,713.4	12,295
25. Misc. mfg.	66.9	7,282	88.3	8,126	3,690.7	7,443	4,383.8	8,225
Total mfg., durable	2,478.6	11,267	3,554.2	13,225	149,449.5	11,938	198,237.0	13,998
26. Tran., com.,util.	1,318.9	13,256	3,554.2	15,577	67,166.1	13,020	89,244.6	15,709
27. Wholesale trade	1,346.2	11,483	1,728.3	13,076	57,614.7	10,978	75,609.9	12,438
28. Retail trade	1,718.7	5,029	1,801.8	5,753	87,791.5	5,420	113,788.2	6,046
29. Fin., ins., real est.	952.5	10,047	2,243.7	11,250	50,804.7	9,790	70,800.6	11,001
30. Services	2,560.5	6,279	1,342.9	7,577	147,967.5	7,173	210,859.1	8,485
31. Federal, civilian	368.8	12,313	3,755.2	14,418	35,123.4	12,191	42,741.6	14,319
32. Federal, military	46.2	2,397	450.1	2,795	13,231.4	5,628	15,371.4	6,563
33. State and local	1,904.0	7,477	53.7	8,435	96,242.8	7,483	118,204.0	8,428
34. Total	16,934.0	8,515	22,626.5	9,885	879,167.9	8,694	115,535.1	10,050

1/ U.S. Department of Commerce, 1980 OBERS BEA Regional Projections, U.S. Government Printing Office, Washington, D.C. 1981.

	1978	1985
	(percent)	
Agricultural production	19.2	22.2
Paper and allied products	19.4	19.9
Chemical and allied products	13.5	-12.4
Leather products	45.0	42.1
Furniture and fixtures	14.8	13.1
Primary metals	-12.5	-8.5
Transportation equipment, excl. motor veh.	-34.2	-31.5
Motor vehicles	-16.6	-13.0
Services	-12.5	-10.7
Federal, military	-57.4	-57.4

Thus, of the 10 industries with 10 percent or more difference in total earnings per worker, in 1978, four, including agricultural production, were above-average and six, including services, were below-average relative to U.S.

The short-term quarterly total earnings forecasts also are compared with the long-term total earnings forecasts (Table 3.4). These comparisons show the combined negative income effects (in current dollars) of inflation and recession during the six periods from 1978 to 1983. These differences were first derived in 1972 dollars and then converted to current dollars using the specified income deflators (listed in Row 13).

Minnesota's actual and projected total earnings for period 1977 Qtr. III to 1981 Qtr. II are compared in Figure 3.1 and Table 3.5 in both current and 1972 dollars. They are compared, also, with the total employment series. The quarterly estimates are extended to 1983 Qtr. II in the quarterly forecast series. Comparison of actual or forecast quarterly series with the quarterly interpolations of the 1978-85 projection series illustrates the aggregate effects of inflation and recession in total earnings and of recession on total employment. The 1980 economic decline was indicated first by a sharp drop in total earnings. This decline, which is most clearly evident in constant dollars, preceded the decline in total employment.

Table 3.4. Comparison of total earnings of employed workers in specified industry, Minnesota, 1978 – 1983.

Forecast Method and Industry	1978	1979	1980	1981	1982	1983
			(mil. $)			
Quarterly Forecast:						
1. Agricultural production	1,728	1,695	1,289	1,122	1,026	1,027
2. Agr. serv., for., fish.	83	93	105	110	128	147
3. Mining	374	449	447	459	446	624
4. Construction	1,634	1,840	1,853	1,798	2,015	2,270
5. Mfg., nondurables	2,404	2,680	2,886	3,225	3,585	4,196
6. Mfg., durables	3,715	4,354	4,752	5,039	5,623	7,257
7. Tran.,com.,util.	1,906	2,225	2,426	2,681	2,979	3,448
8. Trade	4,578	5,222	5,581	6,048	6,870	7,928
9. Fin.,ins.,real est.	1,417	1,606	1,824	2,046	2,293	2,614
10. Services	3,727	4,277	4,979	5,789	6,546	7,980
11. Government	3,412	3,788	4,176	4,220	4,458	4,890
12. Total civilian	25,079	28,229	30,309	32,537	35,969	42,389
Long-Term Projection:[2]						
1. Agricultural production	1,728	1,920	2,178	2,443	2,727	3,021
2. Agr. serv., for., fish.	83	94	107	120	136	151
3. Mining	374	430	471	531	592	658
4. Construction	1,634	1,848	2,131	2,425	2,755	3,107
5. Mfg., nondurables	2,404	2,684	3,059	3,425	3,835	4,262
6. Mfg., durables	3,715	4,225	4,905	5,594	6,382	7,225
7. Tran.,com.,util.	1,906	2,149	2,473	2,805	3,174	3,567
8. Trade	4,578	5,148	5,86-	6,663	7,515	8,411
9. Fin.,ins.,real est.	1,417	1,609	1,865	2,125	2,421	2,738
10. Services	3,727	4,268	4,989	5,739	6,594	7,520
11. Government	3,512	3,898	4,199	4,897	5,446	6,007
12. Total civilian	25,079	28,273	32,537	36,767	41,575	46,667
Forecast/Projection Difference:						
1. Agricultural production	0	-225	-889	-1,321	-1,701	-1,994
2. Agr. serv., for., fish.	0	-1	-2	-10	-8	-4
3. Mining	0	19	-24	-72	-146	-34
4. Construction	0	-8	-278	-627	-740	-829
5. Mfg., nondurables	0	-4	-173	-200	-250	-66
6. Mfg., durables	0	129	-153	-555	-759	32
7. Tran.,com.,util.	0	76	-47	-124	-195	-119
8. Trade	0	74	-279	-615	-645	-483
9. Fin.,ins.,real est.	0	-3	-41	-79	-128	-124
10. Services	0	9	-10	50	-48	460
11. Government	0	-110	-23	-577	-986	-1,117
12. Total civilian	0	-44	-2,228	-4,230	-5,606	-4,278
13. Income deflator, 1972 = 100	150.3	162.3	178.9	193.7	209.8	225.5
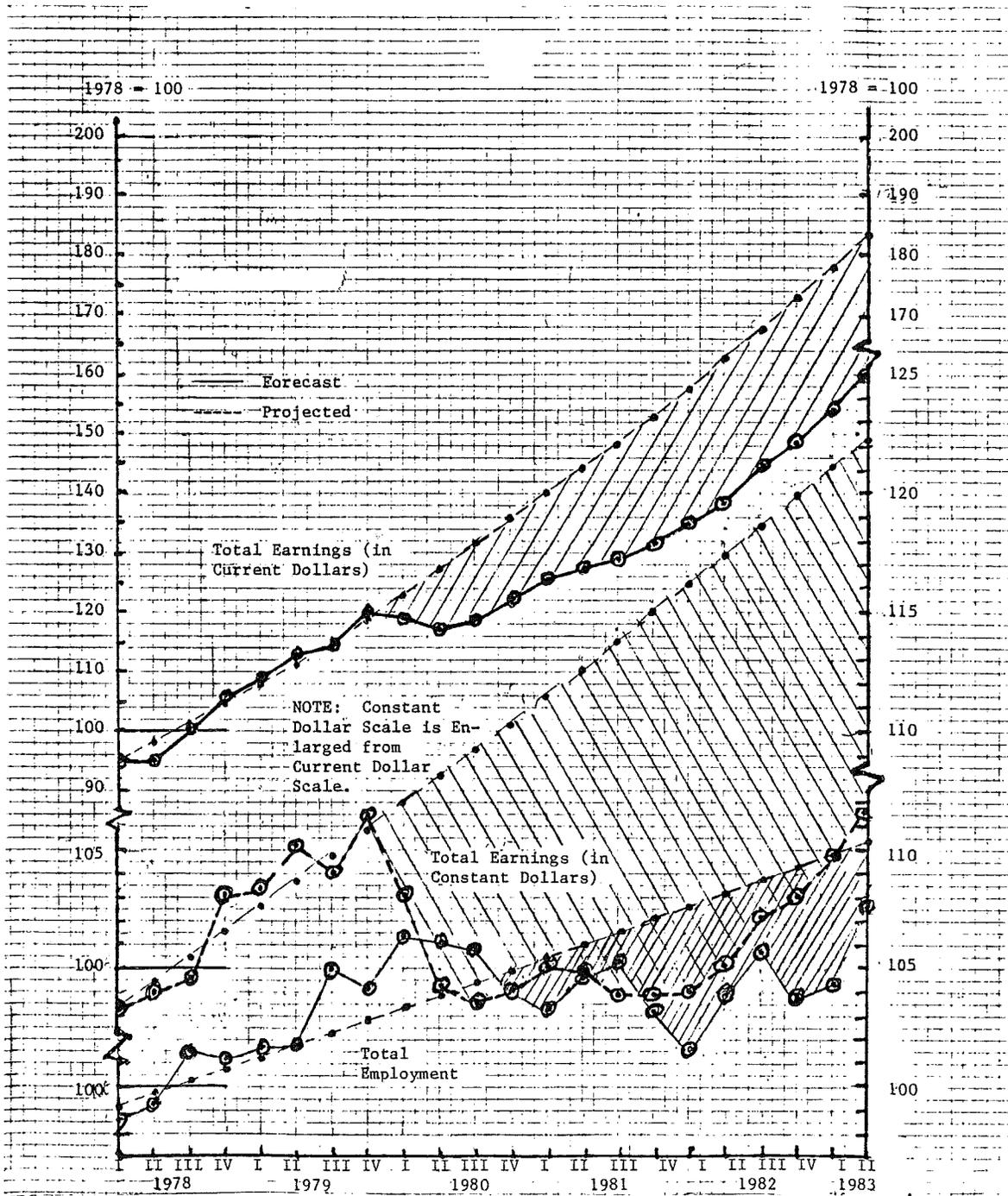
Figure 3.1. Comparison of quarter-to-quarter fluctuations in total earnings
and total employment, Minnesota, 1978 Qtr. I - 1983 Qtr. II.

Table 3.5. Selected Economic Indicators, by Forecast Method, Minnesota,
1977 Qtr. III - 1983 Qtr. II.

Year and Qtr.-yr.	Total Civilian Employment		Total Earnings				Income Deflator 1972=100
	Fore-cast	Pro-jection	Current Dollars		Constant Dollars		
			Fore-cast	Pro-jection	Fore-cast	Pro-jection	
	(thou.)	(thou.)	(mil.$)	(mil.$)	(mil.$)	(mil.$)	(%)
1977 III	1,848.7	1,935.0	22,498	23,098	15,922	16,347	141.3
IV	1,832.4	1,944.8	23,490	23,619	16,427	16,517	143.0
1978 I	1,942.1	1,954.7	24,299	24,333	16,666	16,689	145.8
II	1,955.9	1,964.6	24,975	25,092	16,784	16,863	148.8
III	1,998.6	1,974.6	25,501	25,780	16,888	17,039	151.3
IV	1,992.0	1,984.6	26,871	26,478	17,471	17,216	153.8
1979 I	2,003.2	1,994.7	27,646	27,449	17,520	17,395	157.8
II	2,004.0	2,004.8	28,759	28,352	17,830	17,577	161.3
III	2,068.6	2,015.0	29,134	29,322	17,646	17,760	165.1
IV	2,053.2	2,025.2	30,407	30,309	18,056	17,945	168.9
1980 I	2,093.6	2,035.5	30,223	31,350	17,480	18,132	172.9
II	2,089.3	2,045.9	29,750	32,438	16,808	17,321	177.0
III	2,084.3	2,056.3	30,202	33,449	16,714	18,511	180.7
IV	2,047.7	2,066.7	31,011	34,584	16,772	18,704	184.9
1981 I	2,033.6	2,077.2	31,961	35,625	16,955	18,899	188.5
II	2,063.7	2,087.8	32,462	36,605	16,934	19,095	191.7
III	2,074.3	2,098.4	32,735	37,772	16,744	19,295	195.5
IV	2,032.6	2,109.0	33,494	38,758	16,766	19,496	199.8
1982 I	2,001.2	2,119.8	34,198	40,107	16,796	19,699	203.6
II	2,045.7	2,130.5	35,257	41,341	16,974	19,904	207.7
III	2,081.0	2,141.3	36,691	42,575	17,332	20,111	211.7
IV	2,041.8	2,152.2	37,735	43,914	17,462	20,321	216.1
1983 I	2,055.2	2,163.2	39,101	45,255	17,741	20,533	220.4
II	2,121.4	2,174.1	40,598	48,672	18,075	20,747	234.6

ECONOMIC DETERMINANTS

Minnesota's economic growth is attributed to two principal sources --
U.S. economic growth and regional considerations, such as resource en-
dowments, industry mix, and competitive position. The baseline industry
forecasts and projections in this report, for example, are being collated
with a corresponding set of U.S. industry output and Minnesota market-share
forecasts. The U.S. industry output forecasts, in turn, depend on partic-
ular industry productivity and demand forecasts and assumptions, including
expected future rates of personal consumption expenditures, business in-
vestment, federal, state, and local government purchases, and exports to,
and imports from, other countries, given various domestic and world econo-
mic assumptions. Presention of the short-term baseline forecasts and
long-term baseline projections of the Minnesota economy is,therefore, only
one part of the much larger task of building baseline economic indicators
for tracking Minnesota's economic prospects and accounting for its economic
growth in the 1970's and 1980's. The much larger task is left for later
reports.

In this report an ex post assessment of the baseline economic indica-
tors for the 1978-83 period is presented using the conventional shift-and-
share method. This method partitions total employment change, for ex-
ample, into two external change sources, namely, "national growth" and
"industry mix", and one internal change source, namely, "regional share".
The three change sources are represented, first, as rates of change and,
finally, as total change.[5]/

5/ Either as growth rates or as total change, the rates of individual
    effects are additive, starting with the overall growth rate for
    total employment in a particular (i.e., i-th) industry in the form,

(continued)

Minnesota industry-specific growth rates are presented under two headings -- national economic growth, which focuses on U.S. aggregate and industry-specific growth, and relative regional change. The quarterly industry employment series presented earlier in Table 2.1 are used in this discussion.

National Economic Growth

Total and specific U.S. industry employment growth rates for the 1978 Qtr. IV to 1983 Qtr. II period are summarized in Table 4.1. The aggregate rate is entered in the "total" row while the industry-specific rates are entered in their corresponding rows. Quarter-to-quarter change is shown in the top half of the table while year-to-year change, lagged one quarter,

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$\underline{5}/$ Continued -

$$emp_{it+1} = (1 + r_i)\ emp_{it}$$

and

$$emp_{it+n} = (1 + r_i)^n\ emp_{it}$$

or,

$$emp_{it+n} = (1 + A + B_i + C_{is})^n emp_{it}$$

where,

emp_{it+n} = total employment in i-th industry in (t+n)-th period, with t-th period being the base quarter-year or year, (t+n) being the terminal, or forecast, quarter-year or year, and n being the forecast period;

r_i = overall one-period rate of change in emp_i;

A = aggregate growth rate for U.S. industry employment;

B_i = U.S. i-th industry differential growth rate;

C_{is} = Minnesota i-th industry differential growth rate.

Thus, the Minnesota industry-specific growth rate is the sum of the U.S. aggregate growth rate and the U.S. and Minnesota industry-specific differential growth rates.

Table 4.1. National-Growth and Industry-Mix Coefficients for Specified Industry, U.S., Four Quarter-Year Intervals, 1978 Qtr. IV to 1983 Qtr. II. 1/

Industry	1978 Qtr. IV	1979 Qtr. I	1979 Qtr. II	1979 Qtr. III	1979 Qtr. IV	1980 Qtr. I	1980 Qtr. II	1980 Qtr. III	1980 Qtr. IV	1981 Qtr. I	1981 Qtr. II	1981 Qtr. III	1981 Qtr. IV	1982 Qtr. I	1982 Qtr. II	1982 Qtr. III	1982 Qtr. IV	1983 Qtr. I	1983 Qtr. II
One Quarter-Year Interval, Unlagged:																			
1. Mining	.008	.004	.008	.026	.018	.009	.019	.002	.028	.029	-.080	.139	.024	.017	.024	.018	.003	.006	-.001
2. Construction	.008	-.003	.030	.008	.007	.012	-.079	-.011	.016	.010	-.046	-.019	-.006	-.013	-.004	-.007	-.005	.001	.004
3. Mfg., Nondurables	-.004	-.002	-.008	-.014	-.004	-.007	-.013	-.004	.000	-.003	-.002	.002	-.009	-.008	-.009	.006	-.003	-.002	-.002
4. Mfg., Durables	.011	.010	.000	-.006	-.014	-.007	-.035	-.019	.013	-.002	.005	.002	-.027	-.013	-.005	.003	.010	.012	.011
5. Tran., Com., Util.	.011	.002	-.005	.018	.004	-.010	-.006	-.003	-.005	-.006	.003	-.001	.000	-.002	-.003	-.003	-.005	-.006	-.006
6. Trade	-.001	.002	-.004	-.006	.003	.004	-.001	.009	-.006	.003	-.007	.004	.004	.003	.002	.000	-.001	.003	-.006
7. Fin.,Ins.,Real	.002	.003	.001	.012	.004	.003	.012	.012	.001	.012	.010	.001	.005	.004	.002	.001	-.010	-.007	-.006
8. Services	.002	.000	.006	.018	.005	.005	.009	.014	.001	.005	.020	.005	.012	.008	.006	.004	.003	.002	.002
9. Government	-.014	-.010	.001	-.012	.001	-.003	.043	-.010	-.008	-.009	.002	.018	.005	.003	.001	-.003	-.005	-.007	-.007
10. Total 2/	.010	.010	.007	.015	.005	.006	-.002	-.005	.009	.007	-.001	.005	-.005	-.002	-.001	.003	.005	.007	.008
Four Quarter-Year Interval, Lagged One Quarter:																			
1. Mining	.015	.063	.234	-.010	.049	.060	.065	.075	.054	.060	.080	-.025	.080	.108	.090	.213	.085	.063	.057
2. Construction	.059	.064	.067	.030	.045	-.054	.059	-.055	-.001	-.062	-.063	-.031	-.040	-.068	-.082	-.048	-.037	-.035	-.021
3. Mfg., Nondurables	-.036	-.035	-.033	-.032	.095	-.015	-.032	-.038	-.028	-.023	-.020	-.009	.007	-.014	-.019	-.026	-.032	-.021	-.021
4. Mfg., Durables	.009	.018	.018	.017	.007	-.039	-.034	-.062	-.074	-.047	-.044	-.004	-.010	-.022	-.035	-.042	-.041	.010	.021
5. Tran.,Com., Util.	.013	.021	.030	.029	.027	-.016	.007	.006	-.015	-.024	-.020	-.011	-.010	-0.11	.000	-.006	-.001	-.012	-.017
6. Trade	.019	.019	.015	.019	-.010	.018	-.003	.002	.010	.010	.008	-.001	-.007	.002	.002	.011	.008	.003	.003
7. Fin.,Ins.,Real	-.002	-.009	-.006	-.001	.019	.036	.022	.032	.022	.028	.027	.025	.027	.019	.019	.011	.010	-.005	-.016
8. Services	-.005	-.005	-.067	.005	.026	.037	.034	.004	.033	.029	.029	.040	.029	.042	.044	.030	.029	.020	.015
9. Government	-.026	-.037	-.045	-.040	-.035	.030	-.015	.026	.031	.022	.015	.025	.015	-0.20	-.007	-.009	.007	-.003	-.013
10. Total 2/	.043	.046	.045	.035	.043	.037	.032	.024	.004	.008	.010	.011	.020	.007	-.003	-.003	-.005	.005	.014

1/ Industry-mix coefficient, B_i, is derived as a difference of two U.S. employment ratios -- one industry-specific, the other aggregate.

i.e., $(EMP_i'/EMP_i) - (EMPN'/EMPN)$.

2/ National-growth coefficient, A, is derived as a U.S. aggregate growth rate, i.e., $(EMPN'/EMPN) - 1$. It is entered in "total" row.

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is shown in the bottom half. For example, U.S. total nonagricultural wage and salary employment increased 1.0 percent from third to fourth quarter, 1978, and 4.3 percent from third quarter, 1977 to third quarter, 1978. The two periods of change are presented simply to illustrate the degree of variability in both quarterly and annual rates of total and industry-specific employment change. Growth rates for different time periods would be additive if standardized to a common time period.

U.S. industry-specific employment change in the first five-quarter period, using mining industry employment as an example, is derived as follows:

$$emp_{1, \, 1978IV} = (1 + .010 + .008) \, emp_{1, \, 1978 \, III}$$

$$r_1 = .018$$

or,

$$emp_{1, \, 1978 \, III} = (1 + .043 + .015) \, emp_{1, \, 1977 \, III}$$

$$r_1 = .058$$

or,

$$emp_{1, \, 1978 \, IV} = (1 + .018)(1 + .058) \, emp_{1, \, 1977 \, III}$$

$$r_1 = .077$$

Thus, the combined five-quarter aggregate growth rate for mining employment was 7.7 percent, which compares with a one-quarter aggregate rate of 1.8 percent and a four-quarter aggregate rate of 5.8 percent.

The quarter-to-quarter national-growth rate declined during three of the 12 quarter-year periods from 1978 Qtr. IV to 1981 Qtr. III. It is projected to decline in two fo the seven quarter-year periods from 1981 Qtr. IV to 1983 Qtr. II. The four-quarter rate was consistently positive for the 12 four-quarter periods from 1978 Qtr. IV to 1981 Qtr. III, and it

was projected to decline only once during the seven four-quarter periods from 1981 Qtr. IV to 1983 Qtr. II.

Differential U.S. industry growth rates are dominantly negative because of the large proportion of total employment in the service industry, which is consistently an above-average growth industry. When the trade and government industries, which also account for large proportions of total employment, experience below-average growth, a majority of the industry groups then will show above-average growth.

Relative Regional Change

The differential regional growth rates in Table 4.2 show analagous patterns of Minnesota industry growth. The growth-depressing effects of the general business cycle are demonstrated for the Minnesota economy by the predominance of below-average growth rates. During the 1980-81 period, for example, a majority of Minnesota industries experienced below-average growth relative to the corresponding industries in the U.S. The overwhelmingly negative regional differential growth rates manifest the above-average sensitivity of the Minnesota economy to the general business cycle. Conversely, above-average cyclical responsiveness accounts for the overwhelmingly positive regional differential growth rates in the 1983 recovery period.

Relative regional change is represented by the combined differential industry and differential regional effects in Tables 4.1 and 4.2. Minnesota's above-average long-term overall growth rate is due to above-average regional industry growth relative to the corresponding U.S. industry. In the recession period of a general business cycle, Minnesota's overall growth declines relative to U.S. average because of the large negative differential regional growth rates, as shown in Table 4.2.

Table 4.2. Regional-Share Coefficients for Specified Industry, Minnesota, One and Four-Quarter-Year Intervals Ending 1978 Qtr. IV to 1983 Qtr. II. [1]/

Industry	1978 Qtr. IV	1979 Qtr. I	Qtr. II	Qtr. III	Qtr. IV	1980 Qtr. I	Qtr. II	Qtr. III	Qtr. IV	1981 Qtr. I	Qtr. II	Qtr. III	Qtr. IV	1982 Qtr. I	Qtr. II	Qtr. III	Qtr. IV	1983 Qtr. I	Qtr. II
One Quarter-Year Interval, Unlagged:																			
1. Mining	.016	-.064	-.081	-.029	-.029	-.038	-.112	-.010	-.097	.106	-.010	-.193	-.039	-.080	-.107	.255	.053	-.067	2.08
2. Construction	.025	.048	-.061	.035	.000	.013	-.074	-.025	-.044	-.004	-.113	.028	-0.79	-.003	.022	.185	-.026	-.003	-.036
3. Mfg., Nondurables	.004	.007	-.004	-.014	.014	.023	.006	-.010	-.019	.011	.006	-.007	.079	.020	.028	.002	.002	.011	.008
4. Mfg., Durables	.000	.013	-.008	.059	.024	.031	-.014	-.003	-.024	-.009	.004	-.011	.026	-.005	.005	.006	.026	.025	.004
5. Tran.,Com.,Util.	.024	.006	.011	-.024	-.006	.003	-.003	.004	-.011	.000	-.008	-.012	.036	.001	-.015	-.005	.013	.007	.015
6. Trade	.012	.001	-.008	-.009	.013	.016	-.017	-.006	-.002	-.037	.003	-.005	.003	-.024	-.015	.010	.008	-.024	.001
7. Fin.,Ins.,Real	.000	-.002	-.006	-.023	.009	.022	-.007	.006	-.012	-.011	-.011	-.007	.001	-.014	-.016	.018	.000	.001	.003
8. Services	.013	.007	-.006	-.012	-.001	.025	-.005	.008	-.006	-.014	-.011	.007	-.016	-.007	-.010	.004	.021	.005	.004
9. Government	.017	.001	-.009	-.002	.007	.008	-.025	-.020	.022	.015	-.006	-.019	.020	.023	-.003	-.099	.038	.001	-.013
Four Quarter-Year Interval, Lagged One Quarter:																			
1. Mining	.978	1.159	-.103	-.014	-.114	-.157	-.132	-.210	-.186	-.248	-.131	.048	-.110	-.202	-.348	-.294	-.172	.084	-.106
2. Construction	.122	.080	-.050	-.003	.035	.008	-.028	-.046	-.086	-.125	-.138	-.178	-.134	.013	.014	.028	.173	.022	.023
3. Mfg., Nondurables	.045	.057	.016	.024	-.130	.043	.019	.029	.033	.000	-.013	-.013	-.007	.018	.027	.028	.038	.031	.023
4. Mfg., Durables	.048	.048	.024	.100	.018	.003	.060	.051	.035	-.012	-.047	-.030	-.139	-.004	-.001	.005	.021	.037	.072
5. Tran.,Com.,Util.	-.058	-.020	-.041	.005	.018	-.013	-.015	-.030	-.002	-.006	-.010	-.014	-.030	-.021	-.020	-.015	-.008	.007	.013
6. Trade	.004	-.006	-.018	-.031	-.004	-.003	.012	.002	.013	-.010	-.061	-.041	-.040	-.028	-.016	-.015	.000	-.002	-.002
7. Fin.,Ins.,Real	.071	.066	-.009	.017	-.031	-.022	.002	-.001	.039	.090	-.024	-.029	-.042	-.026	-.030	-.016	.009	.005	.022
8. Services	.049	.046	.081	.016	-.008	-.012	.007	.041	.028	.023	-.018	-.030	-.026	-.024	-.016	-.010	-.013	.013	.025
9. Government	.017	.031	-.009	.008	.007	.000	.006	-.001	-.031	.015	-.008	.011	.009	-.007	.001	.003	-.084	-.055	-.069

[1]/ Regional-share coefficient, C_{ir}, is derived as a difference of two industry-specific employment ratios -- one regional, the other national, i.e.,

$(emp_i'/emp_i) - (EMP_i'/EMP_i)$.

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Inflation, Recession, and Earnings

The negative effects of inflation and recession on total earnings occur because of the decline in employment, average hours worked per week, and lagging rates of increase in earnings per worker. While total earnings increased each quarter in the 12-quarter period from 1977 Qtr. III to 1980 Qtr. II, earnings per worker declined from 1979 Qtr. IV to 1980 Qtr. II, as illustrated in Table 4.3.

The decline in total earnings during the 1979 Qtr. IV to 1982 Qtr. II period is attributed to (1) the 1980 and 1982-82 recession as represented by expected employment change and (2) the general price inflation as represented by an income deflator. These two effects, along with the lagged earnings differential, account for the quarter-to-quarter changes in the projected total earnings per worker series in Table 4. The three-variable forecast equation used in the preparation of the earnings per worker series for the 1981 Qtr. III to 1983 Qtr. II period is represented by the form,

$$w_{it} - \overline{w}_{it} = a_i + b_{ij}(w_{it-1} - \overline{w}_{it-1}) + c_i \Delta p_t + d_i \Delta \overline{e}_{it};$$

$$i = 1, \ldots, 11; \quad t = 1, \ldots, 15$$

where,

$\overline{w}_{it}$ = projected average annual real earnings (in 1972 $) in i-th industry in current quarter-year;

w_{it} = estimated average annual real earnings (in 1972 $) in i-th industry in current quarter-year;

Δp_t = change in income deflator for earnings from preceding quarter-year;

$\Delta \overline{e}_{it}$ = expected change in employment in i-th industry from current quarter-year.

Table 4.3. Total earnings per worker in specified industry, Minnesota, 1977 Qtr. III - 1981 Qtr. II.

		1977		1978				1979	
Industry		Qtr. III	Qtr. IV	Qtr. I	Qtr. II	Qtr. III	Qtr. IV	Qtr. I	Qtr. II
				(dollars)					
1.	Agricultural prod.	10,203	15,881	15,038	15,037	11,101	17,336	19,990	15,522
2.	Agr. serv.,for.,fish.	7,353	7,767	7,767	8,269	8,269	8,447	8,738	9,314
3.	Mining	27,647	28,364	21,310	22,108	24,943	25,444	25,640	24,734
4.	Construction	16,968	15,942	15,200	16,078	16,631	16,488	16,429	17,098
5.	Mfg., nonduruable	16,060	16,556	15,793	16,320	16,605	16,998	17,144	17,933
6.	Mfg., durable	16,221	16,463	16,370	16,565	17,233	17,507	17,826	18,432
7.	Tran.,comm.,util.	17,805	18,560	18,391	19,002	19,127	19,892	20,869	21,086
8.	Trade	9,536	9,436	9,626	9,864	10,199	10,432	10,625	11,331
9.	Fin.,ins.,real est.	14,907	15,068	14,695	15,016	15,361	15,559	15,937	16,098
10.	Services	9,184	10,196	10,335	9,245	9,470	9,753	9,837	10,131
11.	Government	11,933	11,725	12,002	12,064	12,011	12,731	12,989	13,264
12.	Total	12,170	12,819	13,353	12,512	12,771	12,759	13,801	14,098

		1979		1980				1981	
		Qtr. III	Qtr. IV	Qtr. I	Qtr. II	Qtr. III	Qtr. IV	Qtr. I	Qtr. II
1.	Agricultural prod.	12,972	18,738	12,304	8,461	7,779	11,209	12,218	10,145
2.	Agr. serv.,for.,fish.	9,608	9,901	9,901	10,001	10,100	10,000	10,792	10,588
3.	Mining	27,719	31,176	28,182	27,315	29,796	32,029	29,303	30,584
4.	Construction	16,544	16,870	17,538	17,780	18,831	19,420	20,155	20,111
5.	Mfg., nondurable	18,149	18,872	18,145	18,920	19,154	20,014	20,709	21,279
6.	Mfg., durable	19,079	19,407	19,281	19,637	20,224	20,788	21,528	22,059
7.	Tran.,comm.,util.	22,040	22,260	22,743	23,219	24,443	25,197	25,721	26,139
8.	Trade	11,275	11,537	11,372	11,371	11,724	12,039	12,686	12,833
9.	Fin.,ins.,real est.	16,850	16,903	17,212	17,208	17,929	18,481	18,975	19,376
10.	Services	10,338	11,143	11,119	10,943	11,207	11,382	11,845	12,094
11.	Government	13,218	13,368	13,581	13,598	14,022	14,158	14,233	14,364
12.	Total	14,084	14,810	14,436	14,239	14,490	15,144	15,716	15,730

Table 4.4. Total earnings per worker (in current and constant dollars) in specified
industry, Minnesota, 1981 Qtr. III - 1983 Qtr. II.

| | 1981 | | 1982 | | | | 1983 | |
Industry	Qtr. III	Qtr. IV	Qtr. I	Qtr. II	Qtr. III	Qtr. IV	Qtr. I	Qtr. II
In Current Dollars:								
1. Agr. prod.	6,291	9,878	10,084	8,244	6,711	10,541	9,980	8,077
2. Agr. serv.,for.,fish.	11,085	11,506	11,815	12,159	12,427	12,761	13,034	13,395
3. Mining	32,639	32,859	34,595	34,779	35,445	36,095	36,659	37,531
4. Construction	20,848	21,127	22,286	22,731	23,249	23,592	24,215	24,589
5. Mfg., nondurable	21,820	22,386	23,003	23,489	24,172	24,843	25,480	26,040
6. Mfg., durable	22,504	23,023	23,811	24,976	25,832	26,451	27,133	27,633
7. Tran.,comm.,util.	26,899	27,325	28,351	29,230	29,773	30,604	31,517	32,205
8. Trade	13,237	13,636	14,048	14,429	14,802	15,242	15,613	15,902
9. Fin.,ins.,real	20,168	19,912	21,156	22,334	21,905	22,580	23,310	24,542
10. Services	12,525	12,635	13,028	15,255	13,976	14,068	14,449	14,747
11. Government	13,918	14,719	15,158	15,494	15,679	16,335	16,969	17,254
12. Total	15,781	16,478	17,071	17,226	17,631	18,481	19,025	19,137
In 1972 Dollars:								
1. Agr. prod.	3,218	4,944	4,953	3,969	3,170	4,878	4,528	3,596
2. Agr. serv., for.,fish.	5,670	5,759	5,803	5,854	5,870	5,905	5,914	5,964
3. Mining	16,695	16,446	16,991	16,745	16,743	16,703	16,633	16,710
4. Construction	10,664	10,574	10,946	10,944	10,982	10,917	10,987	10,948
5. Mfg., nondurable	11,161	11,204	11,298	11,309	11,418	11,496	11,561	11,594
6. Mfg., durable	11,511	11,523	11,695	12,025	12,202	12,240	12,311	12,303
7. Tran.,comm.,util.	13,759	13,676	13,925	14,073	14,064	14,162	14,300	14,339
8. Trade	6,771	6,825	6,900	6,947	6,992	7,053	7,084	7,080
9. Fin.,ins.,real	10,316	9,966	10,391	10,753	10,347	10,441	10,576	10,927
10. Services	6,432	6,324	6,399	6,382	6,602	6,510	6,556	6,566
11. Government	7,119	7,367	7,445	7,460	7,406	7,559	7,699	7,682
12. Total	8,072	8,249	8,385	8,293	8,329	8,552	8,632	8,520
13. Income Deflator, 1972 = 100	195.5	199.8	203.6	207.7	211.7	216.1	220.4	224.6

In short, the forecast equation shows the earnings per worker differential, $w_{it} - \bar{w}_{it}$, as a function of quarter-to-quarter change in (1) the earnings per worker differential, lagged one quarter, (2) an inflation index (used in converting earnings per worker from current to constant dollars) and (3) expected industry employment. A one-unit change in each of the three explanatory variables accounts for a change in the earnings per worker differential (in 1972 dollars), as follows:

		Lagged Earnings (thou. $)	Inflation Index (1972=100) ($)	Expected Employment (thou.)
1.	Agricultural production	815	-826	25
2.	Agr. serv., for., fish.	430	-33	0
3.	Mining	48	-197	198
4.	Construction	85	-371	18
5.	Mfg., nondurable goods	348	-214	43
6.	Mfg., durable goods	580	-55	20
7.	Tran., comm., util.	80	0	37
8.	Trade	593	-36	3
9.	Fin., ins., real est.	128	-20	184
10.	Services	165	-79	18
11.	Government	780	-90	15

Thus, in durable goods manufacturing, a $1,000 increase in the earnings rate differential this quarter would be associated with a $580 increase in the earnings rate differential in the next quarter, but a one-unit increase in the inflation index this quarter would be associated with $214 decrease in the earnings rate differential in the next quarter. An expected reduction of 1,000 jobs in this industry would be associated with a decrease of $43 earnings per worker. The individual industry earnings per worker rate is reduced because of fewer hours worked per week and lower earnings per hour.

MINNESOTA vs. U.S.

When Minnesota industry growth trends and forecasts are compared with corresponding industry trends and forecasts elsewhere in the U.S., the economic vigor and potential of the Minnesota economy is demonstrated. Selected indicators for Minnesota and two neighboring states and three rapidly growing southern states are compared over the 1969 to 1990 period. Each state experienced above-average growth, but in different economic sectors. State-level implications of the differential growth patterns are discussed, finally, in the context of some alternative future scenarios for Minnesota, and related economic issues.

Alternative Futures

While the long-term projections generally support the perception of a dynamic and expanding economic future for Minnesota industry, the quarterly forecasts are less bullish. They are clouded by uncertainties stemming from the adverse effects of the business cycle and, also, inflation. The potential effects of these seemingly uncontrollable events are difficult to measure from available data. Comparison of past and projected economic trends in selected states provides an initial approach to the preparation of future scenarios for assessing Minnesota's economic growth prospects.

Minnesota's economic growth equaled or exceeded corresponding U.S. growth rates in the two five-year periods from 1969 to 1974 and 1974 to 1979, as shown in Table 5.1. Population was the only exception. In both the 1969-74 and 1974-79 periods Minnesota's population growth lagged the U.S. average, although it equaled or exceeded population growth in Iowa and Wisconsin. In two of the three southern states, population growth was even faster in the 1974-79 period than in the 1969-74 period.

Table 5.1. Comparison of economic indicators and trends, Minnesota vs.
            selected states, 1969-1974 and 1974-1979. 1/

Economic Indicator and State	1969	1974	1979	Annual Growth Rate (pct.) 1969-74	1974-79
Total earnings (mil. $):					
Minnesota	11,103	17,167	28,229	9.1	10.5
Iowa	7,753	11,700	18,332	8.6	9.4
Wisconsin	12,519	18,555	30,812	8.2	10.7
Louisiana	8,358	13,101	24,302	9.4	13.2
Tennessee	9,518	15,259	25,378	9.9	10.7
Texas	29,622	47,560	92,997	9.9	14.4
United States	603,977	903,915	1,481,951	8.4	10.4
Total personal income (mil. $):					
Minnesota	13,684	21,581	36,048	9.5	10.8
Iowa	10,058	15,847	25,276	9.5	9.8
Wisconsin	15,603	23,850	40,340	8.9	11.1
Louisiana	10,328	16,755	31,009	10.2	13.1
Tennessee	11,287	18,792	32,114	10.7	11.3
Texas	36,356	60,781	117,948	10.8	14.2
United States	747,536	1,162,203	1,939,486	9.2	10.8
Total population (thou.):					
Minnesota	3,758	3,898	4,038	0.7	0.7
Iowa	2,805	2,868	2,917	0.4	0.3
Wisconsin	4,378	4,538	4,666	0.7	0.6
Louisiana	3,619	3,821	4,139	1.1	1.6
Tennessee	3,897	4,202	4,533	1.5	1.5
Texas	11,045	12,268	13,887	2.1	2.5
United States	201,298	213,333	224,567	1.2	1.0
Per capita income ($):					
Minnesota	3,636	4,436	8,927	8.8	10.0
Iowa	3,584	5,526	8,666	9.0	9.4
Wisconsin	3,564	5,255	8,646	13.0	10.5
Louisiana	2,854	4,385	7,491	9.0	11.3
Tennessee	2,896	4,473	7,084	9.1	9.6
Texas	3,292	4,954	8,493	8.5	11.4
United States	3,714	5,448	8,637	8.0	9.7
Income deflator (1972 = 100):					
United States	88.5	116.4	162.3	4.5	6.9

1/   U.S. Department of Commerce, Regional Economic Measurement Division,
     "Revised State Personal Income 1969-80", Survey of Current Business,
     61(7): 29-72, 1981.

In both Tennesses and Texas, the annual growth in population, as well as total earnings and personal income, exceeded the corresponding U.S. growth rates. In per capita income growth, however, Tennessee and Texas lagged Minnesota in the 1969-74 period. If total population growth had increased less rapidly, for example, at the average U.S. rate, then per capita income growth would have exceeded the Minnesota rates in both periods. Yet, per capita income levels in the three southern states were as much as 20 percent below Minnesota per capita income in 1979 and, indeed, they also were below the 1979 Iowa, Wisconsin, and U.S. levels.

Industry differences between Minnesota and its two neighboring states -- Iowa and Wisconsin, and between the three northern states and the three southern states are illustrated in the total earnings shares listed in Table 5.2. In four of the five basic industries -- farming, mining, construction, nondurable goods manufacturing, and durable goods manufacturing, Minnesota's share of total U.S. earnings increased in one or both of the two five-year periods and it also is projected to increase in the period from 1980 to 1990. Mining is the one declining industry in Minnesota, which, in both Tennessee and Texas, is a rapidly growing industry. The two manufacturing industries also are increasing rapidly in relative importance in Tennessee and Texas, and, also, in Louisiana, as well as Minnesota. Thus, mining in Louisiana, as in Minnesota, is expected to decline, while manufacturing would increase. The projected increases in total earnings would greatly exceed their projected decreases.

The mixed individual industry trends in the three northern states and the three southern states are difficult to explain simply in terms of "snowbelt vs. sunbelt", or "energy-deficit vs. energy-surplus" considerations. Despite the many adverse effects of geographical location which can

Table 5.2. Comparison of total earnings of employed work force as proportion of U.S. total earnings in specified industry, Minnesota vs. selected states, 1969-1990.

State and Industry	Estimated [1]						Projected 1990 [2]
	1969	1970	1974	1975	1979	1980	
	(percent)						
Minnesota:							
Total earnings	1.838	1.868	1.899	1.884	1.905	1.878	1.987
Farm	4.214	5.041	5.538	4.390	4.234	4.031	6.256
Mining	2.290	2.214	1.793	1.861	1.865	1.549	1.471
Construction	2.127	2.076	1.921	1.943	2.015	1.979	2.152
Mfg.,nondurable	1.853	1.880	1.946	1.957	1.994	1.975	2.029
Mfg., durable	1.550	1.585	1.580	1.612	1.721	1.762	1.867
Iowa:							
Total earnings	1.284	1.267	1.294	1.338	1.237	1.185	1.221
Farm	6.858	6.641	5.399	6.241	3.895	3.727	5.848
Mining	0.465	0.467	0.433	0.361	0.220	0.180	0.169
Construction	1.225	1.221	1.393	1.410	1.404	1.273	1.327
Mfg.,nondurable	1.237	1.278	1.269	1.274	1.276	1.281	1.190
Mfg., durable	1.016	1.028	1.267	1.282	1.295	1.263	1.134
Wisconsin:							
Total earnings	2.073	2.059	2.053	2.059	2.079	2.021	2.057
Farm	3.735	3.728	2.813	3.082	4.079	4.156	4.062
Mining	0.398	0.527	0.425	0.397	0.370	0.350	0.186
Construction	2.114	1.983	1.839	1.860	1.935	1.757	2.038
Mfg.,nondurable	2.386	2.402	2.476	2.520	2.555	2.659	2.539
Mfg., durable	2.785	2.829	2.996	3.051	3.002	2.902	2.996
Louisiana:							
Total earnings	1.384	1.382	1.449	1.512	1.640	1.718	1.749
Farm	1.355	1.500	1.905	1.298	1.519	1.301	1.223
Mining	8.497	7.875	7.095	7.100	7.550	8.039	5.655
Construction	1.907	1.807	2.242	2.268	2.710	3.042	2.391
Mfg.,nondurable	1.337	1.369	1.484	1.556	1.692	1.759	2.137
Mfg., durable	0.595	0.584	0.610	0.708	0.740	0.798	0.979
Tennessee:							
Total earnings	1.575	1.578	1.688	1.664	1.712	1.694	1.927
Farm	1.597	1.638	1.173	1.217	1.147	1.166	1.072
Mining	0.846	0.994	1.054	1.096	0.885	0.793	1.148
Construction	1.527	1.425	1.691	1.711	1.600	1.533	1.991
Mfg.,nondurable	2.828	2.830	3.019	3.005	3.000	3.008	3.207
Mfg., durable	1.229	1.303	1.471	1.374	1.442	1.391	1.765
Texas:							
Total earnings	4.904	4.993	5.262	5.569	6.275	6.608	6.643
Farm	5.332	6.326	3.980	4.541	6.130	6.670	4.703
Mining	17.292	16.338	18.081	17.841	21.159	23.444	25.069
Construction	5.659	5.679	7.289	7.375	8.835	9.281	7.906
Mfg.,nondurable	4.149	4.302	4.753	5.124	5.653	5.899	6.551
Mfg., durable	3.354	3.373	3.524	3.868	4.330	4.827	5.599

1/ U.S. Department of Commerce, Regional Economic Measurement Division, "Revised State Personal Income 1969-80", Survey of Current Business, 61(7): 29-72, 1981.

2/ U.S. Department of Commerce, 1980 OBERS BEA Regional Projections, U.S. Government Printing Office, Washington, D.C. 1981.

be associated with the future prospects of the three northern states they
nonetheless experienced significant economic growth when compared with
either the U.S. averages or with corresponding averages for the three
southern states. The six states together are projected to experience
strong economic performance in the 1980's. They were identified initially
as above-average economic performers among the 50 states, but for different
reasons, as revealed by the mixed economic performance of individual
basic industries.

The U.S. Department of Commerce economic projections serve as a base-
line projection series for Minnesota because of their extension of trends
in Minnesota's economy relative to other states. Alternative regional
economic futures could be represented by two less promising prospects,
namely, accelerated population growth in the "sunbelt" states as a result of
perceived differences in living costs and/or employment opportunities, and
accelerated income growth in the "energy-surplus" states as a result of
the expansion of energy-related basic industries. Both types of trends
are built into the U.S. Department of Commerce projections. In the two
additional options, these trends would be accelerated with corresponding
reductions in industry and population growth rates in the three northern
states relative to the three southern states.

Emerging Issues

From the comparisons of relative economic and demographic growth trends
in six selected states, a series of state and regional issues can be il-
lustrated, starting with the contrasting annual growth rates shown earlier
in Table 5.1. The dominant issue here is population growth and redistri-
bution. But important, also, is the strength and performance of a state's

basic industries, which accounts, in part, for the population growth and, also, accounts, in part, for the per capita income growth. Finally, the divergence in the initially comparable performance of a state's basic industry, as presented in Table 5.2, highlights another set of emerging issues, namely, those geared to the direct, indirect, and induced effects of energy resource localization and utilization.

Emerging state and regional issues can be summarized as follows:

1. Population redistribution, with:

    a. Remuneratively productive age groups locating in states with rapidly expanding employment opportunities in energy-related and national defense-related industries;

    b. Remuneratively unproductive age groups locating in states with expanding, or less slowing declining, support of essential social services for the young, the sick, and the aged.

2. Industry redistribution, with:

    a. Primary basic industries, like mining and energy-related manufacturing, locating in energy-surplus states;

    b. Secondary and tertiary basic industries, like high-technology manufacturing and related business and professional services, locating in states with attractive (i.e., high quality of life) metropolitan centers and superior access to decision information;

    c. Tertiary residentiary industries, like trade and personal services, increasing in relative importance in states with above-average population growth associated with above-average employment growth in basic industries.

    d. Government sector activities, particularly state and local infrastructure development, increasing in relative importance in states with above-average income growth.

3. Income redistribution, with:

    a. Average and above-average income groups residing in states and substate areas of above-average employment growth in basic industries, above-average amenities, and/or below-average growth in total personal income and other state and local taxes.

    b. Below-average income groups residing in states and substate areas with below-average employment growth in basic industries, below-average amenities, except social services, and/or above-average growth in personal income and other taxes.

This listing of emerging issues shifts the emphasis from a "sunbelt vs. snowbelt" and an "energy-surplus vs. energy-deficit" type of dichotomy to one which looks first at the total effects of population, industry, and income redistribution on economic and social well-being. Obviously, different population, industry, and income groups are affected positively or negatively depending on place of residence and state's resource endowments and political influence. The six states listed in Tables 5.1 and 5.2 were selected because they can be ranked according to a diversity of criteria encompassing both resource endowments and political influence. What a state lacks in one resource it may compensate by another resource, or by political influence.

Thus, the summary indicators of state economic growth and well-being, like total earnings and per capita income, demonstrate comparable economic performance, despite differences in basic industries. Yet, comparable state economic performance may not translate into long-term state economic survival and growth because of the gradual erosion of essential public and private services and quality of environment sought by its residents, or because of exceptionally rapid increases in housing and business costs. Recent shifts in fiscal responsibilities from federal to state and local governments make even more imperative than before the careful and accurate monitoring of state and local economic performance trends as an important step in the discovery and development of this state's economic options for sustaining through the 1980's its remarkable industry performance of the 1970's.