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THE MINNESOTA ECONOMY

- Where do things stand?
- What lies ahead?

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A report to the people of Minnesota, prepared by staff of the College of Business Administration, and the Department of Geography, University of Minnesota - Twin Cities, with financial assistance provided by the Minnesota Business Partnership and the Minnesota AFL-CIO.

December 1980

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The Minnesota Economy

Where do things stand? What lies ahead?

A preliminary report on
the current health and
recent performance of
the Minnesota economy

by

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December 1980

The Minnesota Economy -- An Executive Summary

This report is the first of a planned series of semi-annual reports that will focus on the state of the Minnesota economy. More specifically, the intent of the series is to:

- provide indicators of Minnesota's economic health;
- identify components of the state's economy that deserve attention either as opportunities or as problems; and
- provide a starting point for analysis that is acceptable to business, labor, and government.

In this first report an industry-by-industry analysis shows that in the late 1960s and early 1970s, of the 43 industries for which we have detailed output and employment data at the state level, real product per employee for the state of Minnesota rose faster than Upper Midwest regional averages in 21 industries and slower in 20. Compared to national averages, real product per employee rose faster in 20 Minnesota industries, but slower in 22. During this period, Minnesota producers in most sectors had outperformed their Upper Midwest regional competition in terms of real product growth, but that was not true with respect to the national competition.

In the mid-1970s, real product growth rates improved in Minnesota industries relative to national averages, though real product per employee figures grew worse, as indicated by preliminary data available for 34 industries in the manufacturing, wholesale, retail, and service sectors:

- Real output of Minnesota producers rose faster than U.S. industry averages in 20 of 34 industries, but slower in 13.
- Minnesota employment grew faster than U.S. averages in 19 of 34 industries and slower in 11.
- Compared to U.S. averages, real product per employee grew faster in Minnesota in 12 of 34 industries, but slower in 22.
- Value added per employee by Minnesota manufacturers rose during the period 1967-1972 from \$16,200 to \$18,300 (in constant 1972 dollars) but had fallen by 1977 to \$17,200. Minnesota's value added per employee was lower than the U.S. average in both 1972 and 1977.
- New capital investment per employee in the manufacturing sector increased in Minnesota from 1972 to 1977 but at a slower rate than the U.S. average. The Minnesota investment level was lower than the national average in both years.

These crude data suggest that the long-term competitive performance of the Minnesota economy in the 1970s was mixed. Some Minnesota industries appeared to be gaining market shares, but many were failing to meet national standards for productivity improvement.

The report goes beyond industry-specific measures to comment on several other issues of importance to the Minnesota economy. For example, it was noted that in May 1980, unemployment was 5.4 percent in Minnesota compared to a U.S. average of 7.8 percent. The report also points out that the

Minnesota employment growth rate between 1977 and March, 1980 was 11.2 percent, about two percentage points higher than the national rate of 9.1 percent. The higher Minnesota rate meant that it gained about 33,400 "extra" jobs beyond what it would have added by growing at the same rate as the country. By our calculations, only 1,800 of these extra jobs came about because Minnesota's industry was relatively concentrated in fast-growth industries. The large remainder of about 31,600 net extra jobs came about because firms in the state added jobs faster than did their counterparts nationally. The bulk of Minnesota's extra jobs originated in (1) the manufacturing sector; (2) services; and (3) finance, insurance, and real estate.

As part of an ongoing project, this first report provides a preliminary analysis of the Minnesota economy and is intended to promote discussion among interested parties. That discussion will give guidance to our efforts in future reports.

The Minnesota Economy: Where Do Things Stand? What Lies Ahead?

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THE MINNESOTA ECONOMY

Where Do Things Stand? What Lies Ahead?

This is a preliminary report on the current health and performance of the Minnesota economy, the first in what will be a regular series of semi-annual reports. It was prepared by staff at the University of Minnesota at the request of the Minnesota Business Partnership (MBP). The MBP requested a data base that will:

- provide indicators of the state's economic health;
- identify components of the state's economy that deserve attention as opportunities or problems;
- provide a starting point for analysis that is mutually acceptable to business, labor, and government; and
- help various groups to establish their priorities.

Financial support for this work was provided by the MBP, the Minnesota AFL-CIO, and the University of Minnesota. Representatives from the business community, organized labor, state government, and the university provided advice and comment.

For many purposes the state of Minnesota can be regarded as a single economic unit, as an enterprise that is owned and operated mainly by the people and the businesses that make their homes here. Although this notion is provocative and leads us to ask how our enterprise is doing, we lack a "Minnesota balance sheet" and an accompanying "Minnesota income statement." Reports of this kind about the Minnesota enterprise would help inform owner-residents as to where we stand and where we are heading. The work presented here is a first step toward producing such statements.

Introduction: The Minnesota Economy

The geographical context of our report must be a global one. Minnesota is but a small part of an enormous United States economy, which is in turn but one part of a rapidly changing world. Minnesota has always required materials from elsewhere for its products, and has always imported people, resources, and finished products. So the need for a worldwide focus is not a recent development, but the present sense of urgency and vulnerability in economic affairs has few parallels. Just 25 years ago the big economic news in Minnesota and the Upper Midwest was a story of how the regional economy was completing its rapid but rewarding shift away from a heavy reliance on the natural resource based industries of agriculture, forestry, and mining as it increased its emphasis on high technology manufacturing and services.¹ The news today is the speed with which Minnesota and the Upper Midwest have been drawn pell-mell into an increasingly competitive and unpredictable international economy -- in exporting and in importing, in direct business investment abroad and foreign investment in our state and region, and in the opening of new and prosperous markets. We see the rise of fierce competitors abroad while our own ability to compete internationally seems threatened at several points.

The rapid unfolding of events and the public policy issues they generate suggest several basic approaches that can help us understand the economic landscape of Minnesota today.

¹James M. Henderson, A.O. Kreuger, R.S. Rodd, and J.S. Adams. National Growth and Economic Change in the Upper Midwest. Minneapolis: University of Minnesota Press, 1966.

- A Minnesota Balance Sheet. Our people, our institutions, our natural environments (above the ground -- such as air, wind, temperature, and seasons; at the surface -- solar energy, water, soil, forests, and recreational areas; and below the ground -- water, and mineral wealth), and our built environments (for production, distribution, and consumption of goods and services, including housing) are the main assets of our Minnesota enterprise. What is their value and present condition? What kind of current investment are we making to secure their future condition in forms we prefer?
- An Income Statement. How is the economy performing in real terms at the present time, and what do recent trends imply for the future in savings, investment, employment, unemployment, production, income, and prices? What is happening in the voluntary sector and the private not-for-profit sector that affects the levels in our Minnesota Balance Sheet?
- Comparative Performance. How does the state's performance compare with that of the Upper Midwest region and the U.S.? Is Minnesota holding its own, increasing its share, or losing ground?
- The Foreign Connection. What are the principal links between the Minnesota economy and the new and vital growth centers in the international economy, especially the rapidly growing Third World countries? What are Minnesota's main export markets, import sources, and investment targets? What are the sources of foreign investment in the state?

- Opportunities and Obstacles. What are the main economic opportunities for the state, and the obstacles that could prevent their realization?

Accurate, up-to-date information about the state's economic geography will permit interested parties to participate more effectively in creating the future of the state. But better information will not solve all problems. Disputes will arise when the parties act, not necessarily over people's understanding of what is happening, but over what they think should happen. Some disputes pit the interests of future generations against those of the present. Some involve the interests of parties at one kind of location or section of the state versus those at another. Other disputes will involve trade-offs between the goal of efficiency versus the goal of more equal rewards to different groups of productive and dependent participants in the economy. All disputes will represent conflicts rooted in value differences. Each conflict must be resolved by open public policy processes that are legitimately established and fairly operated.

Better data are just a beginning. Their significance depends on the ideas that are used to breathe life into them. Data never speak for themselves. It is our concepts and theories of how the world is working that permit the data to speak. We will need to discuss the data in order to extract their message and explain it to one another.

The next part of this report provides an overview of Minnesota's economy and its recent performance. The subsequent sections will consider -- one by one -- the state's major industrial sectors and then provide a brief look at occupational structure. Some of these sections conclude with a set of discussion questions about content and format of data series

that must be answered now so that the May, 1981 report will bring us closer to a focused understanding of how Minnesota's economy is working. With this understanding as a base, we can adjust our thinking and actions toward bringing about a more satisfactory future for ourselves and for the generations to follow.

Overview of Minnesota's Recent Economic Performance

Recent Non-Agricultural Employment Change in Minnesota

Between 1977 and March 1980, the non-agricultural sector of the Minnesota economy added a net total of 178,300 jobs, an increase of 11.2 percent. During the same period, national non-agricultural employment expanded at a slower rate of 9.1 percent (Table 1).

Table 1. -- U.S. and Minnesota Non-Agricultural Employment, 1977-1980

| (Non-Agricultural employment in thousands) | United States | | | Minnesota | | |
|--|-----------------|---------------|-------------------|-----------------|---------------|-------------------|
| | 1977 Average | 1980 March | Percent Change | 1977 Average | 1980 March | Percent Change |
| Mining | 813 | 995 | 22.4% | 12.9 | 15.6 | 20.9% |
| Construction | 3,851 | 4,303 | 11.7 | 68.7 | 71.8 | 4.7 |
| Manufacturing | 19,682 | 20,711 | 5.2 | 339.3 | 383.0 | 12.9 |
| Transportation and Utilities | 4,713 | 5,155 | 9.4 | 92.4 | 99.1 | 7.3 |
| Wholesale/Retail Trade | 18,516 | 20,111 | 8.6 | 403.5 | 443.0 | 9.8 |
| Finance, Insurance, Real Estate | 4,467 | 5,072 | 13.5 | 82.2 | 94.3 | 14.7 |
| Services | 15,303 | 17,452 | 14.0 | 312.0 | 363.3 | 16.4 |
| Government | 15,079 | 16,143 | 7.1 | 286.3 | 305.9 | 6.8 |
| TOTAL | 82,423 | 89,942 | 9.1 | 1,597.3 | 1,776.1 | 11.2 |

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings, May, 1980, p. 51.

If Minnesota's non-agricultural employment had expanded during the 1977-1980 period at the U.S. expansion rate of 9.1 percent, there would have been only 1,742,700 jobs in the state in March 1980 -- or 33,400 fewer jobs than there actually were.

In other words, Minnesota employment growth between 1977 and March 1980 surpassed the national growth rate by 33,400 jobs. What accounts for these "extra jobs"? Some of the above-average growth came about because Minnesota's base employment in 1977 was relatively concentrated in what turned out to be fast-growth industries (a "mix" effect). The rest of Minnesota's above-average performance came about because firms in the state did better than did their counterparts in the same industry across the country (a "local performance" effect). According to this kind of analysis, the origins of the 33,400 extra jobs break down as follows (Table 2):

Table 2. -- Minnesota's Extra Jobs, 1977-1980

| <u>Industry</u> | <u>Extra (or missing) jobs due to the "mix" effect</u> | <u>Extra (or missing) jobs due to the "local performance" effect</u> | <u>Both effects</u> |
|------------------------------------|--|--|---------------------|
| Mining | 1,700 | - 200 | 1,500 |
| Construction | 1,800 | - 4,800 | - 3,000 |
| Manufacturing | - 13,200 | 26,100 | 12,900 |
| Transportation and Utilities | 300 | -1,900 | -1,600 |
| Wholesale/Retail Trade | -2,000 | 4,800 | 2,800 |
| Finance, Insurance, Real Estate | 3,600 | 1,000 | 4,600 |
| Services | 15,300 | 7,500 | 22,800 |
| Government | -5,700 | -900 | -6,600 |
| TOTAL | 1,800 | 31,600 | 33,400 |

Source: Author's calculations.

The mix effect for a Minnesota industry equals Minnesota base employment in that industry, times the difference between that industry's national growth rate and the U.S. overall growth rate of 9.1 percent. For example, Minnesota's mix effect for mining equals:

$$\begin{aligned} & (\text{U.S. mining industry growth rate of } 22.4\% - \text{All U.S. growth rate of } 9.1\%) \\ & \quad \times \text{Minnesota's 1977 mining employment of } 12,900 \\ & = 1,700 \text{ jobs.} \end{aligned}$$

We can think of the mix effect as pulling a Minnesota industry up if that local industry is part of a fast-growth industry nationally, or bogging a Minnesota sector down when it is a slow-growth industry nationally.

The local performance effect for a Minnesota industry compares the Minnesota industry's growth rate with the performance of that industry nationally. For example, mining in Minnesota (mainly metal) grew more slowly than mining nationally (mainly coal), so mining's local performance effect was negative:

$$\begin{aligned} & (\text{Minnesota's mining industry growth rate of } 20.9\% \\ & \quad - \text{U.S. mining industry growth rate of } 22.4\%) \\ & \quad \times \text{Minnesota's 1977 mining employment of } 12,900 \\ & = -200 \text{ jobs.} \end{aligned}$$

As noted earlier, Minnesota managed to add 33,400 jobs over and above the U.S. growth rate of 9.1 percent between 1977 and 1980. The bulk of the extra jobs originated (1) in the manufacturing sector, where an outstanding local performance overcame the stagnation of a depressed national

industry; (2) in services, a growth industry nationally that saw superior local performance; and (3) in finance, insurance, and real estate, also a national growth industry with strong local performance.

Unemployment

Unemployment rates in Minnesota and the Upper Midwest are almost always below the national average. The lower rates may be due to the continued strength and resilience of the regional economy, or the willingness of the unemployed to migrate to different areas. But it is more likely due to the ability and the willingness of persons leaving one job to switch promptly to another, even if the new one is different from the original (Table 3).

Table 3. -- Unemployment Rates: Minnesota, the Upper Midwest, and the United States, Selected Months, 1978-1980

| | <u>December 1978</u> | <u>May 1979</u> | <u>December 1979</u> | <u>May 1980</u> | <u>Number Unemployed, May 1980</u> |
|---------------|--------------------------|---------------------|--------------------------|---------------------|--|
| United States | 5.9% | 5.8 | 5.9 | 7.8 | N.A. |
| Upper Midwest | N.A. | N.A. | N.A. | N.A. | 416,100 |
| Minnesota | 4.0 | 3.6 | 4.9 | 5.4 | 117,500 |
| Wisconsin | 5.2 | 3.6 | 4.9 | 5.0 | 170,000 |
| Iowa | 4.2 | 2.9 | 4.2 | 5.6 | 84,000 |
| North Dakota | 5.3 | 3.8 | 3.9 | 4.0 | 13,000 |
| South Dakota | 3.4 | 2.9 | 3.9 | 3.6 | 12,600 |
| Montana | 6.4 | 4.2 | 5.2 | 7.0 | 19,000 |

N.A.: Not Available.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employment and Earnings (Monthly), Tables A-1 and E-1.

Per-Capita Income

The apparently strong performance of the Minnesota economy, adding jobs at a faster rate than the national economy, followed almost a decade of rising per capita income in the state (Table 4).

Table 4. -- Estimated Per Capita Income: Minnesota, the Region, and the United States, 1969-1977

| | <u>1969</u> | <u>1977</u> | <u>Percent Change</u> | <u>1970 Population (millions)</u> |
|---------------|-------------|-------------|-----------------------|-----------------------------------|
| United States | \$3,119 | \$5,751 | 84 | 203.3 |
| Upper Midwest | N.A. | N.A. | N.A. | 13.0 |
| Minnesota | 3,038 | 5,778 | 90 | 3.8 |
| Wisconsin | 3,032 | 5,660 | 87 | 4.4 |
| Iowa | 2,884 | 5,439 | 89 | 2.8 |
| North Dakota | 2,410 | 4,856 | 102 | .6 |
| South Dakota | 2,387 | 4,529 | 90 | .7 |
| Montana | 2,696 | 5,288 | 96 | .7 |

N.A.: Not Available

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 886. "1977 Per Capita Income Estimates for States, Counties, and Incorporated Areas." (1980)

Minnesota's personal income per capita began the 1969-77 period below the national average, but leading the region, and by 1977 was ahead of the U.S. average (\$5,778 vs. \$5,751) and still leading the region.

Consumer Prices

The rate of inflation of consumer prices varies from one region of the country to another. The Bureau of Labor Statistics estimates a monthly Consumer Price Index for all urban consumers (CPI-U), and a second monthly

index for urban wage earners and clerical workers (CPI-W). For each index the Bureau publishes a U.S. city average, and separate monthly or bi-monthly indices for 28 metropolitan areas, four regions of the country, and five city size classes.

In the last two years, consumer price changes in the Twin Cities have closely approximated the U.S. price increases (Table 5).

Table 5. -- Consumer Price Index for All Urban Consumers

| (1967 = 100) | <u>1978</u> | <u>1979</u> | <u>1980</u> | <u>% Change 1979-1980</u> |
|--------------------------|-------------|-------------|-------------|-------------------------------|
| U.S. City Average (June) | 195.3 | 216.6 | 247.6 | 14.3 |
| Mpls.-St. Paul (June) | 198.7 | 222.3 | 246.4 | 10.8 |
| Milwaukee (May) | 188.7 | 217.1 | 250.3 | 15.3 |

Sources: U.S. Department of Labor, Bureau of Labor Statistics, News, 22 August 1980; and CPI Detailed Report, 1978, 1979, and 1980.

In the last year, prices in the Twin Cities area have risen more slowly than prices nationwide, and more slowly than in the Milwaukee area, the only other metropolitan region in the Upper Midwest for which indices are provided.

Producer Prices

The Bureau of Labor Statistics provides monthly Producer Price Indices (formerly called "Wholesale Price Indices") for various product groups. It provides Producer Price Indices on a geographical basis (nine census geographic divisions) only for bituminous coal and for 6 classes of refined petroleum products. For example (Table 6):

on a Geographical Basis -- Fuels

| | <u>February 1980</u> | <u>June 1980</u> |
|--|--------------------------|----------------------|
| Unleaded gasoline: Commercial Consumers (June 1977 = 100) | 207.0 | 230.2 |
| West North Central Region | 205.2 | 232.6 |
| Mountain Region | 189.0 | 218.6 |

Source: U.S. Department of Labor, Bureau of Labor Statistics, Producer Prices and Price Indexes. June, 1980 (August, 1980). Table 7.

The Producer Price Indices' comparative lack of geographic detail means that they cannot provide direct evidence on Minnesota economic trends vis á vis trends of the region and the nation.

On the other hand, we will be using the "all commodities," or composite, Producer Price Index to adjust dollar figures to 1972 equivalents in subsequent sections of this report.² The use of a single price index to inflate and deflate sales and value added figures may overstate or understate the effects of inflation on the performance of individual industries. But the errors of data interpretation are less troublesome than they would be if all comparisons were made using current dollar figures.

International Transactions

There are several ways to assess the increasing participation of Minnesota in the world economy. Each company, of course, has proprietary information on its own operations, and the U.S. government monitors several classes of national-level transactions. But the direct evidence

²The values of the all-commodities index are as follows (where 1967 = 100):

| | |
|--------------|--------------|
| 1969 = 106.5 | 1974 = 160.1 |
| 1972 = 119.1 | 1977 = 194.2 |

of Minnesota's transactions with the outside world, domestic and foreign, is quite limited, so estimates must be used. The major available series on U.S. international transactions of special interest to Minnesota are published monthly or quarterly in Business Conditions Digest and include:

- Exports, excluding military aid shipments, total (Monthly, Series 602, Census Bureau);
- Exports of agricultural products (Monthly, Series 604, Census Bureau);
- Exports of nonelectrical machinery (Monthly, Series 606, Census Bureau);

- General imports (Monthly, Series 612, Census Bureau);
- Imports of petroleum and petroleum products (Monthly, Series 614, Census Bureau);
- Imports of automobiles and parts (Monthly, Series 616, Census Bureau);

- Merchandise exports, adjusted, excluding military grants (Quarterly Series 618, Bureau of Economic Analysis);
- Merchandise imports, adjusted (Quarterly, Series 620, Bureau of Economic Analysis);
- Balance on merchandise trade (Quarterly, Series 622, Bureau of Economic Analysis);

- Exports of goods and services, excluding transfers under U.S. military grants (Quarterly, Series 668, Bureau of Economic Analysis);

- Imports of goods and services, total (Quarterly, Series 669, Bureau of Economic Analysis);
- Balance on goods and services (Quarterly, Series 667, Bureau of Economic Analysis); and
- Income on U.S. investment abroad (Quarterly, Series 651, Bureau of Economic Analysis); and
- Income on foreign investment in the U.S. (Quarterly, Series 652, Bureau of Economic Analysis).

These series can be used by any Minnesota company or group of companies to determine whether their share of the nation's foreign transactions is rising or falling. It would also be possible to assemble the quarterly and annual financial statements of the principal publicly held Minnesota companies and compare what is reported of their international business with the indices of international transactions at the national level. Sample quarterly data for February, 1980 include the following (Table 7):

Table 7. -- Goods and Services: Quarter Ending February, 1980
(Millions of dollars)

| <u>U.S. Exports</u> | <u>U.S. Imports</u> | <u>U.S. Balance</u> |
|-------------------------|-------------------------|-------------------------|
| \$85,325 | \$86,016 | - \$691 |

Source: Business Conditions Digest, February, 1980, Series 667, 668, 669.

The largest component of the above totals was merchandise (Table 8):

Table 8. -- Merchandise: Quarter Ending February, 1980
(Millions of dollars)

| <u>U.S. Exports</u> | <u>U.S. Imports</u> | <u>U.S. Balance</u> |
|-------------------------|-------------------------|-------------------------|
| \$54,708 | \$65,583 | -\$10,875 |

Source: Business Conditions Digest, February, 1980, Series 618, 620, 622.

The large deficit balance in U.S. merchandise trade was offset by U.S. exports of services, and by the positive balance of income on foreign investments (Table 9):

Table 9. -- Income on Investment: Quarter Ending February, 1980
(Millions of dollars)

| <u>From: U.S. Investment Abroad</u> | <u>From: Foreign Investment in the U.S.</u> | <u>Net Quarterly Income</u> |
|---|---|-------------------------------------|
| \$20,548 | \$10,425 | + \$10,123 |

Source: Business Conditions Digest, February, 1980, Series 651, 652.

Recently, income on U.S. investment abroad (paid in foreign currency) and income on foreign investments in the U.S. (paid in dollars) have both risen very rapidly, the former rising faster than the latter. For example (Table 10):

Table 10. -- Income on International Investments

| (Quarterly data) | Income on U.S. Investment Abroad (Millions) | Income on Foreign Investment in the U.S. (Millions) |
|------------------|--|--|
| 1979: February | \$14,263 | \$7,225 |
| May | 15,250 | 7,980 |
| August | 18,050 | 8,731 |
| November | 18,407 | 9,524 |
| 1980: February | 20,548 p | 10,425 |

p: preliminary

Source: Business Conditions Digest, June, 1980, Series 651, 652, p. 93.

A favorable balance should be sustained for the benefit of the long-term health of the U.S. economy. The same must be said about the Minnesota economy: the balance of investment flows and the income they yield must remain positive in order for the Minnesota economy to retain control over its economic destiny. When the balance reverses, local control begins to give way to external control.

Information on direct foreign investment in the U.S. is available from the U.S. Department of Commerce on a geographical basis as follows (Table 11):

Table 11. -- Direct Foreign Investments in the U.S.,
Upper Midwest, and Minnesota, 1977

| | Gross Book Value of Land (Millions) | Land and Mineral Rights (1000 Acres): | | Gross Book Value of Plant and Equipment (Millions) | Employees |
|---------------|---|--|--------|--|-----------|
| | | Owned | Leased | | |
| U.S. Total | \$7,609 | 5,580 | 28,847 | \$53,792 | 1,122,207 |
| Upper Midwest | 190 | 306+ | 6,398+ | 3,223 | 57,564 |
| Minnesota | 62 | 240 | 28 | 1,874 | 16,734 |
| Wisconsin | 20 | 0 | 45 | 716 | 28,726 |
| Iowa | 18 | 11 | 0 | 284 | 8,866 |
| North Dakota | 44 | 29 | 3,099 | 122 | 1,259 |
| South Dakota | 4 | 0 | 485 | 19 | 693 |
| Montana | 42 | 26 | 2,741 | 208 | 1,286 |

D: disclosure prohibited.

Source: James L. Bomkamp, Chief, Direct Investment in the U.S. Branch,
International Investment Division, U.S. Department of Commerce,
in Survey of Current Business, July, 1980, p. 39.

In terms of employment and land ownership, the operations of U.S. affiliates of foreign companies are small, but their share of merchandise trade is large. They had U.S. assets of \$131.5 billion at the end of 1977 (Survey of Current Business, July, 1980, p. 32ff).

Conclusions

This introductory section has presented information on the following:

- overall employment trends 1977-1980 in Minnesota, compared to U.S. trends;
- unemployment in Minnesota, the U.S. and the Upper Midwest, 1978-1980;
- per capita income trends in Minnesota, 1969-1977, compared to the U.S. and the Upper Midwest;
- consumer prices, U.S. and metropolitan, 1978-1980;
- producer prices, and their lack of geographical detail; and
- selected international transactions -- trade, investments, and income.

The value of each series must be assessed and a decision made whether to extend them or to drop them from further consideration.

Agriculture

The last three agricultural censuses were taken in 1969, 1974, and 1979. The results of the 1979 census are still unavailable, so our examples of data formats in the tables of this section use only 1969 and 1974 data.

The basic state-by-state agricultural census data describe value of output by type of farm (e.g., cash grain farms, dairy farms, vegetable farms, etc.) and by type of product (e.g., grains, dairy products, vegetables, etc.). Although American farms have steadily become more specialized, most types of farms produce several different products, and most products come from several kinds of farms.

In measuring the performance of Minnesota's agricultural sector, the emphasis can be placed on the type of farm producer, or on the type of product, or both. The examples below emphasize type of farm, value of farm products sold in constant 1972 dollars, and average sales per farm in 1969 and 1974, in constant 1972 dollars.

Sample Analysis of Farms and Farm Products, 1969 and 1974

In the 1974 Census of Agriculture, farms that had sales in 1974 of \$2,500 or over were classified according to the Standard Industrial Classification (SIC) published by the Office of Management and Budget in 1972. According to the SIC, there are two main classes of farms; crop farms (group 01) and livestock farms (group 02). Crop farms are subdivided into

six "three-digit" subgroups (011 - cash grain farms, 013 - field crops except cash grain, 016 - vegetables and melons, etc.). Livestock farms are divided into five subgroups. A residual class includes farms not classified by the SIC. The 3-digit classes are further subdivided into 4-digit classes.

The 1974 Census of Agriculture published sales data and number of farms data for each level of SIC detail, 2-digit, 3-digit, and 4-digit. The 1974 SIC format will be used to publish the 1979 Census of Agriculture. The 1969 Census of Agriculture used a list of 14 farm types. These 14 farm types are generally comparable to certain 3-digit and 4-digit 1974 classes as follows:

| <u>1969 CENSUS FARM TYPES</u> | <u>CORRESPONDING 1974 CENSUS FARM TYPES, BY SIC</u> |
|---|---|
| Cash grain farms | 011 - Cash grain farms |
| (Field crops except grains) | (Field crops except grains) |
| cotton farms | 0131 - cotton farms |
| tobacco farms | 0132 - tobacco farms |
| other field crop farms | 0133, 0134, 0139 - sugar crop, Irish potato, hay, peanut and other field crop farms |
| Vegetable farms | 016 - vegetable and melon farms |
| Fruit and nut farms | 017 - fruit and tree nut farms |
| Miscellaneous farms | { 018 - horticultural specialties Not classified by SIC |
| General farms | { 019 - general farms, primarily crop 029 - general farms, primarily livestock |
| Dairy farms | 024 - dairy farms |
| Poultry farms | 025 - poultry farms |
| Livestock other than poultry and dairy } | { 021 - livestock other than poultry, dairy and animal specialties |
| Livestock ranches } | { 027 - animal specialty farms |

In later reports, we will compare 1974 to 1979 and use the SIC groups to designate farm types.

Minnesota's Real Agricultural Product

Minnesota's real product grew faster than that of the U.S. or the Upper Midwest region between 1969 and 1974, led by extraordinary advances in value of cash grain sales and sales of other field crops. The 1974 data show that the state was much more specialized in cash grains and dairying than was the nation or the region, and much less tied to livestock (other than poultry or dairy) than was the nation or region (Table 12).

Table 12. -- Change in Agricultural Sales: U.S., Upper Midwest, and Minnesota, 1969 to 1974 (based on sales in current dollars converted to constant 1972 prices)

| SIC | Class 1-5 Farms (i.e., with sales in current dollars of \$2,500 or more) | Percent Change in Real Product 1969-1974 | | | Percent of 1974 Product | | |
|-------------------|--|--|-----|-----|----------------------------|--------|-------|
| | | US | UM | MN | US | UM | MN |
| | All Farms | 20% | 22% | 33% | | | |
| 011: | Cash grain farms | 138 | 163 | 186 | 29% | 38% | 41% |
| 0133, 0134, 0139: | Sugar crop, Irish potato, hay, peanut, other field crop | 169 | 164 | 118 | 7 | 3 | 5 |
| 016: | Vegetable and melon | 21 | 67 | 58 | 3 | 1 | 1 |
| 017: | Fruit and tree nut | 13 | 9 | 49 | 4 | 0 | 0 |
| 018: | Horticultural specialties not classified by SIC | 9 | -32 | -20 | 2 | 1 | 1 |
| 019, 029: | General farms primarily crop; general farms primarily livestock | -28 | 6 | -4 | 3 | 4 | 4 |
| 021, 027: | Livestock other than poultry, dairy and animal specialty; animal specialty farms | 26 | 22 | 25 | 28 | 35 | 21 |
| 024: | Dairy farms | -3 | -3 | -7 | 12 | 16 | 21 |
| 025: | Poultry and egg | 7 | 29 | 38 | 8 | 3 | 6 |
| | TOTAL* | | | | 100% | 100% | 100% |
| | 1974 Sales (billions, current dollars) | | | | \$80.6 | \$16.6 | \$3.5 |

*Includes cotton farms (0131) and tobacco farms (0132), which are excluded from the detailed analysis and not significantly present in the Upper Midwest.

Source: Census of Agriculture, 1969 and 1974.

Number of Minnesota Farms

The total number of farms in Minnesota continued to decline between 1969 and 1974, and the specialties of many farms changed as prices and costs of production changed with respect to one another and from one product to another. Farms are classified according to their principal product, so undoubtedly many farms that were, say, general farms or livestock farms in 1969 had shifted to a cash grain emphasis by 1974 in response to sharply higher world grain prices (Table 13).

Table 13. -- Number of Farms

| SIC | Class 1-5 Farms (i.e., with sales in current dollars of \$2,500 or more) | Percent Change in Number of Farms | | | | | |
|----------------|--|-----------------------------------|-----|-----|---------------------|----|----|
| | | 1969 - 1974 | | | 1974 - 1979 | | |
| | | US | UM | MN | US | UM | MN |
| 01,02 | All farms | -2% | -4% | -4% | (Not yet available) | | |
| 011 | Cash grain farms | 57 | 53 | 58 | | | |
| 0133,0134,0139 | Sugar crop, Irish potato, hay, peanut, other field crop | 161 | 309 | 201 | | | |
| 016 | Vegetable and melon | -1 | 40 | 48 | | | |
| 017 | Fruit and tree nut | -5 | 35 | 24 | | | |
| 018 | Horticultural specialties, not classified by SIC | 10 | -38 | -39 | | | |
| 019,029 | General farms, primarily crop; general farms, primarily livestock | -53 | -33 | -42 | | | |
| 021,027 | Livestock other than poultry, dairy and animal specialties, animal specialty farms | -22 | -29 | -30 | | | |
| 024 | Dairy farms | -25 | -20 | -25 | | | |
| 025 | Poultry and egg farms | -26 | -27 | -24 | | | |

Source: Census of Agriculture, 1969 and 1974.

Real Product Per Farm (Value in Current Dollars Adjusted to Constant 1972 Dollars)

The real product per farm is computed by dividing real product by the number of farms. Real product is estimated by first measuring product in current dollars in 1969 or 1974, when the census was taken. Then 1969 sales are inflated to 1972 prices, and 1974 sales are deflated to 1972

prices, so that comparisons are made using constant 1972 prices. By this reckoning, Minnesota's product per farm in real terms rose 38 percent between 1969 and 1974, while the nation's and region's rose by slower rates.

Real product per farm will rise when agricultural prices rise faster than producer prices generally, or when farmers produce larger physical volumes of output without countervailing agricultural price declines, or when the number of farms drops as farms are consolidated into a smaller number of larger units (Table 14).

Table 14. -- Change in Real Product Per Farm

| SIC | Class 1-5 Farms (i.e., with sales in current dollars of \$2,500 or more) | Percent Change | | | | | |
|----------------|--|----------------|-----|-----|---------------------|----|----|
| | | 1969 - 1974 | | | 1974 - 1979 | | |
| | | US | UM | MN | US | UM | MN |
| | All Farms | 23% | 27% | 38% | (Not yet available) | | |
| 011 | Cash grain | 51 | 72 | 81 | | | |
| 0133,0134,0139 | Sugar crop, Irish potato, hay, peanut, other field crop | 3 | -36 | -28 | | | |
| 016 | Vegetable and melon | 22 | 19 | 7 | | | |
| 017 | Fruit and tree nut | 19 | -20 | 20 | | | |
| 018 | Horticultural specialties not classified by SIC | 21 | 10 | 31 | | | |
| 019,029 | General farms, primarily crop; general farms, primarily livestock | 52 | 58 | 65 | | | |
| 021,027 | Livestock other than poultry, dairy and animal specialties; animal specialty farms | 62 | 72 | 80 | | | |
| 024 | Dairy farms | 29 | 21 | 25 | | | |
| 025 | Poultry and egg farms | 44 | 76 | 80 | | | |

Source: Census of Agriculture, 1969 and 1974.

The performance of Minnesota farms between 1969 and 1974 is easier to assess if the types of farms are listed in order of their economic importance to the state's economy (Table 15).

Table 15. -- Farm Performance by Economic Importance
(1974 Sales) of Each Farm Type

| Class 1-5 Farms (i.e., with sales in current dollars of \$2,500 or more) | Minnesota Farms | | | Change in Sales per farm, 1969 to 1974, in constant (1972) prices | | |
|--|-----------------------------|------------------------|---------------------------------|---|------------------|------|
| | Number of farms, 1974 | Percent of total | 1974 Farm Sales (bil.) | Minnesota | Upper Midwest | U.S. |
| All farms | 85,905 | 100% | \$3.45 | | | |
| 011 - Cash grain | 36,036 | 42 | 1.40 | 81% | 72% | 51% |
| 021,027 - Livestock other than poultry, dairy and animal special- ties; animal specialty farms | 17,392 | 20 | .74 | 80 | 72 | 62 |
| 024 - Dairy farms | 22,966 | 27 | .71 | 25 | 21 | 29 |
| 025 - Poultry and egg farms | 931 | 1 | .22 | 80 | 76 | 44 |
| 0133,0134,0139 - Other field crop | 3,509 | 4 | .18 | -28 | -36 | 3 |
| 019,029 - General farms, primarily crop; general farms, primarily livestock | 3,999 | 5 | .15 | 65 | 58 | 52 |
| 018 - Horticultural specialties not classified by SIC | 520 | 1 | .03 | 31 | 10 | 21 |
| 016 - Vegetable and melon | 455 | 1 | .02 | 7 | 19 | 22 |
| 017 - Fruit and tree nut | 97 | - | * | 20 | -20 | 19 |

*Under \$5 million.

Source: Census of Agriculture, 1969 and 1974.

There are four main size classes of farms in terms of their 1974 sales volumes or economic importance. The top three farm types accounted for 89 percent of the farms and 83 percent of the sales. Except for dairy, where large short-term adjustments in production, prices, and sales are normally impossible, Minnesota's leading farm types were also on top in their increases in real sales per farm, probably illustrating the speed at which farmers in Minnesota are able and willing to adjust their operations to changing market conditions.

Regional Details

All of the Upper Midwest information reported here was produced by adding the data for Minnesota, Wisconsin, Iowa, North Dakota, South Dakota, and Montana. If there is any interest in showing state-by-state detail in future reports, these data can be included, either in the text or in appendices.

Remaining Questions -- Agriculture

Several questions remain as we look forward to the 1979 census results and the 1981 report of the Minnesota economy.

- Is this detail sufficient? Or excessive?
- Is there any need for data on the physical volume of product (bushels, tons, etc.), by type of product, rather than (as above) sales by type of farm?
- How much effort should be taken to put Minnesota agriculture into a global market context?
- How useful would it be to present maps that show Minnesota agricultural output on a county basis, since businesses statewide depend on farm income to support wholesale and retail sales throughout the state and region?

Agricultural Services, Forestry, Fishing, and Mining

Agricultural services (SIC 07) are reported in the Census of Agriculture (1969, 1974, 1979). Nationwide sales in 1974 were \$3.6 billion. The Upper Midwest had 5 percent of the national sales with Minnesota farms accounting for \$49 million, over 25 percent of the Upper Midwest total. Between 1969 and 1974 Minnesota sales in agricultural services in constant 1972 dollars expanded at the national rate of 13 percent, while the Upper Midwest sales as a whole dropped 5 percent. These three figures together may mean that regional business in this industry is being diverted to suppliers outside the region (Table 16).

Agricultural services nationwide employed 500,700 persons in 1974, with 15,500 in the Upper Midwest and 4,300 in Minnesota. Between 1969 and 1974

Table 16. -- Agricultural Services, Forestry, Fishing,
and Mining, Percent Change in Product
(Sales) 1967 - 1977 in Real Terms (1972 dollars)

| SIC | Industry | Percent Change in Real Product | | | | | |
|-----|-------------------------------------|--------------------------------|----|----|---------------------|----|----|
| | | 1967 - 1972 | | | 1972 - 1977 | | |
| | | US | UM | MN | US | UM | MN |
| 07 | Agricultural services* | 13 | -5 | 13 | (Not yet available) | | |
| 08 | Forestry | u | u | u | | | |
| 09 | Fishing, hunting, trapping | u | u | u | | | |
| 10 | Metal mining | 29 | d | d | | | |
| 11 | Anthracite mining | -30 | n | n | | | |
| 12 | Bituminous coal and lignite | 54 | d | n | | | |
| 13 | Oil and gas extraction | 14 | d | d | | | |
| 14 | Mining and quarrying, except gas | 2 | d | 4 | | | |

*SIC 07 data are for the years 1969 and 1974.

u: unknown d: disclosure prohibited n: none

Sources: Census of Agriculture, 1969 and 1974; and Census of Mineral Industries, 1967 and 1972.

total employment expanded much faster than sales, but accurate comparisons are difficult to make because of the large proportion of part-time and seasonal workers (Table 17). Seventy-four percent of the workers in the agricultural services industry worked less than 150 days in 1969, and 68 percent did so in 1974.

Table 17. -- Agricultural Services, Forestry, Fishing,
and Mining, Percent Change in Total Employment, 1967 - 1977

| SIC | Industry | Percent Change in Total Employment | | | | | |
|-----|-------------------------------------|------------------------------------|----|-----|---------------------|----|----|
| | | 1967 - 1972 | | | 1972 - 1977 | | |
| | | US | UM | MN | US | UM | MN |
| 07 | Agricultural services* | 18 | 24 | 61 | (Not yet available) | | |
| 08 | Forestry | u | u | u | | | |
| 09 | Fishing, hunting, trapping | u | u | u | | | |
| 10 | Metal mining | 14 | d | d | | | |
| 11 | Anthracite mining | -38 | n | n | | | |
| 12 | Bituminous coal and lignite | 25 | d | n | | | |
| 13 | Oil and gas extraction | -2 | d | d | | | |
| 14 | Mining and quarrying, except gas | -5 | d | -24 | | | |

*SIC 07 data are for the years 1969 and 1974.

u: unknown d: disclosure prohibited n: none

Sources: Census of Agriculture, 1969 and 1974; and Census of Mineral Industries, 1967 and 1972.

The combination of real product data (Table 16) and employment data (Table 17) for the industry group permit calculation of a measure of real product per employee for 1967 and 1972 (1969 and 1974 for SIC 07: agricultural services) and a measure of the percentage change in real product per employee during the five year interval (Table 18).

Table 18. -- Percent Change in Real Product Per Employee
in Agricultural Services, Forestry, Fishing,
and Mining Industries, 1967 - 1972

| SIC | Industry | Percent Change in Real Product Per Employee | | | MINNESOTA | | | |
|-----|-------------------------------------|---|-----|-----|--------------------------|---------------------------------|-----------------------------------|---------------------------------|
| | | 1967 - 1972 | | | 1972 Sales (millions) | Percent of Group Total | 1972 Employment (thousands) | Percent of Group Total |
| | | US | UM | MN | | | | |
| 07 | Agricultural services* | -5 | -23 | -30 | \$36.3 | 5 | 4.3 | 26 |
| 08 | Forestry | u | u | u | | | | |
| 09 | Fishing, hunting, trapping** | u | u | u | 1.6 | 0 | .8 | 5 |
| 10 | Metal mining | 13 | d | d | 675.5 | 90 | 10.2 | 61 |
| 11 | Anthracite mining | 12 | n | n | n | | n | |
| 12 | Bituminous coal and lignite | 25 | d | n | n | | n | |
| 13 | Oil and gas extraction | 16 | d | d | 1.6 | 0 | .2 | 1 |
| 14 | Mining and quarrying, except gas | 7 | d | 35 | 35.8 | 5 | 1.3 | 8 |
| | GROUP TOTAL | | | | \$750.8 | 100 | 16.6 | 100 |

*SIC 07 data are for 1969 and 1974.

u: unknown d: disclosure prohibited n: none

**SIC 09 data are for 1974.

Sources: Census of Agriculture, 1969 and 1974; Census of Mineral Industries, 1967 and 1972; and National Oceanic and Atmospheric Administration, 1974.

The sales, employment, and real product per employee for the eight industries in this group (Tables 16, 17 and 18) reveal the following about these industries in Minnesota in 1972:

- metal ore mining (SIC 09) in Minnesota, with \$675.5 million in sales, accounted for 90 percent of the group's sales and 61 percent of the employment;
- productivity in metal mining is hard to evaluate because the Census Bureau prohibits publishing sales and employment data when one or a few large firms dominate the pattern, as is the case here;

- agricultural services (SIC 07) had sales of \$36.3 million in 1972, or 5 percent of the industry group total, and 26 percent of the group's employment;
- real product per employee in agricultural services dropped more sharply in the state and the region than in the nation;
- mining and quarrying, except gas (SIC 14) had 1972 sales of \$35.8 million, or 5 percent of the industry group total, and 8 percent of the group's employment;
- real product per employee rose 35 percent in mining and quarrying, five times the national rate;
- the anthracite, bituminous, and oil/natural gas industries (SIC 11, 12, 13) are absent or virtually absent from Minnesota;
- the forestry industry (SIC 08) is unreported in the economic censuses (data on Minnesota forestry will be available in subsequent reports); and
- commercial fishing, hunting, and trapping (SIC 09) is a very small industry, with annual reported sales under \$2 million according to the National Oceanic and Atmospheric Administration, which reports landings of commercial fishermen on an annual basis. A source of information on commercial hunting and trapping was not available for this region, so totals for SIC 09 include fishing only.

Construction

There are three industries in the construction group: building construction - general contractors and operative builders (SIC 15); construction other than building construction - general contractors (SIC 16); and construction - special trade contractors (SIC 17). Their business is reported in the economic censuses of 1967, 1972, and 1977.

In 1972, over half the construction firms in the U.S. were proprietorships or partnerships without employees, but the remaining 48 percent of the construction firms had 95 percent of the receipts (Table 19).

Table 19. -- U.S. Construction Firms in 1972

| | <u>Establishments</u> | <u>%</u> | <u>All Receipts</u> | <u>%</u> | <u>Employees</u> |
|-----------------|-----------------------|----------|---------------------|----------|------------------|
| Without payroll | 482,865 | 52 | \$8.61 bil. | 5 | - |
| With payroll | 437,941 | 48 | 155.85 bil. | 95 | 4,145,779 |
| TOTAL | 920,806 | 100% | \$164.46 bil. | 100% | 4,145,779 |

Source: Census of Construction Industries, 1972, Vol. II, Table 1b.

Our analysis below covers only the establishments with payrolls. The 1967 receipts were inflated to 1972 dollars for comparison with 1972 receipts. Receipts are used net of subcontracts to other firms. The wholesale/producer price index was used to adjust prices to a 1972 constant dollar basis. The 1977 census figures will be available shortly. Until then, the 1972 figures are the most recent detailed data.

Minnesota construction receipts of almost \$2.2 billion were distributed among the three construction industries in proportions similar to the U.S. mix, with SIC 16 (heavy construction) having a somewhat higher share than it did in the nation (Table 20).

Table 20. -- Construction Industries, Real Product, 1972

| (dollars in millions) | SIC | Industry | Product, 1972 | | | | | Percent Change in Real Product, 1967 - 1972 | | | |
|-----------------------|-----|------------------------------|---------------|------|---------|------|---------|---|----|----|----|
| | | | US | % | UM | % | MN | % | US | UM | MN |
| | 15 | General building contractors | \$33,245 | 30 | \$1,899 | 31 | \$632 | 29 | 89 | 61 | 75 |
| | 16 | Heavy construction | 25,357 | 23 | 1,472 | 24 | 614 | 28 | 27 | 21 | 43 |
| | 17 | Special trade contractors | 52,630 | 47 | 2,794 | 45 | 941 | 43 | 78 | 39 | 20 |
| | | GROUP TOTAL | \$111,232 | 100% | \$6,165 | 100% | \$2,187 | 100% | | | |

Note: Statistics pertain to establishments with payroll.

Sources: Census of Construction Industries, 1967 and 1972.

General building receipts and heavy construction receipts both grew rapidly in real terms from 1967 to 1972. Special trade contractors lagged in Minnesota while expanding rapidly nationally. Employment in all construction industries expanded at rates well below the rates of expansion in real product (Table 21). The net result was a brisk expansion in real product per employee in most national, regional, and statewide construction

Table 21. -- Construction Industries, Employment, 1972

| SIC | Industry | (persons in thousands) | | | | | | Percent Change in Employment, 1967 - 1972 | | |
|-----|------------------------------|------------------------|------|-----|------|----|------|---|----|----|
| | | US | | UM | | MN | | US | UM | MN |
| 15 | General building contractors | 1,150 | 28 | 64 | 30 | 20 | 27 | 32 | 10 | 13 |
| 16 | Heavy construction | 827 | 20 | 44 | 21 | 18 | 24 | -6 | -9 | 8 |
| 17 | Special trade contractors | 2,169 | 52 | 107 | 50 | 37 | 49 | 37 | 14 | 12 |
| | GROUP TOTAL | 4,146 | 100% | 216 | 100% | 75 | 100% | | | |

Note: Statistics pertain to establishments with payroll.

Sources: Census of Construction Industries, 1967 and 1972.

industries, between 1967 and 1972. The exception was SIC 017 (special trade contractors) in Minnesota, where current receipts rose from \$783 million in 1967 to \$941 million in 1972; when put in constant 1972 dollars, the rise was only \$933 million to \$941 million, while employment rose from 32,573 to 36,600. Thus, real product dropped by 10 percent in this sector (Table 22). These statistics count all employees, without regard to payroll or hours worked per year, so they are only crude measures of employee productivity.

Table 22. -- Construction Industries, Real Product
Per Employee, 1972

| SIC | Industry (values in dollars) | Real Product Per Employee, 1972 | | | Percent Change in Real Product Per Employee, 1967-1972 | | |
|-----|---------------------------------|---------------------------------|----------|----------|--|----|-----|
| | | US | UM | MN | US | UM | MN |
| 15 | General building contractors | \$29,000 | \$30,000 | \$31,000 | 21 | 25 | 29 |
| 16 | Heavy construction | 31,000 | 33,000 | 34,000 | 15 | 10 | 13 |
| 17 | Special trade contractors | 24,000 | 26,000 | 26,000 | 9 | 4 | -10 |

Note: Statistics pertain to establishments with payroll

Sources: Census of Construction Industries, 1967 and 1972.

Manufacturing

In 1972 the twenty manufacturing industries of Minnesota (SIC 20-39) shipped products worth \$12.4 billion (Table 23). The four leading industries in terms of value of shipments were food (\$4.3 billion), machinery, except electrical (\$2.1 billion), fabricated metals (\$1.1 billion), and paper and paper products (\$.9 billion). Together, these four industries accounted for two-thirds of all manufacturing shipments. The next four in importance were transport equipment (\$.64 billion), electrical and electronic machinery (\$.61 billion), printing and publishing (\$.60 billion), and chemicals and allied products (\$.48 billion), the four accounting for another 19 percent of all shipments in 1972.

Only seven of Minnesota's twenty manufacturing industries had managed to expand their shipments (in real product terms) at rates exceeding those of their national counterparts between 1967 and 1972. Those that succeeded were furniture; printing and publishing; petroleum products; stone, clay and glass products; primary metals; fabricated metal products; and transport equipment. Of Minnesota's eight leading manufacturing industries, only fabricated metals, transport equipment, and printing and publishing increased their shares of their national industries' shipments, by growing faster than national rates.

Table 23. -- Manufacturing Industries, Real Product, 1972

| SIC | Industry | (values in millions of 1972 dollars) | | | | | | Percent Change in Real Product, 1967 - 1972 | | | Percent Change in Real Product, 1972 - 1977 | |
|-----|------------------------------|--------------------------------------|-----|--------------------|-----|---------|-----|---|-----------------|-----|---|-----|
| | | Product in 1972 | | | | | | US | UM | MI | US | MI |
| | | US | % | UM | % | MI | % | | | | | |
| 20 | Food and kindred | \$115,052 | 15 | \$16,459 | 35 | \$4,295 | 35 | 21 | 15 | 17 | 3 | -3 |
| 21 | Tobacco | 5,920 | 1 | n | - | n | - | 1 | n | n | -6 | n |
| 22 | Textiles | 28,064 | 4 | 256 | 1 | 55 | 0 | 19 | 5 | 16 | -12 | 4 |
| 23 | Apparel | 27,809 | 4 | 337 ^d | 1 | 130 | 1 | -25 | 17 ^d | -14 | -12 | -12 |
| 24 | Lumber and wood | 23,830 | 3 | 1,628 | 3 | 349 | 3 | 79 | 83 | 78 | 2 | 49 |
| 25 | Furniture | 11,309 | 1 | 434 | 1 | 96 | 1 | 23 | 41 | 25 | -9 | -1 |
| 26 | Paper | 28,262 | 4 | 3,056 ^d | 7 | 886 | 7 | 13 | 51 ^d | 9 | 12 | -2 |
| 27 | Printing | 30,146 | 4 | 1,750 | 4 | 596 | 5 | 16 | 23 | 23 | 1 | 16 |
| 28 | Chemicals | 57,350 | 8 | 1,806 ^d | 4 | 475 | 4 | 14 | 19 ^d | 2 | 26 | 2 |
| 29 | Petroleum | 28,695 | 4 | 410 ^d | 1 | 325 | 3 | 9 | -1 ^d | 56 | 109 | 12 |
| 30 | Rubber | 20,924 | 3 | 1,055 | 2 | 216 | 2 | 38 | d | d | 17 | 31 |
| 31 | Leather | 5,770 | 1 | d | - | d | - | -6 | d | d | -20 | d |
| 32 | Stone | 21,538 | 3 | 900 | 2 | 254 | 2 | 25 | 19 | 33 | 3 | 41 |
| 33 | Primary metals | 58,430 | 8 | d | - | d | - | 9 | d | 10 | 8 | d |
| 34 | Fabricated metals | 51,739 | 7 | 3,528 ^d | 8 | 1,084 | 9 | 26 | 59 ^d | 94 | 6 | -6 |
| 35 | Machinery, except electrical | 65,821 | 9 | 8,071 ^d | 17 | 2,058 | 17 | 14 | 13 ^d | 10 | 14 | 4 |
| 36 | Electrical machinery | 53,394 | 7 | 2,794 ^d | 6 | 613 | 5 | 6 | -2 ^d | -10 | 1 | 45 |
| 37 | Transport equipment | 94,710 | 13 | 3,607 ^d | 8 | 637 | 5 | 16 | 43 ^d | 58 | 8 | 0 |
| 38 | Instruments | 15,527 | 2 | 595 ^d | 1 | 330 | 3 | 32 | 6 ^d | 20 | 13 | 17 |
| 39 | Miscellaneous | 12,173 | 2 | d | - | d | - | 23 | d | d | -4 | d |
| | GROUP TOTAL ^k | 756,463 | 100 | 46,686 | 100 | 12,399 | 100 | | | | | |

d: some product not disclosed by Census Bureau. k: of known items. n: none.

Source: Census of Manufacturing, 1972, and 1977 Preliminary Report.

Shipments from Minnesota's apparel industry managed to decline less rapidly than apparel shipments nationally, leaving Minnesota with a somewhat larger share of an industry in trouble. Minnesota manufacturing industries exceeded Upper Midwest growth rates in seven of the twenty industries: food, textiles, petroleum, stone-clay-glass, fabricated metals, transport equipment, and instruments.

Preliminary 1977 figures show that at the national level only two manufacturing industries had a greater rise in real product between 1972 and 1977 than during the previous five years (chemicals and petroleum), while one held steady (machinery, except electrical). All the rest showed lower real product growth rates during the 1972-1977 period. Six of the twenty industries had absolute declines in real product from 1972 to 1977, compared to only two in the previous period.

The Minnesota manufacturing performance during the 1972-1977 period was almost as grim as the national one. Of the 15 Minnesota industries for which longitudinal data comparisons are possible, eleven showed slower growth in

real product during the 1972-1977 period than during the 1967-1972 period. Five industries had real product declines in the latter period. The data permit comparisons between Minnesota and national real product growth rates in 16 manufacturing industries for the 1972-1977 period: Minnesota fared worse than the nation in seven.

Seven manufacturing industries in Minnesota lost employment in the period 1967-1972 (Table 24). Another seven of twenty gained at rates ahead of their respective U.S. averages: lumber and wood products, furniture, paper, chemicals, fabricated metals, machinery except electrical, and transport equipment. Among the 15 industries with change rates reported for both Minnesota and the Upper Midwest, Minnesota employment grew faster (or dropped less rapidly) than the region in eight industries, and grew more slowly (or dropped more rapidly) in seven industries.

Table 24. -- Manufacturing Industries, Employment, 1972

| SIC | Industry | (persons in thousands) | | | | | | Percent Change in Employment, 1967 to 1972 | | | Percent Change in Employment, 1972 to 1977 | |
|--------------------------|------------------------------|------------------------|-----|------------------|-----|-----|-----|--|-----------------|-----|--|-----|
| | | Employment in 1972 | | | | | | US | UM | MN | US | MN |
| 20 | Food and kindred | 1,569 | 9 | 173 | 18 | 46 | 17 | -6 | 2 | -7 | -3 | -6 |
| 21 | Tobacco | 66 | 0 | n | - | n | - | -12 | n | n | -9 | n |
| 22 | Textiles | 953 | 5 | 9 | 1 | 2 | 1 | 3 | -9 | -19 | -9 | 19 |
| 23 | Apparel | 1,368 | 8 | 19 ^e | 2 | 7 | 3 | 1 | -9 ^d | -22 | -3 | -16 |
| 24 | Lumber and wood | 691 | 4 | 43 | 5 | 9 | 3 | 25 | 20 | 46 | 0 | 39 |
| 25 | Furniture | 462 | 3 | 17 | 2 | 4 | 2 | 9 | 26 | 27 | 0 | -5 |
| 26 | Paper | 634 | 4 | 61 | 6 | 18 | 7 | -1 | -1 | 2 | -1 | -9 |
| 27 | Printing | 1,056 | 6 | 65 | 7 | 22 | 8 | 2 | 0 | -7 | 3 | 29 |
| 28 | Chemicals | 836 | 5 | 22 ^e | 2 | 6 | 2 | -1 | 5 ^e | 2 | 5 | 0 |
| 29 | Petroleum | 140 | 1 | 4 ^e | 0 | 2 | 1 | -2 | -8 ^e | -6 | 6 | -31 |
| 30 | Rubber | 618 | 3 | 31 | 3 | 8 | 3 | 20 | d | d | 16 | 31 |
| 31 | Leather | 273 | 2 | d | - | d | - | -17 | d | d | -13 | d |
| 32 | Stone | 623 | 3 | 24 | 3 | 7 | 3 | 6 | +0 | 3 | -3 | 27 |
| 33 | Primary metals | 1,143 | 6 | d | - | 7 | 3 | -7 | d | -8 | -2 | d |
| 34 | Fabricated metals | 1,493 | 8 | 106 ^e | 11 | 33 | 12 | 11 | 43 ^e | 81 | 3 | -2 |
| 35 | Machinery, except electrical | 1,828 | 10 | 205 ^e | 22 | 55 | 21 | -2 | -2 ^e | 4 | 14 | 14 |
| 36 | Electrical machinery | 1,661 | 9 | 87 | 9 | 18 | 7 | -8 | -17 | -26 | 3 | 51 |
| 37 | Transport equipment | 1,719 | 10 | 54 ^e | 6 | 10 | 4 | -6 | 15 ^e | 7 | 3 | -16 |
| 38 | Instruments | 453 | 3 | 20 ^e | 2 | 10 | 4 | 15 | -6 ^e | 8 | 22 | 40 |
| 39 | Miscellaneous | 446 | 2 | d | - | d | - | 5 | d | d | -2 | d |
| GROUP TOTAL ^k | | 18,012 | 100 | 940 | 100 | 264 | 100 | | | | | |

e: estimated from partially disclosed data. d: some data not disclosed by Census Bureau.
k: of known items. n: none.

Source: Census of Manufacturing, 1972, and 1977 Preliminary Report

Of the ten 2-digit manufacturing industries that were losing employment nationwide between 1967 and 1972, five were still losing in the 1972-1977 period according to the preliminary figures. They were joined by four more that had lower employment in 1977 than in 1972 (textiles; apparel; stone-clay-glass; miscellaneous). The seven Minnesota manufacturing industries that lost employment from 1972 to 1977 included three that lost in the previous period (food, apparel, petroleum) plus four others where the employment loss was recent (furniture, paper, fabricated metals, transport equipment).

The consequences of varying rates of change in real product and in employment are revealed in the record of percentage change in real product per employee (Table 25). Minnesota manufacturing industries' biggest gains during the five-year period ending in 1972 were in petroleum (up 66 percent), transport equipment (up 49 percent), textiles (up 44 percent), stone-clay-glass (up 29 percent), and electrical and electronic machinery (up 22 percent). The weakest showings appeared to be in furniture (down 2 percent), chemicals (no change), paper (up 6 percent), and machinery, except electrical (up 6 percent). In comparing Minnesota manufacturers to their U.S. counterparts, we find there were nine industries that did a better job than their U.S. counterparts in raising real product per employee, and seven that did a poorer job. In the comparison with the Upper Midwest averages, Minnesota industries did better in seven and poorer in seven industries.

In the recent period 1972 to 1977, growth of real product per employee nationally compared unfavorably to 1967-1972 rates of change in 15 of 20 manufacturing industries. In the 1967-72 period, there were declines in real product per employee in only two industries. In the 1972-1977 period the number had risen to seven. The 1972-1977 picture was no better in Minnesota's manufacturing industries where declines occurred in seven of the seventeen industries present and fully reported. In the 1967-72 period, only one of sixteen reported Minnesota industries had registered a decline

Table 25. -- Manufacturing Industries, Real Product
Per Employee, 1972, and Changes 1967 to 1972

| SIC | Industry | (values in 1972 dollars) | | | Percent Change in Real Product Per Employee, 1967-1972 | | | Percent Change in Real Product Per Employee, 1972-1977 | |
|-----|------------------------------|---------------------------------|---------------------|----------|--|-----------------|----|--|-----|
| | | Real Product Per Employee, 1972 | | | US | UM | MN | US | MN |
| 20 | Food and kindred | \$73,300 | \$95,400 | \$94,200 | 1 | -12 | 15 | 7 | 3 |
| 21 | Tobacco | 89,300 | n | n | 15 | n | n | 3 | n |
| 22 | Textiles | 29,500 | 29,100 | 26,000 | 16 | 16 | 44 | -4 | -12 |
| 23 | Apparel | 20,300 | 18,100 ^d | 18,900 | -26 | 28 ^d | 11 | -9 | 5 |
| 24 | Lumber and wood | 34,500 | 37,900 | 37,900 | 43 | 53 | 22 | 2 | 7 |
| 25 | Furniture | 24,500 | 25,800 | 23,000 | 13 | 11 | -2 | -8 | 4 |
| 26 | Paper | 44,600 | 50,000 | 48,900 | 14 | 53 | 6 | 13 | 8 |
| 27 | Printing | 28,500 | 26,800 | 27,200 | -5 | 23 | 32 | 2 | -10 |
| 28 | Chemicals | 68,600 | 81,300 | 76,600 | 15 | 13 | 0 | 20 | 2 |
| 29 | Petroleum | 205,700 | 117,200 | 203,300 | 11 | 7 | 66 | 97 | 63 |
| 30 | Rubber | 33,900 | 34,300 | 28,100 | 15 | d | d | 1 | -1 |
| 31 | Leather | 21,100 | d | d | 13 | d | d | -9 | d |
| 32 | Stone | 34,600 | 37,500 | 35,700 | 18 | 19 | 29 | 5 | 11 |
| 33 | Primary metals | 51,100 | d | 31,400 | 17 | d | 19 | 11 | d |
| 34 | Fabricated metals | 34,600 | 33,300 | 33,000 | 13 | 11 | 7 | 3 | -4 |
| 35 | Machinery, except electrical | 36,000 | 39,400 | 37,400 | 16 | 15 | 6 | 0 | -9 |
| 36 | Electrical machinery | 32,100 | 32,100 | 33,500 | 16 | 17 | 22 | -2 | -4 |
| 37 | Transport equipment | 55,100 | 66,800 ^d | 65,000 | 24 | 24 ^d | 49 | 5 | 20 |
| 38 | Instruments | 34,300 | 29,400 | 33,700 | 15 | 12 | 12 | -7 | -16 |
| 39 | Miscellaneous | 27,300 | d | d | 17 | d | d | -2 | d |

n: none. d: some product not disclosed; or calculation of ratios not meaningful.

Source: Census of Manufacturing, 1972, and 1977 Preliminary Report.

in real product per employee. Of course these output measures are quite crude; they are sensitive to variations in ratios of part-time to full-time employees, and they mask the differences in intra-industry performance at the 3-digit and 4-digit level of SIC detail.

Up to this point we have considered real product in terms of shipments, or sales. Most analysts would hold that the value added to goods as a result of the manufacturing process is a more meaningful concept than sales when evaluating productivity. In Minnesota this is certainly the case. The basis for a large share of this state's income is the value added to goods during manufacturing, and Minnesota's real output, according to this measure, has risen very slowly in recent years. The 1977 Census of Manufacturing estimated that all manufacturing industries in Minnesota produced value added that year of \$9.2 billion, compared to \$5.5 billion in 1972. But most

of the increase was due to inflation. The 1977 total value added by manufacturing was only \$5.7 billion in constant 1972 dollars, a real increase of 2.6 percent in five years.

Minnesota's manufacturing industries divide nicely into four groups on the basis of the size of their contribution of value added to the state's economy (Table 26). In general, none of the groups performed well over the

Table 26. -- Minnesota Trends in Real Value Added per Employee, 1967-1977, and New Capital Expenditure per Employee, 1977

| SIC | Industry | Real Value Added, 1977 (millions) | Real Value Added Per Employee | | | New Capital Expenditure Per Employee, 1977 (in 1972 dollars) |
|-----|------------------------------|--------------------------------------|-------------------------------|---------------------|----------|---|
| | | | 1967 | 1972 (thousands) | 1977 | |
| 35 | Machinery, except electrical | \$1221.2 | \$20,500 | \$20,700 | \$19,500 | \$960 |
| 20 | Food and kindred | 881.3 | 18,400 | 20,200 | 20,600 | 1,630 |
| 34 | Fabricated metals | 561.8 | NA | 17,600 | 17,500 | 1,520 |
| 36 | Electrical machinery | 503.5 | NA | 19,400 | 18,200 | 900 |
| 26 | Paper and allied | 437.4 | 24,100 | 28,200 | 26,700 | 1,870 |
| 27 | Printing and publishing | 419.7 | 14,000 | 18,400 | 14,800 | 1,120 |
| 38 | Instruments | 261.6 | NA | 23,100 | 19,100 | 560 |
| 28 | Chemicals | 236.0 | 44,000 | 43,100 | 38,100 | 1,190 |
| 24 | Lumber and wood | 202.7 | NA | 15,600 | 15,800 | 1,090 |
| 32 | Stone, clay, glass | 180.2 | 14,700 | 18,500 | 20,000 | 1,610 |
| 37 | Transport equipment | 176.1 | NA | 22,600 | 21,500 | 1,030 |
| 30 | Rubber | 141.7 | NA | 16,600 | 14,000 | 1,060 |
| 33 | Primary metals | 124.2 | 13,000 | 18,200 | 16,600 | 1,490 |
| 39 | Miscellaneous | 106.5 | 10,800 | NA | 14,000 | 1,000 |
| 23 | Apparel | 61.1 | 8,400 | 9,500 | 10,500 | 210 |
| 25 | Furniture | 55.6 | 13,500 | 13,600 | 13,900 | 380 |
| 31 | Leather | 33.7 | NA | NA | 16,000 | 380 |
| 29 | Petroleum | 30.1 | 32,200 | 46,200 | 27,400 | 2,560 |
| 22 | Textiles | 20.4 | 9,600 | 14,700 | 8,200 | 560 |
| 21 | Tobacco | N | N | N | N | N |
| | ALL | | 16,200 | 18,300 | 17,200 | 1,100 |

N: None. H.A.: Not available.

Source: Census of Manufacturing for 1967 and 1972, and 1977 Preliminary Report.

decade in terms of steady increases in value added per employee. Only four of the 19 two-digit industries had real value added per employee that rose steadily between 1967 and 1977:

- SIC 20: Food and kindred products
- 32: Stone, clay and glass products
- 23: Apparel
- 25: Furniture and fixtures

Six industries increased their real value added per employee between 1967 and 1972, then had a drop between 1972 and 1977. Chemicals and allied products (SIC 28) declined in real value added during both census intervals.

We might expect that patterns of change in value added would show the effect of capital expenditures. The 1977 Census of Manufacturing preliminary reports showed for each Minnesota industry the level of new capital expenditures in that year. The data presented in Table 26, however, show no systematic relationship between the rates of new capital expenditure per employee and the rates of increase or decrease in real value added per employee. Perhaps the modest rates of capital expenditures are too low across the board to have much effect. When interest rates rise to extremely high levels, and the real cost of capital equipment and facilities shoots upwards, it becomes difficult to raise the level of real value added per employee simply by raising capital/output ratios or capital/worker ratios.

We also need to keep in mind when interpreting the value added figures in Table 26 that -- just as was the case with sales-based output figures discussed earlier -- industry data at the 2-digit level mask important differences among industries and firms at the 3- and 4-digit levels of industrial detail. For example, in the food and kindred products industry (SIC 20), there are nine important 3-digit industries:

- 201: Meat products
- 202: Dairy products
- 203: Preserved fruits and vegetables
- 204: Grain mill products
- 205: Bakery products
- 206: Sugar, confectionary products
- 207: Fats and oils
- 208: Beverages
- 209: Miscellaneous, food and kindred products

Each of these is further subdivided at the 4-digit level. A careful diagnosis of the health of Minnesota's manufacturing industry must include attention to performance at each level of industrial aggregation. Otherwise problems and opportunities may be camouflaged (Table 27). Later reports will present this detail and interpret productivity trends.

Table 27. -- Value Added Per Employee, Selected Minnesota Industries, 1977

| <u>SIC</u> | | <u>Employees (1000s)</u> | <u>Value Added (current dollars, millions)</u> | <u>Value Added per Employee (current dollars)</u> |
|------------|-------------------------------------|------------------------------|--|---|
| 20 | Food and kindred products | 42.7 | \$1437.7 | \$33,700 |
| 201 | Meat products | 14.6 | 333.3 | 22,800 |
| 2011 | Meat packing plants | 8.1 | 227.3 | 28,100 |
| 2013 | Sausage and other prepared meats | 1.3 | 28.4 | 21,800 |
| 2016 | Poultry dressing plants | 3.2 | 46.2 | 14,400 |
| 2017 | Poultry and egg processing | 2.0 | 31.3 | 15,600 |
| 204 | Grain mill products | 3.3 | 155.1 | 47,000 |
| 2041 | Flour, other grain mill products | 1.1 | 61.1 | 55,500 |
| 2048 | Prepared feeds, NEC | 1.3 | 38.9 | 29,900 |

Source: Census of Manufacturing, 1977 Preliminary Report.

Value added per employee varies not only among industries; it also varies geographically. In 1972 the value added per employee ranged from a high of \$23,800 in Louisiana to a low of \$13,800 in Maine. (The average for the United States was \$18,600 in 1972, but this value declined to \$18,200 in 1977 (in 1972 dollars), as higher sales levels and scattered productivity improvements were eroded by inflation.)

Moreover, the states varied in their relative performances over time (Fig. 1). Some states were above the U.S. average in 1972 but fell below five years later (e.g., New Jersey, Delaware). Some were below average in 1972 but moved to positions well above average in 1977 (e.g., Florida, Hawaii). Most states started above average and stayed there (e.g., many in the Midwest, Gulf Coast, and West), or were low and stayed low (e.g., many in New England, the South, and Border States). Minnesota was below the national average in both census years in real value added per employee.

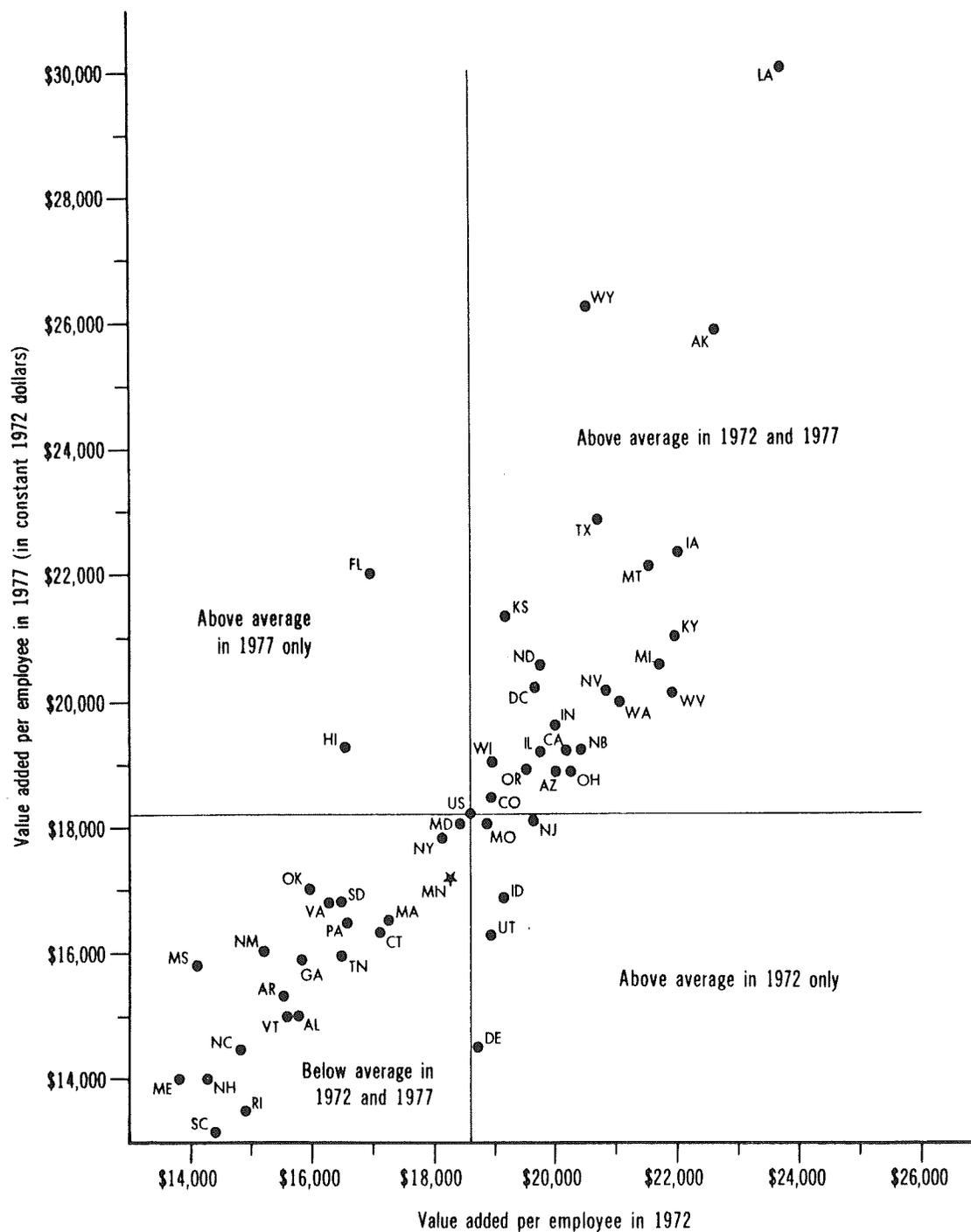


Figure 1. -- Value added in the manufacturing sector, per employee, 1972 and 1977, by state, in constant 1972 dollars.

Data source: U.S. Bureau of the Census, Census of Manufacturing, 1977 Preliminary Report.

We can also look at value added per dollar of wages of production workers. For the U.S. as a whole, this measure rose from \$3.36 in 1972 to \$3.72 (in 1972 dollars) in 1977, a real increase of 10.7 percent. The increase reflects the fact that while the wage bill for production workers rose 49.2 percent in current dollars, value added went up 65.5 percent.

As was the case with value added per employee, however, the national average of value added per dollar of production worker wages conceals considerable state-by-state diversity (Figure 2). Some states with large components of industries producing minerals, chemicals, and petroleum products have high levels of capital investment per employee and high production per dollar of wages. At the other extreme are what appear to be the high wage-low real productivity states (e.g., Michigan, Pennsylvania, Ohio) and the low wage-low real productivity states (e.g., Maine, South Carolina, Arkansas). Minnesota ranked low among the states on this measure in 1972 but rose above the national average in 1977 as value added per production worker rose faster than wages. The opposite apparently happened in Wisconsin as it slipped below average in 1977.

The long-term history of the American economy, plus the recent examples from the petroleum, natural gas, and chemical industries, have argued that value added per employee normally rises when net capital investment per employee rises. The idea has been that the larger and more powerful the tools and the greater the capital equipment per worker, the more work he or she can do. But as suggested earlier, the U.S. record of the middle 1970s provides a picture that is more complicated than the straightforward relationship just delineated (Figure 3). Between 1972 and 1977 the U.S. new capital investment rate per employee (per year) went up, but value added per employee (in constant 1972 dollars) went down

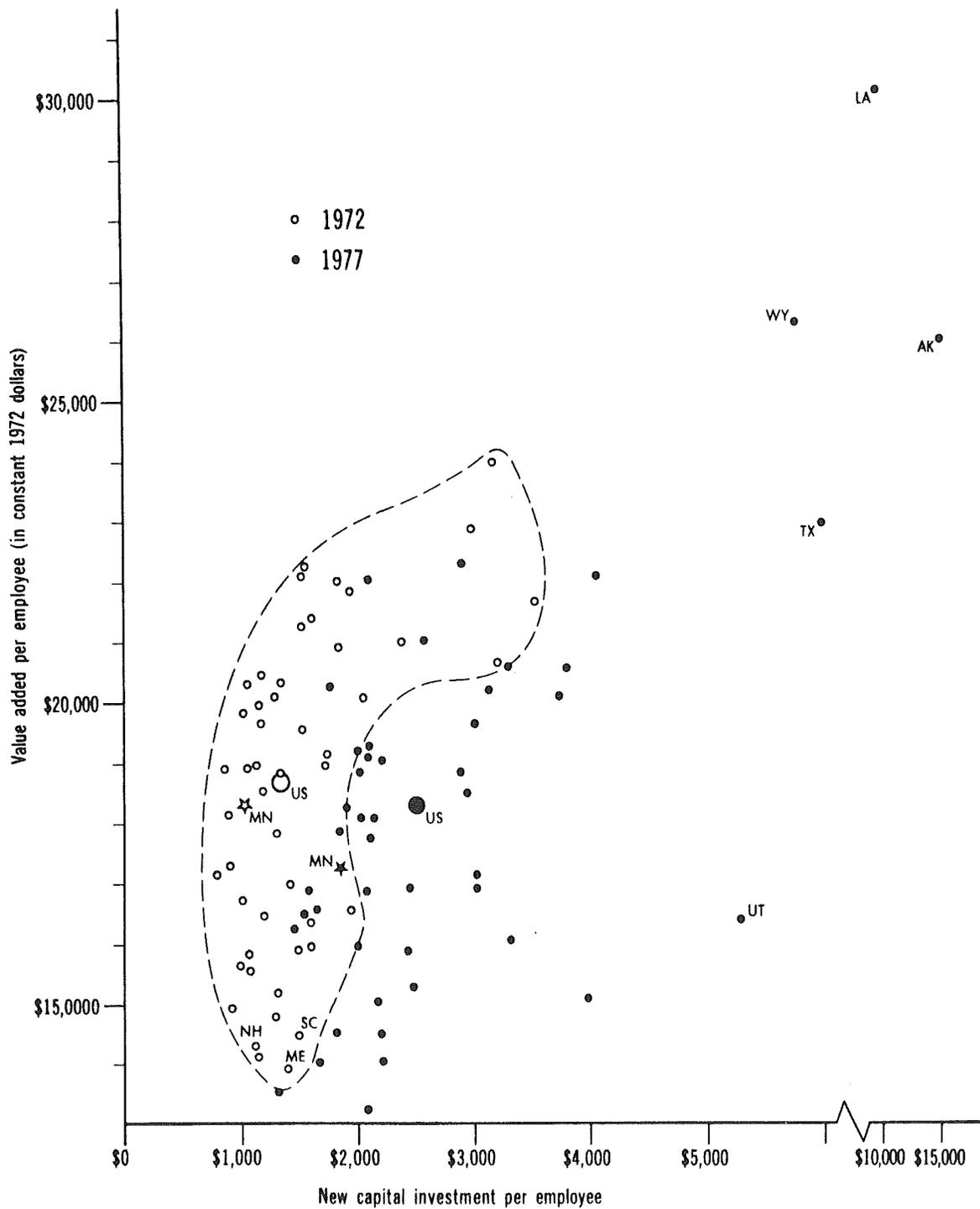


Figure 3. -- Value added per employee and new capital investment per employee in the manufacturing sector, 1972 and 1977, by state.

Data source: U.S. Bureau of the Census, Census of Manufacturing, 1977 Preliminary Report.

Let us examine the components of these ratios. New capital investment in United States manufacturing rose from \$24.1 billion in 1972 to \$48.4 billion in 1977, an increase in current dollars of 101 percent. When the effects of inflation are removed, the 1977 new capital expenditure figure is \$29.7 billion, a real increase of 23 percent over the 1972 annual rate.

Meanwhile, value added by United States manufacturing rose from \$354 billion in 1972 to \$586 billion in 1977, an increase in current dollars of almost 66 percent. When the 1977 value added is deflated to 1972 prices, it reduces to \$359 billion, or barely one percent more than in 1972. But the number of manufacturing employees rose by 3.6 percent, so the value added per employee was driven downward because employment rose at a rate over 2.5 times faster than real value added was rising. In the face of the rise in manufacturing employment, the new capital expenditures were not enough to boost the real value added per employee.

There were other major shocks to manufacturing (and the rest of the economy) during this troubled period:

- There was an unchecked explosion of consumer debt and debt-financed government expenditure at all levels. As more and more debt instruments were sold for what they could bring, prices of them dropped and yields to buyers (interest rates) rose.
- The joint pressures of consumers and governments both spending more than they were earning placed steadily upward pressure on final demand and on prices. The economy was trying to consume more than it was able or willing to produce, so prices had to rise to ration the scarce supply of goods.

- The money supply was galloping upward at almost unchecked rates, fueling the rapid price inflation.
- Foreign producers moved heavily into United States markets and competed effectively with relatively low cost, high quality merchandise, probably keeping prices of U.S. goods lower than they would otherwise have been and thereby curtailing real value added.
- Wages in some industries rose faster than productivity, adding inflationary pressure to the cost of manufactured goods.
- Energy prices rose sharply, raising the cost of goods sold and cutting value added.
- The interest cost of long-term capital for business investment rose abruptly. For many companies the rise was viewed as temporary, and capital investments in manufacturing were often reduced or postponed, while borrowings increased in other industries, government, and the household sector. Postponed capital investment sometimes led to the milking of undervalued capital assets. This in turn led to an understatement of costs of production and an overstatement of value added and of profits, and overpayments to all factors of production.
- In the face of high and unstable interest rates, the importance of the future has become drastically discounted, and the present captures a larger share of the center stage. This encourages some manufacturing firms and industries to emphasize their short-term performance instead of their long-term position.

- The introduction of new standards for "inflation accounting" has led to a more realistic appraisal of the status and performance of individual companies, but some damage has been done. Industrial revitalization, while underway in many industries, is a long and slow process.

Thus, in manufacturing, one of the mainstays of the national economy -- some would say the mainstay -- the middle 1970s were tough times indeed.

Transportation, Communications, Electric, Gas, and Sanitary Services

This industry group contains ten industries:

- SIC 40: railroad transportation
- 41: local and suburban transit and inter-urban highway passenger transportation
- 42: motor freight transportation and warehousing
- 43: U.S. postal service
- 44: water transportation
- 45: transportation by air
- 46: pipelines except natural gas
- 47: transportation services
- 48: communication
- 49: electric, gas, and sanitary services.

There are two main reasons why sales and employment data for these industries have traditionally been excluded from the economic censuses and their business often unreported at the state and local level. Most of them are chartered or licensed or closely supervised by a regulatory agency that

limits the entry of competitors while regulating prices and rates of return on invested capital. The regulatory agency requires at least annual reporting by the firms they regulate. The reports are public documents, but there has not been sufficient time available to acquire them and process the information for this report.

The second reason why sales and employment data for these ten industries have been by-passed in the censuses is that their main business is often devoted to the linking of areas rather than occurring within areas. The headquarters of an international airline may be located in a particular city, but large parts of the capital equipment and the working flight crews are in the air at other locations while sales are being generated. Production and sales are usually reported without geographical breakdowns other than "domestic" and "international", designators that identify the end points of a trip rather than the journey itself.

Wholesale and Retail Trade

For the 1972 Census of Wholesale Trade, wholesaling was divided into durable goods (SIC 50) and non-durable goods (SIC 51) in accordance with a revision of the Standard Industrial Classification. The 1977 census was organized in the same fashion. Unfortunately, this mode of organization is inconsistent with the 1967 census, so comparisons between the latter two censuses and the earlier one are difficult. Still, the 1972 data and the preliminary 1977 figures show Minnesota to be a center of wholesaling activity in the Upper Midwest (Table 28).

In addition to illustrating the state level of detail provided by the Census of Wholesale Trade in 1972 and 1977, Table 28 shows that in 1972 Minnesota led the other Upper Midwest states in both durable goods and non-

Table 28. -- Wholesale Trade; Durable Goods (SIC 50),
and Non-Durable Goods (SIC 51), 1972 and 1977

| | 1972 Levels | | | | | |
|----|---------------------|------------------------|-----------------------|---------------------|------------------------|-----------------------|
| | Durable Goods | | | Non-Durable Goods | | |
| | Sales (millions) | Employment March 12 | Sales Per Employee | Sales (millions) | Employment March 12 | Sales Per Employee |
| US | \$341,829.5 | 2,254,712 | \$151,600 | \$353,394.1 | 1,771,406 | \$199,500 |
| UM | 17,343.0 | 135,621 | 127,900 | 24,281.3 | 123,237 | 189,300 |
| MN | 7,219.7 | 46,823 | 154,200 | 7,834.2 | 39,051 | 200,600 |
| WI | 5,345.4 | 41,758 | 128,000 | 5,493.2 | 34,154 | 160,800 |
| IA | 2,955.9 | 27,724 | 106,600 | 7,013.4 | 33,970 | 206,500 |
| ND | 764.8 | 6,932 | 110,300 | 1,457.7 | 7,618 | 191,300 |
| SD | 452.8 | 5,857 | 77,300 | 1,514.1 | 7,416 | 204,000 |
| MT | 604.4 | 6,527 | 92,600 | 968.7 | 6,028 | 160,700 |

1977 Levels, and Percentage Change, 1972-1977

| | Durable Goods | | | |
|-----------------------------|-------------------------------------|----------------------------------|------------------------|---|
| | 1977 Sales | | Employment March 12 | Sales per employee (in 1972 dollars) |
| | (Current dollars in millions) | (1972 dollars in millions) | | |
| US | 608,756 | 373,167 | 2,539,000 | 147,000 |
| Percent Change 1972-1977 | 78 | 9 | 13 | -3 |
| MN | 13,631 | 8,356 | 52,939 | 157,800 |
| Percent Change 1972-1977 | 89 | 16 | 13 | 2 |
| ----- | | | | |
| | Non-Durable Goods | | | |
| | 1977 Sales | | Employment March 12 | Sales per employee (in 1972 dollars) |
| | (Current dollars in millions) | (1972 dollars in millions) | | |
| US | 649,644 | 398,232 | 1,858,000 | 214,300 |
| Percent Change 1972-1977 | 84 | 13 | 5 | 7 |
| MN | 15,461 | 9,478 | 41,381 | 229,000 |
| Percent Change 1972-1977 | 97 | 21 | 6 | 14 |

Source: Census of Wholesale Trade, 1972, Vol. 1, Table 1;
Vol. 2, Table 1; 1977 Preliminary Reports.

durable goods. In terms of productivity of workers, Minnesota wholesale trade employees exceeded the national average in sales per employee, and they compared favorably with other states in the Upper Midwest, ranking first of six states in durable goods and third of six in non-durables.

The strong showing of Minnesota wholesaling in 1972 continued in the 1972-1977 period. Preliminary data from the 1977 census reveal that sales of Minnesota wholesalers rose faster than sales nationally in both durable and in non-durable goods. In addition, Minnesota wholesalers kept employment increases well below the rate of increase in real sales, so that sales per employee in constant dollars rose in both durable goods and in

non-durable goods, outperforming their national counterparts in every measure.

Growing well above average rates for durable goods (88.8 percent) between 1972 and 1977 were Minnesota sales for SIC 508: machinery, equipment and supplies (up 150 percent in current dollars) and SIC 509: miscellaneous durable goods (up 184 percent). Expanding in sales above the average rate for non-durable goods (97.4 percent) were SIC 515: farm product raw material such as grain, livestock, and other material (up 121 percent), SIC 516: chemicals and allied products (up 132 percent), SIC 517: petroleum and petroleum products (up 112 percent), and SIC 519: miscellaneous non-durable goods (up 113 percent).

Within Minnesota, the Twin Cities and Hennepin County were the wholesale trade centers. Among the 14 U.S. metropolitan areas that had over \$10 billion in wholesale trade sales in 1972, the Twin Cities, the market center of the Upper Midwest, ranked eleventh (Table 29).

Table 29. -- Leading Standard Metropolitan Statistical Areas
in Wholesale Trade Sales, 1972

| <u>SMSA</u> | <u>Sales (billions)</u> |
|-----------------------|-------------------------|
| New York | \$86.0 |
| Chicago | 42.4 |
| Los Angeles | 32.5 |
| Detroit | 18.6 |
| Philadelphia | 18.5 |
| San Francisco-Oakland | 17.8 |
| Dallas-Fort Worth | 15.2 |
| Boston | 14.9 |
| Atlanta | 14.7 |
| Houston | 12.8 |
| Minneapolis-St. Paul | 11.7 |
| St. Louis | 11.3 |
| Cleveland | 10.8 |
| Newark | 10.4 |

Source: Census of Wholesale Trade, 1972, Vol. 1, Table 4.

Inside the Twin Cities, Hennepin County dominated wholesale trade. In fact, it ranked ninth among all counties in the U.S. in total payroll of wholesale trade firms in 1972 (Table 30). The 1977 data, just now becoming available, will

Table 30. -- Payroll of Wholesale Trade Firms,
U.S. and Leading Counties, 1972

| <u>County</u> | <u>Payroll for the Year (billions)</u> |
|---------------------|--|
| U.S. | \$36.89 |
| New York County | 2.16 |
| Cook County | 1.88 |
| Los Angeles County | 1.83 |
| Dallas County | .57 |
| Harris County | .56 |
| Wayne County | .53 |
| Cuyahoga County | .51 |
| Philadelphia County | .48 |
| Hennepin County | .42 |
| Fulton County | .41 |
| Nassau County | .38 |

Source: Census of Wholesale Trade, 1972, Vol. 1, Table 5.

permit an assessment of how Minnesota and the Twin Cities are maintaining their regional lead in wholesaling. Yet even if Twin Cities wholesalers maintain or increase their lead as the trade center of the Upper Midwest region, the steady shift of the national population to southern and western states will tend to erode the competitive position of the state's merchants.

The growth of Minnesota's retail trade between 1967 and 1972 lagged behind the U.S. growth rate in all categories except one: SIC 59, or "miscellaneous" (Table 31). This performance was largely a reflection of the state's aggregate income growth relative to the nation's. Three industries expanded sales in real terms faster than the Upper Midwest average -- food stores, apparel and accessories, and miscellaneous.

Table 31. -- Retail Trade Industries, Real Product, 1972 and Changes, 1967 to 1977

| SIC | Industry (values in millions of 1972 dollars) | Product in 1972 | | | | | | Percent Change in Real Product, 1967 - 1972 | | | Percent Change in Real Product, 1972 - 1977 | |
|-----|---|-----------------|-----|----------|-----|---------|-----|---|-----|-----|---|-----|
| | | US | MI | UM | MI | MN | I | US | UM | MN | US | MN |
| 52 | Building material, hardware, mobile homes* | \$23,844 | 5 | \$1,952 | 7 | \$601 | 7 | 16 | -28 | -14 | 0 | 15 |
| 53 | General merchandise stores | 65,091 | 14 | 3,738 | 13 | 1,241 | 15 | 7 | 4 | -4 | -12 | -8 |
| 54 | Food stores | 100,719 | 22 | 5,659 | 20 | 1,583 | 19 | 20 | 15 | 16 | -4 | -5 |
| 55 | Auto dealers and gas service stations | 123,686 | 27 | 7,820 | 28 | 2,214 | 27 | 33 | 27 | 25 | 2 | 8 |
| 56 | Apparel and accessory stores | 24,741 | 5 | 1,238 | 4 | 370 | 4 | 25 | 16 | 23 | -12 | -1 |
| 57 | Furniture, home furnishing stores | 22,533 | 5 | 1,263 | 5 | 378 | 5 | 30 | 20 | 21 | -10 | -6 |
| 58 | Eating and drinking places | 36,868 | 8 | 2,412 | 9 | 559 | 8 | 30 | 28 | 28 | 5 | 7 |
| 59 | Miscellaneous retail | 61,559 | 13 | 3,642 | 13 | 1,306 | 16 | 15 | 8 | 48 | -6 | -10 |
| | GROUP TOTAL | \$459,041 | 100 | \$27,724 | 100 | \$8,352 | 100 | | | | | |

*Changes in SIC between 1967 and 1972 were significant in this industry.

Note: Comparisons of data from the two census years are of dubious value.

Source: Census of Business, 1967; and Census of Retail Trade, 1972, and 1977 Preliminary Report.

In the 1972-1977 period, Minnesota retailing industries out-performed their national counterparts in real product change in six of eight cases. However, all the national retailing industries and all the Minnesota industries but one (SIC 52: building materials, hardware, mobile homes) appeared to have fared less well in the latter period than in the earlier 1967-1972 period. In constant dollars, five of eight national retail industries posted declines, and one showed zero change. Only two rose: auto dealers and gas service stations (SIC 55) and eating and drinking places (SIC 58), and much of their apparent increase in "real product" might be attributable to specific commodity price hikes (oil, gasoline, cars, paper, meat) that may have risen even faster than the all-commodities Producer Price Index that was used to deflate 1977 sales to constant 1972 dollars.

Nationwide, employment expanded in six of eight retail trade industries between 1967 and 1972, with the largest gains in miscellaneous, eating and drinking places, and auto dealers and gasoline stations (Table 32). Meanwhile employment dropped sharply in the building materials-hardware-gardening equipment-mobile homes industry and the general merchandise stores, but significant changes in the SIC between the version used in 1967 and the new version used in 1972 make strict comparisons hazardous, especially for SIC 52. Employment in Minnesota grew faster than the region in six industries, and declined less rapidly in one. Minnesota employment growth exceeded national rates only in auto dealers-gas stations, eating-drinking places, and miscellaneous.

In the ensuing 1972-1977 period, employment levels advanced in every national retail industry except auto dealers and gas stations (SIC 55), which had zero change, and which was the only Minnesota retail industry to add jobs at below the national rate (reflecting the growing dominance of self-service gas stations and many fewer stations overall).

Table 32. -- Retail Trade Industries, Employment
1972, and Changes, 1967 to 1977

| SIC | (persons in thousands) Industry | Employment ¹ in 1972 | | | | | | Percent Change in Employment, 1967 - 1972 | | | Percent Change in Employment, 1972 - 1977 | |
|-----|--|---------------------------------|-----|-----|-----|-----|-----|---|-----|-----|---|----|
| | | US | % | UM | % | MN | % | US | UM | MN | US | MN |
| 52 | Building material, hardware, mobile homes* | 405 | 4 | 35 | 5 | 10 | 4 | -0 | -27 | -12 | 16 | 23 |
| 53 | General merchandise stores | 1,887 | 17 | 117 | 16 | 37 | 17 | -0 | 1 | -8 | 7 | 7 |
| 54 | Food stores | 1,722 | 15 | 110 | 15 | 31 | 14 | 19 | 11 | 13 | 14 | 16 |
| 55 | Auto dealers and gasoline stations | 1,783 | 16 | 125 | 17 | 36 | 16 | 20 | 21 | 24 | 0 | -2 |
| 56 | Apparel and accessory stores | 800 | 7 | 43 | 6 | 13 | 6 | 22 | 14 | 20 | 5 | 13 |
| 57 | Furniture, home furnishings and equipment | 475 | 4 | 28 | 4 | 8 | 4 | 17 | 12 | 16 | 8 | 12 |
| 58 | Eating and drinking places | 2,634 | 23 | 188 | 26 | 56 | 25 | 30 | 34 | 36 | 43 | 53 |
| 59 | Miscellaneous retail stores | 1,504 | 13 | 91 | 12 | 33 | 15 | 42 | 25 | 54 | 13 | 15 |
| | GROUP TOTAL | 11,210 | 100 | 737 | 100 | 224 | 100 | | | | | |

*Changes in SIC between 1967 and 1972 were significant in this industry.

Sources: Census of Business, 1967; and Census of Retail Trade, 1972, and 1977 Preliminary Report.

The percentage changes in real product per employee between 1967 and 1972 are small for a five-year period. In four Minnesota cases the changes are negative: building materials, etc.; general merchandise; eating and drinking places; and miscellaneous retail stores (Table 33). Real product per employee in general merchandise stores dropped less precipitously in Minnesota than nationally, and in food stores the Minnesota productivity growth of 3 percent over five years slightly exceeded the meager national rate of 1 percent. In comparisons with the Upper Midwest rates, Minnesota apparel and accessory stores barely exceeded regional productivity growth

Table 33. -- Retail Trade Industries, Real Product Per Employee, 1972, and Changes 1967 to 1972

| SIC | (values in 1972 dollars) Industry | Product per Employee, 1972 | | | Percent Change in Real Product Per Employee, 1967-1972 | | | Percent Change in Real Product Per Employee, 1972-1977 | |
|-----|--|----------------------------|----------|----------|--|-----|----|--|-----|
| | | US | UM | MN | US | UM | MN | US | MN |
| 52 | Building material, hardware, mobile homes* | \$58,800 | \$56,500 | \$57,800 | 17 | -0 | -2 | -14 | -7 |
| 53 | General merchandise stores | 29,000 | 31,200 | 30,200 | -10 | -0 | -5 | -1 | -6 |
| 54 | Food stores | 58,500 | 51,500 | 50,600 | 1 | 4 | 3 | -16 | -18 |
| 55 | Auto dealers and gasoline stations | 69,400 | 62,500 | 61,900 | 10 | 4 | 1 | 2 | 10 |
| 56 | Apparel and accessory stores | 30,900 | 28,600 | 28,600 | 3 | 2 | 3 | -16 | -12 |
| 57 | Furniture, home furnishings, and equipment | 47,500 | 44,300 | 45,100 | 12 | 7 | 4 | -17 | -16 |
| 58 | Eating and drinking places | 14,000 | 12,800 | 11,800 | 0 | -4 | -6 | -27 | -30 |
| 59 | Miscellaneous retail | 40,900 | 40,100 | 40,000 | 5 | -14 | -4 | -17 | -22 |

*Changes in SIC between 1967 and 1972 were significant in this industry.

Sources: Census of Business, 1967; and Census of Retail Trade, 1972, and 1977 Preliminary Report.

rates (3 percent to the region's 2 percent), and in miscellaneous retail, Minnesota's real product per employee dropped 4 percent compared to a slide of 14 percent for the region. Overall, the productivity picture for Minnesota retailing between 1967 and 1972 was not impressive. None of the retail industries emerges as a striking success story. The best performance was SIC 57 (furniture and home furnishings), where real product per employee rose less than one percent per year.

When the product and employment data for the 1972-1977 period are combined, the shaky 1967-1972 picture of changes in product per employee becomes a full-scale disaster. Between 1972 and 1977, seven of eight national retail industries registered negative changes in real product per employee. The same pattern is present in Minnesota, with half the retail industries doing better than their national counterparts and half doing worse.

Finance, Insurance, and Real Estate

The economic censuses of 1967, 1972, and 1977 excluded the eight industries that comprise the finance, insurance, and real estate group.

The eight are:

- SIC 60: banking
- 61: credit agencies other than banks
- 62: security and commodity brokers, dealers, exchanges, and services
- 63: insurance
- 64: insurance agents, brokers, and services
- 65: real estate
- 66: combinations of real estate, insurance, loans, law offices
- 67: holding and other investment offices

Many of these industries are regulated by federal and state boards and commissions, and report their operations annually to the appropriate agencies.

Employment data by industry for each state can be acquired from non-census sources such as Employment and Earnings and County Business Patterns.

Production measures are distinctive to each industry, such as deposits, or assets, or commissions earned, or insurance in force. In the real estate industries, our series might include mortgage applications processed, mortgage value insured or guaranteed by FHA and VA, Federal Home Loan Bank Advances, and new mortgage loans of savings and loans.

Services

The pattern of productivity change in Minnesota in the service industries between 1967 and 1972 was apparently as bleak as that of retailing, but the evidence was inconclusive. One major problem was that the changes in the SIC between 1967 and 1972 prohibited strictly accurate comparisons. This problem did not arise when comparing 1972 and 1977 figures, because both of the recent censuses use identical SIC formats. Our calculations using the more certain data for the latter period provide a picture of declining productivity in the services for both Minnesota and the nation.

A second major difficulty that arises when evaluating productivity is due to the number of services that are excluded from the censuses. The main exclusions are the private not-for-profit industries:

- SIC 80: health services
- 82: educational services
- 83: social services
- 84: museums, art galleries, botanical and zoological gardens
- 86: membership organizations
- 88: private households

The meaning of "value of product" is conceptually quite thorny in these industries. When services are (1) sold in a market that (2) features a variety of suppliers and customers with (3) relatively free entry of vendors, (4) offering a substantial amount of consumer choice about how much to buy and from whom to buy, and with (5) payment made directly from buyer to seller, the "value of product" is easy to determine. But in the excluded six service industries, one or more of the conditions listed are not met, so the value of the product is hard to determine, both conceptually and practically.

We examined eight service industries that were covered in the 1972 Census of Selected Services (Table 34). The data here pertain to establishments with employees and payrolls and exclude proprietorships and partnerships without payrolls. In 1972, service establishments with payrolls in these eight industries had 91 percent of the total receipts. Unfortunately, two of the eight industries were not covered in the 1967 census, so comparisons between 1967 and 1972 are possible for only six service industries. Of these six, Minnesota exceeded national and regional real product growth rates in four (hotels, rooming houses, camps, other; personal services; miscellaneous repair services; and motion pictures and other amusements.) Business services in Minnesota grew at the national expansion rate, but slipped behind the Upper Midwest pace. The sixth industry, auto repair and service garages, had a change in real product that lagged behind both the national and regional expansion rates.

Table 34. -- Service Industries, Real Product
1972, and Changes, 1967 to 1977

| SIC | Industry (values in millions of 1972 dollars) | Product in 1972 | | | | | | Percent Change in Real Product, 1967 - 1972 | | | Percent Change in Real Product, 1972 - 1977 | |
|-----------|---|-----------------|-----|-------|-----|-------|-----|---|----|----|---|-----|
| | | US | Σ | UM | Σ | MN | Σ | US | UM | MN | US | MN |
| 70 | Hotels, rooming houses, camps, other | \$10,638 | 9 | \$560 | 12 | \$189 | 11 | 27 | 13 | 36 | 6 | -2 |
| 72 | Personal services | 14,050 | 12 | 776 | 16 | 242 | 14 | +0 | 4 | 7 | -20 | -16 |
| 73 | Business services | 37,802 | 34 | 1,232 | 26 | 531 | 31 | 40 | 46 | 40 | -12 | -6 |
| 75 | Auto repair, service garages * | 12,081 | 11 | 609 | 13 | 186 | 11 | 44 | 49 | 37 | 9 | 19 |
| 76 | Miscellaneous repair services | 5,855 | 5 | 302 | 6 | 90 | 5 | 28 | 29 | 32 | 15 | 16 |
| 78- 79 | Motion pictures; other amusements and recreation | 13,445 | 12 | 533 | 11 | 192 | 11 | 36 | 49 | 65 | -4 | -6 |
| (80 | Health services) | | | | | | | | | | | |
| 81 | Legal services | 10,938 | 10 | 511 | 11 | 175 | 10 | NA | NA | NA | 5 | 3 |
| (82 | Educational services) | | | | | | | | | | | |
| (83 | Social services) | | | | | | | | | | | |
| (84 | Museums, art galleries, etc.) | | | | | | | | | | | |
| (86 | Membership organizations) | | | | | | | | | | | |
| (88 | Private households) | | | | | | | | | | | |
| 89 | Miscellaneous services | 7,588 | 7 | 272 | 6 | 116 | 7 | NA | NA | NA | 19 | 0 |
| | GROUP TOTAL | 112,397 | 100 | 4,795 | 100 | 1,721 | 100 | | | | | |

*Changes in SIC between 1967 and 1972 were significant in this industry

N.A.: Not applicable; industries not covered in 1967 census.

Source: Census of Business, 1967; and Census of Selected Services, 1972, and 1977 Preliminary Report

The rapid increases in real product that were common between 1967 and 1972 were not so much in evidence at either the national or state levels between 1972 and 1977. Increased census coverage enabled us to look at eight service industries for this period. We found that three of the eight national industries posted declines, and in Minnesota only three experienced real growth (SIC 75: auto repair, service garages; SIC 76: miscellaneous repair service; and SIC 81: legal services).

Employment expanded during the 1967-1972 period in all covered service industries at all levels -- national, regional, and statewide -- except for personal services at the nationwide level, which declined 5 percent (Table 35). And even though the increases in real product that were common at the national and state levels in 1967-1972 were disappearing by 1972-1977, employment kept rising in all national and state service industries with (once again) the single national level exception of personal services. The rates of increase in employment were generally lower in the second five years than earlier, but they were increases nonetheless.

Table 35. -- Service Industries, Employment
1972, and Changes, 1967 to 1977

| SIC | Industry (persons in thousands) | Employment in 1972 | | | | | | Percent Change in Employment, 1967 - 1972 | | | Percent Change in Employment, 1972 - 1977 | |
|-----------|---|--------------------|-----|-----|-----|----|-----|---|----|----|---|----|
| | | US | % | UM | % | MN | % | US | UM | MN | US | MN |
| 70 | Hotels, rooming houses, camps, other | 727 | 14 | 41 | 16 | 14 | 16 | 18 | 22 | 35 | 25 | 18 |
| 72 | Personal services | 977 | 19 | 54 | 21 | 16 | 18 | -5 | 7 | 4 | -7 | 2 |
| 73 | Business services | 1,759 | 33 | 67 | 26 | 26 | 30 | 69 | 56 | 63 | 31 | 48 |
| 75 | Auto repair, service garages* | 392 | 7 | 18 | 7 | 6 | 7 | 24 | 24 | 16 | 23 | 27 |
| 76 | Miscellaneous repair services | 207 | 4 | 9 | 4 | 3 | 3 | 15 | 19 | 29 | 35 | 37 |
| 78- 79 | Motion pictures; other amusements and recreation | 653 | 12 | 36 | 14 | 12 | 14 | 34 | 48 | 58 | 1 | 1 |
| (80) | Health services) | | | | | | | | | | | |
| 81 | Legal services | 268 | 5 | 15 | 6 | 5 | 6 | NA | NA | NA | 46 | 48 |
| (82) | Educational services) | | | | | | | | | | | |
| (83) | Social services) | | | | | | | | | | | |
| (84) | Museums, art galleries, etc.) | | | | | | | | | | | |
| (86) | Membership organizations) | | | | | | | | | | | |
| (88) | Private households) | | | | | | | | | | | |
| 89 | Miscellaneous services | 293 | 6 | 12 | 5 | 5 | 6 | NA | NA | NA | 27 | 21 |
| | GROUP TOTAL | 5,276 | 100 | 252 | 100 | 87 | 100 | | | | | |

*Changes in SIC between 1967 and 1972 were significant in this industry.

N.A.: Not applicable; industries not covered in 1967 census.

Source: Census of Business, 1967; and Census of Selected Services, 1972, and 1977 Preliminary Report.

The differences in the two sets of rates, for product and for employment, are revealed in the trends for real product per employee (Table 36). Between 1967 and 1972, business services apparently fared worst among Minnesota's service industries by showing a drop of 14 percent for the half-decade, worse than either the regional or national drops in business services. All other Minnesota rates of change between 1967 and 1972 were positive, but only in the auto repair and service garage industry and the motion picture/amusement industry was Minnesota productivity improvement better than that of the U.S., and only in the personal service industry and the motion picture/amusement industry did the Minnesota improvement exceed the Upper Midwest averages. To the extent that these crude measures revealed the competitive direction of the Minnesota economy in the period 1967 to 1972, and the direction of the state in using resources, the record of the service industries was not impressive.

Table 36. -- Service Industries, Real Product Per Employee, 1972, and Changes, 1967 to 1977

| SIC | (values in 1972 dollars) Industry | Product Per Employee, 1972 | | | Percent Change in Product Per Employee, 1967 - 1972 | | | Percent Change Product Per Employee, 1972 - 1977 | |
|-------|--|----------------------------|----------|----------|---|----|-----|--|-----|
| | | US | UM | MN | US | UM | MN | US | MN |
| 70 | Hotels, rooming houses, camps, other | \$14,600 | \$13,600 | \$13,400 | 7 | 4 | 1 | -14 | -16 |
| 72 | Personal services | 14,400 | 14,300 | 14,900 | 6 | -3 | 3 | -14 | -17 |
| 73 | Business services | 21,500 | 18,200 | 20,100 | -3 | -8 | -14 | -33 | -36 |
| 75 | Auto repair, service garages* | 30,800 | 33,400 | 30,200 | 16 | 20 | 18 | -11 | -7 |
| 76 | Miscellaneous repair services | 28,300 | 32,500 | 29,700 | 11 | 8 | 2 | -14 | -15 |
| 78-79 | Motion pictures; other amusements and recreation | 20,600 | 15,000 | 16,200 | 2 | 1 | 4 | -5 | -7 |
| (80) | Health services) | | | | | | | | |
| 81 | Legal services | 40,900 | 34,500 | 37,500 | NA | NA | NA | -29 | -30 |
| (82) | Educational services) | | | | | | | | |
| (83) | Social services) | | | | | | | | |
| (84) | Museums, art galleries, etc.) | | | | | | | | |
| (86) | Membership organizations) | | | | | | | | |
| (88) | Private households) | | | | | | | | |
| 89 | Miscellaneous services | 25,900 | 23,000 | 24,600 | NA | NA | NA | -7 | -17 |

*Changes in SIC between 1967 and 1972 were significant in this industry.

N.A.: Not applicable; industries not covered in 1967 census.

Source: Census of Business, 1967; and Census of Selected Services, 1972, and 1977 Preliminary Report.

The 1972-1977 picture is even more bleak -- for both the nation and the state. The combination of slow growth or decline in real product and brisk increases in employment leads inevitably to stark drops in real product per employee. Real product per employee dropped in every one of the eight service industries between 1972 and 1977, at both the national level and in Minnesota. According to the measures we have used, some of our fastest growing industries have turned in some of the poorest productivity records.

The 1977 census expanded its coverage to include, for the first time, a large fraction of the private not-for-profit sector. One example of this expanded coverage is provided by preliminary 1977 census data describing the nationwide level of activity in industry SIC 86: membership organizations (Table 37). It appears that Minnesota, with about 1.8 percent of the U.S.

Table 37. -- SIC 86: Membership Organizations With Payroll, Except Religious, in the United States and Minnesota, 1977

| SIC Industry | US | | MN | |
|---|---------------------|-----------|---------------------|-----------|
| | Estab- lishments | Employees | Estab- lishments | Employees |
| 86 (except 866) Membership organizations except religious | 82,666 | 600,062 | 1,910 | 15,653 |
| 861 Business associations | 11,748 | 68,849 | 248 | 1,273 |
| 862 Professional membership organizations | 4,870 | 34,644 | 82 | 557 |
| 863 Labor unions and organizations | 23,418 | 179,029 | 438 | 3,650 |
| 864 Civic, social, fraternal organizations | 34,121 | 255,924 | 932 | 8,533 |
| 865 Political organizations | 1,123 | 3,726 | 16 | 62 |
| 869 Membership organizations not elsewhere classified | 7,386 | 57,890 | 194 | 1,578 |

Source: Census of Selected Services, 1977 Preliminary Report.

population, has 2.3 percent of the establishments and 2.6 percent of the employees in this industry. There are only twelve states that have more establishments, ranging from California (7,970), Pennsylvania (6,358) and New York (5,775) to Massachusetts (2,260), New Jersey (2,129) and Wisconsin (1,921).

Public Administration - Government

The Standard Industrial Classification is used to group production establishments according to the principal activity that is carried on within them. This approach to classifying productive activity is a reflection of U.S. economic history. Until recent times, economic activity was limited mainly to the field, forest, factory, and shop -- all within the private sphere. As society steadily moved away from a population that supported itself using generalized skills within self-sufficient regions, it moved toward a system of specialists and specialized interdependent regions. Old forms of goods production were transformed to capital-intensive industries that needed relatively fewer workers, and work took on new forms in the developing industries of:

- transportation, communications, electric, gas, and sanitary services;
- wholesale trade;
- retail trade;
- finance, insurance, and real estate;
- services; and
- public administration or government.

It is no accident that our economic censuses do a poor job of measuring the newest kinds of work and the newest products in our economy. Often the nature of new work and the ways it relates to older economic activity are not well understood for some time.

The case of government is an especially complicated matter. Since we do not know how to measure and evaluate its output, we use cost of production as a measure of service value, a practice of doubtful validity in the absence of market tests, alternative suppliers, or the presence of choice by the individual purchaser (taxpayer) as to whether or not to buy.

Additionally, government activities are established, funded, and operated on a program basis, rather than an establishment basis. The Census of Governments provides excellent data on government programs by type by each level of government, but the data are presented by programs, and not by the SIC industry groups, which are:

- SIC 91: executive, legislative, and general government, except finance
- 92: justice, public order, and safety
- 93: public finance, taxation, and monetary policy
- 94: administration of human resource programs
- 95: administration of environmental quality and housing programs
- 96: administration of economic programs
- 97: national security and international affairs.

Nevertheless, a substantial insight into the revenue and expenditure sides of government can be gained by comparing types of tax revenue per capita raised in Minnesota compared to the nation, and how those tax collections have been changing (Table 38).

In the five-year period from fiscal 1966-7 to 1971-2, state and local government revenues per capita in Minnesota rose 66 percent, to \$1,001.71. The average for all 50 states in 1971-2 was \$538.66. As total Minnesota revenues were expanding the individual sources of revenues expanded at widely varying rates. Sales and gross receipts taxes rose 175 percent, individual income tax per capita rose 79 percent, charges and miscellaneous taxes were up 80 percent, and intergovernmental revenues rose 72 percent. Since these rates

Table 38. -- Taxes and Other Revenue Raised Per Capita in
Minnesota and U.S., 1966-67 and 1971-72

| Type of Revenue | Minnesota State and Local Revenue Per Capita | | Percent Change | 1966 - 67 | |
|------------------------------|---|------------|-------------------|---------------------|-------------------------|
| | 1966-67 | 1971-72 | | All U.S. Federal | All U.S. State/Local |
| All revenue, per capita | \$602.65 | \$1,001.71 | 66% | \$1,276.45 | \$538.66 |
| Intergovernmental revenue | 87.63 | 161.10 | 72 | - | 77.68 |
| Property tax | 174.04 | 230.81 | 33 | - | 131.64 |
| Sales and gross receipts tax | 55.45 | 152.40 | 175 | 79.88 | 103.66 |
| Motor vehicle tax | 15.32 | 17.64 | 15 | - | 11.57 |
| Individual income tax | 69.22 | 124.03 | 79 | 310.94 | 29.44 |
| Corporate income tax | - | - | - | 171.69 | 11.26 |
| Other and unallocated | 36.71 | 52.32 | 43 | 19.30 | 20.63 |
| Charges and miscellaneous | 95.87 | 172.37 | 80 | 79.59 | 74.94 |
| Utility revenue | 21.59 | 32.16 | 49 | - | 26.51 |
| Liquor stores | 15.28 | 17.20 | 13 | - | 8.41 |
| Insurance trust revenue | 31.54 | 51.69 | 64 | 154.06 | 42.83 |
| Outstanding debt | \$528.20 | \$930.99 | 76% | | |

Sources: Census of Governments, 1967 and 1972, Vol. 4, No. 5, Tables 18 and 47.

all exceed the overall rate of 66 percent, it means that these sources ended the period carrying a larger share of the total burden than they did in 1966-7.

Minnesota's outstanding debt rose 76 percent from 1966-67 to 1971-72, with the result that per capita debt in the state rose even faster than revenues from tax and charges.

In October 1967, federal civilian employment was 2.8 million, all state governments employed 2.3 million, and local governments had 6.5 million employees. A useful basis for evaluating government employment is to study the number of government employees by level per 10,000 population, and to note how this ratio changes through time (Table 39).

On this basis, federal government employment per capita dropped 8 percent between 1966-7 and 1971-2 as general and special revenue sharing programs began to substitute state and local employees for employees of federal programs. During the same period all state and local employment per 10,000 population rose 20 percent.

Table 39. -- Civilian Government Employment Per
10,000 Population, By Level, 1967 to 1972

(Employees per 10,000 population)

| | 1967 | | 1972 | | Percent Change 1967 - 1972 | | 1972 Full-Time Equivalent Employees, State and Local |
|----|---------|--------------------|---------|--------------------|-------------------------------|--------------------|--|
| | Federal | State and Local | Federal | State and Local | Federal | State and Local | |
| US | 142.0 | 448.5 | 131.2 | 539.3 | -8 | 20 | 454.4 |
| MN | 87.5 | 508.4 | 77.3 | 591.3 | -12 | 16 | 465.1 |
| WI | 61.9 | 510.3 | 59.1 | 601.8 | -5 | 18 | 450.6 |
| IA | 69.5 | 495.9 | 65.2 | 557.6 | -6 | 12 | 438.7 |
| ND | 126.4 | 661.5 | 143.6 | 746.3 | 14 | 13 | 473.9 |
| SD | 148.2 | 615.6 | 141.6 | 649.0 | -4 | 5 | 474.8 |
| MT | 61.9 | 710.0 | 159.8 | 646.9 | 158 | -9 | 512.8 |

Sources: Census of Governments, 1967, Vol. 3, No. 2, Table 12; 1972,
Vol. 3, No. 2, Table 11.

Among the six Upper Midwest states in 1972, Minnesota was fourth highest in federal employment per capita, and fifth from the top in state and local employment per capita. State and local government per capita grew at below-average rates in all the Upper Midwest states, but the number of employees is sometimes hard to evaluate because many government employees are part-time workers. When full-time equivalent employment of state and local governments is compared, Minnesota is a bit above average in the Upper Midwest in 1972, and above average for the U.S. as well. The sparsely populated states (North Dakota, South Dakota, Montana) have difficulty providing all government services at the state and local levels while keeping full-time equivalent employees per capita down near the national average.

Another useful method for evaluating the government sector is to compare the outlay per capita for each class of public service (Table 40). These data are provided by the Census of Governments for each state, and for each census year. In Minnesota, all expenditures per capita rose 68 percent to \$992.17 between 1966-67 and 1971-72. Some major categories of expenditure rose much faster than 68 percent (higher education, up 107 percent; public

welfare, up 106 percent; interest on debt, up 133 percent; hospitals, up 69 percent), while many smaller items rose slowly (highways, up 21 percent; natural resources, up 35 percent).

Table 40. -- Minnesota State and Local Government Per Capita Expenditures by Type, 1966-7 and 1971-2

| | <u>1966-67</u> | <u>1971-72</u> | <u>Percent Change</u> | | <u>1966-67</u> | <u>1971-72</u> | <u>Percent Change</u> |
|----------------------------|----------------|----------------|-----------------------|-----------------------------------|----------------|----------------|-----------------------|
| Higher education | \$58.99 | \$122.32 | 107 | Water-Air | \$.44 | \$1.66 | 277 |
| Local schools | 175.54 | 275.34 | 57 | Transportation | | | |
| Other education | 3.32 | 9.61 | 190 | Parking facilities | .56 | .51 | -9 |
| Highways | 95.87 | 115.65 | 21 | Corrections | 5.22 | 7.47 | 43 |
| Public welfare | 47.03 | 97.01 | 106 | Libraries | 2.70 | 4.75 | 76 |
| Hospitals | 30.34 | 51.13 | 69 | Employment Security/ Insurance | 2.33 | 4.35 | 87 |
| Health | 3.76 | 8.03 | 114 | Financial | 6.67 | 12.30 | 84 |
| Police | 10.54 | 19.48 | 85 | Administration | | | |
| Fire | 5.05 | 7.30 | 45 | General control | 8.39 | 15.42 | 84 |
| Sewerage | 16.25 | 26.05 | 60 | General public | 4.60 | 7.18 | 56 |
| Other sanitary | 1.89 | 3.54 | 87 | buildings | | | |
| Local parks- Recreation | 7.38 | 12.59 | 71 | Interest on general debt | 16.18 | 37.77 | 133 |
| Natural resources | 10.92 | 14.79 | 35 | Other | 16.78 | 36.18 | 116 |
| Housing, urban renewal | 6.95 | 14.09 | 103 | Utilities expenses | 20.97 | 38.37 | 83 |
| Airports | 2.23 | 5.42 | 143 | Liquor stores | 11.49 | 14.79 | 29 |
| | | | | Insurance trust expenses | 18.26 | 34.19 | 87 |
| | | | | All expenditures | \$590.64 | \$992.17 | 68 |

Sources: Census of Governments, 1967, Vol. 4, No. 5, Table 18; 1972, Vol. 4, No. 5, Table 47.

It remains to be decided what will be the most informative data on the public sector to include in our next report. The 1977 Census of Governments data will be arriving presently, and can be compared to the results of the two earlier censuses, but these data will tell us more about the commitment of money and personnel to the public sector than about the productivity of workers in this sector. As in the case of much of the service sector, especially in the private not-for-profit industries, conventional product-per-employee ratios do not carry an easily determined or easily interpreted meaning.

Occupational Structure of the Minnesota Labor Force

Each decennial census records the occupations of the experienced members of the labor force who are 14 years old and older. These data are classified by the Census Bureau and published in considerable detail, with occupation cross-tabulated by age, sex, industry, and several other topics.

The Census Bureau's occupational classification section is based on a century-old idea that is centered on the status of different kinds of jobs. Up through the 1970 census, the "top" four groups were referred to as white collar occupations, and the remainder were called blue collar occupations (Table 41).

Table 41. -- Occupation of the Experienced Civilian Labor Force, 14 Years Old and Over, 1960 and 1970

| (persons in thousands) | Experienced Labor Force, 1970 | | | | | | Percent Change in Experienced Labor Force, 1960-1970 | | |
|---|-------------------------------|-----|-------|-----|-------|-----|--|-----|-----|
| | US | % | UM | % | MN | % | US | UM | MN |
| Professional, technical and kindred workers | 11,019 | 14 | 672 | 13 | 223 | 15 | 55 | 53 | 64 |
| Managers and administrators, except farm | 6,223 | 8 | 406 | 8 | 123 | 8 | 9 | 10 | 14 |
| Sales workers | 5,433 | 7 | 329 | 7 | 103 | 7 | 13 | 7 | 18 |
| Clerical and kindred workers | 13,457 | 17 | 745 | 15 | 244 | 16 | 43 | 37 | 46 |
| Craftsmen and kindred workers | 10,435 | 13 | 589 | 12 | 176 | 12 | 10 | 8 | 16 |
| Operatives, except transport | 10,517 | 13 | 563 | 11 | 151 | 10 | 10 | 15 | 26 |
| Transport equipment operatives | 2,889 | 4 | 177 | 4 | 50 | 3 | 8 | 7 | 9 |
| Laborers, except farm | 3,516 | 4 | 195 | 4 | 57 | 4 | -6 | 4 | 12 |
| Farmers and farm managers | 1,351 | 2 | 348 | 7 | 80 | 5 | -47 | -35 | -40 |
| Farm laborers and foremen | 995 | 1 | 113 | 2 | 24 | 2 | -38 | -39 | -41 |
| Service workers, except private household | 8,449 | 10 | 594 | 12 | 175 | 12 | 39 | 47 | 51 |
| Private household workers | 1,143 | 1 | 66 | 1 | 18 | 1 | -37 | -27 | -33 |
| Occupation not reported | 5,180 | 6 | 230 | 5 | 65 | 4 | 50 | 58 | 41 |
| TOTAL | 80,603 | 100 | 5,024 | 100 | 1,489 | 100 | 19 | 14 | 21 |

Source: Census of Population, 1970.

The distribution of Minnesota workers among the twelve main job classes in 1970 resembled closely the distribution throughout the Upper Midwest and the United States.

Minnesota had a larger share of workers in professional, technical, and kindred jobs than did the nation or the region, and this class of jobs expanded much faster in Minnesota between 1960 and 1970 (up 64 percent) than in the region (up 53 percent) or the U.S. (up 55 percent). Minnesota also had a larger share of workers in clerical jobs (16 percent) than did the region (15 percent), but the Minnesota share was less than that of the U.S. (17 percent). During the decade of the 1960s, clerical jobs in Minnesota expanded at 46 percent, well ahead of the region (up 37 percent) and the nation (up 43 percent).

The third category of note was service workers. The state share was the same as the region (12 percent), and higher than the U.S. (10 percent), but service jobs in Minnesota grew by 51 percent between 1960 and 1970, while the region added jobs at a 47 percent rate and the U.S. rate was 39 percent.

While these three job categories expanded, there was a rapid decline in the number of Minnesota farmers and farm managers (down 40 percent), farm laborers and foremen (down 41 percent), and private household workers (down 33 percent).

Summary and Conclusions

What do the data from the late 1960s and 1970s tell us about the long-term competitive performance of the Minnesota economy in that era? The data we used to construct crude measures of change in real product and change in real product per employee suggest that the state of Minnesota did not do well. Employment was up, but employment levels alone are inadequate measures of economic vitality. During the late 1960s and early 1970s, Minnesota's real product growth rates were higher than those of the nation in only 18 of the 43 industries for which both good product and employment data were presented. Minnesota led the Upper Midwest region in 24 industries (Table 42). When growth of real product per employee (per farm in agriculture) is considered, Minnesota firms led the U.S. average in only 20 industries, and led regional averages in only 21 of the 43 industries.

Table 42. -- Minnesota Industry's Performance
in the Late 1960s and Early 1970s

| Industry Group | Number of Industries and Industry Groups Reported | Minnesota Real Product Growth Rate: | | | | Minnesota Real Product Per Employee (or Farm) Growth Rate: | | | |
|-----------------------|---|-------------------------------------|----------------|----------------|----------------|--|----------------|----------------|----------------|
| | | Better than US | Poorer than US | Better than UM | Poorer than UM | Better than US | Poorer than US | Better than UM | Poorer than UM |
| Agriculture | 9 | 4 | 5 | 5 | 4 | 6 | 3 | 8 | 1 |
| Agricultural services | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Construction | 3 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 |
| Manufacturing | 16 | 8 | 8 | 7 | 7 | 9 | 7 | 7 | 7 |
| Transport, etc. | NA | | | | | | | | |
| Wholesale | NA | | | | | | | | |
| Retail | 8 | 1 | 7 | 5 | 2 | 2 | 5 | 2 | 6 |
| Finance, etc. | NA | | | | | | | | |
| Services | 6 | 4 | 1 | 4 | 2 | 2 | 4 | 2 | 4 |
| Government | NA | | | | | | | | |
| TOTALS | 43 | 18 | 23 | 24 | 16 | 20 | 22 | 21 | 20 |

Sources: Tables already presented in text.

N.A.: Data compatible with this table were not available.

Preliminary product and employment data for the mid-1970s (1972-1977) were available for 34 industries in the manufacturing, retailing, wholesaling, and service sectors (Table 43). These data show that Minnesota's real product grew more rapidly than the nation's in 20 of the 34 industries, more slowly in 13, and at the same pace as the nation's in one. Minnesota compared less favorably with the nation in change in real product per employee during this period; in this productivity measure the state did better than the U.S. in 12 industries and worse in 22.

Table 43. -- Minnesota Industry's Performance from 1972 to 1977

| Industry Group | Number of Industries Reported | Minnesota Real Product Growth Rate | | Minnesota Real Product Per Employee Growth Rate | |
|----------------|-------------------------------|------------------------------------|----------------|---|----------------|
| | | Better than US | Poorer than US | Better than US | Poorer than US |
| Manufacturing | 16 | 8 | 7 | 5 | 11 |
| Retailing | 8 | 6 | 2 | 4 | 4 |
| Wholesaling | 2 | 2 | 0 | 2 | 0 |
| Services | 8 | 4 | 4 | 1 | 7 |
| TOTALS | 34 | 20 | 13 | 12 | 22 |

Sources: Tables already presented in text.

Twenty-nine of the 34 industries covered in the mid-1970s data had been among the 43 reported for the late 1960s and early 1970s. Comparisons between the two periods for these 29 industries showed that:

- during the earlier period Minnesota had fared better than the U.S. in growth of real product in 12 of the 29 industries and worse in 16, whereas in the mid-1970s Minnesota did better in 17 and worse in 11; and
- in growth of real product per employee Minnesota fared better than the U.S. in 12 industries and worse in 16 during the earlier period, and better than the nation in 10 and worse in 19 during the later period.

Minnesota's improvement with respect to the U.S. in the real product growth figures for the mid-1970s came about primarily through the state dropping less precipitously than the nation in the retail industries. The erosion of Minnesota's position in real product per employee was attributable to declining productivity in manufacturing. But the measures here are crude and incomplete. Clearer signals will emerge from the more complete information that will be available for the spring 1981 report.

As the indices presented here are updated and interpreted in the light of larger trends affecting Minnesota, some additional questions can be addressed:

- What will the 1980 census of population and housing tell us about population composition, labor force size, and the changing labor force as a fraction of the population?
- What are the prospects for a labor shortage in Minnesota in the 1980s?
- What is the trend in net number of new households formed and the effect of this trend on the demand for housing, new construction, savings, and capital formation in housing?
- What were the trends in the last decade in the occupational structure of Minnesota's experienced labor force compared to the Upper Midwest and the United States?
- How are foreign markets and competitors changing? In particular, what does the recent and rapid transformation of the urban economic geography of the Western Pacific Basin mean for Minnesota businesses and the Upper Midwest economy?

When Fortune published its recent list of the 50 leading publicly owned industrial exporting companies (22 September 1980), none of them was headquartered in the six state Upper Midwest region.

- If we examine, industry by industry, the recent pattern of change in U.S. export sales, how does the demonstrated record of export opportunity compare with the export industries of Minnesota and the Upper Midwest? The economic future will belong to those who sell to the world. But except for aircraft, grain, and Coca-Cola, the U.S. export record is spotty. Is Minnesota increasingly in a position to sell to the world? Or not?

At the beginning of this report, we noted that Minnesota's economy added jobs between 1977 and 1980 at a rate faster than the U.S. expansion rate. The extra jobs were traced to services, manufacturing, finance-insurance-real estate, trade, and mining.

- What are the detailed industries that account for these extra jobs?
- Are these extra jobs created by doing a better job of selling to the world? Or are there other, less welcome explanations?

Current U.S. policy supports direct investment in the less developed countries, but obstacles remain. Some features of the U.S. tax system, for example, discriminate against direct foreign investment, including investment in the less developed countries, but do some others favor it?

- What are some of the details of foreign operations of Minnesota businessmen? Are they expanding their activity at national rates for their industries, or falling out of the competition?
- If there are obstacles to an expanded foreign role for Minnesota's businesses, what are they? How can they be removed or overcome?

There are many directions that our investigations can head, all of them fruitful but some of greater strategic value than others. We hope that the discussion of this report will clarify these questions:

- What is the data format that is most useful to the readers of this report and others to follow?
- What is the level of industrial and occupational detail that is most useful? Does this report contain too much detail? Or not enough detail?
- The Minnesota economy is spread over all the counties and sub-areas of the state. The state, in turn, is a key element in the Upper Midwest regional economy. Economic trends occur with different timing and different intensity at the separate locations in the state and region. How useful would it be if there were separate performance indices developed for the various sub-areas of Minnesota and the region so that growth impulses could be monitored and eventually forecast on a geographical basis for each sub-area?
- How useful would it be for the companies in Minnesota to have a regular report on the regions and countries of the world that currently are growing rapidly and thereby present the best market prospects as well as the greatest competition?
- By the approach adopted here, we have largely neglected the most important part of Minnesota's resource picture -- its people. We have said little about the state's demographic portrait and its implications for the economy. We have also slighted the roles of

the state's educational and cultural institutions in maintaining a productive population and labor force. We could ask, for example, whether the state is an importer or exporter of education and career training. How useful would it be for future reports to grapple with some of these issues?

Answers to each of these questions will ensure that our Spring, 1981 report, based on the most up-to-date information from the Census Bureau, Data Resources Incorporated, and other sources, will be of great usefulness to all who support its production and participate in interpretation of its information.

Notes

This report was prepared for the Bureau of Business Research, College of Business Administration, University of Minnesota, by John S. Adams, Professor of Geography and Public Affairs, University of Minnesota. Assisting were James D. Fitzsimmons, Julie M. Lange, David J. Borchert, and Barbara VanDrasek, all of the Department of Geography, University of Minnesota.

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The report is part of an ongoing project being carried out under the supervision of an advisory committee whose members are:

Dale R. Olseth (Chairman), President and Chief Executive Officer,

Medtronic, Inc., and Member of the Minnesota Business Partnership;

Clyde Allen, Commissioner, Minnesota Department of Revenue;

Wayne Burggraaff, Commissioner, Minnesota Department of Finance;

David M. Lilly, Dean, College of Business Administration, University of Minnesota;

David Roe, President, Minnesota AFL-CIO; and

Harry Sieben, Jr., Speaker, Minnesota House of Representatives.

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