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STRATEGIC CHOICES IN MINNESOTA'S ECONOMIC FUTURE

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by

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Summary

Strategic choices in Minnesota's economic future include the financing and organizing of Minnesota's educational and related state and regional institutions. These choices are constrained by world economic conditions and national policies. Their urgency is manifested in the sharply declining employment shares of Minnesota export-producing industries and the growing burden of financing education in Minnesota's lagging and, also, growing regions.

The internationalization of the Minnesota economy makes its export-producing industries--primarily manufacturing, but including also agriculture and business and professional services--increasingly vulnerable to both the general business cycle and the foreign trade cycle. The foreign export "boom" of the 1970s and its collapse in early and mid 1980s brought, first, unprecedented prosperity to Minnesotans, that was soon followed by a prolonged recession in Greater Minnesota and an aborted recovery in the Metropolitan Region. Indeed, the source of Minnesota's rural crisis, when measured by the net loss of jobs, was not only an ailing agriculture but even more a once-rapidly growing manufacturing industry suddenly faced with a loss of both foreign and domestic markets. The loss of jobs and income in manufacturing far exceeded their loss in agriculture.

Contrary to popular perception, the decline of manufacturing in Minnesota was temporary. By 1987 the collapse of the US dollar had been followed by the resurgence of a once vital and growing foreign export-producing industry in Minnesota. Roughly half of the most recent growth in manufacturing employment

has occurred in Greater Minnesota.

The single most important determinant of Minnesota's improved economic well-being in the 1970s and 1980s, when measured by per capita income, was the sharp increase in labor force participation. Woman and other minorities entered the Minnesota labor force in unprecedented numbers in the 1960s and 1970s. Even though real earnings per worker increased very little, if any, per capita personal income increased at an above-average rate because of growing numbers of two-worker households. Growth in per capita income of Minnesotans outpaced its US growth, reaching levels two to four percent above the US. Meanwhile, wage and salary earnings per worker, when adjusted for inflation and more part-time workers, declined in the wake of declining employment in manufacturing.

Projected growth of industry employment, population, and income in Minnesota is based on projected US growth to 1990 and 2000 and historical trends in market shares of Minnesota's export-producing industries. Depending upon the years included in the historical base, the projections show Minnesota job and income growth either lagging or leading US job and income growth. Much depends on the competitive position of Minnesota export-producing industries in world markets, which, in turn, depends on US fiscal and trade policies and, also, on the productivity of the Minnesota work force (insofar for as high productivity reduces unit costs and sustains the profitability of goods and service produced by Minnesota workers). It is precisely at this juncture in Minnesota's economic future that the financing and organization of Minnesota's educational systems will make an important difference in final outcomes. The threat of imminent decline is eroded, of course, by the remarkable power of competition in forcing innovation and productivity improvements in education. The time for viewing cost-reducing and

performance-improving innovation in the delivery of educational services has come.

This report--the second in a series on education and economic growth--focuses on world economic restructuring and the Minnesota connection, namely, the trade-dependent, export-producing industries of Minnesota. The economic environment for goal attainment in education and its related activities is discussed, next, with reference to threats to, and constraints on, the attainment of these goals and the opportunites that exist to sustain these efforts. Finally, brief summaries on education-related efforts outside the major educational systems of the State are presented for the institutional perspectives they provide in the creation of choice in education in its broadest sense.

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Minnesota's economic future is unfolding within constraints established, for the most part, by world conditions and national policies. But within these constraints certain options are available for attaining particular goals. Movement towards these goals will depend, in part, on the nature and severity of the threats faced by Minnesota's citizens and residents.

Strategic choices grow from an understanding of the relationship of the past to the present and the useful conclusions that can be drawn from these relationships for the future. Of particular concern to the future of education in Minnesota is world economic restructuring and its implications for the financing and organization of Minnesota educational and related state and regional institutions.

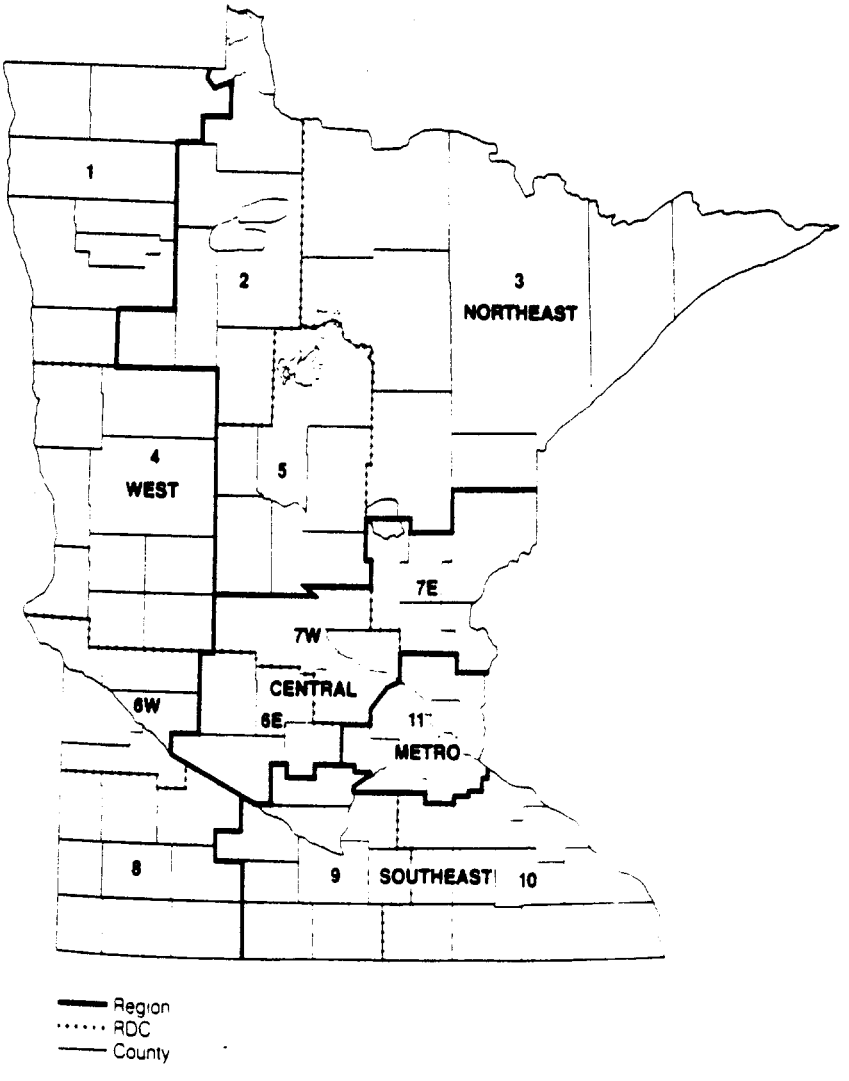
World Economic Restructuring and the Minnesota Connection

The restructuring of Minnesota's traditional goods-producing industries--agriculture, mining, and manufacturing--is changing Minnesota's rural-urban balance. Much of the traditional goods-producing industries, which now experience intense world-scale price competition, are in rural areas--particularly in the four western and two southern substate regions. These six regions are designated as the West Economic Region (1, 4, 6W and 8) and Southeast Economic Region (9 and 10) in Figure 2.1.

Services-producing industries, particularly high-order professional, business and related manufacturing services that compete, in varying degree, on a non-price basis, are concentrated in the seven-county Twin Cities Metropolitan Region and, to a lesser extent, in the four metropolitan centers (Fargo-Moorhead, Duluth-Superior, St. Cloud and Rochester) in four (3, 4, 7W

Figure 1.1

Minnesota's economic regions are each characterized by a unique pattern of industry dependence that is largely natural resource-based in three regions--the Northeast, the West and the Southeast--and dominantly metropolitan-based manufacturing and high-order services in two regions--Central and Metro.



and 10) of the substate regions. The four substate regions are part of the West, Northeast and Southeast Economic Regions.

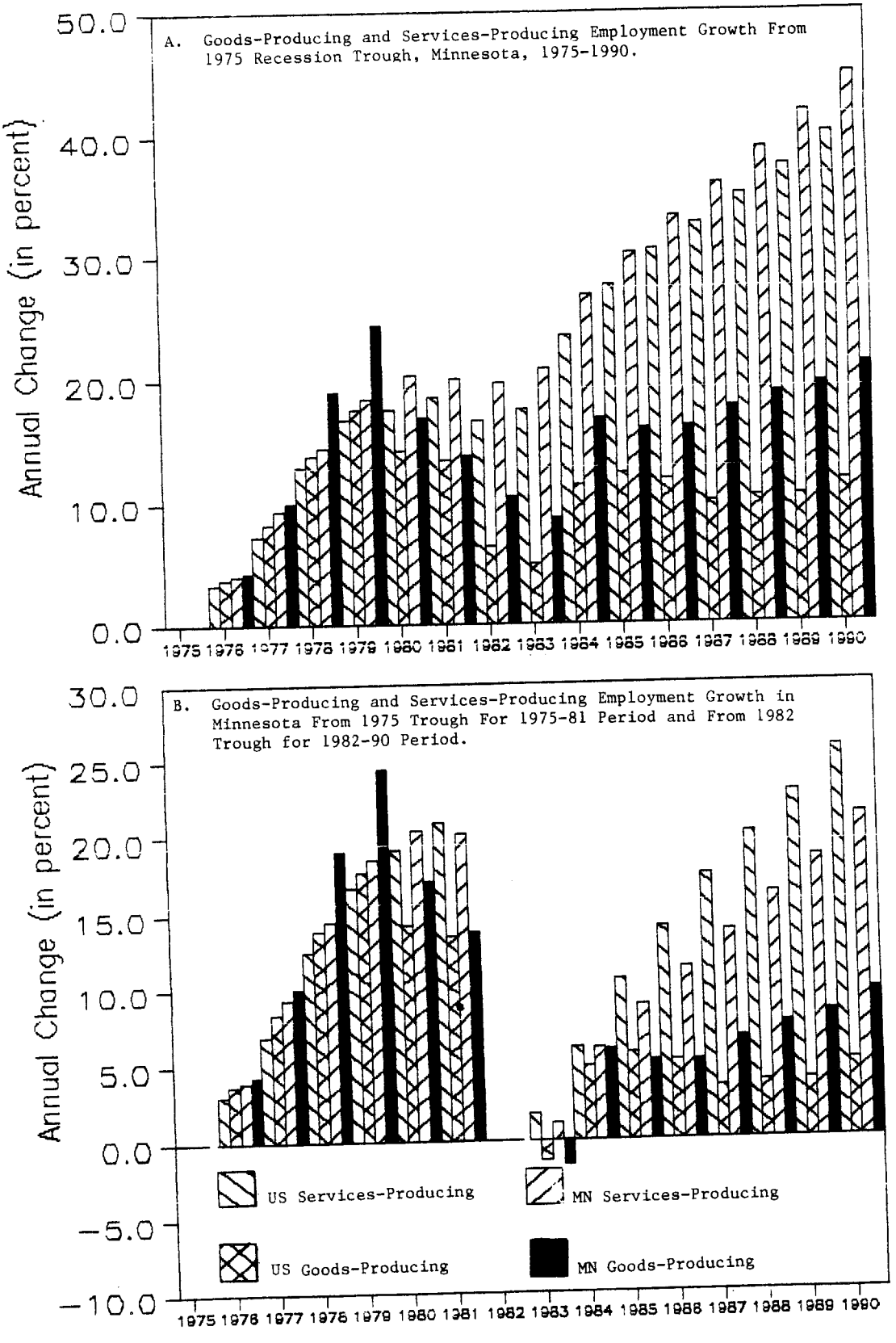
Because services-producing activities of the metropolitan central areas are essential to the nuture and development of the emerging information society, the conventional economic wisdom that emphasizes a region's commodity exports has virtually been turned around. The new emphasis is on research and management in an increasingly service-oriented economy. The shift to services is a world-scale phenomenon with profound implications for Minnesota's educational institutions a well as the economic vitality of its rural and urban communities.

Despite the shift to services, the goods-producing industries nonetheless account for a critical part of the economy of Minnesota's rural regions. They also experience most severely the consequences of world-scale economic restructuring and of general business cycle fluctuations. In the 1975-79 recovery period, for example, goods-producing industry employment in Minnesota increased by 24 percent while employment in services-producing industries (transportation, communications, utilities, wholesale and retail trade, private services and government) increased by 19 percent. Minnesota outpaced U.S. goods-producing employment growth by 50 percent. These patterns were reversed, however, in the 1982-87 period. In fact, total goods-producing employment declined from 1979 to 1983 in both Minnesota and the US as shown in the top half of Figure 2.2

Following short-lived increases from 1983 to 1985 for the US and from 1983 to 1984 for Minnesota, goods-producing employment levels again declined before starting their most recent rise in 1986 and 1987. The percentage increase is larger for Minnesota than the US as a whole because of the above-average concentration of export-producing industries in Minnesota.

Figure 2.2

Total nonagricultural goods-producing employment increased sharply during the 1975-79 recovery period in both Minnesota and the US but in the post-1982 recovery, services-producing employment increased more sharply--a consequence of declining Minnesota and US foreign trade opportunities and manufacturing employment.

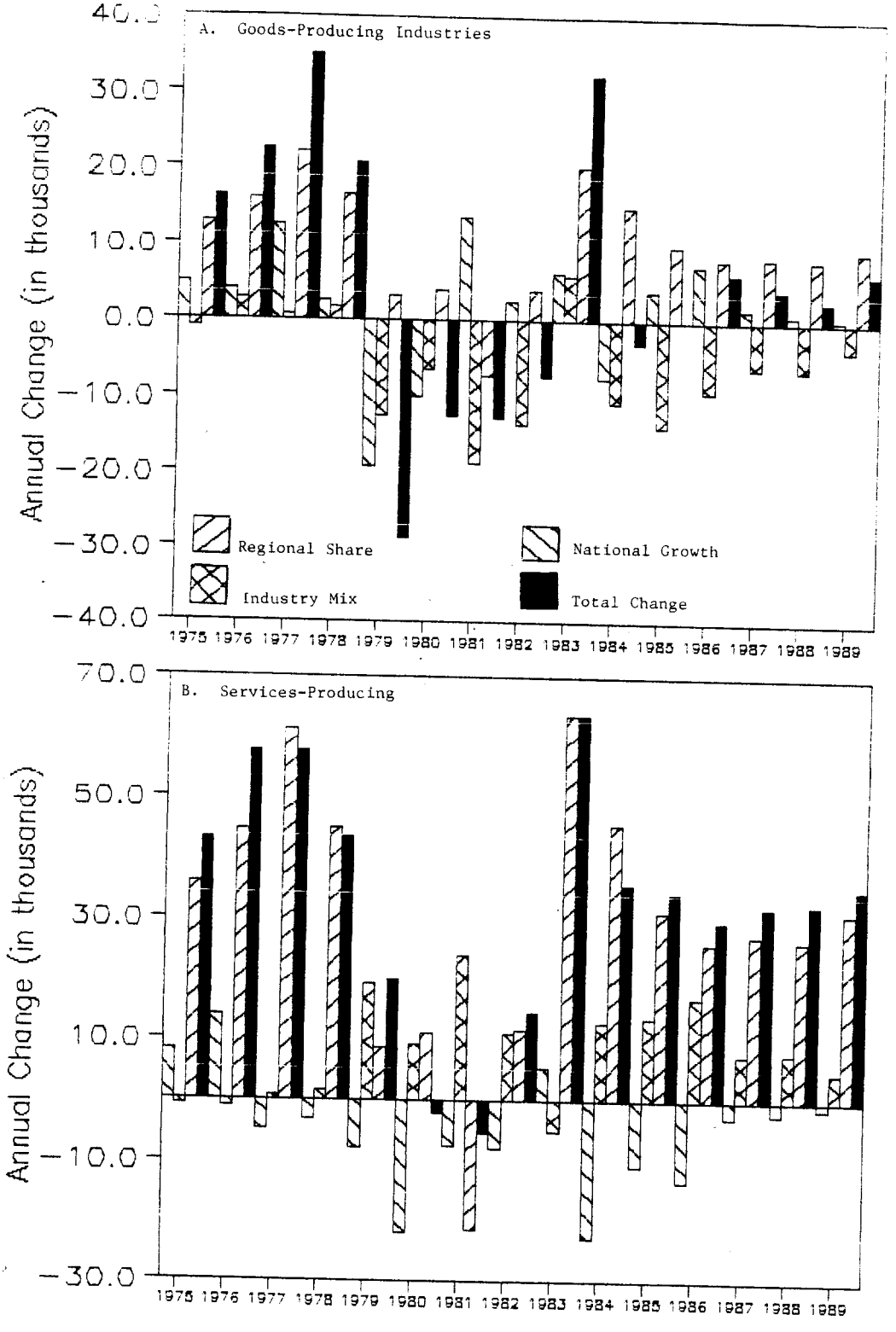


The growth relationship between the nonagricultural goods-producing employment, namely, mining, construction and manufacturing, and services-producing employment differed sharply in the two recovery periods--1975 to 1979 and 1982 to 1987 and, indeed, to projected 1990 (as shown in the lower half of Figure 2.2). During the 1975-79 recovery period, Minnesota industries, even more so than US industries, benefited from a foreign-trade boom. However, the sharp decline in US foreign trade in the post-1982 recovery period impacted adversely upon the export-oriented goods-producing industries, which resulted in a reversal of the two growth rates for both Minnesota and US industries. In the post-1982 period, however, the growth in US services-producing industries exceeded the growth in Minnesota service-producing industries, despite the lesser growth of the U.S. goods-producing industries--again, a reversal of the 1975-79 industry growth patterns.

Sources of employment change in Minnesota are identified under four categories in Figue 2.3 as a way of differentiating national and regional factors affecting industry performance over the business cycle. Relative change refers to the Minnesota industry-specific employment growth relative to US total industry employment as represented by the national-growth effect. The industry-mix effect refers to individual US industry growth relative to overall growth while regional-share effect refers to the individual MN industry growth relative to corresponding US industry US growth. The sum of the three effects--national growth, industry mix, and regional--equals total employment change in a specific Minnesota industry. In the 1983-84 period, for example, total employment in the commodity-producing increased by 32.4 thousand, which was attributed to employment change sources as follows:

Figure 2.3

Most of Minnesota industry growth since the 1975 recession trough is attributed to overall U.S. economic growth as represented by national growth effect. Recession periods are marked by sharp reductions in total employment in goods-producing industry because of an adverse industry-mix effect, while above-average growth in individual industries is attributed to a regional-share effect. Goods-producing industries more so than services-producing industries in Minnesota have benefited from a positive regional-share effect.



Change Source	Employment Change	
	Total (thousand)	Proportion of total (percent)
National growth effect	20.3	63
Industry mix effect	5.8	18
Regional share effect	6.3	19
Relative change	6.3	37
Total change	32.4	100

The national growth effect thus accounted for 20.3 thousand of the 32.4 thousand net employment increase in the 1983-84 period, which was 63 percent of total employment change. Most of Minnesota's economic growth and well-being is closely linked to growth and well-being of the US economy.

In contrast to periods of economic recovery, recession periods are marked by an overriding negative influence on Minnesota industry employment due to the industry mix effect on Minnesota goods-producing manufacturing industry. This results from disproportionately high share of cyclically-sensitive and export trade-dependent industries in Minnesota. Services producing industries, on the other hand, demonstrate above-average growth in recession periods. Since the 1975-76 recovery period, the industry-mix effect has been generally positive for Minnesota services-producing industries, while the regional share effect has been generally negative.

The regional-share effect serves as a rough measure of the competitive position of individual regional industries in the US economy. The generally negative regional-share effect for Minnesota services-producing industries appears to imply that Minnesota services-producing industries have lagged US services-producing industries in economic growth. Complicating this picture is the additional fact that the regional-share effect has been generally positive for Minnesota goods-producing industries. Thus, conversely, the positive regional-share effect appears to imply that Minnesota's goods-producing are leading US goods-producing industries in employment growth.

The growing strength of Minnesota goods-producing industries in the US economy is demonstrated, also, by employment share and excess employment trends. Employment share refers to the proportion of total US employment in a particular industry that is accounted for by the Minnesota industry. An above-average ratio (that is, above the overall industry employment share) denotes an industry with excess employment, that is, employment in excess of the US industry employment share of total industry employment. Trends in these two ratios for Minnesota durable manufacturing industries are presented in Figure 2.4 for the 1972-1987 period.

The four durable goods manufacturing industries account for much of Minnesota's economic growth since 1972 as well as much of its economic hardships of the mid 1980s. Employment shares in the four industries have increased in most years since 1972, as shown in Part A of Figure 2.4. Excess employment in each industry also increased, as shown in Part B of Figure 2.4.

Selected employment share percentages for the four durable goods manufacturing industries are as follows:

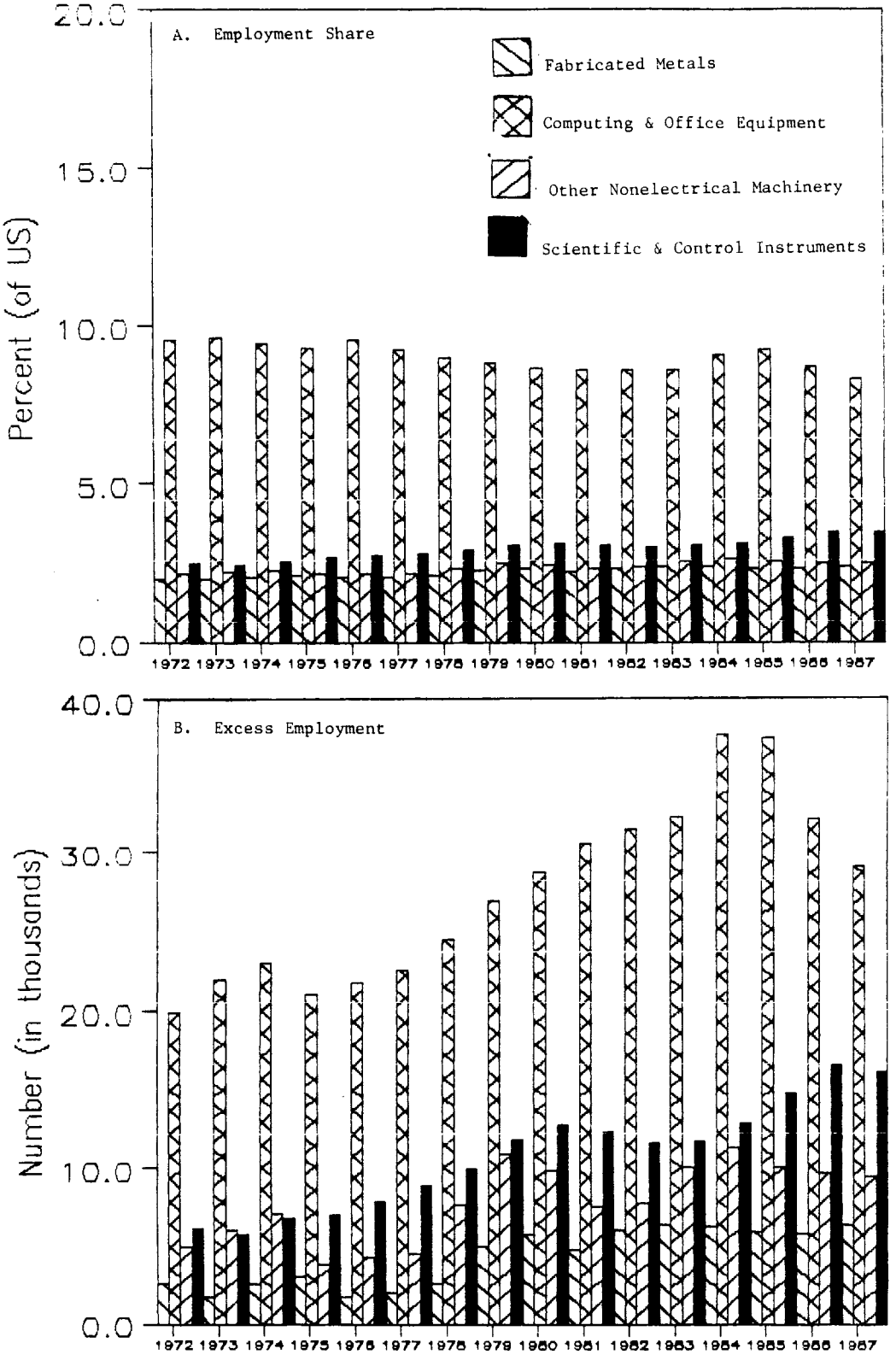
Industry	1972	1980	1982	1984	1986
			(percent)		
Fabricated metals	2.0	2.3	2.3	2.4	2.3
Computing and office machines	9.5	8.6	8.6	9.1	8.7
Other nonelectrical machinery	2.1	2.4	2.4	2.6	2.5
Scientific & controlling instruments	2.5	3.1	3.0	3.1	3.5

Excess employment estimates are presented for comparison with the employment share percentages as follows:

Industry	1972	1980	1982	1984	1986
			(1000)		
Fabricated metals	2.6	5.7	6.0	6.3	5.9
Computing and office machines	19.9	28.7	31.5	37.7	32.1
Other nonelectrical machinery	5.0	9.7	7.8	11.2	9.6
Scientific & controlling instrruments	6.2	12.7	11.6	12.8	16.6
Subtotal	33.7	56.8	56.9	68.0	64.2
Other industry	126.4	127.9	127.9	123.9	123.1
All excess employment	160.1	184.7	184.8	191.9	187.3

Figure 2.4

Four durable goods manufacturing industries--fabricated metals, computing and office equipment, other nonelectrical machinery, and scientific and controlling instruments--account for much of Minnesota's economic growth in the 1970's and 1980's. In recent years each industry has experienced above-average growth as shown by an increasing employment share ratio and increasing excess employment--two measures that compare Minnesota industry growth with the corresponding U.S. industry growth.



Excess employment numbers (in thousands of jobs) increased as individual industry employment share precentages increased over the 1972-86 period. Moreover, the excess employment for the four durable goods manufacturing industries increased as a percentage of all industry excess employment for three of the four periods. Because of the above-average importance of the four cyclically-sensitive and trade-dependent industries, the foreign trade "bust" of the mid-1980s impacted more severely on the Minnesota economy than on the US economy as a whole.

Domestic market expansion for the goods-producing industries has lagged behind productivity increases which has lead to reduced growth in industry labor requirements. Growth of foreign export markets counters this trend and enhances the growth-generating role of a region's its exporting-producing industries because of its multiplier relationship with the total regional economy. A strictly goods-producing economic base for a region nonetheless contributes to the region's vulnerability to the consequences of unanticipated external shocks, as experienced, for example, by Minnesota manufacturing industries during the foreign trade "boom" of the 1970s and the subsequent foreign trade bust of the 1980s. Industry diversification serves to reduce this vulnerability by expanding the market options available to a region's industries.

Economic Enviroment for Goal Attainment

Economic conditions affecting the attainment of community and individual goals are highlighted by comparision of Minnesota and U.S. income and population, as well as employment, trends. Of key importance in these comparisons is the contribution of high rates of labor force participation to overall economic well-being as measured by per capita income. Job growth has

outpaced population growth in much, if not all, of the post-World War II period in large measure as a result of increased labor force participation, particularly female.

Because of rapid increases in labor force participation, Minnesota per capita income grew from 98 percent of the U.S. average in 1969 to 102 percent of the U.S. average in 1983, with the percentage rising in recovery and declining in recession. During this same period, Minnesota's share of total personal income remained at slightly more than 1.8 percent, while Minnesota population, as a share of U.S. population, dropped from nearly 1.9 percent to less than 1.8 percent.

Both total employment and total earnings also increased relative to U.S. levels. However, earnings per worker declined slightly from 99 percent to 95 percent of the U.S. average. Minnesota's long-term industry projections to 2000 show a reversal of these negative trends in the population and employment shares.

In summary, the single most important variable accounting for the above-average rate of growth in Minnesota per capita income is its above-average labor force participation rate. This is coupled with below-average growth in population. The labor force participation rate increased from 42.8 percent to 50 percent, growing from 102.5 percent to approximately 110 percent of the U.S. rate. However, the high growth rate is unlikely to be sustained for long simply because of its demographic limits, namely, the proportion of the total population that can enter the labor force. For this reason, the projected levels of population and employment which are based on the 1969-79 trends are likely too high, along with the projections of real earnings per worker.

Growth in earnings per worker--an important contributer to the increase in

per capita income in the 1972-84 period--has its own demographic, economic and technological constraints. The declining birth rate of 1960 and 1970 was instrumental in reducing the number of new entrants into the work force, which thus reduced the experience level of the existing workforce. Whether or not the higher education levels of new entrants compensates for the reduced experience levels remains an unanswered question in relation to future productivity improvements.

Goals and Threats

Given the demographic, economic and technological factors affecting regional economic growth and change in Minnesota and the U.S., the setting of strategic goals becomes an important step in the deployment of state and regional resources for economic growth and development through education. Goal-defining efforts already underway through Spring Hill Center, Wellspring, Minnesota High Technology Council and other organizations and their sponsored conferences and work sessions have succeeded in devising and differentiating some long-term perspectives on Minnesota's economic growth and development, including goals like the following:

1. Building a strong and healthy economy with a productive workforce that is a significant factor in maintaining the state's competitive edge in world markets, especially at a time when both the state and the nation are facing increasingly severe competition in these markets.

2. Enhancing the ability of each person to acquire the skills and competencies for becoming effective, contributing members of the nation's workforce, especially in occupations that are critical to industry growth and economic development in Minnesota and the U.S.

3. Strengthening state and local leadership in solving problems of lagging economic growth and recognizing new opportunities for improving personal and community well-being as a result of changes in the marketplace and the workplace.

4. Facilitating the sharing of knowledge through interaction of individuals and groups concerned about education and its linkage to economic growth as articulated an action-research agenda based upon the economic needs and opportunities identified in the different

regions of the state.

5. Improving the statistical bases for measuring the contribution of education to state and regional growth and vitality and for monitoring changes in the educational environment that affect the performance of education providers and their clientele.

Each of the first four goals relates, at least in part, to perceived roles of post-secondary education in relation to state and regional economic issues. The fifth goal addresses concerns about the correspondence between perception and reality and the increasing pressures to validate public expenditure proposals with strong and convincing evidence of their net benefits to Minnesotans. Wide and active discussion of these goals and the means to attain them has become, indeed, an important part of the development of a meaningful and effective action-research agenda for education and the economy.

One readily identified threat to goal attainment is the imminent job displacement that Minnesotans face because of industry restructuring. For many seeking new employment, the job openings, if any, are low-paying and part-time. Also, on-the-job productivity is oftentimes low because of a lack of investment in human and physical resources, specifically, in employee and managerial training, particularly outside the Metropoitan Region.

In addition to technological restructuring, the farming and manufacturing industries have been targets of policy actions that have led to high fiscal and trade deficits in the U.S., high dollar values in foreign exchange, reduced exports, and reduced domestic sales. These events have had different consequences for the each sector of the Minnesota economy. One consequence has been the growing fiscal gap between the urban and non-urban sectors as indicated by increasing rural-urban income disparities. They are most evident when comparing total personal income levels in the seven-county metropolitan region with the outstate rural areas, as shown in Table 2.1.

In recent months, because of the declining dollar and productivity-improving industry restructuring, a turnaround in the mid 1980s trends has occurred in Minnesota export-producing industries. Almost half the employment increase in Minnesota manufacturing industries since 1985, for example, has occurred in Greater Minnesota.

In summary, the economic indicators presented earlier for the state as a whole, when differentiated by major economic region, show a large and growing divergence in economic well-being and prosperity between the seven-county Minneapolis-St. Paul Metropolitan Region and Greater Minnesota--the 80 Minnesota counties lying beyond the Metropolitan Region--at least for the 1980-85 period. While, the first of the economic indicators--per capita income--shows considerable stability, the differential is very large--approximately 35 percent of the Minnesota average. Only recently has growth in manufacturing employment offered new employment opportunities that at last momentarily would reduce this income differential.

Most ominous in the trends between the two Minnesotas has not been the year-to-year changes in the already large differential in per capita income, but the declining rates of labor force participation. The rate of new job creation, the single most important variable affecting labor force participation and per capita income growth, had been declining in Greater Minnesota while continuing to increase in the Minneapolis-St. Paul Metropolitan Region. The root causes of this differential have been the high trade deficits that are linked to the high fiscal deficits of the U.S. economy and, also, the lower rates of investment per worker outside the seven-county Metropolitan Region. The latter accounts for much of the lower earnings per worker, industry after industry, that characterizes the indigeneous Greater Minnesota economy.

Table 2.1

Minnesota economic indicators show growing disparities between the Minneapolis-St. Paul Metropolitan Region and the rest of Minnesota during the 1980-85 period even though the Metropolitan Region and Minnesota statewide are gaining on the U.S. in income and employment.

Year	Per Capita Income		Personal Income		Population		Employment		Earnings	
	Average (dol.)	Proportion MN or U.S. (pct.)	Total (Mil$)	Proportion MN or U.S. (pct.)	Total (Thou.)	Proportion MN or U.S. (pct.)	Total (Thou.)	Proportion MN or U.S. (pct.)	Total (Thou.)	Proportion MN or U.S. (pct.)
Minneapolis-St. Paul Region:										
1972	5245	118.3	9894	57.7	1886.4	48.8	941.6	53.7	8419	61.3
1980	11353	117.5	22583	57.2	1989.1	48.7	1216.3	55.3	19179	63.3
1982	13245	117.8	26982	58.0	2037.1	49.3	1196.1	55.6	22055	65.3
1984	15490	117.2	32088	58.4	2071.5	49.8	1290.9	56.4	26717	65.7
1990	18993	119.5	41967	60.7	2209.6	50.6	1538.5	60.0	35186	68.0
2000	22529	121.5	53072	61.8	2355.8	57.2	1799.5	61.2	45286	69.1
Rest of Minnesota:										
1972	3661	82.6	7251	42.3	1980.5	51.2	810.4	46.3	5321	38.7
1980	8055	83.4	16862	42.8	2093.5	51.3	984.2	44.7	11134	36.7
1983	9309	82.8	19508	42.0	2095.6	50.7	954.7	44.4	11732	34.7
1984	10954	82.9	22894	41.6	2098.1	50.2	996.9	43.6	13938	34.3
1990	12560	79.0	27146	39.3	2161.4	49.4	1023.8	40.0	16632	32.2
2000	14614	78.8	32803	38.2	2244.6	48.8	1142.4	38.8	20251	30.9
Minnesota (relative to U.S.):										
1972	4434	98.2	17145	1.81	3866.9	1.85	1752.0	1.89	13741	1.84
1980	9662	101.8	39449	1.83	4082.6	1.80	2200.5	1.98	30313	1.90
1982	11243	101.2	46490	1.80	4132.7	1.78	2150.8	1.92	33787	1.88
1984	13212	103.4	54983	1.82	4161.6	1.76	2287.8	1.93	40655	1.85
1990	15898	102.7	69113	1.80	4371.0	1.75	2562.3	1.94	51731	1.80
2000	18549	101.9	85875	1.75	4600.4	1.72	2941.8	1.97	65537	1.84

The lower rates of investment per worker correlate with a predominance of small businesses with less than 50 employees. Most of these businesses face virtually insurmountable difficulty in acquiring essential expansion capital.

Finally, the shift to services imposes new threats to sustained real income growth in both metropolitan and rural areas. The service industries are low paying for some, high cost for others, depending on one's role as a worker or a consumer. They are low paying because of low productivity and/or gender discrimination. They are high cost because of the lack of import competition via import substitutes, as in manufacturing, and because of demographics, as represented by the declining numbers of new entrants into the workforce who previously would have been hired in the service industries.

Constraints and Opportunities

Minnesota communities and their residents face specific constraints in adapting to industry restructuring. They may lack access to large population centers and high order business and professional services or they may lack access to financial resources for productivity-increasing investment in new plant and equipment. State and local governments, particularly, face increasingly severe fiscal constraints as local residents move to other areas in search of economic opportunities and local businesses cease operations because of high operating costs or reduced access to out-of-state export markets.

Transportation from production site to market also has undergone significant technological advance along with the development of new types of products marketed on a world-scale. On the one hand, business activity can readily shift from high-rent to low-rent sites usually in rural areas within the state. For new product development, however, ready access to critical resources, including market and product information is essential.

For some Minnesotans, the changing economy offers new market, production, employment and income-earning opportunities that take advantage of the state's exceptional resources. These include:

1. Human resources--a well-educated and highly productive workforce makes possible rapid shifts of production capabilities into new market opportunities for Minnesota businesses.

2. Metropolitan-industrial infrastructure--well-developed and well-located systems of institutions of higher learning, high finance and high technology for easy access by established and new entrepreneures in Minnesota.

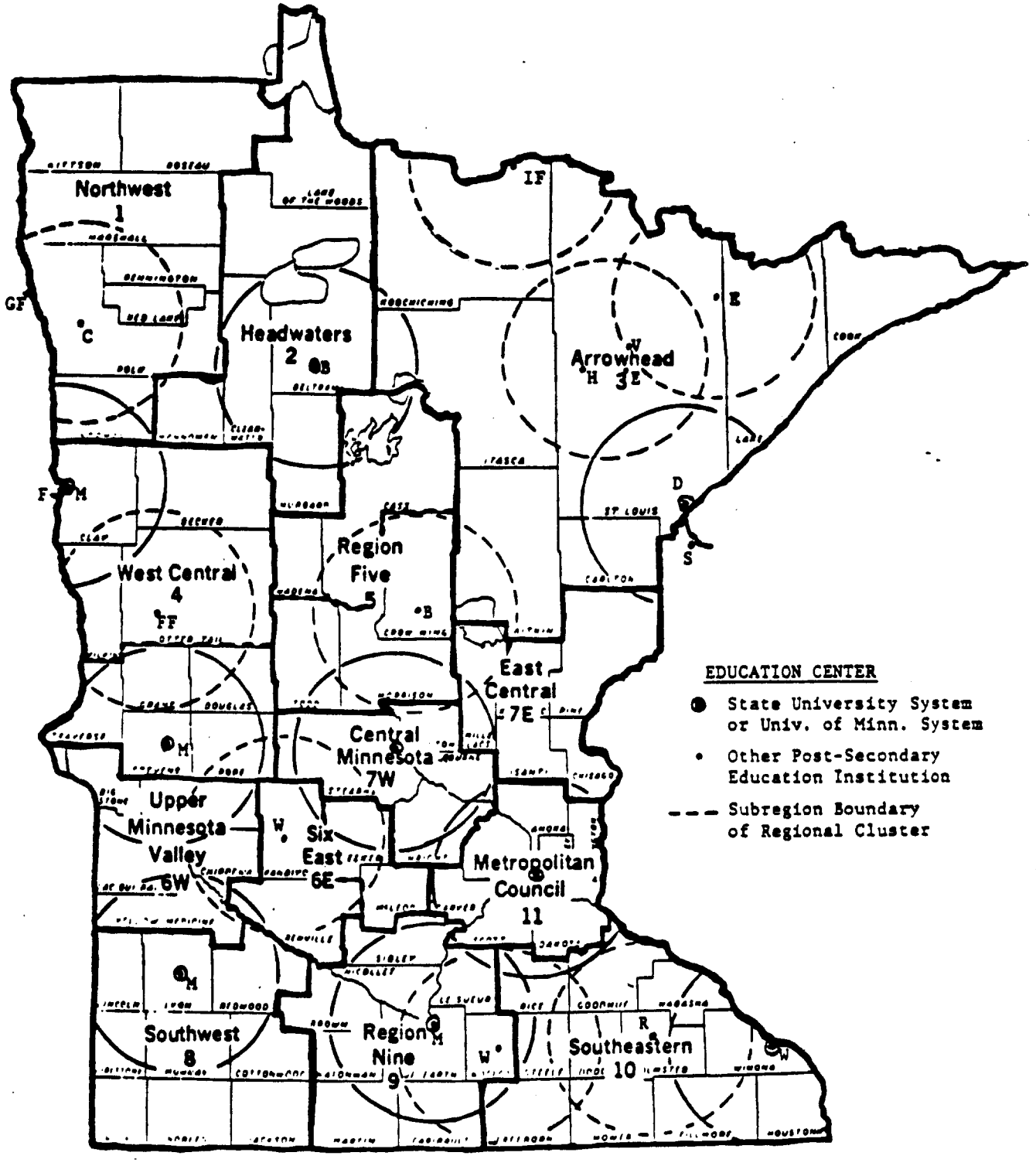
3. Natural environment--scenic amenities and recreational facilities in every region of the state that support tourism and special opportunities for Minnesota businesses.

4. Educational institutions--outstanding private and public educational resources and long-established popular commitment to the generous support of the full gamut of post-secondary education in every region of the state.

While Minnesota's exceptional resources are available to take advantage of new opportunities in every sector of the state's economy, they may not be equally accessible in every region of the state. Post-secondary education institutions, as shown in Figure 2.5, are located in every region of the state. However, specialized educational and research resources are less acesssible. They are concentrated in the Metropolitan Region, which adds to the already-abundant, but technologically and economically essential, urban-industrial infrastructure. Yet, lagging economic growth and growing divergence between "rich" and "poor" within both the Metropolitan Region and Greater Minnesota is an increasingly intractable problem facing Minnesotans in years to come. A key challenge facing Minnesotans of the 21st century is the forging of new linkages between the Metropolitan Region and Greater Minnesota for sharing the benefits of a new economic order that implictly favor large, growing urban-industrial complexes with an expanding capacity for synergistic, self-sustaining growth in jobs, income, and consumption opportunities.

Figure 2.5

Most Minnesota residents live within 35 miles of a public post-secondary education institution.



Institutional Perspectives

Several institutions (other than post-secondary education) with responsibility for producing and delivering educational services in Minnesota differ in their functions and also their territorial jurisdictions. Institutions with local jurisdictions include school boards, provider agencies, and administrative support systems. Regional jurisdictions in Minnesota are served by advisory councils and committees for the most part, with some providing facilities for education and training. Some of these institutions have funding authorities and some do not. They may provide research and evaluation services for both the local and state institutions and they may advise local leaders of the needs of their communities. Some of the regional institutions provide program implementation, serving as a linkage for the service provider, the government funding agency, and the local business community.

Representatives of twelve education and/or economic development organizations were interviewed in the preparation of this chapter. The purpose of the interviews was to determine the nature of the research and analysis already completed and to relate this information to specific educational needs in the five economic regions of the state.

The Minnesota Jobs Skills Partnership is modeled after a Massachusettes program to provide retraining and education for displaced workers or workers whose jobs are likely to become obsolete. It is specifically designed to meet the needs of an existing employer for skilled labor. The Partnership builds strong relationships between industry and education by anticipating potential problems before they become barriers to effective action. Staff work closely with the business community and educators to develop grant applications describing the programs and employment opportunities they plan to create.

The Minnesota Jobs Skills Partnership Board is funded by the state legislature and operates under a sunset provision. The Board sets resource priorities and promotes joint financing of programs by educators and employers. So far in the program's history the employers have provided more than half of total costs.

The Minnesota Jobs Skills Partnership Board acts as a catylist, enhancing the self-direction of industries who wish to train new or current employees. Consultations with providers and the sharing of program results among applicants are major tasks which strengthen the Minnesota Job Skills Partnership. The program is designed to intercept problems before they develop into major barriers. Process and content are emphasized as components of the knowledge base produced from the planning and the provision of program services.

Program goals are to establish a network of businesses, educators, and funding sources to enable schools and businesses to structure their own services independently.

The Minnesota Department of Jobs and Training engages in research sponsored by the U.S. Bureau of Labor Statistics. It conducts studies of labor supply of and demand for specific occupations in regional labor markets.

The studies of the Department of Jobs and Training are used by the Job Service, Unemployment Compensation, Vocational Rehabilitation, Private Industry Councils, and the Vocational Education Board. Each year the research staff selects a topic for a comprehensive study, and this effort is made public to promote better understanding of economic change and its effects upon industry staffing patterns.

The Department of Jobs and Training provides coordination among federal, state, regional, and local agencies. In addition to its research function, it

provides support services for the research activities of its client agencies. Use of statistical analyses and data systems management is another focal areas of the Department of Jobs and Training, and the interaction of government and private institutions is often centered on the research of this agency.

The Department of Jobs and Training has among its goals, the provision of training services for skilled jobs.

The Minnesota High Technology Council is an interface between the education providers and the state legislature, through its research and making proposals for funding of program innovations.

The Council studies the effects of technology on the workplace and reports to the state legislature. It uses its staff and research capabilities for the enhancement of educational systems throughout the state.

The Council seeks to inform the legislature of program effectiveness in meeting the needs of the state and individuals in improving resource productivity. The Council stresses the need for education that provides career skills in work environments where accelerated change is the norm. The concern that young people will enter a world for which they do not have the skills to cope economically, politically, and socially is addressed as a high priority of the Council. In this regard, a continuing review of rural education is viewed as necessary to ensure provision of the prerequisites for college and technical skills.

The principal products of the Council are its research reports and recommendations to the state legislature on the furtherance of the high technology industries in Minnesota.

Continued research and oversight of the education system in Minnesota is a purpose of this organization. The emphasis of the High Technology Council is on the need for professional and technical training at all levels of education

to prepare workers for the occupations that will emerge as technological change is implemented in Minnesota.

The Metropolitan Council undertook the Metropolitan Directions Project to help design and focus on long range planning needs for the seven county region. It encompasses demographic, economic, education, and development trends that will effect the region. The project began in January, 1985, and was completed in July, 1986, at a cost of $99,700.

The research, analyses, and packaging of the Metropolitan Directions Project resulted in a decision agenda for the 1986 Council. The discussions were intended to help develop proposals for the State Legislature pertaining to the governance of the Twin Cities Metropolitan Region.

The published papers and discussions of regional trends help the Council formulate its long range planning strategies to address development, governance economic growth issues, and other service needs.

Project goals were to evaluate the needs of the region for specific services in view of the trends that will effect industries and occupations. The broadness of the study and its futuristic framework call for conceptual discussions and debate to give perspective to program planning.

The Minnesota Council on Bio-Technology developed a strategy to capture a significant share of the international bio-technology market. Agriculture, mining, forestry, medicine, and manufacturing will undergo changes in their production processes as a result of technological inventions. These changes will create new jobs and cause others to become obsolete. The council seeks to inform concerned interests in Minnesota of the innovations taking place.

The Task Force on bio-technology was appointed by the governor in 1984. Its 10-year plan emphasizes industry incentives, work force needs, environment strategy, and public relations options to encourage applications of

bio-technology in Minnesota industries.

Council staff evaluate the policy issues related to applications of bio-technology in agriculture, mining, forestry, medical, and manufacturing industries.

The Citizens' League most recently focused its efforts on the vocational education programs and their effectiveness in adapting to the needs of a changing economy, among other activities. In the 1983 to 1986 period, it was expending nearly one fourth of total staff and other resources.

Interviews, seminars, meetings, newsletters, published reports, and committees are the major tasks of the League's staff which functions to provide oversight for local government in Minnesota.

Research and public education to broaden the perspectives of officials and citizens are the League's major product.

The mission of the Citizens' League pertaining to the role of education in the economy is to encourage debate and recommend policy changes.

Advocacy for education programs designed to inform students about the international economy is the major thrust of the Minnesota Business Partnership. Its detailed plan for the restructuring of K-12 education emphasized the need for communication and reasoning skills.

The resources of the Minnesota Business Partnership are derived from member dues. They are expended on research, public relations, lobbying activity, and recommendations for programs. The Partnership focuses its resources on a small number of key issues.

Communications, including group and individual lobbying, survey research, consultations, and media relations, are used to promote the goals of the Partnership.

The reform of education programs to achieve a fuller realization of the

potential of young people and to enhance Minnesota's contribution to the national education reform movement are the major products of the Partnership.

To inform legislators and implement programs to ensure the highest quality education services possible are the Partnership's major goals pertaining to education.

The Minnesota Department of Trade and Development (DTD) has three major activities related to education and economic development. They are the agency's annual report to the Governor, a Task Force composed of 12 representatives from state agencies, and the Governor's Council of Science and Technology.

The resources of the Department are directed to the study of how state government intervention can help strengthen regional economies.

The Department publishes reports and conducts meetings, seminars, interviews, and other communications for the Governor's office and other clients.

The Strive Toward Effective Performance (STEP) Program is an informal group joining the University and state government in a combined effort to improve the use of data and analysis in the decision-making and planning process.

The program has no independent resources or budget. It operates coincidentally with other programs.

One STEP activity is a collaborative effort among six state agencies to monitor critical economic developments in Minnesota and its regions. The findings are presented at an annual conference of econmic and policy analysts.

The product of this collaborative effort is a report to the Governor with its major goal being to improve the effectiveness of state government.

Minnesota Wellspring is concerned about adult training and literacy,

emphasizing the use of technology in the classroom. A second priority is the evaluation and disemination of new ideas about ways to accommodate the changing economy.

Task forces and volunteer study groups comprise the major resource of Minnesota Wellspring. Altogether the staff provides an oversight function with a different perspective than government or the private sector.

The studies done by Wellspring focus on services, investment, programs, policy, and planning, emphasizing resource management.

In addition to published reports, Wellspring activities encourage thoughtful discussion and consideration of resource management, governance and program effectiveness.

Its primary goal is to provide oversight to enhance communication and improve educational system performance.

The Center for Urban and Regional Affairs, along with the Education Department of the University of Minnesota, conducted the Future of Public Education in Minnesota Project. The project is limited to K-12 public schools in Minnesota.

The University of Minnesota Panel on the Future of Public Education in Minnesota was established to develop findings and policy recommendations that reflect an interdisciplinary and integrated investigation.

The project staff prepared a critique of the school reform proposals and their applicability in various Minnesota settings.

The two-phase study consisted of a description of Minnesota student performance and a description and analysis of changing patterns of cost for Minnesota public education.

The goal of the project was the documentation of the debate, citizen opinion, consultant findings, and summary version of the issue of education

reform in Minnesota.

Finally, the Greater Minnesota Corporation was established in 1987 by Minnesota State Legislature to promote long-term economic growth in the State and its substate regions. "Together with post-secondary institutions, regional research centers and business organizations," as stated in a report to the Governor and the Minnesota Legislature, dated November 13, 1987, "the Greater Minnesota Corporation will make investments in targeted research and development activities. It will link the applied research activities at leading colleges and universities throughout the state with entrepreneurs and investors whose knowledge and skills will transform the results of research into marketable products." In intent, at least, this organization directly addresses the issue of the linkage between post-secondary education and economic growth with reference, particularly, to applied research.

In summary, many of the education-related organizations offer opportunities for demonstrating the importance of the relationship of education to economic growth and, also, for challenging all education institutions to carefully document the individual and community benefits resulting from their efforts.

While the costs of education per student are increasing more rapidly than Gross National Product, education expenditures per capita are not. The apparant declining demand for education, at least for some forms of post-graduation education, may have been attributed, in part, to its declining value in the job market as well as the declining demand for teachers in advanced degree-granting education institutions. The high cost of education may be attributed, in turn, to lack of significant improvements in educational productivity. The lack of productivity improvements that can contain the cost inflation in education is, therefore, of growing concern to those viewing

education as a key factor in improving a nation's economic performance. Much of productivity improvement in education depends on the perceived threats to its management and organization and the pressures to innovate and change in order to successfully meet the new chllenges it now faces.