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# Staff Papers Series

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June 1980

FISCAL EFFECTS OF MINERAL-RELATED INDUSTRY

IN MINNESOTA

Wilbur R. Maki

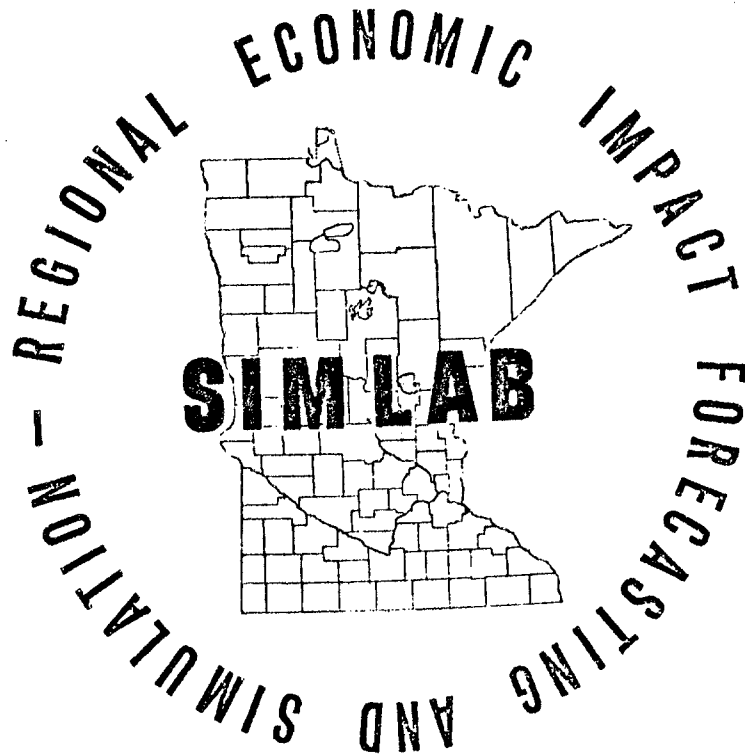


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FISCAL EFFECTS OF MINERAL-RELATED INDUSTRY  
IN MINNESOTA

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Abstract

Ten mineral-related industries in Minnesota are identified in this report and their economic importance is measured in terms of industry sales, jobs and income originating in the industries and received by various economic units. Less than 50 thousand of the 1.9 million jobs in Minnesota were found in the 10 industries in 1977, but they accounted for \$118 million of the \$3.3 billion in total tax revenues in the 1975-76 fiscal year. Estimates and forecasts of the fiscal effects of mineral-related industry development in Minnesota are presented for the 1970-2000 period.

# FISCAL EFFECTS OF MINERAL-RELATED INDUSTRY IN MINNESOTA <sup>1/</sup>

Wilbur R. Maki

While the mineral-related industry in Minnesota accounts for only two to three percent of total employment and payroll in Minnesota, it contributes a substantially larger share of the state's tax revenues. Its long-term impact on the state's economy also is much larger than indicated by its employment or payroll share.

Location of Minnesota mineral resources is shown in Figure 1.1. The iron ore deposits, for example, are concentrated in Northeast Minnesota on the Mesabi Iron Range and the Cuyuna Iron Range (where manganese ores are mined, also). Natural abrasives are mined in the southwest corner of the state. Granite, clay and limestone are more widespread than either ferrous ores and natural abrasives. Finally, the petroleum refining and the liquified natural gas terminals are located in the Duluth and Minneapolis-St. Paul areas. Crude petroleum and petroleum product lines focus on these centers, also.

## Introduction

In this study, the mineral-related industry includes all or part of the 10 industry groups listed in Table 1.1. By far, the largest in employment, payroll, value added (or gross regional product originating), and overall economic and fiscal impact on the state's economy is the iron mining industry. Of the 1.9 million employed persons in Minnesota in 1977, about 40,000 worked in the mineral-related industries (as defined in Table 1.1).

When the Minnesota mineral-related industries (excluding electric and gas utilities) are compared with all other industry, the lagging employment growth in these industries is evident, as shown below:

	<u>1970</u>	<u>1977</u>	<u>Change</u>
	(thou.)	(thou.)	1970-77
			(pct.)
Mineral-Related	38.0	40.4	6.0
Other Industry	1,562.0	1,862.9	19.3
All Industry	1,600.0	1,903.3	19.0

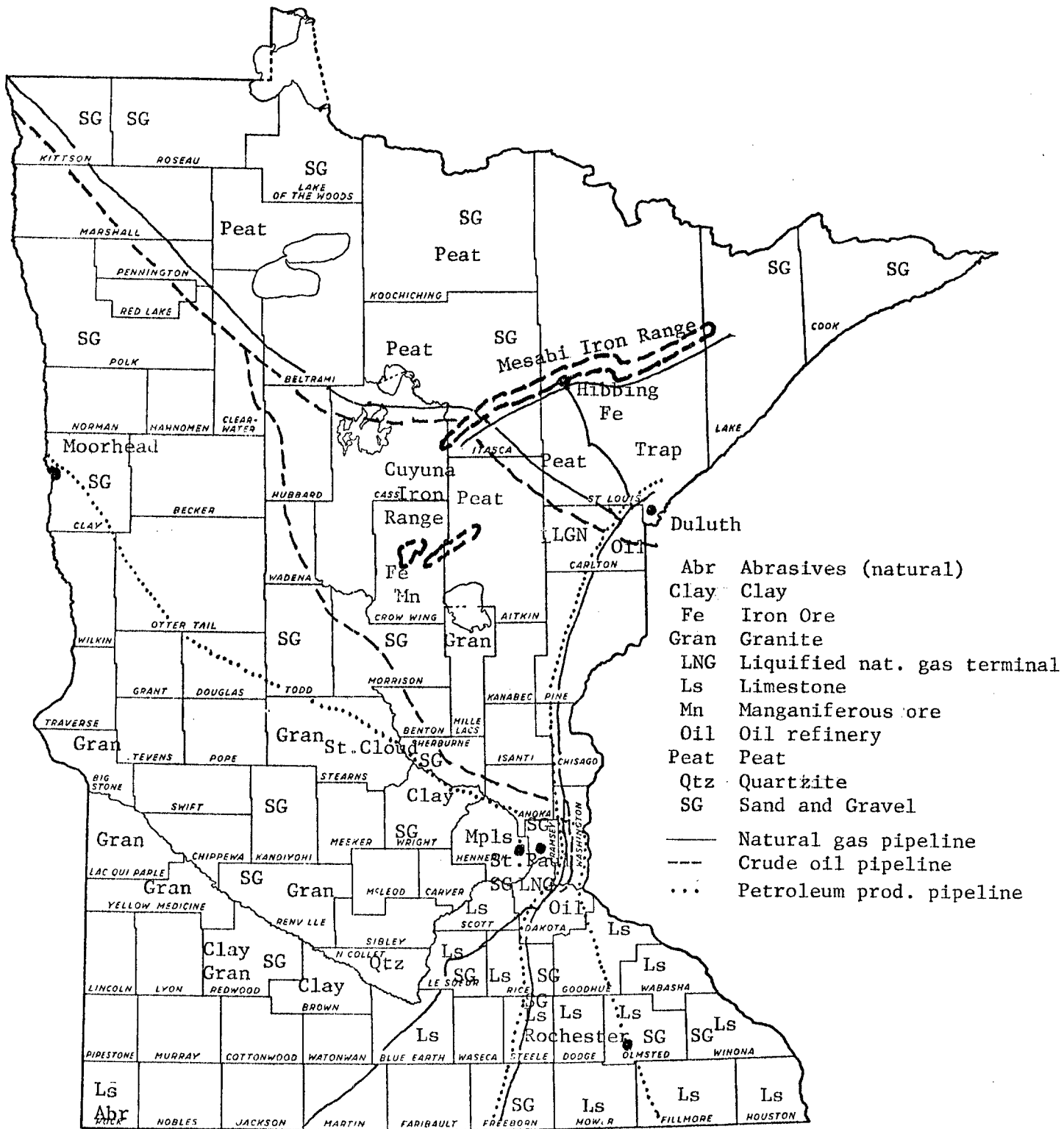
Employment growth in the rest of the economy during the 1970-77 period was nearly three times the growth rate in the mineral-related industries.

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<sup>1/</sup> Fiscal effects are represented by changes in state and local government tax revenues acquired from the 10-mineral related industries in Minnesota for the 1970-71 and 1975-76 fiscal years. Anticipated future tax revenues from the taconite industry in Northeast Minnesota are projected for the 10-year period, 1980-1989.

Figure 2.1

Location of Mineral Resources and Related Facilities in Minnesota



Source: U.S. Department of the Interior, Bureau of Mines; and Minnesota Department of Natural Resources,

Table 1.1

Minnesota Mineral Industry  
Share of Total Industry Employment <sup>1/</sup>

Industry No.	Title	Total Employment	
		1970	1977
		(percent)	
	Mineral-Related Industry <sup>2/</sup>	2.31	2.12
4.	Iron & Ferrous	0.82	0.73
5.	Non-ferrous Metal	0.01	0.03
7.	Stone & Clay	0.14	0.09
	a. Limestone	(0.03)	(0.02)
	b. Sand & gravel	(0.08)	(0.05)
	c. Dimension stone	(0.01)	(n.a.)
20.	Petroleum & Related	0.13	0.09
	a. Refining	(0.07)	(0.05)
	b. Paving & roofing materials	(n.a.)	(0.03)
22.	Stone, Clay & Glass	0.50	0.48
	a. Glass & glassware	(n.a.)	(0.06)
	b. Structural clay products	(0.01)	(0.01)
	c. Concrete, gypsum, plaster	(0.18)	(0.22)
	d. Readymix concrete	(0.05)	(0.08)
	e. Cut stone, stone prod.	(0.07)	(0.07)
	f. Abrasive products	(0.17)	(n.a.)
23.	Primary Iron	0.29	0.19
	a. Blast Furnaces, steel mills	(0.18)	(0.06)
	b. Iron & steel foundries	(0.10)	(0.10)
25.	Other Primary	0.13	0.13
	a. Metal heat treating	(n.a.)	(0.02)
	b. Aluminum castings	(0.08)	(n.a.)
34.	Transportation	0.20	0.39
	a. Pipeline	(n.a.)	(0.15)
40.	Electric Utilities	0.34	0.31
41.	Gas Utilities	0.27	0.24

<sup>1/</sup> Based on unpublished data from Minnesota Department of Economic Security and Minnesota Department of Economic Development, 1979.

<sup>2/</sup> Excluding electric and gas utilities.

A detailed industry breakdown of the 1977 total employed work force in Minnesota is presented in Table 1.2 for comparison of average earnings and output levels in the mineral-related industries and other industries in the state. Average earnings per worker were above the all industry average in every industry, except transportation (which includes transportation service workers as well as pipeline transportation). The high earnings per worker levels were accompanied by high gross output per worker. Value added is high, also, for the mineral-related industries. The high productivity per worker is achieved by a correspondingly large investment in productive plant and equipment.



Table 1.2

 Minnesota Industry Employment, Earnings, and Output  
 (in 1970 dollars), 1977. <sup>1/</sup>

Industry No. Title	Employ- ment (number)	Earnings		Gross Output	
		Total (thou.\$)	Per Worker (\$)	Total (thou.\$)	Per Worker (\$)
1. Livestock	64,586	380,750	5,895	2,473,376	38,294
2. Other Ag. Prod.	67,146	359,218	5,350	1,276,735	19,014
3. Ag. Serv., For., Fish.	4,259	31,721	7,448	58,276	13,683
4. Iron Ores	13,924	126,735	9,102	572,197	41,094
5. Other Metal Ore	550	5,032	9,149	42,111	78,565
6. Copper Ore	0	0	0	0	0
7. Non-Metal Mining	1,678	22,773	13,572	76,161	45,388
8. Construction	85,540	932,825	10,905	2,651,547	30,998
9. Ordnance	9,216	78,796	8,550	454,241	49,299
10. Food & Kindred, exc.	23,695	243,377	10,217	2,127,959	89,806
11. Meat Products	17,079	173,557	10,162	2,044,833	119,728
12. Grain Mill Prod.	4,108	59,769	14,549	710,062	172,849
13. Beverages	4,685	47,922	10,229	368,019	78,553
14. Apparel & Textiles	9,927	57,605	5,803	232,233	23,394
15. Logging	1,844	11,512	820	99,466	53,940
16. Wood Products	9,805	73,331	7,479	277,571	28,309
17. Paper Products	30,957	330,628	10,680	1,498,390	48,402
18. Printing, Publ.	29,886	294,881	9,867	805,731	26,960
19. Chemicals	6,323	61,901	9,790	527,783	83,470
20. Petroleum & Related	1,722	24,897	14,458	315,847	183,419
21. Rubber & Plastic	12,877	82,039	6,371	929,561	72,188
22. Stone, Clay, Glass	9,135	81,532	8,925	259,431	28,400
23. Primary Iron	3,528	30,583	8,669	179,525	50,886
24. Primary Copper	0	0	0	0	0
25. Other Prim. Metals	2,376	22,524	9,480	159,277	67,036
26. Metal Fabricating	33,509	285,592	8,523	791,374	23,618
27. Machinery	70,947	686,745	9,680	2,719,982	38,338
28. Electric Machinery	24,303	266,956	10,984	951,801	39,164
29. Motor Vehicles	6,428	61,049	9,497	492,622	76,635
30. Aircraft, Parts	643	5,630	8,756	30,870	32,457
31. Other Trans. Equip.	4,801	40,143	8,361	221,922	46,224
32. Instruments	16,925	187,270	11,065	399,343	23,595
33. Misc. Manufacturing	12,622	66,838	5,295	178,496	14,142
34. Trans. exc. Pipeline	7,458	43,781	5,870	84,415	11,319
35. Rail Transportation	15,927	186,212	11,692	519,541	32,620
36. Local Transportation	8,052	66,663	8,279	122,503	15,214
37. Trucking & Warehou.	24,608	247,713	10,066	441,456	17,940
38. Air Transportation	7,188	72,002	10,017	348,287	48,454
39. Communication	19,160	180,664	9,429	480,408	25,073
40. Electrical Util.	5,865	64,874	11,061	380,401	64,860
41. Gas Utilities	4,623	51,867	11,219	320,742	69,380
42. Water Utilities	3,484	36,612	10,509	286,348	82,189
43. Wholesale Trade	126,077	1,220,745	9,683	5,191,249	41,175
44. Retail Trade	344,412	1,770,575	5,141	4,565,136	13,255
45. Finance, Ins.	73,082	633,851	8,673	1,453,594	19,900
46. Real Estate	16,220	131,782	8,125	2,314,664	142,704
47. Hotels, Per. Serv.	42,000	184,335	4,389	489,656	11,658
48. Business Services	55,059	318,448	5,784	1,124,760	2-,428
49. Auto Repair	16,048	54,144	3,374	433,818	27,033
50. Amusements	19,342	80,491	4,161	155,457	8,037
51. Medical, Educa.	225,873	1,471,772	6,516	1,893,030	8,381
52. Federal Enterprise	16,777	155,340	9,259	230,784	13,756
53. State & Local Ent.	27,950	255,132	9,128	674,042	24,116
54. Other Industry	19,963	66,216	3,317	271,852	13,618
55. Public Admin.	239,963	1,706,199	7,110	5,126,352	21,363
Total or Average	1,903,274	14,133,676	7,426	50,825,248	26,704

<sup>1/</sup> Employment data from Minnesota Department of Employment Security and from Minnesota Department of Economic Development; earnings data from U.S. Department of Commerce, Regional Economic Information System and other sources; gross output data from SIMLAB.

### Mineral Industry Structure

The structure of the Minnesota mineral industry is represented by the industry distribution of gross output. Earnings are part of total value added by industry in the state. These data are prepared for 55 industries listed earlier for comparison with their base-year 1970 and target-year 2000 levels.

Because of the dominant position of the iron mining industry in the mineral-related industry cluster, its production and employment is presented first (Table 2.1). In 1970, this industry produced 56.1 million long tons of iron ore, or 62.5 percent of the U.S. total. It was valued at \$567 million. By 1978, production reached 58.4 million long tons with a value in excess of \$1.7 billion. Its U.S. share of production increased to 68 percent. Total production and employment thus remained near the 1970 levels. During this period to 1978, natural ores production was declining as taconite production increased. The natural ores shipped average 59 percent iron and the taconite pellets, 62 percent.

### Mineral Industry Activity

Exploration for copper, nickel, and uranium is primarily responsible for the nearly fourfold increase in "other metal ores" employment from 1970 to 1977. Uranium exploration in Minnesota accounts for a small part of the employment in this industry. Drilling has occurred through an aquifer called the Hinckley sandstone which supplies some of the deeper wells in the Minneapolis/St. Paul metropolitan area.

Sand and gravel production, which is included in "other mining", is cyclical because of its use in construction. Since 1970, interstate highway construction has slowed which has reduced demand. Also, crushed and broken stone is being substituted in some uses for sand gravel.

Employment by blast furnace and steel mill operation, included in the "primary iron" industry, has declined because of the closing of the U.S. steel plant at Duluth as already explained. This decline may be reversed in the event that the North Star Steel Company operation grows or a similar operation develops.

Other mineral-related industry includes the stone, clay, and glass industry group, which has such a large number of small establishments. In the case of abrasive products, Minnesota Mining and Manufacturing is clearly the most important firm. Because of its dominance, disclosure rules prevent dissemination of detailed information concerning the abrasives products industry. Although there are some establishments in the other primary metals sector, these operations are often part of iron foundry operations. Pipeline transportation employment may increase if new pipelines are extended into Minnesota from the South while minerals (i.e., energy)-related public utilities are likely to decline in total employment as output expansion lags behind worker productivity gains in future years.

Table 2.1

Iron Ores Production (in Thousands of Long Tons) and Value of  
Production, U.S. and Minnesota, 1970-1978.

Year	Iron Ore Production				Proportion of U.S. (pct.)	Value of Production in Minnesota	
	United States	Minnesota		Total		Per Ton	
	(thou. tons)	Taconite (thou. tons)	Natural Ores (thou. tons)	(thou. tons)		(mil. \$)	(\$)
1970	89.8	35.1	21.0	56.1	62.5	567	10.11
1971	80.8	33.8	17.5	51.3	63.5	547	10.67
1972	75.4	34.6	14.4	49.0	65.0	602	12.28
1973	87.7	42.0	18.0	60.0	68.4	785	13.09
1974	84.4	40.9	17.6	58.5	69.3	947	16.18
1975	78.9	40.9	10.3	51.2	64.9	982	19.18
1976	80.0	40.9	9.5	50.1	62.6	1,138	22.72
1977 (strike)	57.0	26.4	4.6	31.0	54.4	782	25.23
1978	85.9	52.2	6.2	58.4	68.0	1,718	29.42

Source: F.L. Klinger, U.S. Bureau of Mines, Washington, D.C., July, 1978; and Ronald C. Briggs, U.S. Bureau of Mines, Twin Cities Liaison Office, August, 1979.

## Mineral Industry Input Requirements and Output Disbursements

Input requirements are mineral industry purchases of supplies, materials and services. Output disbursements are mineral industry sales of products to industry located within the state, to households, to inventories, to markets outside the state (exports) and to government. Input requirements and output disbursements for 55 Minnesota industry groups are shown in the interindustry transactions table (which is available in the complete report cited earlier). Industry input requirements are represented by the column entries, while output disbursements are represented by the row entries in the transactions table. Ten mineral-related industries are included in the interindustry transactions tables, namely, iron and ferrous ores mining (No. 4), nonferrous metals mining (No. 5), stone and clay quarrying (No. 7), petroleum refining (No. 20), stone, clay and glass products manufacturing (No. 2), primary iron products manufacturing (No. 23), other primary products manufacturing (No. 25), electric services (No. 40), and gas services (No. 41). Pipeline transportation is part of the transportation industry (No. 34).

Procedures used to derive the input-output table are described in detail in the complete report. Briefly, the input-output tables for the United States for the years 1970 and 1967 were used as secondary data sources. This involves making the assumption that if a given industry is present in Minnesota, then it will use the same technology as its U.S. counterpart. This assumption is inappropriate in two cases if an input-output table dating from 1970 is to accurately represent inter-industry interactions in more recent years.

The iron ore industry still produced large quantities of natural ores in 1970, a process which was less energy intensive than taconite pellet production. For this reason, a detailed study of taconite industry input requirements was undertaken and the results were used to modify the 1970 input-output table so it reflected the technology of 1979. This was also done for copper ores mining and for copper smelting and refining so that input requirements for these potential industries reflect the technology needed to process the Minnesota copper-nickel ores.

### Iron Ores

The taconite industry is an intensive user of electric power and natural gas. Electricity is used for electromagnetic separation of iron-bearing materials from waste rock. Natural gas is extensively used to fire kilns which harden taconite pellets. Maintenance and repairs results in large purchases from the construction industry. There are also large purchases of machinery and transportation. Most of the transportation expenditure is for taconite pellet storage, docks, and harbor facilities needed for shipping pellets on the Great Lakes. There are also significant purchases from the petroleum industry and the primary iron and steel industry and from wholesalers. Petroleum purchases are primarily diesel fuel and lubricants for equipment. Primary iron purchases are chiefly grinding balls. Wholesalers sell many items not manufactured in Minnesota.

Purchases from these eight industry groups constituted 79 percent of taconite industry purchases from Minnesota suppliers, estimated to be \$125 million (1970 dollars). This amounts to approximately \$2.20 per ton of pellets produced. Wages and salaries paid to taconite workers amount to an additional \$2.15 per ton of pellets produced.

The taconite industry does not deliver pellets to markets within Minnesota. Thus, row entries are zero in the interindustry transactions table, except for the column entries for inventory change and exports. The taconite industry is Minnesota's eighth ranking exporting industry as represented by the dollar volume of sales outside the State. This industry accounts for approximately six percent of total sales.

#### Non-Ferrous Metal Ores

Currently, no non-ferrous metal ores are being extracted in Minnesota, except for exploratory purposes. Exploration for copper, nickel, uranium and other minerals is being conducted. This activity, classified as metal mining services, thus contributes some output and employment in the Minnesota economy. The dollar volume of activity is small, but growing.

#### Stone and Clay

The stone, clay and gravel (quarrying) industry makes significant purchases from itself and from stone, clay, glass manufacturing, machinery manufacturing, wholesale trade, real estate and rental, and business services industries. Industry purchases from itself represent transfers between individual producers. Purchases from the stone, clay, glass manufacturing industry are largely for abrasive cutting tools used in dressing stone. Machinery purchases are for materials handling equipment.

#### Petroleum Refining and Related Industry

The petroleum refining and related industry makes purchases primarily from stone and clay quarrying, construction, machinery manufacturing, paper and allied products manufacturing, chemicals and allied products manufacturing, stone, clay and glass manufacturing, motor freight transportation, electric service, gas service, wholesale trade, finance and insurance, real estate, and business services. Purchases from these 14 industries constitute 79 percent of purchases from all Minnesota industry.

Purchases from stone and clay quarrying are used to make paving mixtures. Paper and allied products and stone, clay, and glass products are used in manufacturing roofing materials. Fabricated metal manufacturing establishments furnish pipes, valves, and other products to refineries.

### Stone, Clay and Glass

The stone, clay and glass manufacturing industry is a heterogeneous group of a large number of establishments. Inputs are purchased from stone and clay quarrying and paper and allied products manufacturing (for packaging). Motor freight purchases are for delivery of raw materials. Electric and gas services industry purchases are primarily to operate machinery and for kilns. The total of these purchases is 34 percent of purchases from all Minnesota suppliers.

Industry output disbursements, as indicated by the entries in row 22, are entirely within the state. The construction industry receives 59 percent of the output disbursements.

### Primary Iron and Steel

The primary iron and steel manufacturing industry consists of a steel maker who melts scrap in an electric furnace; and of a number of gray iron foundries. Inputs are purchased primarily from the construction, other primary metals manufacturing, fabricated metals manufacturing, machinery manufacturing, electric machinery manufacturing, railroads, motor freight, electric service, gas service, wholesale trade, finance and insurance, business services, and other industry. Purchases from these 13 industry groups constitute 71 percent of industry purchases from Minnesota industry.

Purchases from the construction industry are for maintenance and repair. Purchases from other primary metals and fabricated metals manufacturing may be both scrap materials for the steelmaker and semi-finished goods for the foundries.

Industry output disbursements are to nearly every Minnesota industry, as indicated in row 23. Fabricated metals and machinery manufacturing receive 55 percent of total disbursements. No output disbursements are for export.

### Electric Utilities

The electric utilities industry makes significant purchases from construction, petroleum refining, railroads, motor freight, electric services, gas services, wholesale trade, finance and insurance, business services, federal government enterprise, and state and local government enterprise. Purchases from these 11 industry groups amount to 95 percent of industry purchases from Minnesota suppliers.

Industry purchases from construction are for facilities maintenance and repair. Purchases from petroleum refining are primarily fuels while railroads haul coal into Minnesota. Purchases from the electric utility industry represent intra-industry sales of electricity, a common practice. The gas utilities industry furnishes fuel.

Electric utility industry output disbursements are to nearly every industry and to households. Electric service is a residentiary industry. Iron ores mining and the retail trade industry are the two largest electric service users in the State. Together, they account for 18 percent of total electric service industry output. Heavy electric purchases by state and local government enterprise represent purchases by municipal utilities for resale to customers they service. Households purchase a total of 23 percent of electric output value.

### Gas Utilities

The gas utilities industry makes most of its purchases from stone and clay quarrying, construction, gas service, finance and insurance, real estate, business services, federal government, and state and local government. Purchases from these eight industry groups constitute 91 percent of industry purchases from Minnesota suppliers.

Industry purchases from stone and clay quarrying are primarily gravel and fill for maintenance of facilities. Purchases from construction are for maintenance and repair. Gas service purchases are intra-industry transfers. Some gas may also be used as fuel by pumps used to fill and evacuate above ground and underground storage facilities. Purchases from federal, state and local governments are primarily fees for maintenance and repair of right-of-way as well as purchases of public enterprise services.

Industry output disbursements are to nearly every industry group and to households. Electric service, iron ores mining, and paper and allied products manufacturing are the largest users with 13 percent, 5 percent, and 3 percent, respectively, of total output. Households consume an additional 40 percent of output value.

In terms of cubic feet consumed, electric service, iron ores mining and paper and allied products manufacturing are the heaviest industrial users with 22 percent, 16 percent, and 10 percent of total consumption, respectively.

### Mineral Industry Demand Multipliers

Direct and indirect effects of Minnesota mineral industry expenditures for supplies, materials, and services may be estimated using the interindustry transactions data. Direct effects stem from sales to mineral industries by Minnesota suppliers. In turn, indirect effects stem from these suppliers' input purchases from their own suppliers. Each dollar's worth of mineral industry purchases thus sets in motion a chain of expenditures which totals more than a dollar.

Mineral industry demand multipliers representing direct and indirect effects of mineral industry output changes on input-supplying industries are presented in Table 2.2. These effects are derived from the interindustry transactions on current account and, hence, they depict year-

Table 2.2

Direct and Indirect Effects of a 1-Unit Change in Final Demand for Specified Industry Output in Minnesota, by Mineral-Related Industry, 1970

Title	Mining			Manufacturing					Services			Other	Total	
	Iron & Ferro 4	Non-Ferrous Metals 5	Copper Ore 6	Stone & Clay 7	Petro- leum Prod. 20	Stone Clay Glass 22	Pri- mary Iron 23	Pri- mary Copper 24	Other Pri- mary 25	Trans., excl. 34	Electric Utili- ties 40			Gas Utili- ty 41
Livestock, liv	0	a/	0	0.003	0.010	0.003	0.001	0	0.001	0.002	0.005	0.003	2.219	2.246
Other agricult	0	a/	0	0.006	0.016	0.003	0.001	0	0.001	0.002	0.004	0.002	1.542	1.578
Agricultura fo	1.00	a/	0	0.001	0.007	0.001	0.001	0	0.001	0.004	0.002	0.001	1.431	1.489
Iron and ferro	0	a/	0	0.001	0.012	0.002	0.012	0	0.004	0.023	0.066	0.031	0.181	1.333
Non ferrous me	0	1.000	0	0.004	0.002	0.002	0.008	0	0.001	0.019	0.013	0.003	0.235	1.287
Copper ore min	0	0.004	1.000	0.001	0.019	0.002	0.020	0	0.004	0.001	0.066	0.000	0.180	1.306
Stone and clay	0	a/	0	1.032	0.013	0.035	0.008	0	0.002	0.003	0.015	0.013	0.298	1.420
Construction	0	a/	0	0.012	0.013	0.065	0.014	0	0.003	0.002	0.002	0.003	1.501	1.119
Ordnance, acce	0	a/	0	0.001	0.002	0.003	0.019	0	0.012	0.005	0.004	0.002	1.301	1.446
Food, kindred	0	a/	0	0.002	0.007	0.006	0.004	0	0.001	0.006	0.006	0.006	2.260	2.298
Meat prod	0	a/	0	0.002	0.008	0.002	0.002	0	0.001	0.002	0.007	0.005	2.697	2.721
Grain mill pro	0	a/	0	0.004	0.008	0.003	0.002	0	0.001	0.003	0.010	0.007	2.156	2.194
Beverages, tob	0	a/	0	0.002	0.003	0.020	0.005	0	0.002	0.001	0.003	0.003	1.441	1.179
Apparel, and t	0	a/	0	0.001	0.002	0.001	0.001	0	0.001	0.001	0.004	0.002	1.314	1.326
Logging camps,	0	a/	0	0.001	0.007	0.004	0.003	0	0.001	0.008	0.005	0.003	1.422	1.456
Other lumber,	0	a/	0	0.002	0.003	0.012	0.015	0	0.002	0.004	0.006	0.005	1.509	1.557
Paper, allied p	0	a/	0	0.006	0.006	0.004	0.003	0	0.001	0.005	0.010	0.011	1.698	1.743
Printing, publ	0	a/	0	0.002	0.003	0.002	0.003	0	0.003	0.001	0.006	0.005	1.704	1.727
Chemicals, sel	0	0.001	0	0.012	0.020	0.007	0.004	0	0.009	0.003	0.009	0.011	1.560	1.635
Petroleum, indu	0	a/	0	0.037	1.038	0.010	0.001	0	0.002	0.023	0.006	0.014	0.223	1.354
Rubber, misc p	0	a/	0	0.003	0.003	0.004	0.003	0	0.002	0.001	0.006	0.004	1.624	1.649
Stone, clay gl	0	a/	0	0.071	0.009	1.109	0.007	0	0.002	0.003	0.012	0.022	0.334	1.621
Primary iron a	0	0.001	0	0.004	0.003	0.006	1.059	0	0.025	0.005	0.010	0.014	0.323	1.450
Primary copper	0	0.002	0.568	0.001	0.011	0.002	0.016	1.028	0.002	0.016	0.082	0.010	0.149	1.887
Other primary	0	0.034	0	0.001	0.002	0.005	0.014	0	1.172	0.006	0.006	0.009	0.369	1.618
Fabricated met	0	0.001	0	0.001	0.003	0.006	0.078	0	0.021	0.001	0.005	0.005	1.355	1.475
Machinery	0	a/	0	0.001	0.003	0.008	0.028	0	0.016	0.001	0.004	0.003	1.595	1.660
Elec. machiner	0	0.001	0	0.001	0.003	0.014	0.021	0	0.024	0.001	0.005	0.004	1.517	1.592
Motor vehicles	0	a/	0	0.001	0.003	0.009	0.038	0	0.015	0.001	0.004	0.003	1.704	1.778
Aircraft and p	0	0.001	0	0.001	0.003	0.004	0.012	0	0.021	0.001	0.004	0.002	1.366	1.412
Other transpor	0	a/	0	0.001	0.002	0.009	0.039	0	0.011	0.001	0.004	0.003	1.559	1.631
Instruments	0	0.001	0	0.002	0.002	0.006	0.009	0	0.024	0.001	0.004	0.003	1.474	1.525
Miscellaneous	0	0.001	0	0.002	0.002	0.005	0.013	0	0.025	0.002	0.005	0.003	1.516	1.574
Transportation	0	a/	0	0.001	0.009	0.003	0.004	0	0.001	1.132	0.009	0.005	0.288	1.452
Railroads and	0	a/	0	0.002	0.014	0.007	0.007	0	0.001	0.003	0.006	0.003	1.348	1.392
Local, suburba	0	a/	0	0.001	0.011	0.004	0.001	0	a/	0.004	0.011	0.005	1.372	1.409
Motor freight	0	a/	0	0.001	0.022	0.002	0.001	0	1/	0.003	0.002	0.001	1.339	1.372
Air transporta	0	a/	0	0.001	0.033	0.001	0.001	0	0.001	0.024	0.002	0.002	1.344	1.410
Communication	0	a/	0	0.001	0.002	0.002	0.001	0	a/	a/	0.005	0.002	1.228	1.242
Electric servi	0	a/	0	0.003	0.009	0.005	0.002	0	a/	0.002	1.133	0.121	0.375	1.650
Gas service ex	0	a/	0	0.016	0.002	0.003	0.001	0	a/	a/	0.002	1.017	0.132	1.174
Water and sani	0	a/	0	0.004	0.007	0.012	0.003	0	0.001	0.001	0.062	0.050	2.057	2.197
Wholesale trad	0	a/	0	0.001	0.005	0.003	0.001	0	0.001	0.001	0.003	0.002	1.347	1.364
Retail trade e	0	a/	0	a/	0.003	0.002	0.001	0	a/	0.001	0.010	0.005	1.240	1.263
Finance and in	0	a/	0	a/	0.002	0.001	a/	0	a/	0.001	0.005	0.002	1.498	1.510
Real estate an	0	a/	0	0.002	0.005	0.006	0.002	0	0.001	0.001	0.003	0.002	1.342	1.362
Hotels, motels	0	a/	0	0.001	0.007	0.006	0.002	0	0.002	0.002	0.012	0.007	1.451	1.488
Business and m	0	a/	0	0.001	0.002	0.003	0.002	0	0.001	0.001	0.003	0.003	1.561	1.578
Auto repair an	0	a/	0	0.001	0.006	0.012	0.009	0	0.003	0.001	0.006	0.003	1.532	1.572
Amusements	0	a/	0	0.001	0.002	0.002	0.001	0	0.001	0.001	0.005	0.003	1.470	1.485
Medical, educa	0	a/	0	0.001	0.003	0.002	0.001	0	0.001	0.001	0.013	0.007	1.232	1.258
Federal govern	0	a/	0	0.001	0.006	0.002	0.001	0	0.004	0.001	0.008	0.005	1.302	1.333
State and loca	0	a/	0	0.004	0.008	0.015	0.004	0	0.001	0.001	0.057	0.029	1.487	1.606
Other industry	0	a/	0	0.001	0.005	0.004	0.006	0	0.004	0.005	0.004	0.003	1.950	1.932



to-year industry output changes associated with a \$1 change in a given industry final demand.

The industry incidence of the total effect of a \$1 increase in the final demand for the gross output of the iron mining industry is shown, in part, in row 4 of Table 2.2. For example, the total effect -- direct and indirect -- of a \$1 increase in the exports of iron ore on the iron mining industry itself is also \$1 (because of the lack of inter-industry transactions). Total effect on all industries of the \$1 increase in iron ore exports is \$1.33. Thus, in this example, the indirect effect on other industry output totals to \$0.33.

Comparison of the iron mining industry output multiplier with the livestock industry multiplier (row 1 in Table 2.2) reveals a large difference in their direct and indirect effects. The total all-industry output effect of a \$1 increase in the final demand for livestock industry output is \$2.25. Of this total, only \$0.03 is due to the 12 mineral-related industries listed in Table 2.2.

The mineral industry demand multipliers generally are smaller than those for agriculture because of the lesser dependence of the mineral industries on the input-supplying industries in the state. Also, a proportionately larger value added outlay results in a lower output multiplier for the mineral-related industries. Both conditions result in a reduced level of internal (i.e., inter-industry) interdependence which thus means a reduced level of total -- direct and indirect -- effects.

### Mineral Industry Outlook

While the short-term output multipliers are generally low for the mineral-related industries, the long-term output multipliers are much higher because of the large induced effects resulting from the large value added component. In the standard Leontief inverse, the value added coefficients are excluded. Much of the value added is retained in the state, however, particularly as wage and salary payments to employees and tax payments to state and local governments. Both forms of income payments are recirculated within the Minnesota economy, which contributes to large induced effects as measured by long-term growth in employment and income.

#### Baseline Projections

Industry gross output, employment and value added projections of the Minnesota economy were derived with the aid of existing database, including related assumptions and computer programs for the high-output, or baseline, option. The results show gross output increases in the mineral-related industries as follows:

Industry No. Title	Estimated 1970 (mil.dol.)	Projected, 2000	
		Total (mil.dol.)	Increase 1970-2000 (pct.)
4. Iron ores	571.5	1,052.5	84
5. Nonferrous ores	7.9	735.3	831
7. Stone & clay	67.3	127.6	90
20. Petroleum ref.	273.3	529.0	94
22. Stone, clay, gl.	230.8	429.4	86
23. Prim. iron	156.7	357.9	138
25. Other prim.	131.2	366.7	179
34. Transportation	79.7	185.4	133
40. Electric serv.	335.6	629.7	88
41. Gas service	282.4	515.8	83
Total or Average	2,136.4	4,929.5	131

The projected 1970-2000 increase of 84 percent in the gross output of the iron mining industry compares with a projected increase of 131 percent for the 10 mineral-related industries and a projected increase of 129 percent for all industry in Minnesota. The high-output option for the iron mining industry is consistent with capital expenditure plans reported by the mining companies.

Corresponding increases in value added were derived also for each industry listed in Table 3.1. These increases differ in their percentage levels because of differences in the proportion of industry gross outlays accounted for by the income payments to resource owners, i.e., the total value added of the industry. The value added of all

Table 3.1

Estimated and Projected Gross Output (in 1970 dollars), Employment and Value Added (in 1970 dollars) in Specified Producing Sector in Minnesota 1970 and 2000.

Producing Sector No. Title	Gross Output		Employment		Value Added	
	Estimated 1970 (thou.dol.)	Projected 2000 <sup>1/</sup> (thou.dol.)	Estimated 1970 (no.)	Projected 2000 (no.)	Estimated 1970 (thou.dol.)	Projected 2000 (thou.dol.)
1. Livestock, liv	2,109,900	3,913,485	68,748	43,279	618,663	1,147,508
2. Other agricult	1,136,100	1,977,461	62,652	41,604	554,556	965,244
3. Agricultura fo	50,459	64,370	3,298	4,878	32,864	41,924
4. Iron and ferro	571,488	1,052,459	13,153	12,193	329,831	607,420
5. Non ferrous me	7,932	735,474	146	2,692	4,846	449,333
6. Copper ore min	0	0	0	0	0	0
7. Stone and clay	67,264	127,641	2,197	1,290	40,331	76,532
8. Construction	2,411,213	4,049,110	78,490	96,395	1,117,903	1,877,277
9. Ordnance, acce	568,364	664,247	12,410	8,520	265,726	310,443
10. Food, kindred	1,886,738	3,325,875	25,119	20,262	511,482	901,621
11. Meat prod	1,730,800	3,325,244	17,350	18,689	307,743	591,242
12. Grain mill pro	758,594	1,021,852	7,911	4,641	203,984	274,773
13. Beverages, tob	308,100	659,532	4,702	3,905	182,089	389,787
14. Apparel, and t	207,800	320,542	11,062	6,715	71,784	110,746
15. Logging camps,	91,670	170,141	1,718	1,176	40,658	76,294
16. Other lumber,	234,737	425,439	9,137	8,509	106,446	192,924
17. Paper, allied p	1,408,535	2,651,798	31,468	25,537	591,606	1,113,795
18. Printing, publ	648,200	1,485,716	24,173	33,609	301,869	691,902
19. Chemicals, sel	456,090	860,935	6,599	3,616	162,551	306,838
20. Petroleum indu	273,300	529,048	2,032	1,101	727,772	140,870
21. Rubber, misc p	490,518	2,089,526	8,179	13,790	222,221	446,624
22. Stone, clay gl	230,800	429,417	7,956	9,106	111,365	207,201
23. Primary iron a	156,720	357,860	4,598	3,855	69,728	159,220
24. Primary copper	0	0	0	0	0	0
25. Other primary	131,180	266,661	2,558	2,759	49,463	138,254
26. Fabricated met	694,190	1,007,389	20,427	31,062	298,454	433,108
27. Machinery	2,202,879	6,755,288	65,990	105,472	937,118	2,873,740
28. Elec. machiner	842,234	1,817,316	28,382	31,424	367,353	792,650
29. Motor vehicles	426,200	759,009	4,814	4,277	139,587	248,587
30. Aircraft and p	29,263	35,296	506	840	8,519	14,839
31. Other transpor	201,428	451,417	5,333	5,843	79,336	177,780
32. Instruments	373,400	1,149,218	13,039	18,293	186,210	573,101
33. Miscellaneous	159,966	291,814	7,437	6,474	75,984	138,620
34. Transportation	79,673	185,408	3,248	3,298	39,073	90,928
35. Railroads and	445,152	807,430	20,225	80,64	297,787	540,135
36. Local, suburba	107,635	142,678	7,268	8,318	74,433	98,667
37. Motor freight	375,980	596,975	19,583	23,684	251,269	398,961
38. Air transporta	227,505	1,456,472	7,627	10,634	132,960	851,239
39. Communication	399,178	834,908	17,112	14,021	309,471	647,296
40. Electric servi	335,550	629,665	5,403	4,043	134,112	251,663
41. Gas service ex	282,425	515,833	4,267	3,620	184,937	337,789
42. Water and sani	262,836	291,373	3,209	4,311	53,674	59,502
43. Wholesale trad	3,667,317	11,281,195	93,466	155,936	2,479,546	7,627,442
44. Retail trade e	3,520,113	8,852,236	269,931	433,095	2,676,490	6,730,726
45. Finance and in	1,203,118	1,897,684	60,022	87,939	6,954,112	1,095,064
46. Real estate an	1,975,649	3,811,483	10,056	14,910	1,430,891	2,760,520
47. Hotels, motels	410,588	843,400	40,744	59,421	230,332	473,131
48. Business and m	938,278	2,016,105	41,647	75,017	494,712	1,063,001
49. Auto repair an	357,794	722,288	7,980	12,333	195,796	422,620
50. Amusements	137,765	239,111	13,227	18,139	76,396	132,596
51. Medical, educa	1,351,716	4,433,547	156,247	187,291	1,082,516	4,148,114
52. Federal govern	189,085	415,597	17,268	26,042	133,812	294,111
53. State and loca	625,777	906,917	26,892	34,599	325,491	471,723
54. Other industry	223,674	517,483	21,282	32,461	79,340	183,558
55. Other governm	4,033,300	12,047,894	201,665	401,952	4,022,200	12,047,894
Total	42,008,140	96,366,264	1,599,952	2,180,933	23,474,866	57,696,999

<sup>1/</sup> High taconite output option (of approximately 101 million long tons taconite production).

industry in Minnesota is projected to increase from \$24.5 billion in 1970 to \$57.7 billion in 2000 (in 1970 dollars).

Industry employment levels are less likely to increase over the 1970-2000 period than the value added levels because of generally increasing levels of output per worker. In those industries with annual rates of increase in output per worker which are larger than the annual rates of increase in gross output, the employment levels decline (e.g., iron mining). Total employment in Minnesota is projected to increase nonetheless from 1.6 million to 2.2 million in 2000.

#### Mining Impact

The long-term mining impact on the Minnesota economy is depicted in terms of changes in gross output, employment and value added due to changes in mining industry gross output (Table 3.2). To show this impact, iron ore and taconite production levels set at approximately one-half the high output option. This intermediate option provides for a 37.5 million long ton increase in taconite production above the 1970 level. The difference between this intermediate level and the projected 2000 level in Table 3.1 is represented as the mining impact.

The intermediate option represents the levels of all industry activity associated with the intermediate taconite output level (of 78.6 million long tons of output). The sum of the mining baseline projection and the mining impact projection is equivalent to the high taconite, or baseline, output projection.

Anticipated industry expansion from the intermediate to the high taconite output option would involve increases in three economic indicators for the taconite (i.e., iron ores) industry as follows:

<u>Indicator</u>	<u>Taconite</u>	<u>Total</u>
Gross Output (mil.dol.)	266.6	1,095.2
Employment (thou.)	3.1	21.3
Value Added (mil.dol.)	153.9	686.0

All of the anticipated mineral expansion is in taconite production. Most increase in total economic activity associated with the expanded taconite industry production would occur in Northeast Minnesota.

The long-term taconite mining impact on the Minnesota economy is represented by changes in all industry gross output which are due to changes in the demand for taconite pellets. To show this impact, the gross output difference (of \$266.6 million) between the intermediate and high taconite output option is adjusted for the short-term effect by adding the equivalent short-term indirect gross output change (of \$89 million) associated with the increase in taconite industry output. The taconite industry and its input-supplying industries in the state are now viewed as a single industry complex, which represents an expanding

Table 3.2

Projected Effects of Iron Mining Industry Expansion on Gross Output (in 1970 dollars),  
Employment and Value Added (in 1970 dollars) in Specified Producing  
Sector in Minnesota, 1978-2000.

Producing Sector No. Title	Gross Output		Employment		Value Added	
	Mining 1/ Baseline (thou.dol.)	Mining Impact (thou.dol.)	Mining 1/ Baseline (no.)	Mining Impact (pct.)	Mining 1/ Baseline (thou.dol.)	Mining Impact (thou.dol.)
1. Livestock, liv	3,896,462	17,023	43,090	189	1,142,517	4,991
2. Other agricult	1,958,743	18,718	41,211	393	956,107	9,137
3. Agricultura fo	64,370	0	4,878	0	41,924	0
4. Iron and ferro	785,825	266,634	9,104	3,089	453,534	153,885
5. Non ferrous me	735,386	88	2,692	0	440,279	0
6. Copper ore min	0	0	0	0	0	0
7. Stone and clay	126,140	1,231	1,274	16	75,533	899
8. Construction	3,991,300	57,810	95,019	1,376	1,850,474	26,803
9. Ordnance, acce	662,846	1,401	8,502	18	309,899	655
10. Food, kindred	3,299,962	26,013	20,103	159	894,569	7,052
11. Meat prod	3,314,524	10,720	18,629	60	589,336	1,906
12. Grain mill pro	987,220	34,632	4,484	157	265,460	19,313
13. Beverages, tob	650,159	9,373	3,849	56	384,248	5,539
14. Apparel, and t	317,997	2,545	6,662	53	109,867	879
15. Logging camps	16,834	153,307	1,165	11	75,573	721
16. Other lumber,	420,766	4,673	8,415	94	190,804	2,120
17. Paper,allied p	2,641,451	10,347	25,437	100	1,109,449	4,346
18. Printing, publ	1,479,764	5,952	33,474	135	689,130	2,772
19. Chemicals, sel	852,362	8,573	3,580	36	303,783	3,055
20. Petroleum indu	521,354	7,694	1,085	16	138,822	2,048
21. Rubber, misc p	2,084,277	5,249	13,756	34	944,246	2,378
22. Stone, clay gl	424,249	5,168	8,997	109	204,707	2,494
23. Primary iron a	351,997	5,863	3,792	63	156,611	2,609
24. Primary copper	0	0	0	0	0	0
25. Other primary	364,334	2,327	2,742	17	137,376	878
26. Fabricated met	1,005,111	2,278	30,992	70	432,128	980
27. Machinery	6,713,162	42,126	104,812	660	2,855,820	17,920
28. Elec. machiner	1,796,229	21,087	21,176	248	783,452	9,198
29. Motor vehicles	748,730	10,379	4,219	58	245,220	3,367
30. Aircraft and p	35,069	227	835	5	14,722	95
31. Other transpor	446,085	5,331	5,774	69	175,690	2,100
32. Instruments	1,145,258	3,960	18,230	63	571,126	1,975
33. Miscellaneous	288,882	2,932	6,409	65	137,228	1,392
34. Transportation	177,745	7,663	3,151	137	87,169	3,759
35. Railroads and	800,744	6,685	7,997	67	535,662	4,473
36. Local, suburba	142,592	96	8,312	6	98,600	67
37. Motor freight	596,699	276	23,673	11	398,776	301
38. Air transporta	1,450,999	5,473	10,594	40	848,041	3,198
39. Communication	826,698	8,210	13,883	138	640,930	6,366
40. Electric servi	606,878	22,787	3,897	146	242,556	9,107
41. Gas service ex	503,084	12,749	3,531	89	329,440	8,349
42. Water and sani	291,373	0	4,311	0	59,502	0
43. Wholesale trad	11,237,826	43,369	155,336	600	7,598,119	29,323
44. Retail trade e	8,764,252	87,984	428,790	4,305	6,663,829	66,897
45. Finance and in	1,897,626	58	87,936	3	1,095,031	33
46. Real estate an	3,772,537	38,984	14,757	153	2,732,313	28,207
47. Hotels, motels	834,059	9,341	58,763	658	467,891	5,240
48. Business and m	1,997,976	18,129	74,342	675	1,053,443	9,558
49. Auto repair an	764,158	8,130	12,203	130	418,171	4,449
50. Amusements	236,585	2,526	17,948	191	131,195	1,401
51. Medical, educa	1,433,547	0	187,291	0	1,148,114	0
52. Federal govern	411,036	4,561	25,757	282	290,883	3,228
53. State and loca	900,738	6,179	34,363	236	468,509	3,214
54. Other industry	513,508	3,975	32,211	250	182,148	1,410
55. Other governme	14,831,915	215,979	396,183	5,769	14,831,915	215,979
Total	95,271,014	1,095,250	2,159,628	21,305	57,010,996	686,003

1/ Intermediate taconite output option (of 78.6 million long tons taconite production).

sector of the Minnesota economy against which overall state economic growth is measured. The derived long-term demand multiplier for industry output is 3.08 (i.e.,  $1095.2 \div 355.6$ ) rather than 1.33, as in the short-term case. The long-term multiplier thus incorporates the long-term induced effects of the recycling of the "new" dollars derived from the taconite exports.

The multiplier analysis illustrates the importance of viewing the taconite industry, not in isolation, but as a part of a growing taconite industry cluster. This cluster as a whole has an overall long-term economic impact which is 2 to 3 times its corresponding short-term level. This is simply another way of describing what has long been observed, namely, that the full importance of the taconite industry is greatly underestimated if only the direct, or even short-term, impacts are considered.

Taxes Originating in Mineral-Related Industry

Minnesota state and local tax revenues originating in the mineral-related industries include the principal public income sources -- income taxes and sales and use taxes. They include, also, special taxes, like the gross earnings tax on the railroads owned by taconite producers, the royalty tax, the occupation tax, and the production tax. The latter, which apply to the iron mining, taconite and copper-nickel industries, substitute for the corporate income tax, which is of lesser importance as a revenue source in these industries.

Wide differences occurred in the average annual growth rates for individual tax sources. While property taxes increased at a 4.7 percent rate, general sales, income, and severance and tonnage taxes increased at above-average rates -- 25.9 percent, 26.9 percent and 43.3 percent, respectively. The mineral-related industries were included among the rapidly increasing tax sources, as follows:

<u>Tax Source</u>	<u>1970-71</u> (thou.\$)	<u>1975-76</u> (thou.\$)	<u>Average Annual Increase</u> (pct.)
Sales and Use Taxes	11,608	33,088	37.0
Corporate Income Taxes	5,848	23,669	60.9
Railroad (taconite) Tax	1,204	3,072	31.0
Royalty Tax	1,647	3,503	22.5
Occupation Tax	12,488	24,321	19.0
Production Tax	<u>4,253</u>	<u>30,347</u>	<u>122.7</u>
Total	37,048	118,000	43.7

Thus, the mineral industry tax liability increased, not only in total dollars, but, also, as a proportion of all tax revenues.

Tax revenues derived from all economic units in the state, as shown in Table 4.1, accounted for \$1.9 billion, or 64.5 percent, of the \$3 billion total general revenues in 1970. By 1975, tax revenues were nearly \$3.3 billion, or 60.4 percent of the \$5.4 billion total general revenues. Thus, while tax revenues increased an average 13.8 percent per year in the five-year period from 1970, they declined as a proportion of total governmental revenues. Federal government transfers to state and local agencies in Minnesota increased from 35.5 percent to 39.6 percent of total revenues over the five-year period.

Table 4.1

General Revenue of State and Local Government From Specified Source,  
Minnesota, 1970-71 and 1975-76.

Source	1970-71		1975-76		Average Annual Change, 1970-75 (pct.)
	Total <sup>1/</sup> (mil.dol.)	Proportion of Total (pct.)	Total <sup>2/</sup> (mil.dol.)	Proportion of Total (pct.)	
General Revenue, Total	2,993.4	100.0	5,400.9	100.0	16.1
Intergovernmental Rev., Total					
From Fed. Govt.	485.6	16.2	1,114.9	20.6	25.9
From State Govt.	<u>3/</u>	--	<u>3/</u>	--	--
Own Sources, Total	2,507.8	83.8	4,286.0	79.4	14.2
Property Taxes	817.6	27.3	1,007.9	18.7	4.7
General Sales Taxes	186.9	6.2	429.1	7.9	25.9
Income Taxes	445.9	14.9	1,046.0	19.4	26.9
Severance & Tonnage Taxes, Total	18.4	0.6	58.2	1.1	43.3
Iron Ore Royalty Tax	0.9	<u>5/</u>	0.7	<u>5/</u>	-4.4
Taconite Royalty Tax	0.8	<u>5/</u>	2.8	<u>0.1</u>	50.0
Copper-Nickel Royalty Tax	<u>4/</u>	<u>5/</u>	<u>4/</u>	<u>5/</u>	--
Iron Ore Occupation Tax	<u>9.3</u>	<u>0.3</u>	<u>5.1</u>	<u>0.1</u>	-9.0
Taconite Occupation Tax	3.2	0.1	19.2	0.4	100.0
Taconite Production Tax	4.3	0.1	30.3	0.6	120.9
Other Taxes	462.8	15.5	778.9	14.4	16.0
Charges & Misc.	576.2	19.2	1,024.1	19.0	15.5

1/ U.S. Bureau of the Census, Governmental Finances in 1970-71, U.S. Government Printing Office, Washington, D.C., 1972, Table 17, p. 32.

2/ U.S. Bureau of the Census, Governmental Finances in 1975-76, U.S. Government Printing Office, Washington, D.C., 1977, Table 17, p. 48,

3/ Duplicative transactions between levels of government are excluded.

4/ \$0.5 million or less.

5/ 0.05 percent or less.



### Structure of Mineral-Related Tax Revenues and Disbursements

Further breakdowns of the taxes originating from the mineral-related industries are presented later in this chapter. First, however, state and local government revenue sources, are presented for each level of government in the state in Table 5.1. This summary presentation of the state tax structure (for the fiscal periods ending July 1, 1975 to June 30, 1976) highlights the importance of state government in financing local governments. For example, of the \$3.0 billion in state government revenues, \$1.5 billion was redistributed to local governments. Total intergovernmental revenues of local governments exceeded \$1.7 billion, or one-half of their total general revenues, while local property taxes accounted for less than 30 percent of this total.

#### Mineral Taxes

The three mineral taxes -- the occupation tax, the production tax and the royalty tax -- have increased in yield in the 1970's despite their generally constant rates, as shown in Table 5.2. Much of the yield increase is the result of the recent escalation in the taconite production tax rate, which is adjusted to the rate of growth in the taconite price index.

The specified tax rates are multiplied by the value of production and/or the quality of production to obtain the tax yields listed in Table 5.3. These data show the recent shift to the taconite production tax as the principal source of mineral tax revenues in the state. In 1978, the taconite production tax contributed over \$69 million, or 70.8 percent, of the \$97.7 million in total state revenues from mineral taxes.

Distribution of state mineral tax revenues follows a prescribed set of rules, as shown in Table 5.4. While the distribution formulae have been stable for the occupation tax, they have changed repeatedly for the production tax. Major beneficiaries of these changes are the Economic Protection Fund and the Environmental Protection Fund. Both funds are administered by the Iron Range Resource and Rehabilitation Board.

Actual disbursements of state mineral tax revenues to state and local agencies are listed in Table 5.5. Large increases are shown in the revenue disbursements to local agencies, including counties, municipalities, and school districts. Total local disbursements increased from \$9,715,000, or 52.6 percent of total disbursements in 1970, to \$77,747,000, or 79.4 percent of the total in 1975.

#### Corporate Income Tax

While the mineral taxes partly replaced corporate income taxes for the metal mining industries, more than 10 percent of all the corporate income tax revenues in the state originate from the mineral-related industries, as shown in Table 5.6 for the 1970 calendar year,

Table 5.1

General Revenue and Utility System and Liquor Store Revenue of State and Local Government by Specific Source, by Level of Government, Minnesota, 1975-76.

Source	Total <sup>1/</sup>	Local Governments <sup>2/</sup>						
		State Government <sup>1/</sup>	Total	Counties	Municipalities	Townships	School Districts	Special Districts
(million dollars)								
General Revenue, Total	5,400.9	3,580.4	3,395.8	884.6	796.1	42.5	1,533.9	228.6
Intergovernmental Rev., Total	3/	945.4	1,744.8	463.5	284.9	23.5	920.0	142.2
From Federal Govt.	1,114.9	868.8	246.2	49.4	90.2	5.2	7.4	93.9
From State Govt.	3/	76.6	1,498.6	401.4	173.6	17.6	896.1	10.0
Own Sources, Total	4,286.0	2,635.0	1,651.0	421.0	511.2	19.0	614.0	85.8
Property Taxes	1,007.9	2.2	1,005.7	273.0	199.2	13.5	494.9	25.2
General Sales Taxes	429.1	426.5	2.6	0	2.6	0	0	0
Income Taxes	1,046.0	1,046.0	0	0	0	0	0	0
Other Taxes	778.9	744.2	34.7	3.4	31.0	0.3	0	0
Charges & Misc.	1,024.1	416.1	608.0	114.6	278.5	5.2	119.0	60.7
Utility System & Liquor Store Revenue	298.4	0	298.4	0	282.8	5/	0	15.5

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<sup>1/</sup> U.S. Bureau of the Census, Governmental Finances in 1975-76, U.S. Government Printing Office, Washington, D.C., 1977. Table 17, p. 48.

<sup>2/</sup> U.S. Bureau of the Census, Governmental Finances in 1975-76, U.S. Government Printing Office, Washington, D.C., 1977. Table 16, p. 37.

<sup>3/</sup> Duplicative transactions between levels of government are excluded.

<sup>4/</sup> From local governments.

<sup>5/</sup> \$0.5 million or less.

Table 5.2  
Mineral Tax Rates in Minnesota, 1970-1978.<sup>1/</sup>

Production Year	Occupation Tax			Production Tax		Royalty Tax		
	Iron Ore <sup>2/</sup>	Taconite <sup>3/</sup>	Copper- Nickel <sup>4/</sup>	Taconite <sup>5/</sup>	Copper- Nickel <sup>6/</sup>	Iron <sup>7/</sup>	Taconite <sup>8/</sup>	Copper- Nickel <sup>9/</sup>
	(percent)	(percent)	(percent)	(cents)	(cents)	(percent)	(percent)	(percent)
1970	12.0	12.0	1.0	11.5	2.5	12.0	12.0	12.0
1971	15.5	15.0	1.0	15.5	2.5	15.5	15.0	15.0
1972	15.5	15.0	1.0	18.5	2.5	15.5	15.0	15.0
1973	15.5	15.0	1.0	20.5	2.5	15.5	15.0	15.0
1974	15.5	15.0	1.0	29.7	2.5	15.5	15.0	15.0
1975	15.5	15.0	1.0	74.9	2.5	15.5	15.0	15.0
1976	15.5	15.0	1.0	76.5	2.5	15.5	15.0	15.0
1977	15.5	15.0	1.0	129.5	2.5	15.5	15.0	15.0
1978	15.5	15.0	1.0	139.9	2.5	15.5	15.0	15.0

- <sup>1/</sup> Minnesota Department of Revenue. Minnesota Mining Tax Guide. Minnesota Department of Revenue, Centennial Office Building, St. Paul, Minnesota, 55101, July 1978.
- <sup>2/</sup> Since 1941 certain deductions and credits, including a labor credit, have been allowed to encourage the utilization of low-grade, underground, high labor cost ores.
- <sup>3/</sup> A separate occupation tax on the mining and production of taconite, semi-taconite and iron sulphides was passed in 1971.
- <sup>4/</sup> Production cost allowances and credits for research and for experimentation and exploration are deducted from the 1 percent rate.
- <sup>5/</sup> As escalator based on iron content and an additional escalator based on the wholesale price index were in effect until 1971 when an additional tax was passed and 1975 when a second additional tax was passed. The last major change in the taconite production tax occurred in 1977 when the additional taxes were repealed and the basic tax rate was increased to \$1.25 per ton of merchantable iron ore produced in 1977. For 1978, the basic rate of \$1.25 was increased by the rate of growth in the steel mill production index for January of the production year.
- <sup>6/</sup> Base production tax for copper-nickel ore is 2.5¢ per gross ton plus 10% of the base tax for each 1% that the average copper-nickel content per gross ton exceeds 1%. This total is then subject to an increase proportional to any increase in the current year average monthly wholesale price index for all commodities over the 1967 monthly average.
- <sup>7/</sup> Gross tax rate on royalties follows the occupation tax rate, with all taxes being collected from the leasee.
- <sup>8/</sup> A credit which reduces the effective royalty tax rate to the effective rate for occupation taxes is allowed for taconite, semi-taconite and iron sulphide royalty taxes on land that is being mined.
- <sup>9/</sup> An additional 1% royalty tax is collected on royalties paid on leases for silver, gold, platinum, and other precious metals.

Table 5.3

Estimated State Tax Revenues from Iron Ore, Taconite and Copper-Nickel Production in Minnesota, 1970-1978. <sup>1/</sup>

Production Year	Occupation Tax		Taconite Production Tax	Taconite Royalty Tax		Copper-Nickel	Total
	Natural Ores	Taconite		Iron Ore	Taconite		
1970	9,278	3,177	4,253	966	787	3	18,464
1971	7,310	5,388	4,400	705	1,323	3	19,129
1972	6,376	3,664	5,539	904	1,402	2	17,887
1973	8,836	6,885	10,164	1,289	1,886	2	29,032
1974	9,698	10,235	11,952	1,351	1,994	2	35,234
1975	5,038	19,218	30,347	998 <sup>3/</sup>	2,657	2	58,260
1976	6,480	18,270	30,857	1,053 <sup>3/</sup>	2,841	2	59,503
1977	2,621 <sup>2/</sup>	3,190 <sup>2/</sup>	48,880 <sup>2/</sup>	656 <sup>3/</sup>	3,190 <sup>2/</sup>	3 <sup>2/</sup>	58,460
1978	3,937 <sup>2/</sup>	19,226 <sup>2/</sup>	69,222 <sup>2/</sup>	738 <sup>3/</sup>	4,635 <sup>2/</sup>	3 <sup>2/</sup>	97,761

(thousand dollars)

<sup>1/</sup> Minnesota Department of Revenue, Minnesota Mining Tax Guide. Minnesota Department of Revenue, Centennial Office Building, St. Paul, Minnesota, 55101, July 1978.

<sup>2/</sup> Marvin Guesford, Personal communication. Minnesota Department of Finance, Minerals Division, State Administration Building, St. Paul, Minnesota, 55101, December 1979.

<sup>3/</sup> Estimated by authors from available data.

Table 5.4

Distribution of Mineral Tax Revenues to State and Local Governments in Minnesota, 1970-1978. 1/

Pro- duc- tion Year	Occupation Tax				Production Tax								Total		
	School Dis- tricts (pct.)	Uni- ver- sity (pct.)	Iron Range Res. Board (pct.)	State (pct.)	Tac- o- nite Muni- cipal Dis- tricts (cents)	School Dis- tricts (cents)	Coun- ties (cents)	Pro- perty Tax Relief Board (cents)	Iron Range Rehab. Fund (cents)	Economic Protec- tion Fund (cents)	Environ- mental Protec- tion Fund (cents)	Minne- sota Dept. of Revenue (cents)		State (cents)	(cents)
1970	40	10	5	45	1.4	0	3.2	1.4	5.6	0	0	0	0	0.4	12.0
1971	40	10	5	45	1.0	2.0	2.5	1.5	5.2	0.5	0	0	0	0.3	12.0
1972	40	10	5	45	1.0	3.0	2.5	2.0	6.2	1.0	0	0	0	0.3	16.0
1973	40	10	5	45	1.7	4.1	4.2	2.9	9.8	1.2	0	0	0	0.4	24.3
1974	40	10	5	45	2.0	5.7	4.8	3.4	11.3	1.4	0	0	0	0.5	29.1
1975	40	10	5	45	2.3	8.3	25.6	10.7	21.3	2.6	0	0	0	0.6	74.4
1976	40	10	5	45	2.3	8.8	25.7	10.8	22.7	2.2	0	0	0	0.6	76.0
1977	40	10	5	45	2.5	12.5	29.0	19.5	25.75	3.0	8.2	16.3	0.5	1.0	129.4
1978	40	10	0	50	2.5	12.5	29.0	19.5	25.75	3.0	12.4	24.9	0.4	1.0	139.9

1/ Minnesota Department of Revenue. Minnesota Mining Tax Guide. Minnesota Department of Revenue, Centennial Office Building, St. Paul, Minnesota 55101, July 1978. Royalty tax revenue is deposited in the general fund and not earmarked for any specific distribution.

2/ Based on an allocation of \$1,250,000 to filtration fund.

3/ Fixed distribution of \$3,160,899 to counties, cities, towns and school districts is included only in total.

4/ Fixed distribution of \$1,252,520 to Iron Range Resources and Rehabilitation Board is included only in total.

5/ Remainder is distributed one-third to Northeast Minnesota Economic Protection Fund and two-thirds to Taconite Environmental Protection Fund.

6/ In 1978 (1977 production year) and each year thereafter Department of Revenue shall receive \$50,000 for auditing and enforcing the taconite and production tax. In 1978 and 1979 it shall receive an additional \$150,000 for administering section 298.48 mineral rights, exploration data, filing requirements and penalties; and in 1980 (1979 production year) and each year thereafter, \$100,000 shall be distributed to the Department of Revenue.

7/ Production tax revenues are not adjusted to taxes due or paid for prior years.

Estimated Total Mineral Tax Revenues of State and Local Governments in Minnesota, 1970-1978. <sup>1/</sup>

Production Year	Cities and Towns	Municipal Aid Account	Municipal School Districts	Counties	Property Tax Relief	Iron			Environmental Protection Fund	University	Minnesota Department of Revenue	State	Total Revenues
						Range Res. and Rehabil. Board	Economic Protection Fund	Environmental Protection Fund					
1970	496	0	6,116	496	1,985	623	0	0	1,246	0	7,503	18,464	
1971	338	677	7,925	508	1,760	804	0	0	1,270	0	7,847	19,129	
1972	346	1,039	4,881	692	2,147	848	0	0	1,004	0	6,930	17,887	
1973	711	1,715	8,036	1,213	5,001	1,287	0	0	1,569	0	10,405	29,027	
1974	807	2,323	9,928	1,400	4,675	1,576	0	0	1,992	0	12,527	35,232	
1975	2,187 <sup>2/</sup>	3,400	20,146	4,363	8,688	2,386	0	0	2,426	0	14,812	58,260	
1976	2,194 <sup>2/</sup>	3,571	20,314 <sup>3/</sup>	4,374 <sup>3/</sup>	8,957	2,338	0	0	2,475	0	15,293	59,503 <sup>4/</sup>	
1977	944 <sup>3/</sup>	4,720	13,624 <sup>3/</sup>	7,363 <sup>3/</sup>	9,485	2,299	3,081	6,162	581	200	6,764	58,459 <sup>4/</sup>	
1978	1,237 <sup>3/</sup>	6,186	23,616 <sup>3/</sup>	9,650 <sup>3/</sup>	12,743	2,737	6,154	12,307	2,316	200	17,453	97,716 <sup>4/</sup>	

(thousand dollars)

- <sup>1/</sup> Minnesota Department of Revenue. Minnesota Mining Tax Guide. Minnesota Department of Revenue, Centennial Office Building, St. Paul, Minnesota, 55101, July 1978.
- <sup>2/</sup> Includes \$1,250,000 for filtration fund.
- <sup>3/</sup> Fixed distribution of \$3,160,899 to counties, cities, towns and school districts included only in total production tax receipts.
- <sup>4/</sup> Production tax revenues are not adjusted to taxes due or paid for prior years.

Table 5.6

Value Added and Related Income Tax Liability of Mineral-Related Industries, Minnesota, 1970.<sup>1/</sup>

Industry No. Title	Value Added		V.A. Less Earnings		MN Net Income		MN Tax Liability	
	Total	Proportion of Gross Output	Total	Proportion of Value Added	Total <sup>2/</sup>	Proportion of Value Added Less Earnings	Total <sup>2/</sup>	Proportion of MN Net Income
	(mil.dol.)	(pct.)	(mil.dol.)	(pct.)	(thou.dol.)	(pct.)	(thou.dol.)	(pct.)
All Industry	16,278.1	42.9	5,883.0	36.1	695,823	12.2	57,783	8.3
4. Iron and Ferro	329.8	57.7	209.5	63.6	4,810	2.3	239	5.0
5. Non Ferrous Me	4.8	61.1	3.5	72.4	64	1.8	3	4.7
6. Copper Ore Min	0	0	0	0	0	0	0	0
7. Other Mining	40.3	60.0	22.9	29.5	1,943	<u>3/</u>	207	10.7
20. Petroleum Indu	72.8	26.6	50.4	69.2	4,435	8.8	447	10.1
22. Stone, Clay, G1	111.4	48.3	44.0	39.5	4,258	9.7	460	10.8
23. Primary Iron A	69.7	44.4	27.1	38.9	1,231	4.5	141	11.5
24. Primary Copper	0	0	0	0	0	0	0	0
25. Other Primary	49.5	37.7	25.8	61.2	1,160	4.5	117	10.1
34. Transportation	39.1	49.0	10.4	26.7	9,619	<u>3/</u>	1,050	10.9
40. Electric Servi	134.1	40.0	75.4	56.2	22,398	29.7	1,729	7.7
41. Gas Service Ex	184.9	65.5	138.6	75.0	10,834	7.8	1,455	13.2
Total or Average	1,036.4	48.5	596.6	57.6	60,752	10.2	5,848	9.6

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<sup>1/</sup> Computations based on gross output and value added data from 1970 Minnesota input-output tables (see, Table 2.4).

<sup>2/</sup> Department of Revenue, The Minnesota Corporation Income Tax, Tax Returns Filed During Calendar Year 1971 (St. Paul, Minnesota: State Printer, 1974), pp. 25-26.

<sup>3/</sup> Not comparable.

and, also, in Table 5.7 for the 1975 calendar year. The total corporate income tax liability for the mineral-related industries increased from \$5.8 million to \$47.3 million from 1970 to 1975 -- an average annual increase of 61 percent. During the same period, the tax liability for all corporations increased from \$57.8 million to \$172.3 million -- an average annual increase of 39.6 percent.

The mineral-related industries are characterized by an above-average value added per unit of output and above-average proportion of value added less earnings (from which business profits are derived). The higher profit, or net income, levels are associated with higher levels of capital investment per worker in the mineral-related industries as compared with all industry in the state.

### Sales and Use Tax

The mineral-related industries are a source of sales and use tax revenues because of the sale and/or purchase of goods and services for final use, as shown in Table 5.8. In 1970, the total sales and use tax liability of the mineral-related industries was \$11.6 million, or 6.7 percent of the \$172 million total sales and use tax liability for all industry. By 1975, this tax had increased to \$13.1 million and \$386.1 million for the mineral-related industries and all industry, respectively. The more rapid rate of increase for the mineral-related industries was due to the large sales and purchases of construction materials for final use in the taconite mining industry.

When all tax revenues, except property tax, are combined for the mineral-related industry and all industry, the rapid growth of mineral-related industry tax revenue sources is demonstrated by two critical values -- gross state product and employment (Table 5.9). Mineral-related, and especially mining industry, tax revenues have increased much more sharply than general tax revenues. However, the level of tax revenue per \$1,000 of Gross State Product is much lower for mineral-related industry than all private industry, while the opposite is true per 1,000 employment. Gross state product per worker is exceptionally high in mineral-related industry because of correspondingly high capital investment per worker.

### State and Local Government Expenditures

The fiscal impact of the mineral-related industries is measured, not only by the revenues originating in these industries, but, also, by the state and local government expenditures which are supported by these revenues. Education, which is the largest expenditure category, is declining in importance while health, public welfare, sewerage and sanitation, local parks and recreation, and related categories are increasing in importance, as shown in Table 5.10. Even capital outlays, which accounted for a declining portion of total state and local government expenditures in the 1970-75 period, are increasing for these expenditure categories, especially the basic community facilities.



Table 5.7

Minnesota Net Income and Tax Liability of Mineral-Related  
Industries, Minnesota, 1975. <sup>1/</sup>

Industry No. Title	MN Net Income		MN Tax Liability	
	Total (thou.dol.)	Average Annual Change 1970-75 (pct.)	Total (thou.dol.)	Average Annual Change 1970-75 (pct.)
All Industry	1,843,976	33.0	172,301	39.6
4. Iron and Ferro	4,421	-1.6	527	24.1
5. Non Ferrous Me	92	8.8	11	53.3
6. Copper Ore Min	0	0	0	0
7. Other Mining	5,696	38.6	525	30.7
20. Petroleum Indu	35,985	142.2	4,209	168.3
22. Stone, Clay, Gl	16,370	56.9	1,917	63.3
23. Primary Iron A.	5,914	76.1	654	72.8
24. Primary Copper	0	0	0	0
25. Other Primary	3,095	33.4	343	38.6
34. Transportation	20,318	22.2	2,415	26.0
40. Electric Servi	74,038	46.1	8,597	79.4
41. Gas Service Ex	38,499	51.1	4,471	41.6
Total or Average	204,428	47.3	23,669	61.0

<sup>1/</sup> Commissioner of Revenue, Minnesota Corporation Income Tax, Tax Returns Filed During Calendar Year 1976, Income Tax Bulletin No. 47 (St. Paul, Minnesota: State Printer, 1977), pp. 32-35.

Table 5.8  
Net Sales, Use Tax Purchases, and Sales and Use Tax Liability of Mineral-Related Industries, Minnesota, 1970 and 1975.

Industry No. Title	1970 <sup>1/</sup>			1975 <sup>2/</sup>		
	Net Sales	Use Tax Purchases	Total	Net Sales	Use Tax Purchases	Total
All Industry	5,446,190	286,154	5,723,344	9,113,719	538,112	9,651,831
4. Iron and Ferro	196	2,355	2,551	225	35,702	35,927
5. Non Ferrous Me	224	7,199	7,423	9,406	413	9,819
6. Copper Ore Min	0	0	0	0	0	0
7. Other Mining	142	2	144	1,919	49	1,968
20. Petroleum Indu	5,129	2,346	7,475	12,162	818	12,980
22. Stone, Clay, Cl	59,978	4,309	64,287	120,194	8,596	12,879
23. Primary Iron A <sup>3/</sup>						
24. Primary Copper	7,101	2,073	9,174	38,069	5,451	43,530
25. Other Primary						
34. Transportation	870	2,273	3,143	12,277	6,517	18,794
40. Electric Servi						
41. Gas Service Ex	278,450	12,990	291,440	531,578	44,233	575,811
Total	352,090	33,547	385,637	725,830	101,779	827,609
			11,608			33,088

(thousand dollars)

- <sup>1/</sup> Commissioner of Revenue, Minnesota Sales and Use Tax 1970 (unpublished data), Minnesota Department of Revenue, Centennial Office Building, St. Paul, MN, 1971.
- <sup>2/</sup> Minnesota Commissioner of Revenue, Minnesota Sales and Use Tax 1975, Bulletin No. 13, Minnesota Department of Revenue, Centennial Office Building, St. Paul, MN, 1976.
- <sup>3/</sup> No primary copper industry in 1970 and 1975.

Table 5.9

Gross State Product, Employment and Tax Revenues for Selected Industry, Minnesota, 1970 and 1975.

Item	Units	Mineral-Related Industry		All Private Industry			
		Total	Mining	1970	1975		
Gross State Product <sup>1/</sup>	mil. \$	1,052	1,491	385	650	16,416	25,036
Employment <sup>2/</sup>	Number	45,558	50,859	13,153	13,924	1,618,246	1,091,274
Tax Liability (Excluding Personal Income and Property Taxes): <sup>3/</sup>							
Total	thous. \$	37,048	118,000	19,256	61,232	2,137,098	3,543,480
Per \$1,000 GSP	\$	35	79	50	94	130	142
Per 1,000 Employment	\$	813	2,320	1,464	4,398	1,321	1,864

<sup>1/</sup> Minnesota Department of Economic Development, Minnesota Gross State Product 1965-1976, Research Bulletin No. 17, Research Division, Department of Economic Development, 480 Cedar Street, St. Paul, MN, 1976.

<sup>2/</sup> Unpublished data from: Regional Economic Information System, U.S. Department of Commerce, Washington, D.C., 1977.

<sup>3/</sup> From Tables 5.6, 5.7 and 5.8 and related data.

Table 5.10

Direct General Expenditures of State and Local Government by Function, Minnesota, 1970-71 and 1975-76. <sup>1/</sup>

Function	1970-71		1975-76		Average Annual Change, 1970-75
	Total 1/ (mil.dol.)	Proportion of Total (pct.)	Total 2/ (mil.dol.)	Proportion of Total (pct.)	
Direct Gen. Exp., Total	3,127.6	100.0	5,401.9	100.0	14.5
Education	1,470.9	47.0	2,176.8	40.3	9.6
Health & Hospitals	195.8	6.3	368.3	6.8	17.6
Highways	417.6	13.4	611.9	11.3	9.3
Police & Fire Protection	90.6	2.9	185.3	3.4	20.9
Public Welfare	293.2	9.4	724.5	13.4	29.4
Sewerage & Sanitation	74.1	2.4	196.1	3.6	32.9
Other, Total	585.3	18.7	1,139.0	21.1	18.9
Fin. Adm. & Control	92.1	2.8	187.0	3.5	20.6
Local Parks & Recre.	43.8	1.4	114.5	2.1	32.3
Interest Charges	107.7	3.4	193.7	3.6	16.0
Other n.e.c.	341.7	10.9	643.8	11.9	17.7
Capital Exp., Total	740.8	23.7	1,036.8	19.2	8.0
Education	263.7	8.4	250.4	4.6	-1.0
Health & Hospitals	17.3	0.6	26.4	0.5	10.5
Highways	267.7	8.6	342.6	6.3	5.6
Sewerage	44.4	1.4	123.3	2.3	35.5
Other, Total	147.7	4.7	294.1	5.4	19.8

<sup>1/</sup> U.S. Bureau of the Census, Governmental Finances in 1970-71, U.S. Government Printing Office, Washington, D.C., 1972, Table 18, p. 36,37.

<sup>2/</sup> U.S. Bureau of the Census, Governmental Finances in 1975-76, U.S. Government Printing Office, Washington, D.C., 1977, Table 18, p. 54,55.

A further breakdown of state and local expenditures reveals the government level of expenditure (Table 5.11). Counties, municipalities and special districts account for much of the most recent growth in local government expenditures. These governmental units also have been the largest beneficiaries of the recent increases in mineral tax revenues and, in case of future mineral development, they will be the most severely affected by population and economic growth.

Table 5.11

Direct General Expenditure of State and Local Governments for Specified Functions, by Level of Government, Minnesota, 1975-76. <sup>1/</sup>

Function	Total <sup>1/</sup>	State Govern-ment	Total	Local Governments <sup>2/</sup>				
				Coun- ties	Munici- palities	Town- ships	School Districts	Special Districts
Direct Gen. Exp., Total	5,401.9	1,878.3	3,523.6	747.4	574.8	33.9	1,515.7	615.7
Education	2,176.8	698.6	1,478.2	0	0	0	1,478.2	0
Health & Hospitals	368.3	183.3	185.0	58.0	11.7	0	0	115.3
Highways	611.9	293.7	318.2	143.3	149.3	25.6	0	0
Police & Fire Protection	185.3	18.5	166.8	45.9	119.1	1.6	0	0.2
Public Welfare	724.5	352.2	372.3	372.3	0	0	0	0
Sewerage & Sanitation	196.1	0	196.1	0	89.4	0	0	106.7
Other, Total	1,139.0	332.0	807.0	127.9	205.3	6.7	37.5	429.6
Fin. Adm. & Control	187.0	55.4	131.6	65.3	48.0	3.9	0	14.4
Local Parks & Recre.	114.5	0	114.5	32.5	82.0	0	0	0
Interest Charges	193.7	46.3	147.4	30.1	75.3	2.8	37.5	415.2
Other, n.e.c.	643.8	230.3	413.5					
Capital Exp., Total	1,036.8	306.9	729.9	369.9	218.2	10.1	167.7	264.0
Education	250.4	82.7	167.7	0	0	0	167.7	0
Health & Hospitals	26.4	3.4	23.0	9.6	8.6	0	0	4.8
Highways	342.6	193.6	149.0	55.9	86.3	6.8	0	0
Sewerage	123.3	0	123.3	0	61.0	0	0	62.3
Other, Total	294.1	27.2	266.9	4.4	62.3	3.3	0	196.9

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<sup>1/</sup> U.S. Bureau of the Census, Governmental Finances in 1975-76, U.S. Government Printing Office, Washington, D.C., 1977, Table 18, p. 54-55.

<sup>2/</sup> Distribution of local government expenditures was calculated from Report of the State Auditor of Minnesota on the Revenues, Expenditures, and Debt of the Local Governments in Minnesota, for the Fiscal Years Ended During the Period July 1, 1975 to June 30, 1976 (St. Paul, MN.: State Printer, 1977), pp. 16,17.

Projected Mineral Tax Revenues

Fiscal impacts of projected growth in mineral production are illustrated in the comparison of mineral tax revenues for the two 10-year periods -- 1970-79 and 1980-89 (Table 6.1). During the 1970-79 period, total mineral tax revenues from iron ore mining and taconite production approached \$0.5 billion, with 40 percent of the total being collected in 1978 and 1979. If present tax laws were to remain unchanged, the intermediate production option and a five-percent annual increase in the taconite price index would yield total mineral tax revenues of more nearly \$1.7 billion for the 10-year period from 1980 to 1989.

The distribution of tax revenues differs sharply between the two periods, with the state share declining and the local share increasing, especially the distribution to the two protection funds, as shown below:

<u>Level of Government</u>	<u>1970-79</u>	<u>1980-89</u>
	(percent)	
Counties	8.3	6.0
Municipalities	27.9	18.8
School Districts	22.2	18.1
I.R.R.R.B.	3.5	1.9
Econ. Prot. Fund	3.6	13.0
Evir. Prot. Fund	7.1	25.9
State	<u>27.4</u>	<u>16.3</u>
Total	100.0	100.0

If the present laws were to remain unchanged and the production and price projections were confirmed, then the two protection funds would receive nearly 40 percent of total taconite tax revenues by 1989. The revenue distribution to other local governmental agencies would increase during this period, but at a decreasing rate (as indicated by the decline in the percentage distribution between the two periods).

The income redistribution achieved with the mineral tax revenues serves a dual purpose. It imposes a local levy on export-producing firms which iron and steel consumers pay through higher product costs. It also re-directs more of the tax revenues to environmental rehabilitation and economic development rather than social and economic services. Local residents would be the major beneficiaries of the environmental and economic improvements achieved by the expenditure of the two protection funds.

Table 6.1

## Estimated and Projected Iron Ore and Taconite Mining Tax Revenues, Minnesota, 1970-1989.

Year	Local Governments							State <sup>2/</sup>	Total
	Total	Coun- ties <sup>1/</sup>	Munici- palities	School Districts	Iron Range Res. & Rehab. Board	Econ. Prot. Fund	Environ. Protec. Fund		
Estimated, 1970-79: <sup>3/</sup>									
Total	358.1	109.7	40.9	137.7	17.3	17.5	35.0	134.8	492.9
Projected, 1980-89: <sup>4/</sup>									
1980	93.4	26.0	8.6	26.2	3.0	9.9	19.7	20.7	114.1
1981	105.6	27.4	9.2	28.0	3.1	12.6	25.3	22.5	128.1
1982	115.5	28.5	9.4	28.9	3.1	15.2	30.4	23.6	139.1
1983	122.9	29.0	9.8	29.8	3.2	17.0	34.1	24.7	147.6
1984	133.2	30.3	10.0	30.8	3.3	19.6	39.2	25.9	159.1
1985	143.8	31.2	10.4	31.7	3.3	22.4	44.8	27.1	198.9
1986	155.9	32.2	10.7	33.3	3.4	25.4	50.9	29.3	185.2
1987	169.0	33.2	11.0	34.9	3.5	28.8	57.6	31.7	200.7
1988	182.7	34.1	11.3	36.6	3.5	32.4	64.8	34.1	216.8
1989	197.9	35.1	11.6	38.5	3.6	36.4	72.7	36.8	234.7
Total	1,419.9	307.0	102.0	318.6	32.9	219.8	439.6	276.4	1,696.3

(million dollars)

- <sup>1/</sup> Property tax relief is included.
- <sup>2/</sup> University of Minnesota and Minnesota Department of Revenue allocations are included.
- <sup>3/</sup> Estimated from Tables 5.2, 5.3, and 5.4.
- <sup>4/</sup> Based on intermediate taconite production levels and assumed five percent annual increase in taconite price index.