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Final Report
of the
Minnesota Tax Study Commission

Robert Ebel & Therese McGuire, eds.,

The Final Report
of the
Minnesota Tax Study Commission
St. Paul, 1985.

Final Report of the Minnesota Tax Study Commission

Volume 2
Staff Papers

Edited by
Robert D. Ebel
Therese J. McGuire

Butterworths
St. Paul

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Butterworth & Co. (Canada) Ltd., Toronto and Vancouver

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Butterworth & Co. (Publishers) Ltd., London

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Butterworths Pty. Ltd., Sydney

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Butterworths of New Zealand, Ltd, Wellington

South Africa
Butterworth Publishers (Pty.) Ltd., Durban

Singapore
Butterworth & Co. (Asia) Pte. Ltd.

ISBN 0-86678-474-8 (set)
ISBN 0-86678-473-X (volume 2)

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Printed in the United States of America by Bolger Publications, Inc.,
3301 Como Avenue S.E., Minneapolis, MN 55414

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Preface

In creating the Minnesota Tax Study Commission, the governor's executive order called for "a systematic and learned review of economic and tax policies" that would "provide goals and directions for Minnesota into the twenty-first century." That charge not only set the tone for the tax study, it also led to an early commission decision to document its findings and explain the reasons for its final policy recommendations. It was of critical importance to base those findings and recommendations on a reliable and respected body of research.

Accordingly, the commission engaged the services of several technical experts to prepare a series of research papers on a wide range of state/local tax and revenue issues. The result is this set of nineteen papers targeted to the reader who is looking for the detail and analysis that provide a basis for the policy-directed papers in Volume I.

Their work will be of interest to academics, tax practitioners, and policy analysts outside as well as within Minnesota. Although each of the nineteen papers addresses a specific Minnesota tax or fiscal issue, the study approach is general and, therefore, readily transferrable to other states and localities. In their papers the authors not only provide a framework and methodology applicable to similar fiscal issues in other jurisdictions, but they also present their analysis within the context of the overall structural and demographic characteristics of a state's economy. Moreover, because several papers in this volume provide applications of economic theories and models (in some instances, for the first time) to specific state and local fiscal issues, this book is well-suited to serve as a case-study text supplement to an upper-level undergraduate or graduate course in public finance.

As in any book of this nature, the list of persons deserving acknowledgment for their help and advice is a long one. Many of these people are recognized in the first volume of this report and again in the following pages. For our part, we want to make a special mention of our colleagues on the staff of the Minnesota commission, and to those groups that funded the publication of this report—the Dayton Hudson Foundation, the Minnesota Bankers Association, and Minnesota Wellspring.

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Part I

Background

1
Long-term and Cyclical Change in the Minnesota Economy

Lisa A. Roden

In order to make informed tax policy decisions for the next decade, it is imperative that policymakers understand the nature and direction of change in the Minnesota economy. Accordingly, the purpose of this paper is to lay out the demographic and economic forces that have been and are shaping the tax policy environment in Minnesota. By bringing an awareness of these forces to bear on the policymaking process, it is possible to design a tax (revenue) system that flows with and "captures" the fiscal benefits of economic change.

This paper begins with a brief overview of the structure and growth of the Minnesota economy over the past twenty years. It then uses "shift-share analysis" to identify the long-term employment growth trends in Minnesota's economy vis-a-vis the national economy. Third, it examines how the state economy performed during the cyclical downturn of the early 1980s. Finally, it considers the tax revenue implications of the long-term trends in the state economy.

THE MINNESOTA ECONOMY: AN OVERVIEW

Population. At 4.1 million inhabitants in 1980, Minnesota ranks twenty-first among the states in terms of population size. Although it grew slower than the nation during the 1970s (7.1% compared to 11.5% nationally), it was the fastest growing state in the twelve-state north central region. This trend is expected to continue in the 1980s, with Minnesota's population reaching 4.3 million by the end of the decade.

Minnesota's population is heavily concentrated within the Minneapolis-St. Paul metropolitan area. In 1980, about one-half of all Minnesotans lived within the seven-county metropolitan area. A less apparent feature of the state's settlement pattern is that about one-third of its population resides in rural areas, and that is significantly higher than the national average (26%).

During the 1970s, it is estimated that slightly more people moved into Minnesota than moved out, thus reversing a thirty-year trend of net outmigration. About half of the state's in-migrants and out-migrants came from and went to other north central states. However, most mobile Minnesotans did not leave Minnesota. About 81% of the 1.7 million Minnesotans who changed their residence between 1975 and 1980 moved within the state. This propensity to move locally is higher than the national figure (75%). Moreover, three of every four Minnesotans in 1980 were born in the state, a figure also well above the national average (64%).

Labor Force. During the 1970s, Minnesota's labor force increased by 30%, an explosive rate of growth that was fueled by the entrance of the baby-boom generation into the labor force and the increased participation in the labor force by women. Although the state's labor force expanded as fast as the nation's, its labor force participation rates stood well above the national averages for both males and females, and its unemployment rate was significantly lower than the national average. Together, these characteristics indicate that Minnesota demonstrated an above-average capacity to employ its people.

EMPLOYMENT AND EARNINGS: STRUCTURE AND GROWTH

Structure. The Minnesota economy is generally characterized by its industrial diversity and structural similarity to the national economy. In 1982, the distribution of state employment by major industry group varied from the national pattern by less than 2% in nearly all sectors. However, the state is not a scaled-down replica of the national economy. Agriculture is twice as important to Minnesota, even though it is declining as a share of both state employment and earned income. Professional services and certain durable manufacturing industries, such as nonelectrical machinery, fabricated metals, and scientific instruments, are also of greater importance to the state economy.

Growth. Minnesota has generated jobs faster than most of the north central states and the nation as a whole. Between 1969 and 1982, employment increased by 26% in Minnesota compared to 22% nationally. The state also outpaced the national economy in terms of real earned-income growth, with state earnings (adjusted for inflation) rising by 16.2% compared to 14.8% nationally over the thirteen-year period (See Tables 1 and 2).

Shift to Services. Like the nation, Minnesota is shifting to a service-based economy. During the 1969-82 period, state growth in employment and earnings was dominated by the service-producing industries, i.e., wholesale and retail trade; services; finance, insurance, and real estate (FIRE); transportation, communications, and public utilities (TCPU); and government. By 1982, nearly three-fourths (72%) of the state's workforce

TABLE 1
Minnesota and United States Employment Growth by Sector
1969, 1979, and 1982

	Minnesota					United States	
Industry	1969	1979	1982	1969-79 % Change	1969-82 % Change	1969-79 % Change	1969-82 % Change
Farm Proprietors	132,564	121,093	119,689	(8.7%)	(9.7%)	(13.3%)	(14.6%)
Farm Wage and Salary	25,583	30,898	28,404	20.8	11.1	6.6	6.6
Agricultural Services/ Forestry/Other	3,269	7,711	8,916	135.9	172.7	82.4	104.5
Mining	14,484	17,099	10,564	18.1	(27.1)	52.2	80.6
Construction	67,187	82,788	59,801	23.2	(11.0)	25.4	6.7
Manufacturing	330,556	380,451	345,955	15.1	4.6	4.1	(6.9)
Nondurable	138,742	146,820	139,077	5.8	0.2	(0.1)	(6.5)
Durable	191,814	233,631	206,878	21.8	7.8	7.0	(7.2)
Transportation, Communications and Public Utilities	84,568	100,400	93,822	18.7	10.9	15.1	14.1
Trade	298,869	444,731	430,633	48.8	44.1	35.8	37.3
Wholesale	77,026	120,004	112,817	55.8	46.5	40.3	42.6
Retail	221,843	324,727	317,816	46.4	43.3	34.3	35.5
Finance, Insurance, and Real Estate	61,244	93,885	100,016	53.3	63.3	41.3	52.3
Services	231,234	376,394	398,991	62.8	72.5	40.6	52.3
Government	254,610	303,501	288,462	19.2	13.3	16.4	16.5
Federal[a]	59,992	54,434	45,459	(9.3)	(24.2)	(13.6)	(10.7)
State and Local	194,618	249,067	243,003	28.0	24.9	35.4	33.9
Nonfarm Proprietors	109,560	140,231	152,658	28.0	39.3	28.3	38.2
TOTAL EMPLOYMENT	1,613,728	2,099,182	2,037,911	30.1%	26.3%	22.0%	22.0%

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce, 1969-1982.
Note: Numbers in parentheses are negative.
[a]Includes civilian and military employment

was employed in these industries compared to 65% in 1969. Conversely, the state's goods-producing industries—agriculture, mining, construction, and manufacturing—have declined as a percentage of total employment. However, unlike the service-producing industries, the goods-producing industries' share of total state earnings is greater than their employment share.

Relative Strength in Manufacturing. When examined apart from other goods-producing industries, manufacturing has been a strong performer in Minnesota. It was the state's largest industry in terms of real earnings in 1982, despite a long-term decline in its proportional share of state employment. It was also the only goods-producing industry that experienced gains in employment and real earnings throughout the 1969-82 period. Although such gains were modest, they stand in sharp contrast to the national manufacturing industry, which experienced declines in both employment and earnings over the period.

TABLE 2
Minnesota and United States Earnings Growth by Sector
(Thousands of Real Dollars)
1969, 1979, and 1982

	Minnesota					United States	
Industry	1969	1979	1982	1969-79 % Change	1969-82 % Change	1969-79 % Change	1969-82 % Change
Agriculture[a]	$ 873,679	$ 991,723	$ 634,782	13.5%	(27.3%)	11.5%	(30.0%)
Agricultural Services/ Forestry/Other	43,053	51,727	48,880	20.1	13.5	41.5	29.2
Mining	157,533	255,669	144,569	62.3	(8.2)	101.5	135.0
Construction	928,235	1,069,039	723,870	15.2	(22.0)	21.3	(4.3)
Manufacturing	3,288,454	4,053,682	3,710,412	23.3	12.8	12.5	(2.3)
Nondurable	1,338,965	1,549,903	1,454,012	15.7	8.6	7.6	(1.3)
Durable	1,949,490	2,503,779	2,256,400	28.4	15.7	15.3	(2.9)
Transportation, Communications & Public Utilities	930,166	1,282,357	1,159,822	37.9	24.7	35.5	29.9
Trade	2,346,346	3,006,373	2,647,986	28.1	12.9	22.3	12.3
Wholesale	899,578	1,376,358	1,209,058	53.0	34.4	38.1	32.4
Retail	1,446,768	1,630,015	1,438,928	12.7	(0.5)	13.4	1.1
Finance, Insurance, and Real Estate	660,552	912,040	889,223	38.1	34.6	33.0	32.7
Services	1,708,205	2,452,358	2,583,988	43.6	51.3	38.1	42.6
Government	1,738,832	2,182,819	2,129,833	25.5	22.5	20.4	17.8
Federal[b]	356,598	391,466	351,030	9.8	(1.6)	(0.3)	(1.2)
State and Local	1,382,234	1,791,353	1,778,802	29.6	28.7	33.9	30.0
TOTAL EARNINGS	$12,675,025	$16,257,786	$13,873,545	28.3%	16.2%	23.5%	14.8%

Source: Regional Economic Information System, Bureau of Economic Analysis, Department of Commerce, 1969-1982.
Note: Numbers in parentheses are negative.
[a]Includes farm proprietors and farm wage and salary
[b]Includes civilian and military employment

SOURCES OF ECONOMIC CHANGE: SHIFT-SHARE ANALYSIS OF THE MINNESOTA ECONOMY

In the aggregate, the Minnesota economy resembles the national economy in terms of the relative size and diversification of its major industry sectors. Yet, the state's employment growth in the 1970s far surpassed that of the nation.

This incongruity between economic structure and growth raises two questions: (1) on an industry-by-industry basis, how did Minnesota's employment growth compare with that of the nation's; and (2) why did some industries expand more (less) rapidly in Minnesota than nationally? This paper addresses the first question by using a descriptive device—shift-share analysis—to examine systematically Minnesota's employment growth in relation to that of the nation's. Shift-share analysis identifies which state industry groups have followed or departed from the national pattern of employment growth. Since it is not designed to answer the "whys" of economic growth, the second question is not addressed here.

ANALYTICAL FRAMEWORK

Before discussing the results of the Minnesota analysis, a brief description of the shift-share technique is useful. The technique begins by breaking Minnesota's employment growth into three components—national growth, industry mix, and local performance.

National growth recognizes that the course of economic events in the nation is a major influence on state employment growth. A state's industries are linked in many ways with industries across the country; therefore, a state economy changes as a function of national economic change. The national growth factor compares the "expected" change in state employment (i.e., growth equivalent to the percentage change in total national employment) with that actually achieved during a given period. Those state industry groups whose employment growth rates exceed the national average are termed "fast-growth" industries, those that lag behind are classified as "slow-growth" industries.

Industry mix considers the impact of a state's particular mix of industry groups on the expansion of its employment base. The rates of growth for specific sectors of the national economy are compared with the rate of growth for total national employment. States that tend to specialize in fast-growth sectors of the national economy can expect to experience employment growth that exceeds that of the nation's (and vice versa for states that are primarily composed of slow-growth industries). A favorable (unfavorable) industry mix arises from the fact that, nationwide, some industries expand more rapidly (slowly) than others. These differential rates of expansion are linked to changing supply and demand relationships.

Local performance accounts for the competitive advantage or disadvantage of state industry groups with respect to their counterparts nationally. It is calculated by comparing the actual employment growth of each sector of the state economy with that sector's performance in the national economy. A positive local performance effect arises when certain industries gain an advantage over similar industries in other states due to, for example, favorable access to inputs (land, labor, and capital) and markets. Industries that enjoy greater locational advantages (disadvantages) for their operations are likely to grow faster (slower) than their competitors in other states.

To summarize, national growth sets the "standard" for state employment growth (i.e., employment growth in each state industry group equivalent to national employment growth in the aggregate), and industry mix and local performance account for growth in excess or short of that standard. As illustrated in Table 3, industry mix and local performance can add to or detract from national growth in six ways:

TABLE 3
Possible Combinations of the Industry Mix and Local Performance Factors

Scenario	Industry Mix	Local Performance	Net Effect
#1	+	+	+
#2	+	— (+ dominant)	+
#3	+	— (— dominant)	—
#4	—	+ (— dominant)	—
#5	—	+ (+ dominant)	+
#6	—	—	—

Clearly, a state heavy in fast-growth industries, and whose industries are growing faster locally than nationally, will expand more rapidly than the nation as a whole (scenario #1). Likewise, a state heavy in slow-growth industries, and whose industries are growing more slowly locally, will not keep pace with national growth (#6). A mixed effect—both negative and positive factors—can result in growth that falls behind the national pace (#3 and #4) or growth that exceeds the national rate (#2 and #5).

THE MINNESOTA EXPERIENCE

This analysis examined Minnesota's employment growth relative to the nation's for the period 1969-79.* It revealed that:

- *National growth:* About three-fourths of the jobs generated in Minnesota from 1969 to 1979 were attributable to national growth trends (i.e., employment in most state industry groups increased at least as rapidly as the national rate of growth for all industries combined).
- *Industry mix:* A large representation in the rapidly expanding sectors of the national economy did not fully explain Minnesota's above-the-national-average rate of employment growth. In the 1970s, Minnesota's employment base was evenly split between industries that experienced rapid growth nationally and those that experienced slow growth nationally.
- *Local performance:* The factor that did account for Minnesota's above-average employment growth was the ability of most of its industries to outperform their national counterparts. Nearly all of Minnesota's industry groups—regardless of their fast- or slow-growth qualities—grew faster in Minnesota than they did nationally. This allowed Minnesota to

*1969 and 1979 were selected as the starting and ending dates of the analysis because the state's economy was fairly similarly situated within the national business cycle in both of those years, i.e., at or near the top of a peak in employment. When applying the shift-share technique, it is important *not* to measure from the top of a peak to the bottom of a trough (or vice versa) since that will distort the size of the employment shifts that are occurring.

increase its share of the nation's total employment (from 1.86% in 1969 to 1.98% in 1979).

The evidence that led to these conclusions is presented below by dividing Minnesota's employment growth—by sector and then by subsector—into the six employment change scenarios previously described. The sector analysis explains the overall differences between state and national rates of economic growth (see Figure 1 and Table 4), and the subsector analysis provides greater insight as to how various industry groups contributed to Minnesota's total growth performance (see Figure 2).

SECTOR SHIFTS (FIGURE 1)

National growth. During 1969-79, total employment in Minnesota rose by 30% compared to 22% nationally. If the state had increased its employment at the national average rate of 22%, it would have created 355,020 additional jobs by the end of the decade. Instead, the state actually generated 485,454 new jobs. Thus, about three-fourths of Minnesota's employment gain during this period was attributable to national growth

FIGURE 1
Shift-share Analysis of the Minnesota Economy: Sector Shifts in Employment, 1969-1979

#1	#2	#3
+ Industry Mix + Local Performance + Net Effect	+ Industry Mix (Dominant) - Local Performance + Net Effect	+ Industry Mix - Local Performance (Dominant) - Net Effect
• Agricultural Services/Forestry/ Other • Wholesale Trade • Retail Trade • Finance, Insurance, & Real Estate (FIRE) • Services	• Construction • Nonfarm Properties	• Mining
#4	**#5**	**#6**
- Industry Mix (Dominant) + Local Performance - Net Effect	- Industry Mix + Local Performance (Dominant) + Net Effect	- Industry Mix - Local Performance - Net Effect
• Nondurable Manufacturing • Durable Manufacturing • Transportation, Communications, and Public Utilities (TCPU) • Government • Farm Proprietors • Farm Wage and Salary	No Major Sectors - See Figure 2 Subsector Shifts	No Major Sectors - See Figure 2 Subsector Shifts

Source: Minnesota Tax Study Commission Staff.

TABLE 4
Overview of Shift-share Analysis of the Minnesota Economy, 1969-79

	Minnesota Employment		Percent Change		Absolute[a] Change	Components of Change			
	1969	1979	MN	U.S.	1969-79	National[b] Growth	Industry[c] Mix	Local[d] Performance	Net[e] Effect
Agricultural Services/Forestry/Other	3,269	7,711	135.9%	82.4%	4,442	719.2	1,974.5	1,748.9	3,723.4
Mining	14,484	17,099	18.1	52.2	2,615	3.186.5	4,374.2	-4,939.0	-564.8
Construction	67,187	82,788	23.2	25.4	15,601	14,781.1	2,284.4	-1,478.1	806.3
Manufacturing	330,556	380,451	15.1	4.1	49,895	72,722.3	-59,169.5	36,361.2	-22,808.3
Nondurable	138,742	146,820	5.8	-0.1	8,078	30,523.2	-30,662.0	8,185.8	-22,476.2
Durable	191,814	233,631	21.8	7.0	41,817	42,199.1	-28.772.1	28,388.5	-383.6
Transportation, Communications, and Public Utilities	84,568	100,400	18.7	15.1	15,832	18,605.0	-5,835.2	3,044.4	-2,970.8
Trade	298,869	444,731	48.8	35.8	145,862	65,752.2	41,243.9	38,853.0	80,096.9
Wholesale	77,026	120,004	55.8	40.3	42,978	16,945.7	14,095.7	11,939.0	26,034.7
Retail	221,843	324,727	46.4	34.3	102,884	48,805.5	27,286.7	26,843.0	54,129.7

Finance, Insurance, and Real Estate	61,244	93,885	53.3	41.3	32,641	13,473.7	11,820.1	7,349.3	19,169.4
Services	231,234	376,394	62.8	40.6	145,160	50,871.5	43,009.5	51,333.9	94,343.4
Government	254,610	303,501	19.2	16.4	48,891	56,014.2	-14,258.2	7,129.1	-7,129.1
Farm Proprietors	132,564	121,093	-8.7	-13.3	-11,471	29,164.1	-46,795.1	6,097.9	-40,697.2
Farm Wage and Salary	25,583	30,898	20.8	6.6	5,315	5,628.3	-3,939.8	3,632.8	-307.0
Nonfarm Proprietors	109,560	140,231	28.0	28.3	30,671	24,103.2	6,902.3	-328.7	6,573.6
TOTAL	1,613,728	2,099,182	30.1%	22.0%	485,454	355,020.0	-18,388.9	148,804.7	130,235.8

EMPLOYMENT

Source: Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce, 1969-79.

Note: The summation of National Growth, Industry Mix, and Local Performance may not equal Absolute Change due to the rounding of the Percent Change and Components of Change columns.

[a]Actual employment change between 1969 and 1979.

[b]National Growth — Employment increase that would have occurred in Minnesota for a specific sector if such sector had grown at the national rate for all sectors combined.

[c]Industry Mix — The additional gain (loss) in Minnesota employment for a specific sector (additional to National Growth) due to such sector growing faster (slower) nationally than the national all-sector rate. A minus sign preceding an entry indicates that sector was a slow-growth sector nationally.

[d]Local Performance — The additional gain (loss) in Minnesota employment for a specific sector (additional to National Growth and Industry Mix) as a consequence of such sector growing faster (slower) in Minnesota than the same sector nationally. A minus sign preceding an entry indicates that sector grew slower than its national counterpart.

[e]Net Effect — The sum of Industry Mix and Local Performance. Indicates the number of jobs by which a sector exceeded or lagged the national growth standard. A minus sign preceding an entry indicates that sectoral growth was less than the national growth standard.

forces, i.e., demographic and economic changes at the national level that increased the demand for state goods and services, which resulted in a net increase in state employment.

Industry mix. In 1969, about half (49%) of Minnesota's workforce was employed in what were fast-growth sectors of the national economy in the 1970s, e.g., wholesale and retail trade, services, and FIRE. (Fast growth sectors are represented in scenarios #1, 2, and 3 in Figure 1.) The remaining half (51%) of Minnesota's workforce was employed in slow-growth sectors of the national economy, e.g., manufacturing, TCPU, government, and farm proprietors. (See scenarios #4, 5, and 6 in Figure 1.) After accounting for this mix of fast- and slow-growth sectors, Minnesota ended the decade with a small but negative industry mix effect. Thus, in the aggregate, industry mix was a slight inhibitant to employment growth in Minnesota.

Local performance. Conversely, local performance gave Minnesota's employment base a substantial boost. With the exceptions of mining, construction, and nonfarm proprietors (which are relatively small sectors in Minnesota), all sectors of the state economy exceeded the employment growth of their corresponding sectors at the national level. In total, about 88% of the state's 1969 workforce was employed in industries that outperformed their national counterparts during the 1970s. This was especially true of the service, trade, and manufacturing sectors, which are Minnesota's largest employers. Note in Table 4 that the previously mentioned industries that exhibited slow-growth qualities at the national level (i.e., manufacturing, TCPU, government, farming) managed to show strength in the state economy. Manufacturing, TCPU, and government grew more rapidly and farming declined less rapidly in Minnesota than nationwide.

At this level of aggregation, shift-share analysis suggests that it was the success of most state industries in outperforming their national counterparts (rather than the overall mix of state industries) that largely accounted for Minnesota's expanding employment base vis-a-vis the nation as a whole.

SUBSECTOR SHIFTS (FIGURE 2)

An examination of the state's employment growth at the subsector level reveals that what is true for the whole is not necessarily true for all of the parts. There was marked variation in the performance of many subsectors when compared to the overall performance of the sector in which they were categorized, e.g., scientific instruments and nonelectrical machinery were rapidly expanding segments of the slow-growth manufacturing industry. Such behavior is important since an economy can grow not only by specializing in fast-growth industries, but by gathering the fast-growth parts of industries that are declining in the aggregate. Figure 2 summarizes the subsector trends in the Minnesota economy for the 1969-79 period.

FIGURE 2
Shift-share Analysis of the Minnesota Economy: Subsectoral Shifts in Employment, 1969-1979

#1	#2	#3
+ Industry Mix + Local Performance + Net Effect	+ Industry Mix (Dominant) - Local Performance + Net Effect	+ Industry Mix - Local Performance (Dominant) - Net Effect
• Agricultural Services/Forestry/ Other • Construction: Special Trade Contractors • Durable Manufacturing: Lumber & Wood Products, Nonelectrical Machinery, Scientific Instruments • TCPU: Trucking & Warehousing, Communications • Wholesale Trade • Retail Trade: Food Stores, Eating and Drinking Places • FIRE: Insurance and Real Estate • Services: Business & Repair Services, Hotels and Other Lodging Places, Amusement & Recreation, Medical & Other Health Services, Legal Services	• FIRE: Banking • Government: State and Local • Nonfarm Proprietors	• Construction: Heavy Construction Contractors
#4	**#5**	**#6**
- Industry Mix (Dominant) + Local Performance - Net Effect	- Industry Mix + Local Performance (Dominant) + Net Effect	- Industry Mix - Local Performance - Net Effect
• Mining: Metal Mining • Nondurable Manufacturing: Textiles and Apparel, Paper and Allied Products, Furniture and Fixtures, Chemicals and Petroleum • Durable Manufacturing: Primary Metal Industries • Retail Trade: General Merchandise, Auto Dealers & Service Stations, Building Materials, Farm Equipment • Services: Nonprofit Organizations, Personal Services • Government: Federal • Farm Proprietors, Farm Wage & Salary	• Construction: General Building Contractors • Nondurable Manufacturing: Printing & Publishing • Durable Manufacturing: Fabricated Metals, Stone, Clay & Glass Products • TCPU: Other Transportation • Services: Private Educational Services	• TCPU: Railroad Transportation Public Utilities • Nondurable Manufacturing: Food and Kindred Products • Durable Manufacturing: Electrical Equipment, Transportation Equipment

Source: Minnesota Tax Study Commission Staff.

CYCLICAL CHANGE IN THE MINNESOTA ECONOMY

The preceding analysis of the long-term trends in employment and earnings has shown that Minnesota's economic performance during the 1970s compared favorably with the United States as a whole. The state outpaced the national economy in terms of employment and real earnings growth, and its employment rate remained well below the national average.

However, as Minnesota entered the 1980s, its seemingly superior characteristics of growth quickly deteriorated. The state soon found itself in a deeper and longer lasting recession than that occurring nationally.

RECESSION

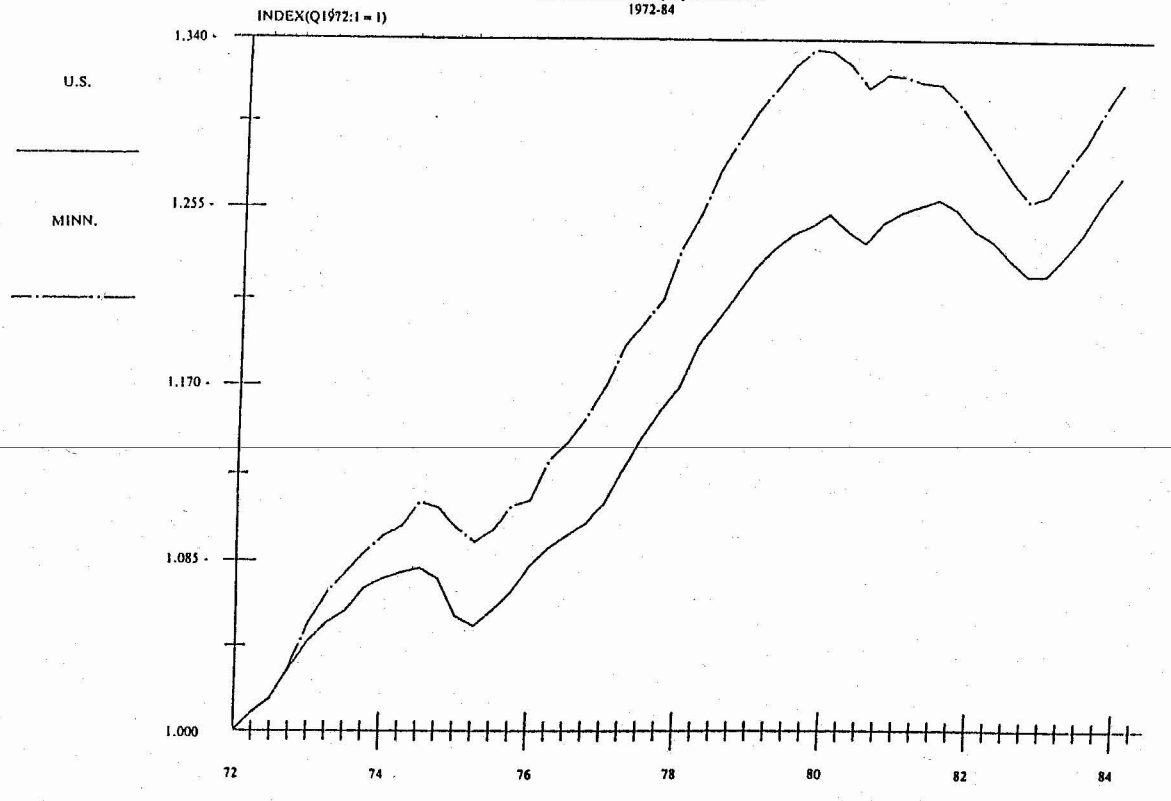
The severity of the 1980-82 recession in Minnesota caused many economists to question the state's presumed immunity to cyclical fluctuations in the national economy. Prior to 1980, it was frequently advanced that the diversified nature of the Minnesota economy insulated the state from the disruptive effects of peaks and troughs in the national business cycle. Proponents of this view claimed that the character of Minnesota's industrial mix—a large farm sector and a balance among nonfarm sectors—buffered the state from the extreme swings in the national economy. In reality, Figure 3 shows that Minnesota's economy has long exhibited a significant degree of sensitivity to changing national economic conditions. Minnesota (especially its nonfarm economy) tends to move with the nation in recession and recovery.

During the 1974-75 recession, Minnesota was quite sensitive to the national downturn even though it was not as hard-hit in terms of employment losses. The stronger performance of the state economy was largely attributable to the moderating effect of the strong performance of its disproportionately large agricultural sector. At that time, farm exports were growing, production was expanding, and Minnesota farmers sold large amounts of grain to the Soviet Union and other foreign nations. This export activity brought new income to Minnesota that softened employment losses in construction and manufacturing and bolstered the growth of the trade and service industries.

The recession of 1980-82 effectively eliminated the popular notion that Minnesota was recession-proof. Contrary to previous experience, a slump in the state's agricultural sector coincided with a dive in its nonfarm economy. This sent Minnesota into a deep and broad-based recession that forced employment contractions in nearly all sectors of its economy.

- The mining, construction, and durable goods manufacturing industries were especially hard-hit. They suffered employment declines of 61%, 26%, and 17%, respectively, during the December 1979 - December 1982 period.
- For the first time on record, jobs in wholesale and retail trade fell significantly.
- Growth flattened out in the FIRE and service sectors, which grew by 4.8% and 5.8%, respectively.

FIGURE 3
Total Non-farm Employment Indices
1972-84



Source: Minnesota Department of Finance

TABLE 5
Minnesota and United States Employment Growth (Decline)
During the 1980-82 Recession

	Minnesota Employment (In Thousands)		Change in Employment		
			Minnesota		United States
	December 1979	December 1982	Absolute Change	Percentage Change	Percentage Change
Mining	16.7	6.5	(10.2)	(61.1%)	7.0%
Metal Mining	15.1	5.0	(10.1)	(61.9%)	(40.9)
Construction	80.8	59.7	(21.1)	(26.1)	(15.6)
Manufacturing	383.5	333.2	(50.3)	(13.1)	(13.2)
Durable Goods	236.8	196.9	(39.9)	(16.8)	(17.0)
Lumber and Furniture	16.0	12.4	(3.6)	(22.5)	(16.4)
Fabricated Metals	39.7	32.4	(7.3)	(18.4)	(20.5)
Nonelectrical Machinery	90.7	76.9	(13.8)	(15.2)	(16.5)
Electrical Machinery	28.7	25.4	(3.3)	(11.5)	(8.9)
Nondurable Goods	146.7	136.3	(10.4)	(7.1)	(7.4)
Food and Kindred Products	47.5	45.1	(2.4)	(5.1)	(5.9)
Paper and Allied Products	33.7	31.9	(1.8)	(5.3)	(7.6)
Printing and Publishing	33.7	35.3	1.6	4.7	1.2

Transportation, Communications, and Public Utilities	102.7	95.2	(7.5)	(7.3)	(3.6)
Transportation	68.4	61.7	(6.7)	(9.8)	(10.4)
Communications	20.2	19.4	(0.8)	(4.0)	4.8
Public Utilities	14.1	14.1	-0-	-0-	8.2
Trade	458.8	434.0	(24.8)	(5.4)	(0.8)
Wholesale	118.7	110.7	(8.0)	(6.7)	(1.2)
Retail Trade	340.1	323.3	(16.8)	(4.9)	(0.7)
Finance, Insurance, and Real Estate	93.2	97.7	4.5	4.8	5.9
Insurance	34.5	35.4	0.9	2.6	3.7
Banking	27.4	28.6	1.2	4.4	7.7
Services	360.7	381.7	21.0	5.8	10.1
Business Services	54.7	57.6	2.9	5.3	10.4
Health Services	120.3	133.4	13.1	10.9	14.9
Government	302.1	290.6	(11.5)	(3.8)	(1.9)
Federal	31.4	30.1	(0.3)	(4.1)	(1.3)
State and Local	270.8	260.6	(10.2)	(3.8)	(2.0)
TOTAL NONFARM EMPLOYMENT	1,798.5	1,693.9	104.6	(5.8%)	(2.2%)

Source: Nonagricultural Wage and Salary Employment—Hours and Earnings, Research and Statistical Services Office, Minnesota Department of Economic Security. *Supplement to Employment and Earnings,* Bureau of Labor Statistics, U.S. Department of Labor, July 1983.

Note: Numbers in parentheses are negative.

In total, Minnesota lost over 100,000 nonfarm jobs during the three-year period (see Table 5). This 5.8% loss was significantly higher than the nation's overall decline of 2.2%.

Many economists attribute the severity of the recession in Minnesota to: (a) the slump in national economic conditions; and (b) the simultaneous downturn of the state's farm and nonfarm economies, an event that had not occurred in previous recessions. At the turn of the decade, the national economy was experiencing double-digit inflation and high interest rates. These factors choked the growth of interest-sensitive industries (such as construction, forest products, taconite mining, and durable goods manufacturing) which depend on business and high-ticket consumer spending for their growth. Because these types of industries account for a significant part of Minnesota's economic base, the state economy was particularly susceptible to the adverse effects of escalating interest rates.

High interest rates exacerbated another problem for the United States and hence Minnesota, i.e., the strong U.S. dollar. By generating an inflow of foreign capital to the United States, high interest rates (in large part) caused the U.S. dollar to soar on foreign exchange markets. A strong dollar hurts U.S. trade in two ways. First, it makes American products more expensive relative to foreign goods and therefore less attractive to foreign buyers. At the same time, it holds down the cost of imported goods, which creates more domestic competition for U.S. products.

The strength of the U.S. dollar added to the troubles of Minnesota's farm industry, which had become extremely reliant on export markets for its continuing vitality. By making it more difficult to sell Minnesota farm products abroad, the strong dollar, along with a weak world economy, resulted in large domestic supplies that depressed commodity prices and farm income. The strong dollar also hurt many of Minnesota's durable manufacturing industries, which look to international markets for much of their growth.

RECOVERY

By the end of 1982, the recession hit its trough for both Minnesota and the United States. During most of 1983, Minnesota's economic recovery lagged behind the nation's, but it then gained increased strength. By April 1984, Minnesota reached its previous nonfarm employment peak of 1.79 million and has since continued to expand. For the period July 1983 - July 1984, Minnesota had the third fastest employment growth in the nation.

Given continued national economic expansion, the Minnesota economy is expected to outperform that of the nation's during the mid-eighties. About three-fourths of the state's near-term employment growth is expected to come from its service, trade, and manufacturing sectors. In total, nonagricultural employment is expected to reach about 1.95 million by year-end 1986.

Although Minnesota is expected to outperform the nation, its future growth may be restrained by: (a) lingering weakness in two of its traditional basic industries, agriculture and mining; and (b) the considerable uncertainty that surrounds the national economic outlook.

AGRICULTURE

The Minnesota Department of Finance is expecting a decline in farm income through 1987. This projection is due to the presence of several unfavorable market factors, including large crop supplies, rising production costs, and low demand for farm exports, and increased foreign competition. Faced with rising costs and lower profits, the farm sector continues to operate in a tight cost/price squeeze.

METAL MINING

Taconite is another industry for which the long-term outlook is not encouraging. This industry is suffering from both cyclical and secular decline. Its future is tied to that of the U.S. steel industry, which must achieve significant improvements in its cost structure in order to be competitive in domestic and world markets. Currently, the U.S. steel industry is plagued by obsolete equipment, excess capacity, and increasingly stiff foreign competition. In order to survive, industry analysts predict that steel companies will become smaller and more efficient, and will increasingly use cheaper, imported sources of iron ore for domestic steel production. These changes imply a reduced demand for Minnesota taconite, and thus, fewer mining jobs. The taconite industry is not expected to return to pre-1980 levels of production and employment.

UNCERTAINTY IN THE FUTURE OF THE NATIONAL ECONOMY

The longevity of the current U.S. recovery is uncertain due to mounting federal budget deficits, the prospects for higher inflation, and a possible change in federal monetary policy. Many economists fear that the heavy borrowing needs of the federal government (to finance its budget deficits) and/or a more restrictive monetary policy will push interest rates back up to business-stifling levels. This could retard the growth of interest-sensitive industries and move the national economy into a recession.

This chapter has demonstrated that the state economy is constrained by larger economic forces, and that a recession at the national level would soon be felt locally. A mid- or late-decade downturn could be particularly painful in Minnesota due to the lack of recovery in its traditional basic industries. It appears, however, that the only certainty in the foreseeable future is that Minnesota will move with the nation through the upswings and downswings of the business cycle.

REVENUE POTENTIAL OF THE CHANGING STATE ECONOMY

The preceding sections of this report have described in detail the changes occurring in Minnesota's economic base. Given such changes, it is appropriate to ask what this all means in terms of the long-run revenue potential of the state/local tax system. Here the economic base—revenue productivity link is forged only in general terms by analyzing the potential ability of thirteen sectors of the state economy to directly and indirectly generate four types of tax bases: personal income; business income/receipts; consumption; and property. Each of these tax bases represents the potential or comprehensive tax base that Minnesota starts with before any narrowing through exclusions, exemptions, deductions, preferential assessments, or credits, *viz:*

- "Personal income" refers to the total income of individuals, of which earnings comprises the largest share;
- "Business income/receipts" includes not only net income or profit, but also rent, wages, and interest;
- "Consumption" refers to that part of personal income not saved—a much broader concept than "sales" taxes, although both conventional general sales and selected sales taxes are included here; and,
- "Property" includes both real and personal property at its full market value.

The ability of the thirteen industry groups to contribute to future tax base growth is estimated by evaluating the relative importance of six key economic characteristics, as follows:

1. The *relative importance* of the industry group in the state economy, as indicated by its share of total state employment and total state earnings;
2. The *growth trends* for the industry group as indicated by its growth in employment and real earnings over the 1969-79 and 1979-82 periods;
3. The *profitability* of the industry group as indicated by corporate profits before taxes as a percentage of gross national product (GNP);
4. The *labor intensity* of the industry group as indicated by employee compensation as a percentage of GNP;
5. The *property intensity* of the industry group as indicated by the value of its property as a percentage of its total property and payroll value; and
6. The *wage scale* of the industry group, as indicated by average wage rates for production workers and the percentage of production vs. nonproduction workers.

These characteristics of the major sectors of Minnesota's economy are presented in Table 6. Different combinations of these characteristics result in

TABLE 6
Economic Characteristics of Major Industry Sectors

Industry	Sectoral Share[a] Employ-ment	Sectoral Share[a] Real Earnings	Employment Growth[b] 69-79	Employment Growth[b] 79-82	Real Earnings Growth[b] 69-79	Real Earnings Growth[b] 79-82	Profitability[c] (Corp. Profits Before Taxes as % of GNP) 1979	Profitability[c] (Corp. Profits Before Taxes as % of GNP) 1982	Labor Intensity[d] (Employee Comp. as a % of GNP) 1979	Labor Intensity[d] (Employee Comp. as a % of GNP) 1982	Property[e] Intensity 1980	Production Workers[f] Wage Scale Index 1980	Production Workers[f] Wage Scale Index 1982	Production Workers[g] as a % of Total 1980	Production Workers[g] as a % of Total 1982
Agriculture	7.3%	5.2%	(8.7%)	(1.2%)	13.5%	(36.0%)	1.2%	NA*	14.1%	16.0%	NA*	NA*	NA*	—	—
Mining	0.7	1.3	18.1	(38.2)	62.3	(43.5)	5.2	3.9%	34.7	31.9	73.8%	138.7	138.7	—	—
Construction	3.4	5.7	23.2	(27.8)	15.2	(32.3)	5.1	4.1	71.4	74.2	52.2	146.6	150.1	79%	72%
Nondurable Mfg.	6.9	9.7	5.8	(5.3)	15.8	(6.2)	26.1	18.6	65.2	66.4	78.0	94.8	95.5	68	61
Durable Mfg.	10.7	15.4	21.8	(11.4)	28.4	(9.9)	13.8	3.5	77.2	81.3	60.4	95.0	95.8	64	58
Transportation	3.1	5.0	17.8	(10.0)	36.0	(17.6)	4.6	-0-	71.4	70.9	66.2	110.6	112.0	—	—
Communications	1.0	1.6	29.1	(1.1)	63.9	1.4	12.5	8.5	52.5	53.6	83.9	104.6	112.0	—	81
Public Utilities	0.7	1.4	10.1	1.9	31.3	3.1	15.0	13.1	33.3	32.0	92.4	126.2	130.0	—	81
Wholesale Trade	5.6	8.4	55.8	(6.0)	53.0	(12.2)	14.2	7.4	55.4	60.5	61.3	98.8	95.9	78	76
Retail Trade	15.6	9.9	46.4	(2.1)	12.7	(11.7)	7.9	5.5	62.4	61.7	74.6	65.8	62.6	90	92
Finance & Insurance	3.8	4.9	46.9	8.9	37.1	6.5	30.4	NA**	63.1	65.6	77.8	71.2	73.7	—	74
Services	18.8	16.4	62.8	6.0	43.6	5.4	3.1	2.1	71.5	73.2	75.2	81.7 66.2	79.9 64.7	84	82
Government	14.4%	14.0%	19.2%	(5.0%)	25.5%	(2.4%)	—	—	99.0%	99.0%	—	NA*	NA*	—	—
Total	—	—	30.1%	2.9%	28.3%	9.7%	9.6%	5.7%	60.3%	60.7%	69.3%	100.0%	100.0%	—	—

Source: See below.

[a]Represents the average of an industry's 1979 and 1982 percentage of total state employment and the total state earnings. Does not total to 100% since certain industries (real estate, agricultural services, proprietors) are omitted from this table. Source: Bureau of Economic Analysis, U.S. Department of Commerce.

[b]Source: Bureau of Economic Analysis, U.S. Department of Commerce.

[c]Figures represent U.S. averages by industry. Source: National Income and Product Accounts, U.S. Department of Commerce.

[d]Ibid.

[e]Figures represent Total Property as a percent of Total Payroll and Property by Industry. Source: Three-factor apportionment data, Minnesota Department of Revenue.

[f]100 = average all-industry wage for production workers. Source: Minnesota Department of Economic Security.

[g]Source: Minnesota Department of Economic Security.

*Not Available.

[h]Professional Services and Other Services.

different implications for the revenue potential of the various tax bases. For example:

- A large, growing, high-wage industry group is estimated to have significant potential for personal income tax revenue growth;
- A large, growing industry group with a wide profit margin is assumed to be a key contributor to business income revenue productivity;
- Purchases of goods and services by consumers are closely related to income; therefore, an industry group with high potential for personal income tax revenue growth also has high potential for consumption tax revenue growth;
- A growing, property-intensive industry group is assumed to be a key contributor to property tax revenue growth.

The industry-by-industry findings of this analysis are summarized in Figure 4. Overall, it indicates that in order to finance Minnesota's public sector in the years ahead, it will be necessary to rely on all major tax sources (no one tax can capture the economic growth in all industries), and, within the bounds of tax policy objectives, taxes should be broadly based. Adherence to these principles will allow Minnesota to capture the fiscal benefits of the long-term economic and demographic trends and cyclical changes occurring in its economy.

FIGURE 4
Tax Revenue Potential: by Industry and by Tax Base

	Tax Base			
Industry	Personal Income	Business Income/ Receipts	Consumption	Property
Goods-Producing				
Agriculture	Low	Low	Moderate	Moderate to High
Mining	Low	Low	Low to Moderate	Low to Moderate
Construction	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Nondurable Manufacturing	Low	Moderate to High	Low	Moderate to High
Durable Manufacturing	High	Moderate to High	High	Low to Moderate
Service-Producing				
Transportation	Low to Moderate	Low	Low to Moderate	Moderate
Communications	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Public Utilities	Moderate	Moderate to High	Moderate	High
Wholesale Trade	Moderate	High	Moderate to High	Low to Moderate
Retail Trade	Low	Low	High	Moderate to High
Finance & Insurance	Moderate to High	Moderate to High	Moderate to High	High
Services	Low	Low	Moderate to High	Moderate to High
Government	Moderate to High	—	Moderate	—

Note: It is important to emphasize that this figure relates to the long-run revenue *potential* of the Minnesota economy. It should not be interpreted as a revenue projection or a tax policy recommendation.

2
Analysis of State Budget Policy

Gordon Folkman and John Asmussen

The principal issue addressed in this paper is to what extent tax reforms can be discussed and determined independent from spending policies. If the tendency is for taxes to determine the amount the state spends for public goods and services (that is, the state will spend only what it raises in revenue), it is not unreasonable to address tax reform as a separate issue from spending, since spending policy would adjust correspondingly to changes made in the tax system. However, if the state's tax effort is influenced primarily by spending demands, any discussion of tax reform must be conducted in the context of the state's spending policies. For example, under this latter condition, if it is determined that the level of Minnesota taxes is too high to be economically competitive with other states, to recommend tax cuts is also to recommend reduction in government spending.

The relationship between Minnesota taxes and spending can be seen by comparing state fiscal policy during the period spanning 1975 to 1979 with the period between 1980 and 1987 (estimated).

The earlier period represented a time of relative good "fiscal health." The tax base and rates established in 1975 changed little during the period. Between 1975 and 1979 tax revenue increased, largely as a result of economic factors, at approximately the same rate as spending.

Since 1980, however, the state has experienced major fiscal problems. Between FY 1980 and FY 1982 the general fund expended over $900 million more than it collected in revenues. This resulted in a fund deficit of $624 million on June 30, 1982. Although many blame the revenue shortfall on the economic recession, it is very important to be aware that the state, in 1979, indexed its personal income tax, which also suppressed revenue growth. To compound the problem, the state also tried to maintain near-double-digit growth in spending during a period when the tax system could only generate revenues at a rate of 3% per year or less.

The magnitude of the general fund's fiscal problems required a complex array of tax increases, revenue/expenditure shifts, and expenditure reductions in order to bring the state's budget back into balance by the end of FY 1983. Although it appears on the surface that these fiscal policies were evenly divided between those affecting revenues and those affecting

expenditures, the long-term implications clearly suggest that the solution was to bring revenues in line with spending and not vice versa.

What follows is a brief analysis of the state's fiscal policy during these two periods. Five topics are specifically addressed:

- Important policies characterizing the state's intergovernmental fiscal system;
- Trends in tax revenue controlling for growth due to economic factors as opposed to tax law changes;
- Trends in major spending areas highlighting those programs where the state exhibits its greatest commitment;
- Policy actions taken by the state to balance its 1981 and 1983 budgets; and
- The importance of these policies for maintaining "fiscal stability" through 1987.

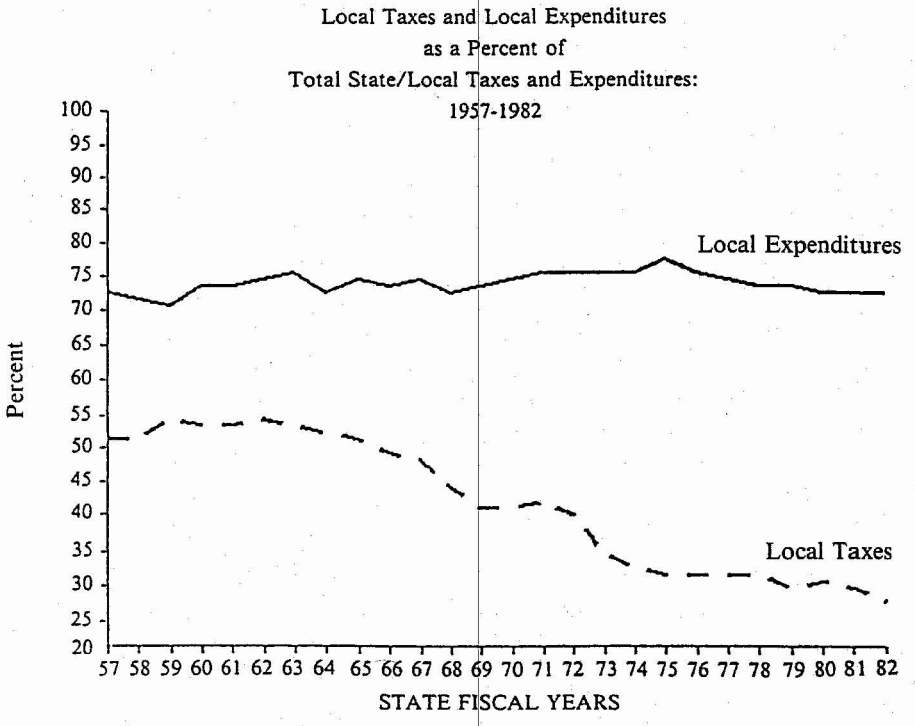
MINNESOTA'S STATE AND LOCAL FISCAL SYSTEM: ONE OF FISCAL INTERDEPENDENCY

Since 1957, Minnesota state and local finances have undergone significant change. The most profound change is that today the state is the primary collector of tax revenue, while local governments continue to be the primary spenders (see Exhibit 1). In 1957, 49% of total state/local taxes in Minnesota were collected by the state and 51% by local governments. Local governments, on the other hand, accounted for 73% of total state/local spending. By 1982 the local share of taxes had declined to 26% while still accounting for over 70% of total government spending.

This trend can be attributed to four distinct policy developments during the period:

- *The 1967 tax reform and relief act* enacted a state general sales tax to finance a local government aid program, the homestead credit, and the circuit breaker program.
- *The omnibus tax bill of 1971 (Minnesota Miracle)* enacted the school foundation aid program, reformed local government assistance, established levy limitation on local governments, and enacted the agricultural credit program. To finance these programs several tax measures were adopted that increased revenue from statewide nonproperty sources.
- *The state began assuming a greater share of spending for public welfare* programs during the mid-1970s. The effect has been to shield the county-collected proportion of the property tax from financing the surge in public welfare benefit costs.
- *Expansion of direct property tax relief payments* in the form of credits and refunds to individuals throughout the 1970s.

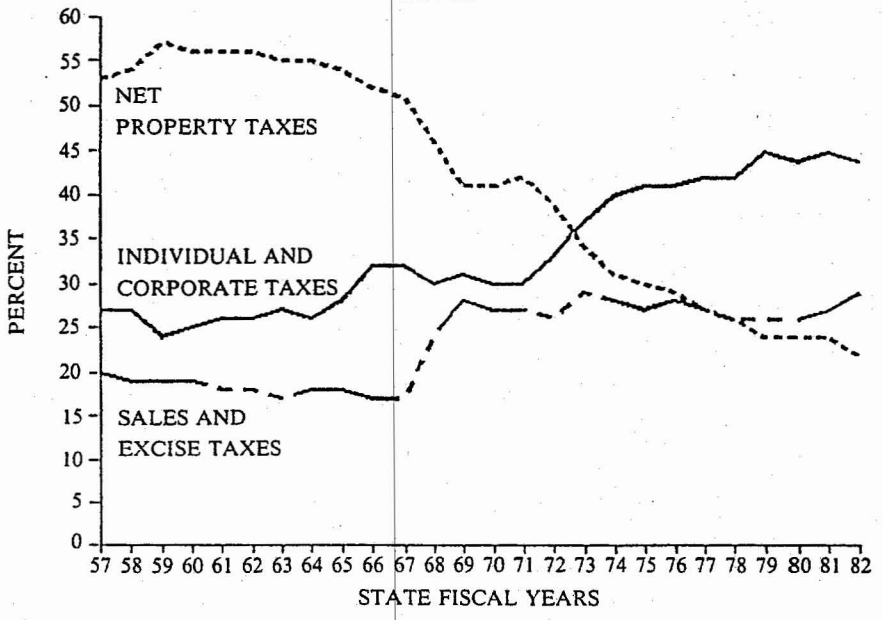
EXHIBIT 1



Source: Office of the Legislative Auditor, *State and Local Government Finances in Minnesota: A Review of Trends in Revenues and Expenditures: 1957-82*

EXHIBIT 2

Change in Minnesota Tax Mix
State and Local Taxes:
1957-82



Source: Office of the Legislative Auditor, *State and Local Government Finances in Minnesota: A Review of Trends in Revenues and Expenditures: 1957-82*

In effect, these policies have worked together towards a common objective—to reduce local governments' reliance on the property tax by:

- shifting taxing responsibility away from local governments (i.e., the property tax) and substituting these revenues with state aids, income raised primarily from the state income and sales tax sources (see Exhibit 2);
- providing property tax relief directly to individuals; and
- having the state assume the fiscal responsibility of particular local programs.

The institutionalization of these programs not only had a profound impact on the state/local fiscal system, it also altered the purpose of state government.

In 1957, Exhibit 3 shows that state operating expenditures accounted for one-half of all state spending, while intergovernmental transfer payments accounted for only 38%. By 1975, 50% of state outlays were distributed back to local units of government and only 28% of the outlays were spent directly for state operating purposes. If direct property tax relief payments—state paid property tax credits and refunds—are also considered as a type of aid to local governments, then nearly 60% of total state outlays provided direct or indirect fiscal assistance to local governments in 1975.

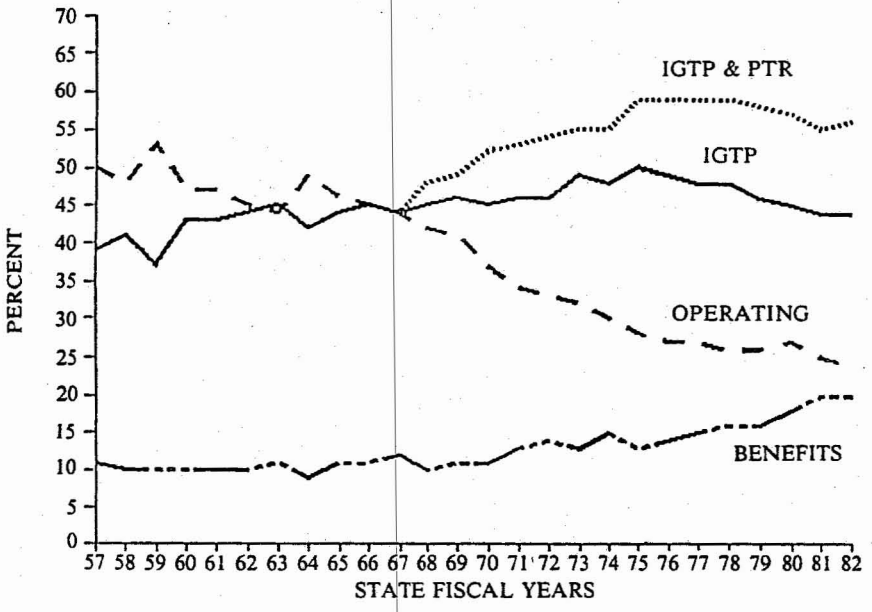
Since 1975, however, the relative growth in state intergovernmental transfer payments declined slightly and in 1982 these expenditures accounted for only 44% of total state outlays. This decline was offset partly by state payments for property tax relief, which increased from 9% of total state outlays to over 12% during the period.

It is also reasonable to interpret the increase in state welfare benefit expenditures as yet another form of indirect aid to local governments. In 1976, when the state assumed a greater financial role in providing welfare benefits to needy Minnesotans, it did so, in part, to relieve local governments of the fiscal burdens in meeting the rapidly increasing costs associated with these programs. As a result, approximately $192 million or 3.5% of state outlays in 1982 could also be viewed as another form of fiscal assistance to local governments.[1] Accordingly, in 1982 nearly 60% of total state outlays was devoted to direct or indirect fiscal assistance to local governments.[2] This represented a share of the state budget equal to that of 1975.

Exhibit 4 shows that as a result of these policies, state tax effort increased significantly from 5.7% of total state personal income in 1967 to 9% in 1979. Conversely, local tax effort declined from 5.3% to 3.6% during the same period. Between 1979 and 1981, state tax effort also declined sharply. This resulted from the indexation of the state's personal income tax along with relatively strong growth in personal income during most of the period. However, this decline was short-lived. By 1982, the state's tax effort once

EXHIBIT 3

Change in State Expenditures
as a Percent of Total State Outlays
by Type: 1957-82

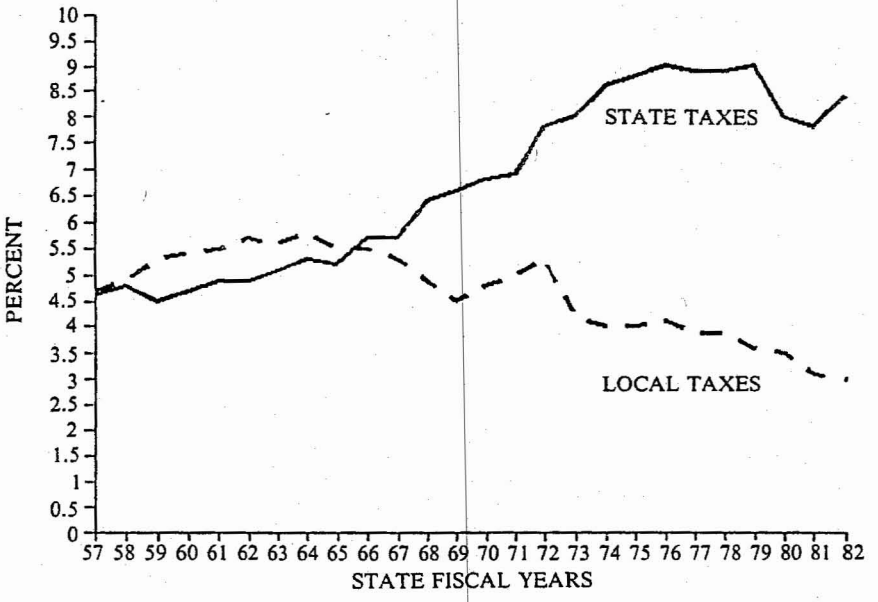


IGTP = Intergovernmental Transfer Payments PTR = Property Tax Relief

Source: Office of the Legislative Auditor, *State and Local Government Finances in Minnesota: A Review of Trends in Revenues and Expenditures: 1957-82*

EXHIBIT 4

State and Local Taxes
as a Percent of State Personal Income:
1957-82



Source: Office of the Legislative Auditor, *State and Local Government Finances in Minnesota: A Review of Trends in Revenues and Expenditures: 1957-82*

again increased to 8.4%. This resulted from the state increasing tax rates in order to offset budget deficits along with much slower growth in personal income. However, local tax effort continued to decline throughout the period. By 1982 local taxes represented only 3% of the state's personal income. Correspondingly, total state and local tax effort increased only slightly during the entire period, from 11% in 1967 to 11.4% in 1982.

The implication of these state/local fiscal policies for evaluating tax reform in Minnesota is straightforward. If Minnesota state taxes are judged too high and state tax cuts are recommended, any corresponding reductions made in state spending (which will likely be needed in order to remain consistent with lower taxes) may merely shift the financial responsibility to local governments. Depending on which state expenditures are reduced, the net reduction in state and local taxes can be something far less than what was originally reduced at the state level. Table 1 shows examples of how state aid and property tax relief programs impact local property tax effort and interrelate with each other.

GROWTH IN STATE TAX REVENUE: 1975-87 (ESTIMATED)

Exhibit 5 summarizes the growth in state tax revenue from major sources for the period between FY 1975 and FY 1987 (estimated).[3] The graph compares the growth in tax revenue due to legislative actions with growth due to inflation and other economic factors. As can be seen, all the growth in tax revenue during the earlier years was a result of the state's tax system benefiting from inflation and an expanding economy. As Table 2 shows, the net impact of tax legislation during the period between 1975 and 1978 actually reduced taxes, suppressing slightly the effects of inflation and economic growth.

Since 1981, however, the impact of new tax laws has been significant, accounting for nearly all the growth in tax revenue between 1981 and 1983 and approximately one-half of the projected growth through FY 1987. Between 1980 and 1987, tax revenue from major sources are expected to increase from $2.5 billion to $4.5 billion, an increase of 83%. If, however, the state had not enacted major tax legislation in 1982 or 1983, we estimate that tax revenue will amount to $3.8 billion in FY 1987, or represent an increase of 53% over that collected in FY 1980.

Table 3 shows the estimated revenue impact of major tax law changes for FY 1982 through FY 1987. Much of the new tax revenue was and will be generated from the general sales tax. In 1982 the state increased the rate from 4 to 6 percent and expanded the tax base to include such items as the sale of candy and soft drinks. As a result of this legislation, the state in FY 1983 collected an estimated $322 million in new tax revenue and may collect as much as $597 million in FY 1987.

TABLE 1
Minnesota Linkages Among State Aid Programs - 1984

PROGRAMS	INTERACTION	RESULT
Automatic Linkages		
1. THC and HC	Both affect taconite households.	Change in HC causes an opposing change in THC.
2. ASC and HC	Both affect agricultural homesteads of greater than one acre.	Change in ASC causes an opposing change in HC.
3. THC, HC, and ASC	All affect taconite agricultural homesteads greater than one acre.	Change in ASC causes an opposing change in both THC and HC; change in HC causes an opposing change in THC.
4. NPC, WC, and ASC, HC.	NPC and WC reduce credits on other land.	Change in NP or WC may cause an opposing change in HC; change in ASC may cause an opposing change in NP or WC.
5. HC and CB	HC subtracted from CB calculated.	Change in HC causes an opposing change in CB.
6. TR and other credits	Credits affect net tax; TR is triggered by increases of over 20% in net tax.	Decreases in credits that are large enough can increase TR outlays.
7. LGA and Levy Limits	LGA received is subtracted from allowed levy limit.	Changes in LGA cause opposing changes in levy limits.
Optional Linkages		
1. Levy Limits and Property Tax Relief Programs	Levy limits control local levies; property tax relief programs pay part of local levies.	Changes in levy limits may affect local levies which will change property tax relief outlays.
2. Direct aid to localities unrelated to levy limits (i.e., highway aid, welfare aid) and Property Tax Relief.	Direct aids fund certain locally-administered programs; property tax relief programs pay part of local levies.	Changes in state aids may affect local levies which will change property tax relief outlays.
3. Foundation aid and Property Tax Relief	Foundation aid and local levies provide revenues for local schools; property tax relief programs pay part of local levies.	Changes in share of school revenues from foundation aid may affect local levies which will change property tax relief outlays.
4. Assessment Ratios and Property Tax Relief	Assessment ratios in part determine local tax base; property tax relief pay part of local levies.	Changes in assessment ratios will affect local tax base and local tax revenues. Changes in tax rates to compensate will change property tax relief outlays.

Source: John Bartle, Minnesota Tax Study Commission (May 1984).

Notes: HC - Homestead Credit
THC - Taconite Homestead Credit
NPC - Native Prairie Credit
TR - Targeted Relief
ASC - Agricultural School Credit
CB - Circuit Breaker
WC - Wetlands Credit
LGA - Local Government Aid

TABLE 2
Summary of Major Tax Law Changes: 1975-79

	Dollar Impact (Millions)			
	FY1976	FY1977	FY1978	FY1979
1975 Laws:				
Expansion of Working Poor CDT	($12)	($12)	($9)	($10)
Tax Exempt Contributions to Keogh Ret Plans	($5)	($5)	($5)	($5)
1977 Omnibus Tax Bill:				
Update Reference to IRC			$2	$2
Taxing Out of State INC				$3
Eliminate Military Excl				$9
Tax Rate Change			$5	$11
Personal Credits = $30			($14)	($28)
Eliminate Prorating Credits				($2)
Minimum Tax			$9	$9
Various Tax Ded. Elm.				$3
Dependent Care Credit			($5)	($5)
1978 Tax Laws:				
Sales Tax-Fuel Credit				($23)
Personal Credit = $40				($14)
Homemaker Credit				($5)
Pension Excl.				($7)
Total Tax Law Impact	($17)	($17)	($17)	($62)

Source: Office of the Legislative Auditor. Staff computations based on information provided by the Department of Revenue.

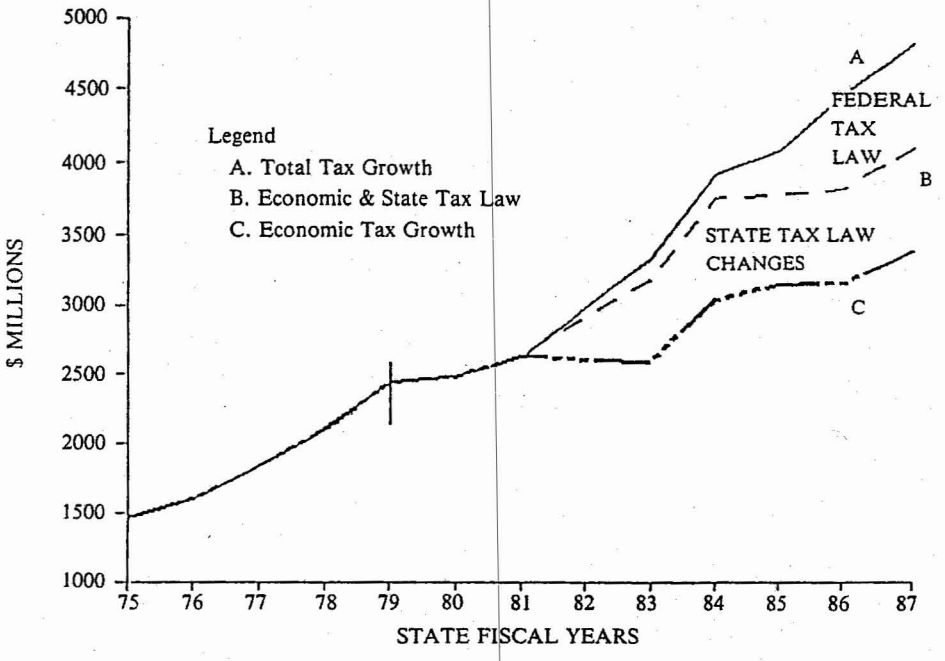
TABLE 3
Summary of Estimated Revenue Impact of Major Tax Law Changes:
Fiscal Years 1982-87 (estimated)
($ Millions)

	Fiscal Years					
Major Tax Source	1982	1983	1984	1985	1986	1987
Personal Income	$139	$268	$188	$ 87	$ 86	$ 99
General Sales	159	322	473	515	552	597
Motor Vehicle	16	25	63	55	59	63
Corporate Income	0	(27)	(11)	(15)	(17)	(17)
Total State Laws	$314	$588	$713	$ 641	$ 649	$ 742
Federal Tax Law Changes	$ 59	$149	$216	$271	$ 338	$ 411
TOTAL IMPACT	$373	$737	$929	$912	$1,017	$1,153

Source: Office of the Legislative Auditor staff computations and estimates provided by the Departments of Revenue and Finance, April 1984. Also see Appendix Table 2A.

EXHIBIT 5

Growth in State Tax Revenues From Major Sources
Economic vs. Tax Law*
1975-87 (Estimated)



Source: Office of the Legislative Auditor staff computations based on data from Tables 2, 3, and Appendix Table 1A.

*This analysis assumes two distinct time periods. The first period assesses the impact of tax law changes enacted between 1975 and 1979 using the 1974 tax system as the base. The second period uses the tax system established in 1979 as a base to assess the impact of tax legislation between 1981 and 1984. See note 3 below.

Laws affecting the state's personal income tax were also responsible for generating new tax dollars for the state. The most important legislation was enactment of the 7% and 10% surtax. Of the new personal income tax revenues shown in Table 2, we estimate that the surtax provisions generated $63 million in FY 1982, $170 million in FY 1983, and approximately $100 million in FY 1984.

In addition to state tax law changes, federal tax policies also had a significant impact on state tax revenues. Table 3 shows that in FY 1983 state revenues increased by an estimated $149 million as a result of changes in federal tax laws. By FY 1987, federal law changes may benefit the state by as much as $411 million. Much of this revenue gain results from federal personal income tax reductions. Since the State of Minnesota allows taxpayers to deduct federal tax liability, any reduction in federal taxes results in an increase in Minnesota taxable income. However, the reverse is also true—if federal taxes go up, Minnesotans will pay less in state personal income taxes.

GROWTH IN STATE SPENDING: 1975-87 ESTIMATED

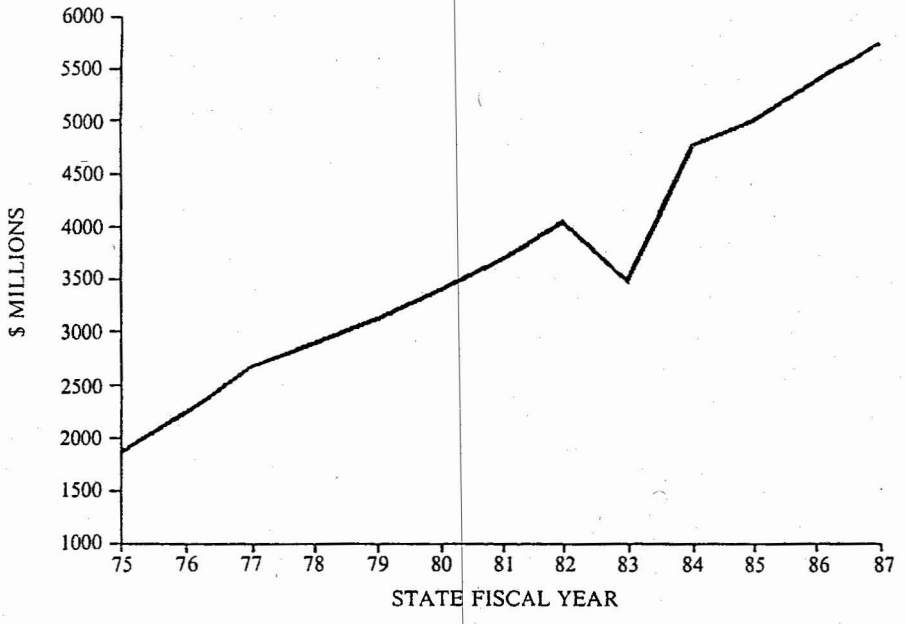
Exhibit 6 shows that between 1975 and 1982, state general fund expenditures increased from $1.9 billion to over $4.1 billion, a rate of growth approximating 12% per year. In 1983 however, state expenditures from the general fund declined by nearly 14%. The primary reason for this dramatic decline was that the legislature, in order to balance the FY 1983 budget, shifted approximately $199 million in school aids and $269 million in direct property tax credit/refund payments to FY 1984. Thus, the 14% decline is misleading because the expenditure shifts essentially resulted in noncomparable expenditure bases between FY 1982 and FY 1983. Perhaps a better indicator of expenditure commitment during the period is to compare FY 1982 expenditures with those estimated for FY 1984. This comparison indicates an approximate 9% annual rate of growth in expenditures for the period. The department of finance estimates that after FY 1984 general fund expenditures will increase at a 6.3% average annual rate to nearly $5.8 billion by the end of FY 1987. If this rate of increase is realized for this latter period, it will represent a growth rate approximately two-thirds of that experienced between 1979 and 1982 when state general fund expenditures grew at 9% per year.

Approximately 80% of state general fund expenditures can be associated with seven major program categories. Examination of Exhibit 7 shows that in 1975, aids to school districts amounted to $636 million which accounted for 34% of total state general fund expenditures. Although aids to school districts remains the most important expenditure category through 1987, its relative proportion of general fund expenditures declined to 29% in FY 1982 and is estimated to account for only 22% in FY 1987.[6]

The reason for this trend is twofold. First, despite experiencing a rate of growth of nearly 10% per year between 1975 and 1982, state expenditures for property tax relief, medical assistance and general assistance for medical care (MA/GAMC), and general support to local governments combined, increased at an average annual rate exceeding 15% during the same period.

EXHIBIT 6

Growth in State General Fund Expenditures
1975-87 (Estimated)



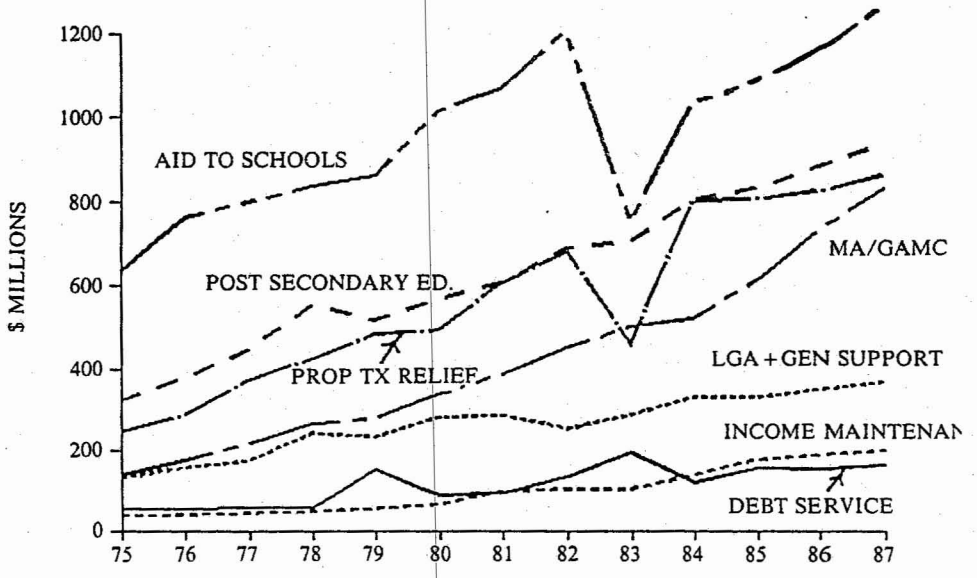
Source: Appendix Table 1A.

Total expenditures for these three programs amounted to $512 million in 1975, accounting for 27% of state general fund expenditures. By FY 1982, expenditures for these programs increased to nearly $1.4 billion and represented over 34% of general fund expenditures.

The second reason is that in 1981 and 1982, the legislature took action that significantly reduced aids to school districts. Included in this legislation

EXHIBIT 7

Expenditures by Major Functions
Big 7
1975-87 (Estimated)



Source: Appendix Table 1A.

for example, was a reduction in foundation aids of an estimated $68 million for FY 1983 due to lowering the level of state foundation support from $1,416 to $1,346 per pupil and increasing the local mill requirement to 24 mills.[8] Aids were also reduced because the legislature required school districts to make early recognition of their property tax. This resulted in an additional estimated savings to the state of $239 million in FY 1983. School transportation aids were also reduced in FY 1983 by an estimated $35 million as a result of increasing the transportation required mill rate from 1 to 2 mills.[10]

It should be noted, however, that in 1984, lawmakers increased foundation aids by approximately $280 million for the 1986-87 biennium. The increase is due to a lowering of the local tax effort requirement to 23.5 mills and increasing foundation support to $1,585 per pupil (from $1,475).

As indicated earlier, the department of finance estimates that general fund expenditures are anticipated to increase at a relatively slower rate of 6.3% per year between FY 1984 and FY 1987. This is largely a product of

anticipated slower growth in general support aids to local governments and expenditures for direct property tax relief. According to projections, aids to local governments are expected to increase by only 4% in FY 1986 and by 6% in FY 1987. This is significantly slower than the rate of growth experienced in the late 1970s when these expenditures increased by more than 24% per year.

State-paid direct property tax relief payments are also anticipated to slow significantly. Projections for the 1986-87 biennium show expenditures for these programs increasing by only 4% per year. This can be compared to a 16% annual rate realized between FY 1975 and FY 1982.[12]

Of the "Big Seven" program areas, the most significant growth, by far, is expected to occur in MA/GAMC, increasing by a projected 17% per year during this period. If these estimates are realized, MA/GAMC expenditures will amount to over $850 million by the end of FY 1987, representing nearly 15% total state general fund expenditures.[13]

GROWTH IN TAXES AND SPENDING AT A SINGLE GLANCE: A PERIOD OF FISCAL STABILITY VS. A PERIOD OF FISCAL WOES

The period between 1975 and 1979 represented a time of relatively good fiscal health. During this period, there were few major tax law changes and what actions were taken resulted in tax savings to Minnesotans. Table 4 shows that tax revenue from major sources increased at a rate of 13.6% per year, however, tax revenue would have increased slightly faster (14.3% per year, if no law changes had been enacted. In effect, the tax system, without legislative stimulus, produced the needed revenues (and then some) to keep pace with growth in state spending, which increased at a rate of 13.9% per

TABLE 4
Growth in Major State Tax Revenues and General Fund Expenditures
1975-82

	Average Annual Percentage Change	
	1975-79	1979-82
Tax Revenue from Major Sources:		
Total Growth	13.6%	7.1%
Growth Excluding Impact of Law Changes	14.3%	3.1%
General Fund Expenditures	13.9%	9.0%

Source: Office of the Legislative Auditor staff computations based on data from Tables 2 and 3, and Appendix Table 1A.

year during the same period. A strong argument could be made that, between 1975 and 1979, the tax system, which benefited greatly from the high rate of inflation during that period, generated revenues at such a fast rate that it actually stimulated state spending. The system produced the revenues, so, the dollars were spent.

Between 1979 and 1982 the fiscal pattern changed. During this period, tax revenue from major sources increased 7.1% per year, while general fund expenditures increased at 9.0% per year. Much of the growth in tax revenue realized during this period occurred in FY 1982 when tax revenues from major sources increased by nearly 14%.[14] However, over 85% of that increase was a result of state legislative action that increased taxes by $314 million. If that legislation had not occurred, revenues from major tax sources would have increased by only 2% in FY 1982, resulting in an average annual rate of growth of 3.1% for the period. This gap between the growth in state taxes and spending began with tax and spending policies adopted during the 1979 legislative session. Actions were taken to slow the growth in tax revenue and to increase spending for major programs.

THE 1979 LEGISLATIVE SESSION: TAX AND SPENDING POLICIES PROVIDED THE IMPETUS FOR FISCAL DIVERGENCY

In 1979, lawmakers decided that the revenue generating capacity of the state's personal income tax may have exceeded spending demands and was overburdening the taxpayer. As a result, several policies were adopted that either cut tax revenue or were designed to diminish the revenue-elasticity of the tax during periods of rapid inflation. Major legislation included:

- All personal credits were equalized and increased to $55 in 1979, to $60 in 1980, and indexed thereafter.
- The standard deduction was increased to 10% up to a maximum of $2,000 and was indexed in 1981.
- The low-income credit was increased and indexed in 1981.
- Income tax brackets were indexed, 85% of the percentage change in the (Minneapolis-St. Paul) consumer price index.
- Top income tax rate reduced from 17% to 16%.
- Pension exclusions increased, nonresident pensions not taxed.

Also, in 1979 the legislature took action that either allowed or provided for major spending increases to occur during the 1981 biennium. Most notable were increases of 40% in MA/GAMC, 24% in school aids, and 25% in major property tax relief programs. In effect, largely as a result of legislation that occurred in 1979, state tax revenue from major sources increased by only 7% during the 1981 biennium, while spending for major programs increased by over 23%.[15] Clearly, this policy mix was not very conducive for fiscal stability.

The fiscal impact of this divergent tax and spending policy can be illustrated by examining two policy decisions—the indexation of the personal income tax, and increased homestead credit benefits. The state began the 1980-81 biennium with a $281 million fund balance. As Table 5 shows, the indexation of tax brackets, credits, and deductions reduced state tax revenue by $302 million for the biennium. In addition, legislative increases to the homestead credit increased the state's liability for property tax relief by $124 million. The combined fiscal impact of these two policies totaled nearly $426 million, exceeding the fund balance by $145 million.

By the end of FY 1982, these two policies had a fiscal impact of $723 million. This represented over 115% of the total general fund deficit of $624 million realized on June 30, 1982.

ANALYSIS OF THE GENERAL FUND, BUDGET-BALANCING ACTIONS 1982-83 BIENNIUM: A PERIOD OF FISCAL WOES

After enjoying several years of relatively stable finances, the general fund began experiencing fiscal problems in August 1980. The sources of these

TABLE 5
Fiscal Impact of Indexing the Personal Income Tax and Increasing the Benefits of the Homestead Credit Program: FY 1980 to FY 1982
($ millions)

	FY 1980	FY 1981	Total	FY 1982	Total 1980-82
Indexation of personal income tax (lost revenue)[a]	$119.7	$182.5	$302.2	$221.9	$524.1
Homestead credit (increased expenditure)[b]	8.0	116.0	124.0	75.0	199.0
TOTAL	$127.7	$298.5	$426.2	$296.9	$723.1

Source: Minnesota Department of Revenue provided estimates for the impact of indexation (December 2, 1983) and the Office of the Legislative Auditor calculated the cost of the homestead credit.

[a]For tax years 1979 and 1980, income tax brackets were increased by 85% of the increase in the consumer price index (CPI) for the Minneapolis-St. Paul metropolitan area. In 1979, the adjustment was 10.1% and in 1980, 8.6%. For tax years 1981 and 1982, brackets were increased either by 100% of the increase in CPI or by 100% of the increase in Minnesota gross income, whichever was less. In 1981 the adjustment was 9.2% and in 1982 was 2.1%. Beginning in tax year 1981, credits and standard deductions were also adjusted for inflation using the same methods (Minn. Stat. 290.06). In 1983, the legislature amended the law such that the indexation provision could be suspended if the state-projected surplus was less than $250 million (Minnesota Session Laws, Ch. 342, Section 6, Subd. 2f).

[b]Benefits for the homestead credit program increased from 45%—$325 maximum in 1979 to 50%—$550 maximum in 1980, to 58%—$650 maximum in 1981.

difficulties are complex, but most agree that a national recession coupled with certain modifications to the tax system, primarily indexing the individual income tax, had stalled the general fund's revenue growth. In addition, while various factors contributed to slowing the rate of growth in tax revenue, the state continued to pursue a relatively fast rate of growth in spending. The combination of divergent tax and spending policies, compounded by an economic recession, quickly resulted in fiscal instability.

The problems experienced during the 1980-81 biennium were certainly painful, but they were solved primarily through restructuring the cash flow of a few major revenue and expenditure programs. Individual income tax collections were acclerated and an additional $60 million was received during the biennium. School aid payments totalling $241 million were deferred into the 1982-83 biennium. In all, $300 million of adjustments were required, but relatively few programs were affected.

By contrast, revenue shortfalls repeatedly plagued the general fund throughout the 1982-83 biennium. Six special legislative sessions were called and so nearly $2 billion of financial modifications were made during the biennium. The time lag required to institute many of the financial changes resulted in a $624 million general fund deficit at June 30, 1982, the mid-point of the biennium. Accordingly, the brunt of fiscal recovery was necessitated during FY 1983 so that the biennium would end without a fund deficit. Table 6 illustrates how dramatically general fund finances had to change during FY 1983 so that a balanced budget could be realized.

Comparing the FY 1983 operating results to those for FY 1982 shows an improvement of almost $1 billion. The change was accomplished by

TABLE 6
State General Fund
Summary of Annual Finances
FY 1980 to FY 1983
($ thousands)

	Fiscal Year			
	1980	1981	1982	1983
Revenues	$3,228,934	$3,320,587	$3,687,965	$4,117,122
Expenditures	3,401,030	3,690,495	4,051,036	3,487,310
Net Annual Increases/ (Decreases) to Fund Balance	$(172,096)	$(369,908)	$(363,071)	$ 629,812
ENDING GENERAL FUND BALANCE	$ 108,511	$(261,397)	$(624,468)	$ 5,344

Source: Office of the Legislative Auditor, staff computations.

increasing revenues by 12% and reducing expenditures by 14%. Such large changes are, however, potentially misleading and do not provide a fair indicator of future trends. Indeed, the magnitude of the general fund's fiscal problems required a complex, comprehensive array of tax increases, revenue/expenditure shifts, and expenditure cuts.

Table 7 illustrates the fiscal impact of the series of budget-balancing acts that were implemented during the 1982-83 biennium. On the surface, it appears the actions were evenly divided between those affecting revenues and those affecting expenditures. However, a closer examination reveals that of the total $1.8 billion fiscal adjustment, 37% was generated with new and now permanent taxes. The 19% expenditure reduction, as discussed later, was basically a temporary decline and was offset somewhat by local tax increases.

Table 7 also shows that nearly $900 million of state budget savings were achieved during the 1982-83 biennium. However, only a small amount of these expenditure reductions were ultimately translated into service cuts. Five hundred forty-eight million dollars represented a restructuring of payment schedules or shifts from one biennium to the next. These actions resulted in a temporary remedy that afforded only a one-time budget savings. The impact of these expenditure shifts also accounted for much of the perceived decline in expenditures as illustrated in Table 8.

TABLE 7
State General Fund
Fiscal Impact of Budget-Balancing Actions
1982-83 Biennium
($ million)

	Biennium		1982-83 Biennium Totals	Percent of Total Adjustment
	1982	1983		
Revenue Enhancements:				
Temporary Taxes (income surtax)	$ 63	$ 170	$ 233	13.0%
New Taxes	251	418	669	37.2
Subtotal: Revenues	$314	$ 588	$ 902	50.2%
Expenditure Actions:				
Cuts[a]	$ 17	$ 331	$ 348	19.4%
Shifts	68	480	548	30.5
Subtotal Expenditures	$ 85	$ 811	$ 896	49.8%
TOTAL FISCAL IMPACT	$399	$1,399	$1,798	100%

Source: Office of the Legislative Auditor, staff computations.

[a]Expenditure cuts do not include amounts eliminated from state department appropriations for salary, supplies, and equipment.

TABLE 8
State General Fund
Expenditure Changes Adjusted for Shifts
Fiscal Years 1981 to 1983
($ Millions)

	Amounts FY 1981	Amounts FY 1982	Percent Change 1981 to 1982	Amounts FY 1983	Percent Change 1982 to 1983
Expenditures as Reported	$3,690	$4,051	+ 9.8%	$3,487	-13.9%
Add Back: Shifts	—	68		479	
Adjusted Expenditure Levels	$3,690	$4,119	+11.6%	$3,967	- 3.7%

Source: Office of the Legislative Auditor, staff computations.

A critical question also arises as to whether the state's expenditure reduction of 3.7% during fiscal year 1983 translated into long-term expenditure savings and reduced tax burdens.[16] For the most part, the answer is no. Of the $331 million cut from expenditures during FY 1983, $262 million may have increased local tax efforts. Because of the extensive intergovernmental fiscal relationships between the state and its local governmental units, most reductions in state spending simply resulted in shifting the tax burden from the state to local government jurisdictions.

Approximately $101 million of the expenditures reduced in FY 1983 directly resulted in an increase of locally collected property taxes. This amount resulted from mandated increases in the local property tax levies for certain school aid programs, e.g., foundation and transportation aids, and reduced state-paid property tax credits for the homestead credit program. It was not possible to determine precisely whether the remaining $161 million actually resulted in large property tax increases. Such increases could have been preempted by levy limits or otherwise avoided by local governments if they assumed the effects to be temporary and were fortunate enough to have adequate cash reserves. Inevitably, local governments were obligated to translate at least a proportion of this $161 million state aid reduction into local property tax increases.

The remaining $69 million of expenditure reductions did not result in increased local taxes. However, these expenditure reductions appeared to be temporary declines or merely shifted financial obligations to a nontax revenue source. For example, $28 million of this amount represents a reduction in state payments to the teachers retirement fund (TRA). This reduction to TRA was partially recovered through mandated temporary increases in employee retirement contributions. However, because of the financial difficulties of TRA, the impact of the reduced state payments was very temporary. In fact, recent legislative actions will result in repaying

employees for their added contributions, plus a sizable increase in state payments to TRA in an attempt to resolve its financial difficulties. In addition, the state also reduced aids to the University of Minnesota by $20 million. However, recent legislative actions provided a sizable increase in state aids to the university during the next biennium.

Thus, the impact of the 1982-83 spending cuts translated into either increased local property taxes, later increases in state spending, or at best a temporary reprieve in tax burdens. Because of the complexity of state/local fiscal relationships in Minnesota, perhaps a better indicator of how state expenditures were impacted during fiscal year 1983 would be revealed by analyzing state operating expenditures (e.g., salaries, supplies, and expense). Despite reducing appropriations of state departments and decreasing state-paid contributions to state employee retirement funds, state-operating expenditures increased by 7.5% during FY 1983. Although this increase is lower than that of previous fiscal years, it demonstrates the real difficulties of implementing long-term declines in state expenditure commitments and consequently, the level of taxation.

SUMMARY OF GENERAL FUND FINANCES: 1978-87 (ESTIMATED)

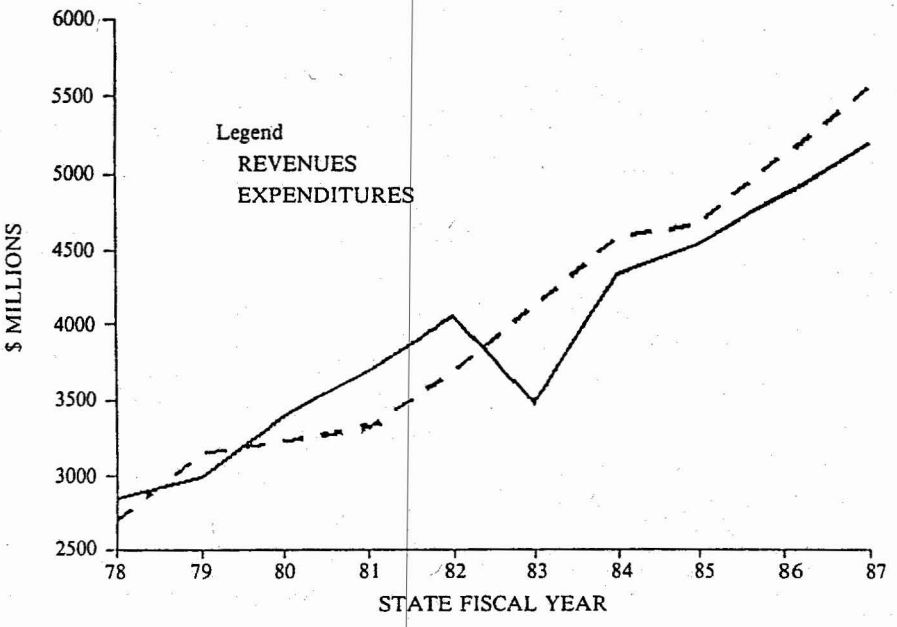
To illustrate the significance of these fiscal policies, a series of exhibits are presented in order to show the relationship between general fund revenues and expenditures beginning in 1978 and projected through the 1987 biennium.[17]

Exhibit 8 plots annual revenues and expenditures for each fiscal year. The difference between revenues and expenditures in any given year represents the annual change to fund balance. The crossing pattern illustrated in FY 1978 to FY 1980 is perhaps the normal pattern to expect for a healthy general fund. This reflects the uncertainty associated with revenue estimates and the need to continually adjust fund balance so it is retained at an acceptable level. However, as can be seen, revenues did not recover to the level of expenditures in either FY 1981 or FY 1982. Whereas a reduction in fund balance was affordable in 1980 (because of a beginning fund balance), continued reductions in 1981 and 1982 resulted in the sizeable fund deficit at the end of 1982. The response to the problem, as indicated earlier, required an array of tax increases, revenue/expenditure shifts, and expenditure reductions to balance the budget at the end of FY 1983.

Exhibit 8 also shows projections of revenues and expenditures, assuming moderate economic growth through FY 1987. As can be seen, revenues are expected to exceed spending throughout the period, keeping the state budget well in the black. However, as Exhibit 9 illustrates, the state's projected level of spending through 1987 is only affordable if the new and temporary state taxes enacted since 1980 remain in place (the only exception being the personal income surtax which under this projection was repealed January 1,

EXHIBIT 8

General Fund
Revenues and Expenditures
Actual and Projected
Trend Long
1978-87 (Estimated)



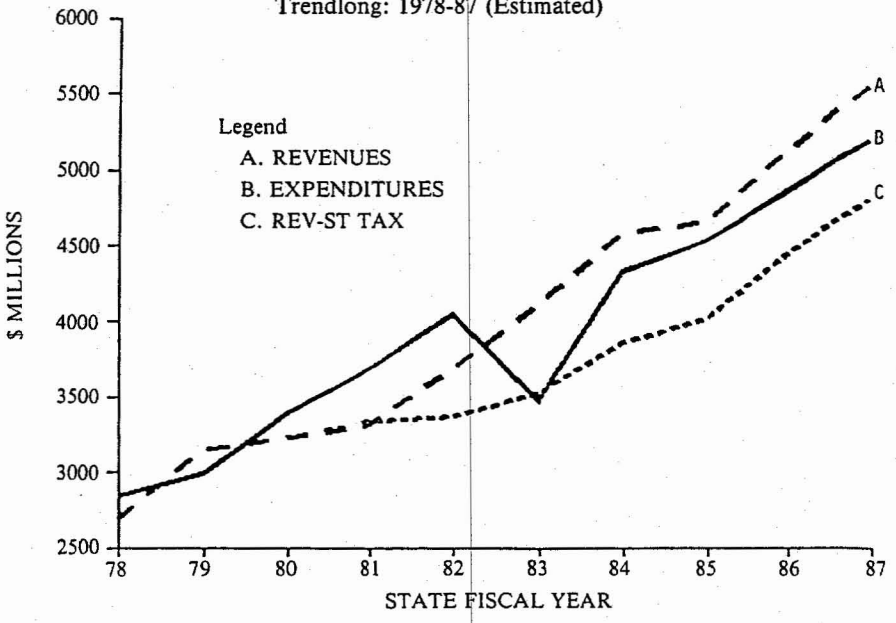
Source: Office of the Legislative Auditor staff computations (FY 1978-FY 1983). Projections based on data provided by the Department of Finance, April 17, 1984 and adjusted to reconcile the differences between GAAP and Budgetary Reporting Basis. See note 16 below.

1984). The graph clearly shows that if these new tax laws had not been enacted, the level of revenues (line C) would not be able to sustain the level of general fund expenditures as currently projected.

Finally, it is important to emphasize that these projections of revenues and expenditures assume moderate economic growth for the state through FY 1987. Exhibit 10 illustrates what happens to the state's fiscal condition if another recession befalls the state in 1985. As can be seen, the department of finance projects under its "Trouble 85" scenario that the state will be faced with another deficit situation by the end of FY 1987 despite the fiscal actions taken since 1980.

EXHIBIT 9

General Fund Revenues and Expenditures
Actual and Projected
Showing Impact of State Tax Laws Since FY1981
Trendlong: 1978-87 (Estimated)



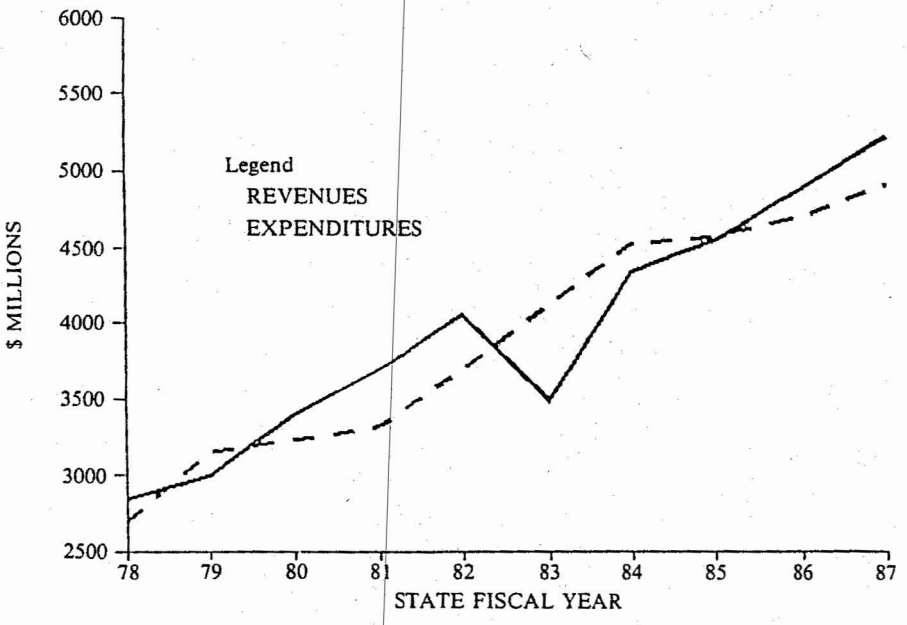
Source: Office of the Legislative Auditor staff computations (FY 1978-FY 1983). Projections based on data provided by the Department of Finance, April 17, 1984 and adjusted to reconcile the differences between GAAP and Budgetary Reporting Basis. See note 16 below.

CONCLUSION

Based on the evidence presented, a strong argument can be made that since 1980 the state's tax policy has been influenced primarily by spending demands. The legislative response to the recent budget crises has been to increase taxes, borrow, and alter its cash flow in order to bring revenues back in line with spending. Although it could be argued that such policies are necessary because it is difficult to adjust expenditures in the short run to keep them in line with revenues, the state has chosen to maintain nearly all the new and "temporary" taxes enacted since 1980 (the income surtax

EXHIBIT 10

General Fund
Revenues and Expenditures
Actual and Projected
Trouble 85
1978-87 (Estimated)



Source: Office of the Legislative Auditor staff computations (FY 1978-FY 1983). Projections based on data provided by the Department of Finance, April 17, 1984 and adjusted to reconcile the differences between GAAP and Budgetary Reporting Basis. See note 16 below.

appears to be the only major temporary tax that will be repealed).

In effect, it is not enough to simply compare Minnesota tax effort to that of other states and conclude from that comparison that since we rank high we must reform and lower our taxes to make our state more competitive. Because we are required by law, if nothing else, to balance our budget every two years, tax policy, by definition, must be linked directly to current and anticipated spending demands. If this fact is ignored or its relevancy minimized, the long-term stability of any tax reform measure adopted will be in jeopardy.

Despite the relatively slower rate of growth anticipated in general fund expenditures through the 1987 biennium, the state faces increasing spending demands. For example, state expenditures for medical assistance (MA) and other welfare benefit programs are expected to increase significantly over the next several years. Although much of the spending pressure is a direct result of increased medical costs and larger caseloads, federal actions have also shifted (and threaten to continue) more financial responsibility for these programs to the state. At present, the department of finance includes in their MA expenditure projections, a continuation of a lower federal participation rate which translates into higher costs for the state.

The state will also be facing increased pressure to use general fund revenues for its infrastructure, specifically for the maintenance and repair of its roads and bridges. The 1984 legislature has already responded by requiring 25% of the revenues raised by the motor vehicle excise tax to be taken from the general fund and placed in the highway users distribution fund. Between FY 1985 and FY 1987, this amounts to an estimated $50 to $60 million per fiscal year, an amount which some say is only a fraction of what is needed.

Given the recent reductions in school aids amounting to over $212 million, coupled with the current national debate on education quality, the state, in all likelihood, will be pressured not only to restore education aids, but to increase them. The education debate, in many ways, is very similar to that occurring over taxes. Both focus, at some point, on how our state ranks. Those in the education field are quick to inform lawmakers that our once relatively high ranking in per-pupil state expenditures has declined in recent years, becoming another argument often used to justify increased state spending for education.

It is also important to realize that much of the slower rate of growth that is anticipated in the state's general fund is a result of slower growth in expenditures which directly or indirectly provide property tax relief. As a result, these policies could eventually result in higher property taxes, which in turn could lead to increased pressure on state lawmakers to once again provide tax relief in one form or another.

In conclusion, the reality is that the tax debate by implication is also a spending level debate. If the two sides of the budget are not reconciled, then there is a real danger that the budget actions taken during the last two bienniums will become the rule rather than the exception.

ENDNOTES

1. This figure was based upon the following assumptions and calculation: If during the period between 1975 and 1982, the responsibility for financing welfare benefits between the state and local governments was left unchanged, in 1982 the

local share would have been 27% or $299 million as opposed to its actual share of 10% or $107 million. The difference between the hypothetical and actual amounts equals $192 million which represents the amount of fiscal relief the state provided for local governments as a result of policy actions taken in and after 1976. This also assumes that the federal role vis-a-vis local governments remain unchanged during the period.

2. This analysis is based upon expenditures made from all state funds as opposed to the general fund only. If only expenditures from the general fund were examined, then nearly 70% of state spending is for the purpose of either directly or indirectly assisting local governments.

3. It should be noted that this analysis assumes two distinct time periods—the first being FY 1975 through FY 1979 and the second being FY 1980 through FY 1987 (estimated). For the earlier period, the impact of tax laws was assessed with respect to the tax system established in 1974. Legislation enacted in 1975-78 was reviewed and the revenue impact was estimated based on information provided by the department of revenue. As Table 2 shows, the net impact of tax legislation during this period actually reduced taxes. However, because the impact was minor, for purposes of graphic simplicity, the growth in tax revenues between 1975-79 is attributed solely to inflation and other economic factors.

For the second period, it was assumed that legislation enacted in 1979 established fundamental changes to the state's tax system, primarily with the enactment of indexation. Accordingly, it is more meaningful to assess the impact of tax law changes since 1980 with respect to the 1979 tax system, rather than the system established in 1974. Thus, the indexation of the state's personal income tax is treated as part of a tax system intended to operate in the 1980s and not as a law change affecting revenues based on a system in place as of FY 1974.

Tax revenue estimates for FY 1984 through FY 1987 were provided by the department of finance from their April 17, 1984 forecast incorporating the governor's recommendations. The projections represent the department's "trendlong" scenario, which assumes moderate economic growth through the period.

4. Although the 10% surtax was repealed by the 1984 legislature effective January 1, 1984, the state collected revenues during the first half of FY 1984 (July 1 - December 31, 1983).

5. Office of the Legislative Auditor staff computations based on data from Appendix Table 1A.

6. Ibid.

7. Ibid.

8. See 1981 Minn. Laws 3rd Spec. Sess., ch. 2, art. IV.

9. Office of the Legislative Auditor staff computations.

10. See 1981 Minn. Laws 3rd Spec. Sess., ch. 2, art. IV.

11. Office of the Legislative Auditor staff computations based on data from Appendix Table 1A.

12. Ibid.

13. Ibid.

14. Ibid.

15. Ibid.

16. Table 8 indicates that even after considering expenditure shifts, a 3.7% decline was realized in general fund expenditures during FY 1983. However, if the expenditure cuts revealed in Table 8 had not occurred, then expenditures would have risen in FY 1983 by 3.9%. This increase is fairly comparable to the 3.0% increase anticipated for FY 1983 in the governor's original budget proposal for the 1982-83 biennium.

17. Total general fund revenue and expenditure amounts are based upon data from the office of the legislative auditor (FY 1978 - FY 1983) and from the department of finance's projections of April 17, 1984, which include the governor's recommendations as of that date. It should be noted that the figures from the department of finance have been adjusted in order to reconcile differences between their budgetary reporting basis and the generally accepted accounting principles reporting method utilized by the Office of the Legislative Auditor. Although total revenues and expenditures differ between the two accounting methods, we believe that the year-to-year changes under both are comparable.

3
The Effect of Business Climate on Employment Growth

Michael Wasylenko*

In both private conversations and public testimony before state legislatures, business representatives often attribute job loss and sluggish economic growth to poor business climate. While a large number of factors affect business location, business climate variables are among the most controversial factors because public policy can influence the business climate. Alexander Grant has recently saddled Minnesota with a poor business climate ranking (forty-three out of forty-eight). This rating underscores the importance of a study of business climate and its potential effect on employment growth.

Most research on business location concludes that business climate has no effect or, at most, very little effect on business location decisions.[1] This finding remains the same whether the research results are derived from surveys of business or from econometric work using data on actual business location decisions.

The issue of business climate and plant location would therefore seem settled. But adherents to the hypothesis that business climate is important appear to be growing, especially among business people and, to a lesser extent, government policymakers. Some adherents criticize the business climate studies as lacking breadth or depth in the sense that they examine only a few industries or do not explore the business climate relationships in sufficiently rich detail to uncover the subtle relationship between business climate and employment growth.

While there is an impressive body of evidence assembled on business location decisions, this literature may be lacking in several respects. With few exceptions these studies analyze manufacturing location decisions, which may not be representative of all businesses. In addition, although these studies find no direct relationship between business climate and

*The author thanks Therese McGuire and the members of the seminar in the Department of Applied Economics at the University of Minnesota for their thoughtful comments on this research.

location choice, there may be an important indirect relationship. Virtually every study finds that labor force characteristics have considerable influence on business location decisions. High personal tax levels appear to affect labor force movement, which in turn influences business location.

This study will expand the scope of inquiry into business location decisions by focusing on a period (1973 to 1980) in which there is a considerable shift in employment among states. More important, this study analyzes employment growth in manufacturing as well as in nonmanufacturing industries. In particular, employment change during the 1970s in six major industrial categories is analyzed using an econometric framework that relates employment growth to a set of independent variables. The industries studied include manufacturing; transportation and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; and services. Employment growth in the total of these categories is also analyzed.

The independent variables will include measures of market accessibility, labor force characteristics, energy prices, climate, and business climate variables. These variables determine the overall revenue and cost (or profitability) of a firm and are widely used in studies of business location decisions.

The next section reports employment trends in Minnesota and the U.S. during the 1973-80 period. Section 3 reviews the business location literature, and the econometric model is presented in a subsequent section. The results of the econometric work are reported in Section 5, and these results are used to reach a conclusion about Minnesota's employment growth rates for the 1980s. A final section interprets the results of this study for tax policy reform.

EMPLOYMENT TRENDS

The study focuses on employment trends between 1973 and 1980, using employment data reported in *County Business Patterns* for the week of March 12 in each specific year. The years 1973 and 1980 are chosen with an eye toward the peak of the business cycle and the date (March) on which the data is collected. According to *Business Conditions Digest,* business cycle peaks occurred in November 1973 and January 1980. The years 1973 and 1980 are chosen so that the employment data are compared on the basis of similar points (peaks) in the business cycle. The economy had been in a long expansion from November 1970 to November 1973. Thus, in March 1973 the employment data reflect a period of full employment in the economy. The next expansion in the economy was from March 1975 through January 1980. Therefore, in March 1980 the economy had just begun to turn downward

and employment in March was still very near its full employment level. Using employment data that are at similar points in the business cycle gives a clear view of the secular trend in employment growth and avoids confusing secular trends with cyclical fluctuations.

Table 1 contains employment growth by nine major industries for the U.S.; Minnesota; South Dakota, North Dakota, Iowa, Wisconsin (all neighboring states of Minnesota); Illinois; Texas, California and Florida, where employment is growing rapidly; and New York, where employment is growing very slowly. The nine industries include: agriculture; mining; contract construction; manufacturing; transportation; wholesale trade; retail trade; finance, insurance, and real estate; and personal services.

Overall employment in Minnesota between 1973 and 1980 grew 35%, much faster than employment grew in the U.S. (22.1%). Moreover, employment growth in seven of the nine industries was more rapid in Minnesota than in the U.S. In all industries, except agriculture and mining, employment grew between 8% and 27% faster than the same industries in the U.S. Employment in contract construction and manufacturing grew much more rapidly in Minnesota than in the U.S. as a whole.

Of Minnesota's four neighboring states, total employment in North Dakota and South Dakota grew more rapidly than in the U.S., but total employment in North Dakota only grew more rapidly than in Minnesota. North Dakota had very strong employment growth relative to the U.S. in all industries except agriculture. With the exception of services, employment growth in the other eight industries was more rapid in North Dakota than in Minnesota.

Employment growth in South Dakota showed a more uneven pattern, but three industries—manufacturing, transportation, and wholesale trade—grew faster in South Dakota than in Minnesota. With few exceptions, employment growth in each industry was higher in Minnesota than in the other three north central states.

Of the three states where total employment is growing rapidly, employment growth in Minnesota was higher than in Florida. Moreover, employment growth in Minnesota was higher than in Florida in all but three industries—agriculture, mining, and retail trade. Between 1973 and 1980 employment grew 47.1% and 41.1% in Texas and California, respectively. Employment grew faster in every industry (except agriculture employment in Texas) in these two states than in Minnesota. In Texas, mining is the most rapidly growing industry, and manufacturing grew at five times the national average compared to three and one-half times the national average in Minnesota. In California, much of the rapid overall employment growth can be attributed to strong employment gains in agriculture, mining, and contract construction.

TABLE 1
Percentage Change in Employment by Major Industry From 1973 to 1980:
U.S., Minnesota and Selected States
(in percentages)

	U.S.	Minn.	S.Dak.	N.Dak.	Ia.	Wisc.	Ill.	Tex.	Cal.	Fla.	N
TOTAL	22.1	35.0	31.0	46.7	24.1	22.6	11.9	47.1	41.1	31.4	
Agriculture	28.6	19.3	-40.0	26.1	25.6	21.0	18.6	10.7	71.6	35.8	
Mining	65.4	25.3	14.9	164.0	-10.1	4.7	45.3	103.6	57.2	57.3	
Construction	19.9	47.5	18.4	64.3	34.3	20.4	9.2	65.4	60.7	5.4	-
Manufacturing	7.0	25.1	43.7	62.2	13.3	11.0	-4.4	35.6	31.2	24.2	
Transportation	15.3	23.2	25.9	35.6	13.7	17.1	1.8	41.0	24.1	20.0	-
Wholesale Trade	23.5	34.5	44.1	53.1	51.4	32.9	13.5	43.5	37.4	29.6	
Retail Trade	21.5	27.2	25.4	28.6	16.2	19.6	10.1	38.9	32.7	34.6	
Finance, Insurance, Real Estate	27.6	38.3	32.2	46.4	34.6	32.2	29.5	39.5	51.0	26.7	
Services	45.3	56.2	35.2	50.4	42.3	45.7	41.3	59.9	57.7	50.6	

Source: County Business Patterns.

INTERREGIONAL BUSINESS LOCATION DECISIONS: LITERATURE REVIEW

The theoretical literature and empirical studies of firm location are heavily oriented toward manufacturing locational decisions. But in principle the theoretical and empirical models of manufacturing location can be applied to nonmanufacturing locational decisions, although the important variables may differ by industry. The differences among industries in the variables are probably related to differences in the spatial distribution of relevant nonlabor inputs, labor skills and costs, and markets for products, as well as to differences in the cost of transportation for inputs and products among industries. Given the theoretical literature, a firm's decision depends on a firm's profitability at alternative locations, which in turn depends on a vector of market and cost characteristics that vary by location.

The relevant vector of market characteristics varies by industry. If the industry manufactures or supplies intermediate products, the market variables will include the number of firms purchasing these intermediate products, the size of each purchasing firm's demand, and the number of competitive supplier firms at each location. If the firm produces for consumer markets, the market variables may include the number of competitors, the per capita income level of the market area, and the population size or the number of consumers at each location.

Cost factors include the supply of different types of labor (unskilled, skilled, and managerial); the cost of capital; the price and availability of land; proximity to a transportation network; transport costs for raw material and product distribution; agglomeration economies that reduce costs; energy prices; and the availability and cost of immobile inputs, such as bodies of water, coal, or other nonstandardized inputs. The relative importance of these cost factors may also vary by industry.

Differences in state and local taxes could affect industry location in two ways. First, the direct effect of taxes would reduce the aftertax profits of firms, if taxes on capital (corporate income and property) are not shifted forward to consumers or backward to labor or even capitalized into the price of land. Even when taxes are shifted forward, differential taxes among locations would affect a firm's profits by raising the firm's prices and reducing their market area, unless the demand for the product is perfectly inelastic or demand is not responsive to price.

Fiscal inducements, such as state loan guarantee programs, direct loan programs, tax concessions, development credit corporations, and local industrial revenue bond programs, could also affect location decisions. These programs reduce the cost of borrowing to firms and raise profits or increase the availability of capital.

Firms would, of course, be attracted to areas with lower taxes, other things being equal. The importance of taxes in the location decision will

depend on the size of the tax differential, on whether the tax differential between locations is substantial compared to differentials in other costs or markets among locations, and on whether the tax differentials result in higher (lower) quality or more public services for which firms and consumers are willing to pay. A firm may willingly pay higher taxes for some public services. High-quality elementary and secondary schools may also indirectly attract firms, since skilled and managerial labor may migrate to areas in part because of the quality of the educational system. The availability of skilled and managerial labor may, in turn, attract firms. Thus, firms may not always avoid high tax jurisdictions, especially if the high taxes are accompanied by higher-quality public services that attract labor.

For a variety of reasons, the locational effect of taxes may vary by industry. Taxes on capital may not affect the location of firms in labor-intensive industries, but taxes on capital may affect the locational decision of firms in capital-intensive industries. Payroll taxes are more likely to affect the decision of labor-intensive firms than capital-intensive firms. And tax differentials and fiscal inducements are more likely to be decisive for firm location, the smaller the area over which the location decision is being made. Simply stated, when cost and market differentials are small, as they are likely to be within a smaller geographic area, tax differentials are more likely to be the deciding locational determinant.

A region's change in firms and employment is the net result of births, deaths, on-site expansions and contractions, and relocation of firms. To help explain locational determinants, researchers have listed four aspects of regional change in firms and employment, namely, regional variations in total employment, in the growth rate of employment, in the number of firm births, and in the number of firm relocations.

It is sometimes argued that the empirical results for locational determinants based on the number of firm births and the growth in employment due to firm births are the most reliable, since new firms have few moving costs and may be subject to less inertia. But proprietors of new firms may be reluctant to move far from their familiar surroundings, given the uncertainties about the success of a new business and the lack of information about locations other than their present ones.

Further, relocating firms may have significantly higher moving costs but more assurance about the success of their business and lower information costs as a proportion of their profits. Thus, no definite preference for explaining either firm births or relocations emerges.

Firm onsite expansions and contractions as well as branch locations of multiplant operations (which can also adjust the size of their operation at each site) are also interesting areas for analysis. Birch (1979) indicated that regional variations in establishment onsite expansions (existing firms) and births are basically responsible for differences in employment growth among

regions. By contrast, employment decline due to firm onsite contractions and deaths shows little variation among regions, while relocations of firms occur in relatively few cases. The relocation of the U.S. textile industry from the northeast to the south during the 1950s is a fluke rather than an example of a typical industrial pattern.

In summary, using locational variables to explain regional variations in changes in total employment may mask important relations between firm location and the independent variables, unless all aspects of firm location in all industries respond to the same locational variables. Based on the theoretical literature, spatial variations in the supply of factors of production (especially labor), in markets for products, in agglomeration economies and, perhaps, in taxes, determine firm location. In some industries, where firms use nonstandard inputs, the availability of these inputs will constrain firm locational choices.

ECONOMETRIC EVIDENCE

Most of the econometric evidence on firm movement and employment growth is based on cross-sectional analysis. In this literature, regional differences in total firms and employment and the growth rate of firms and employment are related to regional differences in market and cost variables hypothesized to affect firm location. This literature is heavily oriented toward manufacturing firm location choices.

Fuchs' (1962) study is perhaps the best known in this area. Fuchs examined changes in manufacturing employment from 1929 to 1954 among the states. He found that as early as the 1930s industry had been shifting to the southern and western states, and there was a comparative loss in industry in the northeastern states since 1929. Lower wages, warmer climate, less unionization, and lower population density were associated with increased growth in manufacturing employment. Fuchs does not consider taxes in his analysis. He argued that taxes are a small portion of a firm's costs, and tax differentials will not affect profits enough to offset other locational advantages. To further buttress his argument about the unimportance of taxes, he noted that higher taxes may be associated with more public services and, thus, tax variations cannot always be considered an added cost to the firm.

Carlton (1979), in two separate analyses, examined the importance of taxes and fiscal incentives (among other variables) in explaining variations among SMSAs in the birth of single establishment firms and in the number of branch plants in three industries: fabricated plastics (SIC 3079), communication transmitting equipment (SIC 3662), and electronic components (SIC 3679). He used Dun and Bradstreet data to construct the dependent variables.

Carlton used a comprehensive list of SMSA variables to explain the dependent variables. The variables include wages, supply of skilled labor, corporate and personal income taxes, property taxes, energy costs (electricity and natural gas), proximity to markets and raw materials, unemployment rates, number of recent work stoppages, construction costs, land costs, and a business climate index. The business climate index is composed of business tax exemptions and other fiscal incentives, as well as state right-to-work laws, state minimum wage laws, state fair employment practice codes, and the presence of statewide industrial noise abatement codes.

Carlton analyzed single establishment births in SMSAs between 1967 and 1975 and performed separate analyses of births between 1967 and 1971 and between 1971 and 1975. He found that the results for the econometric models were structurally stable over the two periods (see Carlton, 1979, p. 38). Wages and electricity prices are found to have relatively large and statistically significant effects on single establishment births, although the elasticity coefficient is much smaller in magnitude for SIC 3662 than for the other two industries. The coefficients of agglomeration economies and the number of engineers variables are also important and statistically significant in explaining births of single establishments. On the tax side his results do not support the view that taxes are a major business location determinant but, on the other hand, taxes cannot be ruled out as having some influence.

Carlton examines branch plant births only during the 1967 to 1971 period, because data on branching for the 1971-75 period are not available. The wage effect could not be estimated with much precision. It is statistically insignificant in the regression for SIC 3662 and 3679, but given the wide confidence interval on this coefficient, a large wage effect could not be ruled out. Energy prices have a strong effect on the birth of branch plants in all three industries. The existing amount of industry activity in a particular industry also has a large influence on the number of births, and the availability of technical expertise in the labor force is an important factor for branch births in technologically more sophisticated industries.

In a subsequent article, Carlton (1983) shows that the decisions about where to establish a branch plant and the size (number of employees) of the branch plant are linked through the profit function by duality theory. He then simultaneously models the probability of establishing a branch plant in any particular location and the size of the branch plant. He analyzes the same Dun and Bradstreet data for branch plants as in his above study. The use of the same industries and the same time period obviously facilitates comparisons of the findings across the two studies.

The model predicts the size of branch plants very well. The wage effect could not be measured very precisely and its coefficient is statistically insignificant for each of these three industries. Higher energy costs have a large negative effect on the size of branch plants in these industries, and an

existing concentration of the industry has a large positive effect on the size of the branch plant in these industries. Available expertise is important for the highly sophisticated industry (SIC 3662), but taxes and business climate do not appear to have a major effect on branch births for any of the three industries.

Plaut and Pluta (1983) examine aggregate manufacturing growth for 48 states between 1967-72 and 1972-77. They use the percentage change in employment, in real value added, and in the real capital stock. They include a large number of variables representing market accessibility, labor's wages and unionization, energy, land, climate, and business climate as explanatory variables. Principal components analysis is used to reduce the number of regressors and reduce multicolinearity.

For employment change, they find that an adverse business climate rank and higher overall tax effort in a state slow employment growth. The coefficients of these two variables are negative and statistically significant. But corporate taxes, personal income taxes, and the sales tax are not important. Surprisingly, higher property taxes are found to increase employment growth. The result is puzzling, but they explain that it may result from firms' desire for locally dominated (as opposed to state) fiscal systems.

On the expenditure side, they find that higher education expenditures lead to more employment growth. But welfare expenditures do not have a statistically significant effect on employment growth.

They also find that union activity reduces employment growth, but that higher wage rates and higher unemployment increase employment growth. The wage rate finding is unexpected and may reflect some multicolinearity problem or simultaneous equation bias between employment growth and wages.

Bartik (1985) examines new total branch plant locations for all Fortune 500 firms in the forty-eight states between 1972 and 1978, using Schmenner's data on the number of new branch plants from his Fortune 500 study (1982). He uses a traditional set of variables which reflect labor costs, energy prices, taxes, and agglomeration economies. Using conditional logit analysis, Bartik finds that the effective corporate income tax rate has a negative effect on the probability of locating a branch plant in a state, and that unionization also has a negative effect on the probability of branch plant location. He also finds that the wage rate is not a statistically significant determinant of branch plant location, and that energy prices similarly have no effect. Bartik also finds that agglomeration of manufacturing firms attracts branch plants, as does the number of highway miles in a state.

There is some evidence in these studies that taxes and business climate in general influence manufacturing employment growth. The evidence is weak in that some research supports the view that taxes matter, but in other research there is little evidence to support this view. The more recent studies

tend to find that taxes matter in regional location decisions. While these studies tend to use more variables to explain location choice and to use more sophisticated econometric techniques, they also either look only at total manufacturing or at a very narrow set of industries. These focuses result in evidence that is not sufficient to draw general conclusions about whether taxes are important in employment growth. Taxes may matter for some industries but not for others, and in examining aggregate manufacturing, taxes (and other variables) may appear to have no effect on location due to aggregation of industries and resulting bias.

The empirical work which follows examines employment growth for the forty-eight contiguous states for manufacturing and several major nonmanufacturing industries. This analysis and the subsequent interpretation of the results extend the discussion of the effect of taxes and business climate on employment growth beyond the manufacturing sector.

ECONOMETRIC MODEL

Percentage changes in employment are modeled here as a disequilibrium phenomenon. More specifically, firms are not viewed as shifting from one equilibrium position in 1973 to another in 1980. In such a case, firms would respond to a set of changes in exogenous variables which would represent changes in conditions that affect profitability at different locations between 1973 and 1980 (comparative statics).

Instead, firms are viewed as responding to a stream of disequilibrium conditions and as trying to adjust their employment in various locations based on the best information available as to how these conditions will affect their profitability over the longer run. The price of inputs, primarily labor, capital and energy, taxation, the environment or climate, and market access, all affect profitability. But what variables firms use to measure these prices and conditions at various locations is not known. Thus, one can only try to capture the prices and market conditions using variables that firms are likely to use in measuring prospective profitability in various states. Because this is a disequilibrium model that spans seven years of employment change, the explanatory variables are a mixture of percentage changes in and of the levels of certain variables. Because employment changes occur in every year during the 1973-80 period, it is not clear which year of data best represents the variables to which firms respond. Therefore, 1977, the mid-point of the 1973-80 period, is chosen to measure most of the variables.[2]

In some sense the choice of the year for data is not critical to the results. The correlation between a variable in 1977 and the same variable in another year (1975 or 1978) is estimated for several of the independent variables. In all cases, the correlations are above 0.9, which is high enough to be virtually the same variable.

The econometric model is specified as a linear relationship between the percentage changes in employment in industry (i), (PCT(i)), and vectors of independent variables representing labor costs and availability (L), energy (ELEC), fiscal climate (FC), the climate (TEMP), markets (M) and agglomeration economies (A).

$$PCT(i) = a + L(b) + ELEC(c) + FC(d) + TEMP(e) + M(f) + A(g) + e \quad (1)$$

where *a* is a constant term, *b* through *g* are vectors of parameters and *e* is an error term.

The linear specification is chosen here over double log and semi-log purely on a practical basis. The dependent variable and some of the right-hand-side variables are specified as percentage changes which are sometimes negative and therefore rule out taking logarithms.

DEPENDENT VARIABLES

The dependent variable is the percentage change in employment between 1973 and 1980 in each of six industries and in the total of the six. The list of industries examined is reported above and repeated in the tables that follow. A list of all the variables used in this study and the data sources are reported in the appendix to this paper.

INDEPENDENT VARIABLES

The explanatory variables specified in Equation (1) have a large number of dimensions to them. In what follows, these dimensions are represented using a large number of variables. But some of these variables are later dropped from the empirical work to increase the explanatory power of the analysis.

Labor Climate Variables. Labor climate is measured using wage rates, union activity, labor availability, productivity, and unemployment compensation benefits. The wage rate variable (WAGE) is the average hourly pay for manufacturing production workers in a state. This same wage rate measure is used for every industry analyzed. If the manufacturing wage rate is high, other industries will have to pay higher wages to attract, hire, and retain employees. Thus the manufacturing wage rate is expected to be indicative of the overall wage level in the state.

Union activity is measured using the percentage of the work force that is unionized in 1973 (UNION), a dummy variable equal to unity if the state has a right-to-work law and zero otherwise (RTW), and the percentage of working time lost in a state due to union work stoppages (WSTOP). WSTOP is calculated using the average percentage of working time lost for years 1977, 1976, and 1975. The percentage change in the population between ages 18 and 44 (P1844) between 1965 and 1973 measures the growth in the prime working age population in a state.

The median education level in the state in 1976 measures labor's inherent productivity (EDUC). The level of unemployment compensation is measured as the average weekly basic unemployment insurance payment in 1976 (UI).[3]

Energy. Energy prices are difficult to measure. There are a variety of energy types—electric, natural gas—and different tariff structures for user classes. One study (Carlton, 1983) uses both natural gas and electric prices. His results show that the coefficients for electric prices are statistically significant; those for natural gas are not statistically significant. Thus, for this analysis, the average industrial electrical bill for the 300 to 600,000 KWH use class (ELEC) is used to proxy energy prices. This is the same variable Carlton and others use in their analyses.

Fiscal Climate. The fiscal climate in a state is difficult to capture with only a few variables. Here numerous variables are proposed to measure both the expenditure and the tax climate in a state. Also, some policymakers and business representatives appear to believe that high nominal tax rates have detrimental effects on business' perception about a state even though the high nominal rates do not necessarily imply high taxes, because business taxable income in a state may be small due to generous depreciation allowances, deductibility of federal taxes, and other provisions. This suggests that business does not look much beyond the nominal tax rate, and that these so-called "announcement effects" about nominal rates drive business decisions. On the other hand, it may be argued that business looks beyond the obvious nominal rate and locates according to effective rates of taxation. These two hypotheses are tested in the empirical work using tax variables discussed in more detail later.

On the expenditure side, the education burden in 1977 (EDUCI) and the welfare-burden (public welfare plus Medicaid) in 1977 (WELI) are included in the regressions. These are measured as total state and local expenditures from their own revenue on each of these functions as a percentage of state personal income.

On the tax side, a measure of the overall level of tax effort in the state is the first dimension of the tax burden used here. ACIR's measure of effort, which is an index of a state's effort relative to the national average of 100, is used to measure effort (TEFF). Higher effort implies higher taxes given the state's fiscal capacity. An effort index of 120, for example, would imply that the overall level of taxes is 20% higher in that state compared to the average in all states. Because it is often stated that firms are concerned about fiscal trends as well as about the level of taxation, the percentage change in effort from 1967 to 1977 (PTEFF) is used in the analysis.

Aside from the overall level of taxation in a state, the burden of two specific taxes—corporate or business taxes and the personal income tax—may particularly affect business location. Several variables can be used to measure the level of corporate or business taxation. The highest nominal

state corporate tax rate in 1976 (HCIT) measures the marginal tax rate on corporate income and is a measure of the announcement effects mentioned above. An alternative and more accurate measure of corporate tax burden is the ACIR's 1979 measure of the effective corporate tax rate or the ratio of corporate tax revenue to corporate tax capacity (EFFCIT).

Personal taxes, especially the individual income tax, can indirectly influence business location. High personal taxes may be unattractive to employees, especially those who are highly paid and in higher state tax brackets. The nominal marginal personal income tax rate can be used to measure the so-called announcement effect. This is more likely to occur the more progressive the income tax and, therefore, for households in high income brackets. Thus, the nominal state income tax rate for incomes of $50,000 or more (PIT50) is used to measure this announcement effect.[4]

An alternative and more accurate measure of personal income tax burden is the ACIR's effective tax rate—the ratio of taxes to income—for households with $50,000 of income or more (EFFIT50). A similar measure for households with income of $25,000 or more is also available. The two measures are highly correlated, and only the former is used here.

Tax progressivity may also adversely influence firm location. The average 1977 effective tax rate for the personal income tax and the sales tax combined is calculated for the ninetieth percentile of income and the tenth percentile of income (see Feenberg and Rosen, 1984). The difference between the effective tax rates in these two income percentiles is used as a measure of the progressivity of these personal taxes (PROG) in this analysis.

Some researchers (Plaut and Pluta in particular) argue that business may prefer states with more local government funding of services because business prefers to pay local property taxes rather than state income taxes. Moreover, it is also argued that business may prefer states that make greater use of sales taxes, because that tax is not as burdensome to business. To test these hypotheses, the percentage of local revenue raised from own-sources as a percentage of state and local taxes (PCTLOC) in 1977-78 and sales tax revenues as a percentage of total state and local revenue in 1976-77 (SALETX) are included among the fiscal variables.

Climate. Temperature variations are used to measure climate. In particular, the average maximum daily temperature for every day in the month of July for the past thirty years in each state (MAXTEMP) is used to measure the heat extreme. A comparable measure of the average minimum temperature for every day in the month of January for the past thirty years in a state (MINTEMP) is used to measure the cold extreme. These variables are used to test whether firms specifically avoid cold climates or whether increased use of air conditioning induces them to expand in hotter climates.

Market Variables. To measure the market potential in a state for final goods producers, and particularly for the retail trade, finance, and service industries, the population density in a state in 1973 (DENST) and the per

capita income in a state in 1977 (PCY) are included in the equation. In addition, P1844 may represent a growing market for some industries, such as retail trade, as well as prime labor force for manufacturing and other industries. This age group is in a high expenditure phase of their life cycle and some firms may expand according to such market trends.

Agglomeration Economies. Firms in some industries may be strongly attracted to one another. Specifically, manufacturing firms often cluster in locations to take advantage of agglomeration economies. A high concentration of manufacturing in a state may also lead to employment growth in wholesale trade and transportation if manufacturing firms are a market for these industries. Thus, the percentage of total employment in manufacturing in 1973 (PCTMFG) is included in the regressions for these three industries.

TABLE 2
Final List of Variable Names Used in the Regressions

Included (Hypothesized Sign)	Dropped[a]
Labor Climate	
WAGE (-)	UI
WSTOP (-)	UNION, RTW
EDUC (+)	
P1844 (+)	
Energy	
ELEC (-)	
Fiscal Climate	
EDUCI (+)	
WELI (-)	TEFF
PTEFF (-)	TEFF
EFFCIT (or HCIT) (-)	TEFF
EFFIT50 (or PIT50) (-)	PROG, TEFF
SALETX (?)	PCTLOC (correlated with PCY)
Climate	
MAXTEMP (+)	
MINTEMP (+)	
Market (used in Retail Trade, Finance, Services only)	
DENST (+)	
PCY (+)	
Agglomeration	
PCTMFG (included in some regressions) (-)	

[a]The dropped variable appears in the same row as the included variable with which it is highly correlated.

RESULTS

The estimation procedure is ordinary least squares regression. The extensive list of variables described above is used in an initial regression run for each industry (results not reported here). In addition, simple correlations between the right-hand-side variables are computed. The correlations among the variables within each subgroup (e.g., labor climate, fiscal climate, etc.) are examined to check whether there is multicollinearity among the variables. If a variable is highly correlated with one or more variable(s) in the subgroup, and it is *always* statistically insignificant in the initial regressions and not found to be statistically significant in other studies of location, it is dropped from the regression, and a preferred model is formulated. A list of variables that are included in the final regression equations and their hypothesized signs is reported in Table 2.

The regression using the announcement effect variables (PIT50 and HCIT) instead of the effective rate variables (EFFIT50 and EFFCIT) generally had slightly less explanatory power (lower R^2) than the effective rate regressions. Moreover, in the three regressions in which the coefficient of the effective income tax variable is statistically significant and has the expected negative sign, the coefficient of PIT50 in the counterpart announcement regression is either not statistically significant (retail trade) or has less statistical significance than in the counterpart effective rate regressions (wholesale trade and finance, insurance, and real estate). Thus, the idea that firms do not look beyond the nominal rates of taxation is rejected here, and only the results using the conceptually more correct effective rates are reported below.

PERCENTAGE CHANGE IN EMPLOYMENT

The results for percentage change in total employment for these industries and in each of the six industries are reported in Table 3. For the six industries as a whole, higher wages and energy prices have a negative and statistically significant effect on the percentage change in total employment. For fiscal variables, higher spending on education as a proportion of income appears to have a positive, statistically significant influence on employment growth. A higher percentage increase in tax effort discourages employment growth and it is statistically significant. Surprisingly, a higher effective corporate income tax rate increases total employment growth, and the coefficient is statistically significant, but only at the 0.10 level. This last finding may result from the aggregation of industries, because the coefficient on the effective corporate income tax rate is not statistically significant in any of the industry regressions.

Employment growth is higher in states that have warmer climates as represented by the average maximum temperature for July variable. Growth

TABLE 3
Regression Results for Percentage Employment Changes 1973-80: by Industry
(number of observations = 48)

	Total Employment	Manufacturing	Transportation	Wholesale Trade	Retail Trade	Finance, Insurance, Real Estate	Services
CONSTANT	51.84	-307.71	-281.03	-17.26	75.47	-211.30	-238.51
WAGE	-5.54**	-3.31	1.12	-2.59	-4.75**	-7.54**	-4.27*
WSTOP	-14.25	-24.38	-23.19*	-6.54	-8.24	-2.14	-11.40
EDUC	-10.28	26.20	16.80	2.11	-10.78	11.02	11.60
P1844	-0.001	0.18	0.15	0.09	0.15	-0.44*	-0.24
ELEC	-0.01**	-0.005	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
EDUCI	2.57*	-2.39	-2.03	3.25	4.67**	7.87**	1.85
WELI	2.17	3.68	1.56	0.11	0.77	1.05	-0.01
PTEFF	-0.42**	-0.55*	-0.22	-0.03	-0.28*	-0.28	-0.43**
EFFCIT	1.72*	0.60	-0.05	1.36	-0.18	1.65	0.71
EFFIT50	-0.89	-0.36	-0.06	-3.26**	-1.78**	-2.46**	0.47
SALETX	0.11	0.43	-0.07	-0.81*	-0.16	-0.10	0.39
MAXTEMP	0.79**	0.77*	1.68**	0.94*	0.17	0.11	0.90**
MINTEMP	-0.04	-0.26	-0.08	-0.30	0.22	-0.04	0.08
PCTMFG	-0.81**	-3.81**	-0.50**	-0.64**			
DENST	-0.01				-0.02**	-0.02**	-0.002
PCY	0.01**				0.01**	0.02**	0.01**
R^2	.77	.62	.64	.48	.54	.62	.44

* and ** indicate statistical significance for a one-tail test at the 0.10 and 0.05 levels, respectively.

in total employment is also higher in states with a lower concentration of manufacturing and higher per capita income. Thus, employment growth is spreading away from traditional manufacturing states.

The hypothesis that different factors are significant in the location decisions of different industries is supported here. In manufacturing, only the tax trend, the temperature variable, and the percentage manufacturing variable are significant. By contrast, for retail trade, wages, electricity costs, expenditures on education, tax trend, personal income tax burden, population density, and per capita income are significant.

Higher wages, energy prices, and, somewhat surprisingly, population growth in the 18-44 age cohort reduce employment growth in the financial industries. The last result may indicate that the 18-44 age cohort does not demand many financial services because they are still, for the most part, in the consumption phase of their life cycle.

Higher expenditure on education as a percentage of income has a strong positive effect on employment growth in the finance industry, and high effective personal income tax rates adversely affect employment growth in this industry. As in retail trade, employees in the financial industry are probably attracted to and deterred by, respectively, these aspects of the fiscal structure. Population density in the state adversely affects employment growth in finance, while per capita income has a positive influence on employment growth in this sector.

The elasticities of the dependent variable with respect to a selected set of independent variables are reported in Table 4. The elasticities can be used directly to compare the strength of the employment response to the independent variables. A higher (absolute) value for the elasticity implies a stronger response.

The elasticities indicate that the wage rate, electricity charges, education burden, warmer climate, and the concentration of manufacturing employment have the strongest effects on employment change. The elasticity of percentage change in employment with respect to EFFIT50 is relatively high for the wholesale trade, retail trade, and finance industries, but that for PTEFF is relatively low. Per capita income also has a substantial effect on employment growth.

While the elasticity coefficients indicate the relative importance of a 1% change in different variables on employment growth from the firm's perspective, how an individual state such as Minnesota will fare relative to other states also depends on the relative position of the independent variables for Minnesota compared to other states. For example, if Minnesota has about average U.S. manufacturing wage rates, even though the elasticity of the manufacturing wage rate variable is high, the wage rate variable does not have much effect on the growth rate of Minnesota's employment. On the other hand, if Minnesota's increase in tax effort is 50% lower than the U.S. average, this variable will play a significant role in the

TABLE 4
Elasticities of Percentage Employment Change with Respect to
Statistically Significant Independent Variables
Reported in Table 3

	Total Employment	Manufac-turing	Transpor-tation	Wholesale Trade	Retail Trade	Finance, Insurance Real Estate	Services
WAGE	-1.12*	-1.08	0.28	-0.45	-1.05*	-1.34*	0.51*
WSTOP	-0.08	-0.23	-0.16*	-0.03	-0.05	-0.01	-0.04
P1844	0.00	0.19	0.12	0.05	0.11	-0.25*	-0.09
ELEC	-0.84*	-0.68	-1.01*	-0.72*	-0.91*	-0.73*	-0.49*
EDUCI	0.72*	-1.09	-0.69	-0.49	1.43*	1.94*	0.31
PTEFF	-0.06*	-0.14*	-0.05	-0.03	-0.05*	-0.04	-0.04*
EFFIT50	-0.10	-0.07	-0.01	-0.33*	-0.23*	-0.25*	0.03
SALETX	.05	0.31	-0.04	-0.31*	-0.08	-0.04	0.10
MAXTEMP	2.42*	3.82*	6.25*	2.49*	0.57	0.30	1.62*
PCTMFG	-0.85*	-6.60*	-0.64*	-0.58*			
DENST	-0.05				-0.11*	-0.09*	-0.01
PCY	2.36*				2.58*	4.16*	1.39*

*indicates that the coefficient underlying the elasticity is statistically significant in the industry regression.

percentage of employment changes even though its elasticity coefficient is relatively small.

Table 5 reports the Minnesota figure used in the regressions and the U.S. average figure for the statistically significant elasticities listed in Table 4, plus the effective corporate income tax rate, because this is likely to be of interest. Minnesota compares favorably in several categories. Wage rates are not out of line with the U.S. average. Minnesota has a per capita income that is 6.5% higher than the average. The figures in column 3 of Table 5 utilize the elasticities for total employment growth in Minnesota that is attributable to each of the variables. For example the -5.1% figure for the wage in column 3 of the table should be read as: because Minnesota's wage rate is 4.5% higher than the U.S. average, Minnesota's growth rate for total employment is 5.1% lower than the average.

Maximum temperature, the effective income tax rate, and electricity prices all have a significant negative effect on Minnesota employment growth. In contrast, the decline in Minnesota's tax effort since 1967, the low population density, and especially the high per capita income lead to employment growth in Minnesota. Even though Minnesota's effective corporate tax rate is relatively high, the regression results suggest that it does not have a significant effect on employment changes.

TABLE 5
Minnesota Versus the U.S. Average for the Sample Period

	Regression Figures		Percentage of Change in Minnesota's Growth Rate of Total Employment Due to Each of These Variables
	Minnesota	U.S. Average	
			(in percentages)
WAGE	$5.98	$5.72	-5.1
WSTOP	0.21	0.16	-2.5
P1844	27.38%	18.33%	0
ELEC	$2,563	$2,360	-7.2
EDUCI	8.9%	7.9%	+9.1
PTEFF	-5.0%	-4.3%	+1.0
EFFIT50	7.7%	3.3%	-13.5
SALETX	7.9%	12.4%	-1.8
MAXTEMP	79.4	86.6	-20.1
PCTMFG	28.35%	29.7%	+3.7
DENST	49	152.4	+3.4
PCY	$7,108.8	$6,674.7[a]	+15.3
EFFCIT	7.9%	4.1%	

[a]This figure is the average (unweighted) per capita income for the forty-eight states (not the per capita income figure in the U.S.) and it is the proper basis to compare Minnesota and the U.S., given that the regression coefficient for PCY is based on the forty-eight-state average figure.

Minnesota's favorable position in per capita income helps boost employment in services, retail trade, and especially in finance. However, Minnesota's high effective income tax rate hurts employment growth in these latter two industries. In fact, in finance Minnesota's per capita income advantage leads to a 27.1% increase in employment growth over the U.S. average, but Minnesota's disadvantage in its high effective personal income tax leads to a 33.3% decrease in employment growth in this same industry. It appears that overall (total employment) Minnesota's employment growth would have been stronger during this period if it had shifted from income taxation to more reliance on the sales tax, because the latter has a more favorable elasticity for employment growth.

CONCLUSIONS AND IMPLICATIONS

From the elasticities reported in Table 4 and from the effect of several independent variables on Minnesota's employment reported in Table 5, it is concluded that Minnesota's employment growth would benefit from a reduction in personal income tax rates. It appears that these revenues could be replaced with increased sales taxes and there would still be a net positive effect on employment growth. Such a policy shift would have a particularly strong effect on employment in the finance industry. This proposed major revision in the tax structure of Minnesota would enhance its competitive position for employment growth in the region and in the U.S. Minnesota's employment growth rate would be higher if it used a more diverse tax structure to raise state revenues.

In contemplating this change in tax structure, some policymakers may consider expenditure reductions instead of increasing revenues from other tax sources. This research shows that higher expenditure on education relative to income has positive effects on overall employment growth, and budget-cutters should not reduce education expenditures very much, if at all.

It is important to note that the significant policy variables are not the strongest determinants of employment growth rates. Several other variables (in particular, wages, electricity, and percentage of manufacturing) have greater elasticities, and the relatively small elasticities of the policy variables limit the impact that a tax restructuring would have on employment growth in Minnesota.

ENDNOTES

1. For a recent example of an econometric study, see R. Schmenner, *Making Business Location Decisions,* (Englewood Cliffs, NJ: Prentice-Hall, 1982), and D. Carlton, "The Location and Employment Choices of New Firms: An Econometric Model with Discrete and Continuous Endogenous Variables," *Review of Economics and Statistics,* 65 (3) (August 1983): 440-449. See M. Wasylenko, "The Role of Taxes and Fiscal Incentives in the Location of Firms," in Roy W. Bahl, editor, *Urban Government Finance: Emerging Issues,* Vol. XX, (Beverly Hills, CA: Sage Publications, 1981), for a review of previous studies on firm location.

2. In some cases the data for 1977 for a specific variable are not available. Rather than drop the variable from the equation, data for a year close to 1977 are used.

3. Workers' compensation is another aspect of the labor climate that, due to a lack of data, is not represented among these variables.

4. The nominal tax rate for the $25,000 tax bracket is also collected as part of the data set and could be used to measure the announcement effect. This nominal rate is highly correlated with PIT50 (r = .97) and only PIT50 is used in the analysis.

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APPENDIX
DATA SOURCES FOR VARIABLES

DEPENDENT VARIABLE

Employment changes 1973 to 1980—U.S. Department of Commerce, Bureau of the Census, *County Business Patterns,* 1973 and 1980.

INDEPENDENT VARIABLES

Labor Climate

WAGE	U.S. Department of Commerce, Bureau of the Census, *Census of Manufacturing,* 1977, Vol. 3, Table 5.
UNION	U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.,* 1979.
WSTOP	U.S. Department of Labor, Bureau of Labor Statistics, *Handbook of Labor Statistics,* 1983 (Bulletin 2175).
RTW	U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.,* 1979.
EDUC	U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.,* 1979.
UI	U.S. Department of Labor, *Handbook of Unemployment Insurance,* Financial Data 1938-76.
P1844	U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.,* 1967, p. 24, and 1974, p. 32.

Energy

ELEC	U.S. Department of Energy, *Typical Electric Bills,* 1978.

Fiscal Climate of the State

EDUCI, WELI	ACIR, *Significant Features of Fiscal Federalism,* 1980-81, Section 2, State Profiles Item 5 M-132 Dec. 1981.
TEFF, PTEFF	ACIR, *1981 Tax Capacity of the Fifty States, A-93,* September 1983, Table 6, pp. 12-13.
HCIT, PIT50	ACIR, *Significant Features of Fiscal Federalism,* 1976-77, Vol. II, Revenue and Debt M-110, March 1977, pp. 219-222, and pp. 194-201.
EFFCIT	ACIR, *Tax Capacity of the Fifty States: Methdology and Estimates,* M-134, State Tables, p. 44 ff.
EFFIT50	ACIR, *Significant Features of Fiscal Federalism,* 1978-79, p. 76.
PROG	Feenberg, D.R. and H.S. Rosen (1984), "State Personal Income and Sales Taxes: 1977-83," N.B.E.R. Conference on State and Local Public Finance, June 15-16, 1984.
PCTLOC	ACIR, *Significant Features of Fiscal Federalism,* 1979-80, Table 15, p. 21.
SALETX	ACIR, *Significant Features of Fiscal Federalism,* 1978-79, M-115, May 1971, Table 25.

Climate

MAXTEMP, MINTEMP — U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.*, 1979.

Market

DENST — U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.*, 1974, p. 12.

PCY — Personal Income: U.S. Department of Commerce, Bureau of Economic Analysis, *State Personal Income Accounts*, 1977. Population 1977: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the U.S.*, 1978.

Agglomeration (Dis)Amenities

PCTMFG — U.S. Department of Commerce, Bureau of the Census, *County Business Patterns*, 1973.

4

Minnesota's Approach to Budgeting: Executive and Legislative Responsibilities

William A. Blazar

This chapter is an analysis of Minnesota's budget process. It focuses on the interaction between the executive and legislative branches as well as the internal workings of the legislature with respect to the state's biennial budget. It does not consider the budgeting relationship between the governor and state agencies nor the relationship between these agencies and the legislature.

Minnesota is one of twenty states that have biennial budgets. Unlike the other thirty, these states adopt new budgets every two years rather than annually. Minnesota's biennium begins on July 1 of each odd-numbered year and ends on June 30 of the next odd-numbered year. For example, the current biennium began on July 1, 1983, and will end on June 30, 1985. The current biennium is frequently referred to as "the 1983-85 biennium." It includes fiscal years 1984 and 1985. Fiscal year (FY) 1984 began on July 1, 1983 and ended on June 30, 1984. FY 1985 began on July 1, 1984 and will end on June 30, 1985.

In Minnesota, there is much more to the state's operating budget than funding for state agencies and programs. Almost one-half of the budget is spent for direct property tax relief (e.g., homestead credit) and aid to local governments and school districts. When the governor makes "budget recommendations" to the legislature, property tax relief proposals are frequently more prominent than conventional spending programs.

At first glance, it may seem that analysis of Minnesota's budget process is far afield from the tax commission's work. It must be remembered, however, that public sector spending is the basis for taxation. We tax to spend.

The budget process can influence the amount that is spent in at least three ways:

- By requiring budget decisionmakers to set goals, parameters, or guidelines regarding the total amount to be spent. Any guidelines can be disregarded or changed, but usually not without some explanation to mark the decision.
- By separating out some items for early consideration while leaving most decisions for the end of the process. The early items may be treated

differently because they are reviewed out of the context of the rest of the budget.

- By concentrating or dispersing budget responsibility among decisionmakers. Concentrating responsibility among relatively few (or one) decisionmakers produces a different result than distributing it more equally (or equally) among a large number of decisionmakers.

All three are factors in Minnesota's budget process. The second and third are more widely recognized and understood than the first. As such, overall budget guidelines are the primary concern of this chapter. Issues of timing and distribution of authority are secondary.

This chapter is divided into two major parts: findings and conclusions. The findings describe the roles that the governor and the legislature play in building Minnesota's biennial budget. They are subdivided into four major sections:

- Ground rules—executive and legislative constraints;
- The governor's role—leading the process;
- The legislature's role—evaluating the governor's proposal;
- Reconciling executive and legislative differences.

The conclusions focus on those aspects of the budget process most relevant to the overall level of budget and tax spending in Minnesota.

GROUND RULES—EXECUTIVE AND LEGISLATIVE CONSTRAINTS

In many respects, the process that Minnesota uses to build, review, and adopt its biennial state budget works well. Every other year, the governor and legislature review and adopt a biennial budget. It includes the state's operating budget as well as major tax legislation and a funding formula for elementary and secondary education. They do this in about eleven months, reviewing thousands of individual spending items in the process. They make decisions which, over twenty-four months, must finance state services, a large portion of those provided by local governments and major public institutions like the University of Minnesota, state universities, community colleges, and vocational-technical schools.

When totaled, the thousands of spending decisions must not exceed revenues. Minnesota's constitution prohibits borrowing to finance operations across bienniums. This necessitates a balanced budget. Except for years when there has been a major recession or unexpected economic shock (e.g. 1981-82), mid-biennium alterations to make the budget balance have been rare. And, while no one enjoys them, special legislative sessions are allowed to deal with unexpected shortfalls. As difficult as they were, the

special sessions of 1981 and 1982 resulted in a balanced budget. The system worked.

The success of Minnesota's budget process is largely attributable to the governor's preparation of a budget proposal and the legislature's practice of following his lead in reviewing it. The governor is Minnesota's chief budget officer. He starts and ends the process. At his direction, the department of finance prepares the biennial budget. He can veto entire appropriations bills or individual items. (The governor may also veto the tax and school aid bills, but not individual items within such legislation.)

The legislature follows the governor's lead because its time and resources for budget work are limited. Part time legislators and their staff can not match the resources of the governor and the department of finance. From January when the legislature convenes until adjournment in May, it must not only adopt a budget but also deal with other policy issues. The legislature could never complete its responsibilities if it had to start from scratch on a budget. Even if it could, management of the state's fiscal affairs might suffer by separating budget planning and development from administration.

There are relatively few formal (i.e. statutory) requirements in Minnesota's budget process. The three most significant are that:

- The governor must present a biennial budget to the legislature, typically by the third week in January of each odd-numbered year.
- A budget must be adopted before the start of a new biennium.
- The state's budget must be balanced at the time it is adopted. (It must also be balanced at the close of each biennium.)

The absence of requirements allows the governor and the legislature to work at their own pace with only one hard-and-fast deadline, the start of the next biennium (i.e., July 1). As a practical matter, the deadline is the third week in May when the Constitution requires the legislature to adjourn. (To work past this date the governor must call a special session.)

The time constraint forces both the governor and the legislature to review some spending areas more thoroughly than others. The governor sets his priorities in the spring of each even-numbered year when budget building begins. The legislature does not identify priority items until after the governor's budget presentation in late January.

Minnesota's budget process can be divided into two stages:

- The budget preparation stage, starting in the spring of each even-numbered year, ending with the governor's budget address in late January of each odd-numbered year.
- The budget adoption stage, starting in late January of each odd-numbered year, ending in mid- to late May. (During its session in even-numbered years, the legislature may adjust budget decisions made the previous year.)

Table 1 describes the timing and major tasks involved in the preparation of the 1985-87 biennial budget. Preparation of tax policy proposals followed a somewhat shorter schedule and was under the direction of a special policy team led by the commissioner of finance.[1] The legislature received four major documents from this preparatory work.

- The governor's operating budget proposal for the 1985-87 biennium, including property tax relief and education aids recommendations.

TABLE 1
Schedule of Significant Dates
1985-87 Biennial Budget Process

January, 1984	— Legislature convenes
April, 1984	— Legislature passes and governor signs school formula for the first year of 1985-87 biennium
May 8, 1984	— Budget guidelines released
May, 1984	— Identification of programs for special analysis and submission of list
May 23, 1984	— Finalize agency structures (programs-budget activities-management activities) due
June 15, 1984	— Agency submits preliminary list of capital budget projects to Finance for use in field visits
July 2, 1984	— Capital budget and 6-year plan, forms, and guidelines to agencies
August 1, 1984	— Agency status report on budget development submitted to Finance
August 13, 1984	— Draft budget narratives and other agency prepared budget materials submitted to controllers/analysts for review
August-September, 1984	— Department of Finance reviews submission for completeness and accuracy
September 10-28, 1984	— Agencies submit final budget requests, budget narratives, fee report, and supplemental information to Finance
October 1, 1984	— Due date for issue analyses for issues with fiscal impact
October 15, 1984	— Agencies submit departmental legislation for 1985 session
November 1, 1984	— Finalized 1985-87 capital budget requests and 6-year plan submitted to Department of Finance
November 15, 1984	— Finance submits agency budget requests to House Appropriations and Senate Finance Committees
January 29, 1985	— Governor's operating budget recommendations for 1985-87 presented to the legislature
March, 1985	— Governor's 6-year plan and capital budget recommendations presented to the legislature
July 1, 1985	— 1985-87 biennium begins.

Source: Minnesota Department of Finance

- The budget requests of individual state agencies.[2] These requests may or may not have been included in the governor's proposal.
- The governor's capital budget proposal for the 1985-87 biennium and his six-year budget plan.
- The governor's tax policy proposals.

The legislature acts first on the governor's operating budget recommendations, adopting an operating budget, tax bill and school aids formula by the end of each odd-year session. For the most part, the governor's capital budget is not acted upon until the following year.[3] The legislature takes no formal action on the six-year plan.

THE GOVERNOR'S ROLE—LEADING THE PROCESS

The governor sets the tone for Minnesota's biennial budget discussion. In the most recent budget cycle (fiscal years 1984 and 1985), the tone was relatively conservative and disciplined. The legislature's actions reflected the governor's lead. Consider the following:

- The overall budget increase for this current biennium is the smallest in twenty-five years (14.9% or just over 7% per year).[4]
- The governor proposed and the legislature adopted a $375 million budgeted reserve. This will make the state's budget less vulnerable to economic recession and help to avert cash flow problems.
- Every spending and tax decision made during the 1984 session was costed out for both the current and 1985-87 biennium. According to legislative staff, this is the first time in the state's history that the legislature has done a thorough job of costing out proposals for both the current and next biennium.
- The legislature (with the governor's support) created a special "education aids increase account" to finance $50 million in additional state aid for elementary and secondary education during the 1985-86 school year. The legislature created this account in order to set aside funds in this biennium for increased school aids during the first year of the next biennium. In effect, it put aside $50 million of current revenue and will use it to pay for school aids increases starting in the fall, 1985.

Previous governors and legislatures have not been as conservative or disciplined. As will be described later, Minnesota's process is as disciplined as the governor and legislative leaders make it. If they are not sufficiently attentive, there are relatively few institutional mechanisms that can take over and guide the process.

As the budget process proceeds, its tone may change. In May 1984, Governor Perpich told state agencies that their budget requests for the next

biennium should not exceed 14% and include no increase in positions. At this time, he also directed all agencies to identify programs for funding cuts or elimination. These became known as "governor's options." Three months later he told agencies that their "governor's options" must equal 5% of their current budgets. This change reflected the governor's growing concern in other fiscal policy areas.[5]

Governor Perpich's action is not unique. Other governors have found it desirable, and sometimes necessary, to alter their guidelines after budget preparation has begun. The process allows (and some would say encourages) these changes.

After the governor submits his budget to the legislature, the tone of the budget may change again. Legislators have just returned to the capital from their home districts. House members and, for every other biennium, senators, have just been elected or reelected. What they heard at home, combined with their own personal views, can dramatically change the tone of the budget discussion. However, it is unlikely that their sentiments will immediately (if ever) overshadow those of the governor.[6]

During budget hearings, legislators' views become known as specific budget items are discussed. Slowly the tone of the budget may change from that contained in the governor's proposal.

It is a subtle process. Each time a legislative committee reviews a budget item and reaches a conclusion different than the governor's, the budget becomes a little more legislative and a little less executive. However, hearings are dispersed, involving at least eleven committees and subcommittees. Furthermore, the timing and style of the hearings will vary from subcommittee to subcommittee and from committee to committee. This makes it extremely unlikely that the governor's general approach to the budget will be replaced by a "legislative approach."

The governor's budget proposal is considerably more than an extrapolation of previous spending practices. This is especially true for the state's most recent budgets. In the course of developing guidelines for the 1985-87 biennial budget, the governor asked the department of finance to prepare background information on six major topics:

- Spending projections for the next biennium based on current state law.
- A comparison of spending projections (assuming current law) with previous bienniums.
- Spending projections adjusted for the expected rate of inflation.
- Minnesota's state/local spending level compared with that in other states.
- Personal income growth projections.
- Revenue projections for the next biennium. (These projections combine revenue forecasts based on Minnesota's current tax laws and adjustments for various proposals to change tax policies.)

The department of finance was not able to provide complete information in all six areas. For example, it is extremely difficult to project changes in the policies of the federal government. Such changes can affect the cost of existing programs. It is also extremely difficult to provide up-to-date information on tax and spending activities in other states. This is the case for two major reasons. First, reporting on state-by-state spending is roughly two years behind. In 1984, the most recent data available is from 1982. Second, many states report the total size of their budget in different ways. This makes comparisons difficult.

Even with this information, the governor's options for budget guidelines are rather limited. Almost 80% of the state's budget is consumed by seven major spending items. They are:

- Aid to school districts (22%).
- Postsecondary education (17%).
- Property tax relief, including the homestead credit, circuit breaker, and agricultural credit (16%).
- Medicaid and general assistance medical care (11%).
- Aid to local governments (5%).
- Income maintenance, including AFDC, general assistance, and Minnesota Supplemental Assistance (4%).
- Debt service and state borrowing (3%).

It is difficult for the governor to control spending for these items. For example, aid to school districts for the 1986 school year was set by the 1984 legislature. That means that 22% of the budget for the first year of the 1985-87 biennium was in place before the governor announced his guidelines for that biennium.[7] With respect to medical assistance and general assistance medical care, the legislature must change the range of services covered and/or eligibility requirements in order to significantly reduce spending in these areas. While the legislature made some changes in 1983, further changes (and savings) will be difficult to enact. Another option would be to use productivity improvements to reduce spending increases in all seven areas. However, most of the spending for these budget items is done by local governments. Currently, the state has no way of legislating productivity improvements for them. In short, the governor's ability to make major changes in spending policy is limited by federal policies, the absence of current information on spending in other states, advanced funding of some major expenditure items, and well established welfare policies and local government spending practices.

Despite the limitations, budget guidelines are an essential part of Minnesota's budget process. In its August 1984 statement to the tax study commission, the Citizens League summarized their importance as follows:

> The Governor's budgetary guidelines are important in that they can prompt broad public discussion, early, of the (spending) alternatives that ought to be explored.

They are an important signal about how much the budget will change. They also offer the opportunity to discuss appropriate spending levels separate from revenue estimates.

Perhaps the most difficult problem with state budget-making today is that the question of appropriate spending levels almost always is related to how much money is being generated by existing taxes. It would be beneficial to have some discussions of appropriate budgetary levels absent the question of revenue generation. The presentation of the budgetary guidelines affords that opportunity because they are issued well in advance of the time of revenue-forecasting that will relate directly to the submission of the budget.[8]

THE LEGISLATURE'S ROLE—EVALUATING THE GOVERNOR'S PROPOSAL

Legislators and their staff are not involved in the budget process until after the governor announces his guidelines. Responsibility for setting guidelines rests with the governor. The guideline for the 1985-87 biennium was set without substantial consultation with legislative leaders and outside organizations. It was done as part of the governor's budget building process. No consultation is required with the legislature until the governor submits his budget in January of each odd-numbered year.

Legislators and their staff follow but do not have ongoing roles in the budget process until late fall of the even-numbered year, or in some cases, until after the governor formally presents his proposal. The staff of the house appropriations committee characterizes its role early in the process as follows:

> During development of budget requests by state agencies in the summer and early fall of even numbered years, the staff and, to some extent, key members of the Appropriations Committee work with the Department of Finance in reviewing and providing suggestions on the format of the budget (both operating and capital), content of the budget narrative and related items . . . By November of even-numbered years, state agencies have sent their budget requests to the Department of Finance and to the money committees in both the House and the Senate. In actual practice, the budget information containing the state agency requests is received by the staff of the House Appropriations and Senate Finance Committees rather than members for detailed analysis.[9]

The members and staffs of the tax committees do not become formally involved in the budget process until after the legislature convenes.[10] They do not participate in the executive's decision regarding the overall size of the state's budget, including spending for property tax relief and local government aid. Review of these items (i.e. budget size and tax relief) is "an ongoing process from the beginning of the legislative session until its conclusion."[11]

As the legislative session approaches, the budget responsibilities of the house and senate leadership intensify. There are frequent, informal consultations between them and the executive. One senate leader describes the relationship this way:

> Lest it be thought that the legislature just rolls over and plays dead, there is a good deal of informal consultation between the executive and the legislature that goes into the shaping of the governor's recommendation and, above all, no governor wants the embarrassment of a budget that's so bad (that) it is not taken seriously by the legislature.[12]

In thirty-three states, the legislature receives the budget proposal earlier in its session than does the Minnesota legislature.[13] (The Minnesota legislature receives the governor's proposal at the end of January, almost one month after convening.)

Despite a comparatively late start, Minnesota's legislature has some special opportunities to shape the budget. Two are particularly important.

- The legislature receives copies of each agency's budget request as submitted to the department of finance.[14] It receives these "gross" requests in November and can compare them against the governor's January recommendations. Forty other states follow a similar procedure. In three others, the legislature receives only the governor's recommendations.
- Minnesota's major appropriations bills are traditionally drafted by committees in both the house and senate. This is not always the case. In fifteen states, the executive branch writes the major appropriations bills. (In ten additional states, these bills are drafted by special legislative fiscal staff or joint executive-legislative committees.)[15]

In addition to the legislature, interest groups and the public join the process after the governor's budget message. The legislature's review process gives them both formal and informal opportunities to make their views known. This is an internal process between the governor/department of finance and state agencies. Executive branch leaders no doubt are lobbied privately regarding specific budget items. By comparison with a public hearing, there is usually significantly less pressure by the executive to be responsive.

From start to finish, there is little opportunity for the legislature to debate the total amount of budget and tax spending. Under the current process, there are two formal opportunities for such debate: the day the governor delivers the budget message to the legislature (late January) and the floor debate over the appropriations, school aids, and tax bills (mid- to late May).

The governor delivers his budget message to a joint session of the legislature. Newspaper and media requests for legislative leaders to comment on the governor's proposal provide the only formal opportunity for "debate" on the package as a whole. (The media has given leaders a

formal opportunity to respond when legislative leaders and the governor are members of different political parties.)

Immediately following the governor's message, the proposed budget is divided into three parts and referred to three committees in both the house and senate. In the house, the appropriations, tax, and education committees all produce major fiscal policy legislation. Similarly, in the senate, the finance, tax and education committees also write funding legislation. Basically, their responsibilities divide as follows:

- The appropriations and finance committees review the proposed budget for income maintenance and medical assistance, state agencies, and institutions. This includes the University of Minnesota and state hospitals.
- The house and senate tax committees review proposals for property tax relief and local government aids.
- The house and senate education committees review the aid proposals for K-12 education. (Education aids are also reviewed by the house appropriations and senate finance committees.

TABLE 2
Distribution of Budget Review Responsibility

Committee	Spending Items	Percent of General Fund (FY 1985 est.)
House appropriations/ senate finance	• Postsecondary education	17%
	• Income maintenance and medical assistance	15%
	• State institutions	5%
	• State agencies	11%
	• Other major assistance to local governments	5%
	• Debt service/borrowing	3%
SUBTOTAL		56%
House/Senate tax	• Property tax relief (homestead credit, circuit breakers, agricultural credit)	16%
	• Aid to local government	5%
SUBTOTAL		21%
House education - ed. finance division/ Senate education-ed. aids subcommittee	• Aid to school districts	22%
SUBTOTAL		22%
TOTAL		100%*

*May not sum due to rounding.

Source: Minnesota Department of Finance

Table 2 shows how the state's major budget items are distributed among legislative committees. In addition to these committees, policy committees (e.g., agriculture, economic development and commerce, etc.) in both houses are regularly involved in the review process. They play a central role with respect to new programs.

State law requires that the governor's budget recommendation include funding for only "current law" programs. New programs must be kept separate and labeled "specific change items." The legislature's policy committees must act favorably on these programs before they can go through the budget review process. This makes the policy committees an important part of the process. They can use their authority to bring legislative initiatives into the budget while delaying and/or stopping the governor's initiatives.

Both the senate finance and house appropriations committees make extensive use of subcommittees or divisions. The house appropriations committee has four divisions: state departments; agriculture/transportation/semistate agencies (e.g., the Minnesota Historical Society); higher education; and health, welfare, and corrections. The senate finance committee also has four budget-related subcommittees: agriculture/transportation/semistate agencies; education; health and human services; and state departments.

Once distributed to the committees, the biennial budget document never comes back together again. The governor's proposals as modified by the legislature will be enacted through a minimum of six conference committee reports—one from each division/subcommittee of the appropriations/finance committees and one each on taxes and school aids. These conference committee reports originate with at least twelve bills—six from the house and six from the senate. As a result, there is no floor debate on the budget and tax spending package as a whole.

The closest the legislature comes is to debate the major components of the package, i.e. the tax, appropriations, and school aids bills. This occurs late in the sessions: less than a week before adjournment for the twelve committee bills; usually not more than one day before adjournment for the conference committee reports. Committee bills are sometimes amended from the floor prior to final passage, but the amendments adopted are normally not substantive in nature and rarely change the dollar amount of the bill. Conference committee reports may not be amended.

While debate by the legislature as a whole is absent, some consideration is given to the total package within spending committees and through informal discussion among legislators. The initial meetings of both the house appropriations and senate finance committees are now used to overview the budget as proposed by the governor. Similar overview sessions are held by both the tax and school aids committees. However, in no case do these committees take any action (binding or otherwise) regarding the overall size

of the governor's proposals. Rather, debate and action is focused on the various items which make up the governor's proposal.

The budget process could be modified to include debate on the totality of the governor's budget and tax spending recommendations. This could be done in a variety of ways. The possibilities are represented by the following options:

- *Pass a budget resolution:* Shortly after the governor presents his budget recommendations, the legislature could adopt a budget resolution, setting guidelines for overall budget and tax levels. The debate over this resolution would focus legislative and public attention on the state's budget and tax spending policies. It would create a public checkpoint in the middle of the budget process and force the legislature to reach consensus on the total amount to be spent before considering individual budget and tax items. The budget resolution would tell the governor and the general public the legislature's goals for total spending and how they compare with the governor's recommendation. According to a survey of budget procedures conducted by the National Conference of State Legislators, no states currently use this budget procedure.[16]
- *Establish an "Affordability Committee."* The Maryland legislature established its "affordability committees" to make recommendations to the governor and legislature regarding the rates of increase for the state's capital debt and operating budget. Maryland's two affordability committees are standing, joint committees of the Maryland House of Delegates and Senate. Their chairs rotate between the two bodies.

  The affordability committees meet each fall and issue their reports in late October. The governor recommends a budget to the legislature each January. While the governor is not bound by the recommendations of the affordability committees, his staff works closely with them. The Maryland constitution prohibits the governor from vetoing the budget bill. It also prohibits the legislature from adding new spending items to this bill. Hence, the work of the affordability committees is of mutual interest to both the legislative and executive branches. (Appendix A provides a more detailed description of Maryland's affordability committees.)
- *Conduct hearings on the governor's budget guidelines.* This approach was suggested by the Citizens League in its August 1984 statement to the tax study commission. The league's proposal states:

> The Governor should submit the (budget) guidelines formally to the leadership of the House and Senate and the Appropriations/Finance and Tax Committees. Issuance of the guidelines comes after the Legislature has adjourned. But the committees of the House and Senate still are active. The appropriate committees of the House and Senate, separately or together, should hold post-adjournment public hearings on the guidelines. Such hearing would provide public education

and probably would help focus issues for upcoming elections to the House (every biennium) and the Senate and Governor (every other biennium).[17]

The first option, a budget resolution, could be added to the second and the third. The report of an affordability committee or joint hearings by the appropriations/finance committees could be the basis for debating a budget resolution.

There is at least one essential difference between the second and third options. The creation of an affordability committee like that in Maryland might encourage the legislature to develop its own budget. Today, it follows the governor's lead. Hearings on the governor's guideline by the appropriations/finance committees would be more consistent with Minnesota's current budget process.

RECONCILING EXECUTIVE AND LEGISLATIVE DIFFERENCES

The budget and tax spending bills passed by the legislature typically exceed the governor's initial request, averaging 108% over the last seven bienniums. See Table 3. Certain features of the process encourage changes in the budget initially proposed by the governor. Two stand out.

- *The policy priorities of legislators.* Not all policy initiatives originate with the governor. Legislators propose new programs or additional spending for existing ones. Others result in additional spending. The mix depends to a large degree on the governor. By threatening a veto, he can influence legislative leaders to kill some proposals, proceed with others by cutting one or more of his proposals; and, fund others by increasing budget's bottom line.
- *The April revenue forecast.* This is the last forecast before adjournment and the start of the new biennium. Regardless of what it says, this forecast creates a formal occasion for the governor and legislators to make new proposals and/or change existing ones. If the April forecast shows a large and growing surplus, there is a temptation to spend more. Whether or not this is controlled depends largely on the governor and the strength of the legislative leadership. Budget discipline is their responsibility.

While the governor leads Minnesota's budget process, it is not autocratic. Compromises between the governor and legislature are part of the process. Table 3 is testament to that. Compromises between the two branches, unresolved policy differences and/or lapses in discipline explain the disparities. For example, during the 1984 session, the legislature outspent the governor by about $50 million for school aids for the 1985-86 school year. The April revenue forecast showed a large and growing fund balance. Legislators devised a special reserve account to put aside a portion of the

balance to finance the additional aid. With that in place, the governor agreed to the increase even though it exceeded his own recommended rate of increase by more than 50%. In this case, both the legislature and the

TABLE 3
Minnesota Biennial Expenditures and Transfers ($000's) Compared to the Governor's Initial Budget Request*

Biennium	Actual Budget Approved by Legislature and Signed by Governor		Governor's Initial Rec**		Actual as % of Governor's Initial Rec
1971-73	Actual FY 1972	1,330.723	Jan. '71 FY 1972	1,246.375	114%
	FY 1973	1,613,366	FY 1973	1,329,461	
		2,944,090		2,575,836	
1973-75	Actual FY 1974	1,662,131	FY 1974	1,583,252	112%
	FY 1975	1,867,714	FY 1975	1,558,871	
		3,529,845		3,142,123	
1975-77	Actual FY 1976	2,246,263	Jan. '75 FY 1975	2,102,845	116%
	FY 1977	2,684,009	FY 1977	2,138,393	
		4,940,272		4,241,238	
1977-79	Actual FY 1978	2,977,843	Jan. '77 FY 1978	2,782,046	110%
	FY 1979	3,244,655	FY 1979	2,874,296	
		6,222,499		5,656,342	
1979-81	Actual FY 1980	3,560,901	Jan. 79 FY 1980	3,355,575	104%
	FY 1981	3,615,401	FY 1981	3,538,526	
		7,176,302		6,894,101	
1981-83	Actual FY 1982	3,718,897	Jan. '81 FY 1982	4,305,694	94%
	FY 1983	4,508,716	FY 1983	4,435,048	
		8,227,613		8,740,742	
			Apr. '81 FY 1984	4,265,249	96%
			FY 1985	4,316,569	
				8,581,818	
1983-85	Estimate FY 1984	4,795,899	Jan. 8'3 FY 1984	4,673,446	
	7/20/84 1985	5,083,853	FY 1985	4,639,886	
		9,879,752		9,313,332	
	+ Reserve	375,000	+ Reserve	375,000	
		10,254,752		9,688,332	106%

*Includes the general fund, dedicated and nondedicated. The figures have not been adjusted for "shifts." They have been adjusted to compensate for obvious discrepancies in comparative data.

**This is the governor's initial recommendation. During the course of the legislative session, the governor typically submits supplemental requests. Some are written. Many are transmitted informally.

Source: Compiled by the Minnesota Taxpayers Association. The "actual" data was taken from the fund statements which accompany the governor's January budget message. The recommended amounts were taken from the fund statements for the applicable year.

governor altered their initial proposals. On major and/or controversial budget items such compromises are common. The process demands this. Ultimately, both the governor and legislature must support the final budget. The former must pass the bills containing it. The latter must sign them.[18]

As Table 3 shows, differences between the governor's initial request and the final budget reached a peak in the mid-1970s. At the same time, the state's tax system was generating large surpluses. Absent pressure to the contrary, final budgets were significantly larger than the governor's initial request. A recent tax commission report on tax and spending policy reached a similar conclusion.

> A strong argument could be made that between 1975 and 1979, the tax system, which benefited greatly from the high rate of inflation during that period, generated revenues at such a fast rate that it actually stimulated state spending. The system produced the revenues, so, the dollars were spent.[19]

The committees reviewing the governor's proposal begin their work without any formal instructions or directions from the legislature as a whole. As such, the governor's recommendation is their baseline. The committees and their subcommittees (where the detailed work is done) may reallocate funds with particular category, rejecting the governor's recommendation for one of their own. Fiscal committees are not free to make significant changes in the total size of major budget items or to shift dollars among themselves. Both are closely controlled by the legislative leadership. If a fiscal committee or subcommittee wants to exceed the governor's recommendation, it must justify its claim to the leadership and quite probably to the majority caucuses in both the house and senate as well as the governor, should he choose to join the debate. This is an informal process. There are no rules or statutes that guide or require it.

Legislative leaders (i.e. the speaker of the house, and the majority leaders of both chambers) oversee budget review and action through frequent meetings with committee and subcommittee chairs. In addition, assistant majority leaders and whips (senate only) are members of one or more of the three key fiscal committees. For example, the senate assistant majority leader and whips (3) are all members of the finance committee. In the house, three of the four assistant majority leaders are members of the tax committee. One also serves on the appropriations committee while another is on the education finance division of the education committee. The presence of these caucus leaders provides additional budget oversight.

Final review and spending decisions are made as the session draws to a close. These are unavoidably hectic days. Earlier in the session there is little interest in finalizing or compromising on anything. It takes a deadline like adjournment or the end of the biennium to force the compromising necessary to pass a budget.

During the closing days, coordination of final subcommittee and committee work is vital. Their bills must sum to a balanced budget. Keeping

track of the bottom line is difficult, but vital. For this work, legislative leaders depend on balance sheets and estimates prepared by the department of finance. In effect, they yield to the executive branch for the information necessary to reconcile revenues and expenditures.

Minnesota's budget process depends largely on the governor and legislative leaders to make it work. Without their strong leadership and constant attention, most observes agree that the process and the budget it produces would falter. Once legislative deliberation begins, executive and legislative leaders must be committed to managing the process on a day-to-day basis. This requires frequent meetings with committee and subcommittee chairs and an occasional emergency meeting among all key legislative and executive leaders. For example, during the 1984 session, the governor convened a Sunday evening meeting of legislative leaders to work out a tax package for the 1984 session. Out of this meeting came a proposal that was well within the governor's guidelines. Similarly, in 1983, a close working relationship between the governor and legislative leaders resulted in a biennial budget that was only 6% greater than the governor's January 1983 proposal. That is one of the smallest differences since the 1971-73 biennium. See Table 3.

The informal nature of Minnesota's budget process makes the state's budget deliberations both open and private. The process is open to virtually every member of the legislature. Eighty-four percent of senate's members are on a tax or spending committee. In the house, almost sixty percent of the members are on one or more of these committees. All other members can participate through caucus debate, direct discussion with the leadership, and in some cases, through their membership on house and senate policy committees. At the same time, the state's budget process is not entirely public. Its informality leads to countless private negotiating and coordinating sessions. To a great extent, these sessions chart the course for subcommittee and committee action.

The informal and private nature of Minnesota's budget process raises questions regarding the need to add more formal structure. The house and senate could restructure their budget review committees around a central budget committee. The "budget committee" would become a formal clearing house for all fiscal decisions, including both tax and budget spending. This committee might be a joint house-senate committee. Several states (including Wisconsin) have some form of central fiscal committee. See Table 4.

Budget committees might make Minnesota's budget process more formal. They would provide ongoing, formal monitoring of subcommittee and committee activities. However, the committees will not eliminate the need for informal consultation among legislative leaders and between the executive and legislative branches of state government. They might also reduce fiscal accountability by delegating budget decisions and expertise to a

TABLE 4
Coordination Between Revenue
and Appropriations Committees

Method:	Number of states:
Combined appropriations — revenue committees	12 - both house and senate* 6 - senate only 1 - house only
Revenue bill referred to appropriations committee	4 - both house and senate* 2 - senate only
Informal meetings of chairs and leaders only	13 - both house and senate (includes Minnesota) 0 - senate only 5 - house only

*Wisconsin has a joint finance committee which is responsible for the state budget/revenue bill. In addition, there are separate revenue committees in each house.

Source: Table C-11, "Methods of Coordination Between Revenue and Appropriations Committees," *Legislative Budget Procedures in 50 States,* National Conference of State Legislatures, Denver, January, 1983, p. 50.

comparatively small number of legislators. Finally, a more formal budget process will not eliminate errors of judgment or counteract political determinations of need.

SUMMARY OF FINDINGS AND CONCLUSIONS

The significant findings of this chapter regarding Minnesota's budget process are as follows:

- Minnesota's budget process works relatively well. Every two years it produces a balanced budget before the start of the biennium. The state's budget did not hold up well under the strain of the last recession. That was more a function of the severity of the recession and the elasticity of the tax system than the state's process for reviewing and adopting a budget.
- The governor leads the process. The budget is prepared at his direction with whatever guidelines he feels appropriate. Preparation is largely a private affair between the governor and state agencies. The governor's recommendations are the basis for legislative review and action. With his veto authority, the governor can lead the process from start to finish.
- The legislature follows the governor's lead. By comparison with the executive branch, its time and resources are extremely limited. It works from the governor's proposal. With rare exception, major legislative budget initiatives will not proceed if the governor objects.

- The actual budget usually exceeds the governor's initial proposal. On average, the actual budget has been about 6% greater than the initial proposal. (The range has been 96% to 116%).
- Once legislative review begins, Minnesota's budget process is managed, disciplined, and generally maintained through personal relationships among legislative and executive branch leaders. The process requires their constant attention. Its essential ingredients are informal meetings and discussions among these leaders. The addition of separate or joint "budget committees" would not replace (nor necessarily lessen) the need for these discussions.
- Individual budget items receive more scrutiny than the overall level of budget and tax spending. The governor does develop and present budget guidelines early in the process. These guidelines are never reviewed by the legislature. Instead, the legislature focuses on individual budget items.

These findings suggest that there is one—perhaps two—major shortcomings in Minnesota's budget process. The first (and most clear-cut) is the extremely limited amount of attention that is devoted to the overall level of state budget and tax spending. The second may be the informal mechanisms which are used to coordinate legislative review of the governor's proposed budget.

It is difficult to make flat statements regarding the second issue. There are strong arguments for and against an informal approach to coordinating budget review and adoption. It opens the process to all members of the legislature. It keeps the budget responsibilities of individual legislators manageable by using a relatively large number of committees and subcommittees. And, the informal approach gives the legislature some additional flexibility in dealing with the governor's proposals. On the other hand, the current approach is piecemeal. It does very little to encourage legislative debate and action on the total size of the state's budget.

One possible solution would be for the legislature to have joint or separate budget committees. Such committees could not only recommend targets regarding the overall size of the budget, but also serve as a clearinghouse and gatekeeper for the budget work of other committees. However, budget committees would not eliminate the need for informal consultation among legislative and executive branch leaders nor would they necessarily lead to better control over the level of state spending.

The federal government's experience with budget committees is testament to their limits. Only once (1981) during its first decade of operation has the congressional budget process worked according to design. In every other year, other (usually informal) forces were more significant in determining the overall size of the federal budget. While the congress' budget committees were committed to their proposed targets, key members of each house were not. They found ways to circumvent or alter the targets. A legislature's

experience is likely to be similar unless it develops a way to build broad support for budget targets—doing so may or may not require the formation of budget committees.

At present, there is no organized public debate among elected officials regarding the overall level of budget and tax spending. The governor's budget guidelines are no substitute for policy discussion (and action) between the legislative and executive branches. Such discussion would invite debate about fiscal policies by not only elected officials but also private organizations, the news media, and the general public.

Under the current system, policy debate on the totality of state fiscal policy ends moments after the governor delivers his fiscal recommendations to the legislature. As a body, the legislature goes directly into the details of the governor's proposal without debating its bottom line. In all except one of the last seven bienniums, actual budgets have been larger than that initially proposed by the governor. This is the result of mid-session gubernatorial and legislative proposals to spend more. Exact responsibility can not be assigned. But, the absence of a mutual and public commitment to budget guidelines makes it easier for all participants to spend more than the initial proposal.

Legislative debate on the governor's fiscal guidelines would change the process in at least one, and perhaps two, fundamental ways:

- It would make fiscal guidelines an explicit and joint action by the executive and legislative branches. What the governor might give up in the way of discretion regarding budget guidelines would be more than regained through better legislative discipline.
- It could become a mechanism through which the legislature might develop and implement a long-term strategy for controlling the overall level of spending and, therefore, taxes.

It would also improve political accountability. Today, criticism of state spending (and taxes) is aimed more at the overall level of spending than any single budget item. The absence of legislative debate and action regarding the total amount to be spent; heavy reliance on informal mechanisms to discipline the process and keep it on schedule; and the rush of last minute conference committees and late night sessions make the public skeptical about the entire process. Regardless of the budget's size, the budget looks too big and out of control.

The informal discussions, last minute conference committees, and late night sessions are largely unavoidable. The budget's size and complexity demand all three. However, nothing in the current legislative budget or calendar precludes the legislature from responding in a timely fashion to the governor's fiscal guidelines.

There are at least three different ways that the legislature could structure debate and action on overall tax and spending issues.

- Debate and pass a "budget resolution." This would occur shortly after the governor makes his budget and tax spending recommendations. It would require no changes in legislative procedures prior to the governor's fiscal message.
- Establish an affordability committee similar to those used by the Maryland legislature. This process would permit the legislature to recommend spending guidelines to the governor. The process might include adoption of a budget resolution, but this debate would conceivably begin with two sets of fiscal guidelines: one proposed by the legislature's affordability committee and the other by the governor.
- Have the appropriations/finance and tax committees constitute a "super committee" for the sole purpose of holding postadjournment hearings on the governor's guidelines in the spring of each even-numbered year. These hearings would provide public education and probably focus debate among candidates for the legislature and other offices on Minnesota's overall level of spending. Committee chairs could report to their respective bodies on the results of these hearings. These reports could be the basis for debate over a budget resolution.

The three proposals differ with respect to leadership and timing. The first and the third recognize and maintain the executive branch's leadership on fiscal policy. The second attempts to give more of that responsibility to the legislature. This might weaken the governor. The first and second proposals do not bring the legislature into the guidelines process until late fall or early winter. The third requires legislative action in late spring or early winter. Regardless of which option is chosen, the goal is the same—to bring greater legislative and public attention to the totality of Minnesota's fiscal policies.

ENDNOTES

1. Responsibility for developing the governor's tax policy proposals has varied from administration to administration. Some governors have relied on the commissioner of revenue. Others have had the commissioner of finance take the lead. This responsibility has also been assigned to a member of the governor's staff.

2. The only major exception is the department of education's school aids proposal. Traditionally, this is not formally shared with the legislature.

3. Some action may be taken in odd-numbered years on the capital budget. However, most of this budget is not considered until the next year. Prior to 1976-77 biennium, the entire capital budget was reviewed and approved each odd-numbered year along with the state's operating budget.

4. "1984 Legislative Session Supplemental Budget Recommendations," Minnesota Department of Finance, February 1984, page 13. Department of finance estimates were increased by $50 million to reflect increases in school aids not included in the governor's recommendations.

5. In explaining his change in guidelines to state agencies, the governor said, "I want you to know that I am even more committed now to the priorities of tax reform and budget stability . . . tax reform means there will be tax cuts. Budget stability means there must be restraint in spending, and a further increase in the budget reserve. That is a tall order. But it is one which can be met. . . ." "Perpich Warns State Agencies Budget Cuts May Be Coming," *Minneapolis Star & Tribune,* August 7, 1984, page 3B.

6. The 1981 session was a major exception. For the 1981-83 biennium, the governor submitted two budget proposals: one in January and a second in April, replacing the January document. It was necessary because revenue forecasts showed that tax collections were likely to fall far short of the amount necessary to finance the governor's original proposal. When the legislature learned this, it "asked" the governor to submit another budget proposal.

7. The legislature must fund school aids for the first year of the next biennium twelve months in advance of its action on the total budget for that biennium. The amount collected in 1985 is levied in 1984. Therefore, school districts must know in 1984 the state aid formula for the 1985-86 school year. Without this information, they can not determine their property tax levy.

In its August 9, 1984, statement to the tax study commission, the Citizens League recommended modifying local government budget years so that all units (including school districts) receive their state aids and property tax payments in the same twelve month period. See "Statement to the Tax Study Commission," Citizens League, August 9, 1984, page 5.

8. "Statement to the Tax Study Commission," Citizens League, August 9, 1984, pages 3-4.

9. From a description of the Minnesota House Appropriations Committee by Cal Herbert, Staff Director, Minnesota House Appropriations Committee, August 20, 1984, page 1.

10. The tax committee is briefed on the state's revenue forecasts. The briefings often include a general overview of budget strategy.

11. From a description of the Minnesota House Tax Committee by James Wafler, committee administrator, August 30, 1984, page 1.

12. From comments by Senator Roger Moe to the Citizens League's Community Information Committee, June 29, 1984.

13. Table C-2, "Deadline for Submission of Budget and Legal Source of Deadline," in *Legislative Budget Procedures in the 50 States,* National Conference of State Legislators, January 1983, page 30.

14. See note 2 above.

15. Table C-4, *Legislative Budget Procedures,* page 36.

16. The Michigan senate included first and second (binding) budget resolutions in its budget review process during the late 1970s. The first resolution was adopted shortly after the governor's January budget message. The second vote was taken in June, just prior to final passage of budget legislation. According to Michigan senate staff, the first resolution provided an "initial sighting" for the size of the budget and major spending items. The second resolution provided guidelines for budget-related conference committees. The procedure was dropped because the Michigan House of Representatives never agreed to use it.

17. Citizens League, page 4.

18. According to article IV, section 23 of the Minnesota Constitution, "Any bill passed during the last three days of the session which is not signed and deposited [with the secretary of state] within fourteen (14) days after adjournment does not become a law." Since budget bills are usually passed within this time period, they require the governor's signature. Prior to the last three days, a bill may become a law without the governor's signature if he holds it for three days after it is presented to him.

19. Gordon Folkman and John Asmussen, "A Review of the State of Minnesota's Fiscal Policies Between Fiscal Years 1975-1987 est.: An Assessment of the Consequences of Divergent Tax and Spending Policies," Office of the Legislative Auditor, State of Minnesota, St. Paul, MN, May 16, 1984, page 18.

APPENDIX A
MARYLAND LEGISLATURE'S AFFORDABILITY COMMITTEES

The Maryland legislature has two affordability committees: the capital debt affordability committee and the spending affordability committee. Both are standing committees. Both are joint committees of the Maryland house and senate. Their chairs rotate between the house and senate.

As statutory committees, both are required to function and submit reports annually. The statutes also require the legislature to provide staff for both committees.

Maryland has had a capital debt affordability process since the late 1970s. The spending affordability committee has been operating since 1982. It was created by the legislature in response to proposals for a constitutional limit on state spending. Legislators support the process and respect its guidelines because they feel its failure would mean more constitutional limits on their policymaking authority.

Maryland adopts a budget annually. The legislature meets each year for ninety days—from mid-January to mid-April.

The capital debt affordability committee analyzes the governor's capital budget. Each year it recommends a debt ceiling to the legislature.

The spending affordability committee sets a limit on the state's operating budget. Typically, this committee uses the change in the state's personal income as its yardstick for limiting operating expenditures. For example, if the state's personal income is projected to grow at an annual rate of 8%, the spending affordability committee might recommend that the state's operating budget not increase by more than 5%.

The affordability committees do their work before the legislature convenes, starting in May and finishing in late October. The governor's staff follows their work closely, keeping it in mind as they prepare the budget proposal.

The governor is not bound by the limits set by these two committees. However, the Maryland constitution prohibits the governor from vetoing the budget bill. It also prohibits the legislature from adding new spending items to this bill. As a result, both the governor and the legislature have an interest in the affordability guidelines. The governor wants it high enough to finance the initiatives. Legislators are inclined to

support the governor as a means of getting their proposals in the budget. If they are not included, the only way legislator initiatives can be funded is through a supplemental appropriations bill.

Supplemental appropriations bills are passed regularly. However, each must include a financing plan, e.g., a tax increase, user charge, or equivalent spending cut in an existing program. Members use the affordability reports to gauge the resources available for supplemental appropriations bills and decide whether or not to cut the governor's budget.

Part II

Personal Income and Estate Taxes

5

Simplification of Minnesota's Personal Income Tax

Emil M. Sunley and Mary M. Walz

In 1956, at the time of the last comprehensive study of the Minnesota tax system, only twenty-nine states levied an income tax on individuals. In 1984, forty states, as well as the District of Columbia, used such a tax. On average, the states derived 29% of their 1983 tax revenues from the individual income tax.[1]

The reevaluation of Minnesota's income tax requires the reevaluation of the objectives of the tax and the best means of achieving those objectives. An income tax can be structured to achieve any combination of several goals—to raise revenue, redistribute income, or to direct economic behavior. But any tax, no matter what its goals, necessarily represents a compromise among the three primary criteria of a good tax: equity, efficiency, and simplicity. While Minnesota's personal income tax must be tested against all these measures, we believe that, at the state level, the simplicity aspects of taxation dominate the other criteria.

The state, much more than the federal government, is critically limited in its ability to alter substantially the distribution of income or the direction of economic behavior. Because of its higher tax rates, the federal income tax is more likely to dominate taxpayers' economic de isionmaking. Furthermore, attempts, for example, to increase sharply the rogressivity of the income tax could lead at the extreme to migration of higher-income-taxpayers to states with less severe tax systems. States—like Minnesota—that begin with some federal concept of a tax base, but attempt through their own tax to counter or enhance tax policies set at the federal level, introduce even more complexity into the system. In all cases, the benefits of attempting to achieve at the state level these other-than-revenue-raising goals must be carefully weighed against the onus of increased complexity.

This analysis, then, is rooted in the belief that simplification of the Minnesota income tax would be of enormous benefit to both the state and its taxpayers. If there is a theme to the recommendations presented for achieving this simplification, it is that the distribution of the tax burden—that is, its degree of progressivity—is quite separable from the definition of the tax base. To simplify the income tax we need to simplify the derivation

of the base, which, this chapter argues, Minnesota can most readily achieve by increasing conformity with the federal tax rules. Any distributional consequences of doing so can be remedied by adjusting the state's tax rates. This theme, in fact, drives our analysis of the deductibility of federal income taxes, the use and level of standard and itemized deductions, and Minnesota's allowance of a personal credit. Accordingly, our recommendations for the tax base generally assume that compensating adjustments would be made to the tax rates. Each recommendation must not, therefore, be considered in isolation, but rather must be seen as an integral part of a major structural reform of the Minnesota personal income tax.

After explaining the mechanics and the importance of the income tax, we turn to a discussion of Minnesota's options for conforming to the federal income tax as a means of simplifying its own tax. With an eye toward adopting federal taxable income as a starting point, this section presents specific recommendations to retain or repeal modifications that currently exist in the Minnesota statute. The third section examines briefly some issues of tax burden distribution, including tax relief for lower-income persons and tax treatment of the family. The final section summarizes the revenue and distributional impacts of alternative income tax systems using "conformed" tax bases.

BASIC STRUCTURE OF THE TAX

As of 1983, all single persons with gross income exceeding $2,800 and all married persons with gross income exceeding $4,100 must file a Minnesota income tax return. Table 1 delineates the computation of the income tax liability under the Minnesota system. Federal adjusted gross income (FAGI) is taken from the federal return and adjusted to derive Minnesota gross income. An additional deduction is allowed from this gross base for federal income taxes accrued for the year, thus yielding Minnesota AGI. A taxpayer may take either specifically itemized deductions or a standard deduction against AGI to obtain Minnesota taxable income. Minnesota does not require that a taxpayer itemize on his federal return before he can itemize for state purposes. However married taxpayers must both use the same method for taking deductions on the state return; if one spouse itemizes, so must the other. A progressive nominal rate structure ranging from 1.6% to 16.0% is applied to this tax base to determine before-credit tax liability.* Both

*Taxable Income must first be adjusted by a "taxable income adjustment factor" of 1.0009 in 1983 that results from the interaction of the deduction of federal income taxes with Minnesota's indexation of its income tax for inflation. Because this chapter does not cover indexing, and because this chapter argues for eliminating the federal tax deduction, this adjustment factor is not discussed further.

refundable and nonrefundable credits are subtracted from the tax to produce the final state tax liability.

ROLE OF THE PERSONAL INCOME TAX IN THE SYSTEM

Minnesota's personal income tax has been and continues to be a prominent element of the state's tax system. Through the 1970s and into the early 1980s, it has contributed on average about 40% of the state's tax revenues, and about 22% of all revenues (See Table 2). Its importance has steadily increased to reach 46% of tax revenues in 1983. This is significantly greater than the 1983 average for all states of 29%, and is the highest of the

TABLE 1
Computation of Minnesota Tax Liability
1984

	Federal AGI	
Add:		Subtract:
— Federal deduction for two-earner married couples		— interest on U.S. bonds
— certain IRA, Keogh, SEP and public retirement plan contributions		— unemployment compensation and social security benefits taxed at the federal level
— a portion of ACRS deductions not allowed by MN		— retirement pay exclusion
— interest on certain state and local bonds and scholarship bonds from outside MN		— certain other pension distributions
— other		— other
	Minnesota Gross Income	
	Subtract: Federal Tax Liability	
	Minnesota AGI	
	Subtract:	
Minnesota Standard Deduction	OR	Federal Itemized Deductions (as adjusted, before ZBA)
	Minnesota Taxable Income	
	Apply rates from 1.6% to 16%	
	Tax Before Credits	
	Subtract: Tax Credits	
	Minnesota Tax Liability	

TABLE 2
Minnesota Individual Income Tax Revenues
as a Percentage of Total Revenues,
State Tax Revenues, and Personal Income
1963, 1968, 1973-83
($ in millions)

Fiscal Year	Individual Income Tax Revenues	As a Percentage of Total Revenues	As a Percentage of Total State Tax Revenues	As a Percentage of Personal Income*
1983	$1,978.0	24.7	45.8	4.3
1982	1,549.1	21.9	40.8	3.5
1981	1,396.4	20.8	41.4	3.5
1980	1,262.7	22.2	39.4	3.5
1979	1,256.0	23.6	40.1	4.0
1978	1,074.6	22.4	38.9	3.8
1977	956.9	21.8	38.5	3.9
1976	849.5	20.8	38.3	3.7
1975	807.1	23.2	39.9	3.8
1974	701.4	23.0	38.0	3.5
1973	586.2	21.3	35.8	3.5
1968	272.6	18.5	33.4	2.2
1963	144.6	18.8	32.7	1.9

*Personal Income is for the prior calendar year. See source for Table 3.

Source: U.S. Department of Commerce, Bureau of the Census, *State Government Finances,* GF Series No. 3, various years.

neighboring states (See Table 3). Wisconsin is the second highest in the region; it relied on its personal income tax to provide 40% of state tax revenues in 1983.

Moreover, as a percentage of state personal income, Minnesota's tax is relatively high. During the past decade Minnesotans have paid an average of 3.7% of their personal income in state income tax. In 1983, the rate jumped to 4.3%. This jump occurred because the rate of increase in personal income declined from 11% in 1982 to 5% in 1983, yet income tax revenues climbed 28%, compared to 11% a year earlier. The tax increase was due in part to an increase in the tax surcharge from 7% in 1982 to 10% in 1983 and in part to lower federal taxes in 1983. In terms of personal income, Minnesota's tax was third highest in the nation behind Delaware and Oregon.

CONFORMITY

As most taxpayers complete their federal income tax returns before beginning their state returns, their burden in filling out their state returns depends largely on the degree of conformity between the state and federal income tax laws. In addition, in states with a low degree of conformity, a

TABLE 3
Individual Income Tax Revenue
as a Percentage of Total Tax Revenue and Personal Income
for Selected States, FY 1983
($ in millions)

	Individual Income Tax Revenues	As a Percentage of Total State Tax Revenues	As a Percentage of Personal Income*
Illinois	$ 2,200.7	29.6	1.6
Indiana	819.2	25.6	1.5
Iowa	724.1	35.9	2.3
MINNESOTA	1,978.0	45.8	4.3
Missouri	885.3	33.5	1.8
Nebraska	280.7	28.4	1.7
North Dakota	35.1	6.7	0.5
Wisconsin	1,734.0	40.4	3.4
All States**	$50,140.0	29.0	1.9

*Personal income is for calendar year 1982.

**Includes the District of Columbia.

Source: U.S. Department of Commerce, Bureau of the Census, *State Government Tax Collections in 1983.*

taxpayer does not benefit from having already made computations under federal rules. Such states probably have a higher rate of inadvertent taxpayer errors and consequently higher administrative costs.

In the interest of reducing taxpayer compliance costs, inadvertent errors, and administrative costs, a strong case can be made for maintaining a high degree of conformity between state and federal income tax laws. However, as noted in the introduction, there may be overriding considerations of equity or efficiency that would allow one to support major departures from the federal tax base.

There is one potential danger in Minnesota's increasing its degree of conformity with the federal income tax at this time: the federal income tax itself may be restructured significantly in 1985 or 1986 when the administration and the Congress enact measures to narrow the gap between federal spending and revenues, now equal to 5% of GNP. Any fundamental changes in the federal tax, however, will likely take the form of tax base broadening, which would increase rather than threaten, the potential state tax base. In fact, if state revenues were sufficiently increased by the base-broadening federal reforms, Minnesota could lower its marginal tax rates.

OPTIONS FOR CONFORMITY

There are three basic categories of conformity that Minnesota might consider as objectives in the process of overall tax reform: using federal tax

liability as a basis for the Minnesota tax; using federal taxable income or at least federal adjusted gross income (FAGI) and itemized deductions; and piggybacking—that is, having the federal government administer and collect the Minnesota income tax. Minnesota can realize substantially all the benefits of conformity, without piggybacking, by accepting FAGI and federal itemized deductions.

Piggybacking. Congress adopted the piggybacking option in 1972 to encourage states to gain the benefits of conformity. To qualify for piggybacking, the state's tax must be a flat or graduated tax on federal taxable income or a flat-rate tax on federal tax liability, with certain adjustments required and others allowed.* Under the system the federal government would bear all costs of administering the state's tax. Estimated revenues would be transferred to the states on a current basis, and adjustments made as actual collection data become available.

Piggybacking would offer several benefits to both the state and its taxpayers. Taxpayers would prepare and file only one return for both federal and state income taxes, and would make only one remittance. They would be subject to only one audit by one federal agency. Businesses would need to withhold, account for, and remit only one amount for each employee. Administrative costs, borne by the federal government, would be consolidated and reduced because both federal and state tax data would be reviewed for arithmetic errors once, and, as noted, one audit would cover both taxes.

Opponents of piggybacking, however, highlight three disadvantages. As with conforming state taxes generally, revenues are necessarily impacted by changes in federal law. Also, because any revenues deriving from a federal audit of the state tax portion of a return will go to the state, some argue that federal authorities would have no incentive to pursue aggressively enforcement of state tax law. Finally, piggybacking transfers a significant block of potential state employment to the federal level. For all these reasons, no state has yet elected to piggyback its income tax.

Tax Liability Conformity. Given the general disadvantages of piggybacking and recent state budget fluctuations, Minnesota might consider complete surrender of control over its primary source of revenue too radical. It could nevertheless conform its income tax to federal tax

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*Required adjustments for taxable income conformity include (1) subtraction of interest income on federal obligations, which was included in federal AGI, (2) addition of net state income tax deductions taken for federal purposes, (3) addition of tax-exempt state and local bond interest from obligations of another state. Optional adjustments include (1) a minimum tax on tax preferences, (2) a tax credit for taxes paid to another state, and (3) a credit for state sales tax, in lieu of an itemized deduction.

For a flat-rate tax levied on federal tax liability the only required adjustment to the base is the subtraction of any federal tax attributable to the inclusion in FAGI of interest on federal obligations. There are other permissible adjustments similar to those noted above.

liability while retaining administration and collection duties. Three states—Vermont, Nebraska, and Rhode Island—currently levy their income tax as a flat percentage of federal liability.*

With tax liability conformity, Minnesota revenues would be impacted not only by changes in the federal tax base, but also by changes in federal rates. The tax would probably be levied at a flat rate, but because the state would inherit a very progressive tax base, it would have a very progressive tax. For example, with a 30% state tax rate, a taxpayer in the 50% federal bracket will pay 15 cents in state tax for $1 of additional income, while a taxpayer in the 11% federal bracket will pay only 3 cents in state tax per $1 of income. The three states using a tax based on federal liability impose rates from 20% to 26%, and they tend to be low-tax states that do not rely to the extent that Minnesota does on the income tax as a revenue source.

Taxable Income or FAGI and Itemized Deductions Conformity. Federal taxable income, as defined in the Internal Revenue Code and as it appears on the federal tax return, is FAGI less the personal exemption and personal deductions in excess of the zero bracket amount (ZBA). The only effective difference between conformity to federal taxable income and conformity to FAGI and itemized deductions is acceptance of the federal personal exemption. With both starting points, the state has to make some provision for a standard deduction, either by allowing a subtraction from FAGI in the case of FAGI conformity, or by building a ZBA into the tax tables in the case of taxable income conformity. Arguments to prefer one of these federal bases to the other are not very striking. Both afford some state-level control over the standard deduction (the ZBA in the states' tax tables could be set higher than the federal levels), and thus over the progressivity of the tax at lower income levels.

In any case, with respect to refining the state tax base, it is easier to make necessary adjustments, such as adding back state taxes, to a federal starting point that is an income measure like federal taxable income or FAGI, rather than a tax measure, like federal tax liability.

CONFORMITY IN MINNESOTA

In 1961 Minnesota took a step toward conforming its income tax base to the federal base by adopting federal AGI, with certain adjustments, as the measure of Minnesota gross income (MGI). Since 1961, however, frequent changes to the Internal Revenue Code and rejection or only partial acceptance of those changes by the Minnesota legislature, have substantially reduced the degree of conformity. In fact, the 1983 Minnesota income tax

*North Dakota offers taxpayers a choice between a tax levied on federal taxable income, or a fixed percentage of the federal tax; in recent years a majority of taxpayers paid the latter.

TABLE 4
Reconciliation of Federal AGI
to Minnesota Taxable Income
1982

($ in billions)

Federal AGI	$34.4	100.0%
Two-earner Deduction	.2	0.6
Other Additions	1.1	3.2
Subtractions	(3.0)	(8.7)
Minnesota Gross Income	32.7	95.1
Federal Income Tax Deduction	(4.4)	(12.8)
Minnesota AGI	28.3	82.3
Personal Deductions	(5.7)	(16.6)
Minnesota Taxable Income	$22.6	65.7%

statute requires as many as forty adjustments to federal AGI to obtain MGI. Minnesota took a second step toward conformity in 1983 when, in lieu of its own list of more than twenty itemized deductions, it adopted itemized deductions as computed under the federal rules, though here, too, Minnesota requires some adjustments to the federal amount.

The state's primary obstacle to conformity is probably its constitutional inability to adopt automatically and comprehensively changes made to the Internal Revenue Code.* Each year the Minnesota legislature must enact a statute to update references to the federal code, and each year, then, it is granted an opportunity selectively to accept or reject changes in federal law.** Clearly, a presumption toward conformity would be achieved if federal changes were prospectively adopted at the state level and if desired deviations required specific legislative action. While a constitutional amendment is not essential to having greater conformity, it would undoubtedly help maintain a tax base that is consistent with the federal law.

Table 4 reconciles federal AGI to Minnesota taxable income for FY 1982, the latest year that data are available. Minnesota's taxable base is just less than 66% of federal AGI; only 17% of that gap is attributable to personal deductions. Minnesota's income tax base differs from the federal tax base, i.e., federal taxable income, in four important respects: (1) Minnesota's adjustments to FAGI, (2) its adjustments to federal itemized deductions, (3)

*The Minnesota Constitution, article 9, section 1, says in part that "The power of taxation shall never be surrendered, suspended or contracted away." This was supported in *Wayne M. Wallace, et al vs. Commissioner of Taxation* (January 29, 1971) before the Minnesota Supreme Court.

**Currently nineteen states define their personal income tax base by reference to the current Internal Revenue Code such that changes in federal law are effective for the state as well.

its allowance of a deduction for federal income taxes, and (4) its personal credit and standard deduction. The first three deviations are considered in this section; the fourth is discussed in the next section in connection with exempt levels of income.

RECOMMENDATIONS FOR CONFORMITY

In general, this chapter supports conformity to the federal income tax, and in particular to federal taxable income. In getting from "here" to "there," however, a careful analysis must be made of deviations from the federal law that currently exist in the Minnesota statute, their policy rationale, and their revenue significance. Details of this analysis are not included in this chapter.[2] However, Table 5 summarizes the modifications to FAGI and federal itemized deductions that could be eliminated. The table shows the 1985-revenue impact under current law of eliminating each major modification. The other major deviation, the federal tax deduction, is discussed separately below.

Adjustments to FAGI and Itemized Deductions. From a list of twenty-two categories of adjustments to FAGI and federal itemized deductions, only four should be retained: (1) the addition of state and local bond interest, which is exempt from federal income tax and thus not included in FAGI. Inasmuch as most states specifically exclude interest on bonds issued by their own states and localities, Minnesota could continue to exclude its own interest from the addback; (2) the addition of "exempt-interest dividends," which are also exempt from federal tax; (3) the addition of state and local taxes, which though deductible for federal purposes should not be deductible on the state return; (4) the subtraction of state income tax refunds that are included in FAGI. To the extent that the tax was not deductible on the state return, its refund should not be taxed.

The remainder of Minnesota's modifications to FAGI and federal itemized deductions should not be retained. As Table 5 shows, in the aggregate, the revenues lost from eliminating the additional modifications will be offset by revenues gained from eliminating the subtractions, with only a slight net revenue gain of $13.3 million. That is not to say, however, that the changes will be distributionally neutral. Clearly, some taxpayers will be winners, some losers. In fact, one of the more important redistributions would result from eliminating the retirement pay exclusion. Minnesota's current treatment—taxpayers may exclude one of two alternative pension amounts—should be simplified. One option would be to grant relief to public pension recipients through an income tax credit.

Notwithstanding the issues associated with the personal exemption, standard deduction, and filing status, which are discussed in the next section, the acceptance of these recommendations would permit Minnesota

to adopt federal taxable income as the starting point of its tax base. Taxpayers could simply lift one number from their federal return. Again, whether to retain or repeal these modifications should not be decided on the basis of the one-year revenue estimates presented in Table 5; these merely give a sense of the magnitude of the gaps in the tax base. Once Minnesota chooses its tax base—primarily on the grounds of equity and simplicity—it

TABLE 5
Modifications to FAGI and Federal Itemized Deductions
Recommended for Elimination
Calendar Year 1985 Revenue Impact

Modification	Revenue Gain (Loss) (in millions)
Federal adjusted gross income	
Two-earner deduction	$ (57.5)
IRA, SEP, Keogh contributions	(74.3)[a]
Employer "pick-up" contributions	(22.9)[a]
Farm losses	(3.0)
Investment credit recapture	(0.8)
ACRS	(13.0)
Other-state bond interest	(3.0)
Other additions	(33.5)[b]
Total additions	$(208.0)
Pension exclusion	$ 113.5
Military pay	14.4
Social security & railroad retirement benefits	23.9
Unemployment compensation	11.7
Other subtractions	54.8[b]
Total subtractions	$ 218.3
Total – FAGI	$ 10.3
Itemized Deductions	
Charitable contributions	$ (4.5)
Education expenses	7.3
Adoption expenses	.2
Total – itemized deductions	$ 3.0
Net revenue impact of recommendations	$ 13.3

[a]This revenue estimate relates only to elimination of the contribution subtraction. The offsetting revenue gain that would result from similarly eliminating the subtraction modification for benefits withdrawn is contained in "other subtractions."

[b]Includes more-narrowly-focused modifications for which detailed data are not available.

can devise a rate schedule to yield the desired revenue and tax burden distribution, as is shown in the final section of this chapter.

Federal Income Tax Deduction. Minnesota is one of sixteen states that permits the deduction of federal income taxes in computing the state tax base.[3] In Minnesota, the deduction, which is taken against Minnesota gross income to obtain Minnesota AGI, is the single largest adjustment to FAGI, totaling $4.5 billion in 1982.

The case for state income tax deduction of federal income taxes paid is a difficult one to make. It rests on the definition and measurement of the appropriate tax base for a state-level tax. If one accepts that the income tax base should be defined and measured in terms of a taxpayer's ability to pay taxes, gross income should include income from all sources and a deduction from income should be allowed when it would produce a better measure of ability to pay. Theoretically this would require that benefits derived from public services be included in income, and that taxes paid be allowed as a deduction. Clearly, valuation of public services and assignment of that value to taxpayers is not feasible, and deduction of taxes may not therefore be appropriate. Deduction of state taxes at the federal level, however, can still be justified as a means of relieving some of the burden of tax overlapping which arises from two levels of government taxing the same base. There is no clear need for the same relief to be provided again at the state level. The federal government permits lower level governments to tax as they need to, and levies its own tax only on income remaining.

Probably the strongest argument for maintaining federal deductibility is that the legislature cannot be trusted to lower marginal rates, or if the legislature did lower marginal rates, it would later be tempted to increase them, particularly for upper-income taxpayers. Thus, federal deductibility is one means to limit the degree of progressivity of the Minnesota income tax, or so the argument goes.

Arguments against deductibility of federal taxes are more compelling. First, as with any deviation from conformity, the deduction adds complexity to the state tax. A separate tax form is needed for computing the portion of federal taxes that may be deducted—only that portion which relates to income included in the Minnesota base. The instructions alone filled three pages in 1983.

Moreover, the interaction between the mutual deductions and the effective marginal tax rates is so abstruse that few taxpayers actually know the combined state and federal marginal tax rate that they face. A state income tax increase caused, for example, by an increase in the marginal rate, in turn increases the state tax deduction on the federal return, thereby decreasing federal taxes; but the federal tax "cut" is diminished by the lower tax deduction on the state return and a higher state tax, which once again impacts the federal return. The net effect is that the tax increase is less than the marginal increase would be if state taxes only were deductible, but more

than the increase would be if federal taxes were deductible and state taxes were not. Agility with simultaneous equations appears to be a prerequisite to understanding the state tax. More importantly, however, though the revenue loss to the state caused by deductibility can be severe, the taxpayer realizes only a small reduction in effective taxes.*

Second, because the deduction eliminates a significant portion of the tax base, it is one of the factors contributing to the unusually high level of income tax rates in Minnesota. A state with a smaller tax base simply requires higher nominal tax rates to yield revenue equal to a large base/low-rate state, though effective tax rates—actual tax paid by the taxpayer per $1 of income—in both states will be the same. Of course, other factors contribute to Minnesota's high tax rates, in particular the state's above-average reliance on the income tax as a source of revenue. But this is real, effective tax burden. Because Minnesota relies heavily on its personal income tax, people in Minnesota may pay higher state income tax. In contrast, the deduction of federal income taxes only creates high nominal rates without changing the overall effective tax burden.

Table 6 shows an alternative rate schedule for single persons that yields the same revenue and tax burden distribution as the current Minnesota rate schedule, if applied to a Minnesota tax base that disallows the federal income tax deduction. Instead of peaking at a nominal rate of 16% as under current law, the alternative schedule peaks at 10%. A separate rate schedule would have to be constructed for married persons. The federal income tax treats married couples and singles differently and the value of the federal tax deduction at the state level thus varies with marital status. While nominal tax rates in such a schedule would be less than current Minnesota law, they would not be as low as those in the single schedule of Table 6.

Though it is probably true that effective tax rates, not statutory rates, are what matter in the location decisions of persons and businesses, the high nominal income tax rates, without regard to the benefits of federal deductibility, contribute to the perception of Minnesota as a high-tax state. Eliminating the federal income tax deduction would broaden the tax base and make possible the lowering of marginal tax rates.

Third, because the federal tax is progressive, Minnesota's federal tax deduction increases with income and high-income taxpayers receive a proportionately greater deduction than lower-income taxpayers. The deduction thus causes the distribution of the state tax burden to be in effect

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*Assuming a federal tax rate of 30% and a state rate of 16%, with state taxes deductible at the federal level, the taxpayer bears a combined effective rate of 41% (the combined nominal rate of 46% less the tax savings from deductibility of 5%, or 16% x 30%). With mutual deductibility, the combined effective rate is reduced to 38% or 3 cents per $1 of deduction. The state, however, loses 5 cents in revenue. The gap between savings to the taxpayer and revenue loss to the state increases with the difference between the state and federal nominal rates.

TABLE 6
Alternative 1983 Minnesota Rate Schedule
for Single Persons
(No deduction allowed for federal income taxes paid)

Income Over	But Not Over	Marginal Tax Rate	Current Law Marginal Tax Rate
0	672	1.6%	1.6%
672	1,344	2.2	2.2
1,344	2,687	3.5	3.5
2,687	4,030	5.3	5.8
4,030	5,373	6.3	7.3
5,373	6,716	7.1	8.8
6,716	9,401	8.1	10.2
9,401	12,086	9.0	11.5
12,086	16,785	9.8	12.8
16,785	26,855	10.0	14.0
26,855	36,925	9.8	15.0
36,925	50,000	9.6	16.0
50,000	100,000	9.4	16.0
100,000		9.2	16.0

Note: The above rate schedule is revenue neutral in FY 1983, based on the Minnesota Department of Revenue 1983 taxpayer sample, and has only minimal redistributional impact. For comparison, the brackets were kept as close as possible to Minnesota's 1983 rate schedule. No other adjustments were made to the tax base, except to eliminate the deduction of federal taxes.

less progressive than is apparent in its nominally progressive rate structure. This is clearly exposed in the rate schedule of Table 6, where the marginal rates begin decreasing at taxable income levels over $27,000.

Finally, deductibility causes automatic revenue fluctuations at the state level in response to changes in federal tax liabilities. The federal tax cuts that began in 1981, and the consequent lower deduction for federal taxes paid, generated a significant increase in revenues for Minnesota, as we noted earlier (see Table 2). Similarly, the federal tax increases that may be necessary to reduce the federal budget deficit would have a detrimental impact on Minnesota revenues.

In considering the case for or against this deduction, the issues of tax burden distribution and the tax base should be analyzed separately. If Minnesota were to disallow the deduction of federal income tax in the determination of its tax base, it could adjust the rate structure to produce any revenue yield and any burden distribution that it chooses, just as we have shown in Table 6. Given this option, the federal deduction seems superfluous. Its elimination would facilitate taxpayer compliance and understanding, allow the application of lower nominal tax rates, permit the use of a rate structure that more clearly reflects the distribution of the tax burden, and afford the state greater control of its revenues.

TAX LIABILITY AND ITS DISTRIBUTION ACROSS TAXPAYERS

EXEMPT LEVELS OF INCOME

Together, the standard deduction and some personal allowance, whether in the form of a credit or exemption, establish the level of income that will be exempt from tax. Both the federal and Minnesota income taxes provide special tax credits that further raise the tax-exempt thresholds for qualifying low-income persons. All these provisions influence the pattern of progressivity over the lower- and middle-income scale. In addition, the relative reliance on the standard deduction and the personal allowance as means of exempting income, as well as whether the personal allowance takes the form of an exemption or credit, determine the degree to which tax liabilities will differ among families of different sizes within an income class.

Personal Credit. Some form of personal allowance is usually granted under an income tax to differentiate the tax burdens of households of different sizes. Larger families are thought to have less ability to pay tax than small families with equal income. Minnesota replaced its personal exemption with a personal tax credit in 1937, only three years after its income tax was enacted. The credit was increased to $60 in 1979 and has been indexed for inflation for each subsequent year; it was $68 in 1983. A credit is granted for each taxpayer, his or her spouse if not a taxpayer, and each dependent. Additional credits are allowed for persons over age 65, blind, deaf, or quadriplegic.

The relative tax effect across income levels of a credit and a deduction (or exemption) differ when the tax rate schedule is progressive. A tax credit always provides the same dollar value benefit to taxpayers at all income levels. In contrast, a deduction produces tax benefits valued at the taxpayer's marginal tax rate, and thus, under a progressive system, increases in value as income and marginal rates rise. The choice between an exemption and a credit, however, cannot be decided on the basis of progressivity. As this chapter has noted repeatedly, for any change in the tax base—for example, the adoption of a personal exemption in lieu of a credit—a rate structure can be designed that will produce any tax distribution and any tax revenue yield.

Although both a credit and an exemption, accompanied by the appropriate rate schedule changes, can be neutral with respect to progressivity, they will not each have the same effect on the tax liabilities of families of different sizes within an income class. To move from a credit to an exemption would increase the difference in tax liabilities among families of different sizes at high income levels and reduce the tax differences among such families at lower income levels. The relevant question, then, for Minnesota to consider in the choice between the use of a personal credit or a personal exemption is how much the state wants to differentiate the tax

treatment of large and small families at a given income level. It is a policy decision and we find no compelling reason to recommend one alternative over the other. We would note, however, that if the state were to adopt federal taxable income as its tax base, it would automatically adopt the federal personal exemption, and would thereby change the relative tax burdens among families of different sizes at the same level. We use the federal personal exemption in the simulations presented in the final section of this paper.

Standard Deduction. A deduction from income is generally allowed when it improves the measure of what should be the tax base. A minimum standard deduction has traditionally been justified not only as a simple tool for accomplishing this tax base refinement but also as a means of providing some relief to lower-income taxpayers. The Minnesota standard deduction is 10% of Minnesota AGI, up to $2,268 for each individual taxpayer.* In 1984 the federal standard deduction was $2,300 for single persons, $3,400 for couples filing jointly. The lower deduction limit for Minnesota ensures that some taxpayers who do not itemize on their federal returns would benefit from doing so on their state returns. Further, certain taxpayers who do not have to file a federal return nevertheless must file with the state. Minnesota's deduction has tended to be lower because the state has relied instead on its low-income credit to provide tax relief to low-income taxpayers. Nevertheless, Minnesota could eliminate these instances of state-only filing or itemization if it would raise its standard deduction at least to the federal level.

Low-income credit. Beginning in 1974 Minnesota provided relief to low-income taxpayers in the form of a tax credit.** A taxpayer is eligible for the low-income credit if (1) he or she is not eligible to be claimed as a dependent on another taxpayer's return, and (2) he or she has FAGI, as adjusted for additions, less than $20,000. The credit is based on a broadly-defined measure of "household" income: FAGI plus any farm loss adjustment, social security benefits, welfare payments, worker's and unemployment compensation and pension or annuity income not otherwise included in FAGI, tax-exempt interest, excluded dividends, excluded capital gains, the special federal deduction for two-earner couples, and income not otherwise assignable to the state. The law provides that certain levels of household

*The statutory limit for the deduction is $2,000, but indexing for inflation has raised it to $2,268 in 1983.

**The state reformatted the credit in 1980 to an equivalent alternative flat-rate tax schedule for qualifying low-income persons, and returned in 1984 to the credit form.

income are exempt from tax. The thresholds, which are not indexed and which vary with household size, were as follows in 1983:

Single taxpayer	$ 5,800
2 Household members	7,400
3 Household members	8,800
4 Household members	10,000
5 Household members	10,500
6 or More household members	11,000

Taxpayers whose household income is less than or equal to the applicable exemption pay no tax. Accordingly, their credit is equal to their tax liability as computed under the regular Minnesota rate schedule. Other taxpayers whose income exceeds the applicable threshold pay a flat tax of 15% on household income above the exempt level. Thus, their credit is equal to the excess of the regular Minnesota tax over the flat tax.

The low-income credit is considerably more useful to families having only one earner. As is discussed in the next section, under the regular Minnesota tax, one-earner couples pay more tax than a two-earner couple with equal income, primarily because of the advantages that arise from filing a "combined" return under a progressive income tax. Because the low-income credit is essentially a flat-rate tax, it provides relief from the progressive rate schedule, and is thus relatively more beneficial to the one-earner family.

This credit has several drawbacks. It is complicated. It requires a separate worksheet and a separate tax table in the income tax package. Also, because it is not indexed, the credit has not kept pace with the rest of the income tax structure and has become less effective as a source of low-income tax relief. Furthermore, the credit has assumed an additional responsibility of, at lower-income levels, lessening the relative tax advantage of families having only one income earner. In fact, while Minnesota ranks first in the state rankings of income tax burdens of one-earner families at all income levels of $15,000 or more, it ranks as high as thirty-fourth (among forty-one states with income taxes) for one-earner families at the $10,000 income level.[4]

An enhanced standard deduction would be a simpler means of assisting low-income taxpayers. Using a more generous standard deduction, though, would not be equivalent to the current credit; it would not provide the additional relief to the one-earner couples. It is not clear, however, that such relief belongs in a credit that is directed at softening the tax burdens of low-income persons. The one-earner/two-earner problem should be approached through the return filing rules, such as replacing Minnesota's combined filing with a joint-return concept for married couples. This is considered and recommended in the next section.

As a last note, if the low-income relief offered by a more generous standard deduction is not considered adequate, Minnesota could elect to

grant a credit similar to the federal earned income credit, or even a percentage of the federal credit. In 1984 the state legislature did consider adopting one-half the earned-income credit. Though the proposal was defeated, it was considered neither in conjunction with an enhanced standard deduction, nor in the context of a major reform.

FILING STATUS

Policy Considerations. Tax policy considerations of the income tax treatment of the family and the individual can be segregated into four reasonable and generally accepted goals of equity. (1) An income tax should be progressive. (2) Married couples with equal combined incomes should pay the same tax, regardless of the relative contribution of each spouse to the combined total. (3) The tax should not penalize marriage; two working persons who marry should not pay more tax simply because they married. (4) The tax should not penalize being or becoming single; a single person should not pay more tax than a married couple with equal income. These goals are necessarily conflicting and, in general, any one tax system cannot achieve them all.* A progressive rate structure, for example, will make the tax of a combined income of $20,000 greater than the tax on two separate incomes of $10,000, each of which would be taxed at lower marginal rates.

The federal income tax generally recognizes the family as the basic taxable unit, and thus emphasizes the achievement of equity among married couples with equal combined incomes. Under federal rules married persons generally file a joint tax return for their aggregate income and they face a different rate schedule than single persons.** Equity among couples, however, comes at the cost of neutrality with respect to marital status. Depending on the distribution of income within the couple, two persons who marry may pay more or less tax than if they were single.

In contrast, Minnesota's income tax is, in general, directed at the individual taxpayer. Married persons may file joint, separate, or combined returns, and both single and married persons are subject to the same rate schedule. A two-column combined return, which separately computes tax for each spouse, is generally the most advantageous filing alternative for married persons for two reasons. First, because tax is computed for each spouse, the couple gets two runs up the rate schedule; each bracket is used twice before moving on to the next highest tax rate. The more even the

*It is theoretically possible to meet all four objectives by having mandatory separate returns and a flat-rate tax on taxable income in excess of a fixed exemption per taxpayer. If income is less than the exemption, a negative tax would be paid. Thus, Tax = Tax Rate x (Income - Exemption).

**The federal income tax has four rate schedules: married filing jointly, married filing separately, single, and head of household.

distribution of income between the spouses the lower the combined tax. Second, though Minnesota requires FAGI and related state modifications to be assigned to the spouse who earned the income, it permits itemized deductions to be allocated between the spouses any way. To minimize tax, all deductions should be taken by the higher-earning spouse until the two incomes are equal, then split evenly between both spouses.

By allowing income to follow the individual, regardless of marital status, Minnesota averts any marriage penalty. In fact, the possibilities of income shifting between spouses and the transferability of itemized deductions provide a form of marriage "bonus." As a result, however, two couples may pay substantially different tax depending on who earns the income. In fact, under certain circumstances, a one-earner couple with $15,000 in income could pay as much as 65% more tax than a two-earner couple with the same combined income split 70%-30%.[5]

Before offering alternatives, a comment on the relative impact of the federal tax deduction on married and single persons is warranted. As noted in the discussion of the tax deduction, because the federal income tax differentiates tax rates based on marital status, the value of deductibility of federal taxes also varies with marital status. In general, singles, who are taxed relatively more heavily at the federal level, derive more "benefit" from the deduction at the state level than married couples. Further, federal income taxes also vary with the income split of couples with equal combined income. A two-earner couple whose income is earned, for example, 50% by each spouse pays relatively more federal tax per $1 of income than a couple with only one earner. One can say little more than that this interaction interferes with Minnesota's ability to develop clearly its own policy for income tax treatment of the family and further supports arguments for eliminating this deduction.

Minnesota Options. Assuming that Minnesota chooses to have a progressive income tax, the ultimate realization of either of the other two equity goals hinges on a difficult policy question: does the state want to tax, and thus measure equity among, individuals or households? The confusion of Minnesota's current treatment is perhaps reflected in its simultaneous use of two tax credits, the homemaker credit and the dependent care credit, which attempt to help both types of married couples.

The federal income tax represents a compromise among the four stated policy goals, but it nevertheless remains rooted in the concept of the family as the taxable unit. Throughout this chapter we have argued strongly for conformity to federal rules, and this preference carries over to income tax treatment of the family. The state has three basic alternatives:

Retain the Current System. The combined filing, emphasizing the individual as taxpayer, seems increasingly appealing in a world where the typical family unit is no longer so typical. Three problems, however, would remain. First, one-earner families would continue to pay higher tax than

two-earner families of equal combined income. It is not difficult to argue, though, that perhaps the one-earner household, which benefits from the efforts of a full-time homemaker and does not incur the additional (often nondeductible) expenses of having two workers, does in fact enjoy a higher standard of living and a greater ability to pay taxes. Second, the incentive to shift income to the lower-earning spouse would remain. The steeper the range of bracket rates the stronger the incentive. And finally, as long as the federal government continues to tax the joint income of the couple, the complexities of pulling apart the income, as well as the federal tax deduction and any income adjustments, will remain.

Joint returns with income splitting. Minnesota could eliminate the tax discrepancies among couples with varying distributions of equal total income and still avoid a marriage penalty by permitting couples to treat combined income as if it were equally earned by each spouse. A couple would in effect face tax brackets twice the size of those applicable to a single person, and pay tax equal to two times the tax of a single person earning half as much. Under this system, if two people marry, their tax would go down or stay the same, depending on their relative contributions to combined earnings, but the tax would never increase. Some would argue that the relative penalty on being single imposed by this system is justified because a single person, without the added expenses of maintaining a family, simply does have a greater ability to pay taxes.

More than ten states incorporate an income-splitting concept into their income taxes. Moving from its current system to one of income-splitting among married couples would, however, generate substantial revenue losses for Minnesota. Couples whose income split is more skewed than fifty-fifty would receive tax cuts relative to what they now pay. As an illustration, to permit income-splitting under the alternative rate schedule that was constructed for singles earlier in this chapter (see Table 6), with no change in the tax base other than removing the federal income tax deduction, would cost as much as $112 million in CY 1983. None of this "tax relief" would go to single taxpayers.

Compromise between the above two alternatives. Like the federal government, Minnesota could engineer a compromise. A rate schedule for joint filers could be constructed to be neutral with respect to marriage for a given income split. That is, a separate rate schedule could be constructed in such a way that the tax under the joint rate schedule of a couple whose income is split, for example, eighty-twenty would be the same as the total tax of those taxpayers separately computed under the single rate schedule. A couple whose income is more evenly distributed than is assumed in the joint rate schedule would be penalized, while a couple whose income is actually more skewed would benefit. The closer the income-split assumed in the table is to the actual mean income-split of all taxpayers, the aggregate revenue consequence of switching to joint returns is generally lower. Table 7 presents

an example of an eighty-twenty joint rate schedule based on the alternative single rate schedule. The net revenue cost of this schedule for CY 1983 is $48 million, or about 3% of total revenue yield from married couples under the single rate schedule without the eighty-twenty split.

Both this example and the fifty-fifty split are presented only as illustrations of the options for emphasizing the family as the taxable economic unit, and of the direction of the revenue consequences of doing so. A rate schedule cannot be appropriate until the tax base and the tax-paying unit to which it will apply have been determined. Despite the changing nature of the family structure, we find persuasive the conformity argument in favor of adopting the federal concept of joint filing at the state level. The final section of this chapter employs an eighty-twenty-type joint rate schedule with a conformed tax base.

TABLE 7
Example of Joint Rate Schedule
Assuming 80%-20% Income-split
(no deduction allowed for federal income taxes paid)
1983

Income Over	But Not Over	Marginal Tax Rate
0	840	1.6
840	1,680	2.1
1,680	3,359	3.2
3,359	5,038	4.7
5,038	6,716	5.5
6,716	8,395	6.4
8,395	11,751	7.2
11,751	13,435	7.9
13,435	15,107	8.3
15,107	20,981	8.9
20,981	47,000	9.3
47,000	125,000	9.5
125,000	134,275	9.4
134,275	250,000	9.3
250,000		9.2

TAX CREDITS

Tax credits are an important tool for relieving unusual burdens for certain taxpayers. As we have discussed, Minnesota's personal credit and low-income credit help to differentiate the tax treatment of different-size families (and the elderly or handicapped), and of lower-income persons. Minnesota also grants a credit for taxes paid to another state or a Canadian province. This credit prevents the inequity of taxpayers paying state-level tax twice on the same income.

In contrast to these credits that are part of the structure of the Minnesota income tax, tax credits may also be used as a vehicle for delivering a variety

of subsidies. In general, a substantial amount of income tax complexity results from using the income tax to encourage or subsidize economic activities. The government could grant a deduction for a particular type of expenditure, such as charitable contributions, and thereby encourage taxpayers to make contributions. But because deductions might have a tendency to appear unfair—they are generally only available to taxpayers who itemize, and their value increases with the bracket of the taxpayer—both Congress and state legislatures have turned to income tax credits. But credits generate their own list of problems. All taxpayers must contend with the credit, either in the instructions, or as a line on the tax form, to determine their eligibility. Those who are not eligible may be left with the perception that somehow they have been cheated: he got something that I did not. And, unless the credit is refundable, it is only useful to those with tax liability. Refundable credits, however, cause otherwise nonfilers to file a return simply to get their refund, something tax administrators want to avoid.

TABLE 8
Credits To The Minnesota Personal Income Tax
1984

	Estimated Calendar Year 1985 Revenue Cost (in millions)	Year Adopted	Percent of Returns Using the Credit in 1982
Nonrefundable*			
Conservation tillage	$0.4	1985	**
Homemaker	1.9	1978	2.9
Political contribution	6.0	1974	6.5
Pollution control	2.0	1979	0.1
Residential energy	9.3	1979	0.2
Small business equity investment	2.6	1983	n/a
Refundable			
Dependent care	15.1	1977	1.5

* This Table excludes three "structural," non-tax-expenditure credits: the low-income and personal credits, which are considered separately in another section of this paper, and the credit for income taxes paid to another state.

** The credit is not effective until 1985 and is not expected to apply to more than 250 to 350 taxpayers, or less than 0.02% of estimated 1985 returns.

n/a Not available

Table 8 summarizes the other nonstructural tax credits available to Minnesota taxpayers, all of which have been adopted since 1974. Each of these credits is designed to decrease the effective cost of the expenditures of a very narrowly-defined group of taxpayers. In fact, none of these credits is claimed on even 10% of all returns.

The policy question is straight forward: Should these subsidies more properly be made through direct cash grants? Our own view is that we try to do too much with the income tax. Minnesota should prune its list of tax credits back to those that may be required in the pursuit of equity. And, as pointed out in the discussion of the tax treatment of the family, Minnesota should avoid tax credits that are inconsistent with each other or with its income tax system as a whole.

TAX ALTERNATIVES

We have concluded that Minnesota should, for its own benefit and the benefit of its taxpayers, increase the degree of conformity of its personal income tax to the federal tax. To do this, Minnesota should first adopt a tax base that is defined and computed under the federal tax, modifying the base for state purposes as little as possible; and, second, alter its rate-structure and tax return filing options to accommodate the conformed base. We present four alternative taxes that would achieve these goals:*

Option A:	Flat-rate tax on federal tax liability
Option B1:	Graduated rate structure on federal taxable income** (joint rate schedule based on fifty-fifty income-split)
Option B2:	Graduated rate structure on federal taxable income** (joint rate schedule based on eighty-twenty income-split)
Option C:	Flat-rate tax on federal taxable income

These options are not offered as ready-to-go legislative proposals; rather, they illustrate the direction that Minnesota's reform could take. Any of these alternatives could be fine-tuned to alter the shifts of the tax burdens across income classes or between married and single persons. And, of course, tax rates could be raised or lowered in accordance with state budget

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*This paper presents only a summary table of average tax rates by income class for current law and each of the four options. More detailed tables are available in "Minnesota's Personal Income Tax," by E.M. Sunley and M.M. Walz, prepared for the Minnesota Tax Study Commission, October 1984.

**Because, as we pointed out, the differences between adopting federal taxable income or only FAGI and federal itemized deductions are not substantial, the impact of conforming to FAGI/itemized deductions would be essentially the same as Options B1, B2, and C.

requirements. In all cases, however, there will be some taxpayers who win and some who lose. That is simply the reality of tax reform.

Option A. A flat-rate tax on federal tax liability could be piggybacked—administered and collected by the federal government—or it could be controlled by the state. A revenue-neutral shift from the current Minnesota tax to such a single-rate tax levied on federal tax liability would require a state tax rate of 43.0%, based on estimated CY 1985 tax revenues. As we showed earlier, this tax is necessarily progressive. Under this option, for example, taxpayers with Minnesota AGI between $5,000 and $10,000 would pay less than 3% of their gross income in tax, compared to about 11% for taxpayers with original MAGI over $100,000 (See Table 9). Consequently, tax increases generally would be experienced by higher-income taxpayers. In aggregate, taxpayers in the lower brackets would also have some tax increase relative to current law, primarily because of the loss of the low-income credit and certain subtraction modifications. The state could compensate for this impact by providing some simplified form of low-income tax credit, and, for example, a credit based on taxable retirement income.

Option B1. By definition a graduated tax on federal taxable income incorporates the federal personal exemption in place of a personal credit. Under this option the rate schedule for single persons was designed to be revenue-neutral and progressive, and the rate schedule for married persons was constructed assuming a fifty-fifty income-split. The brackets are twice as wide as those faced by single persons. Even with taxable income conformity, the state retains control of its zero bracket amount (ZBA), which is set here at $3,000 for single persons ($6,000 for married couples filing jointly), more generous than the federal amounts.

The cost to the state of basing the joint rate schedule on an income-splitting concept would be about $238 million in CY 1985. This alternative would be generally less progressive than current law and, as under Option A, the elimination of some of the provisions that currently benefit low-income taxpayers would produce an aggregate tax increase at the lower end of the income scale. The revenues spent to change to joint filing would exclusively benefit married persons, who tend to have higher incomes than singles. As a result, this option would slightly increase the relative tax burden of single persons who would pay about 27% of total personal income tax revenues, instead of about 24% under current law. Because of the regressivity of the current income tax at upper-income levels, the aggregate tax burden increases for those with original MAGI over $100,000. Nevertheless, this option is progressive overall, as shown in Table 9, and could be made more progressive at the low-income levels by increasing the ZBA.

Option B2: This option differs from the previous one only in the construction of the rate schedule for joint filers. This rate-schedule is an example of the compromise we suggested earlier as a way of minimizing the incidence of both the marriage penalty that would occur when combined

TABLE 9
Taxes Paid as a Percentage
of Minnesota Gross Income
Current Law, Options A, B1, B2, and C
CY 1985
(All numbers in thousands except percents)

Original Minnesota AGI Class		MGI	Current Law		Option A[1]		Option B1[2]		Option B2[3]		Option C[4]	
			Taxes Paid	Taxes Paid as % of MGI	Taxes Paid	Taxes Paid as % of MGI	Taxes Paid	Taxes Paid as % of MGI	Taxes Paid	Taxes Paid as % of MGI	Taxes Paid	Taxes Paid as % of MGI
	$ 0	$ (498,652)	$ 80	—	$ 2	—	$ 43,827	(8.8%)	$ 44,768	(9.0%)	$ 37,567	(7.5%)
$ 0	5,000	873,670	3,820	0.4%	7,242	0.8%	22,652	2.6	24,730	2.8	35,103	4.0
5,000	10,000	1,915,952	34,444	1.8	46,582	2.4	44,597	2.3	47,752	2.5	81,648	4.3
10,000	20,000	5,674,137	235,921	4.2	225,238	4.0	216,461	3.8	233,933	4.1	289,548	5.1
20,000	30,000	6,931,167	368,503	5.3	328,630	4.7	289,513	4.2	318,586	4.6	366,179	5.3
30,000	40,000	7,370,094	432,716	5.9	376,706	5.1	338,404	4.6	371,694	5.0	408,692	5.5
40,000	50,000	5,581,809	350,754	6.3	321,077	5.8	285,411	5.1	311,476	5.6	320,517	5.7
50,000	100,000	6,895,638	480,830	7.0	494,412	7.2	425,983	6.2	449,195	6.5	409,462	5.9
Over	100,000	3,213,464	251,663	7.8	358,776	11.2	254,295	7.9	255,044	7.9	193,968	6.0
		$37,957,278	$2,158,733	5.7	$2,158,665	5.7	$1,921,143	5.1	$2,057,176	5.4	$2,142,683	5.6

Note: All columns may not add due to rounding.

1 *Tax Base:*
Federal tax liability, before credits
Modifications:
Add state and local interest (except from Minnesota obligations), state income tax deductions; subtract state tax refunds included in FAGI and interest on federal obligations.
Tax Rate:
43.0%.
Tax Credits:
Taxes paid to another state on income included in the base

2 *Tax Base:*
Federal taxable income
Modifications:
Same as Option A
Tax Rates:
Singles

Income Over	But not Over	Marginal Rate
0	3,000	—
3,000	4,000	0.8%
4,000	5,000	2.7
5,000	8,000	5.5
8,000	12,000	7.9
12,000	18,000	9.0
18,000	22,000	9.9
22,000	28,000	10.6
28,000	—	11.1

Married filing jointly

0	6,000	—
6,000	8,000	0.8
8,000	10,000	2.7
10,000	16,000	5.5
16,000	24,000	7.9
24,000	36,000	9.0
36,000	44,000	9.9
44,000	56,000	10.6
56,000	—	11.1

Tax Credits:
Taxes paid to another state on income included in the base

3 *Tax Base:*
Federal taxable income
Modifications:
Same as Option A
Tax Rates:
Singles—Same as Option B1
Married filing jointly

Income Over	But Not Over	Marginal Rate
0	3,750	—
3,750	5,000	0.6%
5,000	6,250	2.2
6,250	10,000	4.4
10,000	15,000	6.3
15,000	20,000	7.4
20,000	22,500	7.7
22,500	25,000	8.5
25,000	27,500	9.0
27,500	35,000	9.6
35,000	40,000	10.0
40,000	60,000	10.5
60,000	90,000	10.6
90,000	110,000	10.9
110,000	140,000	11.0
140,000		11.1

This rate-schedule was constructed to be theoretically correct. Without significant tax consequences, the number of brackets could be reduced.
Tax Credits:
Taxes paid to another state on income included in the base

4 *Tax Rate:*
Federal taxable income
Modification:
Same as Option A
Tax Rates:
Single persons: 6.8%
Married filing jointly: 7.7%
Tax Credits:
Taxes paid to another state on income included in the base
Exempt Income:
$2,400 for singles
$3,540 for married filing jointly

income is taxed under a rate schedule for singles, and the marriage bonus that would occur with income-splitting. It is based on an income tax split for couples of 80%-20%. Using this joint schedule more than halves the cost of changing to joint returns to $101 million. Unlike the fifty-fifty split of Option B1, this joint schedule would still impose a marriage penalty on couples whose income is more evenly split than eighty-twenty, though these couples are also the primary beneficiaries of the special federal two-earner deduction.

The progressivity of this option is essentially the same as Option B1 (see Table 9), and the relative shift of the tax burden to single persons is somewhat diminished.

Option C: Option C is a flat-tax based on federal taxable income that is revenue-neutral both for single persons and married persons. This proposal is much more regressive than current Minnesota law (see Table 9). In aggregate, taxpayers with MAGI below $20,000 would be taxed more heavily, those with MAGI over $20,000 would pay less tax. The burden on low-income families and individuals could be relieved to some extent by increasing the level of exempt income which was set here at the current federal ZBA for joint and single filers as indexed to 1985. But to remain revenue-neutral the tax rate applying to taxable income above the exempt rate would have to be increased. The flat-rate tax proposal would then shift the tax burden from upper-income families and individuals to middle-income families and individuals.

ENDNOTES

1. U.S. Department of Commerce, Bureau of the Census *State Government Tax Collections,* 1983. Table 3, p. 7.

2. A detailed discussion of all existing modifications and the justification for their elimination is contained in the original working paper for this chapter, "Minnesota's Personal Income Tax" by E.M. Sunley and M.M. Walz, prepared for the Minnesota Tax Study Commission, October 1984.

3. Federation of Tax Administrators, *Tax Administrators News,* Vol. 48, No. 1 (Washington, D.C., January 1984), p. 4. One of the sixteen states, Oklahoma, provides a separate rate schedule for those taxpayers who choose not to deduct federal taxes. Three of the states put a maximum limit on the amount that can be deducted.

4. Minnesota Department of Revenue *Comparison of the 1981 Individual Income Tax Burdens by State,* Research Report No. 130, May 1983, pp. 15-17.

5. Minnesota Department of Revenue *Comparison of the 1981 Individual Income Tax Burdens by State,* Research Report No. 130, May 1983, pp. 15-17.

6
The Optimal Progressivity of the Minnesota Tax System

Joel Slemrod

This chapter is concerned with the important issues that are relevant to a state's choice of how progressive its tax structure should be. Because it explicitly adopts a state perspective, the chapter is not concerned with the implications for overall national economic welfare of states' fiscal behavior, nor does it consider potential federal response to state fiscal behavior. Because it is about state tax policy rather than fiscal policy as a whole, it does not deal with the distributional impact of alternative state expenditure policies. However, many of the statements about tax policy made herein are, technically speaking, about the overall progressivity of the tax and expenditure systems taken together. These statements do, though, apply equally well to comparisons among alternative tax policies, if it is assumed that the state's expenditure policy is held constant and that budget deficits or surpluses are ruled out. Thus, it is concerned with how a given level of taxes should be distributed among the state's taxpayers, but not with what the total revenue raised by the tax system ought to be.

The classic statement about the state's role in redistributional policy was written by Musgrave (1959, 1976). He portrayed the fiscal responsibilities of government as falling into three categories: stabilization, allocation, and distribution. Musgrave maintained that the distributional role of government is solely a federal responsibility. He argued that regional differentiation among state redistribution policies would result in locational inefficiency to the extent that they affected the choice of location of individuals and businesses. Moreover, he claimed that regional measures for redistribution would be self-defeating: the rich would leave and the poor would move to the more egalitarian-minded jurisdictions.

The most forceful statement of this view was made by Oates (1968). He labels any attempt by a local government to undertake an aggressive redistributive program as "disastrous" because of the mobility of the wealthy citizens. He recognizes that for geographically larger communities, such as states, the impediments to movement increase, thus increasing the capacity for successful redistributive programs. However, he claims (without supporting evidence) that mobility at the state level is large enough to render

the scope of redistributive programs as "modest." He concludes that "the primary responsibility for implementing redistributive policies must in most cases rest with the central government" (1968, p. 45).

The implication of the Musgrave/Oates view is that, to the extent possible, the burden of state taxes should be set so as to match the pattern of benefits received from state expenditures. For some goods provided by the state, where the benefits can be clearly and distinctly traced to the particular households that consume the good, user charges would be appropriate. Examples of such goods, labelled "private" goods by economists, include hospital services and (arguably) postsecondary education. For state-provided "public" goods, where the benefits are not confined to particular households, implementing this principle would require an estimate of how the benefits of the goods and services are distributed throughout the state population. Examples of public goods include public health programs and the state police. Because this view implies that the pattern of taxation should try to match the distribution of benefits, the progressivity of the state income tax is to be determined without direct reference to the ability of the household to pay. (Of course, if the benefits of the public goods are related to ability to pay, so will be the appropriate tax payments.) If, for whatever reason, the total tax burden is to be related to the ability to pay taxes, this relationship should be established via the federal income tax system, not the state.

Unfortunately for this view, the benefit principle does not provide a reasonable operational rule to guide state tax policy. In theory, under a general benefit tax, a household's liability should be related to its own valuation of, or its willingness to pay for, the goods and services provided by the state government. However, willingness to pay depends on the preferences of the households, and it is a function of the price- and income-elasticities of the various goods provided. Such a general benefit tax could be proportional, progressive, or regressive. As Musgrave himself admits, this concept "does not permit easy implementation [because] the relevant prices and income elasticities are not known or readily observed from market observations as in the case of private goods." Musgrave concludes that on the basis of the benefit principle, the question of rate structure "remains open [and] is of interest mainly as a theoretical concept."

As mentioned above, for some particular private goods supplied by the state government, benefit taxation may be implemented by means of user charges. However, many of the goods provided by state governments are characterized by decreasing cost. The efficient solution in these situations is to set the charge equal to marginal cost. In this case, though, revenue would not be sufficient to cover costs. In order to maintain efficiency, the deficit must be financed by charges unrelated to the usage of the commodity. Thus there is an unavoidable conflict between efficient user levies and strict adherence to the benefit principle.

In sum, then, the benefit principle argues for the use of user charges or taxes directly related to benefits received whenever possible, but it offers virtually no guidance about the proper means of financing the provision of pure public goods or private goods produced with decreasing cost. Furthermore, a state acting strictly in accord with the benefit principle would make no transfer payments to the poor. However, given the ground rule of this chapter, that expenditure policy is to be taken as given, we can surely conclude that the benefit principle has nothing to say about how the current level of transfers is to be financed.

Our conclusion, then, is that the benefit principle does not provide a state with an operational guide to the appropriate degree of progressivity of the income tax system. We can, though, consider a broader interpretation of the Musgrave/Oakes view: that a state should not attempt to achieve any substantial redistributive goals in designing its tax system and should instead aim at an apparently distributionally "neutral" tax system such as a proportional tax. Even this weaker view can be effectively challenged.

In direct opposition to the Musgrave/Oates view, even broadly interpreted as above, several authors have argued that state and local governments ought not to abdicate responsibility for redistribution. One circumstance that suggests a state role in redistribution is when there are differences between states in their tastes for equality. As Break (1982) has argued, such differences may preclude the achievement of any national consensus on redistributive programs and require the introduction of ability-to-pay elements into state (and local) tax systems. Break, though, warns that "beyond some hard-to-define point . . . attempts by any one state or local government to make any significant move away from the norm are likely to be counterproductive."

Pauly (1973) presents a formal model in which it is desirable that subnational governments play a role in redistribution. In this model, the welfare of the poor is a public good, in that all citizens derive utility from it. Furthermore, it is a local public good, in the sense that citizens derive utility from the well-being of those poor people who live close to them, and derive less (or no) utility from the well-being of the poor who do not live nearby. Pauly argues that if the desire for redistribution has this kind of spatial quality, it turns out that local governments are an efficient mechanism for redistribution even when taxpayers can move. "Taxpayers who move away avoid welfare taxes, but they also lose the benefits of welfare payments in ameliorating an external diseconomy from the poor, since that diseconomy disappears with distance" (p. 57). Pauly goes on to argue that if the desire for redistribution has "some" spatial quality, the efficient mechanism is a federal system, with payments between communities to reflect the interest of the members of one community concerning the poor in another community.

Pauly's argument rests critically on the presumption that nonpoor individuals gain satisfaction from the increased well-being of the poor.

Because of this, they are willing to forego some of their own income so that the poor will have a higher standard of living. States composed of more altruistic individuals will have more progressive tax systems than states composed of less altruistic individuals, and presumably in the long-run, individuals will sort themselves into states based on their tastes for equality.

Under the kind of scenario outlined by Pauly, it is conceivable that a state composed of altruists would face the flight of some of its high-income residents if it changed to a less progressive tax system. These residents had concluded that their high-tax liabilities were a worthwhile price to pay for the benefit they received from living in a relatively egalitarian society. A less progressive tax system changes the package the state offers to a lower-tax, less-equal, society bundle, which may be inferior to what was previously offered.

Finally, Oakland (1983) has argued for a state role in redistribution due to regional differences in living costs and other amenities. Because of these differences, he shows that a system of nationally uniform transfers will fall short of the amount needed for equity in high-cost areas and above it in low-cost areas. He minimizes the importance of mobility in response to regional differentials in tax burdens. While appropriate, perhaps, for the intraurban allocation of population, he claims that there is much less justification for it in the interregional allocation context.

Our argument so far is that the rule for determining state progressivity that comes out of the Musgrave/Oates view of state responsibility for redistribution, the benefit principle, offers little concrete operational guidance to the policymaker. In addition, there are persuasive arguments that a state government ought to be actively considering the distributional impact of its tax policies, subject to some constraint imposed by the mobility of its citizens. Before we treat the important issue of mobility, there is one other argument for the active consideration of progressivity in the state tax structure.

The standard argument for no subnational involvement in redistribution ignores a key detail of the U.S. income tax system, that state income tax payments qualify as an itemizable deduction. Because of this feature, the cost to an itemizing household of an additional dollar of state income tax liability is only $1-t$, where t is the marginal federal income tax rate. (This calculation ignores, for the sake of simplicity, the fact that in certain states such as Minnesota federal taxes are deductible from state taxable income). This federal offset allows the state essentially to export some of its tax burden to the residents of other states in the form of higher federal tax rates than there otherwise would have to be.

Because the proportion of itemizing-households is not distributed randomly with respect to income, the form of the state income tax can significantly affect the extent of the tax exporting. Because the proportion of itemizing-households increases with income, in general the more

progressive is the state income tax, the greater will be the degree of tax exporting. In a sense, by loading the tax burden onto those high-income taxpayers who tend to be itemizers and also have high marginal federal income tax rates, the total net tax burden borne by Minnesotans declines. The amount of exporting is sizable, and the difference between tax systems in the degree of exporting can also be large.

One cost of increasing progressivity to take advantage of tax exporting is an increase in the horizontal inequity between itemizing-households and nonitemizing-households. Nonitemizing-households in the higher brackets will pay more tax than itemizing-households with the same income.

In Table 1 we present some illustrative estimates of the degree of exporting in the current Minnesota income tax system and how sensitive the degree of exporting is to changes in its progressivity. In order to keep the calculations relatively straightforward, two simplifying assumptions have been made.

TABLE 1
Federal Offset Under Actual 1980 and Flat-rate Income Tax Systems

A Federal AGI Bracket	B Fraction Itemizing	C Effective marginal federal tax offset for state tax payments	D 1980 Minnesota income tax ($000)	E 1980 federal tax offset ($000)	F Flat-rate tax payments ($000)	G Flat-rate federal tax offset ($000)
less than 4,000	0.5146D-02	0.3651D-03	2,827	0	19,354	0
4,000 to 8,000	0.155OD-01	0.1781	21,572	38	78,613	140
8,000 to 10,000	0.3106D-01	0.4002	27,471	110	54,159	217
10,000 to 12,000	0.675OD-01	1.207	38,028	152	57,478	694
12,000 to 14,000	0.8738D-01	1.671	45,659	763	62,756	1,049
14,000 to 16,000	0.1202	2.541	52,235	1,327	64,290	1,634
16,000 to 18,000	0.1920	4.411	56,155	2,477	66,349	2,953
18,000 to 20,000	0.2235	5.418	61,137	3,312	66,707	3,614
20,000 to 22,000	0.2525	6.311	70,006	4,418	72,359	4,567
22,000 to 24,000	0.3065	8,044	70,006	5,631	71,174	5,725
24,000 to 26,000	0.3848	10.67	71,786	7,660	74,405	7,939
26,000 to 28,000	0.4953	14.31	73,566	10,527	68,837	9,859
28,000 to 30,000	0.4693	13.99	73,566	10,292	66,007	9,234
30,000 to 32,000	0.5635	17.72	43,744	7,751	61,046	10,817
32,000 to 34,000	0.5824	18.75	43,744	8,202	55,488	10,404
34,000 to 36,000	0.6658	22.27	43,744	9,748	44,491	9,908
36,000 to 38,000	0.6291	21.65	43,744	9,471	40,528	8,774
38,000 to 40,000	0.7504	26.98	43,744	11,802	35,251	9,551
40,000 to 45,000	0.7528	29.54	109,361	32,305	70,266	20,757
45,000 to 50,000	0.8116	33.15	109,361	36,253	48,757	16,163
50,000 to 55,000	0.8331	39.96	19,299	7,133	35,062	12,959
55,000 to 60,000	0.8411	38.08	19,299	7,349	24,867	9,469
60,000 to 70,000	0.8591	40.49	38,598	15,628	34,849	14,115
70,000 to 80,000	0.8804	42.71	38,598	16,485	21,967	9,382
over 80,000	0.9223	48.78	198,630	96,896	120,220	58,643
TOTALS	N.A.	N.A.	1,416,033	305,728	1,416,033	238,527

Sources:
A, B, C: National Bureau of Economic Research tax simultation model.
D: Author's calculations, based on data from the Minnesota Department of Revenue Research office.
E: C X D
F: Author's calculations, based on 0.0477 times an estimate of federal adjusted gross income in the bracket.
G: C X F

First, the taxpayer choice of whether to itemize deductions is assumed to be unaffected by changes in the Minnesota income tax structure. Second, the percentages of itemizers by income class and the overall distribution of income is assumed to be the same for Minnesota as it is for the U.S. as a whole. Note that the deductibility of federal taxes from state taxable income does not affect these calculations. We are concerned here only with the federal tax savings from a given pattern of Minnesota income tax liabilities. The deductibility of federal taxes influences what this pattern of liabilities turns out to be, but not the relationship between Minnesota tax burden and the accompanying federal tax reduction.

Table 1 first contains data about the current degree of tax exporting. Taxpaying units are arranged by their federal adjusted gross income. Columns B and C display the percentage itemizing and the average marginal tax rate on itemized deductions, respectively. The figure in column C tells how much federal taxes would be saved if the state income tax of an average taxpayer in this bracket increased by $1. The rate of increase reflects not only marginal tax rates increasing with income but also an increasing fraction of taxpayers who itemize their deductions. Column D gives the total Minnesota tax liability of taxpayers in the given federal AGI bracket. Finally, column E gives the total federal tax saving due to state income taxes, and is equal to column C multiplied by column D. The total saving in federal taxes (the amount of income tax exporting) is equal to $305,728,000, or 21.6% of Minnesota income tax revenue in 1980.

The final two columns repeat the exercise with a less progressive variant of the Minnesota income tax. In particular, we investigate a tax system under which state tax liability is a fixed proportion of federal adjusted gross income. The rate of 4.77% is set in order to raise the same amount of revenue as the current tax system, assuming no behavioral response to the tax system change. The new Minnesota income tax liability by federal AGI class is shown in column F. It is calculated by applying a 4.77% to an estimate of federal adjusted gross income. Column G is equal to column C multiplied by column F and is the federal tax saving under the proportional tax system. The total saving in this case comes to $238,527,000, a decrease of $67,201,000 compared to the current system, or 4.7% of income tax revenues. Clearly the shift in tax liability toward nonitemizers reduces the amount of tax exporting implied by the system of deductibility. An interpretation of this result is that the progressivity of the current Minnesota tax system provides an effective tax cut equal to 4.7% of current tax revenues, or 0.31% of total Minnesota taxable income.

The fact of federal deductibility also plays a role in the relative use of income taxes versus user charges. We argued above that the benefit principle suggests the imposition of user charges wherever possible. However, user charges do not qualify as an itemizable deduction, whereas income taxes (as well as property and sales taxes) do qualify. Thus, the effective cost to

Minnesotans of $1 of user charges exceeds that of $1 of income tax liability. Using the data of Table 1 we can calculate that, given the current Minnesota income tax structure, reducing everyone's income tax liability by 1% and making up the lost Minnesota tax revenue with nondeductible user charges would effectively cost Minnesotans 21.6 cents for every $1 transferred. Thus, the federal offset provides an incentive for a state to use taxes rather than user charges just as it provides an incentive for progressivity in the tax structure.

We now come to the issue of the effect of the tax system on individuals' and firms' locational decisions. This is what Musgrave had in mind when he referred to state-originated redistributional programs as "self-defeating," and why Break said that attempts by any one state to have a significantly different redistributional program are likely to be "counterproductive." There are two distinct issues to be considered. First, what is the evidence about mobility in response to fiscal differences? Second, how should the fact of potential migration be incorporated into an analysis of progressivity? We now discuss each of these issues in turn.

First of all, there is no evidence documenting that individual location among states is directly influenced by the tax system. There is some evidence of mobility of low-income households in response to the generosity of state welfare programs, but the consensus of research seems to be that low-income families have not migrated to high-payment areas in significant numbers in order to benefit from such programs (Bahl (1983), p. 23). At the same time, there is no conclusive evidence ruling out the possibility that there is some level of fiscal disparity that would influence locational decisions. What that level is and whether Minnesota is at or near that level is, however, not known.

Concentrating on the direct effects of the tax system on mobility, may, though, be misleading because it ignores the general equilibrium, or long-run, consequences of fiscal policy. For example, in equilibrium a state with a highly progressive income tax may have a relatively high-wage-rate for high-skill occupations in order to attract and retain people with these skills. This may affect the locational decisions of firms. There is evidence that local wage rates do play a role in firms' locational decisions, although the empirical results are still controversial and the magnitude of the effect is uncertain.

In sum, the empirical evidence on the importance of migration in response to state tax policy is not conclusive, though it certainly does not strongly suggest a large response to tax differentials of the magnitude currently observed.

Let us suppose, for the sake of argument, that mobility responses are significant. How does this affect the determination of tax progressivity?

Insight into this question from the public finance literature comes from a perhaps unexpected source—considerations of the "brain drain" from

underdeveloped to developed countries. Several papers have investigated the choice of an income tax system faced by a country with potential emigration of its most talented members in search of higher incomes and perhaps more professional challenge elsewhere.

An early paper of this genre by Hamada (1975) concluded that the degree of progressivity of a tax system should be lower for an open economy with the possibility of emigration than for a closed economy. The critical assumptions of Hamada's model were that there is (i) no emigration for those with less-than-average ability, (ii) nonnegative emigration for others, with emigration increasing with higher marginal tax rates, and (iii) the government only considers the well-being per capita of those left behind. The intuition underlying this result is fairly straightforward. In a closed economy, the optimal degree of progressivity involves a tradeoff between the benefits of a more equal distribution of well-being and the efficiency/disincentive costs of higher marginal tax rates. The possibility of outmigration of the most able adds another element of cost to increased progressivity—the dilution of the per capita tax base and the simple loss of a relatively more affluent household.

Several papers following Hamada have explored variations in this model structure and obtained results in the same spirit. What concerns us here is not the details of the alternative modellings and precise results but instead what they teach us about the critical elements of the problem.

An instructive way to approach this is to examine the assumptions of Hamada's model. The first assumption is that there is no possibility of emigration for those with less-than-average ability or income. While this may make some sense in an international context, in an interregional context it is not plausible. In- or out-migration of lower-income households in response to changes in their net fiscal burden is certainly conceivable. In fact, as mentioned above, the only evidence that exists about interregional mobility in response to fiscal incentives applies to potential welfare recipients.

Recognition that all citizens are potentially mobile does not in itself necessarily change the implications of the optimal progressivity model; in fact, it may strengthen them. It does, though, clarify the implications of a tax policy aimed at encouraging the immigration (or preventing the emigration) of high-income residents. For a given pattern of state expenditures, such a policy also encourages the emigration (or discourages the immigration) of low-income households, who find the net tax burden higher than otherwise. Firms may find it necessary to pay higher wages for low-skill occupations than otherwise, and thus find location in Minnesota less attractive.

The point here is that the state is faced with a zero-sum problem. In order to improve the net fiscal position of one group of taxpayers, a deterioration of the net position of some other group must occur. Thus, encouraging the

immigration (or discouraging the emigration) of one group implies encouraging the emigration (or discouraging the immigration) of another group.

Why would a state want to design its tax (or any other) policy to favor a change in its population mix, say toward high-income people? An answer to this question requires an examination of Hamada's third assumption: the state government only considers the well-being per capita of those left behind. The focus on per capita well-being seems reasonable: it rules out policies that appear favorable because they attract more residents on net, and thus increase aggregate state income. However, stating the state government's objective in terms of those left behind is a critical assumption and merits further inspection.

When both immigration and emigration are possible, consideration of those left behind is equivalent to consideration of those who are residents after any tax change has been instituted. That implies that the well-being of those who emigrated in response to the fiscal system is explicitly not considered, and the well-being of the new residents explicitly is considered. With this kind of objective, social welfare is presumed to increase if a poor household is replaced by a rich household, even if both households pay exactly the same amount of taxes to the state. Per capita well-being rises in this case, but it is difficult to tell a convincing story that Minnesota as a whole is thereby better off. After all, the rich family at the margin that decides to emigrate would, by assumption, be approximately as well off if they lived in any other state.

If we rule out any definition of state objectives that would favor a trading of rich households for poor, holding the welfare of all other households constant, the case for reducing progressivity *a la* Hamada is weakened. It is not, though, destroyed. Because the rich household may be asked to pay more taxes than the poor household, the change in population may enable other residents to be better off due to the higher tax base.

Mirrlees (1982) has argued, in the context of the brain drain problem, that an attractive alternative specification of the government's objective is the per capita well-being of "nationals," which would include emigrants and presumably exclude immigrants. An interpretation of this suggestion is that the state only consider the well-being of its residents before the institution of any tax change. This criterion would impel the state government to take into account the reduced well-being of any individuals who are induced to move to another state. In addition, it would value the immigration of high-income residents only to the extent that their high tax base allows a reduction of the tax liability of current residents.

The simple models of optimal progressivity in the presence of emigration possibilities leave out some elements which may be important. A particular population balance may be desired by residents on its own merits, for "aesthetic" reasons. For example, higher-income families may be desirable

if they bring cultural interests which enrich the community. Diversity of classes may be valued for its own sake. There may also be complementarities in production between low-skilled workers and high-skilled workers, making it desirable for there to be available supplies of both kinds of labor. Finally, all the models assume full employment of resources at all times, an apparently unrealistic assumption. While this is a shortcoming of the modelling approach, dispensing with it is analytically difficult and would not change the results in any obvious way.

This concludes our discussion of the important issues concerning the optimal progressivity of the Minnesota tax system. Before drawing the operational implications of this study, it may be useful to summarize the points made so far. They are:

1. The traditional view that state governments should entertain no distributional goals provides little operational guidance to the progressivity of the tax system.
2. There are compelling reasons to believe that differences in state residents' tastes for equality should be reflected in the distribution of tax burdens. This implies, for example, that to the extent Minnesotans have an especially strong commitment to minimizing inequalities of well-being, its tax structure should be more progressive than that of other states.
3. The system of federal deductibility of state taxes provides a strong financial incentive to retain progressivity. It also favors the use of income taxation compared to user charges.
4. In principle, the possibility of outmigration of high-income households places a limit on the progressivity of the state tax system. However, there is no compelling empirical evidence that this is a significant factor in the range of state tax systems that exist today.

As is clear from this summary, no precise policy prescriptions can be made solely on the basis of economic reasoning. Nevertheless, I believe that some general principles to guide policymaking are suggested by this review. These principles are as follows:

1. The State of Minnesota should not give up autonomous control of its tax progressivity. This rules out systems such as having state tax liability being a fixed proportion of federal tax liability, which would tie Minnesota's tax progressivity to federal tax progressivity and cede local autonomy. At the same time, the simplification advantages of conformity with the federal tax system can be achieved by starting from federal adjusted gross income or taxable income and then applying a Minnesota-determined rate schedule.
2. The degree of tax progressivity in Minnesota should strike a balance between the desire of its citizens to allocate the burden of taxation "fairly" and the objective of minimizing the disincentive effects,

including outmigration, of the tax system. Because what is fair is entirely a value judgment not susceptible to economic analysis, and the disincentive effects are of unknown but potentially significant magnitude, it is impossible to say where in the range of progressivity this balance lies. On the one hand, there is certainly no compelling argument for a radical reduction in progressivity such as replacing the current graduated system of rates with a "flat" tax. On the other hand, policymakers should bear in mind that Minnesota is just one of many states, and they should be concerned with the potential for migration of human and other resources due to its fiscal policies. This chapter suggests that, although migration and its relationship to tax policy are important issues, they are also complex ones that merit serious consideration concerning their implications for tax policy.

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7
Minnesota Transfer Taxes

Raymond A. Reister

Transfer taxes may be defined as those taxes imposed on the transfer of wealth from one person to another without consideration in money or money's worth. Many such taxes have been devised over the years. If the transfer occurs during the transferor's life, the tax is designated as a "gift tax." If the transfer occurs on the death of the transferor, the tax is designated as a "death tax." There are several kinds of death taxes, principally the "inheritance tax," also called a "legacy" or "succession" tax, and the "estate tax."

The inheritance tax is defined as a tax levied upon the succession to property by a transferee, while the estate tax is levied on the transmission of property by a decedent. In an inheritance tax, a separate tax is computed on the value of each transfer. Characteristically, the amount of each transferee's share which is exempt from tax and the rates of tax for different classes of transferees will vary depending on the relationship of the transferor to the transferee. To illustrate, under the former Minnesota inheritance tax, a legacy of $25,000 to a child whose exemption was $6,000 and a rate of 2% produces a tax of $380, while the tax on a like gift to a nephew with an exemption of $1,500 and rate of 6% is $1,410. The sum of the separate taxes on each gift becomes the inheritance tax for the entire estate.

Under the estate tax, the value of the decedent's gross estate is determined, certain deductions and exemptions are subtracted, and the result is the taxable estate. A rate-schedule uniform to all estates is then applied to the value of the taxable estate. Once the tax is determined, certain credits are subtracted on a dollar-for-dollar basis to produce the actual amount of tax due.

The difference between inheritance and estate taxes has been greatly reduced with the development of the marital deduction. A marital deduction, under certain conditions, eliminates the tax on property passing to a surviving spouse. Thus, under either tax, the amount of the tax will vary or be eliminated depending on the amount of the estate passing to the decedent's spouse.

An important version of the estate tax is the so-called "pick-up tax" or "soak-up tax." This tax is designed to require that sufficient state death taxes are paid to insure that the estate obtains the maximum credit allowed

against the federal estate tax under §2011 of the Internal Revenue Code of 1954.[1]

In addition to an estate tax and a gift tax, the federal tax code contains a "generation-skipping tax." This tax, introduced in the Tax Reform Act of 1976, is designed to produce substantially the same total tax results whether the inheritance of a member of an intermediate generation passes to him outright or is held in trust for him during his lifetime, passing, on his death, to a succeeding generation.[2]

CREDIT FOR STATE DEATH TAXES PAID

Fundamental in a discussion of the Minnesota estate tax is an understanding of the provisions of IRC §2011 (credit for state death taxes paid). In 1916, the present federal estate tax was first enacted. Before the federal law, most states had adopted death taxes. However, in 1924 Florida adopted a constitutional amendment specifically prohibiting the imposition of inheritance and income taxes. Several other states followed, seeking to entice new residents with the promise of freedom from such taxes.

In the same year, Congress was considering whether to retain the federal estate tax and, if so, whether or not to raise the rates. Since matters involving probate are uniquely within the province of the states, one of the effective arguments for repeal was that all such taxes should be retained solely by the states.

At that point Representative William R. Green of Iowa introduced the predecessor of §2011 as a means of preserving federal death tax revenues while protecting state revenues and discouraging interstate competition. This was accomplished by increasing the federal tax rates while at the same time not allowing a credit to exceed 25% of the value of the federal estate taxes for state death taxes paid. In 1926, the amount of the credit was increased to 80% of the rates established in that year.

Rates from time to time were increased under the federal estate tax but the amount of credit allowed was restricted to the rates of the 1926 act. The current schedule of the amount of the credit is displayed in Table 1.

By adopting the credit, the advantages of the so-called "tax-haven" states, like Florida, were initially eliminated. As a result, most states, like Minnesota, retained their former systems. However, over the years preceding the Tax Reform Act of 1976, forty states, in addition to their regular death taxes, adopted a special pick-up tax equal to the difference between the maximum credit under the federal tax law and the tax produced by their basic death taxes. Minnesota's pick-up tax was adopted in 1931.

The existence of the credit does not, of course, increase the size of the estate tax burden; it allows the states to shift a substantial portion of the revenue resulting from that burden from the federal government to their coffers. Nor does the credit require any state to reduce its tax if that tax

TABLE 1
Credit for State Death Taxes Paid

The credit shall not exceed the appropriate amount stated in the following table:

If the adjusted taxable estate is:	The maximum tax credit shall be:
Not over $90,000	8/10ths of 1% of the amount by which the adjusted taxable estate exceeded $40,000.
Over $90,000 but not over $140,000	$400 plus 1.6% of the excess over $90,000.
Over $140,000 but not over $240,000	$1,200 plus 2.4% of the excess over $140,000.
Over $240,000 but not over $440,000	$3,600 plus 3.2% of the excess over $240,000.
Over $440,000 but not over $640,000	$10,000 plus 4% of the excess over $440,000.
Over $640,000 but not over $840,000	$18,000 plus 4.8% of the excess over $640,000.
Over $840,000 but not over $1,040,000	$27,600 plus 5.6% of the excess over $840,000.
Over $1,040,000 but not over $1,540,000	$38,800 plus 6.4% of the excess over $1,040,000.
Over $1,540,000 but not over $2,040,000	$70,800 plus 7.2% of the excess over $1,540,000.
Over $2,040,000 but not over $2,540,000	$105,800 plus 8% of the excess over $2,040,000.
Over $2,540,000 but not over $3,040,000	$146,800 plus 8.8% of the excess over $2,540,000.
Over $3,040,000 but not over $3,540,000	$190,800 plus 9.6% of the excess over $3,040,000.
Over $3,540,000 but not over $4,040,000	$238,800 plus 10.4% of the excess over $3,540,000.
Over $4,040,000 but not over $5,040,000	$290,800 plus 11.2% of the excess over $4,040,000.
Over $5,040,000 but not over $6,040,000	$402,800 plus 12% of the excess over $5,040,000.
Over $6,040,000 but not over $7,040,000	$522,800 plus 12.8% of the excess over $6,040,000.
Over $7,040,000 but not over $8,040,000	$650,800 plus 13.6% of the excess over $7,040,000.
Over $8,040,000 but not over $9,040,000	$786,800 plus 14.4% of the excess over $8,040,000.
Over $9,040,000 but not over $10,040,000	$930,800 plus 15.2% of the excess over $9,040,000.
Over $10,040,000	$1,082,800 plus 16% of the excess over $10,040,000.

The term *adjusted taxable estate* means the taxable estate reduced by $60,000.

exceeds the credit; however, by 1976, six states (Alabama, Alaska, Arkansas, Florida, Georgia, and New Mexico) did limit their death taxes to the maximum amount of the credit and nothing more. This latter arrangement is often called a pure pick-up tax. Subsequent to the 1976 and 1981 changes

in the federal estate tax laws, fourteen additional states have repealed their prior law, choosing to rely solely on a pure pick-up tax.[3]

PURPOSES AND RESULTS

Proponents advocate transfer taxes for two major purposes:

Revenue. It was initially thought that transfer taxes could serve as a substantial source of revenue. In Minnesota, the first attempt at such taxation was to cover the costs of probate courts in place of relying only on fees. Those favoring the tax argue that because the act of transfer can be easily monitored through courts and legal devices—like liens—such taxes are easy to administer and collect; that such taxes constitute less of a burden on the recipient, since an inheritance is received without work or effort and is, therefore, like "found-money"; and that such taxes produce a less damaging effect on incentives than do income taxes.

Wealth Redistribution. During the latter part of the nineteenth century, reformers saw transfer taxes as a major weapon in their struggle for the redistribution of wealth.[4] Theodore Roosevelt states this theme in his famous "muckraking" speech at the dedication of the House of Representatives office building on April 14, 1906:

> I feel that we shall ultimately have to consider the adoption of some such scheme as that of a progressive tax on all fortunes, beyond a certain amount, either given in life or devised or bequeathed upon death to any individual—a tax so framed as to put it out of the power of the owner of one of these enormous fortunes to hand more than a certain amount to any one individual; the tax, of course, to be imposed by the national and not the state government.

This policy was eloquently restated in his annual message to Congress on December 3, 1906, when he emphasized both the moral and economic dangers from great accumulation of wealth:

> Government has the absolute right to decide as to the terms upon which a man shall receive a bequest or devise from another. . . . A heavy progressive tax upon a very large fortune is in no way such a tax upon thrift and industry as a like tax would be on a small fortune. No advantage comes either to the country as a whole or to the individuals inheriting the money, by permitting the transmission in their entirety of the enormous fortunes that would be affected by such a tax . . . Our aim is to recognize what Lincoln pointed out—to insist that there should be an equality of right before the law, and at least an approximate equality in the conditions under which each man obtains the chance to show the stuff that is in him when compared to his fellows.

At other times, transfer taxes have been condemned as reducing a family's wealth at the exact time when the decedent's earned-income is removed and greater reliance has to be placed on return from capital; as compelling the

sale of farms and small businesses to raise the funds necessary to pay such taxes; as very complex to administer and a major cause of delay in estate settlement; and as imposing a double taxation since much of a decedent's estate will consist of accumulated income which has already been subjected to income tax during the decedent's lifetime.

The ineffectiveness of the transfer tax as a means of substantial tax revenue and wealth redistribution was soon evident. The early Minnesota inheritance collections were both small in amount and in percentage of total revenue. By 1933, inheritance tax revenue comprised 1.72% of total state receipts.

On both the national and the state levels, only a small portion of the total tax receipts are produced by such taxes. Since the end of World War II, for both the federal government and for all states combined, the percentage of the total tax collections attributable to transfer taxes ranged from 1.5% to 3%; the percentage has constantly declined in recent years. Since revenue is not collected, it is, of course, not being redistributed.

The primary cause for failure is the limited incidences of death.[5] Other factors contribute, however, including the development of effective estate planning arrangements involving lawyers, accountants, bankers, life underwriters and professional estate planners; the development of the marital deduction based on the concept that a married couple is an economic unit whose taxes should be deferred until the death of the survivor; the adoption of other tax deferrals for special kinds of property; the charitable deduction; the 1976 and 1981 revisions of the federal estate tax responding to the strong public demand for tax reductions particularly among the farm and small business communities; and, finally, a lack of any broad-based support for estate tax increases.

Table 2 shows the amount of Minnesota transfer tax collections from 1963 to 1982 and the percentage of total tax revenues attributable to transfer taxes. The estate tax due, as reported in the 1983 data of the department of revenue has declined to $10,834,133 or .0025% of the total amount of tax collections estimated to exceed $4,321,000,000. No substantial differences appeared in the pattern of such collections until the late 1970s when the trend in Minnesota collections followed the federal decline. Additional reasons for Minnesota's decline include the adoption of the 1979 estate tax act, the simultaneous repeal of the Minnesota gift tax and the continuing loss of wealthy residents to tax-haven states.

In one area, though, the transfer taxes have proven successful. As early as 1918, Congress provided that gifts to charitable organizations were deductible in the computation of the estate tax; Minnesota introduced a charitable exemption in 1919. In 1983, throughout the United States, charitable bequests amounted to $4,520,000. It has been estimated that the wealthiest .002% of all decedent estates account for 63% of all deductions for charitable bequests.[6] Thus, the principal benefit of the charitable

TABLE 2
Minnesota Tax Collections, 1963-82
(In Thousands)

Fiscal Year	Total Transfer Tax	Total Tax Collections	% of Total
1963	15,243	416,561	3.66%
1964	15,963	448,835	3.56%
1965	13,843	488,616	2.83%
1966	14,554	584,182	2.49%
1967	14,163	620,400	2.28%
1968	18,392	483,251	3.81%
1969	21,396	914,232	2.34%
1970	20,032	1,020,953	1.96%
1971	21,732	1,100,297	1.98%
1972	25,772	1,327,483	1.94%
1973	32,058	1,624,220	1.97%
1974	33,452	1,841,629	1.82%
1975	41,691	2,024,914	2.06%
1976	44,700	2,218,469	2.01%
1977	43,175	2,485,767	1.74%
1978	34,094	2,766,363	1.23%
1979	40,828	3,177,724	1.28%
1980	41,919	3,242,470	1.29%
1981	28,724	3,392,721	0.85%
1982	24,393	3,809,695	0.64%

Source: Minnesota Taxpayers Association, "Fiscal Facts For Minnesotans, 1983," St. Paul 1983 Table 7-5, 8-1. Additional figures provided by staff.

deduction for bequests is to organizations selected by wealthy benefactors. The same report demonstrates that in their giving, the more affluent heavily favor educational, cultural, and medical organizations and foundations established for these purposes. While the effect of the 1976 and 1981 reductions in federal taxes are not as yet known, the existence of death taxes has been a major incentive for charitable giving, particularly to the organizations described above.

MINNESOTA ESTATE TAX

Minnesota's first attempt to impose a death tax is found in chapter 37 of the laws of 1875. This statute imposed a tax payment dependent on the size of the estate for the purpose of raising revenue to support the probate courts in lieu of the previous fee system. This statute was overruled by the supreme court for violating the then constitutional requirement of equality of taxation. On November 6, 1894, an amendment to the Minnesota Constitution was adopted specifically authorizing an inheritance tax. The legislature then made four attempts to adopt an inheritance law before the 1905 statute was held constitutional.

By the latter part of the 1970s, it was clear that, for the following reasons, the much amended inheritance tax system needed complete revision:

1. The law had become extremely complex; it applied to far too many estates and its administration was lengthy and expensive. In part, the complexity was caused by the necessary coordination between the state and federal tax systems, between the probate courts and the commissioner of revenue, and between the state and the counties.
2. The rate of tax as compared to tax-haven states was so high as to encourage emigration from the state.
3. While many federal estate tax concepts had been adopted, such as the rules governing powers of appointment, employee benefits, transfers in contemplation of death, joint tenancies, life insurance and the alternate valuation date, the Minnesota tax system failed to raise its low exemption rates, and, as a result, a tax proceeding was required for the estate of approximately every third person dying in Minnesota. Furthermore, the marital deduction was not introduced until 1976. The lack of a marital deduction was especially troublesome in the case of farmers when a share of the farm passing to the surviving spouse often remained subject to tax, although that spouse had made substantial contributions to the value of the property.
4. Increases in value caused by inflation, particularly in the case of rural real estate, imposed a heavy tax burden on many estates involving farms and small businesses. This burden was compounded because those estates often lacked the liquid funds to meet the tax.
5. The tax reform act of 1976 encouraged nationwide movement toward transfer tax reform.

Spurred by farm organizations, law reform groups, and those concerned with emigration of affluent Minnesotans, the legislature in 1979 repealed the Minnesota inheritance tax and replaced it with the Minnesota estate tax. The principal features of this act were the adoption of the federal taxable estate as the basis for the computation of the Minnesota tax, the simplification of the rate-schedule and administration, the adoption of a $200,000 estate deduction and the repeal of the Minnesota gift tax.

The Minnesota estate tax vastly reduced the number of estates subject to tax,[7] greatly simplified its administration since computations were based primarily on federal concepts, and substantially reduced the disadvantages of Minnesota in comparison to other states. In particular, the amount of the pick-up tax became the maximum tax for estates of less than approximately $600,000 in size and in excess of approximately $6,000,000. The differences in the intermediate zone are illustrated in Table 3.

Following the passage of the Economic Recovery Tax Act of 1981 (ERTA), the Minnesota estate tax law was amended for closer compliance with the federal estate taxes. The amount of the estate deduction was changed to

TABLE 3

Estate Size	Tax at 1979 Rates	Pick-Up Tax	Percentage Difference
750,000	8,176	6,000	26.61%
1,000,000	15,108	10,000	33.81%
2,000,000	47,784	33,200	30.52%
3,000,000	83,116	64,400	22.52%
4,000,000	118,896	99,600	16.23%
5,000,000	154,200	138,800	9.99%
6,000,000	187,584	182,000	2.98%

Source: Heilman and Johnson *Estate Tax Impacts on Typical Estates.*

equal the equivalent federal exemption. As a result, by 1987 the maximum deduction will reach $600,000. The federal provision for unlimited marital deduction was also adopted by Minnesota.

As now constituted, the Minnesota estate tax is the greater of (a) the federal credit, or (b) an estate tax based on the federal gross estate less a number of deductions and exemptions, including non-Minnesota real estate and tangible personal property, charitable contributions, veterans and employee benefits, usual deductions such as decedent's debts and estate administration costs, the marital deduction and the estate deduction. The result is the Minnesota taxable estate. By 1987 the rates to be applied to the taxable estate will be:

10% on the first $100,000 of the taxable estate;
11% on the next $500,000 of the taxable estate; and
12% on the excess.

The underlying principles of the Minnesota estate tax can be summarized:

1. Basic conformity with federal estate tax system.
2. Treatment of the married couple as an economic unit with the value of the estate to be taxed at the death of the survivor.
3. Little progressivity in rates.
4. The elimination of all but a tiny portion of estates from imposition of the tax. In 1981, it was estimated that after 1987 only .003% of all estates will be subject to the federal estate tax. Based on the data for Minnesota estate tax returns filed in 1983, it is estimated that in 1987 only 350 returns will be filed, of which only 200 will involve taxes due. The latter figure represents approximately .006% of all persons dying in Minnesota.

Table 4 illustrates the amount of tax imposed on Minnesota estates after 1988. For purposes of this computation, the federal taxable estate and the Minnesota taxable estate (except for the necessary deductions for federal estate taxes paid and the Minnesota estate tax deductions) are assumed to be the same. Especially significant is the fact that the federal credit will be the

TABLE 4
Tax Imposed on Minnesota Estates After 1988
(dollars)

Taxable Estate	Federal Estate Tax	Minnesota Estate Tax	Federal Credit	Difference
$ 500,000	$ 0.00	$ 0.00	$ 0.00	$ 0.00
750,000	35,100.00	11,639.00	20,400.00	(8,761.00)
1,000,000	119,800.00	29,822.00	33,200.00	(3,378.00)
1,250,000	207,100.00	47,719.00	48,400.00	(681.00)
1,500,000	298,600.00	65,168.00	64,400.00	768.00
1,750,000	393,900.00	83,732.00	81,600.00	2,132.00
2,000,000	488,400.00	102,392.00	99,600.00	2,792.00
2,250,000	591,700.00	119,996.00	118,800.00	1,196.00
2,500,000	694,200.00	137,696.00	138,800.00	(1,104.00)
2,750,000	798,000.00	155,240.00	160,000.00	(4,760.00)
3,000,000	901,000.00	172,880.00	182,000.00	(9,120.00)
3,500,000	1,103,800.00	208,544.00	229,200.00	(20,656.00)
4,000,000	1,302,600.00	244,688.00	280,400.00	(35,712.00)
4,500,000	1,497,400.00	281,312.00	335,600.00	(54,288.00)
5,000,000	1,691,400.00	318,032.00	391,600.00	(73,568.00)
5,500,000	1,882,200.00	355,136.00	450,800.00	(95,664.00)
6,000,000	2,072,200.00	392,336.00	510,800.00	(118,464.00)
6,500,000	2,259,000.00	429,920.00	574,000.00	(144,080.00)
7,000,000	2,445,000.00	467,600.00	638,000.00	(170,400.00)
7,500,000	2,627,800.00	505,664.00	705,200.00	(199,536.00)
8,000,000	2,809,800.00	543,824.00	773,200.00	(229,376.00)
8,500,000	2,988,600.00	582,368.00	844,400.00	(262,032.00)
9,000,000	3,166,600.00	621,008.00	916,400.00	(295,392.00)
9,500,000	3,341,400.00	660,032.00	991,600.00	(331,568.00)
10,000,000	3,515,400.00	699,152.00	1,067,600.00	(368,448.00)

effective tax for all estates except for those ranging in size from approximately $1,250,000 to $2,500,000. Based on 1983 figures, it is assumed that there will be approximately seventy-five returns, both taxable and nontaxable, in that category.

Having accomplished all of the above changes, it has been suggested repeatedly that Minnesota "finish the job" by adopting the pure pick-up tax. This proposal was specifically included in Governor Rudy Perpich's state of the state address on January 10, 1984, and should be implemented for the following reasons:

Revenue. During its first three full years, the Minnesota estate tax did produce greater revenue than a pure pick-up tax would have produced. However, with the yearly increase in the amount of the estate deductions and the use of the unlimited marital deduction, the extent of the difference began to narrow in 1982, and the department of revenue estimated on March 21, 1984, that this difference would amount to $1,300,000 in 1985. By 1987 the difference will be insignificant. Accordingly, there will be no appreciable revenue loss from the conversion to a pure pick-up tax.

Simplification. The adoption of the pure pick-up tax will further simplify the administration and collection of the Minnesota estate tax. At present, there are still sections of the Minnesota estate tax which do not conform completely with the federal statute. For example, because of reciprocal requirements in the Minnesota tax, the Minnesota charitable exemption does not apply to certain Canadian and foreign charities which qualify for the federal charitable deduction. Similarly, a number of items are exempt from Minnesota tax, such as employee benefits which are not exempt from federal tax. However, in most cases, the particular items included or deducted in the computation of the Minnesota taxable estate will be irrelevant because the effective tax will be the amount of the federal credit for state death taxes. Therefore, requiring computation of Minnesota tax based on provisions peculiar to Minnesota law is superfluous and should be eliminated.

If, however, the current Minnesota estate tax based on the rate-schedule is retained, these differences should again be examined to see if the policy reasons which initially prompted their adoption are still valid. For example §291.065 was enacted when the federal government exempted certain qualified employee benefit plans from estate tax. This exemption has now been repealed for federal purposes, and, consistent with Minnesota's approach of treating these plans the same for Minnesota purposes as does the federal government, §291.065 should also be repealed.

Comparative Advantage. By adopting a pure pick-up tax, Minnesota will eliminate a comparative disadvantage with the sunbelt states, thereby inviting its residents to remain here, keeping their wealth in the state and allowing the State of Minnesota eventually to impose its pick-up tax on those estates and the charities of Minnesota to benefit from their bequests.

RELATED ISSUES

Residency. The imposition of the Minnesota estate tax (except for real estate and tangible property) depends upon the decedent's residence. Section 291.005(4), Minnesota estate tax, defines a Minnesota resident as an individual whose domicile at the time of his death was in Minnesota. What constitutes domicile has caused much litigation. The Minnesota Supreme Court has defined domicile as "bodily presence in a place coupled with an intent to make such place one's home." In particular, a mere declaration written or oral stating an intent to change legal residence not followed by conduct supporting such intention is insufficient to establish domicile. Thus, under current Minnesota law, determination of domicile is a question requiring a long and complicated factual analysis involving many different items. A number of these items are listed in Minnesota income tax rules and regulations, 13 MCAR §1.6001, and are described in Table 5.

TABLE 5

Domicile is based upon intent coupled with objective manifestations of such intent. The courts have established certain guidelines in determining the intent of a person. The principal factors which are considered in determining a person's domicile are as follows:

1. where he physically resides;
2. where he votes;
3. the state in which he is registered for driver's license purposes;
4. whether he purchases resident or nonresident fishing and hunting licenses;
5. where his automobile is registered;
6. the address utilized on his federal return;
7. whether he fulfills the tax obligations of a resident of the state where he is residing;
8. where his church and social affiliations are maintained;
9. the state in which homestead classification is claimed for property tax purposes; and
10. any other factors that could relate to the intent of the person.

Contributions to Minnesota charities or cultural organizations are an insignificant consideration in determining domicile.

Any of these factors standing alone does not determine where an individual is domiciled. Thus, if a person's only contact with this state is the investment of funds with the state, he would not be considered a Minnesota resident and domiciled here for tax purposes, and would not be taxable for Minnesota income tax on the interest, dividends, or capital gains resulting from this investment.

Minnesota residents emigrate for many reasons not limited to tax benefits. They change their domicile while retaining personal and financial contacts in Minnesota. Naturally, they are anxious to insure that their new residency is free of challenge and, consistent with the rules described above and, in particular, the reference in 13 MCAR §1.6001 to locations of bank accounts and other transactions with financial institutions, feel compelled to sever as many of their business relationships in Minnesota as possible. This occurs even though there may be little real danger of their being considered Minnesota residents. As a result, potential income for Minnesota residents and additional taxes from that income is lost.

Similarly, such individuals often have close ties with Minnesota charities. Although the Minnesota Department of Revenue has noted that contributions to Minnesota charities or cultural organizations are insufficient in determining domicile; nevertheless, an excess of caution may induce some individuals to restrict their contributions to or participation in some Minnesota charities.

If it were clearly established that certain connections with Minnesota, such as medical, financial, or personal services, employment, and

contributions to Minnesota charitable organizations will have no adverse weight in determining the questions of domicile, substantial economic value could be retained for the state. Accordingly, we recommend that the law be changed to state that such activities will not be considered in determining Minnesota domicile.

Possible Future Changes. If transfer taxes have failed to date, what of the future? So long as other states are competitive and Minnesotans can and do change their residences, the effectiveness of transfer taxes is limited. Any unilateral effort to increase such taxes by Minnesota will only be counterproductive. However, should the federal government, as part of its concern for federalism and the preservation of the state revenue base, substantially increase the amount of the §2011 credit, the revenue available to the states will be automatically increased. Such action is consistent with the concept that death taxes have a unique relationship to the states, because estate administration is historically within their jurisdiction. It is also consistent with the original concept of the credit which in 1926 reached 80% of the amount of the federal estate taxes.

To obtain uniformity of state taxation, the Congress could require that, as a condition of qualification for increased credit, the individual states must limit their death taxes to the increased maximum credit. This would permit each individual state to retain the form of death tax it chooses. Of course, Congress could always, if it chooses, increase the tax rates and exemptions to compensate for federal revenue loss caused by the decision to increase the credit.

Recent years have also seen a movement for the total elimination of federal death taxes. Legislation for this purpose has been introduced in every year since 1981.

In the unlikely event of total repeal or of adoption of a federal accessions tax without a credit provision, if the current Minnesota estate tax is in effect, the revenue of that tax will be (1) increased by the elimination of the federal tax deduction, and (2) reduced by the elimination of the additional tax resulting from the federal credit. If the pure pick-up tax were in effect, all death tax collections would cease. The elimination of the federal estate tax, with its charitable deduction, would also discourage giving, thereby reducing support for Minnesota's major charitable institutions. Naturally, if a number of sunbelt states elected not to adopt any death taxes, any attempt by Minnesota to do so would encourage increased emigration. The ultimate result would probably be the elimination of all death taxes, both state and federal.

Generation-skipping tax. The Tax Reform Act of 1976 adopted a federal generation-skipping tax. This tax has been vigorously attacked as being unbelievably complex and filled with unintended traps for unwary taxpayers. Everyone, including the treasury, admits that it is unworkable in its present form and that the amount of revenue to be produced is minimal.

The treasury maintains, however, that such a tax is necessary to protect the integrity of the transfer tax system and has made recommendations for substantial changes in its present provisions. It is likely that this tax will, in the next Congress, undergo major change, if not repeal. Since Minnesota's estate tax, particularly if a pure pick-up tax is adopted, is directly related to the federal estate tax, the advantage of a generation-skipping tax is automatically realized by Minnesota through the existence of the federal tax. Accordingly, there appears to be no need for Minnesota to adopt such a tax with its admitted additional disadvantages.

Gift Tax. The Minnesota gift tax, adopted in 1937, was repealed as part of the 1979 tax revision. It has long been recognized that gift taxes on the state level are much too complex to justify the small amount of revenue received. As of now, only nine states retain such a tax. Moreover, since the value of lifetime gifts are incorporated into the base on which the federal estate tax is computed, the interrelationship between the Minnesota tax and the credit incorporates those gifts into the Minnesota tax base. Moreover, the recent changes in estate and gift taxation result in a substantial reduction in the incidence of lifetime gifts, thereby making the gift tax even less significant. It is clear that Minnesota's decision to repeal the gift tax should not be altered.

ENDNOTES

1. Because of their extraordinary close interrelationship, no understanding of the Minnesota estate tax (chapter 291 of the Minnesota Statutes) is possible without a familiarity with the federal estate tax (IRC chapter 11). Necessarily, a number of references to the federal law appear in this chapter.

2. An alternative to traditional transfer taxes is the "accessions tax." Under this proposal a tax is assessed against each individual on the cumulative amount of gifts and inheritance property received by him. The accessions tax has recently received increased consideration as a means of simplifying the current transfer system and more effectively preventing the accumulation of inherited wealth. William D. Andrews, *Reporter's Study of The Accessions Tax Proposal,* American Law Institute, Federal Estate and Gift Taxation (1968).

3. Arizona, California, Colorado, Connecticut, Hawaii, Illinois, Missouri, North Dakota, Texas, Utah, Vermont, Virginia, Washington, and Wyoming. Maine has adopted a pure pick-up tax as of June 30, 1986.

4. The importance of taxing large accumulations of wealth was emphasized when the income tax was declared invalid in *Pollack v. Farmers Loan & Trust Company,* 157 U.S. 429 (1895); *rehearing,* 158 U.S. 601 (1895), as a direct tax forbidden by the Federal Constitution. *Knowlton v. Moore,* 178 U.S. 41 (1900), which sustained the constitutionality of the federal inheritance tax of 1898, held, consistent with its prior decisions, that a death tax is not a direct tax on property but on the right to dispose of that property. The adoption of progressive tax rates in inheritance taxation was

sustained as being constitutional in *Magoun v. Illinois Trust & Savings Bank,* 170 U.S. 283 (1898).

5. For example, during the year 1973, only 174,899 estate tax returns were filed in the entire United States reporting total gross estates of $38,868,676. Of these 120,701 were taxable returns, reporting gross estates of $33,293,565, yielding a total estate tax of $4,153,250. U.S. Department of the Treasury, Internal Revenue Service, *Statistics of Income, 1972,* Estate Tax Returns. In Minnesota in 1982, 32,976 persons died. During 1983 a total of 2,079 Minnesota estate tax returns were filed, reporting total Minnesota gross estates of $983,417,278, producing a Minnesota estate tax of $10,834,133. State of Minnesota, Department of Revenue, *Minnesota Estate Tax Returns Filed During 1983,* Bulletin No. 3.

6. See *Giving in America,* Report of the Commission on Private Philanthropy and Public Needs, 1975.

7. In 1981, the total number of estate tax returns filed was 2,756, of which 1,223 reported tax due; in 1982, 2,637 returns were filed, of which 1,218 reported tax due; and in 1983, 2,079 returns were filed, of which 886 reported tax due. See State of Minnesota, Department of Revenue, *Minnesota Estate Tax Returns Filed for 1981.*

Part III

General and Selective Sales Taxation

8

Retail Sales and Use Taxation in Minnesota

John L. Mikesell

SCOPE OF THE MINNESOTA SALES AND USE TAX

Minnesota enacted its sales and use tax in 1967, one of the last three states adopting such a tax. While revenue in the first year of operation was substantial, as it continues to be, Minnesota did not then and does not now rely on the sales tax for revenue to the extent common in most states. The tax applies to a narrow subset of consumer purchases and applies broadly to business purchases, especially of investment goods. Because of that approach, revised only in part by 1984 legislation, the Minnesota sales tax is not simply a tax on consumption. Paradoxically, it is both much less and much more than that because many individual consumption expenditures are exempt and many producer goods are taxed. To fit the tax into the traditional pattern would require reduced exemptions of consumer purchases and increased exemptions of business purchases. Some of those revisions would make sense, as later sections will argue.

THE PRESENT STRUCTURE

The tax, a privilege tax of 6% of the taxable base, applies to gross receipts from the retail sale, use, storage, or consumption in Minnesota of tangible personal property. Taxable sale includes, beyond ordinary commodity transactions, the transfer of information and directions via computer software; renting, producing, fabricating, printing, or processing tangible personal property; preparing or serving meals and drinks; admissions to amusements or athletic events; furnishing transient lodgings and related services by hotels, motels, rooming houses, etc. other than for a continuous period of thirty days or more; and furnishing electricity, gas, water or steam, local exchange telephone service and intrastate toll service, and cable or similar television services. The compensating use tax applies only to transactions upon which the sales tax has not been paid.

Exemptions include food products; prescription drugs, medicine, prescription glasses, prosthetic devices, and nonprescription products for

preservation of health; constitutionally-exempt sales; gasoline and petroleum products otherwise taxed; clothing and wearing apparel; materials used or consumed in agricultural or industrial production of personal property to be sold at retail; isolated or occasional sales; motor vehicles taxable under the motor vehicle excise tax; water and sewer service for residential use; and residential heating fuels (gas and electricity are exempt during the months of November through April). Sales of commodities for resale are also exempt. The law also exempts sales to charitable, religious, or educational institutions if the property purchased is used in performing charitable, religious, or educational functions, sales to any senior citizen's group, or associations of groups that limit membership to persons age fifty-five or older, when organized for nonprofit purposes, and property sold to a tax-exempt organization of military service veterans for charitable, civic, educational, or nonprofit use. Further, municipalities may request an exemption for purchases of construction materials or equipment for use in an enterprise zone. The tax does not exempt farm machinery or capital equipment. It does, however, apply a reduced rate (4%) to each, the latter only by refund and only if the equipment is for new plant or plant expansion, and only since 1984 legislation.[1] Trade or business property transported by the purchaser out of Minnesota is subject to special tax treatment.

As is characteristic of such taxes, the Minnesota sales and use tax base is highly concentrated in the largest vendors. In 1982, 13% of returns (the largest) contained 80% of tax liability. Ten years before, the largest 13.7% contained 81%.[2] Such concentration can ease an administration aimed at protection of the revenue base, because enforcement efforts applied to a relatively small portion of the return population can cover such a large portion of the tax. The objective of sales tax administration is, however, voluntary compliance by all vendors, so such concentration would be most valuable in an especially adverse compliance environment.

There is a similar concentration of the base in certain primary industry group classes. Table 1, the distribution by the primary standard industrial classification of reporting firms of gross sales, use tax purchases, taxable base, and reporting units for 1975 and 1982, shows almost half of the reports (48% in 1982) as well as almost half of the combined sales and use tax base (47% in 1982) from retailing. A similarly large percentage of use tax purchases alone (47% in 1982) comes from manufacturing.

Around one quarter of all reports and 10% of the base comes from service firms (reflecting taxable commodity sales by them), despite the absence of substantial tax coverage of services. Gross sales—taxable and nontaxable transactions—are much less concentrated, with shares over 20% each coming from manufacturing, retailing, and wholesaling. Gross sales data are, however, often less reliably reported, so should be interpreted only with caution. Some discernable trends since 1971 include the increased

TABLE 1
Distribution of Minnesota Sales and Use Tax by Industry Group, Selected Years, 1975-1982

Industry	Gross Sales		Use Tax Purchases		Taxable Base		Reports	
	1975	1982	1975	1982	1975	1982	1975	1982
Agriculture	0.37%	0.40%	0.11%	0.35%	0.38%	0.41%	1.54%	1.43%
Mining	0.13	0.14	6.30	6.02	0.49	0.54	0.20	0.12
Construction	1.45	1.57	15.97	7.93	2.26	2.23	2.97	3.00
Manufacturing	26.89	24.45	37.35	46.65	10.57	9.34	6.98	5.63
Transportation	0.77	0.83	4.90	5.50	0.56	0.65	0.70	1.51
Communications & Utilities	4.12	5.16	8.29	4.22	9.51	10.34	0.74	0.86
Wholesaling	25.00	22.45	6.05	6.31	15.11	11.70	8.61	6.18
Retailing	32.74	32.78	11.66	10.78	45.60	46.60	45.76	47.94
Finance	0.30	0.56	1.90	2.30	0.60	1.03	1.18	0.95
Services	5.18	5.97	5.02	3.78	9.93	10.79	26.51	25.94
Public Administration	1.06	1.25	0.30	0.26	2.95	2.25	1.04	0.74
Not Reported	2.00	4.43	2.16	5.90	2.05	4.12	3.77	5.69
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%

Source: Commissioner of Revenue, *Minnesota Sales and Use Tax Annual Report,* various years.

concentration of use tax purchases in manufacturing, the decreased use tax purchases in retailing, and the decline in the concentration of the total taxable base in retailing. Use tax purchases grew from 4.7% of the total taxable base in 1971 to 6.9% in 1982. Other elements of the distribution remained generally constant.

RELIANCE AND EFFORT IN MINNESOTA

State governments raise more revenue from their general sales and gross receipts taxes than from any other tax, as has been the case since the decline of state property taxes. For the forty-five states plus the District of Columbia levying general sales taxes, the source yielded in total 32% of their state tax revenue. For FY 1983, this was the predominant tax source in twenty-five of the fifty states and in twenty of the thirty-nine states with both general sales and individual income taxes. Sales tax reliance has, however, declined somewhat because of increased importance of state individual income taxes: in FY 1980, for instance, the general sales tax was the predominant tax source in thirty-three of the fifty states and in twenty-seven of the thirty-nine states with both general sales and individual income taxes. The facts that Minnesota (1) adopted an individual income tax prior to its adoption of a general sales tax and (2) has always raised more revenue

from the individual income tax (more than double the sales tax yield for the past ten years) represent exceptions to the national pattern.

Table 2 charts statutory sales tax rates from 1934, a year in which only ten states had sales taxes and the mean statutory rate was 2%, to 1984. The number of adopting states grew to twenty-three (plus the District of Columbia) by the end of the 1930s, thirty-four by 1955, thirty-seven by 1965, and forty-six by 1970, the most recent year of change. Only Alaska, Delaware, Montana, New Hampshire, and Oregon have no general sales tax. Minnesota (1967), Nebraska (1967), and Vermont (1969) thus have the newest such taxes in the nation. The mean statutory rate—currently around 4.5%—has increased gradually through the years, although its present level is something more than half a percentage point higher than at the beginning of the 1980s. The table indicates seven states levying a sales tax at or higher than the Minnesota sales tax rate (currently 6%). The rate increases in 1981 (4% to 5%) and in 1982 (5% to 6%) dramatically moved Minnesota above the typical state, even though the increases did not substantially change reliance on the tax in the state.

The table excludes the gross income or business and occupation taxes that Washington, West Virginia, and Indiana levy. These taxes typically apply

TABLE 2
History of Statutory Sales Tax Rates
January 1

Year	Number of States* with General Sales Taxes	Mean Statutory Rate	Number of States* at or above Minnesota	Year	Number of States* with General Sales Taxes	Mean Statutory Rate	Number of States* at or above Minnesota
1934	10	2.0	X	1971	46	3.64	42
1938	23	2.28	X	1972	46	3.73	24
1950	28	2.23	X	1973	46	3.79	25
1955	34	2.32	X	1974	46	3.80	25
1960	34	2.65	X	1975	46	3.83	27
1961	35	2.96	X	1976	46	3.90	28
1962	36	2.76	X	1977	46	3.93	28
1963	36	2.78	X	1978	46	3.96	28
1964	37	2.94	X	1979	46	3.95	27
1965	37	2.97	X	1980	46	3.95	27
1966	40	3.03	X	1981	46	4.02	27
1967	43	3.01	X	1982	46	4.14	14
1968	45	3.22	37	1983	46	4.31	5
1969	45	3.35	39	1984	46	4.53	7
1970	46	3.54	40				

*Including District of Columbia.

X No Minnesota sales tax.

Sources: John F. Due and John L. Mikesell, *Sales Taxation, State and Local Structure and Administration* (Baltimore: Johns Hopkins University Press, 1983); pp. 42–45 and Commerce Clearing House, *State Tax Review.*

several fractional tax rates to various stages of the production process, not just the final sale. The general trend appears to be toward elimination of these taxes. Low gross receipt taxes were repealed in Alaska (1979) and New Jersey (1977) and the gross income tax in Indiana is being gradually eliminated. Washington and West Virginia continue using their business and occupation taxes, although credits and rate reductions have reduced its significance in the latter to some degree.

YIELD

The history of the Minnesota sales and use tax, shown in Table 3, reflects substantial growth, from $113 million in FY 1968 to almost $1 billion ($992 million) in FY 1983. That growth has somewhat exceeded that experienced by other tax sources, as reliance on the sales tax has increased from less than

TABLE 3
Sales Tax Reliance and Effort
in Minnesota, FY 1968–83

Fiscal Year	Collections (thousands)	Reliance on Sales Tax	Sales Tax Effort	Sales Tax per capita	Sales Tax per capita (deflated to 1972 dollars)	Statutory Sales Tax Rate Changes
1968	$113,078	14.19%	1.00%	$30.90	$36.52	
1969	173,961	19.40	1.41	46.98	53.08	
1970	195,620	19.39	1.43	52.05	56.27	
1971	212,721	19.65	1.43	55.75	57.71	
1972	270,128	20.19	1.71	70.12	70.12	3% to 4%, Nov. 1, 1972
1973	299,326	18.43	1.75	77.41	73.37	
1974	348,141	18.83	1.71	89.61	76.66	
1975	348,391	18.95	1.78	98.61	78.01	
1976	430,842	19.14	1.87	109.74	82.64	
1977	468,543	18.53	1.87	118.41	84.34	
1978	593,387	19.05	1.89	135.52	90.35	
1979	610,473	18.82	1.91	152.47	93.83	
1980	652,442	19.79	1.82	161.57	90.26	
1981	690,765	20.05	1.75	169.18	87.16	
1982	876,078	22.66	1.99	213.00	103.75	4% to 5%, July 1, 1981
1983	992,259	22.97	2.15	240.08	112.50	5% to 6%, January 1, 1983

Sources: Office of Legislative Auditor, *State and Local Government Finances in Minnesota: A Review of Trends in Revenues and Expenditures, 1957-1982* (November 1983); U.S. Bureau of Census, *State Tax Collections 1983* (GF83, No. 1); *Survey of Current Business,* July and August 1982, July and August 1983; and U.S. Department of Commerce, *Business Statistics,* 1979 edition. Deflation by implicit deflator for personal consumption expenditure.

20% of tax revenue in the early years to almost 23% now. Greater sales tax effort accompanies that increase, as sales tax collection as a percentage of state personal income, sales tax per capita, and sales tax per capita adjusted for inflation are all higher. Regardless of the view taken, the significance of the sales tax to Minnesota state government, to the state economy, and to individuals in the state has increased since the enactment of the tax. Further insights emerge from comparisons across states, however.

Sales and use tax yields by state, as presented by the U.S. bureau of census, are not entirely satisfactory for interstate comparisons because census reporting does not employ a consistent sales tax concept. For instance, some states exclude transactions covered by most states, but then apply near-equivalent selective excise taxes (as with motor vehicles in Minnesota). Other states add severance or other tax features to their sales tax structure. Thus, adjustments are made to data for several states before constructing cross-state comparisons:[3]

1. Business and occupation tax (Washington, West Virginia) and gross income tax (Indiana) collections are subtracted. These taxes are general business levies, not general sales taxes as found in other states.
2. Nonsales tax or special sales tax elements are subtracted when reported as part of the general sales tax. These include the tax on pineapple canning, sugar cane processing, and insurance soliciting in Hawaii and severance tax features in Arizona. The wholesale taxes in several states are, however, not subtracted because they are parts of the basic sales tax structure.
3. Sales tax equivalent taxes on lodging, meals, motor vehicles, etc. are added to the basic sales tax where they are otherwise excluded.
4. Fees received by states for collection of local sales taxes are subtracted, for states reporting this revenue as part of the sales tax.

The adjusted sales tax revenue data indicate the extent to which each state raises revenue from the general sales tax base. Table 4 presents both reported and adjusted sales tax yields for fiscal years 1970, 1980, and 1983. These data are the basis for analysis in the next sections.

RELIANCE

The data show that average state reliance on the general sales or gross receipts equals around one-third of state tax collections for both sales tax concepts. There are, however, substantial differences across the states. FY 1983 state reliance ranged from 58.6% of tax collections generated from reported sales tax revenue in Washington state to 15.6% generated in Oklahoma; thirteen states raised more than 40% of tax revenue from the tax (eleven states, on an adjusted basis). The Minnesota sales tax produced only about one-fourth of its tax revenue in 1983, compared to about one-fifth of tax revenue in 1970. This lower reliance is characteristic of the region: all

TABLE 4
Reported and Adjusted Sales and Use Tax Revenue by State
Fiscal Years 1970, 1980, and 1983

State	Reported Sales Tax Revenue (Million $)			Adjusted Sales Tax Revenue (Million $)		
	1970	1980	1983	1970	1980	1983
Alabama	212.4	577.1	659.7	215.0	605.8	695.1
Arizona	173.7	814.6	845.3	165.2	814.6	800.3
Arkansas	108.7	371.8	437.5	108.7	371.8	437.5
California	1756.9	6695.2	7766.6	1752.4	6679.1	7744.7
Colorado	137.8	537.4	622.5	137.8	537.4	622.5
Connecticut	258.7	803.0	1104.1	258.7	803.0	1104.1
Florida	658.2	2252.1	3334.2	658.2	2252.1	3334.2
Georgia	335.8	932.0	1173.0	335.8	929.7	1169.8
Hawaii	162.7	498.3	601.1	161.2	498.3	598.0
Idaho	41.7	137.1	165.4	41.7	137.1	165.4
Illinois	1008.2	2379.1	2394.1	1015.2	2396.0	2416.3
Indiana	380.7	1331.6	1521.8	214.8	968.6	1111.9
Iowa	223.5	502.1	571.1	223.5	502.1	571.1
Kansas	145.4	418.4	498.5	145.4	418.4	498.5
Kentucky	267.7	607.6	700.4	302.8	704.7	810.4
Louisiana	166.5	739.3	838.5	166.5	750.8	855.7
Maine	83.2	214.1	270.3	83.2	214.1	270.3
Maryland	236.8	712.8	865.1	279.3	847.0	1041.5
Massachusetts	168.4	746.0	1051.7	194.7	763.8	1079.2
Michigan	828.5	1706.7	1969.4	828.5	1706.7	1969.4
MINNESOTA	195.6	650.1	992.3	195.6	738.8	1116.1
Mississippi	227.9	671.1	761.4	227.9	671.1	761.4
Missouri	344.8	792.3	984.9	334.8	792.3	984.9
Nebraska	74.9	277.0	356.6	74.9	275.7	355.0
Nevada	54.7	182.9	368.3	54.7	182.6	368.3
New Jersey	355.6	1180.3	1660.3	355.6	1180.3	1660.3
New Mexico	85.7	402.9	476.7	91.0	418.5	498.3
New York	1012.0	2844.9	3531.9	1012.0	2844.9	3531.9
North Carolina	264.5	693.6	825.7	264.5	693.6	825.7
North Dakota	42.9	124.0	146.4	42.9	124.0	146.4
Ohio	658.8	1445.8	2004.6	658.8	1445.8	2004.6
Oklahoma	93.8	317.6	409.1	110.6	370.8	473.4
Pennsylvania	948.4	1995.8	2365.1	958.8	1995.8	2365.1
Rhode Island	78.3	169.1	212.4	78.3	169.1	212.4
South Carolina	192.6	576.5	691.6	192.6	576.5	698.0
South Dakota	47.7	147.2	173.5	47.7	159.6	186.6
Tennessee	241.2	982.3	1177.2	239.2	982.3	1177.2
Texas	502.6	2536.8	3320.0	606.6	3004.2	3937.8
Utah	91.0	324.7	391.3	91.0	324.7	391.3
Vermont	17.1	40.8	66.7	21.6	65.1	101.7
Virginia	210.0	595.1	721.6	238.2	666.8	820.1
Washington	546.2	1625.0	2454.0	435.0	1222.6	1884.7
West Virginia	181.7	598.5	745.4	96.2	217.7	306.0
Wisconsin	272.6	853.9	1209.4	272.6	853.9	1209.4
Wyoming	31.0	163.1	190.0	31.0	163.1	190.0

Sources: U.S. Bureau of Census, *State Tax Collections in 1983* (GF 83, No. 1) and earlier volumes, as well as information provided by various states.

adjacent states except South Dakota (which has no individual income tax) raise less than 30% of tax revenue from the general sales tax. The states relying most heavily on the standard general sales tax—South Dakota (57%), Florida (54%), and Tennessee (52%)—all have no individual income tax. The next heaviest user, Hawaii (52%), levies an extremely broad-based, multi-stage tax with few exemptions. In spite of the high statutory rate used by Minnesota, sales tax reliance for state revenue is low.

EFFORT

Tables 5 and 6 compare sales tax effort according to two alternative indices. Table 6 examines adjusted sales tax revenue per capita with and without adjustment for differences in state statutory tax rate. As would be expected, both indices have increased considerably across the fiscal years. On either basis, Hawaii's per capita sales tax revenue is highest in the nation, reflecting the broad tax base, high personal income in the state, and the ability of the Hawaiian economy to capture revenue from tourists. North Carolina and Oklahoma are lowest without rate adjustment; West Virginia and Pennsylvania are lowest after adjustment for rates. Low per capita revenue results from combinations of low income (West Virginia, North Carolina), low statutory rates (Oklahoma), and many exemptions (Pennsylvania). The Minnesota per capita effort is above average without rate adjustment (the 6% rate is one of the highest), but is below average after adjustment (the tax has many exemptions).

Table 6 reports sales and use tax revenue as a percentage of state personal income. This index extracts the influence of income levels on the tax base to gauge the relative coverage of the tax base, after adjustment for rate differences. Without the rate adjustment, the index shows the total sales tax effort made on the state income base. National summary statistics show an increase in total effort from 1970 to 1980, with some decline to 1983 (from 2.2% to 2.5% to 2.3% of personal income in each of the years). The effort increase has been continuous in Minnesota; effort in Minnesota (1983) exceeds the national average, compared to lower-than-average effort in prior years. Highest effort states are Hawaii and New Mexico; lowest effort, Oklahoma and Virginia.

Dividing these indices by the applicable tax rate leaves sales tax base coverage as the primary influence on the measure. On a national basis, the sales tax is narrower in 1983 (0.58) than in 1970 or 1980, a reflection of the overall trend toward more sales tax exemptions. Minnesota remained below the national average throughout the period. The Hawaiian index remains highest (1.29%) because of the breadth of its tax base; Pennsylvania and Massachusetts (0.30% and 0.31%, respectively) are lowest as a result of many commodity exemptions. The lowest five states—Pennsylvania, Massachusetts, New Jersey, Connecticut, and Rhode Island—all have

TABLE 5
Sales Tax Yield Per Capita: Fiscal Years 1970, 1980, and 1983

State	Yield Per Capita ($)			Yield Per Capita Per 1% Tax Rate ($)		
	1970	1980	1983	1970	1980	1983
Alabama	$63.73	$155.72	$176.78	$15.93	38.93	$44.20
Arizona	94.30	299.70	272.68	31.43	74.93	68.17
Arkansas	57.64	162.72	188.73	19.21	54.24	62.91
California	88.88	282.19	311.20	22.22	59.41	65.51
Colorado	63.25	186.01	201.02	21.08	62.00	66.12
Connecticut	86.57	258.35	353.55	17.31	36.91	47.14
Florida	98.66	231.22	315.08	24.67	57.81	63.02
Georgia	74.76	170.15	206.65	24.92	56.72	68.88
Hawaii	215.32	516.37	617.73	53.83	129.09	154.43
Idaho	59.69	145.25	168.26	19.90	48.42	56.09
Illinois	92.48	209.85	211.03	23.12	52.46	52.76
Indiana	41.75	176.43	203.16	20.88	44.11	49.31
Iowa	80.10	172.35	196.72	26.70	57.45	60.53
Kansas	65.42	177.06	207.97	21.81	59.02	69.32
Kentucky	95.79	192.49	220.26	19.16	38.50	44.05
Louisiana	46.71	178.58	194.16	23.35	59.53	64.72
Maine	85.17	190.32	237.95	17.03	38.06	47.59
Maryland	72.09	200.90	244.83	18.02	40.18	48.97
Massachusetts	34.58	133.14	187.63	11.53	26.63	37.53
Michigan	94.38	184.35	217.42	23.60	46.09	54.35
MINNESOTA	51.92	181.21	269.39	17.31	45.30	49.70
Mississippi	105.58	266.20	296.84	21.12	53.24	59.37
Missouri	74.37	161.13	198.84	24.79	51.56	56.17
Nebraska	51.01	175.62	223.99	20.40	58.54	64.00
Nevada	113.53	228.59	419.04	37.84	76.20	72.88
New Jersey	50.16	162.48	223.04	10.03	32.50	41.15
New Mexico	91.18	321.94	360.54	22.79	85.85	103.01
New York	56.29	162.04	200.23	18.76	40.51	50.06
North Carolina	53.30	118.07	138.17	17.77	39.36	46.06
North Dakota	70.30	189.91	218.80	17.58	63.30	69.02
Ohio	62.49	133.91	186.77	15.62	33.48	37.35
Oklahoma	44.27	122.59	145.05	22.13	61.29	72.53
Pennsylvania	82.16	168.18	199.03	13.69	28.03	33.17
Rhode Island	84.90	178.52	223.63	16.98	29.75	37.27
South Carolina	76.32	184.83	218.19	19.08	46.21	54.55
South Dakota	72.18	231.37	269.27	18.05	56.43	67.32
Tennessee	62.31	213.95	252.46	20.77	47.54	56.10
Texas	55.20	211.14	252.80	16.98	52.79	63.20
Utah	85.78	222.28	242.77	21.44	55.57	60.69
Vermont	49.34	127.46	193.69	16.45	42.49	48.42
Virginia	52.44	124.73	152.24	17.48	41.58	50.75
Washington	129.74	296.02	444.28	28.83	65.78	78.22
West Virginia	56.51	111.62	155.79	18.84	37.21	31.16
Wisconsin	62.43	181.48	254.62	15.61	45.37	50.92
Wyoming	94.24	346.36	372.64	31.41	115.45	124.21
Average	75.54	200.99	245.44	21.28	53.02	60.06

Sources: Same as Table 4.

TABLE 6
Sales Tax Effort: Revenue as Percent of State Personal Income, Fiscal Years 1970, 1980, and 1983

State	Revenue as Percent of Personal Income			Revenue as Percent of Personal Income per 1% Tax Rate		
	1970	1980	1983	1970	1980	1983
Alabama	2.36%	2.31%	2.04%	0.59%	0.58%	0.51%
Arizona	2.89	3.95	2.75	0.96	0.99	0.69
Arkansas	2.19	2.46	2.25	0.73	0.82	0.75
California	2.10	2.93	2.49	0.53	0.62	0.52
Colorado	1.82	2.13	1.66	0.61	0.71	0.55
Connecticut	1.88	2.55	2.55	0.38	0.36	0.34
Florida	2.94	2.97	2.92	0.73	0.74	0.58
Georgia	2.36	2.38	2.16	0.79	0.79	0.72
Hawaii	5.27	5.96	5.16	1.32	1.49	1.29
Idaho	1.97	2.00	1.90	0.66	0.67	0.63
Illinois	2.14	2.18	1.74	0.54	0.54	0.44
Indiana	1.14	2.09	2.03	0.57	0.52	0.49
Iowa	2.26	1.97	1.82	0.75	0.66	0.56
Kansas	1.80	1.91	1.76	0.60	0.64	0.59
Kentucky	3.29	2.70	2.47	0.66	0.54	0.49
Lousiana	1.60	2.46	1.92	0.80	0.82	0.64
Maine	2.79	2.77	2.64	0.56	0.55	0.53
Maryland	1.82	2.19	2.00	0.46	0.44	0.40
Massachusetts	0.86	1.49	1.54	0.29	0.30	0.31
Michigan	2.37	1.97	1.97	0.59	0.49	0.49
MINNESOTA	1.45	2.05	2.42	0.48	0.51	0.45
Mississippi	4.35	4.47	3.84	0.87	0.89	0.77
Missouri	2.14	1.97	1.96	0.71	0.63	0.55
Nebraska	1.43	2.02	2.10	0.57	0.67	0.60
Nevada	2.69	2.47	3.49	0.90	0.82	0.61
New Jersey	1.17	1.65	1.71	0.23	0.33	0.31
New Mexico	3.16	4.46	3.99	0.79	1.19	1.14
New York	1.24	1.77	1.62	0.41	0.44	0.41
North Carolina	1.76	1.68	1.52	0.59	0.56	0.51
North Dakota	2.32	2.29	2.01	0.58	0.76	0.63
Ohio	1.64	1.55	1.74	0.41	0.39	0.35
Oklahoma	1.41	1.51	1.31	0.71	0.75	0.66
Pennsylvania	2.22	1.99	1.82	0.37	0.33	0.30
Rhode Island	2.23	2.14	2.07	0.45	0.36	0.34
South Carolina	2.74	2.79	2.56	0.69	0.70	0.64
South Dakota	2.39	3.11	2.80	0.60	0.76	0.70
Tennessee	2.14	3.05	2.84	0.71	0.68	0.63
Texas	1.66	2.55	2.26	0.51	0.64	0.56
Utah	2.90	3.30	2.84	0.73	0.83	0.71
Vermont	1.51	1.80	2.07	0.50	0.60	0.52
Virginia	1.54	1.49	1.35	0.51	0.50	0.45
Washington	3.32	3.26	3.84	0.74	0.72	0.68
West Virginia	2.03	1.57	1.79	0.68	0.52	0.36
Wisconsin	1.77	2.13	2.36	0.44	0.53	0.47
Wyoming	2.89	3.65	3.06	0.96	1.22	1.02
Average	2.22	2.49	2.34	0.63	0.66	0.58

Sources: Same as Table 4.

extremely narrow sales tax bases. Minnesota, at 0.45%, is well below average because of consumption exemptions (food, clothing, drugs), but the lack of several manufacturing exemptions keep it well above the bottom group.

Consumption commodity exemptions are something of a revenue luxury available to the more affluent states: only three of the ten lowest per-capita-income states completely exempt food for home consumption, compared with eight of the ten highest per-capita-income states. The low-income states generally cannot afford the revenue loss associated with the exemption, even though their citizenry may be particularly in need of such relief. Minnesota, comfortably above the per-capita-income median, opts for considerable revenue loss through its extensive consumer exemptions.

On the basis of this evidence, the following conclusions are appropriate:

1. Minnesota does not rely as heavily on the general sales tax as does the typical state using the tax.
2. Minnesota makes greater sales tax effort than does the typical state: 2.42% of personal income, versus 2.34% for the average state. This high effort results only because of the high statutory rate applicable in the state; the rate-adjusted yield of the tax as a percentage of personal income is relatively low. The narrow base, in an important sense, produces the high statutory tax rate.

INTERSTATE COMPARISONS OF CONSUMER COMPONENTS OF THE BASE

State sales taxes typically apply to retail transactions, that is, to sales to the final consumer. Since Mississippi eliminated its wholesale tax earlier in 1984, the Hawaiian general excise tax is the only state sales tax not exempting items for resale. Coverage of consumption expenditures by individuals is far from complete, in Minnesota as well as in other states. Tables providing detailed comparisons across states for several major expenditure categories are available from the commission. Some patterns are important to note.

1. Food Exemption. Twenty-eight states and the District of Columbia exempt purchases of food for at-home consumption. Although such an exemption complicates both compliance with and administration of the tax, the exemption does (as will be demonstrated later) relieve a portion of the regressivity of the tax. An alternative approach, the refund of sales tax paid through a credit/rebate structure, although regarded as a cheaper, more effective approach to reducing regressivity is used in only eight states. While five states and the District of Columbia (Colorado, Indiana, Iowa, Michigan, and Nebraska) have abandoned credit systems for food exemption, only North Carolina has permanently ended a food exemption.

2. Prescription Medicine. Only Georgia, Hawaii, and New Mexico do not exempt prescription medicine, and Georgia has legislated exemption to begin 1985. Nine states plus the District of Columbia (including Minnesota) exempt nonprescription medicine as well. The desire to avoid extra burden on the ill has substantial merit, especially as the exemption reduces regressivity. When the exemption is limited to prescriptions, neither compliance nor administration are particularly troublesome; difficult interpretation problems can complicate extensions to other medicines.

3. Clothing. Only five states exempt clothing (plus Connecticut, which exempts all clothing at less than $75). Three—Massachusetts, Minnesota, and New Jersey—were among the six most recent states to adopt sales taxes; few states have seriously considered copying the exemption.

4. Items Subject to Excise. Many states exempt items subject to selective excises (especially motor fuel, cigarettes, and alcohol beverage). This treatment has no logical position; if an item appropriately bears the extraordinary tax burden of the excise, there is no reason to relieve that burden in the general tax structure. Furthermore, the special exemption complicates compliance and administration. Although states almost always extend sales tax coverage to alcohol beverages, they do not regularly tax cigarettes and gasoline. Only ten states tax gasoline, sometimes erecting special bracket structures to exclude the selective excise from the tax base, and thirty-six tax cigarettes, again with some states excluding tax elements from the base. Minnesota exempts the former and taxes the latter.

5. Residential Fuel and Electricity. Somewhat fewer than half the states tax residential fuels and electricity. Some exemptions are based on time of year as in Minnesota and Wisconsin—and Maine exempts only a portion of electricity purchased. Other states (Tennessee and Utah) apply lower rates to the purchases.

6. Consumer Services. Few states have extended their sales taxes broadly to services. Only three have taxed all services except those rendered to employers and those enumerated as exempt. Three other states tax services broadly, but the remaining states apply the tax only to services specifically enumerated in the law. Thus, their taxes become general sales taxes on retail commodity purchases and selective sales taxes on retail service transactions. Twenty-two states do not tax services beyond utilities, admissions, and transient lodging, and not all tax even those.

From this review, it is clear that state sales tax coverage for individual consumers is substantially narrower than total consumption expenditure. Minnesota has one of the narrower bases: it exempts food for home consumption, prescription and nonprescription medicines, clothing, motor fuel, and residential heating fuel, and taxes virtually no consumer services.

MANUFACTURING EXEMPTIONS AND THE BUSINESS IMPACT

Sales tax laws consider many purchases made by a business firm to be final consumption and, thus, tax them. Such taxes applied to production inputs can distort business decisions, can cause pyramiding of sales tax burden, and can discourage capital investment and asset replacement, but no state has sacrificed the revenue associated with full exemption of producer goods. The tax paid on such business purchases is not obvious to individuals (it gets imbedded in operating costs and is hidden in pretax prices) and allows higher revenue from any statutory rate. While the tax may be hidden to individual consumers, it is obvious to businesses; it is the resulting distortions and disincentives that have induced many states since 1970 to widen business-purchase exemptions.

Several categories of business purchases may be subject to tax, including items for resale, materials used in producing the final product, commodities consumed in the production process, fuels and electric power used in production, industrial equipment and machinery, agricultural machinery, and computer software (a purchase only of recent concern). Since the termination of the wholesale level tax in Mississippi in 1984, only Hawaii applies its tax to the first two categories.[4] There is, however, substantial variation among states for the other categories.

1. Consumables. Items directly used in production, but not becoming physical ingredients of the product (processing chemicals, anodes, catalysts, etc.), are taxed at least in part in twenty-two states. Minnesota generally exempts such purchases.

2. Industrial Fuels and Electricity. Taxability of industrial fuels usually follows the treatment of consumables, and treatment of industrial electricity typically follows that of fuel. There are exceptions to both (e.g., Wisconsin and Nebraska), but they are few. Electricity for general use (not production) typically is taxed, unless electricity is generally exempt (North Dakota). Fuel exemptions often are limited to use in production or manufacturing: Indiana, Iowa, Maryland, Minnesota, Ohio, Pennsylvania, and Rhode Island follow that practice.

3. Industrial Machinery. Early sales taxes applied to industrial machinery even though that machinery was used to produce goods subject to the tax. The trend has been toward exemption of such purchases. Thus, twenty-two states fully taxed these purchases in 1971, but only twelve did so by mid-1984. States not fully taxing industrial machinery respond in three ways: application of a reduced rate, exemption limited to new and expanded industry, and general exemption (twenty-two states fully exempt). Minnesota grants a lower rate (by refund) to new or expanded industry only. All states fully taxing industrial machinery are west of the Mississippi River.[5] Full exemption had been associated with the industrial states from the midwest to the Atlantic; both new and expanded limitations and reduced rates had been

associated with the south. In recent years, that geographic pattern has broken down.

4. Agricultural Machinery. Agricultural machinery represents another producer-good initially taxed by virtually all states, but now subject to widespread exemption or taxation at reduced rates. Only eleven states do not provide some exemption or rate reduction for such purchases. Minnesota taxes the purchases at a reduced rate.

5. Computer Software. A final class of business purchase to consider is computer software, the instructions that cause electronic data processing equipment to perform desired tasks. While the computer equipment itself would ordinarily be subject to whatever rules apply to the taxation of equipment and machinery, different rules often apply to the frequently costly associated software. Some states have enacted laws explicitly taxing software (including Minnesota). Other states exempt all software. A final group determines taxability on the basis of whether the software is generally available for use without modification ("canned") or not. If the former, the software is regarded as being an exempt service (the tax covering only purchases of tangible property); if the latter, the software is taxable tangible property. The distinction is fine and potentially troublesome.

STRUCTURAL PECULIARITIES

The previous interstate comparisons of state sales tax structure make clear the peculiarities or special characteristics of the Minnesota tax. These features merit highlighting for attention through the remainder of this study:

1. The exemption of clothing purchases. Minnesota is one of only six states which exempt clothing from the sales tax.
2. The exemption of nonprescription medicine purchases. While virtually all states exempt prescription medicine and most exempt insulin, prosthetic devices, and the like, only nine plus the District of Columbia extend the exemption to nonprescription medicines as well.
3. The selective exemption of residential electricity and natural gas, and electricity purchased by residential users. Minnesota adds the nearly-unique (Wisconsin uses a similar concept) approach of exempting natural gas or electricity billed for November through April when that is the primary source of residential heat. Other states avoid this compliance and administration complexity.
4. The exemption and selective excise taxation of motor vehicles. Minnesota is one of handful of states taxing motor vehicle purchases outside its sales tax.
5. The narrow exemption of business-purchases of equipment and machinery. States now typically provide relief from sales tax on purchases

of industrial machinery by full exemption of all such purchases, by taxing at a reduced rate, or by providing exemption to such purchases by new or expanding industry (only twelve states provide no such relief). Minnesota now provides relief, but it is the only state providing a reduced rate only to new or expanding industry.

6. Business purchase for out-of-state use. The special (and unique) treatment of these purchases will be considered in a later section.
7. High statutory rate. Minnesota has one of the seven highest sales tax rates, despite the low-revenue reliance on the source.

DISTRIBUTION ISSUES

Revenue structures distribute the cost of government among elements of the state economy. Equity in that distribution is critical for evaluation of a revenue structure. Unfortunately, the retail sales tax does not perform well on this standard. These taxes typically are regressive: the interaction of individual consumption choices and tax structures causes low-income families to pay a higher percentage of their before-tax income in sales tax than do higher-income families. That occurs not because the statutory sales tax rate differs among families but because low-income families generally spend a smaller percentage of their incomes on taxable purchases than do higher-income families. Higher-income families not only save a higher percentage of their incomes, but they also tend to spend a greater percentage of their income on untaxed transactions. The equity problem is compounded by a tendency for the effective sales tax rate to differ among families with generally similar taxpaying capacity, because families with similar income have different relative preferences for taxed and untaxed items. Thus, the tax can produce horizontal inequity within income classes as well as regressivity between income classes.

VERTICAL EQUITY

Although exact results depend on market conditions, it is generally held that a retail sales tax will be borne by consumers. That burden will not be an equal proportion of consumer income because consumers at different income levels spend different proportions of their incomes on taxable transactions. Those spending higher proportions of their income on taxable transactions will bear a greater share of the sales tax burden than will those spending lower proportions. If the proportion declines as family income is higher, the burden of the tax is regressive. As analysis here indicates, that is the case with the Minnesota tax.

The evidence comes from family expenditure patterns available in the bureau of labor statistics' *Survey of Consumer Expenditures* data for the

north central states. The most recent disaggregated data with sufficient detail to permit approximation of the Minnesota sales tax base are from the 1972-73 survey year; there is no entirely adequate method of adjusting those data to current family patterns. The bureau has not released detailed data for the 1980-81 survey, but some comparisons from the 1981 data tapes are presented here. Those comparisons generally indicate consistency with the earlier expenditure patterns.

Table 7 presents the average percentage of family income by income class currently in the Minnesota sales tax base and the percentage of income spent on selected expenditure classes. Low-income families spend a higher percentage of their income on items in the Minnesota sales tax base with a decline generally continuous through the income groups. Families in the lowest income class spend 38% of their income on taxed transactions, compared to only 11% in the highest class. The sales tax thus distributes the cost of government more heavily toward lower-income families. The tables show similar data for selected taxed and exempt consumption categories; none but club dues show an overall increase with family income. On that evidence, it would be difficult to construct any sales tax base with nonregressive burdens. Restructuring can only aim for reducing that regressivity.

The extent of regressivity over all income classes may be gauged from an index computed from a simple regression equation:

> "The amount of expenditure (in the sales tax base) is regressed on the amount of income (income class); logarithmic transformations of both variables are used because of the interest in the relative percentage changes. If the coefficient for income is greater than 1.0, the tax is progressive, while coefficients equal to or less than 1.0 indicate proportionality or regressivity, respectively. Use of such regression coefficients produces a single summary statistic, or index, of progressivity or regressivity for the expenditure component in question."[6]

The index indicates whether or not payments from a sales tax would increase more or less rapidly than does income across income classes. The lower the index, the greater the regressivity from the tax. The index for the current Minnesota base equals 0.639, so a family with income 1% higher than another would bear a sales tax burden higher by only 0.639%. The base is regressive.[7]

HORIZONTAL EQUITY

While vertical equity is a basic concern for tax analysis, horizontal equity—the extent to which otherwise equal families pay different effective tax rates—is an important consideration as well. A tax on consumption can create difference because some purchases are taxed, others are exempt, and saving is outside the system. Consumers with high preferences for taxed transactions will pay higher effective tax rates than would others without

TABLE 7
Family Income and Consumption by Expenditure Class as Percent of Average Income and Class Regressivity Index, 1981: North Central United States Expenditure and Income Data

Family Income Class	Average Family Income, 1981	Food-At Home Consumption	Personal are Services	Nonprescription Drug and Supplies	Residential Fuel and Electricity	Gasoline, Oil, and Additives
Under $3,000	$1,411	56.05%	3.87%	2.06%	32.25%	28.19%
3,000-3,999	3,523	24.49	0.92	1.30	8.69	8.35
4,000-4,999	4,520	21.66	0.56	0.71	10.77	6.60
5,000-5,999	5,447	20.58	2.00	2.89	13.68	6.78
6,000-6,999	6,513	17.20	1.08	1.98	7.14	7.96
7,000-7,999	7,364	21.03	0.54	0.78	15.84	6.21
8,000-8,999	8,923	17.48	1.06	0.96	8.18	8.33
10,000-11,999	10,919	16.63	0.53	1.00	7.00	5.76
12,000-14,999	13,431	12.72	0.64	1.43	7.22	7.10
15,000-19,999	17.348	11.12	0.33	0.91	5.10	5.40
20,000-24,999	22,435	9.35	0.46	0.57	4.43	4.76
25,000-above	35,805	7.58	0.35	0.21	3.15	3.93

those tastes. Unless there is special social reason for the extraordinary burden, the differential should be avoided.

Table 8 compares effective sales tax rates on income for the Minnesota sales tax base for family units with different characteristics; the characteristics include size, age of family head, housing tenure of family, and area the family lives in. Those data show:

1. Family Size: the rates paid by largest and smallest units is higher than for intermediate sizes.
2. Age of Family Head. The effective rate declines as the age of the family head is higher.
3. Race of Family Head. Black families face higher rates than do white families.
4. Housing Tenure. Renters pay higher effective rates than do homeowners.
5. Type of Area. Urban or rural, in a metropolitan area or not, there is little difference in effective rate.

These patterns demonstrate the extra problems of fairness created by sales taxation.

COMPREHENSIVE TAX BASE

Comparisons with other states show that the Minnesota sales tax base excludes several consumption items found in several other taxes. Particularly important alternatives are clothing, food, services, and gasoline. Because these exemptions are often defended on the basis of equity, it is important to

consider the influence on tax distribution of including them in the tax. Table 9 presents regressivity indices for various possible sales tax structures, as compared with the present Minnesota base. The evidence shows that, under

TABLE 8
Effective Sales and Use Tax Rates by Family Size and by Age of Family Head

	Family Income Before Tax	Average Effective Rate	Average Effective Rate, Clothing Included	Average Effective Rate, Food and Clothing Included $25 Credit
All Families	$11,419	1.79%	2.08%	2.06
By Family Size				
1 person	5,741	1.87	2.12	2.20
2 persons	10,787	1.75	2.00	2.09
3 persons	12,893	1.80	2.10	2.12
4 persons	14,963	1.77	2.09	2.05
5 persons	16,155	1.74	2.07	1.96
6 or more persons	14,881	1.87	2.25	1.97
Coefficient of Dispersion*		2.62%	2.467%	3.46
By Age of Family Head				
Under 25	6,724	2.33	2.67	2.57
25 - 34	11,764	1.88	2.19	2.09
35 - 44	14,297	1.83	2.17	2.08
45 - 54	15,529	1.70	2.00	2.00
55 - 64	12,286	1.62	1.85	1.94
65 +	6,292	1.74	1.97	2.09
Coefficient of Dispersion		9.13%	9.69%	5.85%
By Race of Family Head				
Black	7,577	1.83	2.24	2.07
White	11,862	1.78	2.07	2.07
By Housing Tenure				
Homeowner	13,502	1.74	2.02	2.03
Renter	7,959	1.94	2.27	2.26
By Type of Area				
Urban, in SMSA	12,016	1.78	2.09	2.09
Rural, in SMSA	12,875	1.80	2.08	2.02
Urban, outside SMSA	9,909	1.80	2.09	2.02
Rural, outside SMSA	9,753	1.80	2.07	1.98

Source: U.S. Bureau of Labor Statistics, *Consumer Expenditure Survey: Integrated Diary and Interview Survey Data, 1972-73* Bulletin 1992.

*The coefficient of dispersion measures the relative dispersion of values around the median.

the current structure, an increase in family income of 1% increases purchases of taxed items by 0.639%. So, on the assumption that the sales tax is embedded in prices paid by purchases, the net burden of the tax declines with higher income. Prospects for improving that performance by general expansion of the tax base are not great: the regressivity index for all current consumption is 0.588, somewhat below the current base. Of the alternatives considered, however, expansion of the base to include clothing would reduce regressivity (the index rises to 0.651) and expansion to clothing and services to consumers would leave regressivity virtually unchanged (the index equals 0.633). Analysts have argued for years that a clothing exemption adds to sales tax regressivity. Thus, Davies notes: "All states considering adoption or changes in sales tax laws should be aware that exempting clothing from taxation not only erodes the tax base, but makes the levy less progressive or more regressive."[8]

Typical commodity exemption programs will not produce a sales tax that is not regressive. Vertical inequity will have to be corrected in some other part of the tax system. Table 8 indicated that taxation of clothing would not have substantial influence on horizontal equity; the data are insufficiently disaggregated for conclusions about other revisions.

An even greater extension of the base would involve the substitution of a sales tax credit/rebate for the exemption of food. The current food exemption exempts purchases of all types, kiwi fruit as well as apples, by all households, wealthy as well as poor. An individual credit system could refund to individuals an amount approximating the sale tax paid on food

TABLE 9
Regressivity Indices for Alternate Sales Tax Bases

	Regressivity Index
Current Base	0.639
Current Base plus Food and Clothing	0.590
Current Base plus Clothing	0.651
Current Base plus Food, Clothing, Services, and Gasoline	0.592
Current Base plus Clothing and Services	0.633
Current Base plus Clothing, Services, and Gasoline	0.609
Current Base plus Clothing and Gasoline	0.599
Current Base plus Food, Clothing, Services and Gasoline less $25 Credit	0.589
All Current Consumption	0.588

required for an individual to live comfortably, while allowing the tax to be collected at time of purchase on all food, essential as well as luxurious. A credit/rebate system can tailor relief in virtually any desired pattern and can often relieve regressivity at lower revenue loss than with food exemption. Unfortunately, the system has limitations: 1) relief requires filing a return and states have found filing to be substantially incomplete and 2) many organized groups argue that day-by-day relief from the tax is more significant for the poorest families than is end-of-year refund. The efficiency gains can, however, be significant for a credit system, assuming satisfactory filing for refunds.[9]

REVENUE RESPONSIVENESS

Revenue from the Minnesota sales and use tax will respond to state and national economic developments, as well as from statutory adjustments in base and rate. The former impacts are particularly important. They are largely outside legislative control and can help or hinder state efforts to finance government services. The present investigation will examine the tax base with regard to its response to national recession and expansions (the business cycle) and to economic activity in the state. The combination of these views provides a reasonable understanding of response patterns of the base to major cyclical and secular developments.

The analysis is based on data from several sources. Sales and use tax base totals and data for individual industry categories were provided by the research office of the Minnesota Department of Revenue. Collections data were provided by the Minnesota Department of Finance. All quarterly data were seasonally adjusted prior to analysis. Minnesota personal income data, the annual rate for each quarter, were provided by the U.S. Department of Commerce, Bureau of Economic Analysis. The three-month U.S. treasury bill rate on new issues comes from the U.S. Department of Commerce publications, *Business Statistics* and *Survey of Current Business;* the rate is the average of the three months in the quarter, each month having been seasonally adjusted. Data from these sources formed the basis for each portion of the revenue response analysis.

THE CYCLICAL RESPONSE

State finances can be especially vulnerable to national economic recessions because state governments lack the relatively easy access to deficit financing characteristic of the federal government. Thus, recession-related reductions in the state tax base can create extra pressures on state finances.

This sensitivity can be measured by use of the cyclical swing index:

$$CS = [\, PCH_e - PCH_c \,] - [\, PCH_r - PCH_c \,]$$

where CS = the cyclical swing, PCH = the mean quarterly percentage change in the tax base over a designated period (the mean of $[R_t - R_{t-}]/R_{t-1}$, where R = the seasonally adjusted base and t = the quarter of observation), e = a subscript designating the expansion phase of the cycle, and c = a subscript for the entire period covered.[10] For revenue analysis, "the index indicates whether revenue growth drops during a recession or whether the revenue profile remains stable. A high-positive index means substantially greater growth in expansion than in contraction, a small-positive index means little difference in growth between phases, and a negative index means greater growth in contraction than in expansion."[11]

The cyclical swing indices are computed for completed recessions and expansions during the period for which data are available. For the tax base data, that encompasses three recessions (November 1973 to March 1975, January 1980 to July 1980, and July 1981 to November 1982) and two expansions (March 1975 to January 1980 and July 1980 to July 1981); for collection, that includes all those phases plus the November 1970 to November 1973 expansion and the December 1969 to November 1970 recession as well.[12] Table 10 presents the average quarterly percentage change for the overall period, as well as for each of the phases. In all instances, the highest and lowest changes were excluded from the computation to reduce the impact of extreme values. The percentage change values vary substantially by industry category: overall, from 4.31% in finance, insurance, and real estate (FIRE) to 0.99% in manufacturing; in expansions, from 6.73% in communications and utilities (excluding suspect results for agriculture where data reporting problems could not be resolved) to 0.65% in manufacturing. The total base—net taxable sales and use tax purchases—grew at a rate of about 1.8% throughout the period. Using the longer observation period available for collections, the rate was almost 2.8%.

The cyclical swing indices show wide variation by industry, although the base itself is not sensitive to the national cycle: an index of 0.01, reflecting minimal difference between recession and expansion. A similar outcome results from analysis of adjusted collections: an index of 0.10. This result may well emerge because of the below-average sensitivity of the Minnesota economy to the national cycle, according to the Friedenberg and Bretzfelder analysis. That conclusion does not hold, however, for all industrial components of the base. Thus, growth in the expansion phase substantially exceeds that in contraction (cyclical swing greater than 2.50) for communications and utilities, for transportation, for mining, for FIRE, and for manufacturing. The swing is also high for use tax purchases, a result consistent with expectation because that base is primarily business purchases of equipment, an activity especially sensitive to the economic climate. Sensitivity in the retail and wholesale trade is low (swing measures of less than 1.25). The indices are negative for agriculture, construction, and public administration, although the first may at least partly result from data problems.

TABLE 10
Quarterly Change and Sensitivity to National Economic Cycles of Sales and Use Tax Components, 1974.1 to 1982.4

	Average Quarterly Percentage Change 1971.4 - 1982.4	Average Percentage, Change, Expansion Quarters	Average Percentage, Change Recession Quarters	Cyclical Swing
Agriculture	3.39	2.49	9.32	-6.83
Mining	3.52	4.81	0.99	3.82
Construction	2.46	1.32	4.26	-2.94
Manufacturing	0.99	1.94	0.65	2.59
Transportation	3.33	4.63	0.77	3.86
Communications/Utilities	3.24	1.59	6.73	5.14
Wholesale Trade	1.24	1.66	0.48	1.18
Retail Trade	2.51	2.82	1.61	1.21
Finance, Insurance, Real Estate	4.31	5.24	2.30	2.94
Services	2.37	3.11	0.72	2.39
Public Administration	3.21	1.66	5.68	-4.02
Use Tax Purchases	2.87	3.88	0.66	3.22
Base, combined	1.83	1.86	1.85	0.01
	1970.1 - 1982.4			
Adjusted collections	2.76	2.42	2.32	0.10

In total, the sales and use tax base in Minnesota shows stability across the phases of the national business cycle, a finding different for behavior of the sales tax base in other areas.[13] Within that overall stability, however, is a wide variation in cyclical sensitivity of industrial categories. Thus, the impact of the tax across industrial groups will vary substantially, depending on the phase of the cycle, to change the extent to which particular elements of the state economy will face its initial burden.

This finding should not, however, suggest that the percentage change in sales and use tax collections will be consistent from quarter to quarter, or that collections will be simple to forecast. That is not the case as quarterly data (not reproduced here) from the department of finance (1969 through 1983) shows. After extracting the influence of statutory rate changes and the influence of accelerated collections, as these data do, collections remain extremely volatile, even though there is minimal influence of the national cycle on change rates.

LONG-RUN ELASTICITY AND BUOYANCY

Collections from the sales and use tax in Minnesota do respond to the level of state economic activity, measured both in terms of elasticity and buoyancy. The latter considers the simple relationship between collections and income, without adjustment for statutory rate changes or other influences. The concept is useful in gauging the total revenue response of the tax as the state economy expands.[14] The former elasticity examines the automatic responsiveness of the tax base to the state economy, extracting the influence of legislative changes, especially on rates that shape the relationship. The elasticity coefficient indicates the relationship between state economic activity and elements of the sales tax base, holding other influences constant. While the tax base applies more broadly than simply to individual consumption, the best single indicator of state economic activity remains state personal income. That is the measure of the state economy used here.

The buoyancy coefficient measures the percentage increase in collections associated with an increase of 1% in state personal income. In the equation

$$\ln C = \ln a + b \ln PI + u$$

where C = fiscal year tax collections and PI = calendar year's state personal income, buoyancy equals the coefficient b. Using annual collection data for FY 1968 through FY 1983, the estimating equation equals

$$\ln C = 0.686 + 1.216 \ln PI + u$$
$$(0.059)$$
$$R^2 = 0.985 \qquad \text{Rho} = 0.240$$

Because initial estimates showed serial correlation, the results shown here are after revision according to the Cochran-Orcutt technique. They show an increase in collections of 1.22% for each 1% increase in state personal income, an elasticity statistically different from one at usual confidence levels. Collections are buoyant to state economic activity. The influence of statutory changes and of the fundamental base-to-economy linkage combine to allow collections to increase faster than growth in the economy.

The elasticity coefficient identifies the influence of personal income on the tax base, not collections. The general structure of the elasticity equation is

$$\ln B_t = \ln a + b \ln PI_{t-1} + c \ln RT_{t-1} + d \ln TBILL_{t-1} + u$$

where B = net taxable sales, RT = the statutory sales tax rate, TBILL = the U.S. treasury bill rate, and other variables are as previously described. (Analysis later substitutes collections (C) for the net base, with other variables the same.) The coefficient b is the revenue-elasticity, the estimated percentage change in the tax base associated with an increase in state personal income of 1%. Other variables in the equation estimate other influences on the base:

1. The statutory sales tax rate (RT) may, at the margin, induce purchasers or potential purchases to reduce their consumption of taxable items in Minnesota, either by not spending, by spending in untaxed ways, or by purchasing items outside the state (and not paying use tax). The coefficient on RT would be negative.
2. The treasury bill rate (TBILL), taken as a proxy for the spectrum of interest rates faced by business and individuals, recognizes the influence that interest rates have on the decision to purchase business and consumer durable goods. When interest costs are high, many taxable purchases would be expected to be low. Thus, the coefficient on TBILL would be negative.

Table 11 reports the elasticity results for purchases subject to the use tax, for the net base, and for rate-adjusted collections. The equations initially showed serial correlation; results emerging from corrections according to the Cochran-Orcutt technique are reported in that table as appropriate. Furthermore, not all variables hypothesized to influence that tax base were statistically different from zero for the use tax equation; these were excluded from the final analysis. Minnesota personal income was, however, always a significant influence.

With regard to the other variables, some striking patterns appear. First the statutory sales tax rate, currently 6%, does influence the level of the aggregate tax base and of adjusted collections. It is not significant in the use tax purchases equation. The coefficient is -0.35 for the net base and -0.33 for collections. Thus, the taxable base would be higher if the rate on taxable sales were lower, part of a pragmatic argument for base-broadening accompanied by lower rates. There would not be a revenue loss equivalent to the rate reduction, should the statutory rate be reduced.

A second important influence emerges from the level of interest rates, measured by the treasury bill rate. The general increases in interest rates since the enactment of the Minnesota sales tax clearly would have reduced revenue potential, other things being equal, and have reduced the otherwise

TABLE 11
Elasticity of the Sales and Use Tax Base, 1972.1 to 1983.3

	Constant	Statutory Sales Tax Rate	Minnesota Personal Income	Treasury Bill Rate	R^2 (DW or Rho)
Purchases Subject to Use Tax	8.207		1.168 (0.121)		0.877 Rho = 0.444
Net Tax Base	10.393	-0.350 (0.145)	1.059 (0.075)	-0.076 (0.041)	0.987 Rho = 0.604
Rate-adjusted Collections	3.756	-0.330 (0.183)	1.077 (0.096)	-0.175 (0.060)	0.957 Rho = 0.495

available sales tax base. (The interest-rate-elasticity of the aggregate base is -0.08 and of rate-standardized collections, -0.18.) Outside of restructuring the tax base to avoid the interest-sensitive industries, there is little the state can do about this erosion of the base because it cannot control market interest rates.

Finally, the income-elasticity of the sales and use tax base is estimated to be 1.06, meaning that an increase in state personal income of 1% would induce a 1.06% tax base increase, other influences unchanged. From rate-standardized collections, the elasticity is 1.08. The use tax purchases elasticity is 1.17. This suggests that the sales tax would tend to grow slightly more rapidly than the state economy. All coefficients are, however, close enough to 1.0 that the difference could emerge from chance. It would be unreasonable to expect that the current tax will exhibit growth substantially greater than that of the state economy.

INFLUENCES OF BASE REVISION ON ELASTICITY

Changes in the tax base would undoubtedly have an impact on the income-elasticity of that tax base. Within the context of this analysis, only general impressions of that influence are possible, based on evidence from a broader analysis done for sales tax components in Illinois.[15] That analysis found low elasticity for services for individuals, except for repair to autos; high elasticity for business services; low elasticity for apparel sales; and high elasticity for manufacturing sales. Within that framework, it appears that most reasonable base revisions—tax on apparel, expanded business purchase exemption, extension of the tax to selected services—would reduce the elasticity of the tax. It is clear that base expansion would produce no bonanza of increased responsiveness of the sales tax base.[16]

EFFICIENCY AND BORDER ADJUSTMENTS

Sales taxes influence prices, causing a difference in gross price between taxed and untaxed transactions. While some of the sales tax on a transaction may be absorbed by the seller, that action will alter seller rates of return and will ultimately induce changed resource allocations. If a tax system seeks to raise needed revenue in a fashion that creates the least economic distortion, sales taxes as they currently operate have special problems. Some problems are, at least potentially, acute in Minnesota: the special problems from Indian reservations, the unusual treatment of certain out-of-state purchases, the high advertised rate compared to adjacent states, and the wide taxation of business inputs. Clear resolutions are not available for each of these.

OUT-OF-STATE BUSINESS PURCHASES AND INDIAN RESERVATIONS

The State of Minnesota faces two special border peculiarities, beyond the normal concern that out-of-state retailers may profit because of a high-tax rate faced by in-state vendors. They are (1) the special treatment of property purchased for trade or business use outside Minnesota and (2) the tax status of transactions on the eleven Indian reservations in the state. Both create special challenges for efficiency, compliance, and administration. Before May 1982, Minnesota did not collect sales tax on goods bought for trade or business use that were transported outside the state by the purchaser, even though those purchases would be subject to the Minnesota sales tax if used within the state. Minnesota allowed the destination state to collect use tax on that purchase, as determined by the law of that state. The commerce clause of the United States Constitution[17] does prevent state sales taxation of transactions in interstate commerce, including sales for delivery outside the state, but when the purchaser takes possession within the state, the state of origin can tax the transaction. Thus, the old Minnesota approach did not tax all interstate transactions within the constitutional scope of its sales tax. While the system undoubtedly made purchase of goods in Minnesota attractive, it also increased the use tax base for destination states. The sales not taxed by Minnesota were taxable on use at the destination.

A 1982 law changed that treatment. Sales of intermediate goods taken outside Minnesota by the purchasers are now taxed at the lower of (a) the destination-state use tax rate or (b) the Minnesota sales tax rate. Purchases exempt at the destination would be exempt in Minnesota. Minnesota employs its constitutional authority to tax such sales, while preventing the Minnesota sales tax rate from discouraging purchasers by out-of-state business users. Only if the out-of-state purchaser did not remit use tax owed prior to the new law would the new Minnesota tax coverage cause higher total tax liability. The provision intends to increase Minnesota revenue without creating a tax-rate barrier to trade within the state.

This approach, unfortunately, complicates compliance and administration, because destination-states have unique business-purchase exemption structures and apply use tax rates ranging from 0 to 7.5% (the Minnesota tax rate would prevent any sales from being taxed at the national maximum). The vendor must know the rate and exemption structure for each state in which business purchasers might use items acquired. Furthermore, administrators must similarly spread their enforcement net. That is a generally excessive burden for both compliance and administration.[18]

The second peculiarity results from the eleven Indian Reservations in Minnesota. A U.S. Supreme Court decision in 1976 generally allowed administration of state taxes in Indian reservations only after special

negotiations with that reservation. Minnesota and the reservations agreed that sales tax would be collected and remitted as due on reservation sales. The state would return to each reservation an amount based on the number of people living on the reservation, originally $60 per person, but currently $110. The agreements are important; without them the reservations could establish tax-free enclaves to compete with other businesses. While reservation purchases would be subject to use tax, collection without harassment would be difficult for many items. It would be impossible for bingo cards purchased for games played within the reservation. One reservation currently (June 1984) has no agreement; the state receives no sales tax revenue from a bingo facility there. While the erosion is relatively small, it could eventually become a problem of substantial consequence for the overall compliance climate. There is little the state can do beyond negotiation of satisfactory and binding agreements to prevent the growth of more difficult problems in the future.

INFLUENCE OF RATE DIFFERENTIALS

Loss of sales along the border of the state can result when its neighbors apply a lower statutory sales tax rate. For high-priced items, purchasers may buy in the lower-tax-rate area, even though they incur travel costs to do so. Some shoppers, out of irritation with taxes, may even accept extra travel cost simply to avoid sales tax (and evade later use tax). Vendors in higher-tax-rate jurisdictions must face reduced customer traffic, or they must reduce pretax prices, provide greater service, or make other accommodations to compensate for the tax disadvantage. There is no satisfactory or successful way for a high-sales-tax area to correct the differential. These border losses undoubtedly explain much of the sensitivity of the Minnesota sales tax base to the statutory tax rate previously noted in the elasticity estimates: an increase of the statutory tax rate of 10% would be associated with about a 3% reduction in the tax base.

The border circumstances in Minnesota are complicated because: (a) There is the special treatment of business purchases previously discussed; (b) The narrow consumer portion of the Minnesota tax means that, along a given border, some Minnesota merchants will be selling at a competitive advantage, while others will be a disadvantage; and (c) The state has international as well as state boundaries. Furthermore, data availability hinders estimation of the border effect: the high Minnesota rate, compared to its neighbors, began after the 1977 census of retail trade, so its distortion would not appear in those data. Thus, only less satisfactory data sources can be used.

A review of related estimates shows that analysts initially presumed that low sales-tax-rate differentials would have little adverse effect on retail sales.[19] Doubts about that presumption appear in works by Maliet[20] and

McAllister.[21] The Maliet work dealt with sales loss along the Illinois-Iowa border in the early 1950s; the work by McAllister dealt with sales patterns in cities along the state of Washington border. Neither measured the amount of loss, but McAllister's comparison between border cities and interior control cities suggested that shoppers consider sales tax differences in purchases of big-ticket durable goods and groceries, not other goods. Other goods are bought where selection was best.

Early estimates of the actual sales-loss impact from rate differentials by Hamovitch[22] of taxable New York City sales from 1948 to 1965 and by Mikesell[23] of sales in 173 central cities of metropolitan areas in 1963 reached surprisingly similar conclusions. Each analysis finds that a 1% sales-tax-rate increase or a 1% adverse sales tax differential causes the base to be lower by around 6%.

Sales-tax-rate impact appears not to have increased in the years since those early studies. Thus, a similar study by Fisher[24] for the District of Columbia Tax Revision Commission in 1978 finds no impact on that government's sales tax base from its sales tax rate. When the base is broken into its store type components, however, food store sales do appear to be adversely affected: every 1% rise in the tax rate differential induces about a 7% decrease in sales tax revenue from food stores. There also is a negative, but statistically insignificant, impact on apparel sales. The Fisher result may result from the substantially increased transportation cost that has occurred over the years. Higher transportation costs (gasoline prices, traffic congestion, etc.) clearly would better insulate areas from any tax base loss because of adverse tax rate differentials.

Additional information appears in Mikesell's examination of border and nonborder countries in Illinois in 1963.[25] That analysis estimated the difference in store sales by category between counties located on the Illinois border and interior counties. All surrounding states had lower sales tax rates; the differential had existed for several years. Other influences were extracted by statistical methods. That analysis found no adverse impact on convenience goods store (food store, eating and drinking places and drug and proprietary stores) sales per capita. Nonprice features apparently determines where individuals make purchases from such stores. When separately examined, however, the border county food store sales were lower; that difference amounted to about 6% of the overall average food store sales per capita. The analysis also found shopping goods store (general merchandise, apparel and accessories stores, furniture and home furnishings, and equipment stores) sales per capita to be lower in the border counties. For these stores, shopping for price is likely, so the lower sales in border counties is not surprising. That difference amounted to about 14% of the overall average sales for this group. Thus, different kinds of stores faced different sales effects.

An indication of the significance of the border-loss problem in Minnesota can be obtained by comparing sales activity in the border counties with similar activity in the interior counties. Because of their different market conditions, Hennepin and Ramsey counties are excluded from the analysis. (Differences are even greater when these countries are included.) Aggregate sales activity depends on the economic size of the county, so all values are divided by county personal income. Comparisons are made for

1. Total Gross Sales by Retail SIC Stores
2. Total Gross Sales
3. Total Taxable Sales and Use Tax Purchases
4. Gross Sales by Apparel Stores

The data results appear in Table 12. All are county group averages for each of the four categories, each per thousand dollars of county personal income. Because not all vendors accurately report gross sales (their concern is with the aggregate on which they pay tax), all gross sales data must be

TABLE 12
Sales and Use Tax Base per Thousand Dollars of Personal Income, by County, 1982

	Number of Counties	Mean Total Sales, Retail	Mean Total Gross Sales	Mean Total Taxable Net Sales and Use Tax Purchases	Mean Gross Apparel Store Sales
Minnesota Total	87	472.494	1069.816	302.740	8.962
Minnesota Nonborder, excluding Hennepin and Ramsey	55	450.722*	1087.899	322.595*	8.737
Minnesota Border Counties	30	383.536*	1009.467	259.777*	8.960
Iowa Border	6	381.254	1192.135	276.566	9.932
N.D. Border	6	296.168	801.821	232.005	3.195
S.D. Border	7	441.470	1043.206	226.724	12.347
Wisc. Border	10	391.664	885.730	224.206	9.222
	87	472.494	1069.816	302.740	8.962

Sources: 1982 Minnesota Sales and Use Tax annual Report; Historical Retail Sales Data for Minnesota Counties and Selected Cities, Calendar Years 1978-1982; and *Survey of Current Business* (April 1984). Counties adjacent to Canada are treated as non-border counties.

*Difference between border and nonborder mean exceeds that which could emerge from chance alone (5% level).

viewed with caution. With that caveat, however, it does appear that the higher Minnesota sales tax rate (5% in 1982, compared with 3% in Iowa and South Dakota and 4% elsewhere) did reduce sales levels. The difference is statistically significant (5% level of confidence) for total gross sales by retail SIC stores and for total taxable purchases. Apparel store sales, a category generally exempt in Minnesota but taxed in surrounding states, were higher on the borders, possibly the result of purchases by out-of-state customers. That difference is, however, not sufficient to allow the conclusion that it did not occur by chance alone. In total, the high statutory tax rate does appear to discourage retail activity along the state's border.

BUSINESS INPUTS

As noted in earlier sections, Minnesota manufacturers must pay sales tax on many of their purchases. Business purchases undoubtedly constitute from 25% to 30% of the sales and use tax base or more, based on Fryman's careful estimate for Illinois some years ago.[26] While such taxation can be a vehicle for exporting tax burden (the sales tax paid by business gets reflected in the prices paid for their products sold to out-of-state buyers), it is not clear that the total result is advantageous.

The taxation of business purchases has several effects. First, because the tax paid gets reflected in prices that consumers pay for products, the more taxable business purchases that were made in the production, distribution, and sale of the goods, the higher the implicit sales tax burden borne by its purchaser. The overall sales tax burden thus becomes more capricious between consumers. Second, the tax may, at the margin, discourage capital investment—which is what taxed equipment and machinery are. Because business investment provides much of the basis for economic growth, the tax is not reasonable. Finally, the extraordinary business-purchase tax burden may discourage businesses that sell in national markets from locating in the taxing state. There is no general reason to discourage economic development.

CONCLUSION

The sales tax structure Minnesota chooses should depend on the objectives of the state, beyond simply the desire to raise a given amount of revenue. If the state chooses the sales tax as a revenue generating device, it ought to design that tax so that it deviates as little as possible from the accepted standards of state/local taxation, which have been addressed elsewhere in this report (see volume 1, chapter 1).

Within those structural requirements, some revisions of the Minnesota sales tax structure seem in order to reduce burden discrimination, minimize

interference with economic development, and simplify compliance and administration. These revisions include:

1. Eliminate the exemption of clothing. This exemption worsens regressivity, reduces the tax base substantially, and increases compliance and administrative costs. It probably does increase certain store sales in border areas, but it is not clear why some Minnesota stores should profit at the expense of others.
2. Expand the exemption of producer goods. The current approach seeks to encourage new capital investment, but does so in a limited and unnecessarily complex fashion. It is not clear why a state should do anything to discourage capital investment, as the tax applied to business equipment and machinery does, particularly when tax policy principles suggest the propriety of exemption. Business purchases of production equipment and machinery should be exempt.
3. Extend the tax to specific types of services rendered to households. These would include services rendered by commercial firms (often already registered because of commodity sales) to individual customers. They would not include services to business firms, professional services (medical, dental, legal, etc.), or household services (domestic work, babysitters, etc.). The first would tax an input to production processes, thus creating the same objections applicable to equipment purchases. The second falls prey to issues of social policy and the desire to avoid adding tax burden to private misfortune. The third group is beyond administrative reach. Repair, installation, alteration, and maintenance services, along with personal care services rendered by business establishments to households are all reasonable candidates for the tax, however.
4. Reduce other exemptions. There are no compelling reasons for exemption of either motor fuels or nonprescription medicines. Ending the exemptions would reduce some administrative complexity and improve burden uniformity somewhat.
5. Trade purchases for out-of-state use. The state should follow the limits of the United States Constitution in applying its sales and use tax. It need not drop below its legal power, especially if Minnesota has reasonable and appropriate business-purchase exemptions.

ENDNOTES

1. There are recent special exemptions for materials and equipment used in direct satellite broadcasting services and used in certain distilleries.

2. Commissioner of Revenue, *1972 Minnesota Sales and Use Tax,* Table 2, and Commissioner of Revenue, *1982 Minnesota Sales and Use Tax Annual Report,* Table 2.

3. Further details on the logic of these adjustments appear in John F. Due and John L. Mikesell, *Sales Taxation, State and Local Structure and Administration* (Baltimore: Johns Hopkins University Press, 1983), pp. 6-9.

4. Washington and West Virginia do have multistage, multirate business and occupation taxes, but they are separate from the retail sales tax in each state. At least a portion of the West Virginia business and occupation tax on wholesalers has recently been struck down by the U.S. Supreme Court as a commerce clause violation. *Armco, Inc.*, Docket No. 83-297, June 12, 1984.

5. The District of Columbia fully taxes, but has no manufacturing.

6. John H. Bowman, "Changes in Sales Tax Regressivity Over Time," *Revenue Administration,* 1979, p.232.

7. Some analysts have argued that total consumption, not current income, is the appropriate standard to use in judging family capacity to bear tax burden. On that standard, the Minnesota tax is progressive.

8. David G. Davies, "Clothing Exemption and Sales Tax Regressivity: Note," *American Economic Review,* LXI (March 1971), p. 188.

9. James A. Papke and Timothy G. Shahen, "Optimal Consumption-Based Taxes: The Equity Effects of Tax Credits, *National Tax Journal,* XXV (September 1972).

10. The cyclical swing index was originated in Howard Freidenberg and Robert Bretzfelder, "Sensitivity of Regional and State Nonfarm Wages and Salaries to National Business Cycles 1948-79," *Survey of Current Business,* 60 (May 1980). Its initial application to tax analysis is John L. Mikesell, "The Cyclical Sensitivity of State and Local Taxes," *Public Budgeting and Finance,* 4 (Spring 1984).

11. Mikesell, *Public Budgeting,* p. 35.

12. All turning points are as designated by the National Bureau of Economic Research and reported in the U.S. Department of Commerce's *Business Conditions Digest.*

13. Mikesell, *Public Budgeting,* p. 38.

14. Charles Y. Mansfield, "Elasticity and Buoyancy of a Tax System: A Method Applied to Paraguay." *IMF Staff Papers,* XIX (July 1972).

15. John L. Mikesell, "Income Elasticity of State Sales Tax Base Components," *Quarterly Review of Economics and Business,* XXVII (Spring 1977).

16. *Ibid,* p. 91.

17. U.S. Constitution, art. 1, §8, cl. 3.

18. Most states simply accept any losses to out-of-state vendors, choosing to apply their sales tax to the constitution limit and relying on use taxes to handle any problems. Loss can be a problem when rate differentials are severe: Arkansas has special sales tax rates applicable in its border counties, but no other states have such provisions.

19. See the summary in the *Report to the Governor on the New York Sales and Use Tax, Governors temporary commission to review the sales and use tax laws.* James H. Tully, Jr. Chairman, December 15, 1979, p. 194. This conclusion would emerge from examinations conducted in New York (New York State Tax Structure Study Committee, Summer 1960) or Kentucky (Commonwealth of Kentucky, *1967-68 Annual Report of the Department of Revenue),* for instance.

20. L.D. Maliet, "A Comparative Study of the Illinois Retailer's Occupation Tax and the Iowa Retail Sales and Use Taxes." Doctoral dissertation, University of Illinois (Urbana), 1955.

21. Harry E. McAllister, "The Border Tax Problems in Washington," *National Tax Journal,* XIV (December 1961).

22. William Hamovitch, "Sales Taxation: An Analysis of the Effects of Rate Increase in Two Contrasting Cases," *National Tax Journal,* XIX (December 1966).

23. John L. Mikesell, "Central Cities and Sales Tax Rate Differentials: The Border City Problem," *National Tax Journal,* XXII (June 1970).

24. Ronald Fisher, *Sales Tax in the District of Columbia Revenue System,"* District of Columbia Tax Revision Commission, 1978.

25. John L. Mikesell, "Sales Taxation and the Border County Problem," *Quarterly Review of Economics and Business,* XI (Spring 1971).

26. Richard F. Fryman, "Sales Taxation of Producers Goods in Illinois," *National Tax Journal,* XXII (June 1969).

27. John F. Due, *Sales Taxation* (Urbana: University of Illinois Press, 1957), pp. 41-42.

9

Minnesota Highway User Taxes: Issues and Alternatives

Thomas F. Pogue

Minnesota, as most other states, finances the construction, operation, and maintenance of its highways primarily with taxes levied on motor vehicles and motor fuels. The first section of this paper describes these taxes, and compares Minnesota taxes with those of other states. The second section evaluates Minnesota's highway taxes from the perspectives of equity, efficiency, and revenue productivity. This evaluation reveals two broad problems: 1) vehicles in the heavier weight classes pay a smaller share of their highway-cost responsibilities than do those in lighter weight classes and 2) user tax revenues have not increased as rapidly as highway maintenance and operation costs, with the result that the real value (purchasing power) of highway tax revenue has actually fallen since 1970. The third section examines alternatives for dealing with these problems and improving the highway user tax systems. The final section provides a summary of major conclusions and policy implications, many of which are also applicable to other states since Minnesota has a rather typical highway tax system.

DESCRIPTION AND BACKGROUND

Table 1 shows currently applicable tax rates and tax base definitions. Revenue yields for recent years are presented in Table 2. Motor vehicle sales are not subject to the retail sales tax, so the motor vehicle excise tax is essentially in lieu of the retail sales tax. Minnesota's 17 cents per gallon tax rate exceeds the rate levied in most states. For the fifty states and the District of Columbia, the high, median, and low tax rates are respectively 18, 13, and 5 cents per gallon. Rates in surrounding states are 16 cents in Wisconsin, 13 cents in Iowa, North Dakota, and South Dakota, and 12 cents in Illinois. However, Minnesota, unlike eleven other states, does not levy an ad valorem sales or gross receipts tax in addition to its gallonage tax on motor fuel purchases. Consequently, in a number of states (New York, Pennsylvania, Illinois, Indiana, Michigan, Wisconsin, Mississippi, Washington), ad valorem and gallonage tax rates taken together approximate (within 1 cent) Minnesota's rate.

TABLE 1
Minnesota Highway Taxes: Rates, Bases, and Disposition, 1984

Tax	Base	Rates	Disposition
Motor vehicle excise tax	Selling price (net of trade-in) of any vehicle required to register in Minnesota	6%	Complete transfer by 1992 from state general fund to highway user and transit assistance funds
Motor fuels tax	Gallons used in highway vehicles and aircraft	Gasoline and special fuels: 17 cents per gallon for highway, 5 cents per gallon for aviation. Gasohol: 15 cents per gallon	Highway fuels: 99.25% to highway user tax distribution fund; 0.75% to dept. of natural resources
Motor vehicle license tax	For cars and pickup trucks: base value of vehicle adjusted for age. For trucks and buses: gross vehicle weight	For cars and pickup trucks: $10 plus 1.25% of base value but not less than $25 after 1-1-85. For trucks and buses: statutory schedule with tax varying by weight, age, and use	Highway user tax distribution fund

Minnesota also taxes other motor fuels: diesel, liquified petroleum gas (LPG), and gasohol. Minnesota, like a majority of other states, taxes diesel and LPG (when used in highway vehicles) at the same rate as gasoline, while taxing gasohol at a lower rate (2 cents per gallon lower until June 30, 1985 and 4 cents per gallon lower from July 1, 1985 through June 30, 1992).

EVALUATION OF HIGHWAY TAXES

With the exception of the motor vehicle excise tax, all of Minnesota's taxes on motor vehicles and motor fuels are earmarked (or dedicated) for transportation purposes. Furthermore, under present law motor vehicle excise taxes will be fully transferred by FY 1992 from the state general fund to the highway user tax distribution fund (75%) and the transit assistance fund (25%). Thus, Minnesota's taxes on motor vehicles and motor fuels are appropriately regarded and evaluated as user taxes.

EQUITY AND EFFICIENCY

Total highway costs consist of fixed costs, which do not vary with traffic volume, and variable costs, which are generated directly by road use and vary with both volume and type of traffic.[1] Efficiency requires that these

TABLE 2
Highway Tax Revenues,
Fiscal Years 1981-84

Taxes	FY 1981 Amount $000	FY 1981 % of total taxes	FY 1982 Amount $000	FY 1982 % of total taxes	FY 1983[a] Amount $000	FY 1984[b] Amount $000
Motor vehicle excise	87,083	2.56	103,767	2.72	122,597	170,900
Motor fuels	232,871	6.86	259,351	6.81	263,445	315,000
Motor vehicle licenses	140,845	4.15	152,889	4.01	176,919	187,400

Sources: Data for 1981 and 1982 are from Minnesota Department of Revenue, Research Office, *Minnesota Tax Handbook,* August 1982, and addendum, September, 1983. Data for 1983 and 1984 have been provided by personnel at the Minnesota Department of Revenue and Minnesota Department of Transportation.

[a]Total collections for 1983 and 1984 not available to compute percentage shares.

[b]Estimated.

two categories of cost be covered by different types of taxes, with highway users as a group paying the total of both categories. Fixed costs should be covered by taxes and fees that do not vary with use, such as license and registration fees. Variable costs should be covered by taxes that vary with and accurately reflect the costs generated by each vehicle's use of the highway system. Ideally, each highway user should pay a marginal-user tax (an additional tax for each additional mile of highway travel) that equals the cost generated by an additional mile of travel. Stated differently, an efficient highway tax system should accurately signal and assign costs to users. When it does, individuals and businesses will use and demand provision of highways only when they are efficient (cost effective) modes of transport. In contrast, when taxes understate costs, inefficiently large highway systems will be demanded and conversely when taxes overstate costs.[2]

Equity in highway-user taxation is also widely regarded as requiring that taxes be distributed according to costs generated—relatively high tax burdens on users that generate relatively high costs, and conversely as well.[3] Therefore, a tax system that satisfies the above efficiency criteria would likely be seen as fair. However, a system could be fair in that the total tax burden on each user class closely approximates the total costs generated by the class, and yet fail to be efficient because marginal-user taxes do not reflect accurately the marginal costs generated by highway use.

Application of these equity and efficiency criteria in designing or evaluating highway-user tax systems requires estimates of the highway costs generated by various classes of vehicles. Such estimates are presented in column 1 of Table 3. They are typical in showing that cost-responsibility per mile of highway travel increases as vehicle weight increases. Also, for vehicles of a given weight, cost-responsibility decreases as the number of

TABLE 3
Estimated Cost-responsibility, Fuel Consumption, and Tax Payments, by Vehicle Class[a]

Vehicle class	Cost-responsibility (cents/mile)	Fuel usage (mpg)	Marginal user tax[b] (cents/mile)	Fuel tax as proportion of cost responsibility[b]
Automobiles and motorcycles	.47	18.0	.50	1.06
Pickups and vans	.56	13.6	.66	1.32
Single-unit trucks less than 26,000 pounds	1.09	7.7	1.17	1.07
Single-unit trucks 26,000 pounds and above	2.64	6.3	1.44	.55
Combination trucks less than 50,000 pounds	3.36	5.6	1.16	.48
Combination trucks 50,000 to 70,000 pounds	4.07	5.5	1.63	.40
Combination trucks 70,000 to 75,000 pounds	5.49	5.3	1.69	.31
Combination trucks 75,000 and above	7.29	5.3	1.71	.23

Source: U.S. Department of Transportation, *Alternatives to Tax on Use of Heavy Trucks, Report to Congress,* January, 1984. Cost responsibility is from Table III-3; fuel consumption is derived from column 1 of Table III-4.

[a]Estimates of cost-responsibility are for federal highway programs of $12.8 billion in FY 1985. For each vehicle class, average operating characteristics are assumed.

[b]Assumes federal fuel tax rate of 9 cents per gallon.

axles employed in carrying that weight increases.[4] Therefore, equitable and efficient highway taxation requires that users pay a tax per mile traveled that depends on both loaded weight per axle and number of axles. The marginal-user tax should be directly related to loaded weight and inversely related to number of axles.

At first glance, Minnesota's motor vehicle and motor fuels taxes appear to be a fairly satisfactory system of taxing highway users according to cost-responsibility, while covering variable costs by taxes that are related to highway use and fixed costs by taxes unrelated to use. Motor vehicle license and excise tax payments depend on weight and other vehicle characteristics, but not distance traveled. Fuel tax payments depend on miles traveled and miles-per-gallon. Therefore, with this two-tier system of taxation, which is typical of most states, users of Minnesota highways do pay taxes that are roughly related to vehicle weight and miles traveled.

However, the system is deficient from both equity and efficiency perspectives, mainly because it fails to impose on each vehicle class a

marginal-user tax that approximates the costs generated when a vehicle of that class travels an additional mile on the state's highways. The reason for this failure is clear. Since Minnesota's fuel tax rate is the same for all vehicle types and weights, the marginal-user tax varies among vehicles only to the extent that miles-per-gallon varies, and fuel tax payments approximate cost-responsibilities only if there is a close correspondence between fuel consumption per mile and costs generated per mile. But such is not the case. As Table 3 shows, fuel consumption does increase as vehicle weight increases, but costs generated per mile traveled increase more rapidly, so that fuel tax payments decline as a proportion of cost-responsibility. Thus, a single-rate fuel tax, such as Minnesota's, results in lighter vehicle classes paying a larger share of their costs than heavier classes, and within classes (e.g., combination trucks), the lighter members of the class overpay relative to the heavier members.

Minnesota's license tax rates increase with vehicle weight.[5] This tax therefore reduces the between-class inequities discussed above. Indeed, between-class inequity could in principle be eliminated by setting license tax rates so that each vehicle class taken as a whole pays fuel and license taxes equal to its cost responsibility. But within-class inequities would remain because vehicles that travel fewer miles than the class average would pay taxes in excess of the costs they generate while vehicles that travel more than the average would underpay; high-mileage users would be subsidized by low-mileage users.

More important, because it does not depend on miles driven, a license tax does not affect the marginal-user tax, which is determined by the fuel tax rate and miles per gallon. Consequently, a license tax based on vehicle weight and type does not solve the efficiency problem that arises when the per-mile fuel tax does not accurately reflect the highway costs generated by an additional mile of travel. In particular, a license tax does not reduce the incentive for inefficient overuse of the highway system by relatively heavy vehicles.[6]

REVENUE PRODUCTIVITY

From 1970 through 1982 Minnesota highway-user tax revenues increased 120%, while the operation and maintenance cost index published by the federal highway administration increased 178%. Revenue thus fell in real terms or purchasing power. The state's ability to finance maintenance and/or expansion of its highway system from user taxes clearly diminished over this period, and in this sense revenues were inadequate. Whether revenues were inadequate in a broader and more absolute sense must be based on judgments about the amount that Minnesota should be spending on highways and how that spending should be financed. Table 4 clearly shows that one consequence of the relatively slow growth of user tax revenues has

TABLE 4
Changing Sources of Receipts for Highways, All Units of Government, 1970–81
(Percentage of receipts from indicated source)

Revenue Source[a]	Minnesota 1970	Minnesota 1981	Illinois 1970	Illinois 1981	Iowa 1970	Iowa 1981	N. Dakota 1970	N. Dakota 1981	S. Dakota 1970	S. Dakota 1981	Wisconsin 1970	Wisconsin 1981	U.S. 1970	U.S. 1981
Road-user taxes, total	54.0	43.9	80.5	52.0	63.5	61.7	66.6	55.0	65.8	20.1	52.4	40.1	64.0	54.9
federally collected[b]	18.8	12.8	18.8	15.9	16.7	19.0	32.0	27.8	30.3	26.5	11.0	12.2	21.0	19.0
state collected	35.0	31.1	57.0	31.2	46.7	42.7	34.6	27.2	35.5	31.6	41.4	28.0	42.3	35.0
Property taxes	14.5	9.3	7.5	9.1	17.5	7.2	18.1	14.7	17.7	16.4	8.9	8.6	6.2	5.8
Appropriations from general funds	8.7	22.0	2.5	12.2	2.6	10.9	5.4	13.3	10.7	17.9	26.9	45.9	10.8	20.3

Source: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics*, 1981, 1971.
[a]Other receipt categories, the more important of which are tolls and proceeds from bond sales, account for a relatively small share of total receipts.
[b]Primarily grants-in-aid payments from highway trust fund.

been increased reliance on other revenue sources, primarily appropriations from general funds; this pattern of change is common to Minnesota, its neighbors, and the U.S. as a whole. Also, revenues appear to be insufficient to fund construction and reconstruction needs as identified and defined by the Minnesota Department of Transportation.[7]

Over the next decade, revenue adequacy will be enhanced by the dedication of motor vehicle excise tax revenues to the highway user tax distribution fund. But conditions that characterized the past decade—rising maintenance and operation costs and relatively static fuel consumption—seem likely to persist. Indeed, from FY 1984 through FY 1990, fuel tax revenues are forecast to decrease slightly, given current tax rates. A slight increase in other traditional user-tax revenues is forecast, but the rate of increase is likely to fall short of the rate of inflation.[8] Thus, future increases in fuel and license tax rates seem likely. Barring such increases or the introduction of a new user tax, an increasing fraction of revenues will be obtained from taxes that are not closely related to highway use.

HIGHWAY TAX ALTERNATIVES

Examination of the equity, efficiency, and revenue productivity of Minnesota's highway tax system has revealed two broad problems. First, vehicles in heavier weight classes pay a smaller share of their highway cost responsibilities than do those in lighter classes. And among vehicles of a given weight class, those with low annual mileages and/or low-average loads overpay relative to vehicles with high mileages and/or loads. In effect, relatively light, low-mileage vehicles subsidize relatively heavy, high-mileage vehicles. This is an inequitable subsidy that encourages inefficient overuse of heavy vehicles. Second, user-tax revenues have not increased as rapidly as highway maintenance and operation costs, with the result that the real value (purchasing power) of highway tax revenue has actually fallen since 1970. The remainder of this section discusses several highway finance alternatives that would ameliorate one or both of these problems.

WEIGHT-DISTANCE TAX

A weight-distance tax is basically a mileage tax with the tax rate per mile of travel on public highways being an increasing function of laden vehicle weight. The tax rate for a vehicle of a given total weight should also depend on vehicle configuration, principally the number and placement of axles. In principle, weight-distance tax rates can be set so that the marginal-user tax for each major class of vehicles is equal to the additional costs, primarily road damage costs, generated by an additional mile of highway travel. Thus, adding a third-tier weight-distance tax to a two-tier system such as Minnesota's could improve the system on both equity and efficiency dimensions.

In deciding whether a weight-distance tax is warranted, states must weigh potential equity and efficiency gains against the higher administrative and compliance costs of the tax. How these gains and costs compare is an unresolved and strongly debated issue. But a weight-distance tax is clearly feasible; at present eight states—Arizona, Arkansas, Idaho, Kentucky, New Mexico, New York, Ohio, and Oregon—have weight-distance taxes. And it is increasingly being advocated as a practical and desirable addition to federal and state highway tax systems.[9]

Comparison with two-part system. Table 5 illustrates the difference between a weight-distance tax and the two-part user tax system employed by Minnesota and most other states. The comparison, which is for an 80,000-

TABLE 5
Comparison of Weight-distance and Two-part Tax Systems, 1982

Thousands of miles traveled per year	Cost-responsibility $ per mile[a] (1)	Tax payments, $/mile[b]	
		Weight-distance tax (2)	$1,620/year plus 17 cents/gallon (3)
10	.11	.11	.194
20	.11	.11	.113
40	.11	.11	.073
50	.11	.11	.065
70	.11	.11	.056
90	.11	.11	.050
100	.11	.11	.049

Source: Estimates of cost responsibility are from Federal Highway Administration, *Final Report on the Federal Highway Cost Allocation Study,* May, 1982.

[a]Since this cost-responsibility estimate is for the federal highway system, it may not correspond precisely to the Minnesota highway cost-responsibility of vehicles of this class. But there is no apparent reason why it should not serve as a satisfactory approximation. Estimates particular to Minnesota are unavailable.

[b]Column 3 assumes vehicles average 5.25 miles per gallon and therefore pay fuel taxes of $.0324 per mile. $1,620 is the license tax that now applies in Minnesota for vehicles of this class.

pound gross vehicle weight, 5-axle combination, also illustrates the equity and efficiency problems of the two-part system. Cost-responsibility for this type of vehicle is estimated at $0.0224 per mile empty and $0.1714 per mile fully loaded.[10] The example is constructed on the assumption that vehicles of this class are fully loaded for 60% of their miles and empty for the remainder, giving an average cost responsibility of $0.11 per mile.

As column 2 of Table 5 shows, the weight-distance tax per mile is the same regardless of miles traveled, and the marginal-user tax is equal to the estimated cost-responsibility per mile. Thus, the weight-distance tax is fair in that it charges each vehicle for the costs that it generates whether it is a low-mileage or a high-mileage vehicle, provided that it has the assumed 60-40 ratio of fully-loaded to empty miles. But it is unfair in that vehicles with a higher ratio of loaded to empty miles underpay, while vehicles with a lower ratio overpay.[11] Also, by undercharging for fully-loaded travel, it gives users an incentive to operate with maximum loads. A weight-distance tax could of course be based on a different loading assumption. For example, assuming that vehicles are always fully loaded would mean a tax rate of $0.17 per mile, and all but fully-loaded vehicles would be overcharged.

Column 3 of Table 5 shows the tax per mile imposed on an 80,000-pound vehicle by Minnesota's present two-part tax system, which consists of a registration fee of $1,620 per year and a fuel tax of $0.17 per gallon. This tax scheme is inequitable because vehicles that travel less than 20,871 miles per year overpay their cost-responsibility (they pay user charges that average more than $0.11 per mile), while vehicles that travel more than 20,871 miles per year underpay. It is also deficient from an efficiency perspective because it imposes a marginal-user tax of only $.0324 per mile, far short of the $0.11 per-mile cost-responsibility.

The case of Table 5 illustrates two important characteristics of a two-part system. The average tax per mile will always exceed the marginal tax per mile, and it will decline as miles traveled increase; and there will always be only one annual mileage for which total tax payments by a vehicle just balance its cost responsibilities—20,871 miles per year in the column 3 case.

Whether a particular two-part system will collect revenue from a class of vehicles that equals the cost responsibilities of the class depends on the distribution of vehicles by miles traveled. With the system of column 3, revenue equals aggregate cost-responsibilities if average mileage is about 20,000 miles per year. If average mileage is greater, revenue falls short of cost-responsibilities and vice-versa. The Minnesota Department of Transportation estimates that vehicles of this class average over 50,000 miles per year.

Administration and compliance. Assuring accurate reporting of miles traveled on public highways is the key administrative problem and cost in weight-distance taxation. Reporting methods range from self-assessment, in which case operators report mileage as recorded by their odometers, to

automated systems that utilize sealed meters. Such meters are in use by large carriers in the U.S. and they have been used for taxing purposes in other countries.

The experience of Oregon, which has employed such a tax since 1949, demonstrates the feasibility of a weight-distance tax.[12] Oregon relies on self-reporting, with the administrative agency maintaining a separate account for each trucking firm. Total administrative costs, which include a share of the overhead costs of the Oregon Public Utility Commission (the administering agency) as well as audit and collection costs, are estimated at 5%-7% of gross receipts. Compliance appears to be very satisfactory, with collections estimated to be 95% of taxes due.[13]

The information that motor carriers must report to comply with Oregon's weight-distance tax is typically available from records that they keep for other purposes. Interstate carriers must file periodic reports in most states (including Minnesota) giving number of miles traveled, in total and in the specific state, and the gallons of fuel purchased in the state. They must also supply detailed information on their operations to state and federal income tax administrators. Thus, the recordkeeping and reporting costs directly attributable to Oregon's system appear to be minimal for interstate carriers. Carriers that operate only within the state would have to keep records for and file mileage reports that are not required under the present system.

Oregon's tax rates are defined for classes based on registered gross vehicle weight, but they are not based on the assumption that vehicles are always fully loaded. Instead, they are based on cost-responsibilities for observed operating rates. Also, to lessen the recordkeeping and reporting burden on carriers, optional flat-fees (payable quarterly) are available for vehicles with gross weights less than 18,000 pounds and for vehicles that make only limited use of highways, such as farm and logging trucks. Carriers that make only occasional use of Oregon highways can operate with temporary passes and pay the tax as each trip is made.

Retaliation. Heavy vehicles typically pay higher taxes to operate in weight-distance tax states than to operate in states that employ a traditional two-tier system of highway taxes. Consequently, if a single state (Minnesota) were to impose a weight-distance tax, heavy vehicles based in most other states would pay higher taxes when operating in Minnesota than Minnesota-based vehicles would pay when operating in other states. States with two-tier systems have often responded to this uneven treatment by cancelling reciprocity agreements and/or imposing retaliatory taxes on vehicles from weight-distance tax states. The prospect of such retaliation is an important barrier to a single state acting alone to impose a weight-distance tax. And it has led the American Association of State Highway and Transportation Officials (AASHTO) to advocate a national weight-distance tax, but not state-level taxes. Although retaliation clearly has not prevented individual states from successfully implementing weight-distance taxes, it is an important argument against them.

Implementation. Serious consideration of a weight-distance tax should be preceded by a state study that would provide cost-responsibility estimates for each vehicle class, and on the basis of those estimates, recommend appropriate weight-distance tax rates. It should also discuss administrative options and issues and make recommendations about the extent to which the weight-distance tax should substitute for the fuel and license taxes presently levied on each vehicle class. In making these recommendations, the study would have to reach a judgment about whether the present subsidies of relatively heavy, high-mileage vehicles should be continued, and it should make clear the magnitude of any subsidies that are recommended for continuation. The study should also address the question of whether the efficiency and equity gains from a weight-distance tax warrant the additional administrative cost involved. The cost of administering a weight-distance tax appears, from the Oregon experience, to be about 5%-7% of revenue, while fuel tax administrative cost is typically less than 1% of revenue.

For reasons of both equity and efficiency the weight-distance tax rate for each vehicle class should be set to cover the per-mile variable costs (repair, reconstruction, maintenance, and operation costs) generated by a typical vehicle of that class. But rates should not be set high enough to cover costs that do not vary with mileage, such as right-of-way acquisition, landscaping, and weight-enforcement costs. With rates set in this manner, annual weight-distance tax revenues would cover annual outlays for highway repair, reconstruction, maintenance, and operation. Whether total highway tax revenues would increase with the introduction of a weight distance tax would depend, of course, on how fuel and license tax rates are adjusted. There could be an equal-yield substitution of weight distance for other user taxes in which case total user-tax revenue would be unchanged. Or, fuel and license taxes could be reduced by less than the yield from the weight-distance tax so that total user-tax revenues would increase. In any case, a weight-distance tax should not be implemented as a complete substitute for fuel, registration, and license taxes.

DIESEL DIFFERENTIAL

Taxing diesel fuel at a higher rate than gasoline is a means of taxing heavy trucks more in line with the costs they generate. Although it would not be as satisfactory in this respect as a weight-distance tax, a diesel-differential would have the advantage of being easily understood and easily administered. Each 1 cent addition to Minnesota's diesel fuel tax rate would yield about $3 million in revenue.

Twelve states currently levy a diesel differential, with the added rate for diesel ranging from 1 cent to 3 cents per gallon. Among neighboring states, both Iowa and Illinois have diesel differentials of 2.5 cents per gallon. A 6 cent federal diesel differential was recently approved by Congress.

Increasing the tax on diesel fuel would increase the marginal-user tax for diesel powered trucks. Since the marginal tax is presently too low for the heavier classes of vehicles, this change would promote efficiency. It would also improve equity within vehicle classes by increasing tax payments by high-mileage users relative to payments by low-mileage users. For between-class equity to be improved, the license taxes of the heavier vehicle classes should not be reduced enough to offset fully their added diesel fuel taxes—there should be a net increase in the tax payments (fuel and license taxes combined) of the heavier vehicle classes.

Although imposing a diesel differential could improve Minnesota's highway-user tax system, it would not eliminate undertaxation of heavy vehicles. For example, with a federal fuel tax rate of 15 cents per gallon and a doubled Minnesota rate of 34 cents, the per-mile fuel tax for fully-loaded, 5-axle 80,000-pound vehicles would be only 9 cents, well below the 1982 federal cost allocation study estimates of the cost that such vehicles generate per mile of travel.

Apart from the possibility that it may be a pretext for greatly reducing license taxes on heavy vehicles, the main disadvantage of a diesel differential is that it would aggravate the enforcement problem that arise because fuel oil ostensibly purchased for non-highway uses can be diverted to use in highway vehicles. A higher tax on highway use of diesel would increase the incentive for such diversion. Enforcement would be facilitated by collecting the tax on diesel from sellers on all of their sales. Non-highway users would then be eligible for a credit upon application.

FUEL SURTAXES

An alternative to a diesel differential would be an additional tax on fuel purchased for trucks in excess of a given weight. This approach eliminates the incentive to substitute other fuels for diesel. Currently, two states have such a tax. Kentucky imposes a 2% surtax on fuel purchased for any vehicle with three or more axles; Virginia imposes an additional tax of 2 cents per gallon on fuel purchased for interstate property vehicles with three or more axles. The surtax rate could be graduated, increasing with vehicle weight, rather than being the same for all heavy vehicles. A graduated surtax could achieve approximately the same results as a weight-distance tax.

A heavy-vehicle surtax would entail higher administrative and compliance costs than either the present system or a diesel differential. Collection of the surtax could be made the responsibility of fuel sellers, or the tax could be self-assessed, with truckers bearing the responsibility for reporting their fuel purchases and tax liabilities. In the latter case, the administrative and compliance costs would be similar to such costs under weight-distance taxation, with the main difference that mileage would be reported under weight-distance taxation while fuel use would be reported under the surtax option.

INDEXING MOTOR FUEL TAXES

Until the late 1970s, states increased fuel tax rates only through periodic legislative action. However, in response to the rapid inflation of the late 1970s and early 1980s, eleven states and the District of Columbia have enacted (as of January 1, 1984) mechanisms for administratively adjusting fuel tax rates in response to one or more indexing factors. And indexing will become effective in Wisconsin in April 1985.

Indexing factors include the consumer price index (CPI), retail price of fuel, wholesale price of fuel, the federal highway administration operation and maintenance cost index, and sales of taxable fuels. States utilizing indexing typically restrict the range over which tax rates may vary in response to index changes.

Indexing on the basis of operation and maintenance costs prevents inflation from eroding the purchasing power of fuel tax revenues. The same result may at times be achieved with indexing based on other factors. But these factors, the CPI and the wholesale and retail prices of fuel, may move independently of operation and maintenance costs; indeed, indexing on the basis of these factors can lead to decreases in fuel tax rates even though highway costs are continuing to rise.

Ohio and Michigan are the only states that presently index on the basis of operation and maintenance costs; Wisconsin will index on this basis beginning April 1985. They also use a second factor, taxable sales, to which tax rates are inversely-related—when taxable sales (gallonage) falls, the tax rate increases. The Ohio and Michigan indexing mechanisms are clearly superior to other mechanisms if the objective is to prevent the purchasing power of fuel tax revenues from falling during periods such as the late 1970s and early 1980s when highway costs are increasing in dollar terms and rising fuel prices are curtailing fuel consumption.

Indexing fuel tax rates on the basis of highway costs may promote both equity and efficiency by preventing decreases in the real value of marginal-user taxes during periods of inflation.[14] Such decreases, which occurred during the 1970s, may prevent needed maintenance and expansion of the highway system, as well as provide an incentive for its overuse. The same reasoning supports indexation when highway cost increases are real—when highway costs rise relative to and not simply along with other prices and costs.

What would Minnesota's fuel tax rate be today if it had been indexed since 1960 on the basis of operation and maintenance costs? From 1960 to 1982 the federal operation and maintenance cost index increased 315% requiring an increase in the fuel tax rate from 5 cents to 20.75 cents per gallon. Current values of the cost index are not available, but costs have surely increased. Thus, indexing since 1960 would have led to a fuel tax rate that is at least 4 cents higher than the current rate of 17 cents per gallon. An additional tax

of 4 cents per gallon would increase revenue by about 23% or $74 million dollars at the level of net collections forecast for FY 1985.

Minnesota's revenue gain from a fuel tax increase, brought about by indexing or otherwise, would depend on the rates levied in other states. The gains from indexing would be greatest when neighboring states also index so that rates move together. The revenue estimate given in the preceding paragraph is based on historical patterns and periods during which fuel tax rates were increasing in Minnesota and neighboring states. Thus, the estimated revenue gain from a 4-cent tax increase should be adjusted downward if rates in neighboring states are expected to remain unchanged—although it is difficult to say how large this adjustment should be.

An alternative to indexing would be to replace the present per-unit tax with a tax on the dollar value of retail or wholesale sales of highway fuels. This ad valorem tax would provide an inflation-sensitive source of revenue and therefore serve somewhat the same purpose as indexing. It is essentially indexing on the basis of fuel prices. Including fuel purchases in the retail sales tax base would have the same result. Based on 1984 fuel prices and purchases, the 6% sales tax applied to fuel purchases would yield about $156 million, or roughly the same amount as the motor vehicle excise tax.[15] Eleven states levy sales or gross receipts taxes on fuel purchases in addition to the gallonage tax. Among neighboring states, Illinois currently levies a sales tax as well as a gallonage tax on fuel purchases.[16]

INDEXING LICENSES TAXES

Minnesota's motor vehicle license taxes are partially responsive to inflation in that registration fees for automobiles and pickup trucks are based on dollar value. In contrast, revenues from truck and bus registrations, which are based on age, weight, and use, are not sensitive to the inflation rate. License taxes could, like fuel taxes, be fully indexed to operation and maintenance costs or some other measure of inflation, and the arguments for indexing fuel taxes would also hold for indexing license taxes. Furthermore, if one tax is indexed, it makes sense to index all highway-user taxes to prevent inflation from capriciously shifting costs among user groups and changing the relative importance of individual taxes.

DEDICATION OF MOTOR VEHICLE EXCISE TAXES

Fourteen states currently dedicate some or all of their motor vehicle sales and use-tax revenue to a road or highway fund. On July 1, 1984, Minnesota began dedication of part of its motor vehicle excise tax revenues to the highway users tax distribution fund: the fraction dedicated will reach a maximum of 75% in FY 1992.

Motor vehicle excise taxes are paid by highway users and in that sense they are user taxes. However, the amount of tax paid does not vary directly with highway mileage, and more important, it is only loosely connected to costs generated by highway use. The motor vehicle excise tax is therefore far from an ideal user tax, and the transfer of motor vehicle excise tax revenue to the HUTD fund is correctly viewed as the use of general purpose revenue for highway financing.

Dedication of motor vehicle excise tax revenues to the HUTDF has been supported as an offset to the failure of traditional user-tax revenues to keep pace with highway costs and funding needs. However, this failure can in large part be attributed to the fact that the legislature has not adjusted fuel and license tax rates in response to inflation. Thus, indexing of fuel and license taxes can be viewed as an alternative to dedicating motor vehicle excise tax revenues to the HUTDF.

Another alternative would be to include fuel purchases in the retail sales tax base and dedicate the resulting sales tax revenues to the HUTDF. The main advantage of this alternative is that the sales tax on fuel purchases is more directly related to highway use than is the motor vehicle excise tax.

SUMMARY AND POLICY IMPLICATIONS

Both equity and efficiency criteria require that highway users be taxed according to the costs they generate. However, Minnesota's highway-user taxes (fuel and license taxes) depart significantly from these broad principles. Vehicles in the heavier weight classes underpay, and within weight classes, vehicles with low annual mileages and/or low-average loads overpay relative to vehicles with high mileages and/or loads. Minnesota's user tax system thus entails cross-subsidies—relatively light, low-mileage vehicles subsidize relatively heavy, high-mileage vehicles. These subsidies provide an incentive for overuse of the system by relatively heavy vehicles, and they may generate excessive demand (expressed through the political process) for highways that will handle heavier vehicles.

Other states currently employ several methods of taxation that could be used to align Minnesota's user taxes more closely with the highway costs generated by various vehicle classes. One is the weight-distance tax, under which truck operators pay taxes on the basis of weight and type of vehicle and on miles traveled. Another is the diesel differential, which taxes the fuel used primarily by heavier vehicles at a higher rate than gasoline. Although it could reduce the subsidy of relatively heavy vehicles implicit in the present system (if it is not used a pretext for greatly reducing license taxes), a diesel differential is inferior to a weight-distance tax as a means of taxing according to marginal cost. Its chief advantage is that it is more easily understood and represents a smaller departure from current practice than

does a weight-distance tax. A third alternative is a surtax (additional tax) on fuel purchased for heavy trucks.

Implementing any one of these three taxes would increase administrative and compliance costs, but it would also produce equity and efficiency gains. It would decrease the cross-subsidy of heavier (in terms of axle loads) by lighter vehicles and decrease road use and damage by heavier vehicles.[17] Shipping costs, defined to include costs of constructing and maintaining highways, would be reduced. However, some shippers would pay higher shipping charges because they would be paying for more of the highway damage generated in connection with their shipments, and some shipping would be diverted to other modes.

ENDNOTES

1. Outlays for right-of-way acquisition, grading, and landscaping are examples of fixed costs; outlays for road maintenance, repair, reconstruction, and operation are the main components of variable costs.

2. These statements presume that other transportation alternatives are efficiently priced.

3. The surface transportation assistance act of 1978 and the congressional budget office guidelines both stipulated use of the cost-generated or cost-occasioning basis for assessing equity in the most recent federal highway cost allocation study (1982). In assessing the fairness of user taxes initially paid by transport operators, it is necessary to keep in mind that the buyers of the transported products are, in the final analysis, the highway users. The transportation company is merely acting as the buyers' agent. It is the buyers' demand for and expenditures on the transported products that generates highway use and the associated costs. Therefore, the cost-generated criterion is not violated when taxes paid by transport operators are shifted forward to consumers who do not directly use highways.

4. We are forced to use data from the federal highway cost allocation study because a similar study has not been made for Minnesota's highway system. There is no reason to believe that a Minnesota study would show a different pattern of cost-responsibility than the federal study, although the results would surely differ in details. For more information on cost allocation, see U.S. Department of Transportation, *Final Report on the Federal Highway Cost Allocation Study,* U.S. Government Printing Office, Washington, D.C., 1982. Also, see American Association of Highway and Transportation Officials, *AASHTO Interim Guide for Design of Pavement Structures,* 1972, revised 1981, and *Our Highways: Why Do They Wear Out? Who Pays for Their Upkeep?,* 1982.

5. The base rate increases from $15 for vehicles with gross vehicle weight of 1,500 pounds or less to $1,620 for 81,000-pound vehicles, with the rate increasing $50 for each ton in excess of 81,000 pounds. The license tax for each age and category of truck is a fraction of this base rate.

6. Such an incentive would exist even if the license and fuel tax payments of heavy vehicles were in the aggregate sufficient to cover the highway costs generated by those vehicles.

7. These needs are summarized in Minnesota Department of Transportation, *State Transportation Programs in Minnesota,* January 1, 1984, pages II-3 through II-6.

8. Minnesota Department of Transportation, *State Transportation Programs in Minnesota,* Jan. 1, 1984.

9. A national weight-distance tax is one of the alternatives evaluated in a recent study by the U.S. Department of Transportation, *Alternatives to Tax on Use of Heavy Trucks,* Report to Congress, January 1984. See pp. VI-8 through VI-13 and VII-10 through VII-11. The American Association of State Highway and Transportation Officials (AASHTO) has recently endorsed a federal weight-distance tax. See *AASHTO Quarterly,* Vol. 63, No. 3, July, 1984. For discussion of weight-distance tax options and administrative issues, see also John Merriss and Loyd Henion, "Oregon's Weight-Distance Tax: Theory and Practice," a paper presented at the twenty-fourth Annual Meeting of the Transportation Research Forum, Washington, D.C., Nov. 3-5, 1983, and Loyd Henion and John Merriss, "An Equity Assessment of Federal Highway User Charges," a paper presented at the sixty-third Annual Meeting of the Transportation Research Board, Washington, D.C., Jan. 16-20, 1984.

10. Based on data from Federal Highway Administration, *Final Report of the Federal Highway Cost Allocation Study,* 1982.

11. Type of roadway traveled would also influence cost-responsibility. A ton-mile tax, currently used by Colorado and Wyoming, does allow for load differences, but doing so greatly complicates compliance and administration. See Merriss and Henion, "Oregon's Weight Distance Tax," pp. 3-4.

12. This discussion of Oregon's system is drawn from Merriss and Henion.

13. The American Trucking Association (ATA) has strongly opposed weight-distance taxes, partly on the grounds that they are costly to administer. A recent ATA publication, *The Case Against Weight-Distance (Ton-Mile) Truck Taxes,* Washington, D.C., Jan. 1984, estimates that the cost of administering Oregon's weight distance tax was 31% of revenues in CY 1981. Applying the same procedure for estimating administrative costs would yield a similar percentage for 1982 and 1983. However, the ATA estimate of administrative costs attributable to Oregon's weight-distance tax is too high. Their procedure does not correctly separate the costs of administering the weight-distance tax from Oregon's driver's license, vehicle registration, weight enforcement, and other motor carrier programs. Indeed, the ATA estimate exceeds the full budget of the Oregon Public Utility Commission, which is involved in a number of administrative and regulatory activities in addition to administration of the weight-distance tax.

14. These decreases could of course also be prevented by frequent tax rate increases. But such increases require legislative action and therefore are typically imposed only with a lag. The manner and pattern of recent rate increases clearly show a lagged adjustment of rates to inflation. For an excellent analysis of recent changes in gasoline taxation see J. H. Bowman and M. L. Mikesell, "Recent Changes in State Gasoline Taxation: An Analysis of Structure and Rates," *National Tax Journal,* Vol. 36, No. 2, June 1983, pp. 163-182.

15. Estimate assumes 2 billion gallons of taxable fuel sales at $1.30 per gallon; thus, it is based on retail price including fuel tax.

16. Federal Highway Administration, *Highway Taxes and Fees: How They are Collected and Distributed,* 1984, pp. 56-57. See also J. H. Bowman and J. L. Mikesell, "State Gasoline Taxation."

17. The magnitude of the welfare gain from a nationwide shift to marginal-cost user-taxes has been estimated at $2.3 billion for 1982 price and cost levels. See Kenneth Small and Clifford Winston, "Welfare Effects of Marginal Cost Taxation of Motor Freight Transportation: A Survey of Infrastructure Pricing," presented at the National Bureau of Economic Research Conference on State and Local Public Finance, New York, N.Y., June 15-16, 1984.

Part IV

The Taxation of Business

10
A Critical Look at Formula Apportionment

Roger H. Gordon

The Minnesota corporate income tax raises several hundred million dollars a year in tax revenue. This report examines how this tax affects the Minnesota economy, how equitable the tax is, and what changes in the tax might be desirable. The report draws heavily on a variety of papers in the academic literature, most importantly on Gordon and Wilson (1984), McLure (1980, 1981), Mieszkowski and Morgan (1984), and Fullerton and Gordon (1983).

The organization of the report is as follows. Section I surveys a variety of criteria to be used in evaluating the existing tax. Section II then describes what effects the existing corporate income tax is likely to have had on the Minnesota economy, and compares these with the likely effects of several proposed modifications of the tax. The discussion is based on the implications of standard economic models of business firms behavior, and focuses on the many peculiar incentives created by the existing corporation tax. As these economic models have not been much-tested empirically—because of inadequate available data—little is known about how much firms do in fact respond to these incentives. Conclusions of the paper and recommendations for changes in the tax law are presented in the final section.

APPROPRIATE CRITERIA TO USE WHEN EXAMINING A TAX

The Minnesota tax commission's report provides a general discussion of the appropriate criteria to use when evaluating the design of a state tax. This section will briefly elaborate on a few of the objectives, to put the following discussion in context.

EQUITY

Popular discussions normally focus on whether the tax payment made by any given taxpayer seems appropriate, given the characteristics of the

taxpayer. Yet, to an economist, such evidence indicates little or nothing in itself about the equity of a tax. When a tax is imposed on a corporation, the company must either raise its prices or cut its labor costs, rental costs, or payments to shareholders to cover any taxes due. How much of each occurs is referred to as the incidence of the tax. The argument below is that, at least in the long-run, a state corporate income tax should have little effect on payments to shareholders, and will mainly increase prices and decrease wage rates. Firms will not invest in a state unless they can earn as much by investing there as they can by investing in other states or in other countries. The appropriate measure of the fairness of the tax is whether the resulting pattern of increases in corporate output prices and decreases in wage rates seems to affect equitably the economic positions of residents. Unfortunately, it is very difficult to infer how much any given price or wage rate has been changed by the existence of the corporate tax.

Not only does a tax cause a permanent change in prices and wages, but also—when a tax change is first announced—there will be an immediate change in the value of existing assets and businesses, reflecting the change in future tax liabilities of the owners of the assets. These windfall gains and losses are in effect large one-time transfers received from or paid to the government. They are received (paid) solely by the owner of the asset when the tax is changed—they cannot be shared with a future purchaser of the asset, as the sales price of the asset would have adjusted to reflect the tax change. The equity of these transfers must be considered whenever a tax change is contemplated.

EFFICIENCY

The discussion of the efficiency effects of corporate taxes will focus on ways in which the tax induces taxpayers to change their economic decisions solely to avoid tax. Taxpayers lose what taxes they pay, but in addition they lose when they readjust their activities, lowering their profits or utility, so as to avoid paying yet more in taxes. This latter loss is not compensated by extra tax revenue to the state.

When examining the effects of a state corporate tax other complications arise. To the degree, for example, that a corporation covers its tax payments in large part by charging more when it sells goods outside of the state, that tax is implicitly paid by nonresidents, and provides revenue at relatively low cost to residents. Conversely, if a taxpayer must pay more to other states when he pays more to Minnesota, then he loses more than the state gains in revenue. This excess loss does occur with a state corporate income tax—when a firm's profits increase to cover Minnesota taxes, tax payments to other states increase as well.

Another complication arises from the fact that corporations benefit from many state government services. If a corporation's decisions affect the cost

of provision of public services, e.g., if an expansion of a plant puts increased pressure on the public roads, the police force, etc., the firm ought to pay for the extra costs created by its actions on efficiency grounds. Otherwise, the corporation would make more intensive use of public services than would be appropriate. User fees ought to be charged wherever possible.

User fees are very difficult to administer, however. The best alternative to them is to tax some aspect of the firm's behavior which is closely related to its demands on public services. For example, if the corporation's commuters clog the roads, the best measure may be the number of employees (or the size of the firm's parking lots). In general, the firm's use of public services is probably more closely related to its level of production in the state than to its level of sales. This observation would support a tax based on some measure of production. Profits are probably less closely related to the firm's use of public services than are many alternative tax bases.

Yet another cost created by a corporate tax is the administrative expense to both the state and the firms of keeping records, filling out firms, and perhaps negotiating a tax settlement or contesting a tax judgment in court. These costs can easily become large relative to the taxes paid. In particular, when the tax law is unclear, taxpayers are likely to go to great effort and expense to justify a favorable interpretation of their situation. These costs are not compensated by extra tax revenue to the state.

ECONOMIC EFFECTS OF A STATE CORPORATE INCOME TAX

When discussing the effects of a state corporate income tax, it will be assumed that the tax is assessed using separate accounting, as is the case regarding the federal corporate income tax. Such a tax at the state level is purely hypothetical—calculating internal transfer prices for all goods and services moving across state borders but within a firm would be very difficult and expensive—but many of the effects of existing taxes would occur even if separate accounting was used. The following sections discuss complications created by use of formula apportionment.

CORPORATE TAXATION WITH SEPARATE ACCOUNTING

In analyzing the impact of a tax based on separate accounting, the first issue is what exactly is being taxed. In principle, the tax base is the income earned by capital used within the firm. Taxing away some fraction of these earnings discourages investment.

However, the incentives created by existing taxes are not so clear cut. Consider an investment which, without taxes, appears to be minimally worthwhile. Assume now that a tax is imposed which allows the initial cost of the investment to be deducted immediately, but then taxes any earnings

arising from the investment. If the tax rate is T%, the government implicitly pays the investor T% of the cost, but taxes away T% of the return. The government is simply acting as a coinvestor, accepting T% of all expenses and returns, and does not affect the incentives to invest. In general, as long as the present value of any tax deductions arising from an investment equals the cost of the investment, the tax does not discourage new investment. If the present value of the deduction falls short of the initial cost of the investment, the tax makes investment less attractive; conversely, if the present value of the deduction exceeds the cost of the investment, new investment is encouraged by the presence of the tax.

These deductions primarily arise from depreciation allowances. In addition, when debt is used to help finance new investment, deductions arise as well from the resulting interest payments. According to the *Economic Report of the President* (1982), under the 1981 tax legislation, the federal corporate income tax encouraged new equipment investment—the present value of deductions would exceed the cost, given the rapid acceleration of depreciation plus the effects of the investment tax credit. In contrast, they reported that investment in structures would be slightly discouraged by the tax.[1]

Imposing a state corporate tax, using the federal definition of taxable income, would have the same incentive effects on new marginal investments (investments which just break even) as raising the federal corporate tax rate. When the federal tax encouraged new marginal investment, so would the presence of a state corporate income tax.

In an appendix to an earlier version of this paper some calculations explored how the Minnesota corporate tax is likely to affect the attractiveness of new investment. The results suggest that the Minnesota tax, like the federal tax, makes most new marginal investments more attractive, contrary to common expectation. Put simply, the required earnings on new investments are low enough, due to generous provisions in the federal law, that the extra taxes collected on these earnings by the Minnesota tax are smaller in present value than the extra taxes saved through depreciation and interest deductions allowed.

However, most firms considering whether to invest in a state want to earn more on average investments than the minimal rate of return necessary to attract funds. When a firm is more than minimally profitable, the extra profits are subject to tax, yet no extra deductions arise, so a high state-tax-rate discourages firms which expect to be very successful from locating in the state, even while it lowers the minimal rate of return required on new investments by firms already located in the state.

For a profitable firm to consider locating in the state, then, it must find some other aspect of the state that outweighs the higher taxes. Firms normally maximize after-tax profits, and a firm would locate in a high-tax-rate state only if the before-tax rate of return on the investment at least

covers the higher taxes. The after-tax rate of return on the investment must be as high as elsewhere.

Of course, when a tax is changed unexpectedly, firms already in the state cannot easily leave so they may find their after-tax income lower. However, new investment will not occur in the state until it earns as much there as elsewhere. But when it does, previous investment should also be earning as much as the equivalent investments elsewhere, so any loss to existing firms is temporary.

In order for the before-tax-rate of return to be higher in the high-tax state, however, either sales prices must be higher or other input-prices (labor costs or rental costs) must be lower than elsewhere. To what degree each of these changes occurs is difficult to say. For example, if prices rise too much, there will be intense competition from goods produced in other states. If firms in Minnesota sell out-of-state, they compete directly with these other firms, and cannot charge more than their competitors.[2]

A fall in wage rates seems more likely to occur. Extra corporate taxes presumably fund increased government expenditures, which make the state a more attractive place to live. As a result, individuals are more inclined to live and work in the state even at a lower wage—the supply curve of labor shifts down. Of course, some types of workers are more mobile than others, and perhaps less affected by the extra state expenditures, so their wages ought to change relatively less in equilibrium. The reduction in wage rates necessary to attract a firm into the state, in spite of the higher taxes, would vary by firm. Firms subject to higher taxes relative to their payroll would require a larger reduction, and they would be driven out of the state in favor of firms owing less in taxes relative to their payroll and thus willing to accept a smaller reduction in wage rates.

Land rents may also fall somewhat as a result of the tax. To the degree they drop substantially, however, land would shift from commercial to residential and agricultural uses. If zoning restrictions prevent this movement, or if the land is clearly more valuable in commercial or industrial uses (e.g., a coal mine), the fall in land rents (and land value) could be important. But this fall in rents is an inequitable burden on the owners of the land at the time of the tax change. Any drop in land prices would primarily attract land-intensive industries that owe relatively little in taxes.

The same incidence story would apply to any tax on corporate capital, including a property tax. New investments must earn as much in Minnesota as elsewhere. If investment continues to be worthwhile in the state, other factors must be paying the tax. Precisely which factors end up paying the tax is difficult to say, though the ultimate incidence of the tax is likely to seem quite inequitable relative to that of most other states taxes.

UNITARY TAXATION WITH FORMULA APPORTIONMENT

Even though separate accounting is used by the federal government, no state has attempted to use it; measuring prices of goods and services moving within a firm but across state lines is a formidable problem. Consider the problem of measuring the earnings generated by a corporate headquarters. A headquarters normally provides financial and management services—and often research ideas—to the rest of the firm. None of these outputs would typically be sold, so no revenue is generated directly. The services do have value, but there is no clear way to assign each service a specific price, and then allocate the value of the service to each of the divisions in other states.

To avoid problems of transfer prices, states have tried to measure the profits of the entire firm, allocating some fraction to each state by some reasonable formula. Their hope is to be able to measure revenues and expenses of the firm solely by arm's-length market prices. However, the definition of a "firm" can be ambiguous for large companies comprised of several hundred separate corporate entities. States have gradually broadened their definition of the boundaries of a firm, seeking to eliminate as much as they can the need for transfer prices. Most states now use some form of unitary taxation.

A unitary corporate tax based on formula apportionment can create quite different incentives than a corporate tax based on separate accounting, even assuming that no problems exist with respect to transfer prices under a unitary tax. There are a variety of distortions created by formula apportionment, which do not exist under separate accounting; the following focuses on the situation of a state such as Minnesota with a high statutory tax rate.

Merger incentives/incentives to operate in several states. To begin with, a corporate tax based on formula apportionment creates incentives to alter the patterns of ownership of corporations. These incentives exist since the taxes assessed on a plant depend on what other plants outside the state are grouped with it. Consider a profitable firm based in Minnesota. If it merges with (or opens up) a marginal firm of equal size in a low-tax-rate state, half of its high profits will be allocated for tax purposes to this low-tax-rate state. Tax law encourages such mergers, and total tax payments drop as a result.

Similarly, a profitable firm outside of the state will hesitate to open operations or merge with a firm in Minnesota since some fraction of its high profits would then be allocated to Minnesota. These extra taxes can be large relative to normal earnings on the investment in the state, or relative to the gains from merging with an existing firm. In contrast, because an out-of-state firm with negative taxable income would presumably continue to pay no taxes even after opening a new plant in Minnesota, it would be able to undercut a similar plant opened by a profitable out-of-state firm. In summary, the tax law induces profitable firms in Minnesota to shift most of

their operations out-of-state, and discourages profitable firms from entering the state. No such incentives exist under separate accounting.

Factor and sales tax elements. In many ways a corporate income tax based on formula apportionment is similar to a particular set of property taxes, payroll taxes, and sales taxes. Whenever a multi-state firm invests in Minnesota, hires labor in Minnesota, or sells output in Minnesota, the fraction of its total profits allocated to Minnesota goes up, and its Minnesota taxes go up. Minnesota taxes increase whenever capital, payroll, or sales in Minnesota increase, just as if property taxes, payroll taxes, and sales taxes existed explicitly instead. Under formula apportionment, the degree to which taxes increase when property, payroll, or sales are increased in Minnesota will vary across firms, depending on how much profit they potentially have subject to tax. If a firm has no taxable profits, its taxes will not be affected by its capital, payroll, and sales decisions. Also, a firm based solely in Minnesota has all its profits allocated to Minnesota, regardless of its property, payroll, or sales decisions. For such a firm, profits and therefore extra taxes, will be generated by property investment, but if the firm is profit-maximizing, profits will not be changed by small changes in payroll or sales, and these decisions are not implicitly subject to tax. Implicit tax rates also vary depending on whether a firm apportions its profits based on equal weights on property, payroll, and sales ratios, or based on a 70% weight applied to the sales ratio.

The pattern of implicit tax rates created by the existing corporate tax could be duplicated by using some combination of property taxes, payroll taxes, and sales taxes. However, this set of tax rates would vary by firm in a peculiar way. Even though peculiar, this set of factor and sales taxes (with rates fixed once imposed) would be preferable to the existing corporate income tax, as it would raise more revenue with lower efficiency costs. Revenue would rise because other states do not get to tax the extra profits generated to pay the factor taxes: factor tax payments, unlike corporate income tax payments, are deductible when calculating taxable profits in these states. Even if these factor tax rates are set so as to preserve the implicit tax rates on property, payroll, and sales, efficiency costs go down because distortions of corporate merger decisions would be eliminated.

While preferable to the existing corporate income tax, this set of factor and sales taxes, with rates varying by firm, is still distinctly unattractive. If proposed explicitly, it would never gain public support. The tax due on a new venture would depend on who does it as well as its nature. Differences in tax rates across firms would result in incentives for unprofitable firms to expand and profitable firms to contract, since the tax rates on unprofitable firms would be lower than those on profitable firms. Capital and labor, rather than being hired by the firm where their value is highest, could be hired most cheaply by unprofitable firms.

With no corporate tax in Minnesota, these differences in implicit tax rates across firms would not disappear, but they would reverse direction. When a profitable firm invests in Minnesota, taxes due elsewhere drop substantially; when an unprofitable firm invests in Minnesota, taxes elsewhere drop slightly, if at all. With no corporate tax in Minnesota, capital and labor would be hired most cheaply by profitable rather than unprofitable firms, even if Minnesota was to impose property or payroll taxes.

Cross-hauling. The variation in effective tax rates on sales across firms can also create an incentive for profitable firms in Minnesota to sell out-of-state and for less profitable firms to sell in-state. Because the tax rate on sales under formula apportionment varies by firm, the more profitable the firm is, the higher the tax. Also, a firm which does not have nexus in a state pays no extra tax to that state when it sells there (though it may pay less to other states). These differences in tax rates across firms are more important when the statutory tax rate is high, as it is in Minnesota, pushing profitable firms to sell in low-tax-rate states and unprofitable firms to sell in high-tax-rate states—and pushing all firms to sell in states where they do not have nexus.

Since firms located primarily in high-tax-rate states tend to have high taxable profits, formula apportionment creates an incentive for them to ship output to low-tax-rate states and firms in low-tax-rate states to ship output to high-tax-rate states, a pattern of trade known as "cross-hauling." The choice of apportionment formulas allowed in the Minnesota corporate tax law accentuates these cross-hauling incentives. Consider, for example, two identical firms producing the same good, one located in Minnesota and one out-of-state. If the Minnesota firm ships all its output to the other state, it would select the weighted apportionment formula and be taxed in Minnesota on only 30% of its profits. If the out-of-state firm ships all its output to Minnesota, and has nexus, it would select the equal-weighting formula and be taxed in Minnesota on 33% of its profits. Through this cross-hauling of output, total taxes collected in Minnesota would be only 30% + 33% = 63% of what they would have been had each firm sold locally. In contrast, taxes collected by the other state, assuming it allows only the equal-weighting formula, do not change in the process, leaving a strong incentive encouraging cross-hauling.

If there were no corporate tax in Minnesota (or one just large enough to avoid having other states invoke a "throwback" rule with respect to Minnesota sales), sales in Minnesota would implicitly be subsidized because corporate taxes due elsewhere would drop for firms selling in Minnesota. This drop would be largest for profitable firms located in states with high tax rates, and these firms would be the ones most encouraged to sell in Minnesota. These relative incentives would not change if Minnesota were to change its sales tax rate, as all firms would face the same change in the sales tax rate.

Effects of apportioning based on sales. Governor Perpich recently proposed that the apportionment formula give 100% weight to sales, and no weight to property or payroll. If this formula were mandatory, cross-hauling incentives would be reduced in some circumstances relative to the current law, but increased in others. Consider again the example of two identical firms, one in-state and one out-of-state. If both firms have nexus in Minnesota, cross-hauling would have no effect on Minnesota taxes, whereas under current law, cross-hauling reduces Minnesota taxes by 37%. (Any mandatory formula would eliminate cross-hauling incentives in this example.) However, if the importer does not have nexus in Minnesota, cross-hauling would entirely eliminate any taxes in Minnesota for the two firms, whereas under current law Minnesota taxes would be cut by "only" 70% in this situation. Similarly, there would be stronger incentives under this proposal for profitable firms to sell out-of-state and for unprofitable firms to ship the same type of good back to the state—the heavier weight on the sales factor increases the tax savings arising from cross-hauling.

Since apportionment would be based only on sales under this proposal, selling in the state would increase taxes for a multi-state firm, and would be profitable only at a higher price than is available elsewhere. As before, the degree to which taxes increase for a multi-state firm when it sells in Minnesota can vary dramatically by firm depending on the firm's average corporate tax rate elsewhere, and on how profitable it is.

However, adding payroll or property in Minnesota would not affect a firm's taxable income as in Minnesota, yet it would decrease the fraction of the firm's taxable income elsewhere. Therefore this change in the tax law would clearly encourage firms to produce but not sell in Minnesota.

Shifting to an explicit sales tax would have the same advantages. Adding property or payroll in the state would not directly affect a firm's tax payments in Minnesota, yet would reduce the firm's corporate taxes paid elsewhere. Adding sales in Minnesota would reduce a firm's corporate taxes elsewhere, but result in extra sales taxes in Minnesota. However, under a sales tax, the effective tax rate would be the same for all firms and for all goods: under the proposed corporate income tax, the effective sales tax rate would vary across firms and goods, perhaps dramatically. In addition, an explicit sales tax does not subsidize sales in other states, nor create an incentive to change the organizational structure of the firm, as would be the case with a corporate income tax under formula apportionment.

CORPORATE TAXATION WITH FORMULA APPORTIONMENT

Until 1982, Minnesota assessed tax solely on corporations with operations in Minnesota. Some are now proposing returning to this.

Does this narrower definition of the firm change incentives? Formula apportionment is still needed and was used to allocate income of a multi-

state corporation between states. All the peculiar incentives described above still exist with the narrower definition of the firm, and some of these incentives become much easier to manipulate making this form of the tax a less sure way to raise tax revenue.[3] For example, cross-hauling might be used very easily to reduce taxes. A corporation in Minnesota could sell all its output, even at a fair market price, to an affiliated corporation across the border, and apportion only 30% of its income to Minnesota. The affiliated corporation can then ship the goods back to Minnesota, but if it does not have nexus in the state, no taxes are due. Under unitary taxation, the same pattern of trade could be developed, but not organized within one firm.

In addition, with the narrower definition of a firm, a corporation has a strong incentive to avoid nexus within the state. Any profitable corporation within a firm would have the incentive to transfer any operations within Minnesota to an affiliated corporation already located in the state, thereby removing its profits from the Minnesota tax base. Conversely, corporations with losses would seek to merge with affiliated corporations in Minnesota to help them save on taxes. Under unitary taxation, all affiliated corporations are automatically pulled into the tax base, whether or not they individually have nexus; thus, it becomes more difficult for a firm to rearrange operations to avoid tax.

One offsetting advantage of the narrower definition of the firm, however, is that deciding which corporations are subject to tax is very clear cut, thus making administration of the tax straightforward for both the state and for corporations. The definition of a unitary firm, in contrast, involves more subjective criteria, and it allows both firms and the state to press for different interpretations of the law, creating expense and ill will in the process.

WORLD-WIDE APPORTIONMENT

Rather than considering the narrower definition of the firm, several states have chosen an even broader definition—one that apportions world-wide income and not just domestic income of multi-national firms. This world-wide apportionment has become a controversial issue, with companies, some foreign governments, and now the Reagan Administration all pushing states to restrict multi-nationals' tax base to domestic earnings of a company, perhaps even excluding dividends received from foreign operations.

World-wide apportionment clearly creates substantially larger administrative costs for both companies and states. Reevaluating foreign earnings, using the definition of taxable income of each state, would involve considerable effort, and states would have great difficulty in auditing such returns. On these earnings, the states cannot rely on federal corporate-income-tax auditors for assistance.

Of course, transfer pricing problems cannot be completely avoided when apportioning domestic income. A multi-national company would have the incentive to exaggerate the price of any goods or services sold to their domestic affiliates. The states now rely primarily on federal auditors to catch extreme deviations from market prices, but even federal auditors cannot easily judge what the appropriate price is for those goods and services—e.g., R&D effort—which are not normally marketed. Problems with separate accounting at water's edge should affect a very small fraction of a state's tax revenue, however.

Use of world-wide apportionment, however, can greatly exacerbate the peculiar incentives created by formula apportionment. Historically, taxable profits have tended to be higher on foreign operations, so world-wide apportionment normally results in an increase in taxes due from a multi-national company. For such companies, locating property, payroll, or sales in Minnesota can result in a much larger increase in taxes than would occur for other companies. Thus multi-national firms are discouraged from locating operations or even selling output in the state. Under world-wide apportionment, tax payments would depend yet more than they do under domestic apportionment on who undertakes a project as well as on the nature of the project. Ownership patterns of operations in the state would undoubtedly respond significantly if world-wide apportionment were adopted.

VALUE-ADDED TAX

A broader, alternative tax, currently used in Michigan, would be a value-added tax. There are many different forms of value-added taxes. The most commonly suggested form involves taxing the value of the output of the firm minus the value of all purchases from other firms. In this case the tax base would be expenditures by the firm on labor and capital, plus profits. If capital acquisition costs are expensed, as in Michigan, then the tax base is reduced to expenditures on labor plus profits.

In measuring what profits of a multi-state firm are attributable to its operations in any one state, the same problems inevitably arise as with the corporate income tax. In fact, Michigan uses the same type of three-factor apportionment formula to accomplish this allocation. They even use the apportionment formula to allocate labor and other expenses between states, despite the normal availability of direct data on these expenditures.

As a result, all the peculiar incentives created by corporate taxation using formula apportionment are also created by using a value-added tax. The difficulties arise solely with respect to the attempt to include profits in the tax base. Expenditures on labor, and even on capital, could be taxed directly with no need for apportionment—this simply involves using a payroll tax in

combination with a property tax. Use of these factor taxes would avoid creating all the peculiar incentive problems described earlier.

CONCLUSIONS

This chapter has argued that, compared with other available state taxes, a corporate income tax is an unattractive way to raise tax revenue, whether it is based on formula apportionment or separate accounting, and whether income is defined on a unitary basis or not. In brief, the reasons are as follows.

1. The tax should result primarily in lower wage rates, higher output prices, and lower property values—and not lower returns to share holders. It is difficult to say, however, to what degree relative wages, prices, and property values are changed in the process. Regarding equity, changes of wage rates, prices, and property values are likely to be very capricious.
2. Under any of the proposed definitions of the firm, separate accounting must be used when measuring taxable profits of the firm. However the firm is defined, there will be difficulties in handling some goods and services transferred between firms but not at arms-length prices. Measurement problems result in significant administrative expenses and provide incentives for firms to rearrange their operations to take advantage of the accounting difficulties. The narrower the definition of the firm used, the greater these problems become.
3. Using a formula apportionment corporate tax puts unprofitable firms at a competitive advantage over profitable firms that produce or sell in Minnesota. The implied tax rates on property, payroll, and sales, vary substantially by firm, making it more attractive for one firm rather than another to undertake any given new venture. As a result, resources are not used where they are most valuable, nor will those goods be sold which, ignoring taxes, would have been cheapest.
4. The state may want to collect taxes from corporations in return for services provided to them by the state. Nonetheless, profits are a poor base to use for such a benefits tax. Depending on the nature of the particular state service, property, payroll, or sales should provide a better measure of the relative use of the service by firms than do profits. Which particular tax base or combination provides the best proxy for use of state services as a group is a difficult judgment.

Also, on efficiency grounds, the tax system should be designed to tax individuals and firms to the degree that they benefit from public services. If an individual or a firm pays more in taxes than is gotten back in benefits, there is a tax-created incentive to avoid the state. The opposite is also true.

Compared to most other alternative tax bases, corporate profits make a poor proxy for use of state services.

On efficiency grounds, taxes should be designed to minimize the extent to which economic decisions are made to avoid taxes, for any amount of revenue raised. This report has argued that corporate taxes create greater efficiency costs than would a combination of property, payroll, and sales taxes.

On equity grounds, it would be desirable to tax the poor less and the wealthy more than they receive back in public services. The personal income tax is certainly designed with this in mind. However, there can be no presumption that the incidence of the corporate tax is in any way equitable. For example, it is likely to be horizontally inequitable in the ways it affects individuals with similar incomes but with different occupations and consumption patterns.

State taxes would be both more equitable and more efficient if greater reliance was placed on personal income taxes, payroll taxes, property taxes, or sales taxes. These taxes suffer from none of the problems listed above, and can easily be designed to seem equitable. Which one or combination of them should be used more intensively to replace revenue from the corporate tax, however, is a matter for further debate.

ENDNOTES

1. These calculations ignored the deductions arising from the interest paid on any debt issued to help finance the new investment. Taking these deductions into account, structures are likely to be slightly encouraged as well by the existing federal law.

2. If Minnesota is the primary provider of a good, so that producers in the state as a group face a downward sloping demand curve, then a corporate tax is more likely to be passed forward through higher prices. In this case, the tax would be paid in fair part by nonresidents. This argument is often used to defend severance fees—taxes on coal and oil that are shipped out of state. Even in these cases, however, the state cannot much affect the market price for oil and coal, so that the tax is mostly paid by the residents of the state, probably mostly by the owners of the property where the well or coal mine is located.

3. When a tax causes firms to alter their decisions so as to avoid tax, extra costs are incurred by the firm which do not result in taxes being collected. The more firms do alter their decisions, the larger are these "excess burden" costs relative to the amount of tax revenue raised.

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11
Taxes and Telecommunications in an Era of Change

Ronald Fisher and Lawrence Martin

INTRODUCTION AND DESCRIPTION OF THE TAX

HISTORY OF THE TAX

Gross earnings (receipts) taxation in Minnesota began as early as 1857 when the legislature of the Territory of Minnesota granted a charter to the Minnesota and Pacific Railroad Company. The charter provided that the company pay 3% of its gross earnings in lieu of all other taxes and property assessments. All other railroad companies came under gross earnings taxation by 1887. The tax rate rose to 4% in 1905 and to 5% eight years later.

Telephone and telegraph companies were added as gross earnings taxpayers in 1887, with a rate of 2%. After a five-year hiatus during which time they were subject to property taxation, Minnesota returned to taxing gross earnings in lieu of the property tax in 1897. The rate in that year was 3%, rising to 4% in 1922. Other amendments followed: in 1937, one amendment increased the rate to 7% for companies serving localities with a population exceeding 10,000; and in 1945 another provided per-phone rates for small companies.

Further additions to the set of gross-earnings-taxable industries included express companies and sleeping car companies in 1897 (the tax base no longer exists), boxing exhibitions in 1937 (repealed 1984), rural electric companies in 1939, and taconite railroads in 1955 (repealed after 1980). The current rate structure appears in Table 1.

The gross receipts tax on telephone and telegraph companies provided nearly $75.7 million in 1982; the amount collected has consistently been about 2% of state tax collections since 1980 (see Table 2). In the latter 1970s, when railroads were still subject to the tax, it provided about 2.7% of state taxes.

For 1982, 95% of the gross earnings tax revenue came from taxation of telephone companies, a fraction which has steadily risen since 1976. In fact, one firm, Northwestern Bell Telephone, has paid 75%-80% of the gross earning taxes in recent years. Finally, over the period 1980-82, about 79% of telephone company gross earnings taxes were generated at the 7% rate.

TABLE 1
Gross Earnings Tax Rates

Industry*	
Express companies	5%
Rural electric cooperatives	10 dollars per 100 members (in lieu of all personal property taxes)
Telegraph	6%
Telephone	4% from rural service
	4% for localities with less than 10,000 population
	7% from all other service
	30 cents per phone if companies earnings are $1,000 or less

*Gross earnings taxes are levied in lieu of all ad valorem property taxes.

A TAX ON TELEPHONE COMPANIES

The picture of the gross earnings tax that emerges from an examination of the data in Table 2 is of a tax on telephone companies that is a small but significant portion of state revenue. Although 113 telephone companies paid the tax in 1982, all but fifteen were subject to the lower 4% rate. In fact, just a handful of companies (especially Northwestern Bell Telephone) have paid almost all of the tax. For these reasons, this discussion and evaluation of the tax will concentrate almost exclusively on the taxation of telephone companies, with emphasis on the tax situation of Northwestern Bell. Long distance (interstate) companies (e.g., American Telephone & Telegraph, Sprint, and MCI) will also be discussed.

Three administrative features are crucial to understanding how the gross earnings tax has operated. The first concerns the allocation of revenue from interstate service to Minnesota for tax purposes. The second concerns the implementation of the specified rate differences between small and larger localities. A third issue pertains to how telephone property would be assessed if subject to the property tax.

The Allocation Problem. Before divestiture (1983), the taxation of gross earnings represented an administratively simple alternative to a property tax. Companies reported revenues and paid the appropriate tax rate. The one administrative difficulty concerned the allocation of long distance revenues of AT&T to Northwestern Bell, and the further allocation to Minnesota. With the recent introduction of competition in long distance service, the same problem has been faced by MCI; other competitors (e.g., Sprint) have not paid gross earnings taxes.

While the Minnesota tax law mentions airline miles as the required allocation formula, AT&T has used its more complicated corporate division of revenues. As this method of dividing revenues among its twenty-two associated companies was already in place, this formula represented a reasonable solution to the problem. It worked as follows: each associated

TABLE 2
Gross Earnings Tax Revenue
($000)

	1982	1981	1980	1979	1978	1977	1976
Gross earnings taxes*	$75,668	$75,206	$69,425	$79,551	$73,390	$66,584	$59,255
% of Minnesota state taxes	2.0%	2.2%	2.1%	2.5%	2.7%	2.7%	2.7%
Telephone taxes							
at 4%	$15,546	$14,649	$12,824	$12,638	$10,720	$ 9,584	$ 8,162.3
at 7%	56,486	52,274	46,858	40,928	37,484	33,038	29,150
Total	72,032	66,498	59,683	53,566	48,205	42,622	37,312
% of gross earnings taxes	95.2%	88.4%	86.0%	67.3%	65.7%	64.0%	63.0%
Northwestern Bell gross earnings taxes	$59,809	$56,098	$50,512	$45,236	$41,047	$36,329	$31,745

Source: Data provided by Minnesota Department of Revenue.
*Excluding insurance company premiums tax

company received compensation for the value of its plant, reserves, payments to connecting companies, and taxes it incurred in providing long distance service. The remaining money was divided among the companies on the basis of the number of shares each has, where a share represented $1 of net plant furnished. The associated companies determined the allocation at their plant to long distance according to various criteria, such as minutes of use for the exchange plant, message-minute-miles for the interexchange circuit plant, traffic units for manual switching equipment, and minutes of use for dial switching equipment. These fractions were determined through sampling, and they were periodically updated. Each company then received the fraction of revenues that corresponded to its fraction of total shares. AT&T and Northwestern Bell then paid gross earnings taxes on the resulting revenues.

A few observations on this allocation method are in order. First, this was no mere "paper" allocation; the revenues were actually paid to each of the twenty-two associated companies. Second, the allocation method coincidentally reinforces the property tax aspect for which gross earnings taxation substituted. Shares were allocated according to book value, thereby providing more revenue per call to the capital intensive companies. Also, those with less efficient and more costly equipment received more revenues per-message minute from their more efficient partners.

The only other long distance company that has paid gross earnings taxation to Minnesota is MCI, which allocates revenues according to the fraction of airline miles that cross over Minnesota from the point of origin of the call to its destination. This method bears no relation to any economic

TABLE 3
Telephone Gross Earning Tax Rates

Office Location	Customer Location: Population 10,000	Customer Location: Population 10,000	Customer Location: Unincorporated
Population 10,000	7%	7%	4%
Population 10,000	7%	4%	4%
Unincorporated	7%	4%	4%

Source: Minnesota Department of Revenue.

activity, such as investment or use, although it is feasible to administer. This method is discussed in greater detail later in this chapter.

Tax Rates. The gross earnings tax statute provides for three basic tax rates. The rates are "four percent . . . from service to rural subscribers," "four percent . . . from exchange business of all cities . . . having a population of 10,000 or less," and "seven percent . . . from all other businesses." The Minnesota Supreme Court has ruled that the 4%-rate class requires that both the firm's central facilities and office be in a jurisdiction of less than 10,000 to qualify for the 4% rate, regardless of the location of customers. Finally, firms with less than $1,000 of gross receipts pay 30 cents per telephone.

Table 3 reports how the revenue department implements these rate classes. Service to customers in unincorporated areas is always taxed at 4% regardless of the firm's office location. Service to customers in jurisdictions larger than 10,000 population is always taxed at 7% regardless of central office location. But the tax rate on service to customers in jurisdictions of less than 10,000 is taxed at the rate appropriate to the location of the firm's central office.

State Assessment of Utility Property. Historically, utilities have usually been treated differently from most other firms for state and local tax purposes, particularly concerning property taxes. This different treatment primarily arose from two factors. First, utility properties are notoriously difficult to assess for property tax purposes.* There are obviously no (or extremely few) sales data showing market transactions. The income approach to valuation is contaminated by the regulation process, which is often designed to guarantee the utility a given after-tax rate-of-return. And the cost-plus adjustment approach to valuation requires a measure of depreciation of utility property, which in many cases is nearly unique property.

*Although the central office buildings (e.g., the NSP offices) are locally assessed like any office building.

Second, the geographic distribution of utility property is somewhat unusual. The production and distribution facilities are unevenly distributed between local jurisdictions (in the limiting case, only a couple of electric generating plants may serve an entire state). Thus, local property taxation provides large revenue gains to a few local governments. A related, but opposite problem occurs because of the utility transmission property (e.g., electric and telephone lines, pipelines, railroad tracks). This property presumably has a single value, but with a local property tax, it would be separately assessed by each jurisdiction.

These traditional problems lead many states to levy either state (rather than local) property taxes on these utilities and railroads or to substitute a different state tax (usually a gross receipts tax) for property taxes.

Minnesota took the second route. Telephone and telegraph companies and railroads were exempt from the local property tax and subjected instead to a state tax on gross earnings. Starting in 1979, the gross earnings tax on railroads phased out and was replaced with a property tax on the operating property, with annual assessment by the state government. The value is then apportioned back to each local government where the property is located and property taxes are levied by each of those localities. For tax purposes, the railroad operating property is treated as commercial and industrial property. Railroad property not used for operating purposes (land) continues to be subject to local taxation, as before the change. The gross earnings tax revenue from telephone companies, telegraph companies, and other sources accrue to the state's general fund, some part of which is then distributed back to local governments through the revenue sharing program.

A BRIEF HISTORY OF THE EVOLUTION OF THE TELEPHONE INDUSTRY

A NATIONAL MONOPOLY, 1934-59

Until relatively recently, the telephone industry seemed the classic example of a natural monopoly. Fixed costs of constructing and maintaining the nationwide network made up the vast majority of expenditures with little additional cost for the incremental telephone call. The consequent decreasing cost structure argued for both entry restriction and rate regulation: the former, to permit attainment of minimum cost, and the latter to preclude monopolistic pricing.

The communications act of 1934 placed communication common carriers, such as the telephone industry, under the regulatory authority of the federal communications commission (FCC). The public interest, convenience, and necessity standard required the FCC to consider, in addition to economic efficiency, such other factors as the technical integrity

of the system, costs, consumer choice, and universal service. For example, AT&T maintained a virtual monopoly on the manufacture and sale of the telephones themselves until the mid-1960s because of the ban on "foreign attachments." Competing equipment was forbidden on the argument that interference or even damage to the system might result from low-quality or incompatible devices. Further, above normal returns to equipment sales allowed subsidy of residential subscribers. Similarly, competition in long distance services was forsworn, it was argued, because the technical integrity of the system required that a single firm provide all parts of the service. As a result, the monopoly on long distance allowed excess returns for cross-subsidization.

EROSION OF MONOPOLY STATUS, 1959-82

Beginning in 1959, the telephone industry entered a second phase which has witnessed the gradual erosion of monopoly status, the narrowing of the scope of regulation, and the introduction of widespread competition in nearly all facets of informal transmission. The first in a series of court judgments and regulatory rulings was the 1959 "above 890" of the FCC which allocated a portion of the radio frequency spectrum to large users desiring to construct their own private microwave communications systems, and, hence, compete with AT&T's long distance monopoly. Between 1969 and 1973, the commission opened long distance private line communications to new competition, such as MCI Communications Corporation, and eliminated tariff restrictions on resale and shared use of leased lines, thereby creating a new class of value-added carriers. These companies, such as MCI and Sprint, purchase the basic long distance service from AT&T and then resell it, often with enhanced services such as conference calling and facsimile transmission. These services also limited AT&T pricing flexibility by providing a means for arbitrage among markets.

The 1969 Carterfone decision inaugurated competition in terminal equipment manufacture and sales. Later, in 1980 the FCC ruled that nondominant carriers similarly be free of rate and entry regulation.

The FCC followed in 1971, declaring that most combinations of computer and communications services were not subject to regulation. The final important FCC decision was its second computer inquiry in 1980, which attempted to divide AT&T's competitive activities, such as "enhanced" services and customer premises equipment, from its regulated local and long distance service.[1]

DIVESTITURE: THE 1983 CONSENT DECREE

All of these decisions can be seen as forming a sequence of phased but relentless narrowing of the scope of the AT&T monopoly. A much more

EXHIBIT 1
Local Access and Transport Areas



Beginning in 1984, Northwestern Bell Telephone Company now distributes information only within what are known as Local Access and Transport Areas, or LATAs. A map is shown above of Minnesota LATAs (one of which also includes half of North Dakota). A call within a user's exchange remains a local call. A call between exchanges within a LATA is a Northwestern Bell long distance call, unless it is purchased from another supplier. Northwestern Bell Telephone does not serve users across LATA Boundaries.

Source: Northwestern Bell, *The Changing World of Telecommunications,* 1984.

discrete event, however, was the 1982-83 settlement of the U.S. Justice Department antitrust suit against AT&T. Under those terms, AT&T was to divest itself of all of its local exchange services, effectively removing the company from the local telephone service market. In its place remain eight operating companies (such as U.S. West). These companies will provide local service over AT&T's former exchanges and interLATA or short haul interexchange (see Exhibit 1). AT&T retains ownership of Long Lines (its long distance arm), Western Electric (telephone manufacture and sales), and Bell Labs (research). The former Bell operating company may sell but not manufacture telephone equipment and continue to market Yellow Pages.

As the industry now stands, basic local services will continue to be regulated as a natural monopoly. Most of Minnesota will be served by Northwestern Bell, although ninety-three other local companies will retain a market share. Some peripheral competition for local service will be provided by mobile telephones and PBX type equipment. AT&T will sell private lc distance service according to regulated rates, but it will be subject to vigorous competition from those who resell its WATS service and also from microwave satellite transmissions. Telephone equipment manufacture, sales, and leasing will operate as a competitive industry.

This competition in equipment sales and long distance will preclude the historic subsidization of local rates. The means by which the subsidy has been carried out was through the allocation formula described above, whereby not only was a portion of the fixed costs of local service allocated to long distance but some fraction of the surplus long distance revenues was returned to the local companies. With competition there will be, of course, no surplus revenues in the long distance business. The questions remain concerning how to allocate fixed costs between local and long distance and how to recover these costs.

In its access charge decision, the FCC ruled that local companies may continue to allocate a share of fixed costs to interstate service. This share is currently 26% nationally (26.6% in Minnesota), but it is scheduled to decline to a 25% standard by 1990. The costs are to be recovered through a system of customer fees called "access charges." These are not scheduled to begin until June 1985 for residential customers and single line businesses and will not exceed $4.00 per line until 1990. Multi-line business customers will pay access charges of $6.00 per line as of May, 1984.

After 1990, access charges will rise until they cover the allocated portion of fixed costs (about $9 per line). Until then, the allocated portion of fixed costs not covered by access charges will be paid to the local companies by the long distance companies.

TELEPHONE TAXATION: PROBLEMS OF DEREGULATION AND TECHNOLOGICAL CHANGE

Deregulation of the telephone industry over the last decade, recent and continuing technological changes in telecommunications, and the court-ordered divestiture of the Bell System from AT&T have generated three issues of operation for the gross receipts tax as applied to telephone companies. The first issue is one of definition of the tax base—which firms, and/or activities will be subject to the gross receipts tax? For those firms that must pay the gross receipts tax, the second and third issues are, respectively, how gross receipts should be apportioned to Minnesota for firms doing business in several states, and at what rate the tax should be

imposed. Depending on the answers to these questions, a key fourth issue for this commission to consider is whether it might be preferable to levy a tax on other-than-gross-receipts—particularly a property tax—on all telecommunications firms.

DEFINITION OF THE TAX BASE

What Is a Telephone Company? In considering the first issue of which firms are to be subject to the gross receipts tax, the starting point must be the intent of the law to tax "telephone companies" and the definition of those firms. For the purpose of the gross receipts tax, a "telephone company" is defined as "any person, firm, association, or corporation, excluding municipal telephone companies, owning or operating any telephone line or telephone exchange for hire wholly or partly within this state, including radio and other advancements in the art of telephony."

It is worth noting that the above definition became effective for 1974 and subsequent years. Prior to that change, it was only required that the organization ". . . whenever organized or incorporated, own or operate any . . . telephone line within this state. . . ." It seems that this change was made in 1973 in anticipation of the coming technological and economic changes in the industry. Yet, the new definition has not resolved the question, as at least one firm is challenging in court its status as a telephone company.

GTE Sprint Communications Corporation, a firm providing long distance communications service in competition with such firms as AT&T and MCI Telecommunication Corporation, contends that it is not a telephone company and thus not subject to the gross earnings tax.* The revenue department, disagreeing with this contention, levied gross receipts tax against GTE Sprint, resulting in an appeal to Minnesota tax court where the issue now rests.

The question of which activities are to be taxed also arises because existing "local" telephone companies and AT&T have reorganized to separate the regulated phone service from the other activities of those firms. Northwestern Bell left the Bell System as part of AT&T at the start of 1984, leading to the current organizational structure shown on the following chart. Northwestern Bell Telephone Company is the major firm providing traditional "local" phone service in Minnesota as well as Iowa, Nebraska, North Dakota, and South Dakota. But as can be seen, Northwestern Bell Telephone is a subsidiary of the holding company called Northwestern Bell

*This is not the position Sprint has taken elsewhere. In Michigan, for example, which levies a tax on the real and personal property of telecommunications firms, Sprint does not contest its telephone company status.

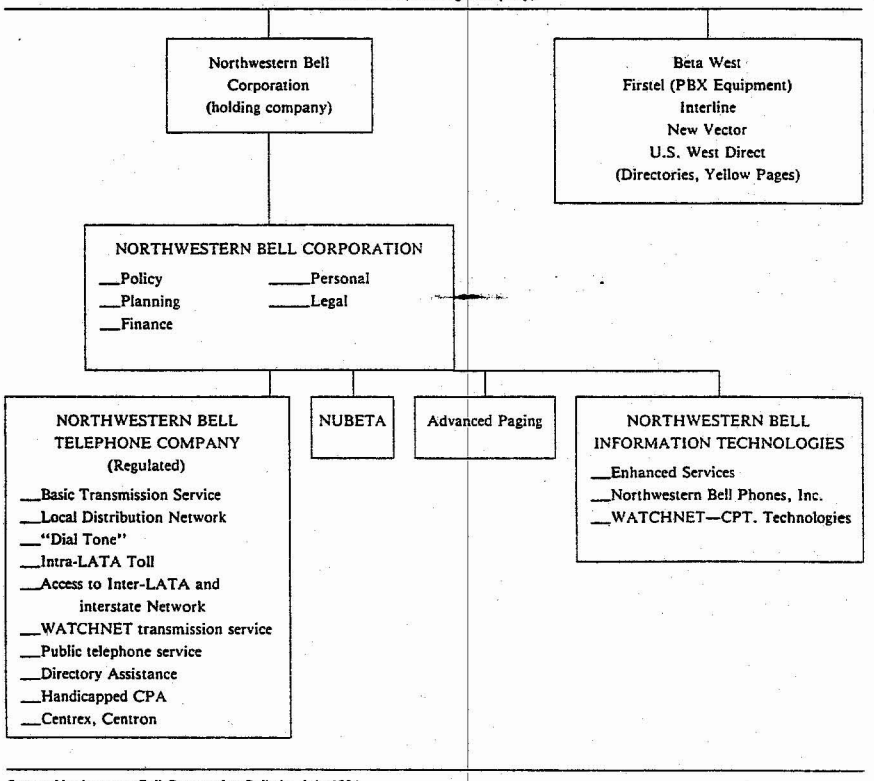
Corporation, which itself is a subsidiary of a holding company called U.S. West.

The Erosion of gross receipt base. For gross receipts tax purposes, it is the revenue of Northwestern Bell Telephone Company that seems to be subject to the tax. It is necessary that the revenue of Northwestern Bell Telephone operations in Minnesota be separated from revenue derived from operations in the other four states. In essence, the continuing state-regulated activities and certain business activities (Centrex) specified in the divestiture settlement remain part of Northwestern Bell Telephone while the other subsidiaries of Northwestern Bell Corporation compete in an unregulated market against other firms, in many cases providing new services or products.

This reorganization has implications for gross receipts tax revenues in at least three ways. All three portend a decline in gross receipts tax revenues:

- *Decline in leasing of equipment by users.* First, as user telephone purchase and ownership have become more common and leasing of telephone equipment from Bell has declined, the revenue of the phone company obviously declined. In addition, sales of telephones are now made by subsidiaries of Northwestern Bell Corporation and AT&T as well as many other private retail firms. These roles, as not part of the "Telephone Company," are not subject to the gross receipts tax. Moreover, in Minnesota, phone equipment owned by individuals is not subject to any personal property tax. However, the sale of telephones at retail is subject to the state sales tax.
- *Directory and advertising.* Directory and advertising service (Yellow Pages) is now provided by a subsidiary of U.S. West rather than the Bell Company. As a result, the full revenues from directory provision are not subject to the gross receipts tax, although according to information provided by Northwestern Bell Telephone Company, the Bell Company does receive a fee for selling its customer list to U.S. West Direct, which is included as revenue for the gross receipts tax; and
- *Shift of receipt-generating activities to nonregulated firms.* Future organization changes are possible which would move additional activities out of Northwestern Bell Telephone Company and into subsidiaries not subject to the gross receipts tax. For example, Northwestern Bell Telephone argues that the gross receipts tax puts Bell at a competitive disadvantage compared to other firms in the provision of centralized, multi-line business-phone systems. As shown in Chart 1, Centrex/Centron services are part of Northwestern Bell Telephone and subject to the gross receipts tax, while a system purchased at retail and installed by a firm for its own use generates no gross receipts tax liability (although equipment purchase is subject to retail sales tax). This personal property may be subject to ad valorem property tax of the firm. Although

CHART 1
U.S. West (Holding Company)



Source: Northwestern Bell Corporation Bulletin, July 1984.

Northwestern Bell Corporation is prevented at present by the divestiture agreement from moving Centrex operations into a subsidiary, that option and others similar to it may be possible in the future.

The implications of some communication activities being subject to the gross receipts tax and some not are four:

- a potential decrease in tax revenue of a previously-taxed activity now exempt;
- a potential shift in tax revenues if one activity is now exempt;
- a potential shift in tax revenues if one activity is now exempt from gross receipts tax but subject to the local property tax (implying in many cases that these telephone or communication firms will be subject to different taxes on different aspects of their business); and,
- potentially different tax treatment of different firms providing the same goods and services.

Related to the question of the definition at the tax base is the tax treatment of access charges. Recall that there will be two types of access charge payments until 1990: by residential customers and businesses to local companies, and by long distance providers to the local companies. As far as gross earnings taxation is concerned, three decisions must be made. First, are the access charge payments of customers taxable receipts? Second, are the payments by long distance companies taxable receipts? And third, can long distance companies deduct the access charges from their taxable total revenues?

It would seem that if the charges are receipts to the local companies, they are deductions for the long distance companies. Otherwise, the same service would be taxed twice.[2] The current position of the State of Minnesota is that the access charges are taxable but not deductible.

APPORTIONMENT OF INTERSTATE REVENUE

Once it has been generally decided which firms or activities are to be subject to the tax, it is then necessary to apportion the revenue of interstate firms to determine that share applicable to and taxable by Minnesota. With deregulation, this is an especially important issue with respect to AT&T, MCI, and Sprint. As has been noted earlier, before divestiture, AT&T revenue from interstate service was allocated to AT&T and each of the Bell System companies based on expenses and net plant investment. At this time, the revenue department and AT&T have not come to a decision as to the apportionment formula to be used now. Therefore, in this presentation, it is necessary to focus on the past discussions and decisions regarding apportioning revenues of MCI and Sprint.

MCI Telecommunications Corporation. The revenue department and MCI Telecommunications Corporation agreed in 1979 to apportion revenue to Minnesota for gross receipts tax purposes "by dividing the sum of city-pair circuit airlines miles that cross Minnesota by the sum of all city-pair circuit airlines miles nationwide." A "city-pair circuit airline mile" is the airline distance between two cities served by MCI multiplied by the number of circuits available between those two cities.

By this method, revenue is apportioned based on the potential for city-to-city calls to cross Minnesota, although no measurement of actual calls made is necessary. As an example, the airline distance from Bismarck, North Dakota, to Chicago is 732 miles, 309 of which cross Minnesota. This calculation would then generate a proportion used to allocate total MCI revenue to Minnesota. Similarly, MCI service between locations in Minnesota and those outside of the state would generate apportionment of revenue to Minnesota. To implement this system, MCI calculated the circuit airline miles between all city-pairs served by MCI and the portion of aggregate city-pair circuit airline miles which cross Minnesota, thus providing its apportionment factor.

According to their official correspondence with the revenue department, MCI originally recommended and has continued to support apportionment based on city-pair circuit airline miles for two reasons. First, MCI argued that the regulated toll charges allowed between locations were based on airline miles. Of course, as long distance toll charges become less and less regulated, this point becomes irrelevant. Second, MCI argued that because this apportionment factor is not based on actual calls or the actual method or route which calls take in the MCI system, it will be a relatively stable factor, not changing as the firm changes its technology. In addition, MCI emphasized the feasibility of calculating circuit airline miles.

It is also interesting to note the MCI arguments against alternative apportionment factors proposed. Alternatives based on number of terminals, number of customers, on payroll, property, or number of microwave towers or circuits were discounted because the number or amount of each of these "has no relation whatever to the generation of income." That is, those factors do not reflect actual use or calling relevant to Minnesota, but only potential use. Of course, that is exactly the situation with city-pair circuit airline miles as well, because as MCI has noted, "A count of circuits available for use will be misleading . . . because the revenue generated per circuit varies and not all circuits are constantly in use."

MCI rejected allocation factors based on actual usage, such as allocation based on billings, net operating income by state, or costs by state because the company does not tabulate data of that type. They noted that state-by-state accounting is not done and that the billing address of a customer may not reflect his calling locations. This line of reasoning raises a new issue. Should a state administer its taxes in accordance with the way in which the firms do accounting or should firms be required to adapt their accounting to state tax laws? Of course, even in the latter case, there is no assurance that the result would properly reflect economic activity in the state, given the number of accounting assumptions required.

It seems hard to escape the fact that the main advantages of city-pair circuit airline miles as an apportionment factor are the ease of calculation for the firm and the independence from technological change. Concerning the second point, actual call-routes between any two points may be different at different times because calls are usually routed by computers over the least-used lines at that time. Calls may also be transmitted by satellite rather than by lines or radio waves.

Sprint Communications. In contrast to MCI, GTE Sprint Communications Corporation has contended that they are not subject to the gross receipts tax, an issue now before the tax court. Sprint has proposed an allocation system for use if they are ruled to be subject to the tax.

It is Sprint's position that because the gross receipts tax is levied in lieu of local ad valorem property taxes, revenue should be apportioned based on the fraction of the firm's taxable property value which is in Minnesota. In

essence, Sprint argues for a state property tax, although one operated on a gross receipts base. (They are liability equivalent if the gross receipts rate is set to collect the same revenue as would be generated by the property tax.)

As it now stands, it appears that the three major interstate carriers, AT&T, MCI, and Sprint are each treated differently under the same tax. All precepts of good taxation would argue for similar administrative treatment of similar activities. What the appropriate, single treatment is remains at issue.

To repeat, the allocation problem arises because firms that operate in Minnesota also do business outside the state. As it is infeasible to pin-point the particular revenues which accrue due to operation in Minnesota per se, total revenues for the firm are calculated and apportioned among the states in which it operates. The tax that the firm owes then depends, not only upon its revenues, as in the case of a pure gross receipts tax, but also on its apportionment formula: if a particular activity of the firm enters the apportionment formula, the firm's tax payments will vary with the level of that activity.

Consider the plant investment apportionment formula as used formerly by AT&T. An extra dollar of plant investment in Minnesota not only generates revenues subject to the gross earnings tax, but also raises the ratio applied to national receipts. This second effect implies that plant investment incurs an additional tax burden due to the apportionment formula which other inputs such as labor do not. MCI's airline mileage formula similarly represents a tax on the number of calls made "through" Minnesota, the duration of these calls, and other factors. In sum, the apportionment formula specifies which activity is being taxed, and if firms are using different apportionment formulas, it implies that these firms are subject to different taxes.

Further, the tax treatment of these interstate firms will necessarily differ from that facing firms which operate solely within Minnesota. Exclusively intrastate long distance firms, should any arise, will face a pure gross earnings tax.

To summarize, the apportionment question contains at least three issues: consistency of treatment among telecommunications firms, administrative feasibility and cost, and opportunity for and ease of auditing.

Separating the feasibility and auditing issues seems important. The first reflects cost to the taxpayers while the second concerns the credibility of the tax. Although city-pair circuit airline miles may be relatively easily calculated by the firms (once the matrix of data is generated, it is a simple computer calculation), auditing that allocation factor is not easy. An audit would obviously require detailed information on the firm's nationwide service, expensive if even possible to verify. In contrast, property located in Minnesota can be inspected relatively easily while the unit-value of the entire firm can be based on reported financial data.

TAX RATE

The third major issue concerns the rate at which apportioned revenue is to be taxed. As previously noted, telephone gross receipts are taxed at either 4% or 7% depending on both the locations of the firm's central offices and location of customer. In practice, given the allocation systems used, it is difficult to see a reasonable way to divide the apportioned revenue of the major interstate firms into a 4% and 7% base. In fact, in 1983 MCI paid the 7% rate on all its apportioned (mileage) revenues.

This factor is another way in which divestiture and deregulation may affect the amount of revenue from the gross receipts tax. Previously, AT&T long distance revenue was allocated back to Northwestern Bell Telephone, some of which became taxed at 4% and some at 7% depending on the user's situation. After divestiture, AT&T will pay gross receipts tax on all this revenue presumably at the 7% rate if they are treated similar to MCI. This would increase gross receipts tax revenue. Similarly, if an individual shifts from AT&T to MCI for interstate service, revenue previously taxed at 4% could be taxed at 7%. On the other hand, if an individual shifts from AT&T to Sprint for long distance service, gross receipts revenues could decrease, given Sprint's claim of not being subject to the tax.

While the differential rates for the gross receipts tax on telephone companies have always posed administrative and equity problems for the tax, those problems are magnified by the growth of telephone competition and divestiture.

EFFECTS OF DIVESTITURE ON GROSS RECEIPTS REVENUES

How will divestiture affect total gross earnings tax revenues in Minnesota? This section provides some estimates of tax revenues under several assumptions concerning allocation formulas for long distance revenues, change in tax rates, and the tax treatment of access charges. Given the apparent change in the telephone industry, these estimates must be taken with some caution.

The first issue concerns the allocation formulas allowed for apportioning, for tax purposes, and long distance revenues among communities eligible for four percent (4%) tax rates and those required to pay rates of seven percent (7%). As discussed above, before divestiture AT&T and Northwestern Bell allocated revenues among communities within Minnesota based upon net plant investment. Most of the plant upon which the predivestiture allocation was based, however, has now been transferred to Northwestern Bell. The postdivestiture distribution by plant investment is likely concentrated in 7% communities.

The other major competitors in the long distance service market, MCI and Sprint, must also face this issue. Oral communication with MCI revealed that they have not considered the interstate allocation question. Consistency with their multi-state allocation would indicate a similar matrix of airline miles and rates charged based on the fraction of the route within 4% and 7% tax areas. On the other hand, the 4% rate can be interpreted as a special circumstance for long distance carriers as well, requiring that the main offices lie within the municipality with a population less than 10,000. Sprint has taken the position that should they be required to pay gross earnings taxes, the allocation should be based upon property.

The entire intrastate allocation issue depends on the rate differential; therefore, elimination of the rate differential would obviate the allocation problem. In this section we present estimates for the revenue consequences of eliminating the 4% rate.

Finally, there remains the question of the tax treatment of access charges. The current position of the revenue department is that these are taxable as revenues accruing to the local companies, but not deductible from the revenue base of the long distance companies. The matter is currently under litigation, and the revenue consequences of this decision are quite significant. Access charge will account for 35-40% of long distance revenues for the near future. The position of the revenue department would tax these revenues twice; should the position of the companies be upheld, no tax receipts would accrue.

Table 4 presents nine estimates of gross earnings tax revenues for 1984. The assumptions considered are three for access charges and three for rates and allocation formulas. On the access charge question, possible decisions are that the charges be both deductible and taxable (in other words, taxed once as receipts of the local companies), taxable but not deductible (taxed twice), or neither taxable nor deductible (not taxed). The rates assumptions are as follows. First, maintain current rate differential and allow AT&T to continue with its predivestiture formula. Alternatively, all long distance revenues could pay 7% for all communities.

The calculations in Table 4 assume no rate increase for 1984, although an increase has been approved but no date set. Advertising revenue has been deducted, based on the postdivestiture corporate organization of U.S. West. We also used an internal Northwestern Bell forecast of access charges.

The most likely case seems to be that access charges will be taxed once and that long distance carriers will pay 7%. Table 4 shows that, in this case, revenues may decline only 2%. Other assumptions lead to revenues falling by nearly half or rising by more than a third. Eliminating the rate differential generates approximately $5 million in gross earnings tax revenue.

The major factor for revenue purposes is the access charge decision.

TABLE 4
Post Divestiture 1984 Gross Receipts Revenue Forecasts (millions) and Percentage of 1983

	Access Charge Assumptions					
Rate Assumptions	Deductible and Taxable	(% 1983)	Not Deductible but Taxable	(% 1983)	Neither Deductible Nor Taxable	(% 1983)
Current Rates + Allocation formulas	$65.9	92%	$88.3	123%	$40.1	56%
Current rates for local + 7% for all long distance	$68.9	98%	$93.8	130%	$40.6	56%
All revenues at 7%	$73.3	102%	$98.2	136%	$47.8	66%

Source: Staff Calculations.

These estimates probably overstate revenues for several reasons. First, revenues from equipment leasing and the sale of enhanced services are included in the tax base for the calculations in Table 4. These activities will almost certainly pay little gross receipts tax in the future. Northwestern Bell will move much of this business to its enhanced services division and thus, not pay gross earnings tax. Meanwhile competitors not subject to this tax will expand their share. Unfortunately data were not available to make more realistic assumptions about revenues from equipment and enhanced services.

Further, the structure of access charges will change as more of the share is shifted to end-users. The Northwestern Bell forecast is that only 2.9% of access charges will be borne by end-users in 1984. After 1990 the residential fees will begin to rise from $4 per line to the per-line share of allocated fixed costs, which are scheduled to be 25% of total fixed costs by 1990. This switch to end-user payment implies that if the nondeductibility of access charges is upheld, the revenue gain will be temporary.

Finally, rapidly changing technology gives one pause to forecast confidently in this industry. Microwave transmissions, cellular phones, two-way cable, and many other developments will significantly change the structure of revenues.

ECONOMIC ANALYSIS OF GROSS EARNINGS COMPARED TO PROPERTY TAXATION

The gross earnings tax in Minnesota originated as an alternative to the property tax. Accordingly, two issues are of particular interest in the context of the changing economic and institutional arrangement of the telecommunications industry. The first pertains to the consequences of taxing one industry with gross earnings taxation while the remainder of the economy pays property taxes. The second concern pertains to the problems of taxing firms within the same industry, and of taxing separate divisions of the firms with different taxes.

For purposes of this study, there are two property taxation features of interest. First, in that it is a tax upon capital, and therefore raises the user-cost, property taxes induce firms to substitute labor for capital. Second, as it is a tax upon factor-use, the property tax is neutral so far as vertical integration is concerned. There are no tax consequences of acquiring an "upstream" or "downstream" producer.

Gross earnings taxation, which is essentially a tax upon revenues, differs from property taxation in these two areas. Gross earnings taxes are neutral with regard to the factor-mix employed by the taxed firm, but they do encourage vertical integration. The acquisition of a downstream producer eliminates a market transaction and therefore reduces taxes.

Taxing gross earnings of one industry while the remainder of the economy pays property taxes leads to greater capital intensity in the gross-earnings-taxed industry, accompanied by some tax-induced vertical integration. There is little more to be said so long as the separation between the gross earnings taxed and property-taxed industries is clear-cut. If, however, either closely competing product lines are taxed differently or the distinction between gross receipts taxable (e.g., regulated) and exempt (unregulated) is unclear—as appears to be the case for Northwestern Bell—the problem is more complicated.

With some portion of the information transmission industry taxed according to gross earnings and the remainder subject to property tax, there are economic incentives to reallocate resources in such a way as to reduce tax payments. Two alternative taxes will collect smaller revenues than one universal tax. To see this, refer back to corporate organization of Northwestern Bell. The company is involved in serving regulated markets, subject to gross earnings taxation, and simultaneously competing in the unregulated sector. It must make at least two types of allocations that have important tax consequences. First, for a given corporate structure, it must decide how its taxable property is to be allocated between those divisions subject to gross earnings taxation and those paying property taxes. Certainly, corporate incentives include allocating more taxable property toward the regulated divisions, and the existence of general overhead allows

some flexibility and room for interpretation. Auditing is required to assure that property falls within the appropriate tax base.

Further, the allocation of property within a given structure aside, the corporate structure itself offers choices for the firm. Many factors such as cost and complementarity of the product lines play roles in the designs of the corporate structure. One factor is the tax consequences. Other things equal, from a corporate point of view, capital-intensive product lines are better placed in its regulated gross-earnings-taxed divisions, while less-capital-intensive product lines can remain subject to property tax. That these incentives exist raises the issue of the nonneutrality of the existing tax system.

FORM OF TELEPHONE PROPERTY TAXATION

In structuring a telephone company property tax, there are three separate issues: 1) Who will assess the taxable value of the firms, 2) what basis or system will be used to determine assessed value, and 3) who will levy the tax on the determined value and receive the revenue?

THE BASIS AND RESPONSIBILITY FOR ASSESSMENT

For the first issue, the options are either state government assessment or property assessment by each locality in which there is telephone company property. Of the forty-four contiguous states which impose a property tax on telephone utilities, thirty-four use the state assessment. And of these thirty-four, twenty-eight assess using the unit method, an attempt to value the whole property (personalty and realty) as a unit, rather then examining the separate values of the components.

State Assessment of Unit Value. The unit method is inappropriate for local assessment, requiring each local assessor to value the property located only in that jurisdiction, probably based on historic cost adjusted for depreciation. The difficulties of this are well known, particularly because the value of some transmission property cannot be separated from other aspects of the firm. The value of a telephone line depends, obviously, on the number of calls carried. In addition, local assessment can result in identical property being assessed at different values in different localities.

The state assessed property section of the Minnesota Department of Revenue currently assesses electric utilities, pipelines, gas distribution companies, and railroads. The department has indicated that they also have the capacity to assess telephone company property.

Local Assessment of Real Property. The presumption in favor of state assessment of telephone company property is not based on the viewpoint that local officials would be unable to handle the assessment job (there is

ample evidence that they can),[3] but rather on the view that the telephone company should continue to be treated as a natural monopoly similar to electric and gas utilities. One important policy implication of acceptance of this traditional approach is that the tax neutrality goal is not violated if the telephone property tax base includes personalty as well as realty.

In a postdivestiture environment, however, the traditional view—that the telephone company is like a utility/monopoly—is being rapidly undercut as new technologies are developed and new firms enter the telecommunications industry. Now, microwave and satellite devices allow for the development of alternatives to the traditional telephone network. The average telephone-user can choose among several long distance carriers, and local customers have put into place private systems (some quite large) that bypass the traditional telephone network. Development in the computer and cable television fields will likely expand customers' service options in the future.

The convergence of these economic as well as technological forces (which were formally acknowledged with the 1982 consent decree) argues for a rethinking of the state/local tax treatment of the firms in the telecommunications industry. Specifically for this Minnesota commission to consider is whether the telephone company must now be treated like any other commercial/industrial entity for tax purposes. If the answer is yes, the tax neutrality goal requires that the gross receipts tax be replaced by a locally assessed ad valorem tax on real property only.

ASSESSMENT RATIO

The second issue concerns the assessment method and valuation ratios to use. Current tax law specifies an assessment ratio of 43% for real property (land and buildings) of public utilities and 33⅓% for machinery, tools, or implements used by public utilities and electric or gas distribution companies. Assuming that both the real and personal property of telephone companies would become subject to property taxation if the shift is made, the assessment ratios could remain as currently specified or be made appropriate to any new property tax classification systems recommended by this commission.

DISPOSITION OF REVENUE

The final issue is the levying of the tax and disposition of the revenue. Although the property is to be assessed by the state, the tax could be collected by either the state or local governments. For instance, as previously noted, once valued, utility and railroad property is allocated for taxation to each locality where the property is located, the revenue going directly to each local government. Alternatively, the state could levy and collect the tax at an average state-tax-rate and then distribute the revenue to localities according

to a formula. A third possibility still, of particular interest because the gross receipts tax revenue accrues to the state's general fund, is to have the telephone property tax be a direct state property tax. Any of the three structures is administratively feasible, the choice dependent on other state intergovernmental aid programs and state revenue needs.

REVENUE AND DISTRIBUTION EFFECTS OF PROPERTY TAX

In some ways, the administration of the gross receipts tax has made it equivalent to a property tax. As has been discussed, before divestiture the long distance revenue of AT&T was distributed among the Bell System Companies proportional to the firm's "net plant investment." Thus, interstate revenue of Northwestern Bell Telephone was both determined and taxed on the basis of Northwestern Bell's property relative to total AT&T and Bell System property. In essence then, part of Northwestern's revenue for tax purposes was proportional to property value. In addition, AT&T's revenue was allocated across states on the basis of the share of property value in the state.

Similarly it is noted that GTE Sprint Communications, Inc. has argued that if they are to be subject to the gross receipts tax, revenue should be apportioned to Minnesota on the basis of the fraction of the firm's property value in the state. In that case, the gross receipts tax is directly a property tax (with allowance for appropriate setting of tax rates to generate equal yield). To the extent that revenue for the gross receipts tax is apportioned on the basis of property values for these interstate service firms, transition to a telephone property tax would not alter the distribution of tax burden between these firms.[4]

At the request of the commission staff, the state assessed property section of the Minnesota Department of Revenue has estimated the property tax liability for four telephone companies, given particular structure assumptions. The assumptions are as follows:

Valuation Method:	Unit-value based both on historic cost less depreciation and net operating income capitalized at 11%; telephone system personal property included. Data from Public Service Commission reports for 1983.
Assessment Ratio:	43%
Tax Rate:	97.85 mills (estimated 1984-state-average rate).

One estimate for Northwestern Bell Telephone, based on 1983 data, is for the predivestiture firm and thus includes some value now attributable to AT&T. A second estimate for Northwestern Bell is for the regulated entity in

TABLE 5
Telephone Company Property Tax Estimate, 1983[a] After Divestiture
($000)

	Northwestern Bell (before divestiture)	Northwestern Bell	Sleepy Eye Telephone Co.	Benton Co-op.	Lismore Co-op.
Unit value	$4,259,684	$3,725,000	$4,542	$3,079	$295
Minnesota taxable value	1,813,711	1,588,140	4,528	2,849	290
Minnesota assessed value	779,896	670,000	1,947	1,225	125
Property tax[b]	76,313	65,560	191	120	12
Gross earnings[c] tax, 1983	61,534	61,534	52	34	5
% gross earnings taxed at 7%	79%	79%	0%	0%	0%
Property taxes % of 1983 gross receipts tax	124%	107%	367%	353%	240%

[a]Estimate by Minnesota Department of Revenue
[b]97.85 mills
[c]Northwestern Bell and 1982 AT&T tax

1984, that is, the postdivestiture Bell. The property tax estimates are compared to actual 1983 gross earnings tax payments and to a 1984 estimate of Bell's gross receipts tax. The results are shown in Tables 5 and 6.

If Northwestern Bell Telephone has been subject to a property tax in 1983, it is estimated that its liability would have been 24% greater than the actual gross receipts tax for that year, given the assumption of the sample property tax structure. Similarly, Bell's 1983 estimated property tax is about 19% greater than the sum of Northwestern Bell's and AT&T's actual 1983 gross receipts taxes. In contrast, it appears that the three smaller companies would have faced property tax liabilities three and one-half or two and one-half times their own gross receipts taxes. In part, this difference between Bell and the smaller firms results because 79% of Bell's gross receipts tax is taxed at 7%, while none of the three smaller firms pay any gross receipts tax at 7%. For comparison, if these three smaller firms had been taxed at 7%, the estimated property taxes are then 209%, 205%, and 172% greater than gross receipts taxes, respectively.

In addition to the change in the relative tax burden of the smaller firms, it also appears that the absolute tax burden of the smaller firms would be increased. The break-up of AT&T should have little immediate effect on the receipts or revenues of these smaller firms. Thus, both the actual 1983 gross receipt taxes and the estimated 1983 property taxes are probably relatively

TABLE 6
Divestiture Impact, Northwestern Bell Telephone Company,
Estimated Property Tax*
($000)

Amount	Predivestiture	Postdivestiture	Difference
Unit value	$4,259,684	$ 3,726,000	$534,684
Minnesota taxable value	1,813,711	1,558,140	225,571
Taxable value unit value	42.58%	41.83%	—
Minnesota assessed value	779,896	670,000	109,896
Property tax**	76,313	65,560	10,753
Gross earnings tax	61,534 (1983)	39,500 (1984 est)	
Property tax as % of gross earnings tax	124%	166%	

*Estimates by Minnesota Department of Revenue
**At 97.85 mills

accurate estimates of the respective 1984 taxes. Although the ninety-eight firms taxed 100% at the 4% rate paid only about $5.1 million in gross receipts tax in 1982 (7% of total), their collective property taxes could have approached $12-$18 million, based on the sample of three smaller firms. In essence, these estimates suggest that the smaller firms generate much less revenue per dollar of investment (measured by historic cost less depreciation) than does Bell, and thus do better with a gross receipts tax than a property tax.

The comparative tax situation of Northwestern Bell under alternative property and gross receipts taxes is not so easily made from these estimates, however, because divestiture should affect both gross receipts and property taxes of both Bell and AT&T. One estimate is derived by comparing the estimated 1983 property tax for Northwestern Bell (before divestiture) to the sum of Bell's and AT&T's actual gross receipts taxes for 1983.

Alternatively, the revenue department has also prepared an estimate of Bell's 1984 property tax (after divestiture). The estimate (Table 6) shows about a 13% decline in the unit value of Northwestern Bell Telephone as a result of divestiture. Such a decrease could result from several factors. Before divestiture, consumers could lease telephone equipment from Bell. After divestiture, that property was transferred to AT&T, from whom some consumers continue to lease while others have purchased the phones from AT&T. In either case the property of Bell decreases, in the first instance to be replaced by property newly acquired by AT&T. In addition, certain other services (and property) offered by Bell before divestiture may now be provided by one of the unregulated entities of Northwestern Bell Corporation or U.S. West.

Bell's estimated 1983 property taxes are only 7% greater than Bell's 1983 gross receipts tax (Table 5) but are fully 66% greater than Bell's estimated 1984 gross receipts tax, after divestiture (Table 6). It should be noted, however, that the gross receipts tax estimate assumes no access charge revenue for Bell and thus underestimates the likely long-run revenues (and thus the property tax/gross receipts ratio) of Bell. In other words, after divestiture and without access charges, Bell looks much more like the smaller phone companies in terms of comparative property tax/gross receipts tax effects. Without access charges, Bell simply is expected to generate less revenue per-investment-dollar, at least initially, than the old Bell System did.

The most appropriate revenue examination would be a comparison of the sum of Bell's and AT&T's 1984 estimated property tax to the sum of the two firms' 1984 estimated gross receipts taxes. Although AT&T data are not available at this writing, one would expect that the sum of Bell's and AT&T's property taxes would be less than Bell's 1983 estimated property taxes alone. This occurs because some equipment owned by the company in 1983 is now owned by the consumer/user, which, at least in the case of households, would not be subject to any property tax.

In contrast, as observed earlier in the report, the large expected decrease in gross receipts tax by Bell should be coupled with a large increase in the gross receipts tax for AT&T. In fact, depending on the base-split between the 4% and 7% rates and what happens to local and toll charges, gross receipts tax revenues would increase because of divestiture.

Unfortunately, data is not now available for 1984 property tax estimates for the other major interstate (and soon-to-be inter-LATA carriers), MCI and Sprint. However, for comparison of property and gross receipts taxes, they should be similar to AT&T. It appears that AT&T and the other long distance firms are better off with a property tax, as they seem to generate a large amount of revenue per dollar of investment in the state. AT&T's gross receipts tax would rise by $15-20 million from 1983 to 1984, but it seems unlikely that they would face even a $10 million property tax liability (about the difference between Bell's 1983 and 1984 estimated property taxes).

Finally, we should note that a comparison of aggregate state revenue for 1984 and future years from alternative property and gross receipts taxes is of less interest. The aggregate level (as opposed to the interfirm distribution) of telephone company property taxes could be adjusted to equal past or expected gross receipts tax revenue by altering either the classification assessment ratio for these firms or by taxing telephone companies at more or less than the statewide average rate. For example, if 43% assessment and the state-average-mills is estimated to generate, say, 30% more revenue, the tax rate could be set at only 75% of the state average.

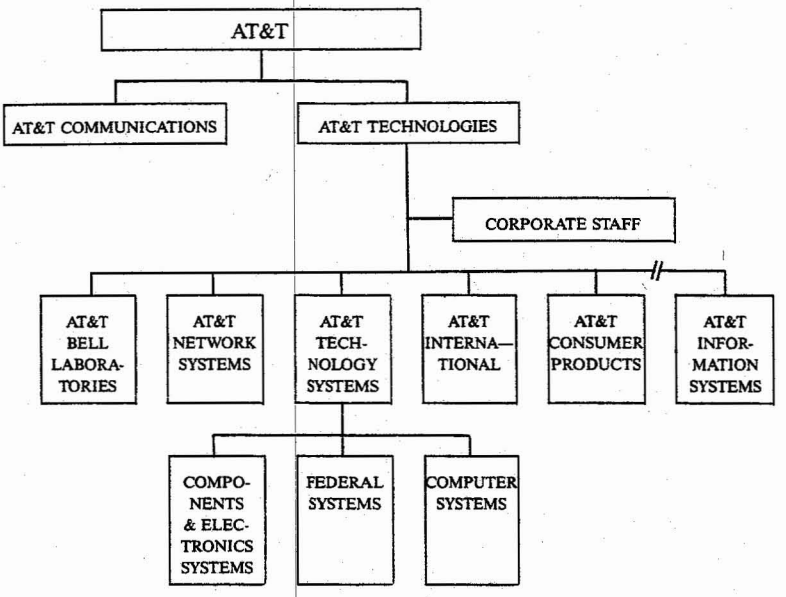
To summarize, it appears that substitution of a statewide telephone company property tax for the gross receipts tax would likely increase the

relative tax burden on "local" phone companies, including Northwestern Bell Telephone Company, and decrease the relative burden on inter-LATA carriers such as AT&T, MCI, and Sprint. However, this conclusion is sensitive to the access charge question, which would increase the revenue and gross receipts tax of the local companies. And further, it would decrease the long distance firms' taxes only if the receipts are not apportioned by property value anyway or to the extent the firm pays any gross receipts tax (as noted, so far, Sprint has not).

And finally, it is important to note that substitution of a telephone company property tax would not resolve all the tax difficulties of deregulation. If a statewide property tax were levied on "telephone companies," the question of what constitutes a telephone company would still be at issue. However, the incentive to avoid the state property tax in place of the collection of local property taxes seems less than the incentive to avoid the gross receipts tax instead of the local property tax. In addition, a state telephone company property tax would have to continually deal with the type of property (e.g., personal as well as real?) to be taxed and how the value is determined. One can imagine the state's decision to tax an interstate carrier's satellite as property (real or personal?) assessable to the state. These administrative issues exist already in the thirty-four states levying a state property tax on telecommunications firms. The advantage of a telephone company property tax, then, is not that it will prevent technological changes from altering the tax, but rather that these firms are treated similarly to other types of businesses.

ENDNOTES

1.



Source: AT&T

Until the 1960s, the Bell system and independent telephone companies had monopolies within assigned service areas. Bell, because of its size, was prohibited from entering other fields. However, as computers and microprocessor technologies advanced, the dividing line between telecommunications and data processing became unclear. In its second study of this issue ("Computer Inquiry II") the Federal Communications Commission concluded that the differences were indistinguishable and that AT&T should be permitted to enter the data processing field. To avoid giving AT&T an unfair advantage over its competitors, the FCC required that Bell spin off its competitive telephone equipment and data systems to a fully separate, unregulated subsidiary. The existing AT&T organization chart is provided above.

AT&T Communications provides national and worldwide long distance services. Using a nationwide network, it offers a broad range of voice, data and video services, including WATS (wide area telecommunication services); 800 service; skynet satellite service; 900 "dial it" services; and teleconferencing. It also provides special switched networks for businesses and for state and local governments.

AT&T Technologies, which is organized by lines of business, takes in the remainder of AT&T's business. These include: *Bell Laboratories* (research, development, design, and systems engineering); *Network Systems* (switching equipment, transmission systems, cable and wire—including optical fiber—and operations systems); *Consumer Products* (home communications systems)—from design and manufacture to wholesaling and service); *Technology Systems* (three separate business groups—*Components and Electronic Systems* that designs and produces silicon chip products and other electronic components, *Federal Systems* that develops, manufactures and markets special design products and systems that

are sold primarily to defense agencies, and *Computer Systems* that develops, manufactures and markets computers for use in communications systems as well as general purpose computers); *International* (primary planning responsibility for international marketing); *Information Systems* (develops, sells and services communication products, information management systems and enhanced services to business customers. It also operates AT&T's nationwide chain of phone-centers to retail products for residential and small business customers).

2. Under a pure (unregulated) system, gross receipts taxation would provide an incentive to vertically integrate. In this case, however, the local companies (those which were part of the Bell system) are proscribed from selling long distance service; therefore, no merger to avoid the tax is possible.

3. For a discussion of local vs. central assessment of special purpose property, see Robert D. Ebel and Joan E. Towles, *Payment in Lieu of Taxes on Federal Real Property* (Washington, D.C.: U.S. Advisory Commission On Intergovernmental Relations, 1981), Vol. 1, pp. 68-70.

4. Let R represent gross receipts of a firm, V = total property value, and Vm = value of firm's Minnesota property, t = gross receipts tax rate. Then the firm's gross receipts tax, given property value allocation is

$$\text{Tax} = t\left(\frac{Vm}{V}\right)(R) = \frac{t\,(R)}{V} \qquad Vm$$

The gross receipts tax is equivalent to a property tax at rate tR/V.

12
Insurance Taxation in Minnesota

William F. Fox

United States insurance companies earned $75,939 million in premiums for life and health insurance in 1982, of which $1,379 million was earned in Minnesota. Earned premiums for property and casualty firms in Minnesota were $2,054 million during 1980.[1] Annuity considerations and other insurance would add greatly to this amount, indicating that the industry is a substantial economic force in Minnesota. Any industry generating so much economic activity is a prime target for taxation. That is particularly true of an industry which is already regulated by the state, and where the industry is dominated by foreign firms.[2] Given these characteristics of the insurance industry in Minnesota—and in every state—it is not surprising that the industry is subject to taxation through a variety of special levies that raised over $76 million for Minnesota state government during 1982.

This study is an examination of the tax treatment of insurance firms in Minnesota. The intent is to answer a series of questions including: (1) What tax structure is imposed upon the industry? (2) How important are insurance taxes to the overall Minnesota revenue generation system? (3) How does taxation differ within the insurance industry and how does it compare with taxes on other industries? (4) How does taxation of the industry by Minnesota compare with other states? and (5) How does tax retaliation affect the industry and the state? The text is organized to answer these and many subquestions in consecutive order, after a brief description of the Minnesota insurance industry.

MINNESOTA INSURANCE INDUSTRY

The Minnesota insurance industry can be divided into property/casualty and life/health firms. Some basic differences arise between these categories of firms which create difficulties in evaluating them in a single study. These differences are reflected throughout the analysis that follows. One is that life insurance is frequently sold through long-term contracts. As such, the firms must maintain reserves to meet future liabilities, which complicate analysis of the firms and calculation of their income. Noncancellable health insurance is comparable to life. Property/casualty firms, on the other hand, generally operate with shorter-term contracts and their income is more easily

measured. This distinction within the industry is less significant than it was several years ago. Property/casualty firms are finding that litigation can often extend their liabilities well into the future while life companies are selling more insurance with shorter-term contracts.

Another important difference is that life insurance companies tend to price their products nationally, except for large group policies which are experience rated. Property/casualty companies set local rates based on experience in the area.

There are 680 firms licensed to sell property and casualty insurance in Minnesota, including domestic, foreign, and town mutual insurers (Table 1). Domestic companies are chartered in Minnesota; foreign firms are chartered in the United States, but outside Minnesota. Town mutual companies are domestic, nonprofit, and generally small. Foreign chartered companies receive a dominant share of premiums paid in Minnesota, as they collected 81.9% of premiums in 1982. Seven of the largest ten companies are foreign, led by State Farm Mutual Automobile Insurance Company. The St. Paul Fire and Marine Insurance Company is the biggest domestic property and casualty insurer, and the fifth largest insurer in the state.

The property and casualty industry can be further divided into stock and mutual firms. The stock firms are owned by shareholders who choose to purchase an ownership share in the firms, regardless of whether the firms' products are also consumed. Mutual companies are owned by policyholders, each of whom acquire ownership in the company when they buy a policy. There are at least fifty-six foreign mutual firms, seventeen domestic mutual companies, and 129 township mutual companies. Those firms which do not have mutual ownership are stock companies.

Life and health insurance is provided by 509 domestic, foreign, fraternal, and domestic nonprofit health companies (Table 1). Foreign forms earn 79.2% of direct life premiums and 58.4% of accident and health premiums. Foreign firms are less dominant in providing accident and health insurance because of Blue Cross and Blue Shield, which receives in excess of five times more premiums than the next largest insurer. Six of the largest eight life insurers are foreign firms. Minnesota Mutual Life and Northwestern National Life are the biggest domestic life insurers. At least five domestic mutual and thirty-five foreign mutual firms operate in Minnesota; the remainder are stock companies.

LEGAL STRUCTURE FOR TAXATION OF INSURANCE COMPANIES IN MINNESOTA

DEFINITION OF INSURANCE TAXES

Insurance firms are directly or indirectly taxed by nearly every levy imposed by Minnesota state and local governments, including sales, property, and corporate income taxes. The intent here is to focus only on

TABLE 1
Minnesota Insurance Industry, 1982

Type of Company	Number[a]	Total Assets[b] (Thousands)			Direct Earned Premiums[c] (Thousands)
Property/Casualty					
Domestic property and casualty	53	$ 5,687,834			$ 358,750
Foreign property and casualty	498	209,920,529			1,755,981
Township mutual	129	55,419			30,492
Life Firms			Life	Accident and health	Annuity Considerations
Domestic life insurers	26	9,662,835	98,773	78,978	132,806
Foreign life	425	553,083,065	618,672	597,372	213,879
Domestic fraternal	9	2,375,944	25,199	1,748	34,609
Foreign fraternal	46	8,746,312	38,362	6,371	10,165
Domestic nonprofit health service plan corporations	3	110,758		337,811	
Other	3	4,385	574	713	

Source: Minnesota Department of Commerce, "Fiscal Year 1983 Annual Report Supplement on Insurance Companies Authorized to do Business in Minnesota."

[a]Number of companies licensed in Minnesota.

[b]Assets are the companies' reported assets, and not necessarily assets in Minnesota.

[c]Direct earned premiums in Minnesota.

taxation of the insurance industry in its corporate form. This section is a description of the legal tax structure for insurance taxes and how the basis for their taxation differs from other industries.

PREMIUM TAX

The major tax incident on insurance companies is the gross premium tax. Use of premium taxes as a base for insurance companies was first begun in 1824 when New York taxed the agents of foreign corporations. This tax, statutorily levied in lieu of all other taxes except those on real property, is paid annually at a rate of 2% on gross premiums less return premiums. A return premium is a dividend applied to payment of premiums and any portion of premiums returned after cancellation or termination of a policy. Reinsurance premiums and annuities are exempt from the tax.

The tax is collected on most insurance premiums paid by Minnesota residents to companies licensed to operate in Minnesota. Certain companies are exempt, including nonprofit health insurance, fraternal insurance, ocean

marine insurance, and domestic mutual property and casualty companies. Taxes are payable quarterly through the calendar year.

CORPORATE INCOME TAX

The gross premium tax is levied in lieu of other taxes, but this limitation does not apply to the corporate income tax because it is regarded as an excise. Insurance corporations are generally subject to the income tax in the same manner as are other corporations and at the same 12% tax rate.

Several major differences arise from the way the tax is imposed on insurance corporations. One is that under the Minnesota corporate profits tax, taxable incomes for the insurance companies are determined using the definitions established in the United States revenue act of 1936. Companies generally find this troublesome because major revisions in insurance taxation occurred nationally in 1959 and again this year. Thus, the calculations for Minnesota are distinct from those necessary for tax purposes in other states and nationally. There is also a lack of consensus as to how to interpret and implement the basic steps in an out-of-date tax law; a further complication exists because some of the annuity and universal life products available today did not exist in 1936. Compliance costs have increased and administration has been made more difficult by the use of the 1936 code. Since the 1936 act governs determination of income for tax purposes, the U.S. tax reform act of 1984, though it has significant implications for insurance companies, will not affect Minnesota taxable incomes.

Under the 1936 act, life insurance companies are essentially taxed only on the companies' share of investment income (interest, dividends, and rent) less certain deductions. Investment income attributed to policyholders, underwriting gains, and distributions to shareholders are not taxed nor are losses from these activities allowed as a reduction in income.[3] This practice closely approaches becoming a tax on the activities of the insurance company but not on the savings of policyholders. In short, it approaches becoming a tax on the consumption aspect of insurance. Aaron has argued that the consumption base is appropriate at the national level to place life insurance firms on an equal footing with other financial institutions.[4] Insurance companies other than life and mutual are taxed on investment income and underwriting income less certain deductions. Mutual insurance companies other than life are taxed on premiums, investment income, and other profits less certain deductions.

The increased administration and compliance costs associated with this distinct treatment of insurance companies by Minnesota indicate that income tax treatment of the industry should be brought in line with income definitions used at the national level and for other Minnesota corporations, if insurance companies are to continue being liable for the Minnesota corporate income tax.

A second difference in the way insurance companies are treated in Minnesota is that the income for multi-state corporations is apportioned to Minnesota according to the percentage that Minnesota gross premiums bear to total gross premiums. Other corporations use a three-factor formula including sales, property, and employment. Special provisions of the three-factor formula allow corporations to weight sales heavily so the apportionment formula may be only nominally different in practice.

Finally, credits allowed for insurance companies generally preclude them from paying any corporate income tax. The most important credits are for the taxes which are paid on a premium basis, except for the firemen's relief surcharge (see below). Another credit is for assessments made by the Medical Malpractice Joint Underwriting Association.

OTHER TAXES

The fire marshall's tax is an additional levy on premiums applicable to fire insurance, and is set at a rate of 0.5%. For policies which partly cover fire hazard and partly cover other liabilities, the tax base is approximated as a certain percentage of premiums. For example, comprehensive automobile insurance is presumed to be 19% fire coverage. The tax must be paid before March 1 of the year after premiums are received.

A firemen's relief surcharge is imposed on fire insurance premiums paid for property located in cities of the first class—Minneapolis, St. Paul, and Duluth. The surcharge rate is 2% and the surcharge base is the same as for the fire marshall's tax. Revenues from the surcharge are used to help finance police and firemen's relief associations. Legislation allows a similar surcharge to be imposed in second-class cities whenever their firemen's relief association trust funds fall below $50,000. Semiannual payments must be made in June and December.

The surplus lines tax is levied on Minnesota brokers for insurance coverage written to Minnesotans but provided by firms which are not licensed to do business in Minnesota. Surplus line companies are only allowed to write insurance when no coverage is available from a Minnesota licensed insurer. The tax is imposed at a rate of 3% on premiums less cancellations. As in many states, the tax rate is higher than the premium tax rate. The inability to levy retaliatory taxes against surplus lines taxes is an important reason for the higher rate.

Ocean marine companies are taxed on the basis of taxable underwriting profits rather than gross receipts (premiums). The tax is levied at a 5% rate.

RETALIATORY TAXES

Retaliation by one state for the insurance taxes in another is a particularly unique part of the overall insurance tax structure. This type of tax was first

imposed by the state of Massachusetts in 1832 and has spread to forty-seven states. A Supreme Court opinion in 1944 which held that insurance business could be considered interstate commerce would have eliminated retaliatory taxes.[5] But the McCarran-Ferguson act of 1945 indicated that the regulation and taxation of insurance firms was in the public interest, and it permitted retaliatory taxation to continue.[6] An interesting note is that the insurance industry was deemed to be an important source of pressure which led to this bill.[7]

Retaliatory laws come into play whenever taxes (including charges, fees, and assessments) on Minnesota domestic firms operating in another state are higher than those which Minnesota would impose on a comparable firm from that other state when it operates in Minnesota. Specifically, to measure retaliation, a foreign firm must calculate the tax for which it is liable in Minnesota and the tax that it would pay on the same basis as a foreign firm operating in its home state. For each tax, the firm must pay the higher of these two calculations. If the taxes it would pay as a foreign firm operating in its home state exceed its Minnesota liability, the firm pays the amount in excess of the Minnesota liability as a retaliatory tax to Minnesota. All revenues collected by Minnesota under the retaliatory tax must, by definition, be paid by foreign firms.

FEES

The most significant fee paid by life insurance companies is the valuation fee. This charge is only collected from domestic life insurance companies and at a rate of 1 cent per $1,000 of life insurance in force. The revenues are intended to cover the auditing costs for the domestic life companies, though the collections significantly exceed that amount. Also, the costs of examining firms will not be proportional to insurance in force, so the base for this fee is questionable.

Fees of $15 for township mutual fire insurance companies and $30 for other companies are assessed for filing their annual report. Insurance firms are occasionally subject to assessments to support the Minnesota Comprehensive Health Care Association. A number of other fees and assessments are also collected.

GROSS RECEIPTS VERSUS INCOME TAXATION

As discussed above, the basis for taxation of noninsurance firms is corporate profits, while insurance companies are taxed predominantly through premiums-based taxes. Insurance companies are also liable for the corporate income tax, but since premium tax payments are a credit against the corporate income tax, few insurance firms incur any income tax liability and little revenue is generated. Corporate income taxes for foreign and

domestic insurance companies are imposed by relatively few states and since the tax is a low-revenue generator, it could be viewed as a nuisance tax. As noted below, it is one way that annuity income can potentially be taxed.

When first used in the United States, the premiums tax was seen as a property tax since the level of property/casualty insurance must be correlated with real property values. Some have interpreted the premium tax as a sales tax on the purchase of insurance services. For property and casualty firms that is somewhat true because the premium is generally designed to pay for coverage against a risk. As will be discussed later, the problem with levying the tax is that alternatives to insurance, like self-insurance, are not taxed. The premium tax cannot be interpreted as a sales tax for many life insurers because only a portion of the premium pays for coverage against a risk. Much of the premium, particularly for new products like universal life, is a form of savings. So, if viewed as a sales tax, it is a sales tax on certain forms of savings. These considerations suggest that the premium tax should be compared with the corporate income tax rather than the sales tax.

The elements in a choice of gross receipts (consumer revenues) versus income (revenues minus expenditures) as a basis for taxation can be seen by looking at the advantages and disadvantages of each tax base. A major attribute of premium taxation is simplicity, as ease of compliance and administration is fostered. The base is premium revenues received by the firm with relatively few adjustments or deductions, and this base is simply multiplied by a flat-rate to yield the tax liability. The ease is particularly apparent by comparison with the alternative of income taxation, which requires a definition of income. Such a definition is complicated for insurance companies by the need to measure future liabilities, a particular difficulty for the life companies. Actuaries are employed by the firms to estimate future liabilities, but for tax purposes the appropriate interest rate for discounting future liabilities must be chosen. The rates that are used are generally too low and have the effect of overstating future liabilities. Taxable income is also hard to define for mutual companies because of complexities in handling refunds to policyholders/owners. Since insurance companies potentially must pay corporate excise taxes, these conceptual difficulties cannot be used in Minnesota as a substantial justification for a different tax structure for insurance companies.

Gross receipts taxation may be used because the consistent taxation of receipts is a better way to tax business firms for the benefits they receive from public services.

Revenues are probably the strongest reason for using premium taxes. Premium receipts are likely to be more stable than insurance company income, so revenue flow will be more consistent and predictable. Further, insurance companies are perceived as large sources of available funds and, as noted above, since they are frequently foreign-based, are easy targets for

taxation. Given the recurring problem of obtaining adequate state revenue bases, special taxes on insurance companies are seen as a desirable choice because they are well-hidden from those not directly in the industry.

The major potential disadvantage of gross receipts taxation for insurance firms and income taxation for other industries is that tax neutrality can be violated as industries are taxed unevenly. Tax neutrality exists when taxes are imposed so that no distortions are created in the way economic resources are allocated. Taxes which alter the decision of whether to insure, how much to insure, or with which company to insure will violate tax neutrality.

A shift away from a premium-based tax structure and towards an income-based structure should only be considered after very careful study. Issues such as impacts on retaliation and the way firms' tax burdens would be reallocated would need to be evaluated. Finally, policymakers must remember that the premium base has been used for many years and the effects on economic activity are in place as the firms and consumers have adjusted accordingly. On the other hand, rapid shifts in the structure of the financial industries may require evenness of tax treatment across these industries.

INSURANCE INDUSTRY CONTRIBUTION TO MINNESOTA REVENUE NEEDS

REVENUES GENERATED

The gross premium tax generated $73.7 million in 1982 and was responsible for 91.9% of taxes remitted by insurance companies in 1981 (Table 2). Revenue from the gross premium tax increased more than sixfold from 1963 to 1982. Another measure of the growth in premium tax is the income-elasticity.[8] The premium tax had an elasticity over the past two decades of 1.10, meaning that revenues grew somewhat faster than personal income. The elasticity was only 0.77 from 1971 to 1981, possibly evidencing some slowdown in premiums relative to income growth. Shifts in the industry towards purchase of term rather than whole life insurance and toward self-insurance would partially account for the slowdown. Much of the decline in the elasticity can also be attributed to the choice of 1981 as the final year (made because personal income data were available through 1981), because premium revenue growth was weak in a year when the economy was near recession.

Corporation income tax payments are the next largest category of collections from insurance companies, amounting to $3.6 million or 5.3% of taxes paid by insurance firms in 1981. Income taxes are relatively limited because premium tax payments are a credit against income tax liabilities. However, the corporate income tax, with an income-elasticity of 1.46, has

TABLE 2
Insurance Company Taxes and Fees

Year	Premium Taxes (Thousands)	Fire Marshall Taxes (Thousands)	Surcharge (Thousands)	Valuation Fees (Thousands)	Insurance Co. Income Taxes[a] (Thousands)	Total Insurance Corp. Taxes & Fees[b] (Thousands)
1963	11,589	213	209	n.a.	n.a.	12,011
1964	12,493	220	199	n.a.	39	12,951
1965	13,400[a]	239	204	n.a.	82	13,925
1966	14,500[c]	247	211	n.a.	73	15,031
1967	15,490	253	215	107	99	15,924
1968	16,974	287	241	114	108	17,724
1969	18,714	334	273	125	106	19,552
1970	24,181	385	316	135	114	25,131
1971	29,530	481	341	146	168	30,666
1972	29,939	469	384	162	228	31,182
1973	28,722	525	410	180	543	30,380
1974	30,550	561	401	197	436	32,145
1975	33,481	617	400	217[c]	946	35,661
1976	36,520	619	429	240[c]	1,089	38,897
1977	45,486	724	482	267	1,312	48,271
1978	52,228	841	539	294	1,469	55,371
1979	58,164	945	565	333	2,249	62,256
1980	62,297	1,053	635	365	3,344	67,694
1981	62,500	1,162	642	394	3,613	68,311
1982	73,663	1,426	683	459	n.a.	76,231[d]
1983	66,840	1,385	676	535[c]	n.a.	69,436[d]

Source: Minnesota Department of Revenue, Minnesota Corporation Income Tax, selected years, and working documents.

n.a. = not available.

[a]Corporation income taxes paid by insurance carriers.

[b]The sum of premium taxes, fees, and insurance company income taxes.

[c]Estimated by Department of Revenue.

[d]Does not include the corporate income taxes.

been the fastest-rising component of insurance taxes and has increased dramatically from the negligible $39,000 collected in 1964.

The other insurance taxes, fire marshall, surcharge, and valuation fees, totaled $2.6 million in 1982. It should be noted that several other fees and assessments are not included in these statistics. The fire marshall's tax is the largest included and has increased at approximately the same rate as the premium tax. The surcharge reported here was collected from the three first-class cities, Duluth, Minneapolis, and St. Paul.

The valuation fee is a relatively small revenue generator, but is important for other reasons. Only domestic life companies pay the fee so it is significant to this particular group of firms. Also, the tax is levied on insurance-in-force, not premiums. The shift towards term insurance has led

to more rapid growth in insurance-in-force than in premiums so valuation-fee collections have accelerated since 1971.

REVENUE STABILITY

Revenue stability refers to the ability of the tax structure to provide sufficient revenues each year across a business cycle. This differs from adequacy, which is the ability of the tax structure to provide revenue growth over the long-term. A revenue structure can be adequate in the sense that sufficient revenues are provided on average over a number of years, but could be unstable in that the revenue flow varies widely from year to year. The reverse could also be true. Unstable tax structures create revenue shortfalls that cause deficits and impoundments during economic recessions. Inadequate revenues generate the need to raise tax rates because of an inability to finance desired services.

Insurance taxes are relatively stable if the income-elasticity stays constant or rises during a recession, and stays constant or falls during an expansion.[9] In essence, this is the condition for the growth rate of revenues to be relatively constant. If this condition does not hold, insurance taxes are unstable. Most major tax sources have some degree of instability, so the concept is most important in a comparative sense.

The elasticities reported in Table 3 are simple in that no effort has been made to account for factors other than income which caused premium tax revenues to rise. The income-elasticities have followed a mixed pattern over the past decade—low in the expansion years of 1972 and 1973, higher in the recession years of 1974 and 1975, and very high in the expansion years of 1977 and 1978 when insurance rate increases were common. The income-

TABLE 3
Simple Premium Tax Income Elasticities

Fiscal Year	Tax Elasticity
1970	
1971	3.705
1972	0.155
1973	-0.216
1974	1.079
1975	1.376
1976	1.082
1977	1.730
1978	1.264
1979	0.898
1980	0.702
1981	0.029

elasticity has declined since 1979. Likely owing to the shifts in products sold by the industry, the elasticities indicate stable revenue generation before 1976, but more unstable revenue growth since then. Insurance products like whole life, which represent long-term contracts, continue to be purchased even during recessions, so premium revenue growth was relatively stable when these were a greater percentage of insurance transactions. Shifts towards term and universal insurance may have reduced this stability. Thus, premium tax revenue growth may be less dependable in the future than it has generally been regarded to be.

REVENUE ADEQUACY

The contribution of insurance taxes to Minnesota revenue adequacy is an imprecise concept because there is no unique definition of revenue adequacy. For this study, the contribution to revenue adequacy is defined simply as percentage of total revenues raised from the insurance industry.[10] Thus, the contribution of insurance taxes increases if the percentage of insurance taxes rises relative to total revenues, and the contribution declines if the percentage declines. The comparisons shown here are relative to all corporate revenues and relative to Minnesota own-source revenues.

Insurance taxes have varied between 14.4% and 25.8% of all corporate taxes (corporate income, bank excise, and insurance taxes) since 1963 (see Table 4). This variation is substantially the result of numerous changes in the corporate income tax base and credits allowed, rather than economically-based shifts in relative insurance revenues. Despite the existence of some variability, the ratio was generally stable in 1967-71 and 1973-82. Between 1971 and 1973 there was a noticeable decline in relative insurance revenues, likely a result of the corporate tax rate increases that have occurred four times since 1957. In 1981 the percentage was the highest since 1972, evidencing the relatively strong growth trend in insurance taxes over the decade, and the particularly weak corporate income tax collections of 1981.

Insurance revenues have varied between 1.56% and 2.54% of Minnesota own-source revenues. The pattern is similar to that noted above relative to corporate taxes, as the percentage was lower in 1973 than earlier years, but stable since.

In sum, insurance taxes have provided an adequate source of revenues in that their natural growth pattern has been comparable to alternative revenue sources. Structure changes and rate increases for other taxes has led to some relative decline in the contribution of insurance taxes to revenue needs, but the relative contribution has been approximately constant for the past decade.

TABLE 4
Insurance Company Taxes and Fees, Corporation Taxes and Minnesota Own-source Revenues, 1963-1982

Year	Total Insurance Taxes and Fees[a] (000)	Total Corporation Income Taxes[b] (000)	Total Minnesota Own-source Revenues[c]	Insurance Revenues as a Percent of Corporate Revenues[d]	Insurance Revenues as a Percent of Own-source Revenues[e]
1963	12,011	37,843	473,655	n.a.	2.54
1964	12,951	40,688	517,355	24.2	2.50
1965	13,925	46,866	560,976	22.9	2.48
1966	15,031	74,362	665,770	16.8	2.26
1967	16,164	72,064	718,741	18.3	2.25
1968	17,724	68,839	893,588	20.5	1.98
1969	19,552	86,489	1,002,587	18.4	1.95
1970	25,131	86,865	1,124,762	22.5	2.23
1971	30,666	88,485	1,227,507	25.8	2.50
1972	31,182	117,002	1,483,286	21.1	2.10
1973	30,380	172,220	1,779,414	15.0	1.71
1974	32,145	191,257	2,049,102	14.4	1.57
1975	35,661	196,551	2,242,077	15.4	1.59
1976	38,897	197,482	2,491,060	16.5	1.56
1977	48,271	258,919	2,775,406	15.8	1.74
1978	55,371	295,946	3,102,740	15.8	1.78
1979	62,256	357,185	3,591,898	14.9	1.73
1980	67,694	382,566	3,635,027	15.1	1.86
1981	68,311	320,523	3,815,118	17.7	1.79
1982	76,231	331,836	4,256,817	n.a.	1.79

Source: Minnesota Depaftment of Revenue, *Minnesota Corporation Income Tax,* various years. Minnesota Taxpayers Association, *Fiscal Facts for Minnesotans: 1983,* Financial Audit Division, Office of the Legislative Auditor, State of Minnesota, *State and Local Government Finances in Minnesota,* November 1983.

[a]Column 7 from Table 2.

[b]Net corporation income tax and bank excise tax revenues.

[c]Total state own-source revenues, tax and nontax revenues.

[d]Column 1 divided by (Column 2 plus column 1 minus column 5), Table 4.

[e]Column 1 divided by column 3.

NEUTRALITY IN MINNESOTA INSURANCE TAXATION

Three major areas where tax neutrality can be violated by the Minnesota insurance tax structure are considered in this section. One is the intrainsurance industry effect of exemptions from taxation for certain types of insurance, which can lead to unequal allocation of resources within the industry. A second is interindustry differences that arise from alternative bases employed for taxing insurance and other industries. Finally, differences in taxation of the insurance industry across state lines are examined.

INTRAINSURANCE INDUSTRY DISTORTIONS

Tax neutrality would require that all insurance activity be taxed the same regardless of the legal structure of the insurer. Several significant exemptions from taxation are permitted in Minnesota, based on the status of the insuring entity. Blue Cross/Blue Shield, fraternal insurers, and domestic property/casualty mutual insurers are the major groups which are exempt from taxation. Health maintenance organizations, annuities, and self-insurance are also untaxed. Each of these categories is discussed below regarding the cost for exemption, the justification for exemption, and conclusions as to whether exemption is appropriate. A total $13.8 million annual revenue loss was estimated for Minnesota, based on the exemption of certain items. The actual loss is much greater as there are other avoidance mechanisms, not all types of self-insurance were measured here, and annuities were not included as a tax loss.

BLUE CROSS-BLUE SHIELD[11]

Blue Cross and Blue Shield were originally introduced as nonprofit corporations during the Great Depression. The intent was to make low-cost health care available to a wider range of people by spreading the risks across a community of individuals. Exemption from taxation was based on the provision by the "Blues" of substantially different coverage from other insurers, including some charitable services. Also, the exemption was undoubtedly designed to permit reduced premiums.

The Blues have grown into the dominant provider of health insurance in Minnesota. During CY 1982 direct written premiums for Blue Cross and Blue Shield totalled $311,511,000 compared with Bankers Life Company, the second largest provider of accident and health insurance (as measured by premiums), which received only $56,232,000 in the same year. In fact, Blue Cross and Blue Shield received 30.5% of all premiums paid for accident and health insurance. The premium tax revenue lost to Minnesota through exemption of the domestic nonprofit health service plan corporations, of which Blue Cross/Blue Shield are predominant, amounted to about $6.75 million in 1982. Since the Blues are domestic corporations, operating only in Minnesota, there would be no retaliation caused by a tax on them.

Does the original structure and purpose of the Blues remain sufficiently intact that continued exemption can be justified? Tax neutrality would indicate that insurance provided by the Blues should be taxed unless a substantial public interest would be served by no taxation. Otherwise, the tax works to raise the relative costs of profit-seeking firms and places these firms at a competitive disadvantage vis-a-vis the Blues.

An equity concern also develops when insurance is taxed under certain types of legal structures and not others. To the extent that the tax is shifted

to the consumer through increased premiums, some consumers pay the tax while others are able to avoid it.[12] Thus, people with the same ability to pay taxes and the same purchases of insurance could pay different taxes—meaning there are horizontal inequities.[13]

Currently, twenty states use gross receipts taxation for Blue Cross/Blue Shield insurance, so that taxation of these plans in Minnesota would be far from unique. Rates range from a low of 0.33% on Blue Cross/Blue Shield in North Carolina to a high of 2.5% on Blue Cross in South Dakota. Fourteen states impose the same rates on Blue Cross/Blue Shield and other domestic health insurance companies. Three states collect a fee based on the number of contracts in force.

A decision to tax the Blues in Minnesota would likely need to go together with reconsideration of regulations which influence their operations. Nonetheless, the conclusion of a recent study in Illinois was "that the advantages obtained through HCSC's (the Illinois Blue Cross/Blue Shield Corporation) special nonprofit status are no longer valid."[14] No overriding public interest would be served by continued exemption of the Blues from taxation. Despite some differences in the way the Blues operated, the authors determined that they had begun to perform substantially as an insurance carrier and thus, should be subject to taxation and other legal conditions as a domestic mutual insurance company.

A possible counterargument could be that the Blues are nonprofit corporations and as such should be exempt from taxation. This argument is only potentially supportable if the premium tax on health insurance is meant as a surrogate for the corporate profits tax. Even then, the effects of imposing a tax on the nonprofit Blues must be balanced against the distorted tax neutrality from taxing other types of health insurance. If the premium tax is meant to be paid by consumers, or in any event is generally shifted to consumers, then the tax is not on profit and the fact that the Blues are nonprofit should not preclude collection of a gross premium tax. It should also be noted that the tax is imposed on many mutual companies.

FRATERNAL BENEFICIARY ASSOCIATIONS

Nine domestic and forty-six foreign fraternal insurers operated in Minnesota during 1982. The fraternal insurers are usually affiliated with religious, ethnic, or occupational groups and sell insurance to members. Life insurance premium receipts were $63.6 million and accident and health insurance premiums were $8.1 million. The Lutheran Brotherhood and AID Association for Lutherans dominated as they collected 68% of the premiums. The fraternals are specifically exempted from payment of premium taxes at a revenue loss to Minnesota of $1.4 million.

The effects on tax neutrality that result from exempting the fraternals are similar to those described above for the Blues. A 2% wedge is placed

between the costs borne by fraternals and those by profit-seeking insurers. Though it may be somewhat difficult to shift the tax on life premiums, the tax puts the profit-seeking firms at a competitive disadvantage.

DOMESTIC MUTUAL PROPERTY/CASUALTY INSURERS

Domestic mutual property and casualty companies are subject to the fire marshall's tax and domestic township mutual insurance companies are exempt from taxation. Exemption has been based upon the mutual status of the insurers, a status which means that the policyholders are owners of the companies so that any profits would be returned to the policyholders.[15] Concern that the larger stock companies (particularly coming from out-of-state) would drive the smaller mutuals out of business is another justification for tax exemption.

The domestic mutual property and casualty companies are not all small firms that are easy prey for large foreign stock companies. The biggest, Mutual Service Casualty Insurance Company, wrote $53.6 million in premiums during 1982 and the twenty domestic insurers had total premiums equal to $195.5 million. If the domestic mutual companies were subject to the 2% premiums tax, they would have paid $3.9 million, but paid only $0.6 million in taxes during 1982. This represents $3.3 million in foregone revenues. The 129 domestic township mutual companies are generally smaller, and they collected a combined $30.5 million in premiums. The domestic township mutual insurers would have paid over $0.6 million if subject to the premiums tax.

Taxes should not distort the choice of insurer, and should have a minimal effect on the decision to insure. Exempting the domestic mutual companies reduces their costs—and presumably their prices—and this has the effect of stimulating the purchase of insurance through them as opposed to domestic and foreign stock companies and foreign mutuals.[16] This violates the concept of neutrality. Further, since the premiums tax on property and casualty insurance is probably substantially shifted to consumers, the current structure taxes some policyholders but not others, creating an inequity.

SELF-INSURANCE

An economist sees insuring as trading the risk of some uncertain loss for a certain loss; the certain loss is the payment made to the insuring firm. Any entity makes the decision to insure by considering the trade-off between the expected loss it will incur, the variance of the loss,[17] and the fee which the insurance company charges to administer the insurance.[18]

Under certain circumstances a business firm or individual may engage in risk retention, which means that they choose to bear individually the

consequences of the risk, however they occur, without insuring. In some situations, insuring would have been cheaper, in others more expensive, but the decision to bypass purchasing insurance does not avoid the cost of the various possible losses. The individual or firm must directly pay expenses which would have been paid by an insurance firm if that option had been chosen. Placing a tax on insurance but not on risk retention causes distortion by raising the cost of insuring relative to the cost of risk retention. In short, the tax encourages risk retention.

Large business firms are particularly likely to self-insure because they can reasonably predict the probability of loss, and there is no real exposure to catastrophe.[19] A major incentive for self-insurance in such a case may be to avoid the 2% premiums tax. Pension programs, worker's compensation, and employee health and welfare benefit plans are frequent choices for self-insurance as are property/casualty type risks. In a number of these cases there may even be an arrangement for an insurance company to administer the self-insurance, but there is no premium paid and therefore no tax.

The basic economic activity is the same, whether self-insurance or purchased insurance is employed, so it is difficult to justify a difference in tax-paying capacity in these two instances. With insurance, the premium tax is paid only because a particular type of transaction occurs, not because there is a tax on the economic activity. The situation is comparable to that in which a firm pays sales tax if it buys a hammer from a dealer, but no sales tax is paid if the firm makes the hammer. Though the firm might be taxed on the purchase of inputs used to make the hammer, vertical integration to make hammers is encouraged. Similarly, firms are encouraged to include self-insurance activities as part of their operations.

Measuring the premiums-tax-dollar-loss from self-insurance is very difficult because, since there is no premium paid, there are no easy measures of the value of the premium which would have been paid. One exception is with worker's compensation. The Minnesota Department of Commerce identified 118 firms that are self-insuring for workmen's compensation, with an estimated $92.1 million in premiums that would have been paid in 1981 without self-insurance.[20] Generally only large firms self-insure worker's compensation: only four firms had less than $10,000 in potential premiums and twenty-seven had more than $1.0 million. More than $1.8 million in premiums were lost from self-insurance of worker's compensation.

Administration and compliance costs would be very high if many types of self-insurance were taxed because nothing comparable to a premium is paid.[21] The potential categories for taxation would likely be limited to administrative service organizations, worker's compensation, fees paid to insurance firms to administer insurance programs, and other easily measurable activities. Stop-loss plans, where firms insure to avoid claims above a certain level, is another example of where the tax could be imposed. Even here, taxation of plans administered by insurance companies may encourage firms to internalize all aspects of insurance.

ANNUITY CONSIDERATIONS

Minnesota is one of twenty-eight states that does not levy a tax on annuity considerations. However, Minnesota does potentially tax the profits insurance firms earn from annuities through the corporate income tax. Only three states and the District of Columbia tax annuity premiums at the same rates as foreign and domestic insurance, and the trend has been towards declining taxation of annuities.[22] Between 1959 and 1973, seven states repealed their annuity tax and thirteen reduced the tax in some manner.

Insurance firms reported receiving $391.5 million in annuity premiums in 1982, and an argument could be made that these should be taxed along with other insurance. Yet several strong arguments can also be made against taxation of annuities. One is that insurance firms must compete with other financial institutions which are not subject to an annuities tax but are subject to the corporate income tax. A 2% premiums tax on annuities would be a large percentage of the administrative fee for annuities and would place the insurance firms at a competitive disadvantage.

Premium taxation of annuities could also harm domestic Minnesota firms as they seek to do business in other states. As previously noted, most states either leave annuities untaxed or subject them to light taxation. Retaliation could occur against the out-of-state operations of domestic Minnesota firms because of a tax on annuities in Minnesota.

Above it was noted that insurance firms pay very little in corporate income taxes, but are subject to taxes levied on both state income and premiums base. One reason to retain corporate income taxation for insurance firms is that it is a way to retain some taxation of annuity income. Shifts which are currently occurring in the types of products offered by financial institutions support the need to retain the corporate income tax on insurance firms.

INTERINDUSTRY TAXATION

Differential taxation across industries can violate tax neutrality, particularly if the differentials exist between or within industries that are in competition among themselves. Insurance firms compete directly with the banking, savings and loan, and stock and real estate brokerage industries. Relatively high taxes on the insurance industry would be expected to shift economic activity from it to another industry. Tax equity would suggest that tax rates should be the same for all industries unless the benefit principle could be used to justify different burdens.

Differences in the way corporations are taxed across industries are difficult to determine. One reason is that the same base is not being used to assess taxes against insurance and noninsurance industries. Another reason interindustry tax differences are difficult to quantify is that there is no

generally accepted standard against which business tax burdens can be compared.

TAX SHIFTING

Perhaps the most important reason why interindustry taxes are difficult to compare arises from tax shifting. Firms in the life insurance industry probably have roughly the same ability to shift the life insurance premiums tax to consumers that other firms have (on average) to shift the corporate income tax. Life insurance firms have limited ability to shift taxes because insurance rates are generally set nationally and the level of taxes in Minnesota are unlikely to affect the nationally-set rates. This means it would be particularly difficult to shift any increases in the premium rate to consumers. If Minnesota taxes lead to higher insurance rates, companies operating in Minnesota would be less effective when competing in other states with firms not operating in Minnesota.

The difficulty of shifting life insurance taxes arises not only because of the need to remain competitive in other states. Insurance companies must also compete with noninsurance financial institutions which pay no tax like the premiums tax. Taxes can reduce the return on the savings portion of life insurance, compared to other savings methods and thereby discourage the use of life insurance as a savings device. To avoid this, insurance companies will be hesitant to shift the taxes to the consumer/saver.

Taxes on property/casualty firms can be shifted more easily than those on life companies because the rates are set within the state. Thus, the tax on property/casualty firms is more like a sales tax. However, there are two limitations on the ability to shift property/casualty taxes. One is that higher insurance rates may discourage consumers from buying insurance, and rates will be kept somewhat lower to avoid this. The second limitation is that money spent for self-insurance is not taxed. Insurance companies may need to keep premium rates low to prevent business firms from opting for self-insurance, thus preventing them from shifting the premium taxes.

MEASURES OF INTERINDUSTRY TAX NEUTRALITY

Evaluation of tax neutrality involves comparing tax burdens across industries, and this requires acceptance of a basis for comparison. The ideal denominator for comparing business taxes is the value added, i.e., the sum of the payments to all the private factors of production. Then, the ratio of tax payment to the denominator provides a "tax-cost" measure of the relative importance of the tax to the total costs of the enterprise. Unfortunately, the value-added data for the Minnesota insurance sector are not available.

However, an alternative (though less satisfactory) measure, net income (profits) is available from a sample of property/casualty and a sample of life companies that were surveyed for this report. It was necessary to collect information from the samples of property/casualty and life companies in order to obtain the fullest information on income and other data about the insurance industry.

Comparison of taxes relative to income must begin with a definition of taxable income. Definitions as provided by Minnesota tax law are acceptable for industries other than insurance. Since taxable income for insurance firms is taken from 1936 definitions, it is not possible to compare directly burdens across industries. Short of recalculating income for every firm, it was not possible to arrive at a definition of income for insurance firms that would precisely compare with other industries. For the current purpose, life companies' income as reported for federal tax purposes is chosen as the definition of income. This income figure is apportioned to Minnesota by multiplying it by the percentage of the company's premiums in Minnesota.[23] Property and casualty companies income is defined as net income from the Minnesota corporate income tax return.

TAX IMPACT ANALYSIS

Taxes relative to corporate income are presented in Table 5 for life and property/casualty insurance and several other industries for the years 1978 through 1982. Five years of data are provided in order to avoid the problem of a single-year aberration. Both 1981 and 1982 are probably unusual years for the insurance industry because of the slow economy. Also, modified coinsurance agreements, in effect during that time as the U.S. government negotiated a new insurance tax law, led to insurance incomes being understated.

A consistent pattern holds for 1978, 1979, and 1980. Insurance firms' taxes are a higher percentage of income than those paid by other industries, even when insurance company taxes are defined to include only the premiums tax. This finding approximates those of Fox (1983) and Papke (1973). Life insurance firms in the sample paid between 13.6% and 17.1% of income in premiums taxes. Property/casualty firms paid between 43.6% and 52.6% of income in premiums taxes. Other industries including those directly competing with the insurance industry, pay approximately 12% of income in taxes, the legislated corporate income tax rate.

When all insurance taxes are included, the percentages of taxes to income are even greater. The sample of insurance firms used for this analysis appeared to be those with the greatest income, because their income tax liability after the premium tax credit is relatively high compared with that paid by all insurance firms. This sample may have had the effect of exaggerating the percentage of all taxes relative to income. Also, the

TABLE 5
Taxes Relative to Income for Selected Years
(percentages)

	1978	1979	1980	1981	1982
Life Insurance Sample[a]					
Premium taxes	15.1	13.6	17.1	25.9	25.2
All insurance taxes[b]	18.4	18.2	24.7	40.3	36.1
All insurance taxes for firms with positive income	16.1	16.8	21.3	33.7	26.3
Property/Casualty Sample[a]					
Premium taxes	43.6	48.8	52.6	51.1	117.4
All insurance taxes[c]	49.5	55.3	60.2	59.6	142.0
All insurance taxes for firms with positive income	45.2	55.3	58.3	59.6	86.8
Banking and Bank Holding Companies[d]	12.0	12.0	12.0	12.0	n/a
Security and Commodity Brokers, Dealers, Exchanges and Securities	12.1	12.1	12.1	12.1	n/a
Total Corporate Taxes, All Industries	11.2	11.2	11.2	11.2	n/a

Source: Insurance tax sample and *Minnesota Corporate Income Tax,* Minnesota Department of Revenue, selected years.

n/a = not available.

[a]All firms may not have been used every year. Data omissions were responsible for some exclusion. Property/casualty mutual companies may not be required to calculate income, so they are excluded.

[b]Includes premium and corporate income taxes and life insurance valuation fees.

[c]Includes premium, income, fire marshall, firemen's relief, and ocean profits taxes and second injury fund.

[d]Includes corporate income and bank excise taxes.

definitions of income are not always comparable across industries, and thus, the analysis may be distorted.

Domestic life companies tend to pay higher taxes than the foreign companies because only the domestic companies pay the valuation fee; there is, though, a tendency for foreign firms to pay greater corporate income taxes.

Property/casualty firms appear to pay much higher percentages of income in taxes than do life companies. The conclusion that property/casualty firms can more easily shift the premium tax to consumers means that a study of economic rather than legal incidence would find the differentials between the two parts of the insurance industry to be much smaller, so little importance should be attached to the differential.

In summary, the insurance industry pays, relative to income, taxes that appear to be higher than those paid by other industries. The effect is to put

the life industry at a disadvantage relative to other direct competitors such as banks, savings and loans, and security firms.

INTERSTATE TAX DIFFERENCES

The basic insurance tax structure is similar across state lines, though some differences do exist, particularly in such areas as whether corporate income, Blue Cross and Blue Shield, and annuities are taxed. Considerable diversity does not exist in the tax rates employed.

Differences in insurance tax structures are important for two reasons. Retaliation is most important as Minnesota domestic insurance firms will be penalized when they operate in other states, if the insurance taxation is too high at home or if the structure is too different. Also, overtaxation can potentially have minor influences on the location of insurance firms. This need not be a major concern because firms will make location decisions infrequently, but Meyers (1978) noted the case of Acacia Insurance Company, which decided to locate in Northern Virginia rather than the District of Columbia to avoid retaliation by other states because of the D.C. annuity tax.

STATE TAX STRUCTURES

A 2% premiums tax rate is the mode (rate with the greatest frequency) across the United States. Twenty-four states and the District of Columbia tax foreign life and health insurance at 2% and sixteen plus D.C. tax domestic life and health at 2%. Twenty states and D.C. tax foreign property/casualty and sixteen plus D.C. tax domestic property/casualty companies at 2%.

There is a slight tendency to tax property/casualty insurance more heavily than life insurance. This probably results because the tax can be more easily shifted by property/casualty companies to consumers.

Only three states, Maryland, Vermont, and Nevada, tax all insurance at the same rate. There is a tendency to tax insurance provided by foreign companies more heavily than that by domestic companies. Only two states tax foreign life and health premiums at less than 2%, but twenty-two tax domestic life lower than 2%, and in many cases of low-premium taxes, an income tax is imposed on domestic corporation. Foreign and domestic corporations can also lower their rates in various states by holding certain percentages of their assets in the state. The U.S. Supreme Court recently rejected arguments used to justify different rates for domestic and foreign corporations in Alabama.

Differential taxation of domestic versus foreign corporations is generally seen as a way to protect the small domestic firms from large foreign companies. While this reduces domestic corporations' operating costs

within the state, the net effect may be deleterious for many companies. Retaliatory taxes are calculated on what a foreign corporation would pay doing business in the domestic state. Little protection may occur as the domestic companies are penalized with high taxes in other states.

Low rates for domestic companies may be seen as a way to attract insurance firms' headquarter locations. Such is unlikely to occur because taxes are probably not the major factor in most location decisions. More importantly, retaliatory taxes potentially paid to other states will be a more significant factor for most large firms than the taxes imposed in their domestic state.

Only sixteen jurisdictions, including D.C., tax annuity considerations received by foreign companies and fifteen tax annuity considerations received by domestic corporations. Foreign corporations are frequently subject to higher annuity tax rates.

Nineteen states tax some form of corporate income earned by insurance companies although few states actually impose the tax on all forms of insurance income. Only domestic companies are liable in seven of these states. Six states allow the income tax as a credit against the premiums tax or vice versa so that there is little duplication of payments. In most of these instances the liability will arise from the premium taxes because its payments will exceed the income tax liability.

MINNESOTA TAXES RELATIVE TO NEIGHBORING STATES

Taxation of the insurance industry relative to other industries was described above. An alternative way to evaluate the level of Minnesota's insurance taxes is to compare them with other states. Because of the differences in tax rates and structures, the appropriate comparison is on the basis of the overall tax structure. The approach adopted here was to calculate the tax burdens that would be imposed by other states on the firms included in the sample described above. Iowa, North Dakota, South Dakota, and Wisconsin—the states surrounding Minnesota—were used for this purpose.

The tax structures were compared to the maximum extent. The detailed credits and tax structures could not always be replicated exactly, but the results are representative of tax differences across states in the region.

Life insurance company taxes for the sample are shown in Table 6 as a percentage of their Minnesota burden. As noted above, the income taxes paid in Minnesota by the sample of firms are higher than would be expected from a random sample of Minnesota firms, so this may slightly lower the relative values listed for other states in the table. Nonetheless, the findings are that the firms paid higher taxes to Minnesota than they would have paid to the surrounding states, except for South Dakota. Minnesota's taxes are higher because of its income tax (Wisconsin has an income tax for some

TABLE 6
Neighboring States Life Insurance Taxes
Relative to Minnesota

	1978[a]	1979[a]	1980[a]	1981[a]	1982[a]	Premium Tax Rates Domestic	Foreign
MINNESOTA	100.0	100.0	100.0	100.0	100.0	2	2
Iowa[b]	80.5	73.5	68.6	63.5	70.0	2	2
North Dakota[c]	51.2	46.7	43.7	40.4	44.4	2	2
South Dakota	97.4	88.9	83.3	77.0	105.3[d]	2.25	2.5
Wisconsin	86.9	79.4	73.6	68.2	2	2	

[a]Values are taxes which would be imposed in each state relative to those actually paid by the sample of firms in Minnesota.
[b]Does not include the franchise tax which is a maximum of $3,010 per firm.
[c]Accident and sickness premium rate is 0.5%.
[d]Includes annuity tax because data were not available for earlier years.

TABLE 7
Neighboring States Property/Casualty Taxes
Relative to Minnesota

	1978[a]	1979[a]	1980[a]	1981[a]	1982[a]	Premium Tax Rates Domestic	Foreign
MINNESOTA	100.0	100.0	100.0	100.0	100.0	2	2
Iowa[b]	85.8	85.6	85.5	85.1	81.1	2	2
North Dakota	42.9	42.8	42.7	42.0	40.5	1	1
South Dakota	106.1	106.0	106.6	106.2	102.1	2.25	2.5
Wisconsin	96.0	93.1	92.0	92.6	87.2	2	2

[a]Values are taxes which would be imposed in each state relative to those actually paid by the sample of firms in Minnesota.
[b]Does not include the franchise tax which is a maximum of $3,010 per firm.

domestic companies) and because of the valuation fee. South Dakota's taxes are higher in 1982 because the annuities tax was included in the calculation. Data were not available to include the annuities tax in earlier years.

Property/casualty company taxes relative to Minnesota are listed in Table 7. Taxes are higher in Minnesota than each of the other states except for South Dakota. The premiums tax rate is higher in South Dakota, thus leading to this result, but the difference in tax levels is never greater than 6.6%. Generally, taxes on property/casualty companies in the other states are higher compared to Minnesota than are the taxes on the life companies. North Dakota is the exception because the premium rate in North Dakota is lower for property/casualty firms than for life firms.

In sum, Minnesota insurance taxes are second from the top of the five-state region which also includes Iowa, North Dakota, South Dakota, and Wisconsin. The issue of whether these taxes are borne by consumers or the

insurance industry remains muddled (because of shifting), but this result is another indicator that insurance taxes are relatively burdensome in Minnesota. A note of caution is in order for interpreting this finding: Minnesota insurance taxes would probably not be as high in a relative list if all fifty states were included.

RETALIATORY TAXATION

Retaliatory taxes were first imposed in Massachusetts in 1832 and exist in all but five states today. Retaliatory taxes are paid by a Minnesota domestic firm to another state whenever a foreign firm operating in Minnesota would pay higher taxes to Minnesota than a Minnesota domestic firm would pay in the state where the foreign firm is domiciled. Foreign firms operating in Minnesota pay retaliation to Minnesota whenever the reverse is true, although Minnesota calculates retaliation on the basis of each separate tax and fee. The retaliatory taxes are calculated by first determining the taxes the Minnesota domestic firm would pay on the comparable business done in the foreign state, if the Minnesota firm were taxed as a foreign insurance corporation doing business in Minnesota. The tax liability for the Minnesota firm, calculated using the foreign state's tax structure, is then subtracted from the determination of Minnesota taxes on the domestic firm. If the result is positive (meaning the Minnesota taxes are higher than the foreign state's) this difference is paid in retaliatory taxes, in addition to other taxes due to the foreign state. If the result is negative the Minnesota firm pays taxes due under the foreign state's tax laws, with no retaliation.

PROTECTION OF THE DOMESTIC INDUSTRY

Retaliation has generally been justified as a means to protect domestic firms from being unfairly discriminated against when operating in other states. The basic result of the system of retaliation across the U.S. is not protection. In fact, domestic firms can be trapped in a no-win situation when pressure arises for greater insurance tax revenues because, if taxes for foreign firms rise, it will cost the domestic firms large increases in retaliatory taxes to other states. The alternative of raising taxes only for domestic firms reduces the competitive position of the domestic firms in Minnesota.

Further, retaliation is not structured to cause equal treatment of domestic and foreign firms in other states. If structured to achieve this result, retaliation would be effective whenever a state discriminated against foreign firms. Instead, retaliation is triggered when taxes are higher in a foreign state than in the domestic state. The structure of retaliation causes states to move towards taxes in line with those imposed in other states, rather than equal taxes for domestic and foreign firms within every state.

The most common impacts of retaliation are to reduce each state's flexibility in taxing the insurance industry and to hold down state insurance taxes, a point which has been recognized for some time (see Hanson, 1969). Meyers (1978) has argued that the insurance industry was a proponent of the U.S. legislation which kept state regulation of the industry and retaliation in place. Attempts in every state to increase insurance taxes are met by concern within the domestic industry that retaliation would create severe penalties if tax rates were increased. This tends to encourage uniformity of tax treatment across states for insurance firms.

Most states include all taxes on insurance companies together in determination of retaliation, though a few states, including Minnesota, allow retaliation on a tax-by-tax basis. This latter form of retaliation causes even greater pressures for uniform tax treatment. Particularly, the item-by-item retaliation discourages any state from creating an insurance tax structure that looks radically different from other states. If a state creates a different structure, it encourages insurance firms to develop subsidiaries which are domiciled in other states in order to avoid retaliation.

A strong argument can be made for eliminating retaliation across the nation. No action by an individual state would overcome the difficulties created by retaliation but there are some ways Minnesota could lessen its effects. One would be to provide domestic firms a credit against premium taxes for increased retaliatory taxes caused by any rise in Minnesota insurance taxes. Based on the findings below, the credit would probably eliminate the Minnesota tax liability of many domestic companies so the revenue loss would be substantial. Another way to lessen retaliation would be to enact reciprocal legislation wherein Minnesota would agree not to retaliate against firms from other states if those states would do likewise regarding Minnesota firms. At least two states enacted similar legislation in the 1970s. The effect of such legislation in Minnesota would probably be limited because there is unlikely to be a significant trend to such legislation. Another improvement would be to shift from the line-by-line form of retaliation to retaliation based on the overall tax structure of other states.

RETALIATION COSTS TO MINNESOTA FIRMS

Retaliation would cause an increase in Minnesota insurance company taxes to result in higher tax payments for Minnesota domestic companies in every state where Minnesota insurance would then be higher. Since premiums within Minnesota are generally a small share of a large domestic firm's total premiums, the retaliatory taxes paid in other states will often dwarf their increased payments to Minnesota.

The retaliation costs to domestic firms from a 1% increase (from 2% to 3%) in the premium tax rate was used to demonstrate the sensitivity to a tax increase. Each domestic firm represented in the sample was asked to

estimate its cost in terms of retaliation for a 1% premium tax increase. Eleven life insurance companies and nine property/casualty companies provided the required information.

Domestic property/casualty companies in the sample would pay an additional $1,096,904 in premium taxes (based on 1982 premiums) with a 1% increase in the premium rate. Retaliation costs paid to other states would be $12,534,891, meaning that it would cost these firms $11.42 in taxes paid to other states for every $1 paid to Minnesota.

Life companies would not be affected as dramatically but the basic result remains. Firms in the sample would pay $774,925 in additional premium taxes with the rate increased. Retaliation costs would be $5,732,164 or $7.40 per $1 paid to Minnesota.

The sample tends to be dominated by large firms with significant business outside the state of Minnesota, so the relative retaliation costs reported here may exceed those which would occur if all domestic companies were included in this experiment. Nonetheless, it is clear that a higher insurance tax rate in Minnesota would result in much greater increases in retaliatory taxes paid to other states than Minnesota would receive from the domestic firms.

ENDNOTES

1. American Council of Life Insurance, (1983) p. 59 and Insurance Information Institute (1982) p. 30.

2. A foreign firm is one chartered outside of Minnesota.

3. A careful description of Minnesota income tax treatment for insurance companies, other state's taxation of insurance companies, and current U.S. treatment prior to the 1984 legislation is contained in Malach (1982).

4. See Aaron (1983), p. 9.

5. United States vs. South-Eastern Underwriters Association (1944) 322 U.S. 533.

6. Public Law 15, 79th Congress (Chapter 20, 1st Session), March 9, 1945.

7. See Meyers (1978), p. 477.

8. The income-elasticity is the percentage change in tax revenues divided by the percentage change in personal income.

9. See Fox and Campbell (1984).

10. The assumption is that expenditures represent the demand for services and revenues must equal expenditures.

11. The other domestic nonprofit health service plan corporations, Delta Dental Plan of Minnesota and Minnesota Vision Services Plan, Inc. are also untaxed and the substance of the following arguments would apply to them as well.

12. An interesting note is that as greater alternatives are available to purchase nontaxed insurance, it becomes more difficult for firms to shift the tax to consumers through increased premiums.

13. Horizontal inequity occurs when people with the same tax-paying capacity pay different amounts of tax.

14. Stoica, et al. (1982), p. 13.

15. Minnesota Department of Commerce, (1983) p. 2.

16. Since the policyholders are the owners, failure to exempt foreign mutuals under the first justification above is curious, because Minnesotans are owners to the extent that they insure through the foreign companies.

17. The expected loss is defined as $E(L) = P_0L_0 + P_1L_1 + P_2L_2 + \ldots + P_nL_n$ where E(L) is the expected loss, P_i are the probabilities of the various losses L_i which can occur. The variance is a measure of the range of actual losses that can occur.

18. The fee is defined here as the present value of the difference between premiums received and claims on benefits paid out.

19. Self-insurance is a class of risk retention where there are a large number of homogeneous exposure units, no exposure to a catastrophe, and there is a financially dependable plan for paying losses.

20. Minnesota Department of Commerce (1983).

21. Firms could be taxed based on the benefits paid. However, the employee retirement income security act of 1974 (ERISA) precludes taxation of employee welfare benefit plans. A tax similar to a premium tax was declared void by the United States District Court in *National Carriers Conference Committee vs. Heffernan* (D.C. Conn. 1978) 454 F. Supp. 914.

22. Meyers (1978), p. 473.

23. Recall that this apportioning methodology can also distort the insurance industry relative to other firms.

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Part V

The Property Tax

13

Direct Property Tax Relief in Minnesota: An Analysis

John H. Bowman

Among the important findings of several volume 1 chapters on property taxation is that reliance upon property taxation to finance government services in Minnesota has declined sharply in recent years—even more sharply than nationally—principally due to the introduction of many property tax relief mechanisms in Minnesota.

This chapter turns to a more detailed analysis of the economics of property taxation, with particular emphasis upon the consequences of the various relief mechanisms found in Minnesota. The first section puts forward a basic analytic framework for considering alternative approaches to property tax relief. A basic distinction made there is between two broad categories of relief programs—those that directly reduce the property tax bills for individual parcels of property, and those that indirectly accomplish this. Direct relief is the focus of this chapter; indirect relief (e.g., aid payments to local governments, local nonproperty taxes) is the subject of another chapter in this volume.[1] The two middle sections of this chapter describe in some detail and present empirical analyses of the Minnesota direct relief mechanisms. The final section considers some general relief guidelines.

APPROACHES TO PROPERTY TAX RELIEF

Property tax relief can be defined quite broadly to include anything which reduces the relative reliance on property taxation for public revenue.[2] This all-encompassing definition includes not only the homestead exemptions, circuit breakers, deferrals, and classification—the traditional property tax relief programs whereby the tax bills for individual parcels are directly reduced[3]—but also various local nonproperty taxes, local nontax revenue sources, and intergovernmental aid programs. Those in the first group are referred to as direct property tax relief; they directly reduce the tax bills for individual property parcels, even though they may not affect total property tax levies of governments. Approaches in the second group provide indirect

property tax relief by providing local governments with alternative revenue sources and, thereby, permitting property tax levies to be lower than they otherwise would be; thus, indirect relief results from change external to (and without reference to) the property tax.

It should be noted that the discussion is restricted to legally intended (i.e., de jure) relief provisions. Extralegal modifications (e.g., through assessment error) often abound, but they are omitted here.

DIRECT RELIEF MECHANISMS

Many programs working within the property tax framework offer direct property tax relief because they are tied to either the tax or the tax base amount. Most modify the calculation of individual property tax bills, although circuit breakers generally are exceptions since they typically provide refunds after the property tax bills have been calculated and paid.

Direct relief often is provided broadly, without reference to attributes of the individual property owners and/or occupants; targeting by such attributes also is common. While uniform relief to all property types is possible, direct property tax relief programs generally discriminate among property-use types (residential, commercial, etc.); thus, they tend to redistribute the property tax load among classes of property.

PARTIAL EXEMPTION

The tax is the product of the tax base (assessed value) and the rate. A partial exemption reduces the base by subtracting some amount after value has been determined in the generally applicable manner. While the exempt amount could be expressed as a percentage of gross value, standard practice is to exempt some absolute number of dollars. This practice means, of course, that a larger percentage of the value of lower-valued properties is exempt.

The size of the partial exemption can be stated in terms of either assessed value or market value. If keyed to assessed value, undervalued properties receive a larger exemption than intended. For example, if property is supposed to be assessed at 100% of market value and the first $5,000 is made exempt, the apparent intent is to exempt $5,000 of market value. But if the assessment level, in fact, is only 50%, subtracting $5,000 of assessed value actually shields $10,000 of market value from taxation.

While use of market value is thus desirable to overcome the effects of undervaluation, as a practical matter its use would not overcome inequities if the assessment level varied across property parcels, although it would result in the proper average and aggregate exemption.

To calculate the market value of a parcel from its assessed value, the latter must be divided by some average ratio of assessed value to market value

(often measured by sales price). To the extent that the average ratio is not valid for an individual parcel, the attempted adjustment to market value still would provide too large (small) an exemption where the assessment level is below (above) average.

Because a partial exemption reduces the tax base before application of the tax rate, the tax amount is directly reduced, and the property owner pays only the tax net of relief. Perhaps because of this, the cost of an exemption typically is borne locally by the taxing jurisdiction. There is a local cost even if local revenues are not reduced as the result of exemptions; in this event, the tax rate is set higher to offset the lower base, causing other local taxpayers to bear higher taxes. Local absorption of the costs of exemption, however, is not an inherent feature of homestead exemptions, as several states now demonstrate.[4]

Homestead exemptions are the most prevalent sort of residential property tax relief. The forty-three programs counted represent thirty-six states rather than forty-three states, however, because seven states were counted in both the "elderly only" and the "all ages" categories of homestead exemptions, presumably because the provisions differ for the two groups.[5]

CREDIT

A credit is subtracted from the tax bill. Despite this apparent difference between a credit and an exemption, a credit can be designed to have the same effect as an exemption. This is particularly true of the property tax, which uses a single rate rather than a graduated rate structure. An income tax personal credit, for example, can be viewed as equivalent to some specific tax rate (such as the first bracket rate) multiplied by a specified amount to be sheltered from taxation; the product is subtracted from (credited against) the gross tax. This same approach could be used in computing a property tax credit.

In practice, however, the credit approach in property taxation often is different from the exemption approach, for property tax credits often are calculated as a specified percentage of the gross tax. This gives the same result as a partial exemption set equal to a given percentage of gross value—an exemption-approach which, as noted, generally is not used; in practice, then, less of a credit than of an exemption tends to go to owners of low-valued properties. Another practical though not inherent difference is that credit-costs, more often than exemption-costs, tend to be borne by the state. Apparently, because a credit-program gross-tax-amount is calculated before the tax relief is subtracted, decisionmakers are more aware of the costs of their decisions and more likely to bear them. An exemption makes it easier to ignore the revenue consequences, particularly if only net assessed values are brought forward for application of tax rates. Thus, a tradeoff seems to be posed for those seeking redistribution: exemptions, more than credits,

tend to favor low-valued properties, but exemptions are more likely to be locally financed.

A recent survey found five homeowner property-tax-credit programs providing credits equal to some percentage of gross property tax (Indiana, Minnesota, Ohio, Oregon, and Wisconsin); all extended to all age groups, and all were state funded.[6]

A credit for property taxes can be subtracted from some tax other than the property tax (as in the several states where circuit breaker property tax relief is credited against the state personal income tax), but those cases are treated as a refund or rebate below.

REFUND OR REBATE

The refund or rebate mechanism (hereafter, simply refund) works much the same as a credit, except that with a refund, receipt of property tax relief is not simultaneous with payment of the gross property tax. With a credit, the taxpayer pays only the amount of property tax net of relief; with a refund, however, the full tax is paid and a separate refund is provided.[7] The Minnesota circuit breaker now is solely a refund program, but some claimants previously received their benefits via income tax credits. Because most property tax refund programs are circuit breakers, however, this relief form in practice is targeted to lower-income groups more than are property tax credits. The refund can be made through a separate administrative arrangement, or this function can be piggybacked on the state income tax (or some other nonproperty tax); each of these approaches is used in roughly a dozen states' circuit-breaker property-tax-relief programs, and either could be used for a broader form of property tax relief.

FREEZE

Another approach to direct property tax relief is the freeze. As the term suggests, a freeze precludes (or, in the case of a partial freeze, moderates) change beyond a certain point. A freeze can apply at any point in the calculation of the property tax—the base (assessed value), the rate, or the tax amount itself. Freezing the tax amount obviously is the most effective way to keep the tax from rising; if only the base or the rate were frozen, changes in the other still could serve to increase the tax. Distinction must be made, however, between the aggregate levy and the bills of individual taxpayers. If a tax freeze means only that the aggregate levy is frozen, the property tax bills for individual parcels may change; in this case, any increases in individual tax bills would be matched by decreases for others.

For a few years in the 1970s, Minnesota froze the tax bills of persons aged sixty-five and over, but this program was ended in favor of increases in other property tax relief programs.[8] As part of a local revenue diversification

option a decade ago, Indiana froze property tax levies in counties adopting a local income tax while freezing rates in the nonadopting counties.[9] California's Proposition 13 included a partial assessed-value freeze (maximum annual increase of 2%) for properties whose ownership has not changed,[10] and Illinois' homestead exemption has the same effect as an assessed value freeze since it exempts the valuation increase resulting from reappraisal.[11]

USE-VALUE ASSESSMENT

Since the advent of general ad valorem property taxation in the mid-nineteenth century, valuation according to highest and best probable use, rather than actual use, has been the standard. In many cases, current use and highest and best probable use will be the same. But as property values escalate in transitional areas, properties used in pursuits valued relatively low by the market will tend to experience rising property taxes relative to the income generated by those uses. One result can be pressure to provide relief by ignoring highest- and best-probable-use (market) value and to look only at actual-use value.

The divergence between use value and market value apparently is greatest for agricultural land in the rural-urban fringe. Starting with Maryland in 1956, forty-nine states now provide some sort of use-value taxation for at least some categories of agricultural land.[12] The Minnesota legislature in 1984 directed the department of revenue to study means of implementing farmland assessment based on production value, and simultaneously repealed a rent-capitalization-value program not yet implemented.[13] Some states apply the use-value standard to housing, as well.[14]

CLASSIFICATION

The hallmark of classification is different effective rates (i.e., taxes that are different percentages of actual value) for the different classes. Because effective rate differences result from anything that affects the actual tax amount—differential levels of fractional assessment, nominal rate differences, or tax adjustments after multiplication of rate by base—the line between what generally is called "classification" and other relief programs is difficult to draw, because it is largely artificial. The broadest definition would consider all the foregoing direct relief mechanisms to be classification (if nonuniform effective rates result), so this discussion follows convention and applies the classification label only to those programs that are generally referred to as classification; essentially, these entail a split property roll. Assessment level differences may result from failure to achieve legally required assessment uniformity, so the effect of classification may occur without legal provision. In this discussion, the focus is on deliberate, legally-

provided (de jure) classification schemes; this is the usual sense in which classification is understood when one talks about states that classify property.

If differential treatments of at least some types of personal property relative to real property are included, classification is rather common.[15] Our interest, however, is in the classification of real property. Within the category of real property, uniformity across the board was the almost universal legal requirement for many decades; it continues to be the standard in the majority of states, although more than a third of the states have adopted real property classification in the past fifteen years, bringing the total to twenty-one states plus the District of Columbia.[16] Minnesota's is the oldest system of real property classification, dating from 1913. Among Minnesota's neighboring states, only Wisconsin does not classify real property for taxation; the other states, however, have considerably simpler systems than Minnesota's.

The most common approach to establishing effective rate differentials is the application of uniform nominal rates to differential assessment levels; about two-thirds of the classification states, including Minnesota, use this approach. West Virginia and the District of Columbia classify by applying differential nominal rates to supposedly uniform assessed values, and New York authorizes local adoption of such an approach. Either approach can be effective, but some argue that the practice of establishing assessment level differences is inferior because it (1) makes it harder for taxpayers to evaluate the appropriateness of their assessed values, (2) increases the potential for abuse of the assessment system and appears to make the assessor part of the tax-setting process, and (3) affects debt limits and other policies tied into assessed value figures.[17] (A third approach applies uniform nominal rates to supposedly uniform assessed values, and then reduces the tax bills for one class of property through tax credits to create effective rate differentials. Minnesota in recent years has combined differential credits with assessment level differences. Because of the use of credits, however, this approach is not considered classification under the narrower definition adopted here.)

Other differences among classification systems include the number of classes defined, the degree of difference among classes, and the constitutional or statutory placement of those details. These are important policy questions to which the states have provided widely differing answers. The number of classes, for example, ranges from two to over twenty. The problem is that there is no objective way to determine what is the "right" pattern; it is a subjective question of equity. Creation of additional classes seems to be a problem if the classes are legislatively determined, and additional classes mean a larger number of borderline decisions to contend with and increased administrative effort.[18] A former tax commissioner of Minnesota, a state where the classes are established by statute, has characterized the tax differences as depending on political power rather than

on economic differences or on matters of equity, as usually conceived.[19] West Virginia's fifty-year-old, unchanged constitutional system shows, however, that instability is not an inherent feature of classification.[20]

Finally, there is the question of whether the differences between classes will be fixed or floating. The motivation for de jure classification often has been the effort to preserve existing de facto differentials that are threatened by court-ordered enforcement of the uniformity standard. Fixed relationships lock in effective rate differences. Earlier, fixed relationships were universal among real property classification states; in recent years, however, concern often has been with halting or slowing the drift toward an ever-higher share of property values being accounted for by residential property, a pattern that has been observed in several states. Such shifts focus attention on the dynamics of the property market (as filtered through the property tax valuation process), and some states have devised classification approaches to nullify the market results as they relate to the interclass—although not intraclass—shifts. This requires floating relationships. The outcome may be the same relative treatment of the classes throughout the state or potentially different relative treatments in each local taxing jurisdiction.[21]

CIRCUIT BREAKER

Circuit breaker relief programs, like the other property tax relief mechanisms discussed so far, also provide differentially favorable effective rates for claimants' property taxes, but circuit breakers are more narrowly targeted. Because circuit breakers take many forms, generalization about their details is difficult. What they have in common is that relief is inversely related to income. When property taxes rise to levels that are thought to constitute an overload relative to income, the relief program breaks the load. This analogy to electrical circuit breakers and power overloads gives this relief form its name. Circuit breakers accept both property ownership and income as indicators of economic well-being (i.e., ability to pay taxes), but the decision goes to income when income is relatively low. Thus, benefits can be targeted to those considered to be most in need of tax relief. Targeting provides a given level of relief to those for whom the property tax amount is truly onerous in relation to income—presumably the group of most concern to tax relief advocates—with a lower total outlay.

The circuit breaker approach to property tax relief is now twenty years old, having been pioneered in Wisconsin in 1964. It spread rapidly, and by 1983 was found in thirty-one states and the District of Columbia; since the late 1970s, however, there have been very few new circuit breakers, no doubt in part because states recently have had little discretionary money for tax relief. Minnesota and all her surrounding states have circuit breakers. The Minnesota and Wisconsin circuit breaker programs are among the broadest

in coverage—including owners and renters of all ages—and among the largest in terms of per capita benefits paid.[22]

Issues concerning residential circuit breaker design include income definition, the type of benefit formula, whether to include renters, whether to include the nonelderly, and whether to impose income and/or benefit ceilings.[23] Flexibility on these matters is a major advantage claimed for the circuit breaker.

The choice is nearly unanimous among circuit breaker states on only one of the design features: virtually all use total money income. Connecticut excludes social security benefits, and Ohio excludes a portion of such benefits. Omitting income from one particular source violates the principle of horizontal equity, treating persons with the same amount of income very differently. The reason for omitting some source of income must be defended on grounds other than equity. In Ohio, where the circuit breaker works against assessed value and directly reduces the tax bill, application is made with the local assessor; social security increases after a claimant's initial application are ignored to avoid the need for reapplication. To exclude from the definition of income the increases in one of the most rapidly growing sources of income for the claimant group (and to do so on the basis of when application was first made) provides a strange twist to a program initially intended to make tax burdens more equitable in relation to income. It trades off equity against administrative and compliance convenience.

The choice between the two fundamental formula types seems to turn upon the question of the major sources of property tax differences within an income group. A sliding scale formula relieves a constant percentage of property tax for all persons within a given income class. For example, a state may provide that those with incomes below $1,000 have 90% of their property taxes relieved (perhaps up to a maximum benefit), those with incomes between $1,000 and $2,000 get an 80% tax reduction, and so forth. The threshold formula defines an acceptable (or threshold) amount of property tax as some percentage of income; the dollar amount of this threshold, of course, rises as income rises. Relief is given only if the actual tax bill exceeds this threshold percentage of income.

Suppose that taxpayers A and B each have incomes of $8,000 and that A and B have prerelief property taxes of $400 and $500, respectively. Under the threshold approach with a 5.0% threshold, A would get no relief because there is no tax overload—A's $400 property tax is equal to the 5.0% relief threshold ($8,000 x .05 = $400) that qualifies for relief. B, however, has a $100 excess property tax (the $500 tax less the $400 threshold amount). Under a sliding scale formula providing, for example, 10% property tax relief for those with $8,000 of income, A would get $40 relief and B would get $50. The relative differences between A and B would remain under the sliding scale approach, but not under the threshold.

Sliding scale advocates argue that it is appropriate to leave relative property tax amounts unchanged because persons with more expensive houses or with higher levels of public services are left with higher property taxes after circuit breaker relief as well as before; the notion is that they are getting something extra for their money. Threshold advocates counter that there is evidence (although fragmentary and imperfect) that within a state—the relevant geographic unit, since circuit breakers almost universally are state funded—property tax differences due to differences in choices regarding housing and public service consumption levels generally are dwarfed by differences due to the amount of taxable property per capita. To provide a given level of services, some localities will have to have higher property tax rates than others because of tax base disparities.[24]

Turning briefly to other design issues, renters are included in most states' circuit breakers, including Minnesota's. This generally is done by defining some percentage of rent as the property tax equivalent. The standard view of property tax incidence concludes that renters bear the property taxes imposed on the structures in which they live. While this would not be the case under certain circumstances (the so-called "new view" of property tax incidence), these circumstances often are not present, in which case it is appropriate to accept the standard conclusion.[25] If this is done, logic requires that renters, as well as owners, be eligible for property tax relief. Even the "new view" notion that the level of property taxation common throughout the nation burdens capital income rather than consumption nevertheless suggests that a portion of Minnesota's tax on rental residential properties falls on renters. Renters are affected via the traditional excise effects, because the nonhomestead property tax in Minnesota is high relative to national levels.[26]

With regard to age-eligibility, logic also is on the side of including the nonelderly. A program that introduces explicit income criteria for determining benefits need not resort to age as a proxy for need. Moreover, it must be recognized (as developed in the foregoing discussion of homestead exemptions) that the elderly by no means have a monopoly on low incomes. "Although the aged are viewed as economically disadvantaged, the fact is that they are about as well off financially today as the nonaged. A variety of statistics support this assertion."[27] Younger persons, too, can (and do) have property taxes that are high relative to income.

Finally, there is the question of whether to impose limits on circuit breaker benefits. Because expenditures for housing do not rise in proportion to income as income rises, a threshold formula automatically results in benefits that are inversely related to income. Even with no stated income limit, this approach will tend not to provide significant relief to higher income groups. A sliding scale formula, by its nature, must set an upper income limit (unless its top bracket is open ended, in which case it would provide relief to all income levels). The questions are what that limit will be, how many income

classes will be defined within that ceiling, what the relief percentage for each income class will be, and whether limits on benefit amounts should be established.

DEFERRAL

Deferral simply delays the time by which the property tax, or a portion of it, has to be paid. Property taxes may impose hardship on persons with property wealth that is disproportionately large in relation to income, even though their property holdings raise them on the economic ladder beyond the point at which it might seem desirable to stop any subsidy. But the hardship posed by the cash-flow pinch may be aggravated by an inability to borrow (at least on reasonable terms) against the asset value. A state (or local) tax deferral may be viewed as a means of overcoming the adverse cash flow and the imperfect capital market. The deferred portion of the tax would be a loan which creates a lien against the property. The loan would come due when the property changes hands, or when other possible conditions (e.g., income level) change. If the full amount of deferred tax plus interest at a market rate ultimately must be paid, deferral—unlike the other relief forms discussed—provides no subsidy.

If deferral is used, how much of the property tax should be deferred? One approach would determine this on an individual basis, much as a private loan would be arranged, but a more routinized approach may be presumed. A flat-percentage could be eligible for deferral (e.g., 75%), or the deferred amount could be determined in conjunction with one of the relief approaches discussed above. In many states, for example, agricultural property taxes in excess of the amount based on agricultural use-value can be deferred. It would be possible to defer the amount in excess of a base-year amount (i.e., freeze the current payment, but not the ultimate liability), or the amount in excess of some percentage of income (i.e., tie deferral to a circuit breaker).

In addition to the agricultural deferral programs, a recent survey found homeowner deferrals in twelve states.[28] The programs attract only a small fraction of the eligible group, apparently because a loan is less attractive than a subsidy (grant).

DIRECT RELIEF: BROAD V. TARGETED

It is useful to divide direct relief into two general categories: broad and targeted. Broad relief may be given in a manner that preserves the legal requirement of uniform effective tax rates for all properties within the same taxing jurisdiction, or it may introduce intentional effective-tax-rate nonuniformities. The nonuniform approach is more common. It defines

property types (classes) across which effective rates are to be nonuniform, although uniformity still is required within each class in a given taxing jurisdiction. The classes used for broad direct relief are defined by reference to some aspect of the property—its use, its location, and/or its value. In short, while global uniformity may be abandoned, the impersonal nature of the tax is preserved. Targeted relief, by contrast, further modifies the traditional nature of property taxation through personalization, taking into account one or more attributes of the owners (and/or occupants), such as age, income, disability, and military service. These attributes serve as the targeting variables.

To illustrate, a homestead exemption that is available to all owner-occupants of residential property is, by this terminology, a broad relief mechanism; owner-occupancy defines the property use category rather than any personal attribute of the owner-occupants. A homestead exemption restricted to owner-occupants aged sixty-five years and over, however, is available to only a portion of the whole class of owner-occupants; such relief is targeted. In general, all the direct relief approaches discussed in the preceding section can be either broad or targeted; the exception is the circuit breaker. By its nature, a circuit breaker always is targeted because it determines relief in part by reference to the income of the owners or occupants, thereby personalizing the tax.

Two or more personal attributes may be used simultaneously in defining a targeted relief mechanism. A homestead exemption restricted to elderly owner-occupants, for example, may be further targeted to such persons having less than $15,000 income.

In practice, much direct relief is targeted, even though broad, class-wide relief is generally feasible. A 1981 count by Steven Gold of the National Conference of State Legislatures[29] found thirty circuit breakers, all of which, by definition, were targeted by income, and twenty-one of which were further restricted to the elderly. The same study also found forty-three homestead exemption programs, of which twenty-three were only for the elderly and fourteen were limited to those below certain income levels. Other sorts of personalization of the property tax were found in Indiana, where an exemption is available only to homeowners with mortgages or contracts on their homes, and Kansas, where a circuit breaker for all ages is extended to the nonelderly only if a dependent child under the age of eighteen is in the household. Although such detail was not recorded by the NCSL survey, in practice many relief programs are targeted to certain disabled persons and to military veterans, and—reversing the Kansas circuit breaker treatment noted above—a New York exemption is available to the elderly only if they do not have school age children in the household.[30]

Two programs that have become quite popular in the last two decades, classification and circuit breakers, exert opposing influences with regard to targeting.[31] Classification, by its nature, is broadly provided; while different

property-use classes are treated differently, all within a class are to be treated uniformly. Circuit breakers, on the other hand, are inherently targeted by income, and two-thirds of these programs are further targeted to the elderly.

INDIRECT RELIEF

In addition to direct property tax relief, there are many indirect relief programs. Direct relief, as discussed, (1) is keyed to the property tax, (2) reduces individual property tax bills in ways that generally redistribute the property tax load across classes, or even within classes, but (3) may or may not affect the total property tax levy. Indirect property tax relief, on the other hand, (1) works outside the property tax system, but (2) also may or may not affect the total property tax levy.

Indirect relief includes local nonproperty taxes (income and sales, whether general or selective), local nontax revenues (users charges, interest income, etc.), and intergovernmental aids. These revenue instruments may displace property tax revenue, thereby providing property tax relief, or they may to some degree augment property tax revenue, permitting an increase in the overall level of services. Leaving aside this question of the effect of nonproperty tax sources on the overall level of local public services, these sources can be viewed as property tax relief mechanisms in the sense that, for a given level of services financed with some contribution from these sources, the amount of revenue to be raised from the property tax is less than it otherwise would be.

The diminished reliance on property taxation made possible by these indirect relief mechanisms, taken alone, will result in proportionate property tax relief for all property taxpayers. Thus, indirect relief is inherently broad rather than targeted.

Indirect property tax relief accounts for the majority of local revenue in Minnesota. In FY 1982, for example, local revenue amounted to $6,719 million, of which property taxation (net of direct relief) accounted for $1,372 million, or 20.4%. Thus, property tax relief, very broadly defined, was nearly four times as large as the net property tax. Direct property tax relief in FY 1982 was $714 million, equal to over half the net tax and to 10.6% of total local revenue. The 69% of total local revenue not accounted for by net property taxes and state direct property tax relief was, by definition, indirect property tax relief.

While the financing role of the property tax dropped from 44% to 20% of total local revenue between 1967 and 1982—a drop of 24%—the share of local revenue from all local sources fell only 16%. Table 3 shows that virtually all of the relative increase in other local sources was accounted for by nontax sources (charges and fees, interest earnings, special assessments, etc.). The share of total local revenue provided by intergovernmental

transfers rose, of course, by the same 16% by which local-source revenues declined. State transfers to local governments alone accounted for 13% of this increase, going from 30% in 1967 to 43% in 1982; state-paid direct property tax relief, in turn, accounted for most of the relative gain in state transfers, rising from zero in 1967 (the last year before such relief commenced) to nearly 11% of local revenue in 1982.

We turn now to an examination of the various direct property tax relief mechanisms in Minnesota. The indirect property tax relief programs are not treated in detail here, but they are covered in another chapter of this volume.[32] Deductibility of property taxes under federal and state income taxes is considered to be an income tax feature rather than a form of property tax relief, and so it is left to treatment in the income tax paper.

MINNESOTA DIRECT PROPERTY TAX RELIEF

Minnesota provides direct property tax relief through three basic approaches:

1. Classification, which alters the tax base by assessing different types of property at different percentages of market value;
2. Credits, which make the net property tax bills that certain property owners must pay less than their gross property tax bills; and
3. Refund programs, which refund a portion of claimants' property taxes.

The classification system is the first layer in the three-tiered Minnesota direct property tax relief system; under it, the tax base is determined. The other relief programs make adjustments at later stages in the taxing process. In effect, the assessed value adjustments under classification are like partial exemptions, and—as is generally the case with adjustments to the base—the revenue loss, if any, is borne locally. The state however, bears the costs of the credits (paid to the local taxing units) and of the circuit breaker and other refunds (paid to the taxpayers). These programs are discussed below.

CLASSIFICATION

Minnesota has the oldest real property classification system in the nation, dating from 1913. It also is one of the most complex, if not the most complex.[33] Simply in terms of the number of classes, Minnesota has no close rival.[34]

Persons familiar with the Minnesota property tax have estimated the number of classes as "something over twenty," "thirty-three," "more than forty," "over fifty," and "about seventy." Several factors contribute to this wide range in estimates. First, some consider "classification" to include only the assessment level differences, while others also include the

differentiation introduced by the various credits. Generally, the lower estimates are given by those holding the former view, while the higher estimates reflect the more comprehensive definition of classification.

But even when classification is defined in the narrower, more traditional manner, it is not clear how many classes exist. A listing of classes and classification percentages is prepared annually by the Minnesota Department of Revenue (because of its length, it is not reproduced here). Two obvious ways to sort through this listing are to count the numbered classes and to count the number of different classification ratios (i.e., percentages of market value used in calculating the assessed values against which tax rates are applied). Neither approach is conclusive.

The "numbered" classes total fourteen, but they appear as twenty-two entries, with several of the designations (including "none") appearing more than once. (The numbers reflect the origins of the Minnesota system, which began with four classes in 1913; letters have been appended to designate new subdivisions, while "none" generally designates property types that were not addressed by the initial classifications—e.g., parking ramps, FHA structures.) The second approach, listing classification percentages, reveals fifteen specific percentages, but there is also a range of percentages (30% to 48.5%) for " 'low recovery' iron ore" for taxes payable in 1984. If this indefinite range is counted as one class, then this approach identifies sixteen classes; several percentages, however, appear more than once, as there are thirty-four listings.

That there are twenty-two "numbered" class entries and thirty-four percentage listings suggests that at least one numbered class includes more than one classification percentage. In fact, subdivision of the classes occurs for several residential classes. Class 3cc (homesteads of paraplegic veterans and of blind or disabled persons), for example, includes four different classification percentages ranging from 5% to 30% for taxes payable in 1984. Thus, the second approach to counting classes would count this one numbered class as four classes. For taxes payable in 1983, five classification percentages were used in class 3cc; the legislature's frequent changes add to the confusion over the nature and extent of classification.

Within class 3cc for 1984, three value brackets are defined; larger classification percentages apply to successively higher slices of market value. There is also a distinction between agricultural and nonagricultural homesteads in class 3cc, however, with both the second and third value brackets assessed at lower percentages of market value if the property is agricultural. The differences are relatively large. For the slice of market value between $30,000 and $60,000, the homestead of an eligible disabled person is to be assessed at 14% of such value if the homestead is agricultural, but at 19%—over 35% higher—if it is nonagricultural. The differential rises to nearly 58% for the amount of value above $60,000, for which the agricultural and nonagricultural classification percentages are

19% and 30%, respectively. Such differences offer a significantly greater subsidy for agricultural property that seems not to be based on need. Because home prices and property tax rates both tend to be lower in rural areas compared to urban areas, a given property tax bill generally would be associated with a lower level of real housing consumption in an urban setting; the agricultural/nonagricultural distinction in the 3cc classification percentages serves to widen this difference.

Both the relatively large differentials and the preferential treatment of more rural areas illustrated by the 3cc class are found in other parts of the Minnesota classification system. While both agricultural nonhomestead property and timberland are assessed at 19%, vacant land has a 40% classification ratio; in some cases, it must be difficult to distinguish among these three classes. Within the category of agricultural property, nonhomestead property is assessed at 19% of market value, while the first $60,000 of homestead property is assessed at only 14%. Considering all homestead property, while the first $60,000 is assessed at only 14% if it is agricultural, nonagricultural property is assessed at an average of 18% (17% and 19%, respectively, for the first and second $30,000 slices of value); and while the amount in excess of $60,000 is assessed at 19% in the case of an agricultural homestead, this amount is assessed at 30% if the homestead is nonagricultural. Classification ratios for commercial and industrial property are larger than for most other classes of property—34% for the first $50,000 of market value (changed to 28% of the first $60,000 by 1984 legislation[35] and 43% for amounts above this. Seasonal recreational properties, both commercial and noncommercial, enjoy the relatively low assessment level of 21%—12% if commercial and the owner's homestead is included.

An aspect of the Minnesota classification system that adds to the complexity inherent in its many classes and the gray border between it and the system of credits is the frequency of change in the classification provisions. A compilation by the department of revenue provides a longer look at the evolution of the system.[36] From 1972 through 1984, the residential homestead (class 3a) classification percentages, for example, were changed five times. In 1972, they were 25% on the first $12,000 and 40% on the excess; in 1984 they were 17% on the first $30,000, 19% on the next $30,000, and 30% on the excess. Use of three brackets instead of two first applied for taxes payable in 1981, but the difference between the percentages for the first two brackets was narrowed effective for taxes payable in 1984. Classification percentages were changed four times from 1982 to 1984 for agricultural homesteads (class 3b), but this remained a two-tier class throughout the period. Agricultural nonhomestead classification percentages also were changed four times.

In addition to rather frequent discretionary adjustments to the classification provisions, the brackets to which the various homestead

percentages apply have been indexed since 1981. The previous year's brackets are increased administratively, pursuant to legislative mandate, by the estimated percentage increase in the statewide average residential homestead value.

The changes have been less numerous for nonagricultural and nonhomestead properties, but changes have occurred. For residential nonhomestead structures with up to three units (class 3dd), for example, there were two changes in classification percentages—from 40% to 32% in 1980 (when a separate "3dd" class was established) and to 28% in 1981. Residential nonhomestead structures with more than three units (class 3d) experienced three changes, all since 1981, bringing the classification percentage from 40% to 34%. The treatment of commercial and industrial land and buildings has been somewhat more stable. Effective with taxes payable in 1982, another class (4c) was created causing the first $50,000 of such property to be assessed at 40%, rather than the 43% level of class "4a". For taxes payable in 1984, the classification percentage for class 4c was reduced from 40% to 34% and, as noted earlier, to 28% by 1984 legislation (which also extended the class 4cc ceiling to the first $60,000). As final examples, timberland (class 3e) and vacant land (class 4b) received classification percentage changes only one time each between 1972 and 1984, each a relatively small reduction.

Because most of the classification changes have reduced the tax base, and because the changes generally have been more significant (and more numerous) for residential and agricultural properties, the relative tax treatments of the various property classes have changed. The result of the classification changes (everything else unchanged), then, has been to lower residential and agricultural effective tax rates relative to those for other classes, thereby redistributing the tax burden among the classes. Effective rate differentials tend to create both equity and efficiency problems; as the differentials become larger, the cause for concern tends to increase.

PROPERTY TAX CREDITS

Property tax credits currently account for nearly three-fourths of the state-funded direct relief—almost $622 million of $841 million for taxes payable in 1984. The credits are not all provided through one program. In fact,

> There are eight property tax credits. (The taconite tax relief credit and the supplementary taconite relief credit are counted as one since they are essentially the same.) The eight credits and the persons eligible to receive them are:
>
> | | |
> |---|---|
> | state school agricultural credit | owners of farmland, timberland, private vacation cabins |
> | wetlands credit | owners of wetland |

native prairie credit	owners of native prairie
reduced assessment credit	blind homeowners, permanently and totally disabled homeowners, owners of rental property providing rental housing to senior citizens and low- and moderate-income families
disaster credit	owners of homesteads damaged by disaster
agricultural preserve credit	owners of certified long-term use agricultural land in the seven-county metropolitan area
taconite tax relief credit and supplementary taconite tax relief credit	Iron Range homeowners including farm homeowners
homestead credit	homeowners, including farm homeowners

The property tax credits are subtracted from the property tax bill in the order listed above. For example, if a person is receiving both the reduced assessment credit and the homestead credit, first the amount of the reduced assessment credit will be subtracted from the total property tax bill. Then the amount of the homestead credit will be subtracted from the remaining amount of the property tax bill.[37]

In addition to the eight credit programs listed above, there is a lesser one to be noted—a credit for homesteads over which high voltage lines pass.

Based on preliminary data for taxes payable in 1984, nearly 85% of total credits go to homeowners (homestead properties), and most of the remaining credits go to agricultural properties. "Owners of commercial or industrial property—except timberland—are not eligible for any property tax credits."[38] Thus, the distribution of the credits is similar to that of the classification benefits, a fact that helps to explain why the two types of programs sometimes are lumped together under the classification heading. (If the circuit breaker refund is included, the homeowner share of all state-funded direct relief remains high, at over 70%; the majority of circuit breaker relief goes to renters, in part because credits reduce the amount of homeowners' property tax considered in the circuit breaker formula.) Among the credit programs, the homestead credit is by far the largest ($505 million out of $622 million). The credit programs are described briefly below, and are taken up in the order in which they are subtracted from the property tax bill, as listed above, although the order of the homestead and taconite credits is reversed effective in 1985.[39]

State school agriculture credits. Under the state school agriculture credit, effective 1972, a portion of the property tax imposed by local school districts on agricultural properties, timberlands, and certain seasonal-use

cabins is paid by the state. The fraction of the tax paid via the credit varies by the type of property and, within the agricultural category, the size of the tract and its homestead or nonhomestead character. The credit percentages for taxes payable in 1984 are shown below (changes, if any, adopted in 1984 for future years are shown in parentheses):

Agricultural homestead:	first 320 acres, 29% (33% after 1984); next 320 acres, 13% (15% after 1984); and acreage over 640, 10%.
Agricultural nonhomestead:	first 320 acres, 13% (15% after 1984); acreage over 320, 10%.
Timberland:	10%.
Cabins:	13% (15% after 1984).

For many years prior to 1972, similar relief had been given to these types of property through local millage adjustment programs. In 1982, the state assumed the cost of the relief, shifting the cost from other local property owners and onto state nonproperty taxes.

Prior to 1984 taxes based on 1983 values, relief was granted in a different manner. Rather than crediting constant percentages of the tax bills, the credits were calculated as specified percentages of assessed value; those percentages were 1.8% (for the first 320 acres of agricultural homesteads), 1.0% (for the second 320 acres of agricultural homesteads, the first 320 acres of agricultural homesteads, the first 320 acres of agricultural nonhomestead properties, and cabins), and 0.8% (for the top slices of both agricultural property types and for timberlands). This earlier approach gave the same dollar amount of relief for two properties of the same type and value, which of course provided larger percentage reductions in taxes where nominal rates were lower compared to higher tax areas.

The percentage-of-tax credit approach adopted in 1983 (and liberalized in 1984) changes this, providing a constant relief percentage for all properties of a given type across all jurisdictions; dollar amounts of relief, therefore, now vary according to the level of local tax rates as well as the value of property. The switch to this tax-based approach, however, was accompanied by the imposition of a ceiling on the amount of relief to any one property owner—$2,000 in the 1983 legislation, but increased to $4,000 in 1984 effective with the taxes payable in 1984. The ceiling, of course, will tend to reduce the effective credit percentages for properties with high taxes, whether due to high property value or high local tax rates.

The rationale for the state school agricultural credit is said to be that the properties favored by the credit otherwise bear taxes that are high relative to the costs that these properties impose on the local schools. As the department of revenue explains it, "The individual farmer generally owns

much more property than the owners of other kinds of property. But . . . farmers generally send no more children to school than the owners of other kinds of property. . . ."[40] Thus, the program seeks to make local school taxation better accord with the benefits-received (or costs-imposed) notion of tax equity. While this basic rationale for reducing school taxes on such properties has some merit, several observations are in order.

Although the stated intent is to redistribute the school tax burden in accord with costs imposed, the relative relief percentages within the state school agricultural credit program are not consistent with this. Within the agricultural category, homesteads receive much more favorable treatment than nonhomesteads—more than twice as big a reduction in the taxes on the first 320 acres (and buildings), and a 50% greater reduction in taxes on the second 320 acres—even though it is not clear that the ratio of children-per-acre differs between these farm types. Moreover, neither of the other favored property types contributes any children to the school load, because no one can live on land classed as timberland, and an eligible cabin cannot be used as a residence.[41] Even so, cabins receive no bigger percentage tax reductions under the program than the first 320 acres of nonhomestead agricultural properties (15%), and timberlands receive the smallest reduction (10%). And, of course, all other types of property that do not contribute directly to school enrollments—e.g., commercial and industrial—receive absolutely no school tax reduction.

It might be argued that commercial and industrial properties simply represent the places of employment of families that do place children in the public schools, and that because these properties indirectly contribute to school enrollments they should bear responsibility for school taxes. After all, the federal government's impact aid programs for public schools (P.L. 81-874 and P.L. 81-815), which make school contributions for tax exempt properties where parents of public school children live and/or work, are based on this rationale. But by the same token, it can be argued that the amount of property per school child is higher for farms than for city residences because the farm represents both the place of residence and the place of employment while the city home represents only the place of residence. Furthermore, under the classification system, farm residences (agricultural homesteads) are assessed at lower rates than their urban counterparts.

More basic than the question of the property types included and their appropriate credit percentages under the school agricultural credit, however, is the question of whether such emphasis on the benefit principle is desired. It is often noted that public education generates external benefits (i.e., benefits that accrue to families with no children in the public school system) and it is further noted that, even under the benefits-received concept, these warrant some general taxation for public schools. But reliance on general taxation, rather than user charges, rests primarily on the ability-to-pay concept of equity.

The agricultural school credit program gives uncommon emphasis to the benefits-received (costs-imposed) concept. User financing of public education is inconsistent with the strong redistributional objectives of public education. Arguments for more reliance upon the benefits principle logically extend beyond the property tax and beyond public school finance; carried to the extreme, the result would be full user financing of public services. Greater reliance on such financing arguably is desirable in many instances, but certainly not all; existence of pure public goods, merit goods, and redistributional objectives all greatly limit, and often rule out, reliance upon user financing.[42]

Wetlands credit and native prairie credit. The wetlands and native prairie credits, two separate programs adopted in 1980, are so similar that they are considered together here. Ownership of either wetlands or native prairie lands that meet certain size and locational criteria gives rise to these credits. Because both these types of land are exempt from property taxation under other legal provisions, the credits offset taxes on other taxable land. The stated intent is to give incentive for the preservation of such lands beyond that provided by tax exemption of those lands.

Thus, one criterion for wetland and native prairie credits is ownership of other taxable land. Moreover, this other land must be in the same or adjacent parcels in the case of wetlands, although native prairie land can be removed from the other land by as much as two cities or townships. There must be at least one acre of tax exempt wetlands to be eligible for the credit, and the minimal tract of native prairie land eligible for the credit program is ten acres.

Each acre of either type of tax exempt land gives rise to a credit equal to some stated percentage of the average market value (in the jurisdiction in which the wetland or native prairie land is located) of one acre of tillable farmland. The percentage for the wetland credit is 0.5% (reduced from 0.75% by 1983 legislation), and for the native prairie credit it is 1.5%. Thus, if the average value of an acre of tillable farmland is $800, each acre of native prairie land will reduce the tax on other land owned by the owner of a qualifying tract of native prairie land by $12 (i.e., .015 x $800). Although the tax on farmland varies around the state, this credit is between two and three times the average level of tax on farmland,[43] in part because farmland is taxed on an assessed value that is a small fraction of market value while the credit is calculated at 1.5% of market value.

Public subsidy for the preservation of wetlands and of native prairie lands may be warranted by public values and preferences. The appropriate subsidy is the amount of public benefit provided (at the margin for the number of acres of such lands that the public wishes to preserve) by keeping such lands in their natural conditions. The recent reduction in the subsidy percentage for native prairie implies—if both rates were correct when instituted—that the marginal (or incremental) value of preserved native prairie lands recently

has fallen by more than one-third (not just one-third, because the average value of farmland also has fallen), either because too much land was coming into the program and being preserved or because the value placed by the public upon such land declined.

If the benefits of preservation are statewide, regardless of where the preserved lands are located, the state is the appropriate unit to provide the subsidy. Benefits that truly are statewide, however, would tend to justify a uniform subsidy rate in all parts of the state. A subsidy that varies, like the current one, directly with the market value of tillable farmland implies, however, that the benefits are higher in areas closer to the population concentrations (a defense of this is plausible, due to the travel costs necessary to enjoy the presumed benefits firsthand) and/or where farmland is more productive. The current programs will reflect these guidelines only by coincidence.

For reasons such as these, it is not clear that the tax system is the proper vehicle for providing the subsidy; assuming that the subsidy is warranted, either a direct state payment to private owners or outright state ownership might be preferable. In addition to the variability in the value of the subsidy because of factors that may not reflect the value of the preservation of the lands in question, the fact that owners of wetlands and of native prairie lands are ineligible if they do not also own other taxable lands (either adjacent or relatively close by) suggests possible shortcomings. Ownership of other, taxable land presumably is required so that there will be another tax bill against which to make the credit, and the further requirement that the taxable and exempt lands at least be near to one another presumably facilitates the crediting mechanism and the local assessor's role. But these requirements also suggest an improbable implication: that there is less public benefit from preserving wetlands or native prairie lands that are owned by persons who own no other land in the same vicinity.

Reduced assessment credit. The reduced assessment credit also was adopted in 1980, but it simply provides a different approach for continuation of an earlier policy. This credit is to provide lower property taxes for selected disabled homeowners and for owners of certain apartments that are rented to the elderly and/or low- and moderate-income families; in the case of the apartments, the intent clearly is to reduce the rent paid by the tenants, and not simply the landlords' property tax bills. Prior to 1981, similar property tax relief was provided to the same groups solely through assessed value reductions, which resulted in lower local revenues and/or higher tax bills for other local property owners. Conversion to a state-paid credit was to prevent these local shifts.

As the name suggests, the reduced assessment credit—like the earlier approach—works through the reduction of assessed values. Lower classification percentages are set for the homesteads and apartments occupied by the favored groups vis-a-vis the classification percentages for

similar properties not so occupied, as before. Now, however, local taxing units receive the gross property tax amounts based on the higher standard percentages, while the net taxes paid by the favored properties' owners still are based on the lower percentages; the difference is the credit amount paid by the state. Thus, the credit provisions are inextricably entwined with the classification system (such arrangements, whatever else may be said about them, help to explain some of the confusion about just what constitutes "classification").

- *Homestead Provisions.* The homestead provisions are applicable to homeowners who are legally blind and those who are permanently and totally disabled. For the blind and for permanently and totally disabled veterans, there are no income constraints on credit participation; for the permanently and totally disabled who are not veterans, however, credit eligibility is restricted to those who are unable, because of their disability, to earn enough to support themselves and who receive at least 90% of their income from certain state or federal payment programs.

  Net taxes are based on the class 3cc provisions rather than those for class 3b if agricultural or class 3c if nonagricultural. For both agricultural and nonagricultural homesteads of the groups favored by this credit, the credit reduces the classification percentage for the first $30,000 of market value to 5%; otherwise it would be 14% for agricultural and 17% for nonagricultural homesteads. So the credit reduces the tax on the first $30,000 slice of market value by 64% for agricultural homesteads (the assessed value is cut from $4,200 to $1,500) and by 71% for nonagricultural homesteads (the assessed value is reduced from $5,000 to $1,500). The lower percentage reduction in assessed value for agricultural properties results solely from the fact that the standard classification percentage for the first $30,000 in class 3b (agricultural homestead) is lower than that for class 3c (nonagricultural homestead); the value of this credit, per se, was reduced for taxes payable in 1984 vis-a-vis those payable in 1983 by changes in the class 3b and class 3c provisions. Because the tax on market value increments above $30,000 is not affected, this credit amounts to a larger percentage of gross tax for lower-valued homesteads.

- *Apartment Provisions.* The apartment provisions are complex because of different treatments for buildings that differ by financing, location, and/or age; some of these differences have been introduced by recent legislation. In general, the reduced assessment credit amounts to the difference between assessment of apartments at 34% of market value (class 3d, Table 4) and at 20% (several of the "non" classes), a 41% reduction. To qualify for the 20% "none" classification ratio, the apartment building must (1) be either a limited- or a nonprofit operation, (2) be financed by certain state or federal loan programs, and (3) provide

rental housing to the elderly or to certain low- and moderate-income families.

There are some exceptions to these general provisions. For buildings financed by the Farmers Home Administration and located in a city of under 10,000 population, the classification percentage upon which the net tax is based is only 5% rather than 20%, and the reduction from 34% is a whopping 85%. Thus, a qualifying structure in a city of just under 10,000 would have its net tax bill increase four-fold by a small population increase to just over 10,000—if nothing else changed—simply because state policy favors, for a reason that is not apparent, renters who live in cities with under 10,000 population. Under 1983 legislation, this differential does not apply to buildings commenced after January 1, 1984; all eligible new projects will qualify for the 20% classification, regardless of where they are located in the state. This change is a step in the right direction, because it eliminates discrimination based on city population size for new buildings. But such discrimination remains for older buildings, and to it is added, within cities under 10,000, discrimination based on building age.

Another recent distinction based on age of the building concerns the portion of the apartment building that qualifies for assessment at the lower classification percentage. Under 1983 legislation, the tax relief for buildings commenced after January 1, 1984, is to be restricted to the portion occupied by the favored tenant groups.

The reduced assessment credit provisions may have some unintended consequences, and they pose several policy questions. For example, is it appropriate that the tax relief be needs-tested for one group of disabled homeowners and not for other target groups? The needs test can reduce program costs, but it increases administrative (agency) and compliance (client) costs. If a test is desirable, is the one used the most appropriate? The requirement that 90% of all income of the low-income, nonveteran, permanently and totally disabled come from specified sources may be intended to further define the eligible group, but it tends to create horizontal inequities. Persons with the same disabilities (though perhaps with different causes of those disabilities) and the same incomes—i.e., equally-situated persons—will receive different property tax credits based on the sources, rather than the amounts, of their incomes.

This suggests a broader concern. How important should the precise types and degrees of disability be for state property tax relief policy? Very different tax treatments will be accorded persons in similar economic circumstances because of slightly differing degrees of disability. Cutoffs must be provided in any program that relies upon physical criteria to determine relief eligibility, but what should those cutoffs be? To be considered blind for purposes of this credit, a person's better eye must be

certified not correctable to better than 20/200. How different, as a practical matter, is 20/190 from 20/200? Is the difference enough to warrant substantial differences in property taxes? Similar questions can be raised concerning the precise criteria for "permanent and total disability." What about persons with disabilities that do not make the list to establish property tax relief eligibility, but that nevertheless impair a person's earnings ability as much as those listed?

A reasonable solution is suggested by the last sentence's reference to earning ability. The department of revenue states that the groups favored by the reduced assessment credit are targeted for relief because ". . . they have less ability to earn income and pay the costs of [housing] . . . ."[44] If the concern is with diminished income potential, why rely upon imperfect proxies for this when income itself not only can be observed, but is observed and is the basis for property tax relief under the circuit breaker program? (The circuit breaker refund will be taken up after discussion of the credits.) Not all blind persons are less able to earn income than are sighted persons, for example, and many elderly people can earn much more than many younger persons. Without having to worry about whether all the disabilities that impair income-earning ability have been identified and listed, and without having to worry about the proper placement of the cutoffs as to degree of disability, the circuit breaker simply looks at property tax load alongside income and, based upon the circuit breaker's relief formula, objectively determines the amount of relief to which a person is entitled. The circuit breaker program, which includes renters as well as owners, would seem to make the reduced assessment credit redundant.

DISASTER CREDIT

The disaster credit provides property tax relief for homeowners whose homes have been damaged by a disaster—fire, flood, tornado, etc.—that results in a local declaration of emergency and/or in the local area being declared a disaster area by certain federal officials. The program was adopted in 1982; 1984 legislation sets requirements as to (1) the average amount of home damage and either (2a) the number of homes damaged or (2b) the fraction of aggregate market value destroyed by the disaster. The relief presumably is one-time relief for part of a year (even if it takes longer to repair damage), to cover the period between the occurrence of the disaster and the following January 2, the assessment date when a new value will be determined reflecting the property's condition on that date.

An alterative that protects the homeowner, but not local revenue, is to permit value (and tax) to be reduced after the assessment date. Indeed, 1984 legislation explicitly provides this alternative for homeowners who suffer at least 50% disaster-caused destruction of their homes but who do not qualify for relief through the disaster credit.

For the credit determination, the market value of the damaged home is estimated both after-disaster and before-disaster (the assessor's estimate as of the previous January 2). Each is weighted by the appropriate fraction of the year to arrive at the adjusted estimate of market value. The excess of the local property tax based on the initial value estimate and the tax based on the weighted average of the before- and after-disaster values is the amount of the credit. In this way, local property tax revenues are protected while the homeowner does not have to pay tax on value that has been lost after the assessment date.

The problem addressed by this credit, unlike the credit itself, is not restricted to homestead property. Owners of damaged nonhomestead properties are left to bear property tax on the full, predisaster values of their properties for the fraction of the year after the disaster, even though their property incomes probably will have fallen. As it relates to rental residential properties, this credit presumes either that landlords do not shift property taxes forward to renters or that tenants and/or landlords are not deserving of relief in these circumstances. If the former, the assumption is inconsistent with that implicit in the reduced assessment credit, which seeks to relieve certain renters' property tax burdens by reducing their landlords' taxes.

AGRICULTURAL PRESERVE CREDIT

The agricultural preserve credit is a tax reduction program for farmland within the seven-county Twin Cities metropolitan area. It is intended to encourage farming within that area. Participation in this program requires a total of at least forty acres in parcels of at least ten acres each, although a single parcel of at least twenty acres can participate if it is bordered by eligible land on at least two sides. Unlike most of the other credit programs, however, relief under this one is not automatic. Local government has to certify that the land in question is long-term-use agricultural land, and the owner has to establish a restrictive covenant—automatically renewable each year—to keep the land in agricultural use for at least eight years.

The amount of the agricultural preserve credit depends upon the local tax rate in the area where the land is located. This program establishes, for participating land, a floating ceiling rate for net taxes payable by the owners equal to 105% of the average gross rate for all townships in the state in the previous year. The credit is the difference between the actual local rate (which determines the local government yield from the tax) and the ceiling rate (which determines the tax liability of the owner.) Thus, the credit rises as the local tax rate rises, but it is zero as long as the local tax rate is less than 105% of the previous year's township average rate.

Although virtually every state has some sort of preferential tax program for agricultural land intended, in part, to preserve land in agricultural use, the literature suggests that these programs have little effect on the decision to

convert land from agricultural use.[45] The tax on the agricultural land even without the relief—and hence the tax saving that can be offered by a relief program—is very small relative to the gains to be realized from conversion. Of the several types of agricultural tax relief, however, those requiring restrictive land use agreements are the most likely to succeed in the preservation objective.[46] This is because of the automatic annual renewal of the multi-year restrictive covenant which requires a long advance notice (eight years in the Minnesota case) of intent to change land use and imposes penalties for premature conversion.

TACONITE TAX RELIEF CREDIT

The taconite tax relief credit, adopted in 1970, is the second oldest of the credits. This credit is to benefit Iron Range homeowners, including farm homeowners, in designated "taconite tax relief areas." Such areas are defined by either (1) the presence of certain types of taconite-related operating properties or (2) by the relative significance of unmined iron ore in total real property value in 1941 (at least 40%) and in the current year for which the credit is provided (no more than 60%); school districts are the political jurisdictions used to define these tax relief areas. A "supplementary taconite tax relief credit" adopted in 1980 provides identical benefits to two specific Iron Range school districts that do not meet the exact criteria for the basic credit but that are said to warrant the same relief. Both the basic and supplemental credit are treated here.

The taconite tax relief credit is funded by proceeds from the state taconite production tax (the supplemental credit, however, comes from state general tax sources). This tax is in lieu of property taxation. A detailed analysis of the credit is provided elsewhere.[47]

The relief provided by this credit is equal to 66% of the property tax for homes located in a city or a town, and 57% of the property tax for homes not in a city or a town. In each case, there is a statutory maximum credit, with a maximum outside cities and towns set $55 below that for cities and towns. Both rise automatically by $15 per year; they are $475 and $420 for taxes payable in 1984. In the case of agricultural homesteads, taxes on land up to 240 acres previously were eligible for the taconite credit, but 1983 legislation removed this acreage limitation.

There is logic to the notion that the state should make up local revenue losses that result from state policies. In this case, the state policy to be atoned for is the property tax exemption of taconite production and mine properties. The nature of the state-provided relief, however, is subject to criticism. The principal criticism is that it is too narrowly directed. The rationale given above is reasonable as far as it goes, but it logically extends beyond homesteads to every other type of taxable property. This is another of the many Minnesota property tax policies which favor homestead

properties above all others—including rental residential—with the cumulative result that effective property tax rates vary substantially across classes of property (the empirical data for the total Minnesota system are presented in a later section of this paper). While the appropriate relative tax loads for various classes necessarily are a matter of judgment, Minnesota has created differences that are large compared with those found in other classification states. Also, the taxes on homeowners in the Iron Range enjoy larger reductions than those in other parts of the state, with the level of net taxes in the region being relatively low.[48]

If homestead properties in general are favored by state policy, agricultural homesteads are particularly favored. The taconite credit program exhibits this trait in the inclusion of unlimited acres of a homesteaded farm; even the earlier ceiling of 240 acres seems relatively high. (As a practical matter, there are a few farms on the Iron Range, but this does not justify current policy.)

Effective in 1985, as noted, the taconite credit will be determined after the statewide homestead credit, rather than before, as previously. The result of this change will be to perpetuate the relatively low homestead taxes in the Iron Range even as the proceeds from the taconite production tax, which funds the taconite homestead credit, decline along with taconite production. The logic of the taconite credit would require that homeowner property tax relief decline as taconite production declines—if Iron Range communities could tax taconite production property, the tax base would decline as production declined (all else unchanged), causing homes (and other properties) to bear a higher share of local service costs. Reversing the order of the homestead and the taconite credits in 1985 and thereafter is, therefore, a questionable effort to use state general fund revenues to maintain what has become a relatively low level of homestead taxation in the Iron Range.

HOMESTEAD CREDIT

The homestead credit, the oldest (adopted in 1967) and the largest of the credits, was deducted after all other credits prior to 1985 (note the taconite credit change in 1985, discussed above). It is equal to 54% of the (remaining) gross tax, up to a relief maximum of $650. After steady increases in both the relief percentage and the relief maximum, the percentage was reduced from 58% by 1983 legislation as part of the response to state budget pressures.

The homestead credit is available to all homesteads, including farm homesteads of unlimited acreage. The tax on only the first 240 acres of a farm homestead was considered in calculating homestead relief prior to 1983 legislation. But at the same time that the coverage of agricultural homestead taxes was extended, nonagricultural homestead coverage was made narrower by limiting relief to the taxes on the first $67,000 worth of market value. These changes tend to increase the net tax differentials that exist between

agricultural and nonagricultural properties, on the one hand, and between relatively high-valued homes and less expensive homes, on the other.

This is generally consistent with the objective summarized by the department of revenue: "To reduce by a large amount the yearly property tax bill of virtually every homeowner in the state by providing a property tax credit which is subtracted from the homeowner's property tax bill, and to reduce low and moderate property tax bills by a greater proportion than high property tax bills."[49] The $650 maximum also serves to provide relatively greater relief on lower tax bills, while the 54% relief percentage serves the objective of a "large amount" of tax relief.

In addition to the obvious effects of this credit on the interclass distribution of the property tax impact, its features may have unintended implications for the future growth of the public sector in the various areas of the state. This can be illustrated by an extreme example. Suppose that in area A, none of the homeowners are at the $650 homestead credit maximum. Due to the high relief percentage within the maximum, an additional dollar of local tax on a home in area A will cost the homeowner only 46 cents; the state as a whole will pick up the other 54 cents. This provides a substantial incentive for local residents to tend to support local budget expansion. On the other hand, if all homeowners in area B already are at the $650 maximum, another dollar of local tax on a home there will cost the homeowner the full $1; approval by homeowners of further local budget increases is less likely in B than in A.

Statistical analysis of differences in property tax levels across 174 Minnesota cities in 1983 found the property tax credits (the principal one being the homestead credit) to be a significant determinant of local taxes. Specifically, the credits stimulate local taxes; the positive association between credits and taxes suggests that taxes are higher with the credits than they would be without credits, everything else equal.[50]

Some see the effect of the $650 limit in regional terms. In general, property taxes are highest in cities. As a consequence, the percentage of homeowners affected by the $650 maximum is larger in cities than in rural areas; the result of this state policy, some argue, is to make it more difficult for cities to get tax increases approved locally. This argument is simply the flip side of the preceding one—that where a higher percentage of voters is below the homestead credit maximum, property tax increases will tend to be approved more freely.

Another effect with the same regional implications is that the homestead credit can subsidize all locally provided services in rural areas, where public service needs are said to be lower, while in cities where needs are greater, a smaller part of the locally provided services is subsidized by the state. A slight restatement of this argument stresses that the credit, by applying to the first X dollars of the property tax bill, makes inefficient use of state aid dollars. Much aid is "wasted" in relieving property tax bills that few, at

least, would consider high, while there is no relief at the margin for tax bills that climb to much higher levels.

Reaction to these criticisms depends upon judgments as to the appropriate objective of state relief. Unfortunately, no one objective commands unanimous support. Those who wish simply to favor homestead properties over other types probably are not too unhappy with current arrangements. (It should be noted that the circuit breaker, by integrating the homestead credit into the maximum circuit breaker benefit, tends to diminish the differential between homesteads and nonhomesteads, among those who receive circuit breaker benefits.)

But those who believe that state relief should be targeted to high effective-property-tax rates in general, or to larger cities in particular, will wish to see revision of the aid mechanisms. The desire for revision will be shared by those who believe that uniform per capita assistance by the state is most appropriate and neutral, but they will not agree with the previous group on the desired nature of the revisions.

POWER LINE CREDIT

While the eight credits discussed are the major ones, they do not exhaust the list. One additional credit, the power line credit, reduces the property tax bills of owners of homestead and agricultural properties over which a high voltage (200 kilovolts or more) power transmission line passes, provided the line was constructed after June 1974. Funding is equal to 10% of the property tax on the power line. The fraction of the credit for any given property is equal to the percentage of the total length of the line in the county that passes over that property. Prior to 1982, when the credit became effective, utility companies made direct payments to the property owners.

The logic of this credit is not clear. A newly constructed line, as opposed to an existing line, could reduce the value of the property owner over which it passes; but if such construction does not occur over an existing easement, the rights to run the line presumably would have to be bought. Thus, the owners of the properties crossed by the power line should already have been compensated. Moreover, the extent that the power line diminishes the value of the properties should be reflected in the appraised and assessed values and result in lower property tax liabilities.

REFUND PROGRAMS

In addition to the use of various classification percentages (which reduce the tax base prior to calculation of the tax amount) and of property tax credits (which cause the net tax due from the taxpayer to be less than the calculated gross tax) described above, Minnesota also provides some

property tax refunds (reimbursements of some or all of the net tax paid). This section defines the refund programs.

Circuit breaker. By far the largest and oldest of the refund programs is what commonly is known as the circuit breaker, known officially as the "Minnesota homeowner and renter property tax refund"; its genesis was the senior citizen income tax credit adopted in 1967.[51] Of the $187 million of benefits paid in 1983, $125 million (67%) went to renters. The renters' share is larger than the owners' share in part because renters tend to be more concentrated than owners in the lower-income levels, and because other property tax relief programs disproportionately benefit homeowners; the circuit breaker is calculated on the basis of net property taxes after all credits except the homestead credit (but homestead credit benefits are deducted from the circuit breaker benefit).

Consistent with the general objective of all circuit breakers—to provide relief from property taxes that are deemed excessive in relation to income—the amount of relief available for any given amount of property tax falls as income rises. This feature of circuit breaker formulas, together with normal housing consumption decisions, assures that relief will be concentrated in the lower-income ranges; even so, most circuit breaker states include an income ceiling. For filings prior to 1984 (for 1983 taxes), however, Minnesota placed no limit on the amount of income that circuit breaker claimants could have; but 1983 legislation limited eligibility to those with less than $40,000 of household income. "Household income" is a broad measure of money income, rather than just taxable sources of income. Minnesota, like virtually all circuit breaker states, relates property taxes to this broad income measure to determine benefit amounts.

The Minnesota circuit breaker formula is essentially a threshold formula, but it uses multiple thresholds which rise as income rises. An example may aid understanding. Consider a taxpayer with $15,000 of household income. The threshold for this person is 1.5% of income, or $225; this is the amount of property tax that the taxpayer must bear before qualifying for any circuit breaker relief. The state matches this threshold payment, so for any amount up to $450 of tax the taxpayer in our example would pay only $225 (but if the homestead credits are at least $225, the additional circuit breaker relief would be zero). If the tax exceeds twice the threshold amount ($450 in our example), the state pays a fraction of the excess until the relief maximum ($1,125—only $475 if the full $650 homestead credit is received) is reached; for our taxpayer with $15,000 income, the state will pay 80% of the excess over $450 (90% if the taxpayer is at least age sixty-five or is disabled). The threshold percentage rises as income rises, and the fraction of the excess above twice the threshold amount that the state will pay falls as income rises; for both these reasons, circuit breaker relief on a given amount of property tax falls rather rapidly as income rises. The homestead credit is subtracted from the circuit breaker amount (their combined maximum is

$1,125), but a minimum, the amount of homestead exemption relief, determined as already discussed, is received.

The current circuit breaker differs from the earlier one in an important respect, aside from the addition of the income ceiling. Under the old approach, the state paid at least the first $500 (and as much as $650) of the excess above the threshold amount before any additional payment from the taxpayer was required. Under the new approach, even taxpayers who have not yet reached the maximum relief amount will have to bear some of the cost of any increase in property taxes. This tends to provide greater taxpayer accountability, since the marginal cost to the taxpayer of the tax increase does not become zero.

Minnesota is one of the nine states in which the circuit breaker is available to both homeowners and renters regardless of age (out of thirty-two circuit breaker programs); benefits for the elderly and for the disabled, however, are more generous than for others. All circuit breaker benefits now are provided through a separate refund program operated by the department of revenue; instructions for a special form for circuit breaker claimants, Form M-1PR, show the amount of relief for various income and property tax combinations; one table is for the elderly and the disabled owners and renters, and the other is for all other claimants.

Renters, of course, do not directly pay property taxes on their dwellings. However, Minnesota and the many other states that provide circuit breaker property tax relief to renters presume that the landlord passes the property tax forward to renters in the form of higher rents.[52] Typically, this assumption is made operational for circuit breaker purposes by further assuming that a constant percentage of gross rent represents property taxes for all renters, a situation which, for various reasons, seems unlikely to be true.[53] Minnesota used this approach until 1984, with 23% of rent taken to represent property taxes.

Effective with 1983 property taxes, payable in 1984, landlords' actual property tax payments provide the basis for tenants' presumed indirect property tax payments.[54] If a renter accounted for 10% of the total gross rent received by the landlord in the previous year for the building in which that renter resided, then 10% of the property tax paid by the landlord for that building is presumed to have been paid, indirectly, by that renter. These facts are determined from Form CRP, which must be provided by the landlord.

For homeowners, circuit breaker relief is based on property taxes net of special assessments and of all credits other than the homestead credit; the homestead tax can include that on up to ten acres or, in the case of agricultural homesteads, 320 acres. A single, combined relief maximum (currently $1,125) is set for the homestead credit and the circuit breaker. The table used by the homeowner in filling out the property tax refund form reflects the circuit breaker relief formula. The property tax payments used in

entering the table have not been reduced by the amount of the homestead credit, however, so the table is used to determine combined circuit breaker and homestead credit relief; the actual amount of the homeowner's homestead credit is then subtracted from this total to arrive at the amount of the refund to be paid separately. This procedure for homeowners provides renters and owners comparable treatment; both groups are subject to the same circuit breaker formula, but renters do not receive the homestead credit. Also, for circuit breaker claimants, it serves to lessen the effective rate differentials between owners and renters (if renters bear the taxes on their dwellings) created by various other features of the property tax system.

Renters, as noted, file on the basis of rent paid the previous year, but homeowners file on the basis of taxes payable in the current year; this is made possible by the relatively late filing date. Prior to 1983, circuit breaker benefits were provided as a refundable state income tax credit for renters, senior citizens, and the disabled, but 1982 legislation mandated a change. A separate refund mechanism was adopted for all circuit breaker claimants, and an August 31 filing date was established; timely filers are assured quick processing so that they will receive their refunds in advance of the October 31 due date for the second half of property taxes. Basing homeowners' circuit breaker relief on current taxes rather than on taxes already paid overcomes criticism of the circuit breaker vis-a-vis homestead exemption: the circuit breaker usually does not provide timely relief.

As the earlier circuit breaker discussion noted, agreement is lacking on the appropriateness of either circuit breakers in general, or circuit breakers for renters in particular. Briefly, opponents argue that circuit breakers for homeowners inappropriately (1) subsidize those fortunate enough to own property and (2) convert the property tax into an income tax by permitting the amount of income to override the value of property owned as the basis for property taxation. In the case of renters, circuit breaker opponents argue that recent developments in the theory of property tax incidence make more questionable the assumption that tenants bear the property taxes on their dwellings.[55]

There is, however, a case to be made for the circuit breaker,[56] and in general the Minnesota program conforms to common notions of good circuit breaker design—the income definition is broad, all age groups are included, etc. The formula used in the Minnesota program, however, is quite complex. In a streamlined property tax system, some specific circuit breaker changes might be in order, to permit it to carry more of the property tax relief load.

Targeted refund. Temporary relief is "targeted" to homesteaders whose property taxes have increased relatively rapidly since 1982 (payable 1983). Initially, this temporary relief was provided in 1983, and it was modified and expanded by 1984 legislation.

Specifically, there are two targeted relief measures. First, the "special property tax refund" provided relief in 1984 when (1) household income was under $50,000 and (2) the tax—net of all other relief, including the circuit breaker—payable in 1984 was more than 20% above that payable in 1983 on the same property, provided the tax difference did not result from improvements to the property between the two years. In such cases, the state paid the amount of payable 1984 tax in excess of 120% of the 1983 bill. Similarly, for 1984 taxes payable in 1985, the state will pay half the amount in excess of 112.5% of that for the previous year, to a maximum of $400 of relief. In this latter year, there is no income restriction.[57] This relief is extended through the same procedure as the circuit breaker, via additional lines on Form M-1PR.

The second temporary relief program adopted in 1983, the "extra special property tax refund," was targeted to homestead net taxes payable in 1984 that had increased at least 10% from the previous year and resulted in an effective tax rate of at least 2.25%. In these circumstances, the state paid half the amount in excess of 110% of the previous year's net tax. A $200 limit on the amount of this additional tax refund was removed by 1984 legislation.

Congressional medal of honor payment. The final refund program also was created by 1983 law. A veteran who has received the Congressional Medal of Honor and who meets certain Minnesota residency requirements can be refunded up to $2,000 of homestead property tax annually.[58] Application must be made with the commissioner of revenue. Any refund under this provision is before the circuit breaker refund.

This refund clearly represents an expression of gratitude for or pride in the military service of the recipient; it does not rest upon need. The total cost of the credit will depend upon the age of the recipient when the refund is first received, how long that person (or the surviving spouse) continues to live in qualifying property in Minnesota, and how high the gross taxes on that property are. Lifetime costs, however, could well run into the tens of thousands of dollars.

Whether such a program is proper and, if so, whether its guidelines for eligibility and reward amounts are appropriately specified is largely a matter of judgment. Some might argue, however, that this program unduly favors homeownership; the same deeds that can produce tens of thousands of dollars in benefits would provide nothing for a person who chose to rent. And similar acts of valor by police, fire fighters, and private citizens in their civilian capacities likewise are not so well rewarded.

ANALYSIS OF MINNESOTA DIRECT RELIEF PROGRAMS

The preceding section has described the direct property tax relief programs in Minnesota. This section considers more systematically the effects of these programs.[59] In general, this analysis considers the

cumulative effects of the several direct relief programs; where appropriate, however, individual programs are singled out.

A major reason why the several direct relief mechanisms are considered together here is that they have so much in common. As noted in the earlier discussion of the various possible approaches to tax relief, the direct relief mechanisms share the creation of effective tax rate differentials across property types. Minnesota, like many states, now employs more than one direct property tax relief approach; unlike most states, Minnesota adopted classification first and added other relief mechanisms later. The Minnesota system of classification and credits surely produces one of the most complex—probably the most complex—property tax systems in the nation. The various programs sometimes become woven together—as with the reliance of the reduced assessment credit on the classification system—to determine the amount of the credit. Also, the order in which the credits are subtracted, as well as the credit formulas, affects their relative aggregate sizes and the relative significance of some of the narrower programs for different members of the target population. The homestead credit total, for example, would be even larger if it were not subtracted out after the other credits (and will be larger in 1985 and subsequent years because of the decision to deduct it before the taconite credit, all else remaining unchanged).

DISTRIBUTION OF THE TAX LOAD

In this analysis of Minnesota direct tax relief, use will be made of two sets of property classes. One allocates properties across sixteen classes, while the other collapses these sixteen into only five classes. Both are in common use in state government. The sixteen classes are those used by the house research department of the legislature in reporting the results of its property tax simulation model. Many of the figures presented here have been derived through the house research model; because the level of detail provided by sixteen classes is often useful, it generally is retained. Sometimes, however, basic patterns are of interest, and they are more easily seen with fewer classes. Thus, the data also are sometimes grouped into five classes. The five are those used by the department of revenue in assessment-sales ratio studies, and for other purposes. An additional reason for using only five classes at times is that assessment-sales ratios are prepared only for these five; therefore, no adjustments for assessment level differences could be made for a more detailed breakdown of property classes.

The five revenue department classes are designated residential, agricultural, apartments, seasonal-recreational-residential (sometimes referred to simply as "cabins"), and commercial (actually commercial and industrial). They contain anywhere from one to seven of the sixteen house research classes; the house research classes (including the numbers of their

positions in house research materials) collapsed into each of the five revenue classes are as follows:

- Residential: residential homesteads (3), residential nonhomesteads (4), and homesteads, whether agricultural or nonagricultural, of the disabled who are eligible for the reduced assessment credit (formerly, legal class 3cc, and number 9 in the house research materials);
- Agricultural: agricultural homestead (1), agricultural nonhomestead (2), and timberlands (12);
- Apartments: apartments (5) and subsidized apartments (6);
- Seasonal-recreational-residential: seasonal-recreational-residential (10);
- Commercial: commercial (7), industrial (8), commercial-seasonal (11), vacant land (13), mineral (14), personal and public utility (15), and railroad (16).

FROM MARKET VALUE TO ASSESSED VALUE: CLASSIFICATION

Some notion of the effects of the Minnesota direct property tax relief programs can be gotten by comparing each class' share of various tax base and tax amounts. Full uniformity of tax treatment would cause a given class' share of eventual taxes paid by all property owners to be the same as its share of the aggregate market value of taxable properties; effective tax rates also would be equal across classes. Not surprisingly, such uniformity does not exist in Minnesota (Table 1). We expect nonuniformity, because that is the intent of the direct relief programs; they, however, are not the whole story behind the figures in Table 1. What are the causes of the nonuniformity evident in Table 1? In answering this, it is useful to consider what circumstances would produce uniformity.

Uniformity would result if three conditions were met: (1) if all properties were valued for tax purposes at the same percentage of their respective market values; (2) if a uniform tax rate was applied to all such assessed values in calculating tax amounts; and (3) if the gross taxes thus calculated were not reduced by credits or refunds. Looking at this somewhat differently, there are three points at which tax nonuniformity can arise—valuation of properties, application of tax rates, and adjustments of calculated gross taxes. All of these are applicable to the Minnesota situation. To illuminate this, three measures of value and two tax measures are presented in Table 1. They progress (left to right) from the best estimate of market value ("adjusted market value"—more on this in a moment) to the amount of tax net of credits (but before refunds). The data are for 1982 taxes, payable in 1983; this year was selected because it was the latest year

TABLE 1
Percentage Distributions of Minnesota Property Tax Base Amounts (including adjustment in assessor error) and Tax Amounts Across Five Major Classes, Taxes Payable 1983[a]

Property class	Adjusted Market Value[b]	Market Value	Assessed Value	Gross Tax	Net Tax[c]
Residential	45.4%	49.3%	44.3%	48.1%	39.2%
Agricultural	33.5	31.0	23.9	17.4	14.9
Apartments	4.3	4.3	6.1	6.9	8.6
Seasonal-residential	2.6	2.3	2.1	1.9	2.2
Commercial	14.6	13.1	23.5	25.8	35.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Calculated from tax base and yield data supplied by the Minnesota House Research Department and appraisal ratios provided by the Minnesota Department of Revenue.

[a]This table is not strictly comparable with others using the same five classes. To better conform the tax base categories to those used in constructing the section of appraised values to sales price, the 3cc homesteads were divided between the residential and agricultural classes fifty-fifty rather than being placed only in residential; timberlands were omitted from agriculture; and three subclasses (mineral, personal and public utility, and railroad) were omitted from the commercial class.

[b]Assessors' appraised (market) value divided by ratio of appraised value to sales price.

[c]Gross tax less credits; circuit breaker refund has not been subtracted.

for which some of the detailed information desired for various parts of this study was available when the research was begun.

The tax determination process starts with the determination of appraised values by assessors. By Minnesota convention, the market value estimates determined by assessors are called market values, rather than appraised values, and they are shown in the second column of Table 1; in this case, they are estimates of value as of January 2, 1982. The assessed values in column 3, the actual tax base, result from multiplying the legal classification percentages and the assessors' estimates of market value. The gross tax amounts in column 4 are the products of the statutory (or nominal) tax rates of the local jurisdictions and the assessed values. Subtraction of credits from gross taxes results in the net tax amounts shown in column 5. Thus, columns 2-5 of Table 1 show the determination of Minnesota property taxes, progressing from the estimation of market value by assessors and culminating in the tax amounts due from taxpayers as reflected on their property tax bills.

How does column 1 fit? The magnitudes shown there have no bearing on actual tax bills; rather, they simply provide for evaluative purposes the best available estimates of actual market values. The adjusted market value estimates in column 1 represent an attempt to adjust for apparent

assessment errors as revealed by sales-ratio study data for 1982 provided by the department of revenue. To get the estimate of adjusted market value (for Table 1), county data were aggregated to derive state figures. Using data on sold properties, the department of revenue compares the market value estimates to the sales prices; division of the resulting ratio for a particular type of property in a particular location into the aggregate market value estimate for that property type in that area yielded the estimate of adjusted market value.

Care must be taken not to read too much into these numbers. It is tempting, for example, to jump from column 1 to column 5 and to impute the differences to state property tax policy—to say, for example, that state policy causes the commercial class share of net taxes to be 140% greater than its share of adjusted market value, and to cause the agricultural class share of net tax to be 56% smaller than its share of adjusted market value. But this ascribes too much to state policy—at least to direct property tax relief policy. First, the differences between market value and adjusted market value result from valuation (appraisal) error; while many would argue that the state has the responsibility to see to it that appraisal error does not occur, many fewer would argue that it can hope to be fully successful.[60] Additionally, in moving from tax base values in column 3 to gross tax amounts in column 4, the taxing decisions of local governments come into play. While these decisions are influenced indirectly by state policies in many areas—local government structure, state aid, and, to an unknown extent, even direct property tax relief—the results are the indirect consequences that come from policies undertaken for reasons other than to affect statewide interclass tax uniformity.

Having said what Table 1 does not tell us, what conclusions can be drawn from it? Comparison of columns 1 and 2 can be used to judge assessor performance. Such comparison reveals relative overvaluation of residential property (the residential share of adjusted market value is less than its share of assessors' estimates of market value), neutral valuation of apartments (same percentage share in both columns), and relative undervaluation of the other three classes. Deviations from appraisal uniformity create a de facto classification effect that may either reinforce or counteract the de jure system. De facto appraisal differences that counteract the provisions of de jure classification, credit, and refund policies are the relative overvaluation of the residential class and the relative undervaluation of the commercial class, while the relative undervaluation of the agricultural and seasonal property classes reinforce state policies.

Classification's effects show up in a comparison of the second and third columns of the table, which contain interclass distributions of appraised ("market") values and of the assessed values obtained by application of the classification percentages to those values. The effects of classification, however, also are revealed—perhaps more clearly—by Table 2 (as before, the

TABLE 2
Relationship Between Market Value and Assessed Value
and Between Gross Tax and Tax Net of Credits
Taxes Payable 1983
(dollars in millions)

	Market Value	Assessed Value	Assessed Value/ Market Value	Gross Tax	Net Tax	Net Tax/ Gross Tax
Residential	$54,649.3	$11,498.9	21.0%	$1150.9	$688.0	59.8%
3 Res. homestead	50,028.1	10,223.9	20.4	1021.8	561.6	55.0
4 Res. nonhomestead	4,442.1	1,243.8	28.0	126.0	126.0	100.0
9 3cc: Ag & nonag.	179.1	31.2	17.4	3.1	.4	12.9
Agricultural	34,280.6	6,216.1	18.1	415.8	261.5	62.9
1 Ag. homestead	23,702.2	4,206.2	17.7	284.3	150.5	52.9
2 Ag. nonhomestead	10,458.2	1,987.1	19.0	129.3	109.0	84.3
12 Timberlands	120.2	22.8	19.0	2.2	2.0	90.9
Apartments	4,721.5	1,588.3	33.6	164.3	151.5	92.2
5 Apartments	3,899.5	1,308.9	33.6	135.0	135.0	100.0
6 Subsidized apartments	822.0	279.4	34.0	29.3	16.5	56.3
Seasonal	2,593.0	544.5	21.0	45.2	39.3	86.9
10 Seasonal-rec-res	2,593.0	544.5	21.0	45.2	39.3	86.9
Commercial	18,698.5	7,730.1	41.3	763.1	762.7	99.9
7 Commercial	9,391.5	3,988.1	42.5	402.9	402.9	100.0
8 Industrial	3,767.1	1,608.9	42.7	163.7	163.7	100.0
11 Commercial-seasonal	173.0	28.6	16.5	2.4	2.0	83.0
13 Vacant land	1,193.8	477.5	40.0	47.0	47.0	100.0
14 Mineral	67.8	33.9	50.0	3.8	3.8	100.0
15 Personal & PU	3,814.5	1,468.0	38.5	130.7	130.7	100.0
16 Railroad	290.8	125.1	43.0	12.6	12.6	100.0

Source: Minnesota House Research Department property tax simulation model.

data pertain to taxes payable in 1983). Table 2 omits the comparisons to adjusted market value for two reasons. First, de facto appraisal differences are not created by state direct property tax relief policy; they are of interest here only because they may either diminish or enhance the differentials created by direct relief policy. Second, use of sixteen classes is more satisfactory than use of five classes for studying direct property tax relief policy, but the lack of sales ratios for a finer breakdown than the five major classes precludes making the adjustment for the more revealing sixteen-class comparison.

The first three columns of Table 2 present, for five major classes and the sixteen subclasses, market and assessed value amounts and the percentages of market value represented by assessed value. For all taxable property, assessed value is only 24% of market value—i.e., market value is reduced by 76% in arriving at the actual tax base.

This average relationship, however, is not the object of explicit policy; rather, it is implicit in the policies for the individual classes of property. And those policies differ dramatically. The biggest reduction (i.e., the smallest percentage of assessed value relative to market value) among the five broad classes is enjoyed by agriculture (82%), followed fairly closely by residential and seasonal residential (79% each); for the apartment and commercial classes, the reductions were only 66% and 59%, respectively. While all of these reductions are quite large, their relative magnitudes are very different. The remaining tax base (assessed value) is roughly twice as large a fraction of market value for the commercial class (41%) as for the agricultural class (18%) and the residential and seasonal classes (21% each). These differences alone would produce effective tax rate differentials of about two to one—but credit and refunds cause even larger differentials.

Large as the differences are among the five major classes, they are even larger among the sixteen subclasses. For the latter, assessed value ranges from under 17% to 50% of appraised (market) value. The lowest-assessed-value percentage (i.e., the largest reduction) is for seasonal-commercial property, a part of the revenue department's commercial class; thus, large differences can exist among the subclasses that make up the five major classes.

A lesser, but still significant, difference exists within the residential class, where homesteads are treated much more favorably than nonhomesteads (i.e., owner-occupants are favored over renters/landlords)—assessed value equals 20% of market value for homestead versus 28% for nonhomesteads. Because the overall assessment level is so low, this differential of "only" eight percentage points becomes a 40% differential. Moreover, assessed value is a much higher fraction of market value for apartments than for other residential properties; at nearly 34%, the assessment level is almost 70% higher than that for homesteads. Particularly if one believes that tenants bear the taxes on their dwellings, so large a differential is questionable.

FROM GROSS TO NET TAX: CREDITS

State tax credit policies increase the interclass differentials, already large due to classification on the assessed value side. Credits create the differences between gross taxes and net taxes shown in the last three columns of Table 2 (refunds—only the circuit breaker in 1983—are not subtracted out). Across the five major classes, net taxes range from 60% of gross taxes for residential to 100% for commercial; the figure for agricultural property is nearly as low as that for residential (63%), while those for seasonal-residential and for apartments are closer to that for commercial (87% and 92%, respectively).

As with classification, the degree of differentiation introduced through credits is broader when a more disaggregated view is taken. Considering the sixteen classes, assessed value represents as little as 13% of gross taxes for homesteads of certain blind and disabled persons eligible for the reduced assessment credit (class 3cc). For subsidized apartments participating in the same program, however, net taxes drop to 56% of gross taxes—a seemingly low figure, but one that is more than four times as high as for the homesteads in the program. Credits reduce taxes to a lower percentage of gross taxes for agricultural homesteads than for subsidized apartments, and within the residential class, nonhomesteads receive no credits while homestead taxes are reduced to 55% of the gross amount. These figures are consistent with the strong bias in favor of homesteads previously noted.

It is important to note that the circuit breaker refund is not reflected in these figures (data on claimants are not available by property class); taking it into account would further reduce the net tax figures for residential, agriculture, and apartments, thereby widening the differentials across classes; since two-thirds of circuit breaker benefits go to renters, the difference between apartments and other types of dwellings probably would decrease.

COMBINED CLASSIFICATION AND CREDIT EFFECTS

Both differential assessment (classification) and differential credits affect the relationship between net taxes and market values. Percentage distributions of market value, assessed value, gross tax, and net tax provide another way of looking at the consequences of state direct property tax relief policy. In going from market value to net tax, some dramatic shifts occur. Data for taxes payable in 1983, for example, show that agricultural homestead property accounts for nearly 21% of market value (actually appraised value) but only 8% of net taxes, while the commercial property figures are just the opposite—8% of market value and 21% of net taxes (Table 3). Such shifts suggest substantial effective tax rate differences, and this is the case: the effective net tax rate relative to market value is only 0.6% for agricultural homesteads compared to 4.3% for commercial property. Similarly, residential homestead properties, whose net tax share is lower than their market value share, enjoy a relatively low effective rate (1.1%), while residential nonhomestead properties have a relatively high effective tax rate (2.8%) together with a net tax share higher than their market value share.

ISOLATING THE EFFECTS OF POLICY

Clearly, such associations are to be expected. But more than state direct property tax relief policy lies behind the numbers in Table 3. Another major effect concerns local taxing decisions. This can be seen readily by comparing

TABLE 3
Percentage Distributions of Tax Base and Tax Amounts for Five Major Classes and Sixteen Subclasses, Statewide Taxes Payable 1983

	Market Value	Assessed Value	Gross Tax	Net Tax	Effective Rate[a]
Residential	47.6	41.7	45.3	36.1	
3 Res. homestead	43.5	37.1	40.2	29.5	1.1
4 Res. nonhomestead	3.9	4.5	5.0	6.6	2.8
9 3cc: Ag. & nonag.	.2	.1	.1	.0	.2
Agricultural	29.8	22.6	16.4	13.7	
1 Ag. homestead	20.6	15.3	11.2	7.9	.6
2 Ag. nonhomestead	9.1	7.2	5.1	5.7	1.0
12 Timberlands	.1	.1	.1	.1	1.7
Apartments	4.1	5.7	6.5	8.0	
5 Apartments	3.4	4.7	5.3	7.1	3.5
6 Subsidized apts.	.7	1.0	1.2	.9	2.0
Seasonal	2.3	2.0	1.8	2.1	
10 Seasonal-rec-res	2.3	2.0	1.8	2.1	1.5
Commercial	16.4	28.0	30.0	40.2	
7 Commercial	8.2	14.5	15.9	21.2	4.3
8 Industrial	3.3	5.8	6.4	8.6	4.3
11 Com. seasonal	.2	.1	.1	.1	1.2
13 Vacant land	1.0	1.7	1.9	2.5	3.9
14 Mineral	.1	.1	.1	.2	5.5
15 Personal & PU	3.3	5.3	5.1	6.9	3.4
16 Railroad	.3	.5	.5	.7	4.3
Total	100.2	100.0	100.0	100.1	1.7

Source: Minnesota House Research Department property tax simulation model.
[a]These effective rates have not been adjusted for assessment error.

Table 3 with Tables 4 and 5. These tables differ only in their geographic coverage—Table 3 is statewide, while 4 and 5 are for the metro and nonmetro areas, respectively. The overall effective rates differ substantially (1.7% statewide, 2.2% in the metro area, and 1.2% in the nonmetro area), as do the effective rates for many of the sixteen classes. Application of the same state policies in different areas of the state often result in different effective rates for the same type of property because of differences in one or more of the following: (1) nominal rates; (2) the distribution of homestead properties, for example, across the value bands to which different classification percentages apply; and (3) the percentage of homestead properties that receive the maximum homestead credit.

The effects of direct property tax relief policies are isolated from these other influences in Table 6. This table applies actual assessment level relationships for taxes payable in 1983 to a hypothetical $100 of market

TABLE 4
Percentage Distributions of Tax Base and Tax Amounts for Five Major Classes and Sixteen Subclasses, Metro Area
Taxes Payable 1983

	Market Value	Assessed Value	Gross Tax	Net Tax	Effective Rate[a]
Residential	68.1	55.2	55.1	44.6	
3 Res. homestead	62.2	49.2	49.1	37.1	1.3
4 Res. nonhomestead	5.7	5.9	5.9	7.5	2.9
9 3cc: Ag. & nonag.	.2	.1	.1	.0	.3
Agricultural	2.9	1.9	1.7	1.5	
1 Ag. homestead	2.0	1.3	1.1	.8	.9
2 Ag. nonhomestead	.9	.6	.6	.7	1.7
12 Timberlands	.0	.0	.0	.0	1.5
Apartments	7.1	8.8	8.9	10.8	
5 Apartments	6.2	7.7	7.8	9.9	3.4
6 Subsidized apts.	.9	1.1	1.1	.9	2.2
Seasonal	.2	.1	.1	.1	
10 Seasonal-rec-res	.2	.1	.1	.1	1.8
Commercial	21.8	34.0	34.1	43.1	
7 Commercial	12.5	19.7	19.7	24.9	4.3
8 Industrial	5.2	8.3	8.4	10.6	4.4
11 Com. seasonal	.0	.0	.0	.0	1.9
13 Vacant land	1.7	2.5	2.5	3.1	4.0
14 Mineral	0	0	0	0	0
15 Personal & PU	2.2	3.3	3.3	4.2	4.0
16 Railroad	.2	.2	.2	.3	4.4
Total	100.1	100.0	99.9	100.1	2.2

Source: Minnesota House Research Department property tax simulation model.
[a]These effective rates have not been adjusted for assessment error.

value in each of the five major property classes, and then a 100-mill tax rate (close to the state average) is applied against the resulting assessed value. Next, the gross tax amounts calculated in this manner are reduced according to actual 1983 net/gross tax relationships. By holding the tax base amount and the tax rate constant across classes, the effects of classification and of credit policies can be isolated and readily seen.

The resulting net taxes range from $1.14 (agriculture) to $4.13 (commercial). The net tax amounts in Table 6 also are effective rates, since for each class the amount of market value is $100. The index values in the last column express the net tax (and the effective rate) for each class as a percentage of the lowest net tax. Thus, state direct property tax relief policies (through credits but before circuit breaker refunds) in effect in 1983—if coupled with uniformity of assessment and of nominal tax rates—would have left residential properties with taxes at 111% of the level that

TABLE 5
Percentage Distributions of Tax Base and Tax Amounts for Five Major Classes and Sixteen Subclasses, Nonmetro Area Taxes Payable 1983

	Market Value	Assessed Value	Gross Tax	Net Tax	Effective Rate[a]
Residential	29.6	26.8	32.1	23.1	
3 Res. homestead	27.2	23.7	28.3	17.8	.8
4 Res. nonhomestead	2.3	3.0	3.7	5.3	2.8
9 3cc: Ag. & nonag.	.1	.1	.1	.0	.2
Agricultural	53.4	45.4	36.2	32.8	
1 Ag. homestead	36.9	30.7	24.8	18.9	.6
2 Ag. nonhomestead	16.3	14.5	11.2	13.6	1.0
12 Timberlands	.2	.2	.2	.3	1.7
Apartments	1.6	2.4	3.1	3.6	
5 Apartments	1.0	1.5	1.9	2.8	3.6
6 Subsidized apts.	.6	.9	1.2	.8	1.7
Seasonal	4.1	4.0	4.0	5.0	
10 Seasonal-rec-res	4.1	4.0	4.0	5.0	1.5
Commercial	11.5	21.3	24.2	35.6	
7 Commercial	4.4	8.6	10.7	15.5	4.3
8 Industrial	1.6	3.1	3.8	5.6	4.3
11 Com. seasonal	.3	.2	.2	.3	1.2
13 Vacant land	.5	.9	1.0	1.5	3.8
14 Mineral	.1	.3	.3	.5	5.5
15 Personal & PU	4.3	7.5	7.6	11.0	3.1
16 Railroad	.3	.7	.8	1.2	4.3
TOTAL	100.2	99.9	99.6	100.1	1.2

Source: Minnesota House Research Department property tax simulation model.
[a]These effective rates have not been adjusted for assessment error.

existed for agriculture (i.e., 11% higher), while apartments and the commercial class, respectively, would have borne taxes at 272% and 362% of the agricultural level.

THE ROLE OF CREDITS

The major change in Minnesota property tax relief policy in recent years, of course, has been state-paid credits.[6] Particularly striking is the decline in effective property tax rates since 1975, even before subtraction of the credits. In 1975, gross taxes for the aggregate of all classes were 2.93% of market value, a figure that had plummeted to 1.61% by 1982—a decline of 45% in seven years. The decline in net effective rates between 1975 and 1982 (nearly 60%) was greater than the decline in gross effective rates.

TABLE 6
Comparison of property taxes per $100 of market value for five major property classes in Minnesota assuming a 100-mill tax rate and actual payable 1983 assessment levels and credit policies

Property class	Market Value	Assessed Value[a]	Gross Tax from 100 mills	Net Tax after credit[b]	Index of Net Taxes[c]
Residential	$100	$21.00	$2.10	$1.26	111%
Agricultural	100	18.10	1.81	1.14	100
Apartments	100	33.60	3.36	3.10	272
Seasonal-residential	100	21.00	2.10	1.82	169
Commercial	100	41.30	4.13	4.13	362

Source: Calculated from Table 2 relationships.

[a]Assumes same ratio of assessed value to market value as existed for taxes payable in 1983.

[b]Assumes same ration of net taxes (after credits but before circuit breaker) to gross taxes as existed for taxes payable in 1983. Because market value is $100 and the tax rae is 100 mills, the net tax amounts in this example also are the effective tax rates.

[c]The lowest effective rate, that for agriculture, is used as the basis for comparison and set equal to 100%.

The major winners—i.e., the classes experiencing the largest decreases in effective tax rates—are agriculture and residential. This is true whether one considers the percentage decline over time in either the gross or the net effective rates, or the percentage decline in gross effective rates provided by credits. As noted previously, the clear orientation of state relief policy has been to increase the preference given to these classes. While these trends are apparent nationally, the net effective rates for both agriculture and residential property in 1982 were relatively low in Minnesota.

Having identified credits as a major vehicle for dispensing property tax relief, a more disaggregated view of credits will be useful (detailed tables are available from the commission). A county-by-county examination of the effect of credits shows residential property as a big winner statewide. Credits reduced 1983 residential gross taxes by an average of 49%; the largest percentage reduction was 73%, and the smallest was 33%. Thus, significant reduction occurred everywhere, but with unequal force. Intercounty differences in effective rates seem larger net of credits than before their subtraction, a logical result of caps on the amount of credit any one property can receive, as in the case of the homestead credit.

County-by-county data also show that the effect on gross residential taxes from the combined credit and circuit breaker programs is such that most of the benefits fall within the residential class (recall that residential nonhomestead includes some apartments, as well as detached structures).

Similar numbers by Minnesota county were calculated for agriculture. On the strength of the credits, the average residential property tax reduction was larger than that for agriculture (49% versus 39%). In spite of this, though, it must be noted that the average effective net property tax rate for residential property remained substantially above that for agriculture (0.78% versus 0.56%). For both classes of property, there are significant differences in both gross and net effective tax rates across counties.

The relatively favorable treatment of residential property, and of residential homesteads in particular, has been noted at various points. Just as the residential class average does not describe equally well the circumstances for both homestead and nonhomestead properties within the class, so too will the residential homestead averages be wide of the mark for many properties of this type. Large intraclass differences result from the nature of the homestead preferences. The three-tiered application of progressively larger classification percentages, for example, provides unequal preferences for homes of different values, and the limit on total homestead credit benefits likewise produces unequal percentage reductions in gross property taxes. These differences are explored through examples (available from the commission), that compare homestead and nonhomestead taxation at different market value levels. Those examples reveal that the homestead preference within the residential class is real, and it is quite large at relatively low-value levels and remains large even above the average home value; most of the differential is due to the homestead credit, at least at a 100-mill tax rate. But the homestead preference is quite targeted, and is of comparatively little value at very high home values. In our examples, the effective tax rate for a $200,000 homestead is nearly three times as high as that for a $40,000 home.

POLICY CONSIDERATIONS

At this point it is appropriate to outline some general options for reform of the Minnesota property tax relief system, with reference to such standard evaluative criteria as equity, efficiency, and ease of administration and compliance.

The time may be ripe for a change in Minnesota direct property tax relief, for there is widespread concern within the state over the current collection of programs. Greatest concern may be with the complexity of current arrangements, but significant concern also exists regarding accountability and equity.

The concern for complexity is not difficult to understand, in view of the arrangements described in this chapter. When no one can even say how many classes of real property are defined, and when the classification percentages and the credit provisions are subject to frequent change, the

result is confusion. Among other consequences, additional administrative effort is required to try to implement the system according to legislative intent. The apparent solution is to reduce greatly the number of classes and credits, and then resist the urge to tamper with the simplified system.

Accountability may be jeopardized by current arrangements because the amount of relief is so large, and many of the programs have an effect at the margin—i.e., they reduce the portion of an additional dollar of local levy that local taxpayers will have to bear directly. (A related problem is that the large state contribution to local revenue has weakened the ability of localities to maintain stable revenues because of the vulnerability of state aids to cutbacks in periods of budgetary stress.) As noted, empirical research suggests that this concern is well founded; the credits appear to provide a significant stimulus to local net tax levies. Possible solutions include eliminating the credits, restructuring them to provide foundation aid rather than aid at the margin, or at least reducing the magnitude of the marginal subsidy well below current levels—54% for the homestead credit and as high as 66% for the taconite credit.

Some have begun to question the equity of the Minnesota direct relief package, even though the various elements of that package have been advocated in the name of equity. Equity is inherently a matter of judgment; opinions will differ, and there is no way of proving that one judgment is better—strictly on the matter of equity—than another. This may suggest staying with current arrangements. But it may also suggest the desirability of restraint in property tax relief programs; there is no objective way to establish that vastly different effective property tax rates are appropriate, and they may have adverse announcement and incentive effects. Current state policies cause commercial/industrial properties to bear taxes more than three times as high as residential taxes (Table 6), and within the residential class, nonhomestead properties are singled out for taxes that are over two and one-half times as high as those on homesteads (Table 3). Such differences strike many as indefensible.

Such differences may also influence economic decisions. If two alternative uses for property (and investment capital) offered the same benefits—tangible and intangible, total—to a prospective investor before tax considerations, a difference in tax treatments of the magnitude established by Minnesota policy could easily decide the matter. Such large differences could even cause an otherwise inferior alternative to seem preferable. The tilt in Minnesota is toward farms and owner-occupied homes, and away from business investment; income tax provisions tend to provide the same bias. While taxes generally are not the major factor in investment decisions, they can be important at the margin.

All these considerations seem to weigh in on the side of significant revision of Minnesota direct property tax relief. The simplest and most allocatively neutral approach, and also one that would serve the

accountability objective, is full uniformity: assess all types of real property at the same fraction of market value (preferably 100 percent) for tax purposes, and eliminate all credits. (This and other alternatives are considered in some detail in another chapter.[62]) Substantial redistribution of the property tax would result, posing a political obstacle.

Increases would be experienced by those now favored by the state's deliberate nonuniformity policies, and the increases would be in proportion to the degree of preference currently enjoyed, as shown in this chapter. Thus, what some would view as an unfair shift of the tax burden, others would see as rectification of an unfair set of policies.

Still, some truly needy persons would be left with property tax burdens that most would regard as excessive, justifying some retreat from full uniformity. But taking care of the truly needy need not be an excuse for large tax preferences for whole classes of property. Those deemed to be truly needy (low-income and/or low-wealth) could be subject, initially, to the same uniform tax provisions as others, but have any "excess" tax relief by a property tax circuit breaker. (Presumably it would be simpler than the current Minnesota circuit breaker.) A circuit breaker is inherently flexible; cutoffs on the target population could be established at whatever points decisionmakers found desirable. But this one relief mechanism could be fashioned to take care of perceived property tax inequities. Such a property tax system would be a very clean, understandable one that would overcome most of the complaints against the current system.

If this vastly simplified system were thought to be too great a break with Minnesota tradition, several other courses of action are open that still would avoid the current complexity. One would be to adopt the uniform system (presumably with a circuit breaker) just described, but to phase in the tax changes over a period of time—say, three to five years—to ease the pain of transition.

If uniformity is not desired by Minnesotans even in the long-run, a streamlined classification system could be fashioned somewhere between two and five classes. This clearly would be simpler than current arrangements, and it could be made to provide as much, or as little, interclass differentiation of effective rates as desired; this instrument, also, is flexible. A circuit breaker still might be desired to take care of hardship cases. Even the retention of interclass differentials of the current magnitude through a simpler system would result in intraclass shifts of tax burdens, since the same provisions would apply to all within a given class. To provide greater stability than has characterized Minnesota classification in the past, some consideration might be given to placing the classification provisions in the state constitution, as West Virginia did over fifty years ago—admittedly a radical solution, but one for a severe problem.

A simplified classification system would do less than a system of uniformity in addressing some of the problems outlined above, including

complexity and intraclass equity. Neutrality in economic decisions is compromised to some extent by any interclass differentials; the greater the differentials, the greater the potential influence of the tax differences. Accountability also tends to be eroded by large interclass differentials which favor residential properties, for classification percentages—like credits—affect tax shares at the margin. If resident-voters generally do not see taxes on businesses as falling on themselves, a lower residential share of the marginal tax dollar will tend to stimulate local taxes due to this "exportability" feature.[63] Thus, while a simple three-to-five-class classification system could overcome the major complexity problems without entailing a significant interclass redistribution of the tax burden, such an arrangement would not address the neutrality and accountability problems.

ENDNOTES

1. Michael E. Bell, "Minnesota's Local Government Aids Program," chapter 14 in this volume.

2. Steven D. Gold, *Property Tax Relief* (Lexington, Massachusetts: D.C. Heath, Lexington Books, 1979).

3. Alternatively, income tax credits or separate refunds based on property tax amounts often are provided.

4. Steven D. Gold, "An Overview of Property Tax Relief for Homeowners," Table 1, shows thirteen state-funded and two partially state-funded programs out of a total of 43 enumerated.

5. *Ibid.*

6. *Ibid.*

7. The refund generally comes after payment of the gross property tax, but it is possible to reverse this order, as Minnesota does with its circuit breaker.

8. Minnesota Department of Revenue, *Property Tax Credits and Property Tax Aids* (May 1983), p. 6, and discussions with Dennis Erno, Deputy Commissioner, Minnesota Department of Revenue, July 1984.

9. Donald W. Kiefer, "The 1973 Tax Package," *Indiana Business Review* (October 1974): 3-5; and Scott S. Lloyd, "The New Local Property Tax Controls," *Indiana Business Review* (January-February 1978): 1-5.

10. Jerry McCaffery and John H. Bowman, "Participatory Democracy and Budgeting: The Effects of Proposition 13," *Public Administration Review,* 38 (November-December 1978): 534.

11. Steven D. Gold, "An Overview of Property Tax Relief for Homeowners," p. 3.

12. Advisory Commission on Intergovernmental Relations (ACIR), *Significant Features of Fiscal Federalism 1982-83 Edition,* Report M-137 (Washington: Government Printing Office, 1984), Table 7.2

13. Minnesota House of Representatives, Research Department, *H.F. 2016 Conference Committee Report on Omnibus Tax Bill* (St. Paul: House Research Department, processed, April 19, 1984).

14. John H. Bowman and John L. Mikesell, "The Importance of Property Tax Structural Variations for Effective Property Tax Reform: Barriers Created by Misconceptions," *State and Local Government Review,* 12 (September 1980): 92.

15. Steven D. Gold, *Property Tax Relief,* p. 147.

16. ACIR, *Significant Features of Fiscal Federalism 1982-83 Edition,* Table 71, omits three local programs that are included in the total given here: Cook County, Illinois; Hartford, Connecticut; and Washington, D.C. For more on the temporary Hartford program, see Richard Pomp, "What Is Happening to the Property Tax?," *Proceedings of the Seventy-second Annual Conference on Taxation* (Columbus, Ohio: National Tax Association-Tax Institute of American, 1980), pp. 10-22; and John H. Bowman and others, *City of Buffalo Revaluation and Revenue Study,* a report to the City of Buffalo, New York (Washington: Academy for State and Local Government, 1982), pp. 158-61.

17. Advisory Commission on Intergovernmental Relations, *The Property Tax: Reform or Relief? A Legislator's Guide,* Report AP-2 (Washington: ACIR, 1973).

18. Minnesota is the usual horror story. The number of classes varies from one account to another, with some counts in Minnesota exceeding 50. In part, this may reflect actual differences in a changing situation, but it may also reflect confusion as to how to enumerate Minnesota's subclasses and the combination of assessment-level differences and multiple tax credits. A summary of real property classification is provided in ACIR, *Significant Features of Fiscal Federalism 1982-83 Edition,* Table 71.

19. Roland F. Hatfield, "Minnesota's Experience with Classification," *The Property Tax: Problems and Potentials,* Proceedings of a symposium of the Tax Institute of America (Princeton, New Jersey): Tax Institute of American, 1967), pp. 239-44.

20. John H. Bowman, *Issue #4: Property Tax Equity and Efficiency* (Charleston: West Virginia Tax Study Commission, 1984), p. 1-11.

21. In Iowa, the assessment level for each class is set annually at the level required to keep the statewide aggregate assessed value increase for the class—excluding new construction—at or below four percent. Steven D. Gold, "Property Tax Relief Trends in the Midwest: Where It All (or Much of It) Began," *Financing State and Local Governments in the 1980s: Issues and Trends* (Cambridge, Massachusetts: Oelgeschlager, Gunn and Hain, 1981), p. 75. While Ohio's use of credits is beyond our narrow classification definition, it is nevertheless illustrative. A very complex procedure is used to assure that the amount of tax imposed through voted levies is held constant for each of two property classes, considering only those properties that were in the taxing jurisdiction in essentially the same condition (i.e., excluding new construction, improvements, and annexation) in both the current and the preceding years. (Voted levies are those which must be adopted through a referendum; they account for most of the property tax in Ohio.) This is done through the calculation of a tax adjustment factor for each voted levy in each taxing jurisdiction, and then using those factors to calculate credits applied against residential and farm real property tax bills. John H. Bowman and others, *Buffalo Revaluation and Revenue Study,* pp. 169-70.

22. Steven D. Gold, *Property Tax Relief,* pp. 57-58.

23. This discussion draws upon John H. Bowman, "Property Tax Circuit Breakers Reconsidered: Continuing Issues Surrounding a Popular Program," *American*

Journal of Economics and Sociology, 39 (October 1980): 355-72.

24. *Ibid.*

25. *Ibid.* For a fuller discussion see Charles E. McLure, Jr., "The 'New View' of the Property Tax: A Caveat," *National Tax Journal,* 30 (March 1977): 69-75.

26. For a fuller discussion, see "Overview of the Property Tax," chapter 15 in volume 1.

27. Henry J. Aaron, *Economic Effects of Social Security* (Washington: Brookings Institution, 1982), p. 68.

28. Steven D. Gold, "An Overview of Property Tax Relief for Homeowners," Table 1 and pp. 3-4.

29. *Ibid,* Table 1.

30. John H. Bowman and others, *Buffalo Revaluation and Revenue Study,* p. 19.

31. Steven D. Gold, "An Overview of Property Tax Relief for Homeowners," p. 4.

32. See note 1 above.

33. Ohio's approach—technically a credit program—probably is procedurally more complex: it involves the calculation of tax reduction factors for each of the separate levies approved in referends in each taxing jurisdiction in the state, with the objective of holding the residential and agricultural share of the aggregate levy in each jurisdiction the same as in a base year, after adjustment for annexation, new construction and other improvements, as well as demolitions and other deterioration since the base period. John H. Bowman and others, *Buffalo Revaluation and Revenue Study,* pp. 165-71.

34. ACIR, *Significant Features of Fiscal Federalism 1982-83 Edition,* Table 71.

35. Minnesota House Research, *H.F. 2016 Conference Committee Report.*

36. State of Minnesota, Department of Revenue, "Classification Percentages by Property Class: Taxes Payable 1972-1982" (St. Paul: Department of Revenue, processed, June 1983).

37. State of Minnesota, Department of Revenue, *Property Tax Credits and Property Tax Aids: Purpose, Eligibility Requirements, and How the Credit Aid Amount Is Determined* (St. Paul: Department of Revenue, May 1983), pp. 2-3.

38. *Ibid.* p. 2.

39. Factual materials for the discussion below, unless otherwise noted are from *Ibid.,* pp. 1-31.; State of Minnesota, Department of Revenue, *Summary of Property Tax Law Changes Made in the 1983 Legislative Session* (St. Paul: June 1983); Minnesota House Research, H.F. 2016 *Conference Committee Report;* State of Minnesota, Office of the Legislative Auditor, *Evaluation of Direct Property Tax Relief Programs* (St. Paul: February 1983); and Commerce Clearing House, *State Tax Reporter: Minnesota.*

40. Minnesota Department of Revenue, *Property Tax Credits and Property Tax Aids,* p. 8.

41. *Ibid.*

42. These are discussed in chapters 1 and 21 of volume 1.

43. See Steven D. Gold, "Minnesota's Farm Sector and the Taxation of Agriculture," chapter 19 in this volume.

44. Minnesota Department of Revenue, *Property Tax Credits and Property Tax Aids,* p. 15.

45. *Use-Value Farmland Assessments: Theory, Practice, and Impact,* IAAO Studies in Property Taxation (Chicago: International Association of Assessing

Officers, Research and Technical Services Department, 1974), pp. 38-55.

46. Despite this program's requirement of a written agreement to keep the land in agricultural use for several years, Minnesota is not one of the seven states counted as having a "restrictive agreement" program of preferential farmland taxation. This Minnesota program does not necessarily provide a tax reduction if land is brought under the program, and there is no tax penalty for premature conversion from agricultural use.

47. Lisa A. Roden, "Minnesota's Taxation of Minerals," a working paper prepared for the Minnesota Tax Study Commission, September 1984.

48. This fact emerges from property tax data generated by the simulation mode of the Minnesota House Research Department, and from estimates prepared for the Minnesota Tax Study by Thomas F. Stinson.

49. Minnesota Department of Revenue, *Property Tax Credits and Property Tax Aids,* p. 30.

50. See Michael E. Bell and John H. Bowman, "Property Tax Differences Among Cities: The Effect of Property Tax Relief Programs," chapter 15 in this volume.

51. This discussion of the Minnesota circuit breakers draws primarily on several published and unpublished materials prepared by the Department of Revenue, including *Minnesota Homeowner and Renter Property Tax Refund Forms and Instructions* for both 1982 and 1983 and the most recent statistical report on the program, 1983 *Property Tax Relief for Minnesotans, Bulletin No. 14* (St. Paul: Department of Revenue, September 1983). Despite the broad title, Bulletin 14 is devoted to the circuit breaker. The 1983 and 1984 tax legislation summaries used in discussing the credit programs (see note 39 above) also were used for this section.

52. The "new view" of property tax incidence, discussed in "Overview of the Property Tax" in volume 1, challenges this standard notion.

53. Henry J. Aaron, *Who Pays the Property Tax? A New View* (Washington: Brookings Institution, 1975), pp. 32-33.

54. In the case of renters in rent-subsidized housing, however, the old approach still is used; for them, the property tax is taken to be equivalent to 20% of rent.

55. See, for example, Henry J. Aaron, *Who Pays the Property Tax?,* p. 77.

56. See, for example, John H. Bowman, "Property Tax Circuit Breakers Reconsidered."

57. The initial 1983 legislation provided relief equal to only 50% of the increase above 20% in 1984, a $40,000 income ceiling, and no relief for increases in 1985; the liberalizations were made in 1984.

58. Based on Commerce Clearing House, *State Tax Reporter: Minnesota,* ¶ 20-296.

59. A very good evaluation of direct property tax relief in Minnesota is the recent *Evaluation of Direct Property Tax Relief Programs* by the Office of the Legislative Auditor. This section, which is drawn in part from that report, necessarily is much shorter than that report.

60. The assessment system and its results are discussed in "Property Tax Law and Administration" in chapter 16 of volume 1.

61. The 1975-82 period is summarized in State of Minnesota, Office of the Legislative Auditor, *Evaluation of Direct Property Tax Relief Programs* (St. Paul: Office of the Legislative Auditor, 1983), Table 7.

62. Discussed in "Direct Property Tax Relief" in chapter 17 of volume 1.

63. Discussed in Michael E. Bell and John H. Bowman, "Property Tax Differences Among Cities," chapter 15 of this volume.

14
Minnesota's Local Government Aids Program

Michael E. Bell

Government services in the United States are provided by 82,688 governmental units, the vast majority of which are local. Approximately 80% of these governmental units have taxing authority. These units are distributed quite unevenly among the fifty states, with the number ranging from nineteen in Hawaii to 6,464 in Illinois. Only five states have more units of government than Minnesota's 3,530.

Many feel that Minnesota's state/local system is unnecessarily complex. In a recent paper entitled "State/Local Fiscal Reform: Has Its Time Come?", Munnich observes that:

> "Minnesota's state/local tax and spending system has become so complex that very few people can explain how it works. The interaction of state aid and credit formulas with local spending and taxing decisions makes it hard to determine what is really happening and who is accountable for fiscal decisions . . . There is growing concern that a major overhaul is necessary . . ."

The foundation of the current intergovernmental system in Minnesota can be traced back to the so-called Minnesota Miracle passed by the 1971 legislature. Constant ad hoc changes by each legislature since 1971, however, have obscured the original goals of the reform measures and raised questions about the efficacy and fairness of the overall strategy. A recent analysis of Minnesota's intergovernmental system concluded, that:

> The state/local system known as the Minnesota Miracle no longer exists. Its goals and structure have been undermined by more than a decade of modifications made by the legislature in response to lobbying by special interest groups and individual jurisdictions. . . .[1]

One component of the amalgam of programs that make up the intergovernmental system in Minnesota is the Local Government Aids (LGA) program, created by the 1971 legislature. The LGA program is a general purpose lump-sum grant program to aid local governments. The program initially distributed $98.9 million to counties, cities, towns, and special districts in the state. By 1983, the LGA program distributed $270.7 million, an increase of 174%, with 85.3% of the aid going to cities.

Initially, the LGA program had two rather straightforward goals. First, in 1971, the taxpaying electorate was very concerned about rapidly increasing property taxes due to growth in property values and mill rates. There was a desire for substantial and permanent property tax relief. The LGA program, unlike classification/credit/refund, was designed to keep the overall level of property taxes lower than they otherwise would be, for a given level of spending, by substituting state resources for local ones.[2]

Second, there was concern about the fairness of the distribution (formulated in 1967) of shared tax revenues. Since most of the shared revenues were distributed on a per capita or an origin basis, many felt the resulting allocation did not adequately reflect differences in "need" between jurisdictions. While the concept of need has remained vague, subsequent legislatures have attempted to refine the LGA distribution formula to respond to disparities among jurisdictions in tax capacity and tax effort. As a result, the allocation formulas have become more complex.

This paper does not analyze the LGA distribution formula in order to propose incremental changes in the formula to fine-tune the distribution of aid. Rather, it steps back to look at the distribution of aid in 1983, and it analyzes whether that distribution accomplishes any of the equalization goals implicit in the program.

The next section briefly outlines the state/local fiscal relationship in Minnesota. A third section reviews the development of the current distribution formula. Last, the distribution of aid resulting from the 1983 allocation formula is analyzed.

STATE/LOCAL FISCAL RELATIONS IN MINNESOTA[3]

In 1982, Minnesota's state/local system generated $7.912 billion of own-source revenues and spent $10.967 billion. As Table 1 indicates, not all government units were equal partners in raising revenues and/or making expenditures. Cities and school districts together accounted for nearly half of all state/local expenditures, 22.9% and 22.1% respectively, but less than one-fifth of total tax revenues, 6.8% and 11.2% respectively. Cities generate over half of their total general revenue from user charges, while school districts depend heavily on state aid as a source of revenue (see Table 2). Property taxes account for 14.8% and 24.1% of city and school district total general revenues, respectively. Nationally, property taxes account for 21.3% and 35.7% of total general revenues for cities and school districts, respectively.

Counties, the third most significant unit of local government in the Minnesota intergovernmental system, account for just over one-seventh of total state/local expenditures and one-twelfth of tax revenues. Like school districts, counties depend heavily on state aid as a source of revenue—47.1%

TABLE 1
Percent Distribution of State/Local Own-source Revenues and Direct Expenditures in Minnesota by Level of Government, 1982

	Direct Expenditures	Own-source Revenues	Tax Revenues
State	35.6	58.8	72.3
Local, total	64.4	41.2	27.7
Counties	14.0	9.3	8.3
Cities	22.9	17.6	6.8
Townships	0.5	0.5	0.6
School districts	22.1	10.8	11.2
Other	4.9	3.1	0.7
Total	100.0	100.0	100.0

Source: Governmental Finances, 1981-82, U.S. Department of Commerce, Bureau of the Census, Government Printing Office, Washington D.C. 1983. Tables 5, 13 and 23.

TABLE 2
Percent Distribution of Total Local General Revenue by Source and Level of Government, 1982

	Intergovernmental		Own-source		
	Federal	State	Total	Taxes	Charges
Counties	5.9	47.1	45.6	27.2	18.4
Cities	9.5	19.9	69.2	17.9	51.3
Townships	8.9	31.8	55.6	46.4	9.2
School districts	0.7	64.1	34.9	24.1	10.8
Other	16.9	11.2	52.7	8.4	44.3

Source: See Table 1

of total general revenue. Counties and school districts receive 83.1% of total state aid—27.0% and 56.1%, respectively.

In 1982, the state generated 72.3% of total state/local tax revenues. While this measure of tax centralization was 118% of the national average, it was still less centralized than fourteen other states.[4] Minnesota, however, allocated a larger share of state expenditures to local government aids, 43.6%, than any other state. As a result of this extensive aid, the state accounted for only 35.6% of total general state/local expenditures. Nationally, states accounted for 39.4% of total general state/local expenditures, but only five states had more decentralized expenditure responsibilities than Minnesota.[5]

Local governments in Minnesota received 43.5% of their total general revenues from state aid. This was 127.9% of the national average, and only four states had local governments which were more dependent on state aids.[6]

In summary, Minnesota has a highly centralized revenue-raising system, and decentralized expenditure responsibilities. School districts and cities are the most important units of local government in terms of spending responsibilities. Cities rely heavily on user charges to finance their expenditures; school districts and counties depend heavily on state aid. Cities and school districts depend less heavily on the property tax than their counterparts nationally.

LOCAL GOVERNMENT AIDS IN MINNESOTA

In 1984, the LGA program distributed an estimated $273.7 million to cities, counties, and towns. As the program has grown since 1971 and the allocation formula has been changed, the LGA program has focused more on municipalities. In 1972, for example, cities received less than two-thirds of the aid distributed, but by 1984 will increase their share to over 90% of the aid (See Table 3).

Table 4 presents a summary of the major phases of the distribution formula for three distinct stages of its evolution. From the table, it is apparent that the distribution formula has become increasingly complex because of frequent changes by the legislature and the legislators' desire to make the resulting aid distribution more equitable. The focus of this section is on the formula changes made by the 1979 legislature.[7]

TABLE 3
Distribution of LGA, 1972-84

	LGA Amounts ($ millions)				
Calendar years	Counties	Cities	Towns	Special districts	Total
1972	24.6	64.1	9.6	0.6	98.9
1973	26.3	70.5	9.2	0.6	106.6
1974	30.9	89.7	13.9	0.6	135.1
1975	31.3	93.0	13.9	0.6	138.9
1976	19.9	125.2	14.2	0.6	159.9
1977	19.9	136.4	14.4	0.6	171.3
1978	19.9	162.6	14.8	0.6	197.9
1979	19.9	189.8	15.5	—	225.5
1980	22.0	208.3	15.4	—	245.7
1981	22.3	213.2	14.3	—	249.9
1982	20.3	201.4	13.5	—	235.2
1983	24.2	231.0	15.5	—	270.7
1984*	14.5	250.0	9.2	—	273.7

Source: House Research, March 1984
*Preliminary estimates.

TABLE 4
Three Phases of LGA Formulas

	1972-75 Levy-based Formula	1976-79 Mill-rate Based Formula	1980-Present Revenue Gap Formula
FORMULA BASES	Fiscal need measured by property tax levy.	a. Fiscal need measured by property tax levy. b. Fiscal capacity measured by assessed value of property. [Actual measure used is mill rate, which is need divided by capacity.]	a. Fiscal need measured by historical spending level. b. Fiscal capacity measured by assessed value of property.
DISTRIBUTION METHOD	1. To county areas: money allocated to county areas* on a per capita basis. 2. Within county areas: distribution based on each local government's share of the total levy. "Grandfather" clause to prevent aid from declining.	1. To county areas: money allocated to county areas* on a per capita basis. 2. Within county areas: fixed shares allocated for county government and special taxing districts. Remainder apportioned among municipalities in direct proportion to population multiplied by (equalized) mill rate. "Grandfather" clause to prevent aid from declining.	1. Counties & townships: fixed share allocated for county and township governments. 2. Initial allocation: each city's aid amount determined by subtracting fiscal capacity from fiscal need. 3. Adjusted allocation: adjustments made city-by-city to prevent large increases or decreases, and statewide to make aid amounts conform to appropriation level.

Source: House Research Information Brief, Prepared by Steve Hinze, House of Representatives, Department of Research, March 1984.

*The entire seven-county metropolitan area was treated as one county.

A feature of all of the distribution formulas through aid year 1979 was the "county pot." Local government aid was calculated on a county-by-county basis (with the seven-county metropolitan area considered as one large county) by multiplying the county's 1970 federal census population by a specified per capita amount. These county pots were then distributed by deducting the county government's share first and apportioning the balance to the cities and towns within the county in accordance with whatever the current formula provided. Another feature common to all of the distribution formulas through 1979 was the "grandfather provision," whereby the cities and towns that received initial distributions less than their minimum aids had their aids increased to their minimums and all of the

other cities and towns within the same county that received an initial distribution in excess of their minimums had their aids proportionately reduced to supply the difference. After "grandfathering," every city and town within the county had a local government aid amount that was greater than or equal to its minimum aid, where the minimum level was initially based on the results of the shared revenue system established in 1967.

The 1979 formula represented a radical departure from previous distribution mechanisms because it eliminated the county-pot concept in favor of a statewide distribution system. The formula also provided one method for distributing local government aid to the cities and towns exempt from the levy limitation and another method for distributing local government aid to the levy-limit cities and towns. A city or town exempt from the levy limitation was guaranteed its preceding year's aid amount plus an increase which depended upon the level of its "average equalized mill rate." The average equalized mill rate was defined as the city or town's average mill rate for the past three years multiplied by its latest sales ratio

TABLE 5
Local Government Aids: Sample Calculations*

I. City of Aurora (over 2,500)

Data: Population = 2,793 — Eq. mill rate = 17.2
Prev. yr. aid = $147,775 — Prev. yr. aid per capita = $52.91
Eq. assessed value = $7,029,734 — Local revenue base = $230,741

Initial calculation: aid factor = $230,741 - ($7,029,734 x .010) = $160,444

Minimum: $147,775 + ($2,793 x 3) = $156,154

Maximum: $147,775 x 1.17 = $172,897

Final factor = $160,444 = final aid unless appropriation is insufficient, in which case this figure is proportionately reduced.

II. City of Arden Hills (over 2,500)

Data: Population = 7,450 — Eq. mill rate = 6.3
Prev. yr. aid = $152,301 — Prev. yr. aid per capita = $20.44
Eq. assessed value = $51,013,899 — Local revenue base = $614,320

Initial calculation: aid factor = $614,320 - ($51,013,899 x .010) = $104,181

Minimum: $152,301 - ($7,450 x 1) = $159,751

Maximum: $152,301 x 1.20 = $182,761

Final factor = $159,751 = final aid unless appropriation is insufficient, in which case the figure is proportionately reduced.

Source: See Table 4.

*Note how the formula improves the equalization between Aurora, which has a low-tax capacity ($2,517 of equalized assessed value per capita) and a higher tax effort (17.2 equalized mills), and Arden Hills, which has a higher tax capacity ($6,848 of equalized assessed value per capita) and a lower equalized millage rate (6.3). Aurora's LGA payment increased 8.6% while Arden Hills' increased by only 4.9% and is now less than Aurora's.

(the measure of the level of assessment within the community, that is, how close the assessor is valuing property to full-market value).

The formula for the levy-limit cities and towns begins with the determination of the total amount of LGA available to them. This is done by first multiplying the total aid per capita ($64 for aid year 1980, $70 per capita for aid year 1981) by the 1970 federal census of the state. Next, the 1979 level of aid for cities and towns exempt from the levy limitation is subtracted. Finally, the previous year's aid for the levy-limit cities and towns is subtracted. The balance remaining is the aid increase available for distribution to levy-limit cities and towns. This is the only amount actually distributed by the formula since each city and town is guaranteed at least the previous year's amount of local government aid.

In theory, the local government aid increase is distributed to the levy-limit cities and towns by a formula involving their local revenue bases and their adjusted assessed values. Initially, the local revenue base was based on historical spending levels—specifically the 1971 local levy. For aid year 1980, a city or town's local revenue base was the sum of its payable 1979 levy limitation and payable 1979 local government aid. For subsequent aid years, the local revenue base is adjusted for increases in population, the cost of living, and other specific levies. The city or town's adjusted assessed value is its assessed value divided by its aggregate sales ratio. (For example, for aid year 1983 it was the city or town's 1981 assessed value divided by its 1981 sales ratio.)

The actual 1983 LGA payment was determined by first calculating the amount due each jurisdiction according to the formula and then comparing that figure with a minimum and maximum payment level. The minimum payment was based on the preceding year's LGA payment with a per capita increase depending on the average equalized mills levied by the jurisdiction. The maximum payment was based on the preceding year's LGA payment plus a percentage increase in the payment which depended on the per capita LGA payment in the preceding years.

Table 5 provides a simple example which illustrates how the 1983 aid payment for two cities was calculated initially. The formula improves the equalization between Aurora, which has a low-tax capacity ($2,517 of equalized assessed value per capita) and a lower equalized millage rate (6.3). Aurora's LGA payment increased 8.6% while Arden Hills' increased by only 4.9% and is now less than Aurora's.

The next section of this chapter provides some preliminary analysis of the efficacy of the formula enacted by the 1979 legislature in equalizing for disparities among jurisdictions in need, capacity, and/or effort.

ANALYSIS

The purpose of this section is twofold: first, to describe the current distribution of LGA funds between and among levels of government; second, to evaluate how well the current distribution of aid meets legislators' concerns, as reflected in the aid formula, about equalizing for disparities in need, capacity, and effort.

CURRENT AID DISTRIBUTION

In 1984, $273.7 million should be distributed to counties, cities, and towns under the LGA program. Cities will receive 91.3% of total funds allocated while counties and townships will receive 5.3% and 3.4%, respectively. In 1972, the first year of the program, cities received only 64.8% of the funds distributed, while counties and townships received 24.9% and 9.7% respectively. The increased urban focus of the LGA program has been an explicit goal of the legislature. First, since townships have limited taxing and spending responsibilities vis-a-vis cities, it was felt they had less need for fiscal assistance. Second, in 1975, Hennepin, Ramsey, and St. Louis counties were removed from the LGA program because they received substantial increases in the state contributions for welfare expenditures. Since 1975, the county allocation has been held relatively constant while program funding has increased; consequently, the county share has decreased. Finally, cities with populations of 2,500 or more will receive 87.2% of LGA payments to all cities, or approximately 75% of all LGA payments in 1984.

The formula used in calculating 1983 LGA allocations, for cities over 2,500 population, was based on the city's local revenue base, adjusted for population and price increases, and assessed values. After a preliminary allocation was computed for each city, a minimum and maximum payment was calculated. Of the 185 cities with population of 2,500 or more, only twelve received final 1983 LGA distributions that were determined by the formula. Of the remaining 173 cities, ninety received LGA payments equal to their maximum payments and eighty-three received LGA payments equal to their minimum payment.

According to data supplied by the local government aids and analysis division of the state department of revenue, final 1983 LGA distributions to cities with populations of 2,500 or more ranged from over $50 million for Minneapolis to $40,979 for the city of Babbitt. After adjusting for population, the data indicate that per capita 1983 LGA payments varied from $137.38 in Minneapolis to $12.26 in the city of Andover. For counties, the LGA dollar distributions ranged from $1.0 million in Olmstead county to $44,126 in Cook County. The per capita distributions ranged from $4.16 in Anoka County to $17.67 in Lake of the Woods county. Correlation

coefficients[8] are examined in the next section to test for strong relationships between LGA payments and measures of fiscal need.

DEFINING FISCAL NEED

The original LGA program was intended to make state aids more sensitive to differences in need among local governments. Prior to 1971, state aids were primarily composed of programs that tended to allocate resources without an explicit concern for equalization. As discussed above, many of these programs were shared taxes returned to local governments in proportion to the amount collected in each jurisdiction.

Over the years, however, the allocation formula became increasingly complex as the goals of the program expanded. Instead of merely replacing a system of shared taxes with a system more sensitive to differences in need among jurisdictions, the current formula tries to equalize disparities in need, fiscal capacity, and tax effort without providing an incentive for recipient governments to increase their spending. As policymakers consider fine-tuning the LGA allocation formula, they will confront many of the problems encountered by the federal and state governments in designing unrestricted grant allocation formulas, (e.g. general revenue sharing). Specifically, how does one quantify service needs, fiscal capacity, and tax effort in a manner that will reflect accurately disparities between jurisdictions? Unfortunately, no unambiguous solutions have emerged from these debates.

The concept of fiscal need is a relative concept because cities differ in the definitions of what are public vs. private goods and services; in their preferences for publicly provided goods and services; in the characteristics of the residential population; in price and cost factors; and in their economic and physical conditions. Determining the appropriate level of public services provided by each city is a subjective question which should be resolved through the political process. Fiscal need occurs when desired expenditures, as determined by the local electorate, cannot be financed with the revenue capacity of that jurisdiction.

In designing an allocation formula, the first problem is to measure service needs for each jurisdiction objectively—a difficult task since service needs reflect political and economic decisions. One does not want necessarily to concentrate aid on cities that choose to have a well-developed public sector. As Bahl observes, disparities within cities represent local choices about how to distribute public services, how they should be produced, and so forth. The results of these choices may well be distressing, but they should not be taken into account in measuring distress.[9]

Population is often used as a proxy for service needs. Critics argue, however, that it is too imprecise to reflect accurately differences in need that arise because of differences in the characteristics of each city's population

(e.g., the percentage of families below the poverty line or the percentage of population over age 65). Break, however, argues that if a community's fiscal needs are mainly related to large concentrations of low-income people, unrestricted grants would be a less effective intergovernmental aid tool than direct redistribution programs and/or categorical grants supporting services used by low-income populations. Since the purpose of revenue sharing is to support local programs in general, the needs it responds to should be correspondingly general, so population may not be a bad starting point.[10]

Population may be a reasonable proxy for the objective factors which influence expenditure needs across cities, but it does not reflect differences in cost and preferences, which also influence expenditure levels. Since these subjective factors are manifested in actual expenditures, and since property taxes account for over 95% of local tax revenues in Minnesota, the property tax levy per capita may be a useful proxy for differences in preferences among jurisdictions. The problem with this measure, of course, is that it does not differentiate between cities with high needs and those that are simply profligate spenders and/or poor managers. Also, it may not accurately reflect true needs if low-tax-capacity cities have significant unmet needs or poor quality in local services. In the analytical section that follows, population and per capita property tax levies are used as measures of service needs for the 185 cities examined, even if they be imperfect measures.

A second problem is in developing an allocation formula to measure the fiscal capacity of local jurisdictions. A high-expenditure level need not create fiscal distress if that jurisdiction also has a high ability to generate tax revenues to finance those expenditures. Conceptually, tax capacity is simply an indication of a jurisdiction's ability to pay for public goods and services. It can be measured in a number of ways including per capita income, assessed valuation per capita, or a representative tax system approach.

Typically, per capita personal income has been used to measure fiscal capacity because, in the last analysis, taxes have to be paid out of income. The problems with per capita income are that reliable estimates are not available on a timely basis for local governments, and per capita income does not reflect the actual tax base of a local government which relies exclusively on the property tax as a source of tax revenue.

The representative tax system developed by ACIR is an alternative that measures the total capacity of a jurisdiction to raise revenue from all sources. Again, accurate data for local jurisdictions are difficult to obtain on a timely basis and the measure includes revenue bases that Minnesota local governments cannot tax.

Given data limitations and the heavy reliance of local governments on property taxes as a source of tax revenue, some measure of property values seems to be the most appropriate indication of local tax capacity. Since the ratio of the market value established by the assessor to actual sales prices may vary across jurisdictions, the capacity measure should be adjusted to

reflect these differences, (as it is in the current distribution formula). Similarly, since the composition of the local property tax base may vary across cities,[11] the capacity measure should reflect the impact of the classification system on determining the jurisdiction's actual property tax base. The measure of capacity used in the next section is the amount of property tax revenue each jurisdiction would raise by levying one equalized mill—after adjustment has been made for classification, assessment/sales ratios, and metropolitan tax base sharing. The revenue raised by one equalized mill is also presented on a per capita basis, as an alternative measure of tax capacity.

A third problem in designing an allocation formula is measuring the extent to which a jurisdiction tries to meet its own needs, i.e., a measure of its tax effort. Tax effort variables are often included in allocation formulas because they link expenditure needs (measured by property tax levies) and tax capacity. Generally, a tax effort variable is calculated by dividing the levy by some measure of the tax base (or by some ability-to-pay, such as per capita income). In the analytic section that follows, tax effort is measured by the number of equalized mills (i.e., after adjusting for differences in assessment practices across jurisdictions) a jurisdiction would need to generate its 1983 property tax levy. Again, this variable reflects adjustments for the composition of the tax base, assessment disparities, and fiscal disparities adjustments.

Like the variables discussed above, measures of tax effort have their limitations. For example, tax effort measures do not reflect the extent to which taxes levied are exported to residents outside the taxing jurisdiction. Two cities may have the same tax effort, but because one city has a large share of commercial/industrial properties, the actual burden on its residents may be substantially less than the burden on residents in the other city.

A second criticism of tax effort measures is that they do not distinguish between a low-capacity/high-effort and high-capacity/high-effort city. The concern is that the wealthy city may have a good effort because it has greater preferences for public goods and/or a wasteful public sector, but would get the same aid as the poor jurisdiction. If the purpose of the index is simply to measure tax pressure, this concern may not be critical since both jurisdictions are fully utilizing the available tax bases. If, however, the concern is to equalize for disparities in fiscal need, this criticism may be important if the low-capacity city has significant unmet needs and/or poor quality public goods and services.

The narrowness of the tax effort measure used has been viewed as a problem also. Since the effort measure does not consider user charges, a city that has shifted the financing of services from taxes to user charges may be penalized by the aid formula. If the formula provides an incentive to move away from benefits-received financing, certain inefficiencies may be created. Use of total own-source general revenues as a percentage of total income is a

more comprehensive measure of effort but has been criticized as being too broad.[12]

Finally, inclusion of any tax effort measure in an allocation formula has been criticized because it may provide an incentive to tax more—the higher the tax effort, the higher the aid. While this may be of concern for any city acting independently, it may not be a problem in the aggregate because if all cities increased their effort proportionately, the distribution of funds would be unchanged.[13]

In summary, fiscal need has several dimensions; service needs, revenue capacity, and tax effort all interact to determine a city's fiscal need. Designing an allocation formula to distribute general unrestricted grant funds in a manner that equalizes across jurisdictions for disparities in fiscal need is very difficult, in part because there is no unambiguous consensus measure for any of the components of fiscal need. With these warnings given, the next section analyzes the extent to which various measures of aid are related to measures of need, tax capacity, and tax effort.

LGA PAYMENTS AND EQUALIZATION

The previous section argued that there is no unambiguous way to quantify fiscal need. Similarly, there is no single preferred manner to measure the extent of assistance or relief provided a city or county by the LGA program. The most obvious measure of the impact of the LGA program on a local government, would be found in looking at the actual LGA dollar payment made to each city. This information, however, is not very useful in evaluating the impact of the program because there is no context in which the payment can be analyzed. For example, one city may have twice the population, tax base, and property tax levy than the other. The impact of the LGA payment, then, would be less than it would for the second city.

In order to provide a context for evaluating the impact of the LGA program, a number of measures of assistance are calculated. In addition to gross dollar allocations, the LGA payments can be expressed relative to the needs of the jurisdiction. In this case, LGA payments may be expressed relative to the overall property tax capacity of the jurisdiction. In this case, LGA payments are expressed as the number of equalized mills a jurisdiction would have to levy in order to replace its LGA monies. A final alternative would be to express LGA allocations relative to some measure of local effort. In this instance, local effort is measured by the number of equalized mills required to generate the 1983 property tax levy. By adding together the equalized millage equivalent of the 1983 property tax levy and the 1983 LGA payment, and dividing that sum into the equalized millage equivalent of the LGA payment, the degree of subsidy provided by the LGA program is determined. Regardless of the measure of the impact of the LGA program on local finances, the *a priori* assumption is that relatively more (less) aid

should go to jurisdictions with high tax effort and relatively less (more) aid should go to jurisdictions with high (low) tax capacity.

For purposes of initial analysis, four measures of local government assistance were calculated: (1) Absolute dollar level of LGA payment (LGA83); (2) LGA payment per capita (LGAPC83); (3) The number of equalized mills that a jurisdiction would need to levy to replace its LGA payment (LGAMREQ); and (4) The extent to which the LGA payment subsidizes local property taxpayers, i.e. a measure of fiscal dependence (LGASUBS). The 1983 population estimate (POP83) and the property tax levy per capita (PTLPCP83) were used as proxies for local need. Two measures of local tax capacity were calculated: (1) the amount of property tax revenues that would be generated by one equalized mill (OMEQLVY); and (2) the revenue raised by one equalized mill expressed on a per capita basis (OMLEQPCP). Finally, local tax effort was measured by expressing the payable 1983 property tax levy as an equalized mill rate equivalent (EQMR83). As discussed above, none of these measures are without flaws. Thus, these results should be interpreted with caution.

A correlation coefficient matrix was generated for all nine variables using 1983 data and the relevant coefficients are reported in Table 6. The correlation coefficients suggest that the LGA program may be more equalizing with respect to both tax capacity and effort than originally thought. For example, the correlation coefficients in Table 6 indicate that per capita property tax capacity (OMLEQPCP) is negatively correlated strongly with the degree of subsidy provided by LGA (LGASUB), the equalized mills required to replace LGA payments (LGAMREQ) and—to a lesser extent—to per capita LGA payments (LGAPCP83). The negative coefficient in each of these cases is the anticipated sign and indicates that cities with high (low) per capita capacity receive relatively lower (higher) LGA payments per capita, would require less (more) equalized mills to replace LGA payments and are less (more) dependent on LGA allocations for providing local services.

TABLE 6
Correlation Coefficients Between Local Government Aid Payments and Measures of Need, Capacity, and Effort for Cities Over 2,500 Population, 1983

	LGA83	LGAPCP83	LGAMREQ	LGASUBS	POP83	PTLPC83	OMEQLVY	OMLEQPCP	EQMR83
LGA83	1.000	.2750*	.0560	.0518	.9668*	.2576*	.9354*	.0512	.0977
LGAPCP83	.2750*	1.000	.8751*	.7952	.1718*	.2112*	.1064	-.4920*	.7215*
LGAMREQ	.0560	.8715*	1.000	.8026	-.0458	-.0214	-.1099	-.6704*	.8171*
LGASUBS	.0518	.7952	.8026	1.000	-.0391	-.3376	-.1161	-.7134	.4285
POP83	.9668*	.1718*	-.0458	-.0391	1.000	.2419*	.9790*	.1395	.0026
PTLPCP83	.2576*	.2112*	-.0214	-.3376	.2419*	1.000	.2762*	.5026*	.3312*
OMEQLVY	.9354*	.1064	-.1099	-.1161	.9790*	.2762*	1.000	.2477*	-.0568
OMLEQPCP	.0512	-.4920*	-.6704*	-.7134	.1395	.5026*	.2477*	1.000	-.5484*
EQMR83	.0977	.7215*	.8171*	.4285	.0026	.3312*	-.0568	-.5484*	1.000

*Significant at the 99% level of confidence.

Similarly, the correlation coefficients in Table 6 indicate that local tax effort as measured by 1983 property tax levy millage equivalents (EQMR83) is correlated strongly with the millage equivalent of the 1983 LGA allocation (LGAMREQ) and with the per capita LGA distribution (LGAPCP83). The positive coefficient in each of these cases is the anticipated sign and suggests that cities with high (low) 1983 local tax effort would receive relatively higher (lower) per capita LGA payments, and require higher (lower) additional tax effort to replace their LGA payments.

Finally, the degree of subsidy provided by LGA payments is not strongly related to the millage equivalent of the 1983 property tax levy, and is correlated inversely, but only slightly with per capita 1983 property tax levy.

The conclusion that the LGA program may provide some equalization for tax capacity and tax effort disparities among jurisdictions may be somewhat surprising in view of the initial analysis that showed the absolute LGA distribution was correlated strongly and positively with both population and gross tax capacity. There are a couple of reasons that the LGA program may provide some tax effort and capacity equalization. First, all jurisdictions were guaranteed at least their 1980 LGA payments and, as Table 7 indicates, those payments provided some degree of equalization already. It should be noted when comparing Tables 6 and 7 that the degree of equalization has increased since 1980. Further, it must be remembered that only twelve cities had their final 1983 LGA payment directly determined by the formula, while ninety cities received their maximum amounts and eighty-three received their minimum, as determined by the formula. Additional equalization takes place because the maximum and minimum amounts vary inversely with the previous year's per capita LGA payment and directly with the cities' equalized mill rates.

A similar analysis was carried out for counties, but because county LGA distributions have been fixed since 1975, the results are less interesting than those for cities. As Table 8 indicates, for 1983 payments, the four measures of assistance are correlated weakly, at best, with all of the property tax capacity and effort measures. To the extent there is any correlation, aid

TABLE 7
Correlation Coefficients Between Local Government Aid Payments and Measure of Need, Capacity, and Effort for Cities Over 2,500 Population, 1980

	LGA80	LGAPCP80	LGAMREQ	LGASUBS	POP80	PTLPC80	OMEQLVY	OMLEQPCP	EQMR80
LGA80	1.000	.2680	.0902	.0342	.9695	.2490	.9419	.0292	.1646
LGAPCP80	.2680	1.000	.8874	.7441	.1737	.2490	.1211	-.4211	.6943
LGAMREQ	.0902	.8874	1.000	.7989	-.0053	-.0046	-.0660	-.6276	.7309
LGASUBS	.0342	.7441	.7989	1.000	-.0499	-.3851	-.1195	-.7133	.2852
POP80	.9695	.1737	-.0053	-.0499	1.000	.2371	.9841	.0947	.0927
PTLPCP80	.2490	.2490	-.0046	-.3851	.2371	1.000	.2730	.5675	.4612
OMEQLVY	.9419	.1211	-.0660	-.1195	.9841	.2730	1.000	.1937	-.0455
OMLEQPCP	.0292	-.4211	-.6276	-.7133	.0947	.5675	.1937	1.000	-.3793
EQMR80	.1646	.6943	.7309	.2852	.0927	.4612	-.0455	-.3793	1.000

TABLE 8
Correlation Coefficients Between Local Government Aid Payments and Measure of Need, Capacity, and Effort for County Data for 1983*

	LGA83	LGAPCP83	LGAMREQ	LGASUBS	POP83	PTLPC83	OMEQLVY	OMLEQPCP	EQMR83
LGA83	1.000	-.2731	.0324	.0381	.0187	-.4854	-.0260	-.2469	-.1480
LGAPCP83	-.2731	1.000	.4705	.7636	-.6432	.1084	-.5656	.4134*	-.2918*
LGAMREQ	-.0324	.4705	1.000	.5283	-.4241	-.1968	-.4224	-.5402*	-.4809*
LGASUBS	.0381	.7636	.5283	1.000	-.5564	-.5100	-.5061	.1295*	-.4306
POP83	.0187	-.6432	-.4241	-.5564	1.000	.0993	.9981	-.1063	.1117
PTLPCP83	-.4854	.1084	-.1968	-.5100	.0993	1.000	.1279	.3099*	.3275*
OMEQLVY	-.0260	-.5656	-.4224	-.5061	.9881	.1279	1.000	-.0221*	.0464
OMLEQPCP	-.2469	.4134	-.5042	.1295	-.1063	.3099	-.0221	1.000	-.7168*
EQMR83	-.1480	-.2918	.4809	-.4306	.1117	.3275	.0464	-.7168*	1.000

*Significant at the 99% level of confidence.

seems to be inversely correlated with capacity (six of the eight coefficients have the anticipated negative sign), and tax effort (three of the four coefficients have an unanticipated negative sign). In the latter case, the data suggest that counties with relatively higher tax effort receive relatively less assistance from the LGA program.

ENDNOTES

1. Thomas Peek and Douglas Wilson, *Local Perspective on Minnesota's Intergovernmental System,* Center for Urban Regional Affairs, University of Minnesota, 1984.

2. John Brandl and Donald Diddums, "Property Tax Rebates in Minnesota," mimeograph, 1978.

3. Census data are used for interstate comparisons because it is the most comprehensive set of standardized state/local financial data available. Each state and local government has its own accounting convention so that interjurisdictional comparisons are not possible without some standardization of the data. Census gathers data from state/local governments, rearranges the data, and presents them in a standard format to facilitate comparison. Census revenue and expenditure numbers, therefore, may not directly correspond to numbers prepared by the state/local government. One of the biggest differences is that census takes a broad view of state/local activity and does not restrict the analysis to general fund revenues and expenditures. For example, by including enterprise funds—e.g., sewer and water—census numbers are larger than those numbers arrived at by just focusing on general fund numbers. Census data indicate that in 1982 property taxes were 21.4% of municipal own-source revenues in Minnesota. This is contrasted to the general fund data prepared by the state auditor's office that reports that property taxes were nearly 40% municipal own-source revenues. The numbers are not comparable.

4. The fourteen states that generate a larger percentage of total state/local tax revenues than Minnesota include: Alaska, 90.0%; New Mexico, 82.5%; Delaware, 82.4%; Kentucky, 79.6%; West Virginia, 78.9%; Hawaii, 77.2%; Mississippi, 77.2%; Arkansas, 75.9%; South Carolina, 74.5%; Oklahoma, 74.1%; Alabama,

73.9%; Nevada, 73.5%; Washington, 72.9%; and North Carolina, 72.8%.

5. The five states where the state accounts for a smaller percentage of total state/local expenditures than Minnesota include: Arizona, 34.5%; Wisconsin, 34.0%; California, 33.7%; Florida, 32.3%; and New York, 29.5%.

6. State aid includes federal aid to the state that is passed through to local governments. The four states were New Mexico, 57.0%; Alaska, 47.2%; Kentucky, 46.8%; and California, 44.7%.

7. This historical section draws heavily from the draft "Report on the Study of Local Government Aid Formula," prepared by the Local Government Aids and Analysis Division, Minnesota Department of Revenue, December 18, 1980; "State Revenue Sharing with Local Governments: The Local Government Aids Program," prepared by Steve Hinze, House Research, March 1984; "Earmarking State Revenues," prepared by John Bartle, Minnesota Tax Study Commission, June 1984; and several unpublished mimeographs from the Minnesota Department of Planning and House Research.

8. The correlation coefficient measures the degree to which the observations for one variable are related to those for another variable. If there may be no relationship, the correlation coefficient is zero; if there is a perfect relationship, the correlation coefficient is 1.0. A negative correlation coefficient indicates the two variables are inversely related.

9. Roy Bahl, *The Fiscal Outlook for States and Local Governments,* Syracuse University, 1982.

10. George Break, *Financing Government in a Federal System,* The Brookings Institution, Washington D.C., 1980, pp. 148-9.

11. Break argues that for local governments the capacity measure should not only reflect the aggregate size of the property tax base, but also its composition. The composition is important, he argues, because it reflects differences among cities in their ability to export their taxes. For example, a city that has a high percentage of its property tax base in the commercial/industrial class may have its tax shifted forward through the purchase of the goods produced by those sectors. For Minnesota cities over 2,500 in population, the correlation between total gross property tax levy per capita and the percent of the property tax base in the commercial/industrial class was .1622, a figure suggesting that local governments in Minnesota that have a large share of their base in commercial and industrial property do not have systematically higher tax levies than other jurisdictions, i.e., there may be no apparent effort to shift the tax burden to nonresidents. See Break, *Financing Government in a Federal System,* p. 150.

12. Break, ibid., p. 152. This measures does not address the exporting questions and would be difficult to calculate regularly because the base, local per capita income, is not available in a timely manner.

13. This is argued by Maxwell in "Tax Effort as a Determinant of Revenue Sharing Allottments," *Harvard Journal of Legislation,* Vol. 10, No. 4, December 1973. Fisher, however, argues that "while revenue sharing is often presented as a pure lump-sum transfer and redistributive system, there is an expenditure incentive effect introduced by the inclusion of tax effort in the allocation formula." As a result of this expenditure-incentive effect, total public sector expenditures may be greater with the aid program than they would be without the program. See Fisher, "A Theoretical View of Revenue Sharing Grants," *National Tax Journal,* June 1979, pp. 173-84.

15

Property Tax Differences Among Minnesota Cities: The Effect of Property Tax Relief Programs

Michael E. Bell and John H. Bowman

In 1983 the State of Minnesota allocated nearly a third of its expenditures for direct and indirect property tax relief to local governments and property owners. The two largest property tax relief programs are the homestead credit ($503.6 million in 1983) and local government aids ($273 million in 1983). Some have expressed concern that these programs drive a wedge between those decisionmakers responsible for determining spending levels and those responsible for determining tax levels. The result is higher own-source local spending than would be expected otherwise. This chapter empirically tests that hypothesis for 174 Minnesota cities with populations of 2,500 or more.[1] Section II briefly describes the homestead credit and the local government aid programs in Minnesota. Section III outlines the analytic framework used to test the hypothesis and section IV presents the empirical results. Section V discusses some policy implications of the empirical findings.

PROPERTY TAX RELIEF IN MINNESOTA

Property tax relief can be defined quite broadly to include anything which reduces the relative reliance on property taxation for public revenues. This all-encompassing definition includes not only homestead exemptions, credits, deferrals, and classification—the traditional property tax relief programs—but also various local nonproperty taxes, local nontax revenue sources, and intergovernmental aid programs. Those in the first group are referred to as direct property tax relief measures because they directly reduce the tax bills for individual property parcels, even though they may not affect total property tax levies of governments. Approaches in the second group give indirect property tax relief by providing local governments with alternative revenue sources, thereby permitting property tax levies to be lower than they would be otherwise.

DIRECT PROPERTY TAX RELIEF

Minnesota provides direct property tax relief through three basic approaches:

1. *Classification,* which alters the tax base by assessing different types of property at different percentages of market value;
2. *Credits,* which make the net property tax bills that certain property owners must pay less than their gross property tax bills; and
3. *Tax refunds,* of which the circuit breaker is by far the most important, which return a portion of one's local tax bills actually paid.

The assessed value adjustments under classification are, in effect, like partial exemptions, and—as is generally the case with adjustments to the base—any revenue loss is borne locally. The state, however, bears the costs of the credits paid to the local taxing units and of the circuit breaker, which is paid to the individual taxpayer.

The state-paid homestead credit, the oldest and the largest of the credits in Minnesota, is equal to 54% of the gross property tax, up to a relief maximum of $650. The credit for each property is computed and then deducted from the gross property tax liability before the bills are sent to the taxpayer and the state pays the deducted amount directly to the local taxing jurisdiction.

The homestead credit is available to all homesteads, including farm homesteads, but some program features result in net tax differentials between agricultural and nonagricultural properties, on the one hand, and between relatively high-valued homes and less expensive homes, on the other.

In addition to the obvious effects of this credit on the interclass distribution of the property tax, critics claim that its features have unintended implications for the growth of the public sector. Because the credit reduces the locally borne share of local service costs, it may have a stimulative effect on local own-source expenditures.

INDIRECT PROPERTY TAX RELIEF

In addition to direct tax relief, there are many indirect relief programs, as well. Direct relief, as discussed, (1) is keyed to the property tax, (2) reduces individual property tax bills in ways that generally redistribute the property tax load across classes, or even within classes, but (3) may or may not affect the total property tax levy. Indirect property tax relief, on the other hand, (1) works outside the property tax system, but (2) also may or may not affect the total property tax levy.

Indirect relief includes local nonproperty taxes, local nontax revenues, and intergovernmental aids; our interest in this chapter is in

intergovernmental aids. These may displace property tax revenue or they may, to some degree, augment property tax revenue (including a net stimulative effect), permitting an increase in the overall level of services. In any case, these aids can be viewed as property tax relief mechanisms in the sense that, for a given level of services financed with some contribution from these sources, the amount of revenue to be raised from the property tax is less than it would be otherwise.

The local government aids (LGA) program in Minnesota was created by the 1971 legislature and distributes general purpose lump-sum grants to aid local governments. Initially, the LGA program had two rather straightforward goals; (1) to provide substantial and permanent property tax relief by substituting state for local resources; and (2) to distribute general purpose aid monies more in accord with local need than was accomplished by the distribution of shared tax revenues established in 1967 (mostly distributed on a per capita or an origin basis).

Table 1 provides a simple example which illustrates how the 1983 aid payment for two cities was calculated initially. The formula equalizes for differences in fiscal capacity and effort between Aurora, which has a low-tax capacity ($2,517 of equalized assessed value per capita) and a high-tax effort (17.2 equalized mills) and Arden Hills, which has a higher tax capacity ($6,848 of equalized assessed value per capita) and a lower equalized millage rate (6.3). Aurora's LGA payment increases 8.6% while Arden Hill's increases by only 4.9% and is now less than Aurora's. Thus, the program is said to equalize fiscal disparities between the two cities.

THE MODEL

The approach used in this chapter provides an analytical description of the determinants of taxing decisions in Minnesota cities with populations of 2,500 or more. The hypothesis to be tested is that state-funded property tax relief programs paid to local governments stimulate additional own-source local spending (taxing) and, more important perhaps, that the form of aid is critical—credits are perceived as more stimulative than general purpose lump-sum grants because of the tax-price-reducing effects of the former, absent in the latter.

The dependent variable in the model is the 1983 net property tax levy per capita (NPTLPC) for each city. The net levy is the city's gross levy minus state-paid credits and represents local own-source property tax revenue. Variations across cities in net property tax levies per capita are assumed to be affected by differences in local property tax capacity, in the ability to export a portion of the local property tax, in intergovernmental revenues, and in socioeconomic variables which are proxies for the need and/or taste for publicly provided goods and services.

TABLE 1
Local Government Aids: Sample Calculations*

I. City of Aurora (over 2,500)

Data: Population = 2,793 — Eq. mill rate = 17.2
Prev. yr. aid = $147,775 — Prev. yr. aid per capita = $52.91
Eq. assessed value = $7,029,734 — Local revenue base = $230,741

Initial calculation: aid factor = $230,741 - ($7,029,734 x .010) = $160,444

Minimum: $147,775 + ($2,793 x 3) = $156,154

Maximum: $147,775 x 1.17 = $172,897

Final factor = $160,444 = final aid unless appropriation is insufficient, in which case this figure is proportionately reduced.

II. City of Arden Hills (over 2,500)

Data: Population = 7,450 — Eq. mill rate = 6.3
Prev. yr. aid = $152,301 — Prev. yr. aid per capita = $20.44
Eq. assessed value = $51,013,899 — Local revenue base = $614,320

Initial calculation: aid factor = $614,320 - ($51,013,899 x .010) = $104,181

Minimum: $152,301 - ($7,450 x 1) = $159,751

Maximum: $152,301 x 1.20 = $182,761

Final factor = $159,751 = final aid unless appropriation is insufficient, in which case the figure is proportionately reduced.

Source: House Research Information Brief, Prepared by Steve Hinze, House of Representatives, Department of Research, March, 1984.

*Note how the formula improves the equalization between Aurora, which has a low-tax capacity ($2,517 of equalized assessed value per capita) and a higher tax effort (17.2 equalized mills), and Arden Hills, which has a higher tax capacity ($6,848 of equalized assessed value per capita) and a lower equalized millage rate (6.3). Aurora's LGA payment increased 8.6% while Arden Hills' increased by only 4.9% and is now less than Aurora's.

TAX CAPACITY

Virtually all local tax revenues for Minnesota cities are attributable to the local property tax. Thus, the appropriate measure of local tax capacity is some estimate of the local property tax base.[2] Since the state department of revenue equalizes for assessment variations across cities, the measure of tax capacity used here is the per capita property tax revenue that each jurisdiction would generate with one equalized mill (OMEQPC). The a priori expectation is that greater local capacity will be associated with a higher net property tax levy per capita because it is politically more palatable to raise additional revenue when rates can be kept relatively low. The anticipated sign, therefore, is positive.

TAX EXPORTING

Exporting of local taxes results when the ultimate burden of a tax falls outside the locality imposing the tax. This can occur through shifting the tax either forward to users/purchasers or backward on factor inputs which

reside outside the taxing jurisdiction; it also can occur in the absence of tax shifting if the owner(s) of the taxed property reside outside the taxing jurisdiction as with shareholders of a multi-state corporation. The concern with exporting has focused on the equity and efficiency consequences of exporting, generally perceived to be adverse. Exporting taxes, per se, is not necessarily undesirable, inefficient, or inequitable, however, if there also are exported costs to be covered. But, whether or not cost exporting offsets tax exporting, greater ability to export taxes—everything else equal—is expected to be associated positively with per capita net taxes because less of the locally-voted taxes fall on local residents.

For Minnesota cities, the potential to export taxes is limited because virtually all local tax revenues come from the property tax. Thus, the composition of the local property tax base is a proxy for the ability of a jurisdiction to export taxes. The model includes a variable (COMBAS) which measures the share of a jurisdiction's property tax base in apartment, seasonal/recreational, and commercial/industrial uses. The expectation is that the greater the share of a jurisdiction's property tax base in these uses, the higher the local own-source property tax levies will be, for reasons already given.[3] The a priori assumption, therefore, is that the COMBAS coefficient will be positive.

INTERGOVERNMENTAL REVENUE

There is an abundance of theoretical and empirical economic literature analyzing the stimulative impact of intergovernmental aid on local spending levels.[4] Building on that literature, this chapter analyzes not only the extent to which own-source local expenditures may be stimulated by intergovernmental aid, but also examines what impact the form of aid has on local spending levels.

We include three aid variables:

1. LGAPC, the per capita amount of local government aids in 1983;
2. CREDPC, the per capita amount of state-paid property tax credits in 1983 (principally the homestead credit); and
3. FAIDPC, the per capita amount of federal aid in 1983.

Each of these would be expected to increase local spending from all sources, and the second and third would be expected to boost local spending from own sources (i.e., to stimulate local taxes). This expectation with regard to CREDPC is attributable to the tax-price-reducing feature discussed earlier, arising from the matching character of the aid (e.g. 54 cents state homestead credit per 46 cents of local property taxes). Similarly, many federal aid programs are matching in character, and so, too, may be expected to stimulate local taxing. A pure lump-sum grant, however, does not alter relative prices and, therefore, has only an income effect and would tend not

to stimulate own-source spending (taxing). But, the LGA program is not a pure lum-sum aid program because of its distribution formula—need was presumed to be positively associated with historic actual spending levels, so higher local taxes are rewarded with higher LGA amounts.

An allocation formula which contains a tax level or tax effort measure has been criticized because it may provide an incentive to tax more since a greater tax effort results in more aid. However, Maxwell argues that even if the distribution formula contains a tax effort measure, it may not provide an incentive to raise taxes because if all cities increased their effort proportionately, the distribution of funds would be unchanged.[5] On the other hand, Fisher presents a theoretical argument that a general lump-sum grant does have an expenditure-incentive effect introduced by the inclusion of tax effort in the allocation formula and concludes that, as the result of this expenditure-incentive effect, total public sector expenditures may be greater with the aid program than they would be without the program.[6]

In sum, we expect positive signs for all these aid variables.

SOCIOECONOMIC VARIABLES

The final set of factors thought to influence the level of own-source expenditures in local jurisdictions are variables which reflect differences in needs and preferences for public services. Objectively measuring service needs for each jurisdiction is a difficult task since service needs reflect political as well as economic decisions by the local electorate. To some extent, disparities across cities represent local choices about what goods and services should be provided publicly, how they should be produced, and so forth. The results of these choices reflect differences in preferences as well as basic service needs. What is required, therefore, is a set of variables that represent proxies for basic service needs and preferences.

Population is often used as a proxy for service needs. Critics argue, however, that is it too imprecise to reflect accurately differences in need that arise because of the unique characteristics of each city's population, e.g., the percentage of families below the poverty line or the percentage of population over age sixty-five. Table 2 indicates that in Minnesota, for example, local governments account for a larger share of expenditures on welfare, highways, police protection, and parks than do local governments nationally and regionally (except for Wisconsin). An aggregate measure of population, therefore, would not adequately reflect difference in need across cities which, in turn, influence the level of own-source local expenditures.

A number of socioeconomic variables were considered in an effort to reflect variations in city characteristics which might be expected to influence the level of local own-source expenditures. Specifically, variables tested included per capita income (PCINC), the percent of the jurisdiction's population age sixteen or younger (PYOUNG), the percent of the

TABLE 2
Local Share of Total State/Local Expenditures
by Function, 1981-82 (percent)

	Total	Education	Welfare	Highways	Police	Parks
MINNESOTA	65.2	70.6	45.2	56.6	88.2	58.6
Iowa	60.0	70.5	11.0	54.5	83.7	49.1
North Dakota	46.7	65.1	12.9	39.5	83.4	29.2
South Dakota	47.2	68.5	3.7	35.7	77.7	32.6
Wisconsin	66.0	72.6	21.8	63.6	90.9	58.6
U.S. Average	60.4	72.6	26.2	41.8	85.4	53.1

Source: Governmental Finances, 1981-82, Bureau of the Census, U.S. Department of Commerce, Washington D.C., 1983.

jurisdiction's population over age sixty-five (POLD), the percent of the population owning their own homes (POWNOC), the percent of families with incomes below the poverty line (PLOINC), and whether the city was in a metropolitan area or not (METLOC).

Determining the expected signs of each of these variables can be somewhat difficult. For example, Table 2 shows that local governments in Minnesota provide an above-average share of expenditures which benefit the young, the elderly, and low-income families. The expectation, therefore, would be that jurisdictions with a greater share of their populations either above sixty-five years of age or below the poverty line would have higher own-source local expenditures—i.e. PYOUNG, POLD, and PLOINC would be expected to have positive coefficients.

Alternatively, it might be argued that rural areas generally have relatively low per capita incomes and a high proportion of their population under age sixteen or over age sixty-five. In this situation, goods and services which might be provided through the public sector in a higher income jurisdiction may not be provided at all in the lower income rural area, or may be provided only on a volunteer basis. Thus, a higher value of PYOUNG, POLD or PLOINC may be associated with lower levels of own-source local expenditures—i.e., these variables would be expected to have negative coefficients.

The sign for the variable measuring the percentage of the population owning their own homes (POWNOC) is also difficult to predict a priori. On one hand, property owners may want higher levels of local services since the benefits of these services (e.g. police, fire protection, parks) generally accrue to residents, and may boost local property values. Thus, the higher the percentage of owner-occupants, the higher the expected level of own-source local expenditures. Alternatively, a lower percentage of owner-occupants would be associated with a higher level of renters. If renters do not perceive the full tax price that they pay for public goods, they may be more inclined to vote for more public goods and services. In fact, depending on market

conditions (vacancy rates, supply and demand for rental units, etc.) property owners may absorb a large share of local property taxes. As a result, renters may receive a higher value of public goods, vis-a-vis what they actually pay, and thus, be inclined to vote for higher levels of public services. In this case, a lower percentage of owner-occupants would be associated with a higher level of local own-source expenditures—i.e., the coefficient would be negative.

Per capita personal income (PCINC) is another variable often included in expenditure studies as a proxy for tastes or preferences. That is, if public goods are normal goods, the demand for those goods will increase as income goes up—i.e., the income variable should have a positive coefficient. However, income is also used as a measure of local fiscal capacity—the greater the per capita income, the easier it is to raise local taxes which, in the final analysis, are paid out of income. This argument also suggests that the coefficient for the income variable would be positive. Unfortunately, the per capita income variable and the measure of the property tax capacity (OMEQPC) are highly correlated at .773. Because PCINC is also highly correlated with other socioeconomic variables (see Table 3), and because the dominance of property taxes in local tax structures argues for a property-related capacity measure, it was not included in the model tested.

Whether a city is in an urban or rural area may also affect the level of own-source local expenditures. As mentioned above, rural areas may not provide as comprehensive a basket of public goods and services as do higher-income (tax) urban areas. Thus, one might expect that cities outside metropolitan areas would, on balance, have lower net property tax levies per capita so that a metropolitan location (METLOC) dummy variable indicating whether the city is in a metropolitan area (METLOC = 1.0) or not (METLOC = 0.0) would have a positive coefficient.

Finally, the degree of revenue diversification in a city will influence the level of net property taxes per capita. Since virtually all local tax revenue comes from the property tax, the measure used here is the percentage of own-source revenues that comes from taxes, or the property tax (including special assessments) share of own revenue (PTASOR), rather than user

TABLE 3
Correlation Coefficients for the Socioeconomic Variables

	PCINC	PYOUNG	PCTOLD	OWNOCC	PLOWINC	DUMMY
PCINC	1.000	.073	-.374	.245	.567	.584
PYOUNG	.073	1.000	-.603	.673	-.471	.371
PCTOLD	-.374	-.603	1.000	-.511	.601	-.612
OWNOCC	.245	.673	-.511	1.000	-.542	.282
PLOWINC	-.567	-.471	.601	-.542	1.000	-.561
DUMMY	.584	.371	-.612	.282	-.561	1.000

charges, interest earnings, etc. The assumption is that the greater the share of own-source revenues that comes from taxes, the higher the net property taxes per capita—PTASOR should have a positive coefficient.

EMPIRICAL FINDINGS

Table 3 presents correlation coefficients for the socioeconomic variables discussed above. The results suggest that there are strong interrelationships among the various socioeconomic variables, and between these variables and several others. While this may be expected, it complicates the empirical analysis because of the increased likelihood of multicollinearity. In fact, various combinations of socioeconomic variables were tested and the values of the coefficients and t-statistics changed—sometimes radically—indicating that collinearity was a problem. Thus, the results presented in Table 4 reflect the best outcome when the socioeconomic variables were included one at a time in the model.

The model tested was of the form

NPTLPC = f(OMEQPC, COMBAS, CREDPC, LGAPC, FAIDPC, PYOUNG, PTASOR)

Ordinary least-squares procedures were used to estimate the equation for the 174 cities in the sample. Data were obtained from the state department of revenue, the state auditor's office, and 1980 Census reports. The results are presented in Table 4.

The results in Table 4 substantiate all of our expectations since all of the variables (except PYOUNG) are significant at the 95% level or above and have the anticipated signs. First, state aid to local governments, like federal aid, does stimulate additional local own-source spending, and credits are about three times more stimulative than lump-sum transfers. In addition, jurisdictions with a greater property tax base per capita and/or a greater reliance on taxes as a source of local revenues, can be expected to have

TABLE 4
Regression Results

	COEFFICIENTS	T-STATISTICS
CONSTANT	-123.21	-6.71
OMEQPC	10.82	16.53
COMBAS	0.92	4.32
CREDPC	1.29	6.79
LGAPC	0.46	4.23
FEDAID	0.13	2.68
PYOUNG	0.44	0.99
PTASOR	0.60	4.14
ADJUSTED R^2	0.731	

greater net property tax levies per capita. The results also indicate that the greater the share of property in apartment, seasonal/recreational, and commercial/industrial uses, the more likely it is that property taxes will be shifted to nonresidents and the higher the net property tax levy per capita.

POLICY CONSIDERATIONS

Of particular importance for policy are the findings for the property tax relief/intergovernmental aid variables. Given the concern about accountability—the matching of the pain of taxing with the pleasure of spending—in Minnesota government finance, the findings about the stimulus to local taxing and spending of direct (CREDPC) and indirect (LGAPC) property tax relief are of interest. Both CREDPC and LGAPC were associated positively with net local property taxes per capita (NPTLPC), so the size of the local public sector is larger with these property tax relief programs than it would be without them. This stimulus to local spending tends to occur because these aid forms make increased local spending appear to be a relative bargain, since not all of the costs are borne locally. But the stimulus is decidedly stronger for property tax credits (CREDPC) than for local government aid (LGAPC)—the coefficient of CREDPC was nearly three times as large as that for LGAPC.

These findings are consistent with the concerns expressed that the property tax credits and the LGA program result in higher levels of local spending. While care must be taken in the use of cross-sectional findings, they seem to suggest that these principal relief measures actually encourage higher own-source local taxes and expenditures. In the case of LGA, this stimulative effect must be weighed against the equalizing benefits (reported elsewhere in this volume) in deciding on the overall desirability of the program. In the case of credits, the trade-off seems to be between greater local accountability (through reduced credits) and reducing homestead property taxes to encourage homeownership, although some restructuring of the credits may bring about a better balance between these policy objectives.

ENDNOTES

1. There were originally 180 such cities in the period studied; six were omitted because of incomplete data for some of the variables used in this analysis.

2. George Break, *Financing Government in a Federal System,* the Brookings Institution, Washington D.C., 1980, p. 150.

3. A similar variable, advanced for similar reasons, is used in John H. Bowman, "Tax Exportability, Intergovernmental Aid and School Finance Reform," *National Tax Journal,* 27 (June 1974): pp. 163-73.

4. Edward M. Gramlich, "Intergovernmental Grants: A Review of the Empirical Literature," in Wallace E. Oates, ed., *The Political Economy of Fiscal Federalism,* Lexington, Mass.: Lexington Books, pp. 219-39; and *Fiscal Federalism and Grants-in-Aid,* edited by Peter Mieszkowski and William H. Oakland, The Urban Institute, Washington, D.C., 1979.

5. Maxwell, "Tax Effort as a Determinant of Revenue Sharing Allotments," *Harvard Journal of Legislation,* Vol. 10, No. 4, December 1973.

6. Ronald Fisher, "A Theoretical View of Revenue Sharing Grants," *National Tax Journal,* June 1979, pp. 173-84.

16

The Impact of Existing Property Tax Relief Programs on Taxes Paid on Owner-occupied Housing in Minnesota

Thomas F. Stinson and Kathleen M. Vanderwall

In Minnesota, the property tax on owner-occupied housing is probably the most politically sensitive of all state and local taxes. It is also likely to be the most misunderstood. Public perceptions of the size of the average homestead property tax bill and of the need for additional tax relief are often based almost entirely on ancedotal evidence. But, in Minnesota, generalizing from a small sample may be misleading due to the wide variation in tax bills across the state.

This chapter presents evidence on the distribution of property taxes actually paid by Minnesota homeowners. The distribution of benefits from existing property tax relief programs is also shown. Estimates of the regressivity of Minnesota's property tax on owner-occupied housing are given in the final section.

Data for the study came from a stratified sample of more than 11,000 Minnesota state income tax returns for 1982 compiled by the Minnesota Department of Revenue. From this sample, joint distributions of income and property values were obtained for farm and nonfarm homeowners in each of nine separate regions of the state. Estimates of the impact of alternative tax relief programs were made using the Minnesota property tax simulation model, a computer routine which calculates individual tax bills given the market value of the home, the effective assessment rate, the local millage rate, and the provisions of any property tax relief program for which the homeowner qualifies.[1] Simulations in this paper are all based on property tax relief programs in place in Minnesota in August 1984, except where noted.

HOMEOWNER PROPERTY TAXES: 1982 EVIDENCE

For most Minnesotans residential property taxes are relatively low. Statewide, about 58% of all nonfarm homeowners paid less than $500 in property taxes in 1982 (ignoring any relief provided by the circuit breaker), and approximately 75% paid less than $750 (Table 1). Although property tax bills faced by individual homeowners varied significantly, only 16% of all Minnesota homeowners paid more than $1,000 in property taxes.

There were, however, substantial differences in average tax bills depending on where one lived. Housing in some areas is more expensive, reflecting either higher quality or the demand for housing in that area. Property tax bills also differ because local governments tax at different rates, due to differences in the demand for local government services, in the size of the local property tax base, and in methods employed to pay for government services. In addition, homeowners on Minnesota's Iron Range qualify for the taconite homestead credit, a property tax relief program applying only to homeowners in that region.

Together, these factors created important regional differences in property tax bills, differences especially noticeable when the taxes of the Twin Cities metropolitan area and out-state communities are compared. Seventy-seven percent of nonfarm households outside the metro area paid less than $500 in property taxes in 1982, while only 40% of metro area homeowners had tax bills that low. At the other end of the scale, 7% of out-state nonfarm homeowners paid more than $1,000 in property taxes in 1982, while 25% of all metro area homeowners paid taxes at that level and 10% had property tax bills of more than $1,500.[2]

TABLE 1
Estimated distribution of homestead property tax payments, by region, 1982

	Tax Payment			
	Less than $500	$500-750	$750-1,000	Greater than $1,000
	percent			
Minnesota	58	16	10	16
Metro	39	22	14	25
Out-state	77	10	6	7
Exhibit: Iron Range	91	4	3	2

Source: Original data provided by Minnesota Department of Revenue.

This geographical split in homestead property tax bills has led some to characterize Minnesota as having a two-tiered property tax system on owner-occupied housing, with those living outstate paying significantly lower amounts in property taxes per household than those in the metropolitan area. The two-tiered system greatly complicates attempts to target additional property tax relief to those with relatively high tax bills.

HOMESTEAD PROPERTY TAX RELIEF

The low homestead property tax bills faced by most Minnesotans are not due to a lucky combination of low millage rates and low-value property. Instead, they have occurred by design. State law provides homeowners with substantial amounts of property tax relief. There is a classified property tax system which allows all residential property to be taxed at a lower effective rate than business property, and which, by design, causes lower valued residential property to be taxed at a lower effective rate than more expensive housing. Owners of agricultural homesteads receive additional relief since farm homes are required to be assessed at lower rates than similarly valued homes in urban areas. The state also funds a homestead credit to be applied against the property tax bill of each owner-occupied homestead, and a circuit breaker which targets additional tax relief to those whose property taxes exceed certain specified percentages of their income. Finally, as in other states, homeowners who itemize deductions on their federal and state income tax returns can deduct property taxes paid from taxable income. The resulting decrease in federal and state income tax liability is an indirect form of property tax relief.

The combined impact of these programs on actual, out-of-pocket costs of property taxes to the homeowner is impressive. A Minneapolis resident with a home valued at $67,500 would pay property taxes of more than $2,000 annually, in the absence of any tax relief. But when relief programs currently available are applied (and taking into account the reduction in federal and state personal income tax liabilities), that homeowner only pays between $219 and $532, depending on household income. Although the state government funds much of that relief through the homestead credit and circuit breaker programs and through foregone personal income tax collections, the federal government (through foregone personal income taxes), and owners of other types of property (through the higher local property tax bills produced by the classification system) also contribute to residential property tax relief.

In this section, Minnesota's existing property tax relief program is described. First, estimates of property tax bills which would exist if there were no property tax relief are presented. Property tax relief programs are then added one at a time and the reduction in taxes by value of home and

household income noted. Results shown are based on average millage rates in Hennepin county suburbs, although the same general pattern of tax relief occurs throughout the state.

NO RELIEF

Residential property tax bills in the absence of any tax relief are shown for nine housing values in Table 2. All property is assumed to be assessed at a 40% rate, and local millage rates are reduced so that the same total revenue is raised by the property tax as is raised under the current system. No allowance is made for the deductibility of property taxes from federal and state taxable income, and savings due to the homestead credit and circuit breaker are ignored.

In the no-relief scenario, taxes ranged from $527 for homes under $20,000 in value to $2,825 for homes with estimated market values in excess of $100,000. Homestead property tax bills for any particular value of property are the same no matter what the owner's income. In this simulation the property tax bill depends only on the value of the property and the local millage rate.

DEDUCTIBILITY ONLY

Homeowners receive significant amounts of property tax relief in the form of reduced federal and state income tax liabilities. When property taxes are deducted from income subject to tax, income tax bills are reduced by an amount equal to the combined federal and state marginal income tax rate multiplied by the local property tax payment.

The pattern of benefits from this indirect property tax relief program is shown in Table 3. Those with higher-valued property receive larger dollar

TABLE 2
Estimated property tax levies
by estimated market value of homestead,
no property tax relief

Estimated Market Value	Estimated Tax Levy
Less than $30,000	$527
$30,000 - 49,999	1045
$50,000 - 54,999	1374
$55,000 - 59,999	1503
$60,000 - 64,999	1637
$65,000 - 69,999	1768
$70,000 - 84,999	2022
$85,000 - 99,999	2368
$100,000 or more	2825

TABLE 3
Tax relief provided through deductibility of local property taxes from income subject to state and federal income tax, no other relief programs assumed

($) Income Class	Homestead Value: Less than $30,000	$30,000-49,999	$50,000-54,999	$55,000-59,999	$60,000-64,999	$65,000-69,999	$70,000-84,999	$85,000-99,999	$100,000 or more
Less than 7,500	70	138	182	199	217	234	268	314	374
7,500 - 14,999	70	138	182	199	217	234	268	314	374
15,000 - 22,499	106	210	277	303	330	356	407	477	569
22,500 - 29,999	136	269	354	387	421	455	520	610	727
30,000 - 34,999	141	279	366	401	437	471	539	632	753
35,000 - 39,999	154	305	401	439	478	516	590	691	825
40,000 - 49,999	158	314	412	451	491	530	607	711	848
50,000 - 69,999	184	365	479	524	571	617	705	826	986
70,000 or more	230	457	600	657	715	772	883	1035	1234

amounts of relief. And, for any given home value, those with higher incomes receive proportionally more relief than do those with lower incomes. Homeowners with incomes over $70,000 per year owning a house valued at between $60,000 and $65,000, for example, would receive indirect property tax relief of nearly $715, while a family owning a similarly valued house with income of $7,500 or less would receive only $216 in tax relief. Put another way, the net property tax bill for the $70,000 household would be $922 while the poorer family would pay $1,420.

Discussions of property tax burdens on homeowners often overlook the tax relief provided by deductibility from federal and state taxable income. Doing so ignores substantial amounts of tax relief, particularly for upper-income homeowners.

CLASSIFICATION AND DEDUCTIBILITY

Under existing Minnesota law, homesteads are not assessed at a fixed rate. Instead, the first $30,000 of estimated market value is assessed at 17%, the second $30,000 at 19%, and all value above $60,000 at 30%.[3] When that set of assessment rates is introduced (replacing the single assessment rate of 40%), and millage rates are adjusted to maintain an equal yield for the property tax, homeowners gain additional property tax relief. In effect, owners of other types of property in the community are taxed at higher effective rates so that homestead property taxes can be reduced.

The additional tax relief provided by the classification system is shown in Table 4. Three forces are at work. First, the effective tax rate on all residential property declines since the assessment rate is decreased by more than 25%, while that on business property remains the same. This decrease in residential taxes is shared by all homeowners. In addition, Minnesota's

TABLE 4
Additional property tax relief provided by classification of homestead property*

($) Income Class	Homestead Value: Less than $30,000	$30,000-49,999	$50,000-54,999	$55,000-59,999	$60,000-64,999	$65,000-69,999	$70,000-84,999	$85,000-99,999	$100,000 or more
Less than 7,500	169	318	403	436	447	434	407	362	309
7,500 - 14,999	169	318	403	436	447	434	407	362	309
15,000 - 22,499	156	293	371	401	412	400	375	333	284
22,500 - 29,999	145	273	345	373	383	372	349	310	264
30,000 - 34,999	143	269	341	368	378	367	344	306	261
35,000 - 39,999	138	260	329	356	365	355	332	296	252
40,000 - 49,999	136	257	325	352	361	350	329	292	249
50,000 - 69,999	127	239	302	327	336	326	306	272	232
70,000 or more	110	207	261	283	290	282	264	235	201

*Assumes individuals deduct property taxes from state and federal taxable income.

three-stage homestead assessment rate schedule gives those owning less expensive homes additional relief. Finally, as actual property tax payments decrease, the amount of indirect tax relief provided by deductibility from the income tax declines. That is, upper-income individuals benefit less from a given amount of direct property tax relief because they have less to deduct. Therefore, they pay more in income taxes. The result, as shown in Table 4, is that dollar amounts of effective tax relief from the classified property tax decline as homeowners' income increases, holding housing values constant. On a percentage basis, the classified system provides greater relief to lower-valued homes.

HOMESTEAD CREDITS, CLASSIFICATION, AND DEDUCTIBILITY

The second source of direct property tax relief for Minnesota homeowners is the homestead credit. Under this program the state pays 54% of the property tax levy on the first $67,000 of assessed value, or $650—whichever is less—of each homeowner's property tax bill. Estimates of this credit's net impact on a system already containing classification and deductibility are shown in Table 5.

Again, the offsetting nature of the loss of indirect relief from deductibility is apparent. For any given homestead value, the additional relief offered by the credit declines as income increases. In addition, the $650 maximum for the credit causes it again to provide proportionately more relief for lower- and moderate-priced housing. Individuals whose homes have estimated market value in excess of $67,000 receive no tax relief beyond that available to those with homes valued at $67,000.

TABLE 5
Additional property tax relief provided by the Homestead Credit*

($) Income Class	Homestead Value: Less than $30,000	$30,000-49,999	$50,000-54,999	$55,000-59,999	$60,000-64,999	$65,000-69,999	$70,000-84,999	$85,000-99,999	$100,000 or more
Less than 7,500	156	318	426	469	525	564	564	564	564
7,500 - 14,999	156	318	426	469	525	564	564	564	564
15,000 - 22,499	143	293	392	432	484	519	519	519	519
22,500 - 29,999	133	272	365	401	450	483	483	483	483
30,000 - 34,999	132	269	360	396	444	477	477	477	477
35,000 - 39,999	127	259	348	383	429	460	460	460	460
40,000 - 49,999	126	256	344	378	424	455	455	455	455
50,000 - 69,999	117	238	320	352	394	423	423	423	423
70,000 or more	101	206	277	304	341	366	366	366	366

*Assumes the existing property classification system and that individuals deduct property taxes from state and federal taxable income.

TABLE 6
Additional property tax relief provided by the Circuit Breaker*

($) Income Class	Homestead Value: Less than $30,000	$30,000-49,999	$50,000-54,999	$55,000-59,999	$60,000-64,999	$65,000-69,999	$70,000-84,999	$85,000-99,999	$100,000 or more
Less than 7,500	52	154	222	249	285	358	412	412	412
7,500 - 14,999	0	83	143	167	199	266	412	412	412
15,000 - 22,499	0	1	44	61	83	137	312	379	379
22,500 - 29,999	0	0	0	0	0	6	137	297	297
30,000 - 34,999	0	0	0	0	0	0	65	73	73
35,000 - 39,999	0	0	0	0	0	0	0	0	0
40,000 - 49,999	0	0	0	0	0	0	0	0	0
50,000 - 69,999	0	0	0	0	0	0	0	0	0
70,000 or more	0	0	0	0	0	0	0	0	0

*Assumes the existing homestead credit and classification system are already in place, and that individuals deduct property taxes from state and federal taxable income.

THE EXISTING SYSTEM

Minnesota's existing system of property tax relief can be simulated by adding the circuit breaker to a system containing homestead credits, classification, and deductibility. The incremental relief added by the circuit breaker is shown in Table 6.

Consistent with its goal of targeting relief to those lower-income individuals whose property tax bills are an abnormally high proportion of income, the circuit breaker provides the greatest relief for low-income individuals with relatively expensive homes. Families with incomes under

$7,500 and houses valued at more than $70,000 receive the largest dollar amount of relief. No family with income over $35,000 receives any relief by specific design of the program.

Estimated out-of-pocket costs of property taxes, after all forms of tax relief are taken into account, are shown in Table 7. Comparing these results to the estimates in Table 2 of tax bills in the absence of any property tax relief provides a measure of the amount of local property tax relief currently provided to Minnesota residents.

Despite the availability of a circuit breaker, homestead credits, and a classified assessment system, the deductibility of local property taxes from federal and state taxable income continues to have perverse effects on tax bills. For example, out-of-pocket property tax costs for a family making $15,000 to $22,500 per year on a $50,000 home are identical to those on a $60,000 home for a family whose income exceeds $70,000. Also, for any housing value chosen, households with incomes between $22,500 and $35,000 appear to face the highest net property tax bills.

For all combinations of income and housing value, those whose homes are classified as agricultural homesteads pay less tax than those with the same value home and facing the same millage rate, but without the agricultural homestead designation (Table 8). The lower assessment rates are particularly beneficial to upper-income homeowners with expensive homes. Farmers whose homes are valued at less than $50,000 were estimated to receive a tax reduction of $44 or less attributable to the agricultural homestead classification. However, those whose homes are valued over $85,000 and who qualify for agricultural homestead status receive between $135 and $591 (depending on their income) of property tax relief in addition to that available to urban homeowners.

TABLE 7
Estimated out-of-pocket costs of the property tax after deducting relief provided by the circuit breaker, homestead credit, property classification system, and the deductibility of property taxes from state and federal taxable income

	Homestead Value								
($) Income Class	Less than $30,000	$30,000-49,999	$50,000-54,999	$55,000-59,999	$60,000-64,999	$65,000-69,999	$70,000-84,999	$85,000-99,999	$100,000 or more
Less than 7,500	81	117	141	151	163	178	371	717	1167
7,500 - 14,999	133	188	220	232	249	269	371	717	1167
15,000 - 22,499	122	248	291	307	329	356	409	660	1074
22,500 - 29,999	114	232	311	342	383	453	533	669	1054
30,000 - 34,999	112	229	307	338	378	453	597	881	1261
35,000 - 39,999	108	221	296	326	365	437	639	922	1289
40,000 - 49,999	107	218	293	322	361	432	632	911	1274
50,000 - 69,999	100	203	273	300	336	402	588	847	1185
70,000 or more	86	176	236	259	291	348	508	733	1025

TABLE 8
Additional property tax relief provided to dwellings classified as agricultural homesteads

($) Income Class	Homestead Value: Less than $30,000	$30,000-49,999	$50,000-54,999	$55,000-59,999	$60,000-64,999	$65,000-69,999	$70,000-84,999	$85,000-99,999	$100,000 or more
Less than 7,500	5	12	18	20	23	28	45	348	592
7,500 - 14,999	20	16	23	26	31	37	50	257	589
15,000 - 22,499	19	44	42	36	42	51	68	135	478
22,500 - 29,999	18	41	60	67	79	97	88	146	350
30,000 - 34,999	17	40	57	64	76	93	126	192	486
35,000 - 39,999	16	38	55	62	73	90	155	254	381
40,000 - 49,999	16	37	54	61	72	88	152	248	372
50,000 - 69,999	15	35	51	57	67	83	143	233	351
70,000 or more	12	29	42	47	56	68	118	193	290

*Assumes the existing homestead credit and circuit breaker are in place, and that individuals deduct property taxes from state and federal taxable income.

THE REGRESSIVITY OF PROPERTY TAXES ON OWNER-OCCUPIED HOUSING

The regressivity of the property tax on owner-occupied housing has always been of concern to policymakers. Cautions by economists that the property tax should be seen as a tax on wealth, not on income, and that an appropriate measure of regressivity would include all state-local taxes as well as all benefits from state-local spending have done little to diminish the public's interest in the relationship between residential property taxes and income.

This section presents evidence on the regressivity of residential property taxes in Minnesota. A systemwide measure developed by Suits is used.[4] Since the regressivity or progressivity of the property tax can vary substantially depending on what segment of the income distribution one measures, a system-wide measure is essential. In addition, this index has a convenient graphical representation which provides additional information on the relationship between taxes paid and income.

Suits' index, in simplified form, takes into account the number of taxpayers in each income group as well as whether members of that group pay proportionally more or less of their income in taxes than is the state norm. Index values range from -1 (fully regressive—the lowest-income individual pays all taxes) to +1 (fully progressive—the highest-income individual pays all taxes). A proportional tax will have an index of 0.

The index is also scale invariant. That is, holding all incomes constant, an equal proportional increase in everyone's tax bill will not change the index value. Consequently, it gives no information about the overall level of taxation in the economy, only about how taxes are distributed across income.

Scale invariant indexes are not uniformly accepted as good measures of tax progressivity. Some criticize them because they do not automatically measure the change in the income distribution produced by the tax system.[5] For purposes of this paper though, this concern is minor. Property tax bills in Minnesota are unlikely to have a significant impact on the distribution of income in the state. Instead, what citizens and policymakers are interested in is whether lower-income households are paying proportionately more of their income in property taxes than are the wealthy.

Data similar to that in Tables 2-8 combined with joint distribution by region of housing value provided by the Minnesota Department of Revenue were used to estimate the regressivity index. The same path is followed as in the earlier property tax relief estimates. We begin by estimating the regressivity of the property tax on owner-occupied housing in the absence of any property tax relief. Existing relief programs are then sequentially introduced showing the impact of each.

Estimates of the regressivity of the property tax on owner-occupied housing in Minnesota under alternative property tax relief programs are illustrated in Figures 1-5. With no property tax relief, including not recognizing the deductibility of property taxes against income in computing federal and state personal income taxes, the index stands at -.31, a moderately regressive tax.

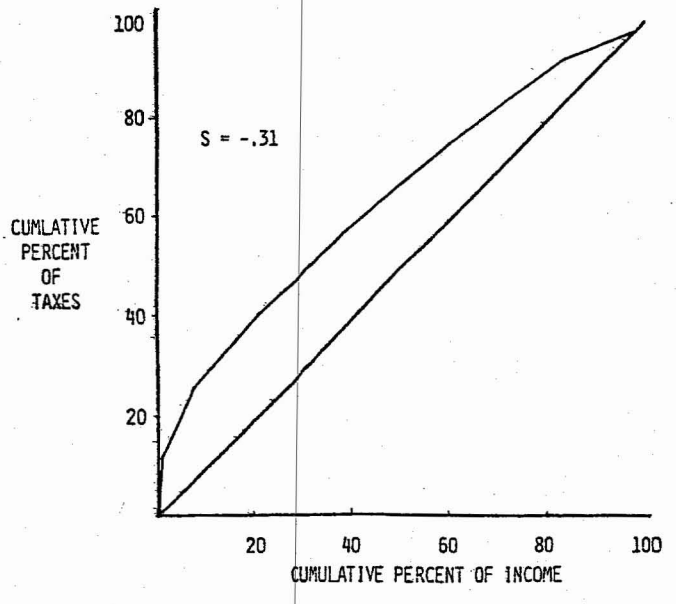


FIGURE 1: LORENZ CURVE FOR PROPERTY TAX ON OWNER OCCUPIED DWELLINGS IN MINNESOTA, NO RELIEF.

When deductibility is allowed, the index drops to -.37 indicating greater regressivity. This reflects the fact that a $1,000 tax deduction is worth more to higher-income taxpayers than to those with lower marginal income tax rates. Minnesota would be more than one-third of the way from a proportional tax toward a completely regressive tax if all direct property tax relief programs were eliminated.

When the existing classified property tax system is introduced, the system becomes less regressive, with the index dropping to -.35. Minnesota's classification system lowers taxes proportionately more on inexpensive homes, and individuals with lower incomes tend to have lower-valued homes. As a result the proportion of taxes paid by lower-income families declines.

The addition of the homestead credit to the property tax relief package cuts the regressivity of the system even more, raising the index to -.28. In effect, the differential assessment rates for owner-occupied homestead property and the homestead credit cancel the additional regressivity added to Minnesota's property tax system by the deductibility of property taxes on federal and state income tax returns. Although the actual tax bill paid by individuals in each income group is less following introduction of federal and state deductibility, differential assessment rates for owner-occupied dwellings, and the homestead credit, the shares of the total tax bill paid by each income group are nearly identical with what existed under the no-relief example.

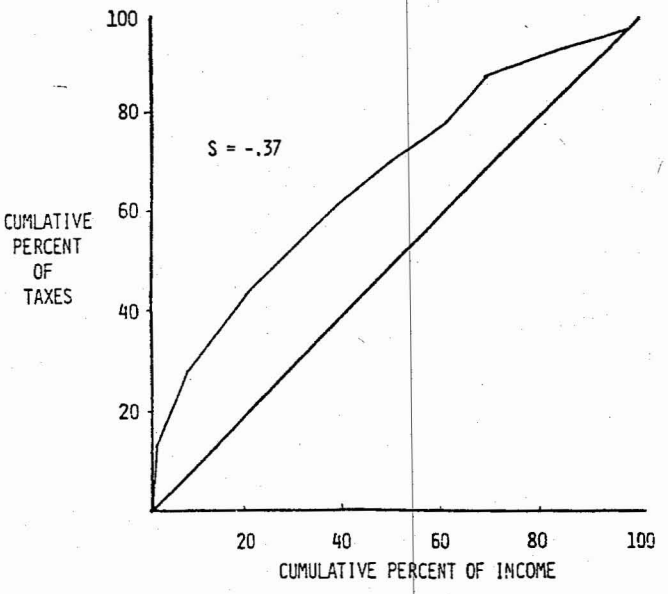


FIGURE 2: LORENZ CURVE FOR PROPERTY TAX ON OWNER OCCUPIED DWELLINGS IN MINNESOTA, FEDERAL AND STATE DEDUCTIBILITY ONLY.

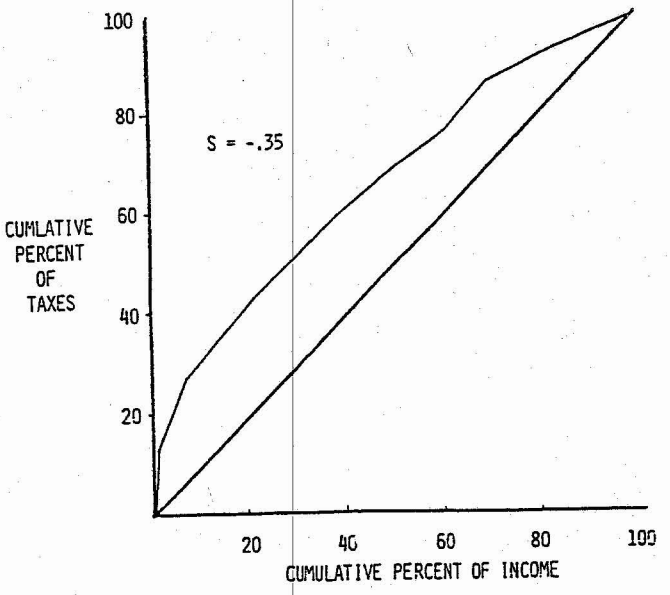


FIGURE 3: LORENZ CURVE FOR PROPERTY TAX ON OWNER OCCUPIED DWELLINGS IN MINNESOTA, FEDERAL AND STATE DEDUCTIBILITY AND THE EXISTING PROPERTY CLASSIFICATION SYSTEM.

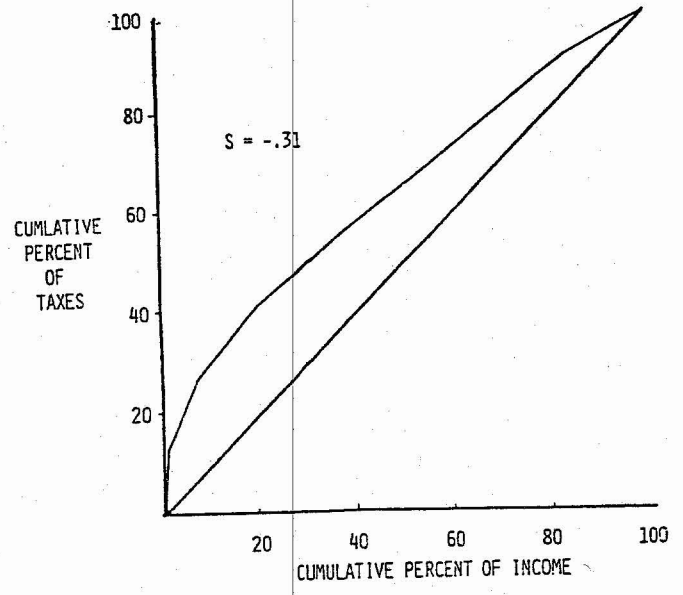


FIGURE 4: LORENZ CURVE FOR PROPERTY TAX ON OWNER OCCUPIED DWELLINGS IN MINNESOTA, FEDERAL AND STATE DEDUCTIBILITY, EXISTING CLASSIFICATION, AND HOMESTEAD CREDIT.

When Minnesota's circuit breaker program is added—producing the package of tax relief which exists in the state today—the picture changes dramatically (Figure 5). Since the circuit breaker targets relief toward those who have relatively low incomes and high property taxes, one would expect that it would further reduce the regressivity of the system. The amount of change is substantial, increasing the index to -.20. Minnesota's property tax on owner-occupied dwellings when all forms of property tax relief are included, can probably be best described as mildly regressive. The Minnesota tax relief programs currently in place have reduced the Suits index of regressivity to about one-half of what it would have been in the absence of any direct tax relief programs.

The regressivity measures describe the distribution of the tax burden across all income classes. Figures 1-5, however, illustrate that the degree of regressivity is not uniform across individual income groups. By comparing the slope of the Lorenz Curve at any point with that of the 45 °line one can see whether a particular income class is paying proportionately more or less of their income in taxes than the statewide norm. Slopes greater than 1 ° indicate a higher ratio of taxes to income while slopes less than 1 ° indicate a lower ratio.

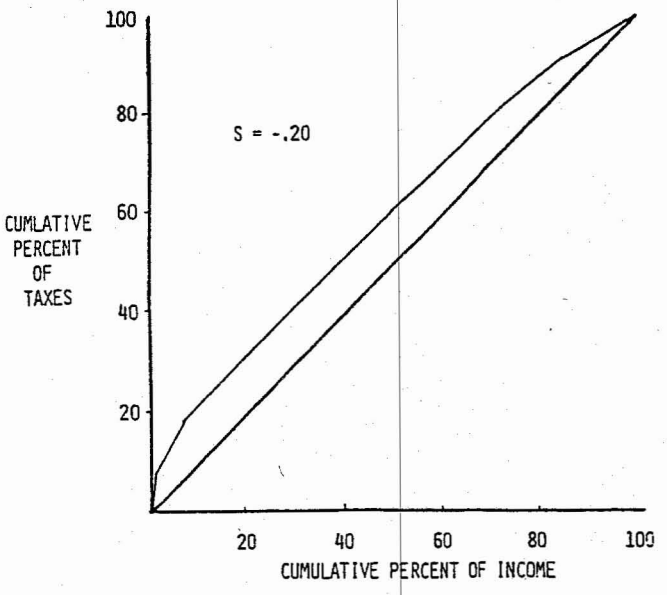


FIGURE 5: LORENZ CURVE FOR PROPERTY TAX ON OWNER OCCUPIED DWELLINGS IN MINNESOTA, EXISTING SYSTEM OF PROPERTY TAX RELIEF.

On average, low-income homeowners pay a much greater percentage of their income in property taxes and high-income homeowners—those making more than $70,000 a year—much less than the state average. The vast majority of homeowners, however, appear to pay approximately the same proportion of their income in property taxes as the statewide average. These results suggest that Minnesota's property tax system is roughly proportional over most income classes and that limited state resources may best be spent targeting additional relief to low-income homeowners rather than trying to provide broad relief to all homeowners.

ACKNOWLEDGEMENT

The authors wish to thank Lance Staricha, Minnesota Department of Revenue for his assistance in providing data. Steve Hinze, Minnesota House Research, also provided data essential to the project. Glenn Nelson and members of the Minnesota Development Policy Workshop provided useful comments on preliminary versions of this report.

ENDNOTES

1. Additional detail on the sample or the simulation model is available on request from the authors.

2. Some of those paying the higher level of taxes would have qualified for additional tax relief under the circuit breaker, however.

3. Agricultural homesteads are assessed at 14% of the first $60,000 and 19% of all value above $60,000.

4. The index is described in more detail in Daniel Suits, "Measurement of Tax Progressivity." *Am. Econ. Rev.,* Sept., 1977, pp. 747-752.

5. See for example, Donald Kiefer, "Distributional Tax Progressivity Indexes." *National Tax Journal,* Dec., 1984, pp. 497-513.

17
An Income-wealth Alternative to the Property Tax Circuit Breaker

Glenn Nelson and Fiona Sigalla

Many Minnesotans believe their property tax system is much too complex and needs reform. The results of this study add further weight to the considerable evidence supporting the critics' position. We propose a new property tax relief mechanism which is simple and which recognizes equity and efficiency as the central issues.

The analysis concentrates on the incremental changes in an individual homeowner's taxes associated with changes in the tax rate in a community.[1] These "tax prices" represent the cost to homeowners of additional units of publicly provided goods and services. The results are most relevant to efficiency questions but are related to equity. The study by Stinson and Vanderwall in this volume, using the identical data base and modeling technique, focuses on the equity issues.

If no property tax relief were granted, property taxes would vary in direct proportion to the value of property. Without relief, the changes in tax bills due to changes in the tax rate would also be proportional to the value of property. These relationships would hold regardless of the income of the property owner.

The political consensus in Minnesota favors an extensive system of property tax relief measures to alter this proportional relationship. Some of the relief measures create a progressive property tax system by the treatment of property wealth: that is, citizens who have less property pay less than a proportionate share of property taxes. Other relief measures incorporate income as a measure of ability to pay and of demand for public services. These relief measures give lower-income citizens tax relief so that they pay less than proportional property taxes.

The first section of this paper discusses a desirable pattern of tax relief, taking into account the efficiency and equity of the tax burden. The second section explains the assumptions used in calculating tax prices. The third section demonstrates that current tax prices are neither efficient nor equitable. The fourth section examines the causes of current problems, and the final section recommends an alternative.

THE DESIRABLE PATTERN OF TAX RELIEF

Under an equitable property tax system, one household should not pay lower taxes than another household which has less property and a lower income. This analysis asserts, in addition, that the equity standard implies that the change in the tax burden of a household due to a change in tax rates should not be less burdensome than the change in the tax burden of another, less wealthy household

The change in the tax burden of a household associated with a change in publicly provided goods and services is the "tax price." The tax prices of households depend upon household characteristics as well as on public policies such as tax laws and intergovernmental aids. In general, households seek to acquire more of a lower-priced good or service if other factors such as income are held constant.

Households make decisions among alternative goods and services based upon perceived prices which may differ from actual prices. The need to supply public goods and services through group decision processes where multiple items are included in a single governmental budget makes difficult the determination of tax prices for individual public goods and services. The complexity of the Minnesota property tax system further obscures tax prices. A simpler tax system would lead to greater efficiency by enabling households to make better informed choices between public and private goods and services.

Most public sector products are equally available to all citizens. People do not, however, have identical demands for public goods and services. In particular, empirical studies reveal that wealthier people have higher demands for public goods and services than poorer people.[2]

In cases where the same quality must be available to all, but the demands of individuals differ, efficiency requires that individual tax prices be positively related to individual demands.[3] The resulting combination of tax burdens and public services creates incentives for voters to elect politicians who the citizens believe will reduce the size of the public sector when it becomes too large and to expand when it becomes too small. Thus, the efficiency criterion leads to the conclusion that wealthier people should generally pay tax prices no lower than poor people, with exceptions in cases where demands are inversely related to wealth.

The equity and efficiency criteria lead to the same conclusion with respect to the pattern of tax prices; wealthier people should generally pay tax prices at least as high as those of poorer people. If the criteria are satisfied in practice, tax prices would likely increase somewhat as income or wealth increases. Figure 1 illustrates the pattern of relief from property taxes which satisfies the criteria. The plan gives more relief, measured as a percentage of the tax to be paid by the state, to those who are poorest and gives the least relief to those who are wealthiest.

FIGURE 1

Illustrative Pattern of Desired Relief

Relief as a Percent of Pre–Relief Tax Prices

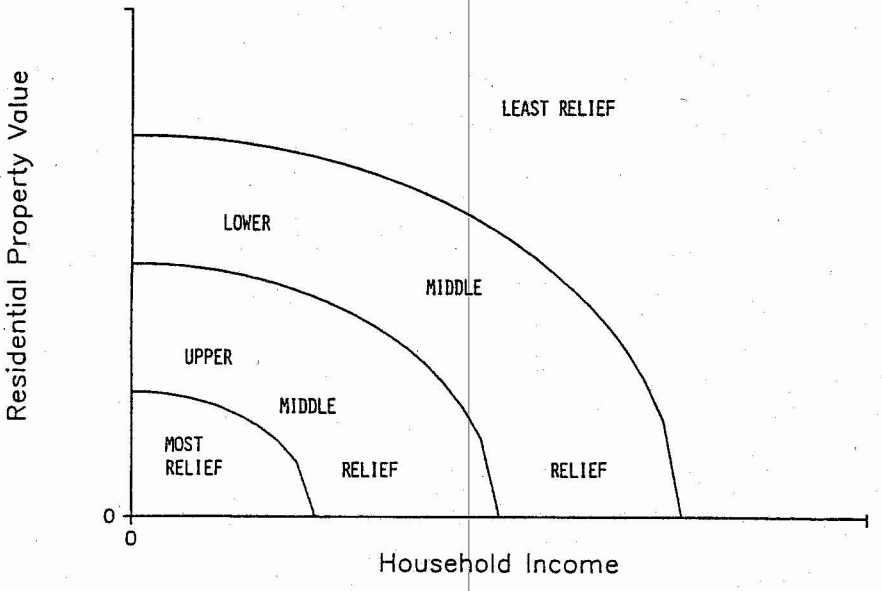


FIGURE 2

Illustrative Pattern of Desired Tax Prices

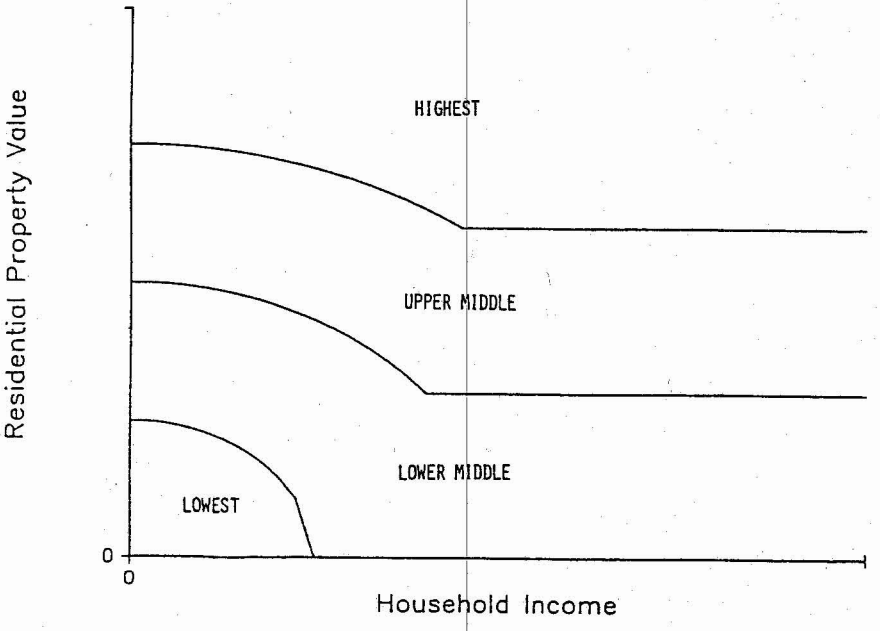


Figure 2, which plots actual tax prices rather than percentage shifts in tax prices as in Figure 1, shows the effects of the pattern of desirable relief on the pattern of tax prices. An illustration of the pattern of tax prices without relief would consist of a series of horizontal lines, because taxes would rise in proportion to property value and income would have no effect. The system of relief lowers tax prices for households with less income and lower property values (closer to the origin). This creates curvature in the lines separating the ranges of tax prices. The pattern in Figure 2 is the standard which this study uses in evaluating the tax prices produced by the Minnesota property tax system.

ASSUMPTIONS UNDERLYING THE CALCULATION OF TAX PRICES

The calculation of tax price used in this study assumes that increments in public services are decided by communities and are financed by increasing the tax rate applied to local property in accordance with current laws. Tax price suggests which households are likely to support or oppose increments in public services because tax price reveals the cost to the household of such community decisions. As noted earlier, differences between actual and perceived tax prices may be important, especially in the short run as citizens learn through experience how changes in tax rates affect them. This analysis deals only with actual tax prices.

BENEFITS AND TAX BURDENS ASSOCIATED WITH PUBLIC SERVICES

The measurement of public sector outputs is difficult. This study, like most others, assumes that public expenditures are a reasonable proxy for public sector outputs. The analysis further assumes that benefits from the services financed by the property tax system in a community are distributed equally among the households in the community. An alternative assumption would be that benefits are distributed in proportion to property owned. The goods and services supported by property tax levies are directed primarily to citizens rather than to property owners. Because some services such as fire and police protection serve property interests as well as personal needs, the assumption is not wholly satisfactory. In particular, the analysis probably underestimates the benefits to owners of more expensive homes and overestimates the benefits to owners of less expensive homes. The results, therefore, probably overstate the tax prices of owners of more expensive homes and understate the tax prices of owners of less expensive homes.

The analysis assumes that homeowners bear the burden of the property tax on their dwellings. Because the study is concerned with relative tax

burdens rather than with absolute levels, an alternative assumption of tax incidence which adjusts all household property tax burdens by the same proportion would not affect the conclusion.

This study does not attempt to account for changes in home values that result from changes in the tax rate in the local community; that is, capitalization is not considered. These feedback effects from the initial change in tax and public service to the value of the house—and thus to the tax burden—may lessen differentials in tax prices among households.

Another major assumption underlying the calculation of tax price is that local communities have the flexibility to change the level of public revenues and expenditures. When a community cannot change its local property tax levies due to state laws, the tax price is undefined for no opportunity exists to change the relative proportion of private and public purchases. This phenomenon introduces major distortions in tax prices with important implications for public policy which are not captured by this analysis.

HOUSEHOLDS AND COMMUNITIES IN THE STUDY

This study applies to households in owner-occupied residential dwellings and not to other owners or renters of property. The existence of property other than owner-occupied residential dwellings affects tax burdens and tax prices of homeowners; these impacts are included.

Farm households present unique problems because household and business activities mingle and because data on the value of farm dwellings are unavailable. The results for farm households apply to the residential dwelling plus one acre of land. The analysis does not deal with the full scope of agricultural homesteads or with the total burden on farm businesses. It assumes that farm dwellings have the same distribution of values as rural nonfarm dwellings occupied by households with the same income.

The study partitions the households of the state into thirteen groups: (1) Minneapolis; (2) Saint Paul; (3) Duluth, Mankato, Moorhead, Rochester, and Saint Cloud; (4) Hennepin County (excluding Minneapolis); (5) Anoka, Dakota, Ramsey (excluding Saint Paul) and Washington counties; (6) Iron Range cities; (7) Iron Range open-country; (8) All cities not in groups 1 through 6; (9) Farms in northeast counties; (10) Farms in northwest counties; (11) Farms in southwest counties; (12) Farms in central counties; and (13) Rest of the state. The groups of counties outside of the metropolitan area reflect agricultural criteria because one major purpose in delineating regions is to partition farm data. The nature of the farm enterprise affects important variables, for example, variation in income and the ratio of land to income. The northeast is primarily nonagricultural open-country; the northwest has large cash grain farms; the southwest consists of mixed grain and livestock farms; and the central area is the major dairy region.

The definition of the community within which tax and spending decisions are made has a significant impact on tax prices. Table 1 presents the data underlying tax prices by region. This study uses the groupings shown in the top portion of Table 1. Residents of outstate Minnesota on farms, in rural areas, and in the smaller cities—except for the Iron Range which has unique taconite tax credits for cities and open-country—are grouped in large county aggregations; that, is they are assumed to be part of the same community for taxing purposes. The primary effect on the findings is to raise the tax prices of farmers and to lower the tax prices of homeowners in the smaller cities. The definition of the community would ideally reflect the nature of the policy issue under consideration. These groupings reflect a broader range of public policy choices than the alternative of treating farms, other rural residents, and smaller city residents separately.

A computer simulation model facilitated computations. The model takes as input the income and residential property value of a household in a particular location and computes the resulting property tax burden. The model includes classification rules, the homestead credit, taconite credits, agricultural homestead credits, the circuit breaker, and the effects of deductibility of property taxes from state and federal taxable income. The simulation model is available from the authors on request.

CURRENT TAX PRICES

Figures 3 through 15 illustrate current tax prices for thirteen groups of Minnesota homeowners. The patterns in the figures are rectangular rather than smooth curves because the analysis was performed on nine income groups and nine property groups, for a total of eighty-one tax prices per figure. The results for residents of farms, rural nonfarm households, and smaller cities in the northeast region are so similar to those in the central region that the results for the northeast are not presented. Similarly, the results for these household groups in the northwest region are so similar to those in the southwest region that the results for the northwest are omitted. Figure 2 provides the norm against which the actual tax prices should be compared. If the norm were satisfied, the shading would show bands that would run from the upper left to the lower right of each figure; the bands would become darker farther from the origin.

The results are disturbing. The figures reveal patterns which defy easy characterization, although perhaps "crazy-quilt" would be appropriate. The uneven and incongruent patterns are consistent with a citizenry which is confused and dismayed by the property tax system. The instances of rapid transition from light to dark shading in most of the figures indicate large differences in tax prices for households with small differences in incomes or property values. In every type of community a considerable number of

TABLE 1
Population and Assessed Value Estimates and Marginal Tax Burdens by Region

Region	Population	Assessed Value	Marginal Tax Burden[a]
	(thousand)	(million)	(mills)
Minneapolis	365	$ 2,809	1.30
Saint Paul	267	1,756	1.50
Duluth, Mankato, Moorhead, Rochester, and Saint Cloud	250	1,054	2.46
Hennepin county (excluding Minneapolis)	582	5,295	1.10
Anoka, Dakota, Ramsey, and Washington counties (excluding Saint Paul)	716	4,584	1.56
Iron Range cities	97	336	2.11
Iron Range open-country	95	586	1.75
Northeast counties excluding Duluth and Iron Range	216	1,159	1.86
Northwest counties excluding Moorhead	162	1,304	1.25
Southwest counties excluding Mankato	523	4,037	1.08
Central counties excluding Rochester and Saint Cloud	841	4,690	1.79
Minnesota total[b]	4133	28,361	1.46
---------- alternative disaggregation ----------			
Twin Cities and suburban counties (see detail above)	1930	14,443	1.34
Duluth, Mankato, Moorhead, Rochester, and Saint Cloud	250	1,054	2.46
Iron Range (see detail above)	192	922	2.08
All cities not included above	919	3,752	2.44
Farms in northeast counties	28	179	1.54
Farms in northwest counties	35	936	0.38
Farms in southwest counties	100	3,354	0.30
Farms in central counties	122	1,692	0.72
Rest of state	559	2,034	2.75

Sources: Population estimates as of April 1, 1982, from Office of State Demographer, *The Minnesota Population Estimates, 1982.* Minnesota State Planning Agency, and from estimates by authors in the case of farms and iron range: total assessed value for assessment year 1983 and payable 1984 from Minnesota Department of Revenue.

[a]The increase in the mill rate required to increase public sector expenditures by $10 per person; equals ten times column one divided by column two.

[b]The total does not equal the sum of the detail in all cases due to a statistical discrepancy among available sources.

FIGURE 3

TAX PRICES FOR HOMEOWNERS
(Cities of Duluth, Mankato, Moorhead, Rochester, & St. Cloud)

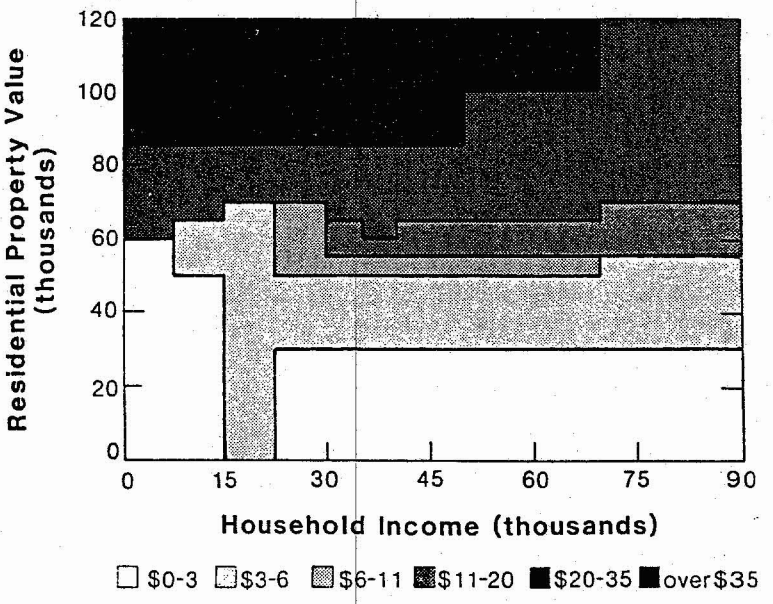


FIGURE 4

TAX PRICES FOR HOMEOWNERS
(Minneapolis)

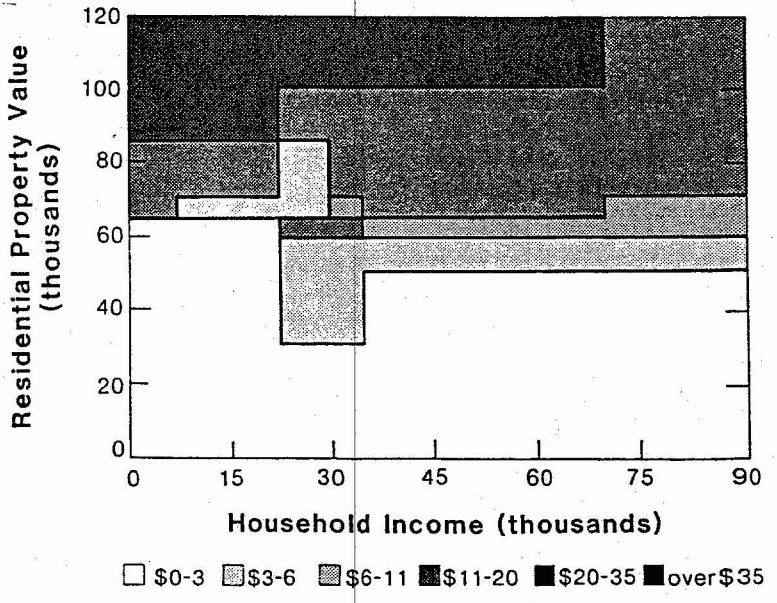


FIGURE 5
TAX PRICES FOR HOMEOWNERS
(St. Paul)

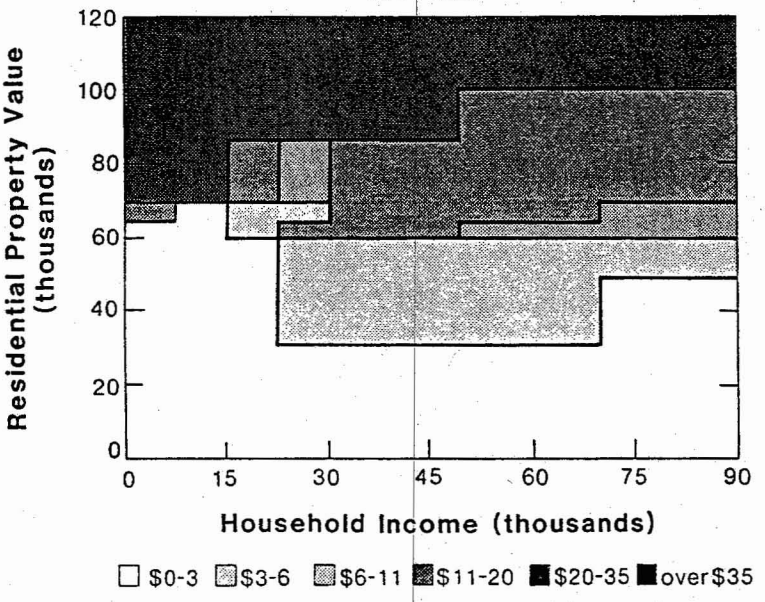


FIGURE 6
TAX PRICES FOR HOMEOWNERS
(Hennepin County Excluding Minneapolis)

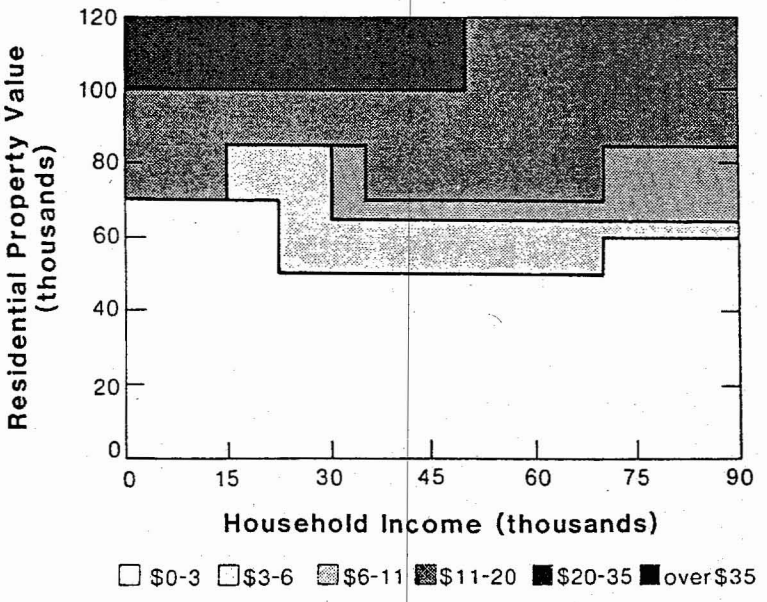


FIGURE 7

TAX PRICES FOR HOMEOWNERS
(Anoka, Dakota, Ramsey, & Washington Counties Excluding St. Paul)

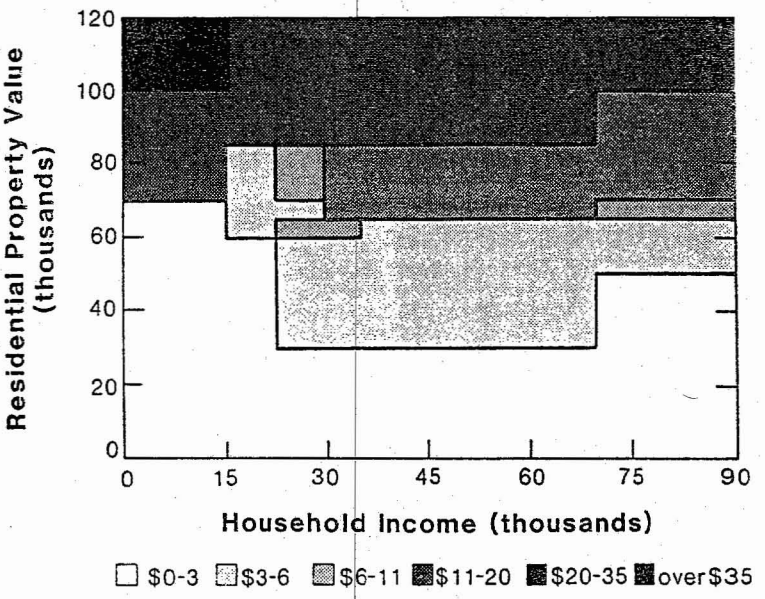


FIGURE 8

TAX PRICES FOR HOMEOWNERS
(Iron Range Cities)

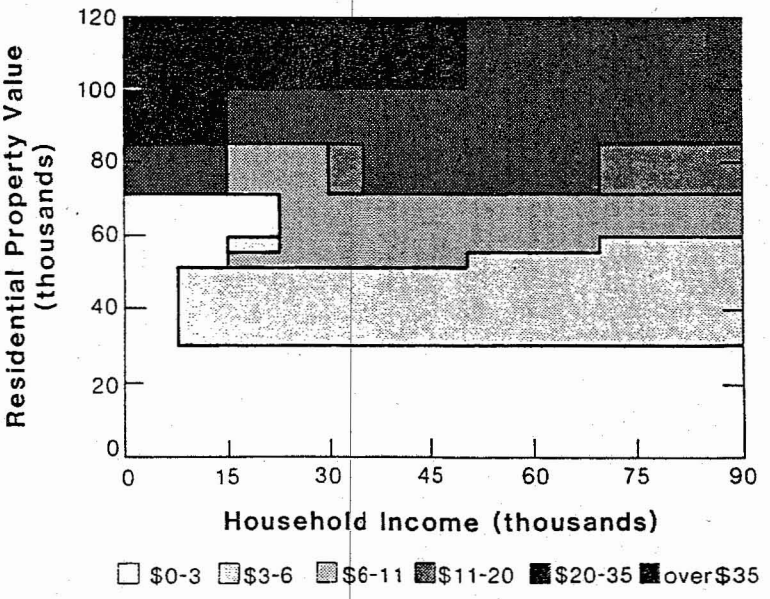


FIGURE 9

TAX PRICES FOR HOMEOWNERS
(Rural Residents of the Iron Range)

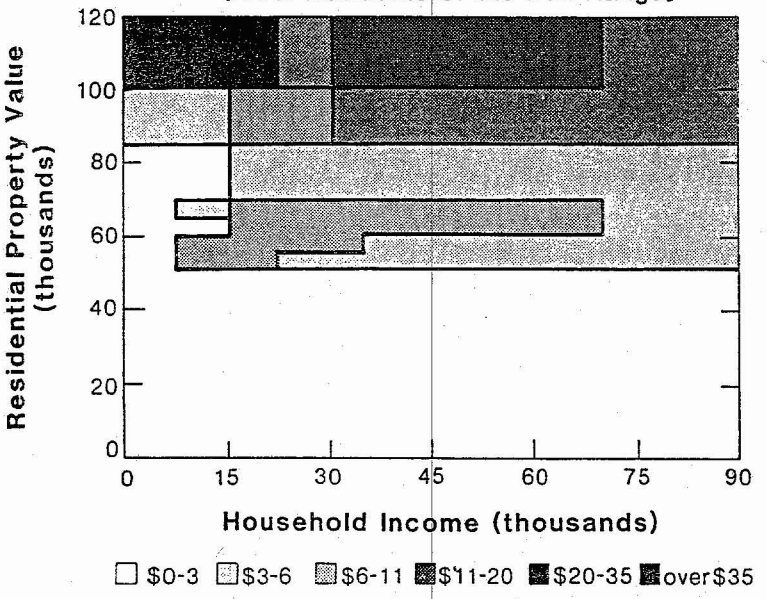


FIGURE 10

TAX PRICES FOR HOMEOWNERS
(Cities of the Southwest Region Excluding Mankato)



FIGURE 11

TAX PRICES FOR HOMEOWNERS

(Cities of the Central Region Excluding Rochester & St. Cloud)

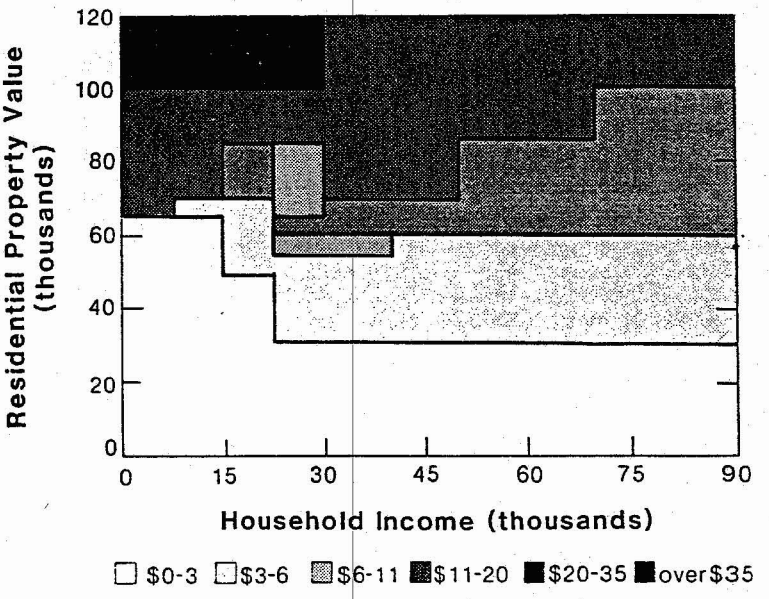


FIGURE 12

TAX PRICES FOR HOMEOWNERS

(Rural Nonfarm Residents of the Southwest Region)

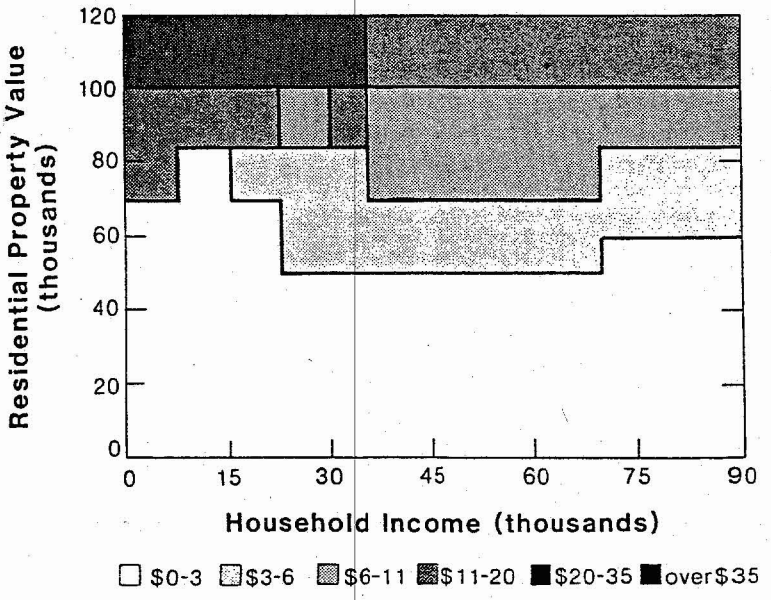


FIGURE 13

TAX PRICES FOR HOMEOWNERS
(Rural Nonfarm Residents of the Central Region)

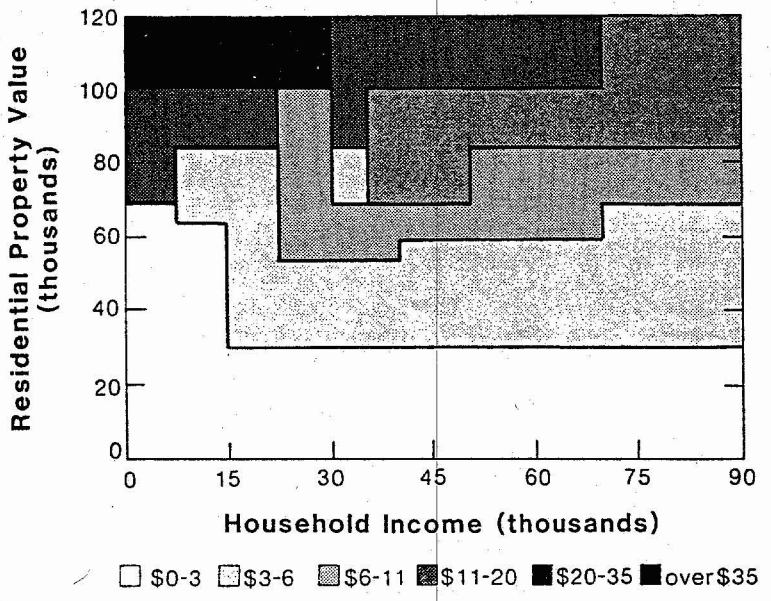


FIGURE 14

TAX PRICES FOR HOMEOWNERS
(Farm Residents of the Southwest Region)

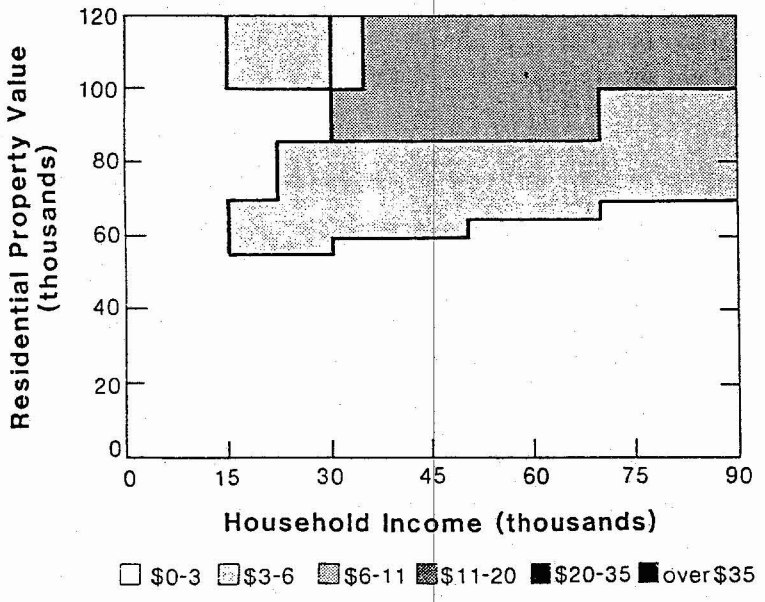
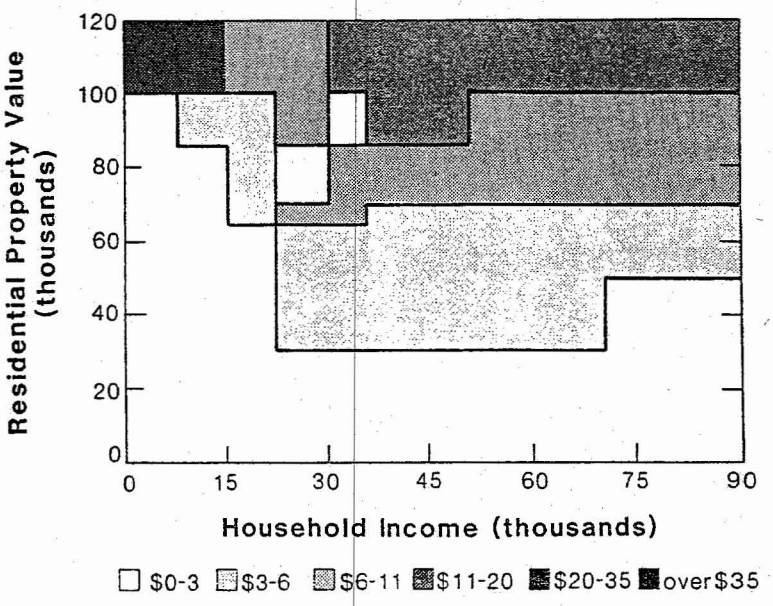


FIGURE 15

TAX PRICES FOR HOMEOWNERS
(Farm Residents of the Central Region)



households who are wealthier than others pay lower tax prices, contrary to norms of both equity and efficiency. Using estimates of the number of households in each income and property value class, we calculated for selected regions the minimum percentage of households whose tax prices would have to change in order to satisfy these norms.

Region	Percent
Minneapolis	38%
St. Paul	38
Duluth, Mankato, Moorhead, Rochester and St. Cloud	28
Hennepin County (excluding Minneapolis)	54
Anoka, Dakota, Ramsey (excluding St. Paul), and Washington Counties	48
Iron Range cities	61
Iron Range open-country	46

This evidence suggests that between one-third and one-half of all Minnesota households are paying tax prices which do not meet basic normative standards.

Tax prices vary from one region of the state to another. Farm households (not including the business portion of the farm) in every region and residents of nonfarm rural areas and smaller cities in the southwest and northwest have the lowest tax prices. Residents of the Twin Cities metropolitan area, including both central cities and suburban counties, pay what can be labeled "lower-middle" tax prices. The regions in the "upper-middle" range are the northeast (including the Iron Range) and rural nonfarm and smaller city residents of the central region. Finally, households in the large outstate cities tend to have the highest tax prices. We cannot judge the appropriate differences in levels of tax prices among regions. Further examination is warranted of the underlying reasons for major differences in tax prices among regions but is beyond the scope of this paper.

UNDERLYING CAUSAL FACTORS

The factors underlying the erratic pattern of tax prices reveal the nature of the problem and suggest a solution. The critical determinants of the distribution of tax prices among homeowners are classification, deductibility of property taxes from state and federal taxable income, the homestead credit, and the circuit breaker.

CLASSIFICATION

The classification of property determines the fraction of its market value which is included in assessed value. Classification changes the distribution of the tax burden among property in a community but does not affect directly the total tax burden. Thus, the critical issue is the change in a homeowner's assessed value relative to other property owners rather than the absolute change in assessed value.

Owner-occupied residential property is classified in a three-tier system. Using data for taxes payable in 1983, the assessed value of all property in the state equaled 24% of market value. Homeowners' property was assessed at the rate of 16% for the first $27,000 of value, and 28% for the remaining value. A homeowner whose house had a market value of $121,500 had an assessment ratio of 24% and was not affected by classification. Homeowners whose houses had market values of less than $121,500 benefited from classification and those whose home values exceeded $121,500 paid higher taxes as a result of classification.

Classification introduces into property tax burdens and tax prices a progressive component with respect to home value. This is consistent with, although not necessary for, the normative criteria noted earlier.

HOMESTEAD CREDIT

The homestead credit, which is paid by the state and thus deducted from homeowners' property tax bills, equals 54% of the gross tax up to a maximum credit of $650. Until a homeowner reaches the maximum credit, the household pays a tax price of only 46% of the tax price that would prevail without the credit. After the maximum credit is attained, the homeowner pays the same tax price as would be due without a homestead credit since the full amount of any changes in the homeowner's tax levy are the responsibility of the homeowner.

The homestead credit introduces into property taxes a progressive component with respect to home value. As with classification, this progressive component is consistent with, although not necessary for, the normative criteria discussed earlier. Based on efficiency or equity criteria, it would be difficult to justify the abrupt change from a tax price equal to 46% of the no-relief case to a tax price of 100% of the no-relief case with a small increase in taxes. This issue is beyond the scope of this paper.

DEDUCTIBILITY FROM STATE AND FEDERAL TAXABLE INCOME

Deductibility introduces into property taxes a regressive component with respect to income that is inconsistent with the normative criteria noted earlier. Homeowners may deduct property taxes from their income when computing state and federal taxable income. The reduction in income tax liability is an increasing function of the marginal tax bracket of the homeowner and thus of homeowners' income. Deductibility is a major factor causing the tax prices of higher-income homeowners to be less than those of middle-income homeowners, as shown in Figures 3 to 15.

CIRCUIT BREAKER[4]

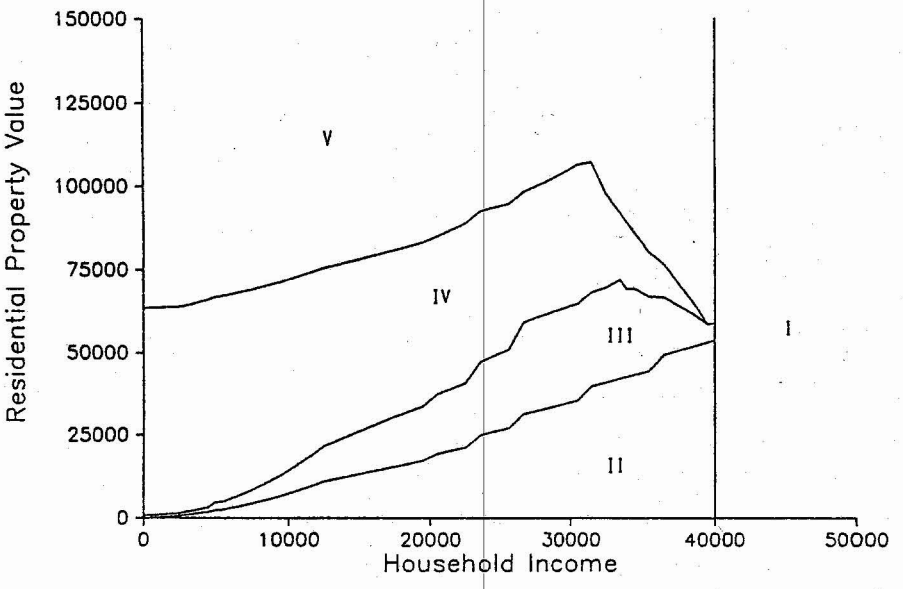
Before addressing the combined effects of the circuit breaker and the homestead credit on the distribution of tax prices, the analysis focuses on the circuit breaker in isolation from the homestead credit; that is, all homestead credits equal zero and all circuit breaker policy parameters equal their current values. This abstraction reveals the structure of the circuit breaker and indicates the consequences of relying on the circuit breaker and discontinuing the homestead credit.

Circuit Breaker With No Homestead Credit. In the absence of the homestead credit, the circuit breaker yields the pattern of relief shown in Figure 16. Households in area II receive no assistance from the circuit breaker. The circuit breaker reduces the property taxes of all homeowners with incomes less than $40,000 and tax levies exceeding the threshold level indicated by the boundary between areas II and III in Figure 16. The circuit

FIGURE 16

Circuit Breaker and No Other Credits

(assumes 1984 classification and 100 mill tax)



breaker pays all taxes above the threshold level for households in area III. Households in area IV must pay the threshold tax plus a sliding scale proportion of the portion of the levied tax exceeding the threshold; the sliding scale proportion increases with income. Finally, households in area V receive the maximum credit permitted under law; the credit declines as income increases and does not increase with increases in property taxes.

The circuit breaker reduces the taxes of most low-income homeowners although it does not aid those who are worst off in the sense of having little property as well as low incomes. It provides aid to those with much property with revenues from taxpayers who are, for the most part, less well off. Marked differences in property tax burdens characterize homeowners who have roughly similar incomes and property values but who happen to fall on different sides of the cut-off lines for provisions of the circuit breaker law.

The circuit breaker causes major distortions in tax prices. Households in areas I, II and V of Figure 16 pay a tax price that is not affected by the circuit breaker. Households in area III pay a tax price of zero since the circuit breaker absorbs the total increase in their tax levies as mill rates rise. Thus, households in area II would likely support higher property tax levies since they would share in the resulting benefits while avoiding the cost. Households in area IV pay a tax price equal to a sliding scale percentage of

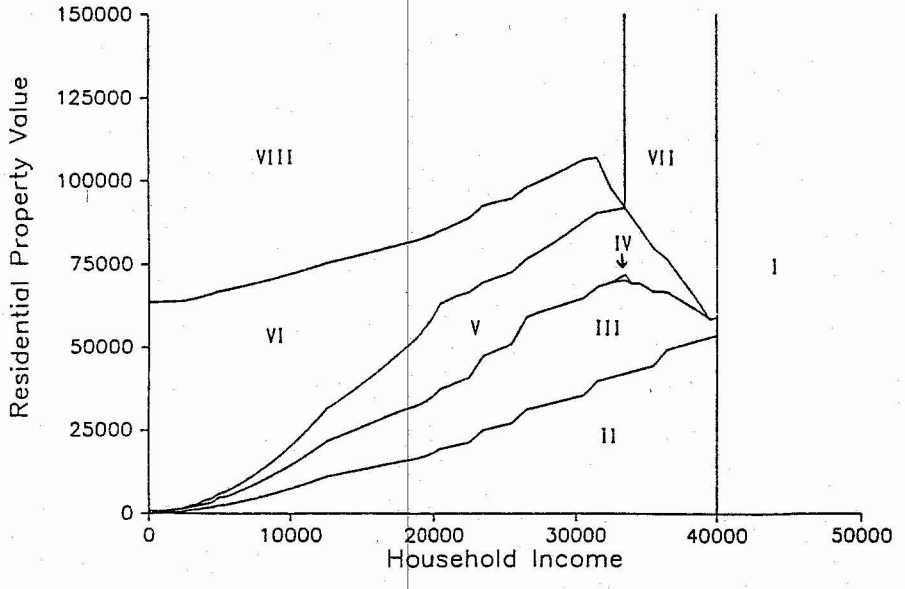
the increased taxes levied on their property. This sliding scale ranges from 5% for household incomes of less than $3,000 to 50% for household incomes of $30,000 or more. The marked discontinuities associated with the borders between the areas in Figure 16 and also the irregular shapes of the areas help to clarify why tax prices do not follow the orderly pattern suggested by equity and efficiency criteria.

Circuit Breaker With Homestead Credit. The circuit breaker with the homestead credit provides tax relief to homeowners in areas IV, VI and VIII shown in Figure 17. All other homeowners fail to meet eligibility standards with respect to income or the ratio of taxes to income. Homeowners in area IV pay a tax price of zero but the area contains so few homeowners that it is of little operational importance. The homestead credit reduces such cases to a small number from the large number shown as area III in Figure 16. Households in area VI receive a circuit breaker credit equaling a sliding scale proportion of the levied tax exceeding the threshold, minus their homestead credit; the sliding scale proportion decreases with income. Finally, households in area VIII receive the maximum credit permitted under law; the credit declines as income increases and does not increase with increases in property taxes.

FIGURE 17

Circuit Breaker with Homestead Credit

(assumes 1984 classification and 100 mill tax)



The circuit breaker affects tax burdens as expected in view of its original intent and design. Households with large property tax burdens relative to their incomes receive relief. Many, but far from all, low-income homeowners receive circuit breaker aid. The circuit breaker does not aid high-income people but does help those who have much property and incomes under $40,000.

The combined homestead credit and circuit breaker cause major distortions in tax prices. The general pattern of tax prices is shown in the combination of Figure 18 and Table 2. Figure 18 is the same as Figure 17 except that the property value corresponding to the ceiling on the homestead credit is denoted by a dotted line. The areas originally delineated in Figure 17 are now labeled with "A" and "B" designations in Figure 18 if the original area is partitioned by the dotted line. Table 2 lists the tax prices associated with each area in Figure 18.

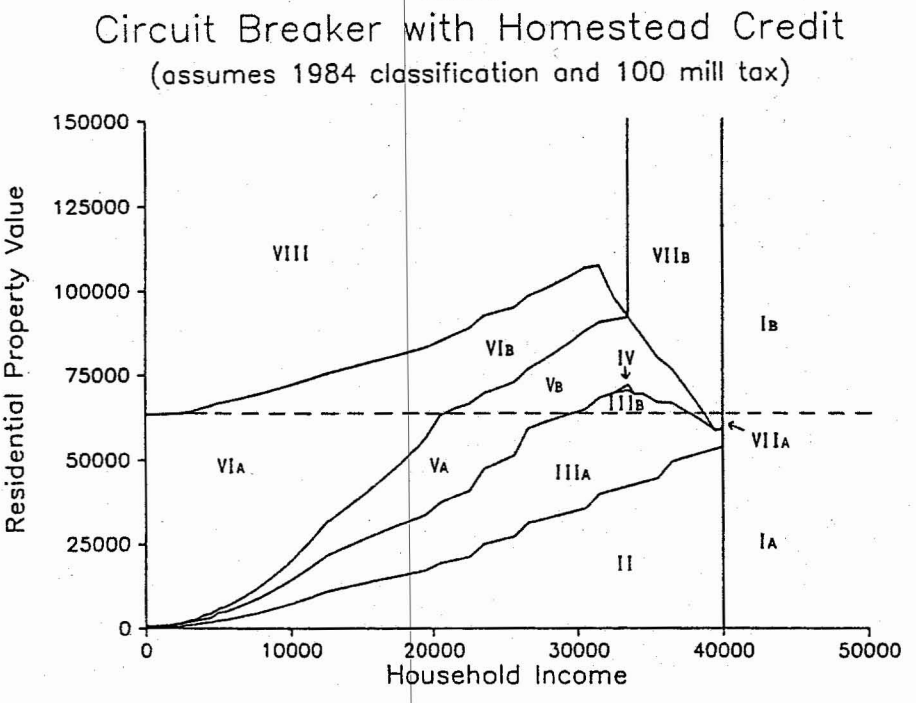
TABLE 2
Tax Prices Associated with Areas in Figure 18

Areas in Figure 18	Tax Price as a Proportion of Case of No Homestead Credit or Circuit Breaker
IV	0.00
VIA, VIB	0.05 to 0.50
IA, II, IIIA, VA, VIIA	0.46
IB, IIIB, VB, VIIB, VIII	1.00

As noted earlier, the case of the few households with a tax price of zero in area IV is of little practical significance.

The combination of the homestead credit and circuit breaker reduces the tax price for those whose property values do not reach the maximum limit of homestead credit relief and for a "wedge" of homeowners represented by area VIB, as shown in Figure 18 and Table 2. Low-income homeowners qualifying for the circuit breaker (area VIA and left-hand portions of VIB) enjoy the largest drop in their tax price for public services. Low-income homeowners with modest home values (left-hand portions of area II, IIIA and VA) receive relief but at a lower rate than other homeowners who have more property and are thus wealthier (see areas VIA and VIB). High-income people with modest homes pay a lower tax price than many other homeowners since the homestead credit has no ceiling on income in its eligibility criteria (see area IA). The homeowners in area VIB tend to be middle-income households with average to somewhat-above-average property values; their lowered tax prices are a major anomaly in the overall pattern since many other homeowners who are worse off receive less or no relief in the marginal cost of public services.

FIGURE 18



Tax prices shift abruptly as households reach the maximum benefit from the circuit breaker or the maximum benefit from the homestead credit if they do not qualify for the circuit breaker. Table 3 illustrates this result, also evident in Figure 18 and Table 2. The examples in Table 3 represent households with identical incomes but slightly different property values. The similarity in the economic status of these paired households suggests that a reasonable policy would affect each member of the pair in similar fashion. The members of each pair straddle a boundary separating households which are, or are not, eligible for the maximum homestead credit or circuit breaker. The dotted line in Figure 18 represents the boundary for the homestead credit. The line separating area VIII from areas VIA and VIB represents the boundary for the circuit breaker maximum.

The net taxes of each member of the paired households are quite similar. The net taxes also correlate positively with the wealth of the households. Most people probably desire both of these features, devote their attention to them, and thus miss a major problem.

The tax prices of each member of the paired households may differ by significant amounts. The household with property valued at $65,000 and no income pays a tax price over twenty-two times as large as a household with property valued at $60,000 and no income. Other differences within pairs are less dramatic but still large. The differentials in tax prices associated with

TABLE 3
Illustrative Tax Levies, Credits, and Tax Prices with Emphasis on Homestead Credit and Circuit Breaker Thresholds*

Income:	Property Value	Tax Levied	Homestead Credit	Circuit Breaker	Net Tax	Tax Price
			joint circuit breaker and homestead credit threshold			
$0:	$60,000	$1,080	$583	$443	$ 54	$0.54
	65,000	1,230	650	475	105	12.30
			homestead credit threshold			
15,000:	60,000	1,080	583	101	396	2.16
	65,000	1,230	650	154	426	2.46
Over	60,000	1,080	583	0	497	4.97
21,500:	65,000	1,230	650	0	580	12.30
			circuit breaker threshold			
10,000:	70,000	1,380	650	412	318	2.07
	75,000	1,530	650	475	405	15.30
20,000:	80,000	1,680	650	370	660	4.20
	85,000	1,830	650	475	705	18.30
30,000:	100,000	2,280	650	190	1,440	11.40
	110,000	2,580	650	280	1,650	25.80

*Tax burden calculations based on 1984 classification and a 100 mill tax rate. Tax price calculations assume an increase of 1 mill in the tax rate.

the circuit breaker decline as income rises but only to a minimum of a factor of about two at the highest eligible income levels. The differential due to the homestead credit maximum does not decline as income rises. For most low-income households, that is, those represented by area VIA, the circuit breaker absorbs the differential due to the homestead credit. For example, the two households in Table 3 with incomes of $15,000 have similar tax prices although one has reached the maximum homestead credit.

Households do not necessarily pay lower tax prices if they are less wealthy than other households, as illustrated in Table 3. The household with property valued at $65,000 and no income pays a higher tax price than households with property valued at $65,000 and income of $15,000 and even a higher tax price than a household with property worth $100,000 and income of $30,000. These results severely violate the normative standard developed at the outset of this analysis.

PROPOSED FORMULA FOR PROPERTY TAX RELIEF

The recommended property tax relief system is based upon the normative criteria developed in the initial stages of this paper and illustrated in Figure 1. The new schedule replaces the homestead credit and circuit breaker. Although the deductibility provisions distort tax prices, they are unchanged

under the proposed system. The deduction of property taxes from taxable income raises issues related to income tax policy which are ignored in this study of property taxes. In addition, the state can have little influence on changing deductibility at the federal level. Finally, a judiciously designed property tax relief program can counter the ill effects of deductibility on tax prices. Simple modifications of the relief program described below would preserve the net effect of the reform if deductibility were eliminated at the state or federal levels.

The simplest and most direct method of translating the pattern of desired relief in Figure 1 into a schedule is to divide the graph into a grid and assign percentages for the proportion of the tax paid by the state to the resulting combinations of income and property value. The proportion of the tax paid by the state should be largest near the origin and decrease or remain constant as income or property value increase. A more analytical approach to the assignment of percentages which guarantees a smooth surface as well as facilitating computations is also possible.[5]

An example of a relief schedule which requires estimated state outlays for relief equal to the current expenditures for the homestead credit and circuit breaker programs is presented in Table 4. The schedule is simple. State officials could present it concisely, and citizens could easily determine their percentage of relief by finding the intersection of their income and property value. Citizens could also quickly determine the relief granted to others. Decisionmakers could understand patterns of percentages with the awareness that constituents would understand the implications of decisions. In sum, the simplicity of the schedule would aid in producing an informed debate and compromise concerning property tax policy.

TABLE 4
Illustrative Example of a Desirable Property Tax Relief Schedule

Income ($1,000)	Residential Property Value ($1,000)								
	<30	30-40	40-45	45-50	50-60	60-70	70-85	85-100	100
	percentage of tax paid by the state								
$ <7.5	98.8%	97.5%	91.0%	84.5%	78.0%	71.5%	65.0%	65.0%	65.0%
7.5-15.0	97.5	91.0	84.5	81.9	75.4	65.0	58.5	58.5	58.5
15.0-22.5	91.0	84.5	81.9	78.0	71.5	58.5	52.0	52.0	52.0
22.5-30.0	84.5	78.0	78.0	71.5	65.0	52.0	45.5	45.5	45.5
30.0-35.0	78.0	71.5	71.5	65.0	58.5	52.0	39.0	39.0	39.0
35.0-40.0	71.5	65.0	58.5	52.0	52.0	45.5	32.5	32.5	32.5
40.0-50.0	58.5	58.5	52.0	45.5	39.0	32.5	26.0	26.0	26.0
50.0-70.0	39.0	32.5	32.5	32.5	32.5	26.0	19.5	19.5	19.5
>70.0	13.0	13.0	13.0	13.0	6.5	6.5	0.0	0.0	0.0

The illustrative relief schedule yields the desired pattern of tax prices, as shown in Figures 19 and 20. These two examples contrast markedly with the current pattern of tax prices for these regions as shown in Figures 7 and 8

FIGURE 19

ILLUSTRATIVE TAX PRICES FOR HOMEOWNERS
(Anoka, Dakota, Ramsey & Washington Counties
Excluding St. Paul)

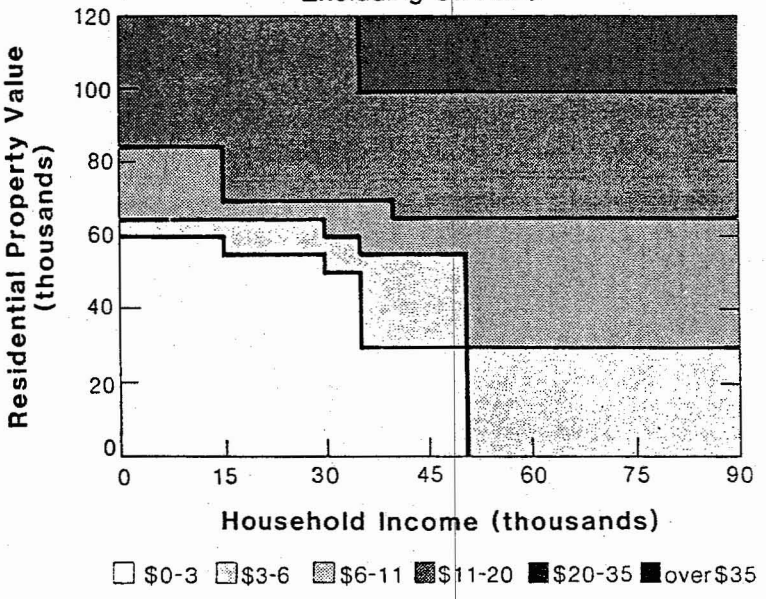
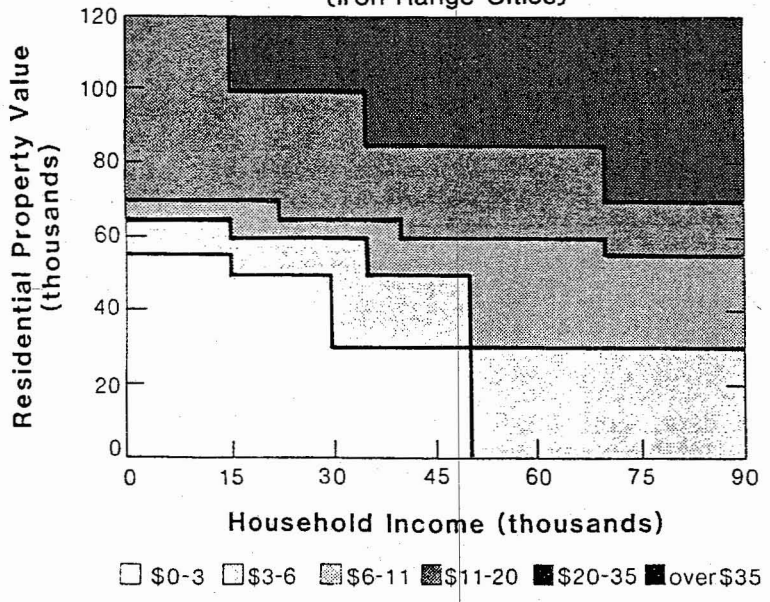


FIGURE 20

ILLUSTRATIVE TAX PRICES FOR HOMEOWNERS
(Iron Range Cities)



but match the normative standard shown in Figure 2. Tax prices increase smoothly as income or property wealth increases. The results of applying the illustrative relief schedule in other regions are similar and therefore not presented here.

In conclusion, this research demonstrates the need for and the feasibility of a property tax relief schedule which successfully addresses the concerns of efficiency and equity. The illustrative schedule presented here is superior to current policy, but its specific form is not superior to another that is efficient and equitable. A combination of political and scholarly evidence on the demand for public services of people in varying economic circumstances should be used to refine the schedule. If implemented, such a reform would be a major step towards greater equity and efficiency in the Minnesota property tax system.

ENDNOTES

1. A more detailed report of this research is provided in a staff paper available from the Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, Minnesota 55108. The authors acknowledge the extensive assistance of Thomas Stinson and of the Minnesota Department of Revenue throughout the study. Margaret Dewar and Julia Friedman provided helpful comments on earlier drafts. Mary Adelman supervised the preparation of figures and made many other editorial contributions.

2. Robert P. Inman, "The Fiscal Performance of Local Governments: An Interpretative Review." In *Current Issues in Urban Economics,* edited by Peter Mieszkowski and Mahlon Straszheim, 270-321. Baltimore: Johns Hopkins University Press, 1979.

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4. See discussion in chapter 13 of this volume, "Direct Property Tax Relief in Minnesota," by John H. Bowman.

5. Nelson, Glenn, and Fiona Sigalla. "Incentives and Minnesota Property Taxes: Current Problems and Suggested Reforms." Staff Paper, Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, MN, 1985.

18
Taxation of Timberland

Julia Mason Friedman

INTRODUCTION

IDENTIFICATION OF THE PROBLEM

Choosing a method for taxation of timberland involves two separate problems of economic efficiency. First, taxation is efficient if the method of taxing has no effect on the market's decision whether to use any given parcel of land for growing timber. Second, taxation is intertemporarily efficient if the tax method has no effect on the market-based decision of when to cut timber. Efficiency among land use options is enhanced if all agricultural land parcels are uniformly assessed at the same percentage of bare-land value under the ad valorem tax. Timberland, the land used to grow timber crops, is agricultural land. Efficiency over time derives from use of an annual percentage tax levied either on the value of timber growth or on the value of bare timberland, but not on both. Thus, the uniformly assessed ad valorem tax on bare land encourages efficiency both with respect to timber harvest and the use of land for growing timber. In Minnesota, timberland is not taxed under a uniform ad valorem tax.

The criteria of simplicity, revenue stability, and uniformity also can govern the choice of methods for taxing timberland. A uniform ad valorem tax on the market value of bare land will hold up well under these criteria. And the tax encourages competitiveness by treating all timberland and nontimberland equally; timberland does not bear an excess tax burden because of favorable tax treatment given to other classifications of land.

CURRENT TAXATION

While Minnesota utilizes three timberland taxes, in total these taxes only affect about one of every eight of the 16.7 million acres of forestland in the state. These taxes are:

- The auxiliary forest tax—a percentage tax levied on the value of timber harvest at the time of the cut;
- The tree growth tax law (TGTL)—a tax levied yearly on the annual growth in value of timber; this increase in value is the product of annual stumpage growth multiplied by current stumpage price.

- Classification 3e, timberland, of the property tax law—a tax levied annually on 19% of either the market value of the timberland or the market value of land plus standing timber on the land.

Forestland not touched by one of these laws is either publicly owned (7.3 million acres) and untaxed, or it is covered by one of the nontimberland classifications of the property tax (e.g., as agricultural, seasonal-recreational, or vacation land). None of the three timberland taxes satisfies the requirements for both land-use and intertemporal efficiency. Further, the existence of other taxed and untaxed forestland exacerbates achievement of efficiency as well as the uniformity, simplicity, and revenue stability objectives.

ORGANIZATION OF THIS CHAPTER

The next section of this chapter describes Minnesota's forest land and the major laws for taxing this land. The following section analyzes timber taxation in light of the four criteria for tax policy. The final section of the chapter evaluates options for reform of timber taxation in Minnesota.

This chapter is based on the premise that when timber-growing is the highest-and-best- use of the land, then the market value of bare timberland is the present value of net income earnings from successive timber crops on the land. A tax on timberland might be passed on to buyers as a higher price for stumpage (the crop), but in the highly competitive timber market this seems unlikely. Thus, the tax is more likely to be borne by timberland owners in the form of a reduction in the market value of land.

MINNESOTA'S FOREST AND FOREST TAX LAWS

About one-third of Minnesota is forested, with the greatest concentrations of forest land in the north central, northeastern, and southeastern parts of the state. According to a 1977 survey by the U.S. Forest Service, Minnesota has 16.7 million forested acres, of which 1.2 million acres are classified as productive reserve, land that is withdrawn from timber utilization by statute or administrative regulation. Almost all (99%) of this land is in public ownership, primarily in state and national parks, including the Boundary Waters Canoe Area Wilderness. Also, Minnesota has almost 2 million acres of unproductive forest land, three-fourths of which land is in public ownership. But the majority of the forestland, 13.7 million acres, is commercial forest used for producing crops of industrial wood.

Ownership of Minnesota's commercial forest is divided between the public (53%) and private sectors (47%). Farmers are the largest group of private owners of commercial forest with about 3.4 million acres (25%).

About one-third of this land is held in parcels of at least 100 acres. Miscellaneous private owners, including private non-forest-industry corporations own another 2.2 million acres (16%). The forest industry owns only 770,000 acres (6%) of commercial forest.

THE DECLINING FOREST LAND BASE

The amount of commercial forest land declined by 859,000 acres between 1962 and 1977, with most losses under nonindustrial private forest ownership. This decline is expected, by some, to continue and there has been much discussion of using tax policy to encourage timberland crops.

In 1982, 3.69 million cords of wood were harvested in Minnesota—1.52 million for fuelwood, 1.48 million for pulp and paper, and 0.52 million for lumber, logs, and bolts (Governor's Wood Products Commission). Of the total harvest, 11% was from industry land, 38% from nonindustrial private forest (NIPF) land, and 51% from private lands. These figures indicate that the forest industry is extremely dependent on wood harvested on land owned and controlled by the public sector and by NIPF. Land withdrawn from timber use today, if returned to timber tomorrow, would not produce a usable crop for many decades. However, the timber industry, to guarantee long-run supplies, could acquire parcels currently held under nonindustrial ownership.

FOREST TAX LAWS

Of the timberland that is privately owned, 27% is taxed under one of three laws specifically designed for forest lands. The other 73% is taxed under some other property tax classification. A forest owner is subject to only one tax on timberland. The three timber tax laws are described below (source: Kilgore and Ellefson):

1. Tree growth tax law—This law was established in 1957 and attempts to tax the land's ability to produce income. The tax is determined to be 30% of the value given by ((average growth in stumpage) x (average price of stumpage)) for each species. Calculations for both stumpage and price are specific to the county where the timber is located. If a forest is temporarily or permanently nonproductive, it is taxed annually at 5¢ or 15¢ per acre. In comparison to other land taxes in Minnesota, these are low tax rates.

   To be eligible for the tree growth tax, one must own five or more acres of timberland. Owners must apply to a county board for this tax status. The board has wide latitude in ruling on these applications. The application must include a sworn statement that the land "will be used exclusively for growing continuous forest crops in accordance with

sustained yield practices." Thus, owners are obligated to use the forest only for silvaculture, and, in most counties, must have a management plan for sustained yield crops and reforestation. Further, the sworn statement requires that the land "will remain open to the public for hunting and fishing, except within one-fourth mile of a permanent dwelling or during periods of high fire hazard. . . ." The county can remove land from the TGTL at anytime if the highest-and-best use of the land shifts away from timber cultivation or if the owner fails to comply with provisions of the law.

A total of 412,197 acres were taxed under the TGTL law in 1982, producing $366,869 in revenue, an average of 89¢ per acre. The tax was collected in eleven counties and was equivalent to 1% or more of the property tax levy in five counties—Cass (1.1%), Hubbard (1.7%), Itasca (1.3%), Koochiching (1.4%), and Wadena (2.7%).

2. Auxiliary forest tax law—This tax was established in 1927 and places a 10¢ per acre tax on forest land plus a yield tax on timber at the time of cutting. The yield tax begins at 40% of the value of timber harvested on immature stumpage and declines at a rate of 2% per year to a minimum of 10% as the timber stand ages.[1]

   No new applications have been allowed under the auxiliary forest tax since June 30, 1974. When existing contracts expire, the lands automatically qualify for TGTL status.

   Auxiliary forest taxes were collected in seven counties in 1982 on a total of 219,796 acres. Total revenue was $60,971, or about 28¢ per acre. More than 3/4 of this revenue was collected by Koochiching County—$46,486—where it was equivalent to 1.8% of the property tax levy.[2]

3. Classification 3e timberland of the property tax—About twice as much land is taxed under the 3e classification of the property tax as under the TGTL and auxiliary forest tax combined. To qualify as "timberland," the acreage must be rural and be used exclusively for growing trees for timber, lumber, wood, or wood products. Timberland in multiple-use (e.g., for grazing or recreation) technically is not taxable under 3e. Timberland is assessed at 19% of market value and is eligible for state school agricultural credit of 10% of gross tax. Property must be reassessed at least once every four years.

   County assessors determine if land can be classified 3e, and as a result there is lack of agreement across the state as to what qualifies for 3e classification. Some counties require minimum acreages; some do not require exclusive use for timber growth; in some counties, 3e is granted only after a management plan is established and the plan must be followed; and there are other variations. Many counties require owners to apply for 3e classification and limit the amount of land so classified.

   Counties also use different methods to determine the market value of timberland under 3e. One approach is to value all timberland at a flat

rate—rates in use in 1982 ranged from $140 to $800 per acre. A graduated rate structure was used by at least seven counties, with the rates varying in level and structure among these counties. Some counties base market estimates on market data, either applying an average sale price to all timberland or assigning sale value based on characteristics of the land.

In 1982, a total of 1,067,259 acres of timberland were classified under 3e and total revenue collected from these acres was $2,837,826 after credits, or about $2.65 per acre. Thirty-five counties collected revenue from this tax and thirteen counties generated more than 1% of property taxes under classification 3e.[3] All three counties with more than 100,000 acres of 3e class land are in this group—St. Louis received 2.8% of property taxes from 3e, Crow Wing 4.55%, and Lake County 7.64%. And eleven of the twelve counties with more than 10,000 acres of 3e are in the 1%-or-more of property tax group.[4] At the upper end of the range, Lake-of-the-Woods and Beltrami receive about 20% of property taxes from class 3e land, Kanabec receives about 28%.

Minnesota's property taxes are based on the highest and best use of each land parcel. Thus, if the parcel becomes valuable as a home site or center for retail/industrial development, the assessor can change the tax class and assessed value to reflect this higher-valued use.

The TGTL also is said to be based on the notion of highest and best use. For land which is not best-used in timber crops, the land can be switched to an appropriate property tax classification. The auxiliary forest tax, however, has the effect of a current-use designation. The contract for auxiliary forest taxation holds, even if the land becomes more productive in some alternative activity.

OTHER PROPERTY TAX CLASSIFICATIONS

About 73% of privately owned commercial timberland in Minnesota is taxed under some property tax classification that does not designate exclusive forest use. The three most frequent classifications are:

- Agricultural nonhomestead—class 3—land used primarily for agriculture; it can include timber. Land is assessed at 19% of estimated market value. The first 320 acres are eligible for state school agricultural credit of 13% of gross tax; acres over 320 receive a 10% gross tax credit.
- Seasonal residential recreational land—Class 3—may be wooded land improved with permanent structures. Land is assessed at 21% of estimated market value and is available for state school agricultural credit of 13% of the gross tax.
- Vacant Land—Class 4b—undeveloped forest land with no structures or roads and not used for any commercial or recreational activity. The land is assessed at 40% of estimated market value and is not eligible for tax credits.

Timberland is taxed at about the same rate under agricultural nonhomestead as under 3e; estimated market value is assessed at 19% for both, and the credit is slightly larger for agricultural nonhomestead. The timberland owner who grazes animals on the land gets nearly the same tax bill and tax breaks from the agricultural nonhomestead classification as from the timberland classification. The same is true if the land is used for recreation or contains seasonal recreation buildings. Timber is seriously penalized only if owners fail to show any productive use of the land and become liable for taxation as vacant land.

TIMBER TAXES AND TAX GOALS

Each of the timber taxes performs differently with respect to the four criteria. The tree growth tax potentially meets the goals of intertemporal efficiency, simplicity, revenue production, and uniformity, but falls short on land-use efficiency and on several other criteria in practice. The modified ad valorem tax could be efficient, simple, and uniform but, again in practice, likely does not meet the goals. The yield tax cannot be efficient or provide for regular revenue.

EFFICIENCY

A timber tax satisfies an efficiency goal if it does not affect the price or mix of inputs chosen or the quantity of outputs produced. There are three efficiency questions with timber taxes:

- Considered alone, is each tax intertemporarily efficient?
- At current tax rates, are the three taxes efficient vis-a-vis one another?
- Is forest taxation efficient in comparison with the ad valorem tax on other property?

Each of these questions is considered in turn below.

1. Considered alone, is each tax intertemporarily neutral? The yield tax is assessed and collected at the time of harvest. Because of the tax, the forest owner always has some incentive to hold the forest longer and cut it later than in the absence of the tax. If all timber crops, regardless of rotation cycles, are subject to the same percentage tax on yield, then short-cycle crops especially are penalized. The higher the yield tax, the more likely it is that some short-cycle timber will never be cultivated. And because the tax is biased against shorter cycles, it also introduces a land-use inefficiency. The tax is biased against those lands that are better suited to intensive management where timber is assisted in growing faster (Gaffney).

The productivity or growth tax can be efficient with respect to the timing of harvest of timber crops. To achieve efficiency, the amount of growth on

each stand must be correctly estimated, the same percentage of the value of growth must be taxed on all stands, and timber production must be the best use of the land. The tree growth tax law is not efficient since the amount of growth taxed on each acre is based on a county average, and trees in managed forests likely grow faster than average. Thus, at a nominal tax rate of 30%, rapidly growing stands may be actually based at less than 30% while slow-growing stands will be taxed at more than 30%. Thus, there is an incentive for early harvest of slow-growth timber on land of below-average productivity.

Also, in a maturing timber plantation, the rate of growth declines as the timber ages. Under the TGTL, where the amount of growth per acre is based on a county-wide average and the tax is 30% of the value of this average, it is likely that timber bears a higher tax rate while its growth rate falls with maturity. The result is an incentive for the timber to be cut sooner than in the "no-tax" forest. If the growth tax were levied on value of actual growth—rather than on average growth—there would be no tax-based incentive for early harvest.

An ad valorem property tax may be efficient with respect to timber harvesting decisions. Achieving efficiency depends on assessing the tax only against the value of the land, not against the value of the timber crop. When timber-growing is the highest-and-best use of the land, then implicitly the current market value of the bare land is the expected present value of the net earnings from future harvests. Thus, by taxing the land, one is effectively taxing the present value of all expected future timber harvests regardless of how long or short the growing cycles are. If all timberland is taxed at the same rate, the tax is efficient with respect to the timber growing and harvesting decisions.

However, should it be the case that both the bare land and timber are assessed for the ad valorem tax, then timber is effectively taxed twice and the longer the growing cycle, the greater the extra tax burden. (This burden likely appears as an excessive reduction in the market value of timberland (see Klemperer)). Taxing both land and timber encourages an earlier cut than if no tax were levied.

Maturing timber is a crop and, like wheat and green apples, is appropriately viewed as a good-in-process. It is appropriate for the land producing these goods to be subject to the property tax. But the crops generate the value of the land which is to be taxed; the goods themselves are not land or capital stock and ought not to be subject to the property tax (Dowdle).

Assessment practices for timberland differ across Minnesota's counties. According to one county assessor, all timber, agricultural, seasonal-recreational, and vacationlands are assessed at bare-land values. Many others are skeptical that this practice holds in all counties. If assessment is on bare land, then the fact that timberland is taxed under an ad valorem tax does not necessarily affect the stocking or harvesting of timber.

2. At current tax rates, are the three taxes efficient vis-a-vis one another? Efficiency among the timber taxes requires that unless otherwise intended, all three have the same effective tax rate, distributed in the same pattern over time. This efficiency does not occur. According to the February 1984 study by Kilgore and Ellefson, the average revenue per acre, 1982 assessment, from the 3e classification was $2.93 before the state school agricultural credit and $2.66 after the credit; from the TGTL, average tax was 89¢ per acre; and average revenue from the auxiliary forest tax was 28¢ per acre. This range of tax liabilities might be efficient if 3e land, on average, is three times as valuable as TGTL forest and about ten times as valuable as land designated for auxiliary forest tax. However, this is not the case and lands taxed under both of the latter laws are reputed to be more productive on average than 3e timberland. The taxes, then, are not efficient and the tax burden is greatest on lands subject to the ad valorem tax. Timber owners have an incentive to seek taxation under the productivity or yield tax; county officials—who receive revenue—have an incentive to tax timber under the ad valorem tax.

3. Is forest taxation efficient in comparison with the ad valorem tax on other forested property? The property tax liability on any acre of forested land depends on the classification of the acre for tax purposes. Table 1 summarizes the effective tax rate under five alternative classifications and a 100 mill tax on an acre with estimated market value of $150. The effective tax rate ranges from 0.42% for the agricultural homestead to 4.0% for the vacant land class. Most forestland, however, would be taxed under the

TABLE 1
Property Tax Collections and Rates, Taxes Payable 1984
(100 mill levy on an acre with estimated market value of $150)

Classification	Assessment Rate	State School Agriculture Credit	Tax per Acre	Effective Tax Rate on $150 Market Value
Ag. Homestead	14%*	29% of gross tax**	$ .63	0.42%
Ag. Nonhomestead	19%	13% of gross tax***	2.48	1.65
Timberland	19%	10% of gross tax	2.57	1.71
Seasonal-recreational	21%	13% of gross tax	2.74	1.83
Vacant Land	40%	None	6.00	4.00

* For first $60,000 of market value, 19% over $60,000.

** Also receives the homestead credit; 29% applies on first 320 acres, 13% on second 320 acres; 10% on remaining acres.

*** 13% on first 320 acres, 10% on additional acres.

agricultural nonhomestead, timberland, or seasonal-recreational classes, and here, the effective rates are clustered quite closely. Among acres in these three classes, the property tax liabilities are very close.

If timberland is assessed in the same way as other agricultural land, that is, if both are assessed only on the value of the land, and assessments exclude the value of timber and other crops, then the tax also is neutral. A crop grower will choose between timber crops and other agricultural uses solely on the productivity of the land. If, however, the timber crop is being assessed and taxed, then the ad valorem tax is not efficient. On the margin, a crop grower has an incentive to avoid timber crops in order to escape the associated higher taxes.

UNIFORMITY OF TAX TREATMENT

There is a serious lack of uniformity of tax treatment in Minnesota's taxation of forestlands. An owner will pay different amounts depending upon which tax law is used—the yield, growth, or various property tax classes. And within a single tax category, owners of identical parcels can be taxed at different rates. Assessors in different counties use different methods to determine the market value of the tax base. This produces nonuniformities among land owners in different counties. Use of average values can result in two differing parcels bearing the same tax within a county. And county officials have the discretionary ability to place two identical parcels under different tax laws. All of these circumstances extend the likelihood that identical owners of identical parcels are taxed at different rates.

SIMPLICITY AND ADMINISTRATIVE DESIGN

Clearly, forestland taxes are neither simple nor easy and efficient to administer. Administrators can have different objectives and use the tax policies in different ways to achieve these objectives. Responsibility for administering these laws is widely dispersed and latitude for case-by-case interpretations is great. Some of the fundamental concepts in the taxes do not seem to be well-developed—"market value," "exclusively used for timber," "growth," "stumpage price," and "management" are all pivotal concepts and ill-defined. Some propose that the state departments of revenue and natural resources can, for simplicity and efficiency, take on more of the responsibility for defining and administering the laws. Others argue that the necessary size of staff and administrative complexity is too great for centralized administration.

Indeed, simplifying and clarifying the laws themselves seems to be the best route to simplifying administrative design. For example, all multiple-use woodland parcels could be taxed under one property-tax class, the

auxiliary forest tax could be eliminated, and the TGTL could be reserved for parcels "exclusively" in timber-use. This eliminates part of the administrative burden. The state could assist in determining market value, growth, and stumpage prices. Or all timberland can be taxed under one property tax classification.

CERTAINTY OF REVENUE PRODUCTION AND CASH-FLOW

The growth and ad valorem taxes provide annual and reasonably stable revenues. The yield tax is collected only when timber is cut, implying very lumpy revenue production from each parcel. Unless a county has forest crops of even-age distribution, the yield tax is not a reliable source of regular revenue.

A forest owner has relatively few cash-flow problems in paying a yield tax, greater difficulty under the productivity tax, and the worst cash-flow situation under a property-tax. Under Minnesota's yield tax—the auxiliary forest tax—the owner must present a bond or a cash deposit to the state for 150% of the expected tax. Once this payment is deposited, a cut permit is issued. And, in the year after the timber is cut, the actual tax is levied, payment made, and accounts cleared. Thus, payment of the tax coincides relatively closely with receipts of income from harvest, although the timing is tax-then-income.

If an owner has stands of managed timber with even-age distribution, then the productivity tax is relatively easy to pay. Each annual tax is accompanied by income from an annual (or at least regular) harvest. If the timber is unevenly aged, then the owner must support the tax from other income for the time period between taxation and the next harvest.

The problem of supporting the tax payment from other income is most severe for timberland under the property tax. The tax rate is higher and possibly this timber is less often managed for even-age turnover. The property tax payment each year is not recovered until harvest. And each payment appreciates in value over the timber period. For example, suppose the tax this year is $2.66 per acre and the owner borrows the $2.66 at 4% interest (assuming no inflation is going to occur). It is expected to be thirty-five years before the timber is harvested. In thirty-five years, the owner must have $10.50 to pay off the debt on this year's property tax, and each year's tax payment appreciates in the same way.

CONSIDERATIONS IN REFORM OF TIMBER TAX LAWS

The reform of timberland taxation is a much discussed topic in Minnesota. In the last six months, formal recommendations have been issued by the governor's commission on wood products and the advisory

task force on forest taxation of the joint select legislative committee on forestry (both majority and minority opinions). And, in April 1984, the tax study commission received a formal statement on forest tax policy from Minnesota forest industries. From the perspective of the tax study commission, the timberland tax laws clearly are deficient in terms of the criteria of uniformity, simplicity, and efficiency. While revenue production is not deficient, if tax laws and hence tax collections are changed, some localities could have substantial revenue losses.

Uniformity of taxation and efficiency will be enhanced if all timberland subject to ad valorem is classified in one category. In practice, this requires that all agricultural and other rural lands be classified together and uniformly assessed. Further improvement occurs as the auxiliary forest tax is phased out; if this process can be accelerated, neutrality is restored more quickly. The inefficiency from the lower tax of the TGTL is the result of the competitiveness goal of stimulating timber production. That is, this result is intentional, although there is no clear evidence whether the lower rate actually does or does not enhance competitiveness. Because the effective tax rate under the TGTL is less than the ad valorem rate, parcels subjected to the property tax bear a heavier share of the local tax liability. Thus, the effect of favoring timberland under the TGTL is necessarily to penalize class 3e and other rural lands.

Additional efficiency improvements hinge on two components. Under the TGTL, growth on each plantation should be monitored and evaluated independently rather than "on average." Under the ad valorem tax, estimations of market value must depend on treating timberland symmetrically with other cropland and assessments must be based on the value of the bare land at its highest-and-best use, not on the value as timberland-plus-timber-crop.

Improvements in simplicity result from consolidating all timberland under the property tax into one classification so that county assessors no longer have to choose among ill-defined tax classifications. Simplicity is further improved if procedures for estimating market value become more uniform and if county discretion is reduced. The greatest degree of simplicity results from placing all timberland under one classification of the property tax along with other rural land. In this case, county boards would not have to rule on applications for TGTL versus ad valorem tax status.

If localities lose or gain tax revenue and tax base as a consequence of changes in timberland taxes, their level of local government aids also is likely to change, partially offsetting the tax effects. However, the potential for adjustments in revenue capacity in some counties is great and may require specific offsets from the state.

Annual revenues will rise and the revenue stream will be more stable if some timberland is switched from auxiliary forest to TGTL (although future yield-tax receipts will be lost unless a penalty is imposed on land formerly

under the yield tax). Similarly, revenues will rise and stabilize if timberland is switched from TGTL to the property tax. This policy also strengthens the achievement of efficiency and uniformity. Alternatively, the TGTL can be redesigned to allow more land to qualify. This results in lower and less stable revenue from timberland. One possible redesign of the TGTL is to include all forestland that has a management plan and is used primarily (not exclusively) for timber production. Only unmanaged or multiple-use forests would be taxed under the ad valorem tax and these forests would bear a somewhat larger tax share because of the favorable tax treatment of managed forests.

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ENDNOTES

1. Forest owners may apply to their county board for an alternative form of the yield tax; under this form, a 10% tax is paid each year on the value of the annual timber growth. In this form, the tax is actually a productivity tax rather than a yield tax. This method has never been used or applied for.

2. Koochiching is the only county with a relatively large amount of revenue from both the TGTL and the auxiliary forest tax, totaling about 3.2% of the county's property tax receipts. The county has no revenue from timberland under classification 3e of the property tax.

3. Isanti, Hubbard, Carlton, St. Louis, Mahnomen, Crow Wing, Clearwater, Cook, Lake, Becker, Lake of the Woods, Beltrami, and Kanabec.

4. Only Cass county is not. Cass also has 27,284 acres under the TGTL. Koochiching has more than 200,000 acres but these are taxed under the other two forest taxes.

19
Minnesota's Farm Sector and the Taxation of Agriculture

Steven D. Gold

Agriculture is an important part of Minnesota's economy, and the taxation of agriculture is a hotly debated issue. This chapter consists of two sections. Part I reviews the past, present, and future role of agriculture in Minnesota's economy. Part II analyzes how farms are taxed in Minnesota and evaluates the question of whether the method of assessing agricultural property should be changed.

DEFINITIONS AND DATA PROBLEMS

Any detailed study of farm issues is plagued by the inadequacy of available data. Some problems bedevil national analyses, but the lack of adequate data is even more acute when the focus is on a particular state. For example, estimates of farm income are volatile and subject to large errors at both the national and state levels, but estimates of farm exports are much more difficult to obtain for individual states than for the entire country because products intended for export markets frequently cross state boundaries without being recorded.

The situation is no better now than it was in 1979, when the U.S. Department of Agriculture made the following statement in its annual report on the status of the family farm:[1]

> Neither the existing data base nor research to date is adequate to explain the developments taking place in the farm sector, the situation of farms in the various size groups, or the individual and cumulative impacts of all the forces causing structural changes. Improvements in the data base and our knowledge of structural changes are essential to understanding the impacts of present Federal policies and programs and the development of rational policies that will facilitate the kind of structure in the farming sector that best serves the Nation.

One difficult problem is defining the farm unit in general and the family farm in particular. Existing data make it impossible to separate "hobby farms" from small, struggling "serious farms." Both have low levels of farm income, but in the first case this is because the income is unimportant to the

owner, while in the second case it is a sign of economic distress, if not poverty.

The federal government defines a farm as a unit with annual sales of more than $1,000. There are at least two problems with this definition. First, prior to the mid-1970s a different definition was used, rendering comparisons over time somewhat problematic. Second, rising and falling product prices can affect the number of reported farms by influencing the number of units exceeding the $1,000 sales threshold.

The State of Minnesota employs a looser definition of a farm:

> Agricultural land . . . shall mean continuous acreage of ten acres or more, primarily used during the preceding year for agricultural purposes. Agricultural use may include pasture, timber, waste, unusable wild land and land included in federal farm programs. Real estate of less than ten acres used principally for raising poultry, livestock, fruit, vegetables or other agricultural products shall be considered as agricultural land, if it is not used primarily for residential purposes. [*Minnesota Statutes,* section 273.13, subdivision 5.]

In 1982, according to the department of revenue, there were more than 120,000 farm homesteads in Minnesota for state tax purposes, but the U.S. Census Bureau counted only 94,382 farms and the Minnesota Department of Agriculture reported 103,000 farms. The difference between the latter two figures may reflect sampling error or differences in the treatment of separate parcels owned by the same household. The gap between the department of revenue figure and the others is attributable to the looser definition of a farm and to some assessors' mistakenly reporting data on parcels rather than homesteads.[2]

As a result of incomplete data, this report must refer in some cases to national statistics rather than statistics specifically for Minnesota.

Farm income is another important but complicated statistic. Table 1 shows the calculations that go into producing income statistics. In 1982 gross farm income was $7,525.0 million. After deducting farm production expenses, net farm income was $1,185.7 million, but this did not consider the change in inventory levels. Because farm inventories were reduced that year, net farm income after inventory adjustment was $1,087.1 million. By contrast, in the previous year net income before adjustments for inventories had been lower, but inventories had risen sharply in 1981, so that net income after inventory adjustments was much higher than in 1982.

ROLE OF AGRICULTURE IN THE ECONOMY

This section describes what has been happening to the farm economy in Minnesota and the outlook for farming. Minnesota is a major agricultural state, but the prominence of farming has moved downward over the past years. Minnesota is unusual in that its farm products are diversified, but

TABLE 1
Minnesota Farm Income Calculations,
1981 and 1982
(millions of dollars)

	1981	1982
Gross farm income		
Cash receipts from farm marketings	$6508.5	$6672.2
Government payments	79.1	182.9
Nonmonetary income	581.2	591.8
Other farm income	73.9	78.2
Total	7242.7	7525.0
Farm production expenses	6199.5	6339.3
Net farm income before inventory adjustments	1043.1	1185.7
Net change in farm inventories	455.6	-98.6
Net farm income after inventory adjustments	1498.7	1087.1

Source: U.S. Department of Agriculture, *Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1982,* p. 72.

diversification has not spared it from the volatility which is characteristic of farm operations. Farmers are unlikely to return soon to the prosperity of the 1970s, which was historically an atypical period.

MEASURING AGRICULTURE'S ROLE

There are many ways of measuring the importance of agriculture to Minnesota. More than half of the land in the state is used for farming, but less than one in thirteen workers is employed directly in farming. This statistic understates agriculture's role because farming is a basic industry, which means that it has a multiplier effect: many nonfarm workers depend indirectly on farming for their economic well-being. Over time farming has been declining in relative importance, but it is declining more slowly in Minnesota than in the nation as a whole. Other ways of describing the role of agriculture consider its output and the income it generates.

Employment and earnings. In 1982 agricultural employment was 148,093, four out of five of whom were farm proprietors, the remainder being wage and salaried workers. This represented a 6.4% decrease from 1969, when farm employment was 158,147. During this period employment was increasing in all other major sectors of the economy, so the proportion of employment in agriculture fell from 9.8% in 1969 to 7.3% in 1982. Still, only 3.8% of employment was in agriculture in 1982. Moreover, the proportionate decrease was less in Minnesota than in the rest of the country.

Farm workers tend to have lower earnings than employees in other industries, so the farm share of total state earnings is lower than their percentage of total state employment. In 1982 total agricultural earnings in Minnesota were only 4.3% of the state total, down from 7% in 1969.

TABLE 2
Minnesota Farm and Nonfarm Personal Income Trends, 1970-82

Year	Farm personal income (millions of $)	Percentage increase, personal income: farm	nonfarm	Farm personal income as percent of total personal income
1970	$0.914			6.2%
1971	0.851	-6.9	6.8	5.4
1972	1.032	21.2	8.2	6.0
1973	2.389	131.6	11.6	11.7
1974	1.756	-26.5	10.2	8.1
1975	1.357	-22.7	9.6	5.9
1976	0.850	-37.4	11.3	3.4
1977	1.725	103.1	11.1	6.0
1978	1.736	0.6	12.4	5.4
1979	1.721	-0.9	13.4	4.8
1980	1.530	-11.1	11.1	3.9
1981	1.801	17.7	10.8	4.1
1982	1.464	-18.7	6.1	3.2

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

However, farm earnings are two or three times as important for Minnesota as for the nation as a whole.

Farm earnings are volatile. They rose 13.5% between 1969 and 1979 and then plunged in the next three years, so that for the entire 1969-82 period they were down 27.3%. This compares to a national decrease of 30% in agricultural earnings during the thirteen years.

The multiplier. The most careful work in measuring the role of agriculture in Minnesota has been done by Professor Wilbur R. Maki of the University of Minnesota. He has estimated that for every job on the farm in 1980 there were approximately two jobs in agricultural processing and marketing, other agricultural-related industries, and trade and service businesses serving the households directly or depending on agriculture indirectly. This estimate would bring the proportion of total employment dependent on agriculture from 7.3% to approximately 22%. This is still much lower than the estimates of 40% for the proportion of jobs dependent on agriculture.[4] The higher estimates may include employment in retail food stores. While most such employment certainly is related in some manner to agriculture, it would exist even if there were no farming in Minnesota. Such employment is largely independent of developments in Minnesota agriculture itself, although it may be influenced by national agricultural trends.

Basic industries are those which export products from a region or state, though not necessarily to foreign countries. According to Maki, agriculture accounted for 30% of Minnesota's basic industry employment in 1970, a steep decline from 66% in 1940. No later estimate has been provided, but,

presumably, agriculture has continued to decline as a proportion of basic industry since 1970. Still, agriculture's important role as a basic industry explains why Maki titled his report "Agriculture: Essential to Minnesota's Economy and its Regions and Communities. . . ."[5]

Personal income. Agriculture's share of personal income varies considerably, as Table 2 shows. While personal nonfarm income rose in every year from 1970 to 1982, personal farm income fluctuated widely. Farm income was as high as 11.7% of total personal income in 1973 and as low as 3.2% in 1982.

Purchases. In 1972 dollars, purchases by agricultural industry were $4.2 billion out of total purchases for all Minnesota industries of $45.4 billion in 1977. However, the food products manufacturing industry had even higher purchases ($5.6 billion). The $9.8 billion of purchases by the two industry groups represented 21.5% of total in-state purchases of the Minnesota business sector.[6]

SIZE DISTRIBUTION OF FARMS

There is a great deal of variability in the size of farms. Many are small-scale operations, so small in fact, that they cannot provide the principal livelihood for a family. A rule of thumb used by the U.S. Council of Economic Advisors is that a unit must have annual sales of at least $40,000 to be a commercial operation.[7] According to this standard, 43.5% accounted for 88.2% of total sales. Table 3 shows the proportion of farms with sales at

TABLE 3
Market Value of Minnesota Agricultural Products Sold, by Amount of Sales, 1982

Value of sales	Percentage of farms	Percentage of sales
Less than $2,500	12.7%	0.2%
$2,500 to $9,999	16.3	1.5
$10,000 to $19,999	11.7	2.7
$20,000 to $29,999	8.8	3.5
$30,000 to $39,999	7.0	3.9
$40,000 to $59,000	11.1	8.7
$60,000 to $79,999	8.3	9.2
$80,000 to $99,000	6.0	8.5
$100,000 to $249,999	14.5	34.1
$250,000 to $499,999	2.8	14.5
$500,000 or more	0.8	13.2
Summary figures:		
Less than $40,000	56.5	11.8
$40,000 or more	43.5	88.2
$100,000 or more	18.1	61.8

Source: U.S. Census Bureau, *1982 Census of Agriculture, vol. 1, Geographic Area Series, Part 23, Minnesota State and County Data* (AC82-A-23), Table 11.

various levels. The farms with annual sales of more than $100,000 represented less than one-fifth of the total units but produced more than three-fifths of the sales.

Another way of looking at farm size is in terms of acreage. Farms with less than one hundred acres of harvested cropland accounted for 37.8% of all Minnesota farms in 1982, and another 24.5% had less than 200 acres. At the other extreme, there were 6,764 farms with between 500 and 999 acres, 1,819 with 1,000 to 1,999 acres, and 371 with at least 2,000 acres of harvested cropland.[8]

CHANGING FARM ECONOMIC CONDITIONS

According to the department of agriculture, between 1970 and 1980 the number of farms in Minnesota diminished from 121,000 to 104,000, an average of 1,700 per year. During the next three years the total decrease was only 1,000 (to 103,000). This probably reflects the fact that during recessions the movement away from farms slows or halts because of the lack of employment opportunities in cities. (Operations with less than $1,000 of cash receipts are not counted as farms.)

The decrease in the number of farms has been slowing down over time. From 1960 to 1970 there was a 22.4% decrease, compared to a 14.0% decrease in the following ten years. The major reason for this slowdown is that the health of the farm economy was relatively greater compared to the nonfarm economy in the 1970s than in the 1960s.

The decrease in farmland has also slowed down. From 1960 to 1970, 1,500,000 acres of land were taken out of farm use, but in the following thirteen years only 500,000 more acres were lost to farming. These are relatively insignificant amounts in comparison with total farm acreage of 30,400,000 in 1983.

As a result of these trends, the average farm size has grown from 208 acres in 1960, to 255 acres in 1970, to 295 acres in 1983. The growth of average farm size was considerably slower in the latter period.[9] As noted above, statistics on all Minnesota farms are somewhat misleading because many farms are not full-fledged operations.

Agriculture has been on a rollercoaster since 1970, both in Minnesota and the nation as a whole. As Table 2 showed, net farm income fluctuates a great deal. The median net income since 1970 was $1.464 billion in 1982, but that level was exceeded by at least 15% in six years, and in four years, income was at least 15%.

To illustrate the economic pressure on farming as a whole, compare 1978, a relatively high income year, with 1982. In 1978, realized gross farm income was $5.64 billion, and it rose 33% in the next four years to $7.52 billion. However, farm production expenses rose even faster, 51%, from $4.19 billion to $6.34 billion. Since farm inventories rose slightly in 1978 and fell

somewhat in 1982, net farm income was off from $1.52 billion in 1978 to $1.09 billion in 1982, a 28% drop.[10]

The farm boom beginning in 1973 was a result of the conjunction of several forces. Very strong export demand resulting from poor Russian crops, unusually low harvests of anchovies (a substitute for soybeans), and other factors combined with relatively static domestic supplies, sent farm prices and income soaring. One direct result of this increased income was higher land values. The average price of Minnesota farmland rose 428% between 1972 and 1981, one of the most rapid increases of any state. The increase was warranted if farm incomes continued to rise, but this did not occur. As a result, farm land values began to decline after 1981. According to University of Minnesota surveys, the decrease was 18.7% from 1981 to 1983.[11]

The enormous increase in land values implies that farmers became wealthier. The value of Minnesota farmland in 1983 was $24.5 billion, more than three times its level in 1972. However, farm debt has also risen steeply. In total, the value of farm land and buildings rose 445% from 1971 to 1981, while farm real estate debts increased 250%. Table 4 traces the rise and fall of net farm assets from January 1, 1977, to January 1, 1983. Following a 75% increase between 1977 and 1981, net assets fell 16.2% in the following two years as land values decreased and debt continued to rise.[12]

Exports play a much larger role in the Minnesota farm economy than formerly. Unfortunately, estimates of Minnesota's farm exports are not available for the 1970s, but in the 1980-82 period they are estimated to have fluctuated between $1.9 billion and $2.3 billion. Nationally, the percentage of farm receipts coming from exports increased from less than 15% to almost 30% during the 1970s, and there was a concurrent increase in Minnesota, although its magnitude is uncertain.[13] Recently, exports have fallen short of earlier projections.

ANATOMY OF MINNESOTA AGRICULTURE

Minnesota agriculture is unusually diversified. The $6.9 billion received by farmers for cash sales of farm products in 1981 included $3.5 billion from crops and $3.4 billion from livestock, dairy products, and poultry. The eight largest commodities produced, listed by their share of the value of production, were as follows:[14]

- Meat animals (cattle, calves, hogs, sheep, and calves), 26%
- Feed grains (corn, oats, barley, and hay, primarily produced as feed for animals), 21%
- Dairy products, 19%
- Oil crops (soybeans, flaxseed, and sunflowers), 16%
- Food grains (wheat and rye), 8%

TABLE 4
Balance Sheet of the Minnesota Farming Sector,
January 1, 1977-83
(millions of dollars)

Year	Assets	Debt	Equity
1977	$29,151.6	$4,659.5	$24,492.1
1978	33,461.5	5,791.4	27,670.1
1979	39,086.5	7,214.9	31,871.6
1980	45,368.7	8,649.5	36,719.2
1981	52,365.0	9,945.5	42,870.4
1982	51,469.8	10,717.8	40,752.0
1983	47,953.0	11,986.2	35,966.7

Source: U.S. Department of Agriculture, *Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics, 1982,* Table 20. Data for 1977 and 1978 were obtained from Linda Wright, statistician for the Department of Agriculture.

Note: Farm households are included in these statistics. Trends were similar for data excluding farm households.

- Poultry and eggs, 5%
- Sugarbeets, 3%
- Vegetable crops, 2%

Minnesota ranks among the top five states for numerous products. In 1982, it ranked first in production of sugarbeets and sweet corn for processing; second in oats, sunflowers, turkeys, and cheese; third in hay, flaxseed, rye, green peas for processing, hog marketings, and butter; fourth in barley and milk; and fifth in corn for grain and soybeans.

The various regions of the state differ considerably in the farm products they produce. Cash crops predominate in the south and northwest, dairy products are strongest in the center of the state, and meat animals lead in twelve scattered counties, half of which are in the extreme southwest.

These differences in the use of land reflect variations in its productivity, which is the major determinant of land values. Table 5 demonstrates that the value of land varies considerably from region to region. In the southwest the average value per acre in 1983 was $1,669, more than four times as much in the northeast. The table also shows that all sections of the state did not share equally in the inflation in land values beginning in 1972. The northwest had the greatest increases and the east central region had the smallest increases. The decreases from 1981 to 1983 were relatively uniform, with four of the six regions having declines from 17% to 21%.

A correlation exists between land values and some other variables. For example, the more expensive the land, the smaller the average size of farms tends to be. In the northwest, where land is less expensive, farms tend to be much larger than in the southwest, where land values are on the average more than twice as high.

TABLE 5
Estimated Average Value Per Acre of Farmland, by District, 1983, and Changes Since 1972

District	1983 Value	Percentage change 1972-81	1981-83
Southeast	$1,354	362%	-21%
Southwest	1,669	450	-20
West-central	981	446	-14
East-central	561	317	-17
Northwest	658	595	-19
Northeast	411	505	-11
State total	1,065	428	-19

Source: Donna Downs, Matthew G. Smith, Philip M. Raup, "The Minnesota Rural Real Estate Market in 1983" (Minnesota Agricultural Economist, January, 1984).

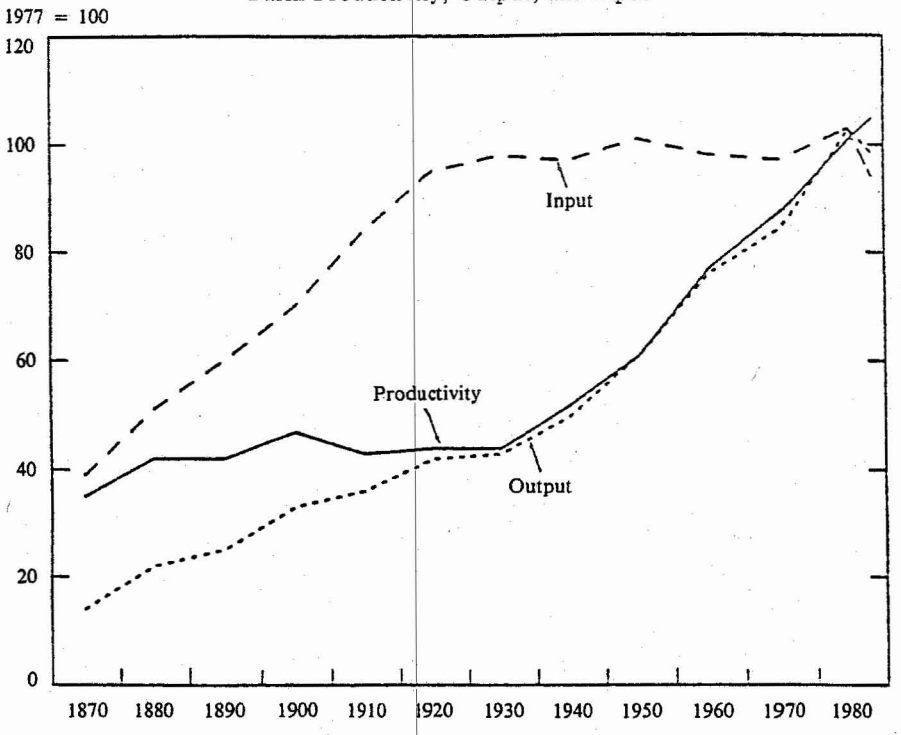
Other factors affecting farm size besides the productivity of the land (closely related to value) are the type of farming and the amount of parttime farming. In the main agricultural region of the state, farms tend to be larger toward the west, where it is drier, and toward the north, where the growing season is cooler and shorter. Dairy farms tend to be smaller than other farms. Where abundant nonagricultural employment is available, farms tend to be smaller because a large proportion of farmers only devote part of their time to agriculture. Families on about one in five farms in 1974 had a greater income from nonagricultural sources than from operation of the farm.

Tenant farming is not as common in Minnesota as in some neighboring states, such as Iowa. In 1982, only 12% of Minnesota farms were operated by renters. Tenant farms tend to be in the areas of higher land value and high productivity in southern and southwestern Minnesota. The number of tenant farms has decreased at a much faster rate than the number of owner-operated farms.[15]

An important change in the Minnesota farmland market is the increasing share of farm sales to expansion buyers. Prior to 1964 sole-tract buyers were the most frequent purchasers of farms, but since that time the proportion of expansion buyers has steadily grown, until in 1983, 78% of farms were bought by expansion buyers. Sole-tract buyers accounted for 13% of purchases, and the remaining 9% were bought by investors who do not farm.[16]

The decrease in the number of sole-tract buyers and tenant farmers are indicative of the great difficulty faced by anyone attempting to get a start in farming, particularly if he cannot take over a farm which is already owned by his family. The initial investment required is so large as to be prohibitive for most would-be farmers.[17]

FIGURE 1
Farm Productivity, Output, and Input



Source: U.S. Council of Economic Advisors, *Annual Report* (February 1984), p. 118.

SOME NATIONAL TRENDS IN AGRICULTURE[18]

Many important economic trends are more readily documented for the nation than for Minnesota alone. While the precise statistics surely are different in Minnesota, the trends apply to this state just as they do for American agriculture in general.

In 1982 the average farm had net income from farming of $9,188, and average income from nonfarm sources of $16,430, for a total of $25,618. The average family income for the whole population that year was $27,391. This indicates two important facts: farmers often have considerable nonfarm income, and the average income of farm families is lower than income for other families, but not by a great deal. This implies a great narrowing in the income differential between farm and nonfarm families. In the 1930s disposable farm family income per capita was less than 40% of that in the rest of the economy, but over the past decade it has averaged 88%.

These statistics, like all those on a per-farm basis, are somewhat misleading because they include many very small farms which do not provide a family's main livelihood. More than a third of the nation's farms

TABLE 6
Farm Input Use, 1910-80
(Index, 1910 = 100)

Year	Labor	Real estate	Mechanical power and machinery	Agricultural chemicals	Feed and seed
1910	100	100	100	100	100
1920	106	105	159	167	135
1930	102	104	200	200	159
1940	91	106	212	300	229
1950	68	108	424	633	341
1960	45	102	488	1067	453
1970	28	104	506	2500	565
1980	20	101	618	4000	635

Source: U.S. Council of Economic Advisors, *Annual Report* (February 1984), p. 118.

sell less than $5,000 worth of products a year, and 71% sell less than $40,000. The 29% with annual sales of more than $40,000 generate 87% of total farm receipts. In 1982 these commercial farms had average annual gross receipts of about $190,000 and net farm income of about $36,000. These farms have average assets of about $1 million and average equity of about $800,000.

The major reason why farmers' incomes have improved so much relative to the rest of the economy is the extremely rapid increase in productivity which has occurred over an extended period of time. Figure 1 and Table 6 show the magnitude of the productivity improvement and help to explain it. As Table 6 shows, between 1910 and 1980 labor employed in farming fell 80%. During the same period, mechanical power and machinery increased more than six-fold, agricultural chemicals increased forty-fold, and feed and seed rose more than six-fold. In other words, mechanization, herbicides, pesticides, and improved seeds and feeds have revolutionized agriculture and vastly increased each remaining farmer's productivity.

NONFARM INCOME OF FARM FAMILIES

As noted in the previous section, nearly two-thirds of the total income of the average farm family nationally comes from nonfarm sources. Unfortunately, comparable data for Minnesota is not available on a systematic basis. One fragmentary indication is provided by a U.S. Commerce Department survey for income received in 1978. In that year, total net cash income of farmers was $2.08 billion, of which $870.8 million (41.9%) was from offfarm sources. In interpreting this information, one should consider that 1978 was a particularly good year for farm income, so that normally the proportion of income from offfarm sources is presumably higher.[19]

INSTABILITY OF THE FARM SECTOR

As an industry, agriculture has some characteristics which distinguish it from other industries, such as manufacturing. Its biological production process

> involves long lags arising from growth cycles. This severely constrains the speed with which farmers can respond to changing market conditions. In addition, the volume of farm production is less predictable than in the non-farm economy because of the random effects of weather, disease, insects, and genetics.[20]

These factors have always made agricultural supply unstable. Because the price elasticity of demand for farm products is relatively low,[21] this unstable supply implies that farm prices and incomes will be volatile. An important goal of federal government farm policy has been to dampen these fluctuations, but sometimes gyrations in federal policies have added to instability.

Two major developments during the past decade have added to the volatility of conditions facing farmers. As noted above, export markets are much more important than they were prior to the 1970s. Export demand is relatively unstable because it is strongly influenced by weather, trade policy, exchange rates, population, and income in the rest of the world—all of which (except for population) tend to be unpredictable.[22] Another source of added instability is increased volatility in interest rates. Farm debt has often been a problem in the past, but it has a different character now because since 1979 monetary policy has permitted wider fluctuations in interest rates than previously.

THE PREDICAMENT OF FARMERS

Some economic problems of farmers are of long standing. They are at the mercy of nature and international markets. The demand for farm products usually grows relatively slowly because farm products are mostly necessities, not luxuries. The rapid increase of productivity tends to put downward pressure on prices. Because farming is viewed as a "good way of life," farmers tend to leave agriculture slowly and reluctantly, which tends to depress monetary incomes.

In addition, the over-valued dollar is currently adding to the problems of most parts of the farm sector. Because the value of the dollar is so high relative to most other currencies, demand for American exports is considerably less than it would otherwise be.

Currently, financial problems are not uniformly distributed among farmers. Many of those who purchased land recently and assumed a heavy debt load are experiencing serious problems in servicing their debt: interest rates are unusually high and farm incomes have been less than they expected. However, farmers without significant recent purchases and debt increases

are much better off. Their net worth has decreased considerably "on paper" because of falling land prices, but they are generally not in financial danger. Without the high interest burdens assumed by recent purchasers, their net incomes are substantially higher than those of their neighbors who have assumed more leveraged financial positions.

A recent study by the federal reserve board assumed that operators with a debt-asset ratio greater than 40% are experiencing financial stress. Among large and medium-size farms—which includes most full-time farm operations—one-third nationally had ratios suggesting financial stress as of January, 1984. At the same time, nearly one-third of the farmers in this group had little or no debt.[23]

The farm bankruptcy has risen because of the financial problems described above. However, as important as it is to recognize that the farm bankruptcy rate is well below that for nonfarm businesses, there remains the possibility that farmers may be forced to sell their property in order to avoid bankruptcy.[24]

THE OUTLOOK FOR AGRICULTURE

It is important to recognize that the booming farm economy of the 1970s was not unprecedented, although it is an unusual occurrence. Farm booms of major proportions occurred two times earlier in this century, during and immediately after the World Wars, and twice in the nineteenth century, booms also triggered by U.S. or European wars.[25]

> . . .[T]he effects of each boom extended over several decades, shaping the fortunes of an entire generation of farmers and their landlords, lenders, and suppliers. In each case, the vast majority of farmers were lifted by an initial wave of unanticipated prosperity. After the booms, however, their experience varied according to how dependent they had become on continued high commodity prices, and thus how financially vulnerable they were as prices and incomes retreated. After each boom some farmers experienced lasting financial improvement, while others endured prolonged financial stress or went bankrupt.

Future export trends will have a major influence on U.S. farm economic conditions, and the standard forecast is that farm exports will grow less rapidly in the next five years than they did in the 1970s. Export demand in the early 1980s was reduced by the global recession, Third World debt, and the strong U.S. dollar. If the dollar declines in value and the world economy is relatively prosperous, it will help exports to recover. However, the debt situation of less developed countries does not present an optimistic picture. The ability of these countries to finance the purchase of U.S. farm exports is likely to remain limited. This market is important because the growth of exports to Japan, Europe, and the U.S.S.R. is likely to be slow.

Two other factors, one already in existence and the other potential, also dim the outlook for farm exports. Some other major agricultural exporting

countries have made large capital investments in farming and in marketing facilities to expand their export capacity. Thus, American exports face tougher foreign competition than they did a decade ago. Second, there is a risk of increased protectionism. If the U.S. and its trading partners became involved in a trade war, this would have very negative implications for American agricultural exports. Not only might other countries raise barriers to our exports, but protectionism could impede the economic growth of less developed countries, further reducing their ability to purchase U.S. exports.[26]

CONCLUSION

The 1984 *Annual Report* of President Reagan's council of economic advisors makes an interesting point about the changing relationship between agriculture and the rest of the economy:

> Cyclical changes in the level of economic activity now have larger effects on agriculture than formerly. The agricultural sector . . . is strongly affected by interest rates and the value of the dollar. The agricultural sector therefore has a strong interest in reducing the Federal deficit to which recent farm programs have contributed significantly. Macroeconomic policy may have as great an absolute effect on agriculture today as do the direct effects of farm policy.[27]

Predicting trends in agriculture is fraught with uncertainties, but it appears that the odds of a quick return to the prosperity of the 1970s are not good.

TAX POLICY

Farmers pay each of the major state and local taxes, but the property tax is by far the one which gathers the greatest share of attention. In 1984, farm owners are estimated to have paid $294.2 million in property taxes.[28] In addition, in 1982 farmers paid an estimated $32.6 million income tax, $20 million in sales tax on farm machinery and equipment purchases, and undetermined amounts of the corporation income tax and other taxes.

This chapter focuses primarily on the property tax, but the other major taxes are also discussed briefly. The ability of state government to assist the agricultural sector is assessed in the concluding section.

PROPERTY TAX

The property tax is the largest tax paid by the agricultural sector. The most important issue discussed in this section is whether the method of assessing farmland should be changed. The assessments of most but not all farms in Minnesota are based on their market value as estimated from the

sales prices of comparable property. Farm spokesmen advocate instead basing assessments on the productivity of the land. In order to set the stage for analysis of this issue, this section first considers the incidence of farm taxes, trends in property taxes since 1973, comparisons with other states, and variations of tax burdens for farms within the state. Next, the various methods of relieving farm property taxes used in Minnesota and other states are described and analyzed, after which the question of how farm property should be taxed is addressed.

Minnesota's farm property tax is solely on real estate. Personal property such as farm machinery and livestock was exempted in 1967. While the trend nationally is gradually to exempt personal property and most states do exempt livestock completely, the majority of states still impose a tax on farm machinery.

The department of revenue reports that the market value of taxable farm property was $34.172 billion and the assessed value was $6.195 billion in 1982 (the basis for taxes payable in 1983—the latest year for which data are available). Farm land accounted for the great majority of this value, as shown by this breakdown:

	Market value	Assessed value
House, garage and one acre	$3.480 billion	$486 million
Land	29.139 billion	5.392 billion
Other buildings	1.553 billion	217 million

WHO PAYS FARM TAXES?

One of the issues on which economists are in widespread agreement is the incidence of the property tax on farmland. Because the prices of most farm products are determined by supply and demand in national or international markets, farmers cannot shift taxes forward to their customers. Nor can taxes generally be shifted backward to the farmer's suppliers. Therefore, the farmer generally bears the burden of the taxes he pays.

According to standard economic theory, the property tax on farmland is capitalized, that is, it is reflected in a reduction in land values. The value of the land depends on the net income accruing to its owner over time; since the property tax lowers net income, it reduces the market value of the land.

The capitalization process has some interesting implications. Because the tax is immediately reflected in land values, a purchaser of the land after the tax has been imposed does not bear the burden of the tax because he or she paid a lower price for the land on account of the tax that its ownership entails. The tax is borne by the owner at the time it is imposed.

Capitalization also works in reverse. If taxes are unexpectedly reduced, owners will receive windfall capital gains because land values will rise. A subsequent purchaser of the land will not benefit from the tax relief because his or her purchase price will be accordingly increased.

This analysis of tax incidence implies that the interests of those who supply farmers with products and purchase farmers' output may not be the same as the interests of farmers. Those who sell products to farmers, such as farm implement dealers and small town merchants, benefit from the tax relief provided to farmers to the extent that enhanced wealth increases farmers' purchases. On the other hand, the purchasers of farm products have relatively little interest in how much tax farmers pay unless they happen to own farmland themselves.

The preceding analysis must be qualified to the extent that the property tax falls on buildings rather than land. The tax on land should not affect the allocation of resources at all, but the tax on buildings discourages investments in structures and thereby tends to reduce farm output, in the long run.

A complete analysis of farm tax relief would have to consider who finances the relief. Depending on the relief program, the relief may shift costs to other local taxpayers, be borne by state taxpayers, or result in lower local government spending.

TRENDS IN PROPERTY TAXES SINCE 1973

Table 7 summarizes what has happened to farm property taxes in the aggregate since 1973. Between 1973 and 1984 these taxes rose 171% and at an uneven rate. The increase in 1984 was one of the largest, with a rise of about 17% from 1983; only 1982's 29% jump was larger. Double-digit increases have not been uncommon, occurring in 1975, 1977, 1979, and 1980. In most other years the tax increase was relatively small, and in 1981 a 9% decrease occurred.

The increase in farm taxes has been much less than the increase in farm market values since 1973. The indicated market value of farms rose 549%. (This figure may somewhat overstate the extent of the increase because it does not fully reflect the decrease in values that occurred in the past three or four years.) In other words, the market value of farms in 1984 was six and one-half (6.49) times its 1973 level, while taxes were approximately two and three-fourths (2.71) times what they had been in 1973. Consequently, the effective tax rate (net taxes as a proportion of market value) decreased sharply from 1.55% in 1973 to 0.65% in 1984.

The decrease of the effective tax rate reversed several years ago. In fact, it bottomed out in 1981 at 0.44% and rose in each of the next three years.

The irregular pattern will continue in 1985, when farm property taxes are projected to decrease 1.8% as a result of policies adopted by the state in 1984.[29]

Farm taxes have risen slightly faster than total net property tax collections. As a result, the share of property taxes paid by farms increased from 12.6% in 1974 to 13.5% in 1983. This was a much smaller rise than

TABLE 7
Farm Indicated Market Value and Property Tax
Taxes Payable 1973-84

	Farm Property[a]			
Payable Year	Indicated Market Value[b] (billions)	Tax[c] (millions)	Effective Tax Rate[d]	Percentage Change
1973	$7.429	$115.1	1.55%	
1974	8.297	115.6	1.39	0.4%
1975	9.820	130.6	1.33	13.0
1976	11.707	136.4	1.17	4.5
1977	16.026	159.5	1.00	16.9
1978	21.930	172.8	0.79	8.3
1979	27.661	195.9	0.71	13.4
1980	32.783	215.0	0.66	9.8
1981	44.671	195.8	0.44	-9.0
1982	47.244	251.7	0.53	28.6
1983	48.618	266.0	0.55	5.7
1984	48.229	311.9	0.65	17.2

Source: Minnesota Department of Revenue.

Notes: Actual data for 1973-83; estimated for 1984.

[a]Includes farm homesteads and nonhomestead property and noncommercial vacant land located in townships.

[b]Assessor's market value adjusted for the level of assessments as determined by assessment-sales ratio study.

[c]Reflects homestead and agricultural aid credits but not circuit breakers or targeting credit.

[d]Tax divided by indicated market value.

occurred in property values. During the same period the indicated market value of farm property jumped from 20% to 29.7% of the total real and personal property tax base. In other words, the farm share of net property taxes increased slightly while the farm share of total property values increased substantially.

Inflation should also be taken into account. The consumer price index rose approximately 135% between 1973 and 1984, indicating that most of the 171% property tax increase during this period was due to inflation. In real terms, farm property taxes increased only 15%.

Real farm taxes have increased at a much faster rate in the 1980s than they did in the 1970s. From 1973 to 1980 farm property taxes rose 87%, less than 2% more than prices increased. Comparing just the change of taxes from 1981 (a year when farm taxes were unusually low) to 1984, there was a 38% increase after eliminating inflation (a 59% rise before stripping away inflation). Over a slightly longer period, 1980 to 1984, the real farm property tax increase was 14% (and the nominal increase was 45%). In other words, real farm property taxes were virtually constant from 1973 to 1980, but then rose 14% in the next four years. The increase of farm taxes from the

abnormally low level of 1981 has been dramatic, even eliminating the effects of inflation. This timing is unfortunate because real taxes were increasing during the period when the economic fortunes of farmers were worsening.

COMPARISONS WITH OTHER STATES

The best data for comparing tax levels in various states are collected by the U.S. Department of Agriculture (USDA). While they do not agree precisely with the department of revenue's information, these estimates are consistent across states.

In 1970 and earlier years, farm taxes per $100 of full market value in Minnesota were substantially above the national average. For example, in 1970 the effective rate in Minnesota was 1.69% compared to a national average of 1.08%. By 1975 Minnesota was only slightly above average, and in later years it was slightly below average. The effective tax rate on farm property decreased substantially across the nation in the 1970s, but it fell faster than average in Minnesota.

In 1970, excluding the northeast, where relatively little farmland remains, only three states (Wisconsin, California, and Alaska) had a higher effective tax rate on farm real estate than Minnesota. In 1981, thirteen states were higher than Minnesota outside the northeast. Nearby states like Wisconsin, South Dakota, and Nebraska have considerably higher tax rates.

In terms of real estate taxes per acre, Minnesota still ranks relatively high. Its average tax in 1981, $5.25 per acre, was 27% above average. However, in 1970 Minnesota had been 68% above the national average. Minnesota's relatively high taxes per acre are related to its relatively high land values. The higher the value, the higher the tax per acre tends to be.[30]

A final way of comparing tax burdens across states is in terms of farm income. The USDA published such comparisons for taxes levied in 1979 and earlier years, but it has not done so recently because of qualms about the quality of income data. Throughout the late 1970s, Minnesota farm property taxes were below average in relation to net farm income and about average when compared to gross farm income. For example, in 1979 they were 7.0% and 2.0% of net and gross farm income respectively, while the national averages were 8.0% and 2.1%. These rates were considerably lower than those in surrounding states. In 1979, property taxes as a proportion of net farm income were 13.6% in Iowa, 9.6% in North Dakota, 12.4% in South Dakota, and 11.6% in Wisconsin.[31]

To summarize: when compared to other states, Minnesota farm taxes are about average compared to property value, above average compared to acreage, and below average compared to farm income. (These results imply that income per acre is above average.) Prior to the 1970s, Minnesota's farm tax burdens were much higher in comparison with the national average than they are now, reflecting the fact that major steps were taken during the past decade to relieve farm property taxes.

While Minnesota's farm tax burdens have gravitated toward the national average during the period since 1970, Minnesota has followed a path different from most other states in providing property tax relief. The differences in relief mechanisms employed will be discussed later.

ARE FARMS OVER- OR UNDERTAXED RELATIVE TO OTHER PROPERTY?

Farm effective tax rates are considerably lower than the tax rates on other kinds of property. For taxes payable in 1983, effective tax rates (not considering the circuit breaker) were as follows:[32]

0.53%	Farm
1.05	Residential
2.89	Commercial/industrial
2.45	Apartment
1.09	Recreational
1.12	Timber
3.03	Utility
1.25	Total

The relatively low property tax rate on farms has several sources. The classification system and property tax credits, discussed below, are part of the explanation; the other major factor is that rural tax rates tend to be considerably lower than urban tax rates because public spending is less in rural areas and the per capita tax base tends to be relatively high.

On the other hand, property taxes are a higher proportion of income for farmers than for city residents because farmers own a great deal of property and have relatively low income. The magnitude of the difference is suggested by comparing the ratio of net property taxes to personal income in rural and urban counties. In the nineteen most rural counties, property taxes averaged 4.57% of personal income in 1983, while they averaged 3.71% of personal income in the nine most urban counties.[33]

In other words, farmers have so much property that their property tax payments are large in relation to their income and in absolute terms (per capita). However, partially because of state policy and partially because rural areas have large per capita tax bases and relatively low service levels, the tax rate on farm property tends to be relatively low.

The issue of whether farms are over- or undertaxed will be discussed further after the classification and tax credit systems are explained.

VARIATIONS OF TAX BURDENS WITHIN THE STATE

The effective tax rate on farm property varies considerably within Minnesota. For example, in 1983 the lowest effective rates were 0.15% in Lake County, 0.26% in Cook County, 0.28% in Itasca County, 0.35% in

Hubbard County, and 0.36% in Renville County; while the highest tax rates were in Ramsey County (0.90% on the small amount of farm property located there), 0.78% in Washington County, 0.76% in Hennepin County, 0.75% in Kittson County, and 0.73% in Lake of the Woods County, and 0.70% in Winona County.[34] Property in or near the Twin Cities metro area tends to have a higher tax rate because the land is more valuable and cities tend to have higher tax rates. In rural areas, tax rates tend to vary inversely with the per capita tax base.

The variation among counties of farm effective property tax rates is relatively modest. Forty-two of the eighty-seven counties had rates for taxes payable in 1983 between 0.50% and 0.59%. Most of the other counties had tax rates close to this level, with sixteen in the 0.60% to 0.69% range and eighteen in the 0.40% to 0.49% range. Only six counties had higher rates and five counties had lower rates. Most of these outliers have little farm property, either because they are heavily urbanized or because they lie in northern Minnesota where the quality of land is poor. Winona and Renville counties are the only two counties with relatively extreme tax rates that are not in the Twin Cities or northern areas.

The relatively small dispersion of tax rates is a consequence of Minnesota's equalizing tax credits and school aid and local aid programs.

Whether a property qualifies for the benefits of homestead tax treatment also affects its tax rate. Homestead property has a number of advantages: it receives a larger agricultural tax credit; it is assessed at a lower percentage of its market value; it receives the homestead credit; depending on the household's income and the rate of increase of taxes, it may receive the circuit breaker and targeting credits. As a result, the effective tax rate on homestead property is considerably lower than on nonhomestead property.

The classification system and credits also result in lower tax rates on smaller farms and farms with lower value per acre. These differences and some of the advantages enjoyed by homestead property are illustrated in a simplified manner in Table 8. This table shows the effective tax rates for homestead and nonhomestead farms with sizes varying from 250 to 1,000 acres and land values between $500 per acre and $2,000 per acre. Several simplifying assumptions have been made in Table 9. The most important assumptions are that the tax rate has been held constant at seventy mills and that the circuit breaker and targeting credits are not available. Taxes paid on buildings are not considered.

As Table 8 shows, lower-value farms have considerably lower tax rates than higher-value farms. For homesteads, the effective tax rate is 0.36% for a 250 acre farm with $500 per acre land it is 1.09% for a 1,000 acre farm with $2,000 per acre land. This differentiation according to size is relatively slight for nonhomestead farms, and the tax rate does not vary for nonhomestead farms at all according to land value. The table also shows that homesteads do have substantially lower taxes than nonhomesteads, particularly for

TABLE 8
Effective Property Tax Rates for Farms of Various Sizes, Land Values, and Homestead Situations, Taxes Payable in 1985
(percent of market value)

	Value per acre					
	$500		$1,000		$2,000	
Size	Homestead	Non-homestead	Homestead	Non-homestead	Homestead	Non-homestead
250 acres	0.36	1.13	0.57	1.13	0.73	1.13
500 acres	0.66	1.15	0.82	1.15	0.90	1.15
1,000 acres	0.92	1.18	1.00	1.18	1.09	1.18

Note: Calculations assume that the tax rate is seventy mills. Taxes paid on buildings are not taken into account. The provision excluding the homestead and one acre from the agricultural credit is not considered. Calculations consider only the agricultural and homestead credits. The circuit breaker and targeting credits could lower effective tax rates for homesteads further. Calculations assume that farms are assessed accurately.

small farms. The difference between homestead and nonhomestead farms would be even greater if the circuit breaker and targeting credit were taken into account, since they are available only for homesteads.

The assumption in Table 8 of a constant mill rate is unrealistic. In a county where the average land value is close to $2,000, the tax rate would be considerably less than in one where land is worth only $500 per acre. Therefore, the gap between the effective tax rates on such farms would be smaller than the illustration in Table 9 suggests.

These differences have implications for the tax rates on different kinds of farms. Because farms producing grains tend to be larger than others, their effective tax rate tends to be higher than average. Smaller farms, such as those producing vegetables or turkeys, tend to have lower effective tax rates than average. Since personal property is exempt from the property tax, farms using a high proportion of personal property rather than real property have a lower effective tax rate.

RELIEVING FARM PROPERTY TAXES: METHODS AND GOALS[35]

Three primary methods have been used to target tax relief to farm property—preferential assessment, classification, and credits. Most states rely primarily on preferential assessment. While Minnesota has two preferential assessment programs, they are used only on a limited basis. Minnesota has relied primarily on classification and credits to relieve farm

property taxes. These policies have enabled Minnesota to target relief to family farmers and, in particular, to relatively small, low-value farms to a greater extent than in any other state. The fact that most Minnesota farms are assessed on the basis of market value while most farms nationally are assessed on a preferential basis does not imply that Minnesota farms have been treated more harshly than farms in other states. As the previous section on tax comparisons with other states showed, Minnesota has relieved farm property taxes more than most other states since 1970. However, Minnesota has employed methods not used by other states. This section describes the property tax relief mechanisms in Minnesota and other states in order to provide a basis for considering possible changes.

Farm tax relief programs may have at least three goals, which vary in importance among states and within states. The weight attached to each of these goals has an important effect in selecting which tax relief program is most appropriate. The three goals are preserving farmland, reducing the tax burden on the owners of farm real estate, and increasing the income of family farm operators.

Preserving farmland. Many people are concerned about the loss of farmland as cities sprawl across the countryside. While this was an important argument for the adoption of many preferential assessment programs, the severity of the problem varies considerably geographically. Since 1970 in Minnesota, the decrease in farm acreage has been only 1.6%. In some parts of the Twin Cities area, however, the decrease has been greater. For example, between 1974 and 1982, Anoka County lost 21% and Scott County lost 5% of their farmland.[36]

Reducing taxes on farm owners. Economists agree that taxes on land are borne by the landowner. Some argue that farm real estate is overtaxed in relation to the governmental benefits it receives, which implies that farm property taxes should be lowered across the board.

Increasing the income of family farmers. Normally some proportion of farm operators are struggling financially. (The proportion is considerably higher now than throughout most of the past decade.) This goal can be distinguished from the second one because not all Minnesota farms are owner-operated.

In addition to these general goals, tax relief programs can be judged according to the same criteria discussed earlier. Criteria such as horizontal equity, vertical equity, neutrality, and simplicity are met to a different extent by the various types of farm tax relief programs.

Judgments on three fundamental issues must be reached before decisions can be made about whether and how to relieve farm property taxes. (1) Should farms be treated differently from other business property? (2) Should homestead farms be favored over nonhomestead farms? (3) Should small or low-value farms be favored over large or high-value farms? In addition to answers to these three questions about the direction of farm tax

policy, answers are also needed about the extent to which differences in treatment are warranted.

Farm vs. business property. Some persons argue that farms are no different from other businesses, so they should be taxed in the same manner. This position ignores the fact that farms entail very large investments in real estate, which penalizes them because the property tax is primarily on real estate rather than on personal property. In any case, all states have established the practice of taxing farms more favorably than business property.

Farm tax preferences have sometimes been justified as a means of preserving open space in congested urban areas. While this argument may be valid in certain circumstances, its applicability in Minnesota is primarily limited to the Twin Cities area. Programs have been designed specifically for this area, so preservation of open spaces does not justify a statewide tax relief program for farms.

Homestead farms. Some persons argue that family farms make an important contribution to the American way of life, so they should be granted favored treatment. Others dismiss this argument as sentimental, saying that it once may have been valid but that family farms are now economic production units not essentially different from other farms or businesses. Many family farmers have far greater wealth and, in most years, higher income than the average Minnesotan.

Minnesota's tax policy should be based not merely on whether preserving family farms is desirable but also on whether it is feasible. The ability of state government to provide enough assistance to make a real difference in the economics of farming is open to question. As noted in the previous section (and demonstrated in Table 8), effective property tax rates are lower for homestead farms. For example, a 500-acre farm with land worth $1,000 per acre subject to a seventy-mill rate has a 0.82% effective tax rate if it is a homestead and a 1.15% tax rate if it is not a homestead. This amounts to $1,650 less tax for the homestead, which is not a make-or-break difference.

However, farm property taxes are a significant cost. Including the estimated effects of the circuit breaker, net farm property taxes in 1982 were about $239 million. This represented 3.9% of farm production expenses and 15.9% of net farm income. If property taxes had been 20% lower in that year and nothing else had changed, net farm income would have been increased 3.2%.

In conclusion, farm tax preferences involve significant amounts of money, but they are usually too small to make a crucial difference in determining the economic viability of family farming.

Large vs. small farms. The comments about family farming also apply to the issue of large vs. small farms. Tax relief can help small farms more than large farms by reducing tax burdens, but it is unlikely that a small farm will survive when its economic environment is very unfavorable. For

example, as Table 8 showed, a 250-acre homestead farm with $500-per-acre land a millage rate of seventy pays a low 0.36% effective tax rate, but its tax saving compared to a nonhomestead farm is only $962.50, and its tax saving compared to a very large homestead farm is even less.[37]

One rationale for favoring relatively small farms is to offset federal income tax policy, which may be viewed as biased toward large farms. This bias is discussed in the personal income tax section of this report.

ANALYSIS OF DIFFERENCES AMONG TAX RELIEF MECHANISMS

One fundamental difference is between programs that help farms by lowering assessed valuation and programs that reduce taxes directly through a credit mechanism. Programs that reduce assessments tend to shift the cost of financing local services to other local property. Credits are subtracted from the property tax bill. There are four major differences between these forms of relief:

- An assessed valuation reduction is largely financed locally by other property; a credit is financed by state taxpayers.
- The benefit from a credit is easily quantifiable. The benefit from a lower assessment is more complicated to measure because the property tax rate is normally raised to compensate for a lower assessment. An example will make this clear. Suppose that initially the assessments of farm and nonfarm property were each $20 million. If the nominal tax rate was 5%, total tax revenue would be $2 million. If farm assessments were lowered to $16 million, the tax rate would have to be increased to 5.56% to yield $2 million. Farm taxes, which were initially $1 million, would now be $0.89 million. Thus, a 20% reduction in farm assessments resulted in only an 11% reduction in farm taxes. There is a corresponding 11% increase in nonfarm taxes. What complicates the situation further is that the relationship between assessment reductions and tax savings depends on the proportion of the tax base that is agricultural. If farms are a small proportion of assessed valuations, the farm assessment reduction will not affect the tax rate much; if farms are a large proportion of assessed valuations, the increased tax rate will offset most of the benefit from the lower assessment.
- It is easier to target credits than assessed valuation reductions. It is not administratively difficult to set a maximum on benefits from a credit, but it is awkward to limit benefits of preferential assessments.
- Preferential assessment is administratively cumbersome, requiring assessors to determine the use-value of property rather than the more observable market value.

The latter two differences between credits and assessment reductions apply more to preferential assessment than to classification. Classification

does permit targeting by setting increasing assessment ratios as market value rises. Classification is also less administratively cumbersome than preferential assessment because it does not require determination of use-value.

A final difference between credits and lower assessments is not inherent but is usually part of the way in which state fiscal systems operate. State aid to school districts normally depends on the assessed valuation of property per pupil. Any program lowering assessments tends to increase state aid. In a rural area where farms are a very large proportion of the tax base, this is the major benefit to agricultural property from lower assessments. (There is little nonfarm property to which the local tax burden can be shifted.)

DESCRIPTION OF PROGRAMS IN ALL STATES

Preferential assessments programs. Forty-six states (including Minnesota) have laws prescribing that farm property may be assessed according to its use-value rather than its market value. Eligibility for these programs varies considerably. In some states, all property is automatically covered by the preferential assessment law; in others, all property is eligible to apply for preferential assessment; finally, in some states, only property in certain geographic areas or having specific characteristics may receive a preferential assessment. Although forty-six states have preferential assessment laws, in many of these states they do not apply to all farms statewide.

States differ widely in terms of how they administer their preferential assessment laws. In some states, determination of use value is left to the discretion of local assessors; elsewhere, a state government agency establishes the detailed procedures to be used in assessing farm property. Sometimes the state establishes the aggregate farm assessment for a county and leaves to the assessor the task of placing a value on individual parcels.

The majority of the preferential assessment programs include a penalty which must be paid if participating land is converted to nonfarm use. This penalty is usually based on the tax savings over a number of previous years, varying from two to ten years. Approximately half of the states add an interest charge to the penalty. As of 1980, twenty-eight states levied a penalty when land changes use, while seventeen had no penalty. Two states (one of which also has another program) required that a restrictive agreement be signed by landowners desiring a preferential assessment.[38]

Because there is so much difference among states in terms of how they implement preferential assessment laws, it is impossible to generalize about what effect one would have on farm tax burdens if it were generally applied throughout Minnesota. The details of a particular preferential assessment method must be spelled out before its effects can be analyzed.

The first preferential assessment program was enacted in Maryland in 1956, and most others were adopted between 1960 and 1975. Most of these programs did not initially result in a reduction of farm assessments but rather ratified a pattern of de facto preferential assessment that previously existed.[39] They prevented a large increase in assessments during the 1970s when farmland values soared.

Classification. Classification differs from preferential assessment in that it explicitly assigns a lower assessment ratio to farm property than to certain other categories of property, while preferential assessment does this implicitly. Most states with classification systems assign a lower assessment ratio to residential and farm property than business property, but farms are not usually favored over homes.

Minnesota's classification system differs from those elsewhere in several respects. No other state has changed the assessment ratios as often; nor has any other state "fine tuned" classification by setting different assessment ratios on property with different market valuations. Finally, no other state differentiates between homestead and nonhomestead property in setting assessment ratios.

Credits. Michigan, Wisconsin, and Iowa are the only states besides Minnesota to use credits specifically for farm property as a tax relief tool. Michigan and Wisconsin have circuit breakers for farm property in addition to their general circuit breakers. Both states tie their farm circuit breakers to the preservation of farmland. In Michigan, the landowner must sign an agreement to maintain his property as a farm for at least ten years. In Wisconsin, circuit breaker benefits are greater if the property is located within a district zoned for agriculture, and only counties with land-use plans can have farms which participate in its circuit breaker. Benefits from both of these farm circuit breakers have grown rapidly. The Michigan farm circuit breaker (which refunds property taxes in excess of 7% of household income) had benefits of about $51.6 million in 1982, more than triple the level three years earlier. In Wisconsin, the benefits from the farm circuit breaker were $22.6 million in 1984, several times as much as in 1978.

Both Michigan and Wisconsin also permit farms to participate in their general circuit breakers. Many Michigan farms receive the maximum $1,200 benefit from its general circuit breaker. In Wisconsin, farmers receive over 12% of the benefits from its general circuit breaker, although they account for fewer than 8% of the participants in the program. Benefits from Wisconsin's general circuit breaker are limited because only $1,200 of property tax is considered in calculating benefits, which is a more important constraint than the fact that only buildings and one hundred-twenty acres are eligible for the program.[40]

Circuit breakers have appeal because they relate tax relief more closely to need than do other tax relief programs. However, they may be less appropriate for farmers than for homeowners and renters because farmers

have considerable ability to manage their taxable income by means of cash accounting and timing their expenses and sales of output. In contrast, the incentives provided by a circuit breaker may be offset by the incentives of the income tax. The circuit breaker encourages reporting very low income in some years and relatively high income in other years; the income tax encourages smoothing out the flow of income.

Iowa's credit is like Minnesota's agricultural aid credit in that it is not income-related. Iowa's credit is less progressive than Minnesota's because it does not set a maximum benefit, nor does it differentiate between homestead and nonhomestead property. Iowa's agricultural land tax credit has a fixed total appropriation, unlike Minnesota's, which is open-ended. Iowa's credit has had a fixed annual cost of $43.5 million since 1980, while Minnesota's grew rapidly in cost up to 1983. Finally, Minnesota's credit is considerably larger than Iowa's.

DESCRIPTION OF MINNESOTA PROGRAMS[41]

Minnesota has three preferential assessment programs, classification, four major credits, and two minor credits.

Preferential assessment I: Green acres. Section 273.11 of the Minnesota Statutes, enacted in 1967, established the first preferential assessment program in Minnesota. This law, known as the "green acres statute," provided that qualifying real estate would be assessed "solely with reference to its appropriate agricultural classification and value" and that "the assessor shall not consider any added values resulting from nonagricultural factors."

To qualify, the land must be used for agricultural production, it must be at least ten acres, and its annual income must be at least $300 plus $10 per tillable acre. (Alternatively, the land may provide one-third of the total family income of the owner.) Only homesteads are eligible (unless the farm has been owned by its present owner at least seven years). If land is subsequently removed from agricultural use, a penalty must be paid equal to the additional taxes which have been paid over the three previous years if the property had not been in the green acres program.

The green acres program is not widely used. Only twenty-four counties have any land in the program. Sixteen of those counties are in the Twin Cities metro area or contiguous. This is as would be expected because it is in those counties that urban pressure causes the widest divergence between the value of land for farm use and for development. All of the eight counties outside the Twin Cities area have very low participation in the program. In all cases less than 1% of the farmland is in green acres, and in six of the counties the proportion is 0.2% or less.

By contrast, in the Twin Cities area, eleven counties have more than half of their farmland in the program, and in two counties (Kanabec and Wright) 90% is enrolled.

Statewide, 1,842,000 acres are in the green acres program, representing 22.5% of the farmland in the twenty-four counties. The market value of land in those counties is lowered 11.5% by the program from $6.162 billion to $5.456 billion. In the two counties with the most land in the program, it reduces the aggregate farm assessment 36.1% and 29% respectively.

The limited use of the green acres program suggests that in most of the state there is not a large difference between the market value of land for agricultural production and the market value determined by assessors. In other words, in most of the state, urban development pressures does not significantly inflate the value of farmland. The green acres law is silent on how farm market value should be determined; that decision is left to local assessors.

Preferential assessment II: Metropolitan agricultural preserves. Chapter 473H of Minnesota Statutes, enacted in 1980, goes beyond the green acres law in relieving farm property taxes. It provides not only that participating land will be assessed solely on the basis of its value for agricultural use, but also that the tax rate may not be more than 5% above the previous year's statewide average mill rate levied on property located within townships. The state reimburses local governments for taxes in excess of this 5% figure.

To qualify for this program, land must be located in an area designated for long-term agricultural use by a local planning and zoning authority. The property owner must agree to keep the land in farm use and to give notice of eight years before the use may be changed. A parcel of land must normally be at least forty acres in size to be included in the program, although some exceptions are allowed. In addition to the tax benefits, participating farms receive other benefits, such as protection from unreasonably restrictive local and state regulation of normal farm practices, imposition of unnecessary special assessments, and indiscriminate and disruptive eminent domain actions.

Participation in this program has been significant although it represents a small proportion of farmland in the Twin Cities area. As of February 1983, the deadline for the second year of tax benefits, 88,358 acres were enrolled in the program, 15% of the land certified eligible for preservation. This was a 46% increase over the first year. In addition, many local communities have designated land as long-term agricultural areas which planners had not previously defined as such. More than 1,700 parcels of land are in the program, receiving an average tax credit of $200; thus, the total credits paid for taxes payable in 1984 were $340,000.

Preferential assessment III: School aid formula. Since 1977, for purposes of distributing state aid to school districts, one half of the assessment of farmland has been based on its value in farm use. This value is calculated by capitalizing each county's gross farm rental income with a capitalization rate of 9%. The other half of the assessment is based on market value. The effect of establishing half of the assessment on a

preferential basis is to increase school aid, especially in rural school districts. For example, in Brown County the market value of farm land is $826 million and the preferential value is $543 million, that is, 34% lower. As a result, this county's school aid is increased 22%. Statewide, this provision increases state aid about $40 million per year in rural areas.

Preferential assessment IV: Rent capitalization. In 1981, a law was passed stipulating that in 1983 and later years farm assessments would be based on capitalized rent. This law was suspended for one year and then repealed in 1984. Its effect would have varied considerably among counties. Some areas would have realized large assessment decreases, others would have had small assessment decreases, and still others would have experienced no decreases at all.[42] As set forth in this law (a law which did not take effect), rents would have been capitalized at a 5.6% rate.

Preferential assessment: Summary. As noted above, preferential assessment differs from classification in that it implicitly may assign a lower assessment ratio to farm property than to other categories of property; classification assigns an assessment ratio explicitly. Minnesota has three forms of preferential assessment in effect and recently repealed a fourth. The merits of expanding the extent of preferential assessment will be discussed later.

One of the goals of farm tax relief is preservation of farmland. Minnesota's green acres and metropolitan agricultural preserves programs are well tailored to achieve this goal, since they relieve farm taxes in areas where farms are threatened by expanding urban areas. Farmland preservation does not justify a new preferential assessment program for farms not benefiting from the existing programs.

Other goals of farm tax relief are to reduce taxes on farm owners and to increase the income of family farmers. Preferential assessment is better suited for the first of these goals than the second because it is generally applied to all farms rather than solely to family farmers; it would greatly add to the complexity of the tax system if family farms were assessed by one method while other farms were assessed by a different method. Through the preferential assessment feature of the school-aid formula, farm owners are already significantly benefiting from use-value assessment, although this provision could be liberalized further.

Classification. Farm assessments are based on 19% of market value, except that the first $60,000 of value for homesteads is assessed at 14%. The amount of homestead value assessed at 14% has been indexed to the assessors' indicated market value of single family homes. In 1985, the lower rate will apply to the first $62,000 of market value.

The farm classification percentages make agriculture the most favored class of property. For example, a $100,000 home would be assessed at 22.8% of its market value, while a $100,000 farm would be assessed at 19% (16% if it is a homestead).

For 1982 assessments (the basis of taxes payable in 1983) farms were in fact assessed at a considerably lower ratio than residential property. The assessed valuation of farms was 12.7% of indicated market value, while the comparable figure for residential property was 17.7%. These are the actual assessment ratios based on department of revenue data and reflect both classification and the actual practices as indicated by assessment/sales ratio studies.

The classification percentages for farms and many other kinds of property have been lowered considerably over time. For example, for taxes payable in 1972, agricultural property was assessed at 33.3% of market value, except that the first $12,000 of homesteads was assessed at 20%. The classification percentages for farms were lowered each year from 1978 to 1981. The decrease in the classification percentage for agricultural property was greater than for other major classes of property.

Agricultural nonhomestead property is placed in class 3, and agricultural homestead property is placed in class 3b of Minnesota's classification system. The apparent tax reduction resulting from the 14% rate on the first $60,000 of market value ($62,000 in 1985) is equivalent to providing an exemption of $3,000 of market value ($3,060 in 1985). Since the tax rate on farm property is relatively uniform throughout the state, this is equivalent to a tax reduction of slightly over $200 for most farms (assuming a millage rate of seventy). The actual tax reduction is less than this amount because local governments tend to raise their millage rates to offset the reduction of their tax base due to this provision.

A case can be made for assessing all farmland at the same rate, that is, 19%. This would contribute to simplification of the tax system, but farm homesteads would experience a tax increase unless an offsetting adjustment were made, for example, by increasing the agricultural aid credit.

Credits: Overview. Table 9 summarizes the provisions of the four most important tax credits providing benefits to farm property—the agricultural aid credit, the homestead credit, the circuit breaker, and the targeting credit. The agricultural aid credit is the only one of the four which is primarily for agriculture;[43] it is also the only one for which nonhomesteads are eligible as well as homesteads. The homestead credit is paid to all farms which are homesteads, but the circuit breaker and targeting credit are not paid to all homestead farms. The circuit breaker depends on household income, and the targeting credit is limited to property with relatively large tax increases. In addition to these credits, there are also credits for wetlands, native prairie preservation, and power transmission lines.

Credits I: Agricultural aid. This program can be traced to a mill rate differential on agricultural property for school maintenance levies which was established in 1933. It was not until 1971 that the state began to finance the mill rate differential; previously the cost of the differential was borne through a tax burden shift to local nonfarm properties.

TABLE 9
Major Farm Property Tax Provisions, Taxes Payable in 1985

Provision	Homesteads	Nonhomesteads
Assessment	14% of first $62,000 of market value; 19% above $62,000[a]	19% of market value
Agricultural credit[b]	33% tax bill on buildings and first 320 acres; 15% for next 320 acres; 10% above 640 acres; $4,000 maximum	15% of tax bill on buildings and first 320 acres; 10% above 320 acres; $4,000 maximum
Homestead credit	54% of tax bill net of agricultural credit; maximum $650	
Circuit breaker	Sliding scale based on income; only 320 acres eligible; maximum $1,125 minus homestead credit	
Targeting credit	50% of tax increase above 12.5%, with a $400 maximum; only 320 acres eligible[c]	

[a]Indexed for average percentage increase in assessors' indicated market value of single family homes.

[b]Residence and one acre not eligible for this credit.

[c]For 1984 taxes, this credit was for the tax increase in excess of 20% from the prior year; this credit began to phase out for incomes over $40,000; not available if income over $50,000.

This credit has undergone several changes in format recently. For taxes payable in 1983, the credit was based on the amount of revenue produced by various millage rates. The following year it was expressed as a percentage of the total tax bill, with homesteads being favored over nonhomesteads and larger relative credits for small farms. A law passed in 1983 limited the credit beginning in 1984 to $2,000, but the 1984 legislature raised this limit to $4,000, effective in 1984.

The cost of this credit to the state government has grown substantially in recent years. For taxes payable in 1983, it was $96.947 million, more than six times its cost in 1972. As recently as 1979, the cost was only $41.634 million. Its growth rate is somewhat greater than that of the homestead credit since 1979 and considerably greater since 1972. However, its 1983 cost was only 19% of the homestead credit's cost.[44]

The progressivity of this credit depends critically on how it is structured. The maximum credit established by the 1983 legislation tended to concentrate benefits on smaller farms and those with lower values. Raising the maximum from $2,000 to $4,000 in 1984 increased the estimated cost of the credit 3.3% ($3 million).[45] Changing the credit from the tax yielded by a certain millage rate to a percentage of the total tax bill also may have made the credit more progressive: using a millage rate makes benefits depend on a

property's value, while using the total tax bill makes benefits a function of the local tax rate as well as the property's value. To the extent that the tax rate tends to be lower in richer communities, the change helps farms in poorer sections of the state. A third aspect of the 1983 law change also made the credit more progressive. Previously the credit for homestead farms was for the tax yielded by eighteen mills on the first 320 acres and ten mills above 320 acres, a ratio of 1.8:1. Now the credit is 33% on the first 320 acres, 15% on the next 320 acres, and 10% above 640 acres: the ratio between the first 320 acres and the second 320 acres is 2.2:1 and the ratio between the first 320 acres and acres above 640 is 3.3:1. Thus, the 1983 changes in the form of the credit increased its progressivity in three ways.

Credits II: Homestead. The homestead credit for farms is the same as for homes, 54% of the tax bill, with a maximum of $650. (The relevant tax bill is the bill after subtracting the agricultural aid credit.) Many states have homestead credits, but they usually restrict them to the home and perhaps one acre of land; it is unusual for farm taxes to be eligible for the homestead credit. This is particularly important in Minnesota because it has the most generous homestead credit of any state in terms of the benefits per recipient.

Farm homestead credits cost the state $59.2 million in 1983, i.e., 11.8% of the total cost of homestead credits. Their cost nearly doubled between 1979 and 1983, primarily as a result of legislation. The cost of nonagricultural homestead credits rose slightly faster than the cost of agricultural homestead credits during that period.

There is a somewhat larger proportion of agricultural homesteads receiving the $650 maximum credit than nonagricultural homesteads. For taxes payable in 1983, 57,579 farm homesteads were at the maximum, representing 47.6% of the total. Only 42% of nonfarm homesteads were at the maximum that year. The average farm and nonfarm homestead credits were virtually equal, both in the $488 to $490 range. If it were not for the agricultural aid credit, farms would derive relatively more benefit from the homestead credit than does nonagricultural property; because the agricultural aid credit is figured first and subtracted from the gross tax bill, the homestead credit affords relatively even benefits to both categories of homesteads.

Credits III: Circuit breaker. The circuit breaker is a credit whose benefits depend on household income as well as the property tax bill. As income increases, circuit breaker benefits are reduced, with no benefits for those with income above $36,000. In 1984, farms received approximately $11.7 million from the circuit breaker.

Minnesota's circuit breaker differs from those in most other states in at least two important aspects. First, it is among the three largest circuit breakers in terms of per capita benefits and the proportion of the population receiving benefits: only Michigan and Oregon have programs on the same order of magnitude. Second, most other circuit breakers are restricted to

residential property (including both homeowners and renters). Michigan and Wisconsin are among the few other states where farms receive a substantial benefit from a general circuit breaker.

Minnesota's circuit breaker differs from its other credits in that only 320 acres are eligible for inclusion.

Credits IV: The targeting credit. Minnesota's fourth major credit relieves taxes for homes and homestead farms experiencing unusually large tax increases in a single year. The form of this credit differs significantly for taxes payable in 1984 and 1985. In 1984, the credit is for tax increases above 20%, with no maximum credit. Benefits phase out gradually between $40,000 and $50,000 household income. In 1985, the credit has a $400 maximum, but it covers one half of the tax increase above 12.5%.

In 1984, farms are expected to receive $6 million of the total $7 million benefits from this credit.

This credit was first provided in 1981 and 1982, but it was eliminated for taxes payable in 1983. In the 1970s sharp tax increases were moderated through a different mechanism, a limitation on annual increases of assessments.

Credits V and VI: Wetlands and native prairies. Both of these credits exempt certain property from taxation and grant a credit for adjoining property held by the same landowner. Local governments are reimbursed for a portion of foregone property tax revenue. The credits were enacted in 1979 and 1980 respectively, and both became effective for taxes payable in 1981. Both apply to homestead and nonhomestead properties. For taxes payable in 1983, the credits amounted to $2.792 million and $0.109 million respectively. The reimbursements from the state were for approximately one-third of the revenue lost due to the wetlands credit and one-fourth of the revenue lost due to the native prairie credit.

TAX CREDITS: SUMMARY

Tax credits have a major impact on farm tax liability, as indicated by these estimates for taxes payable in 1984:

Gross tax liability	$467.1 million
Agricultural aid credit	-91.9 million
Homestead credit	-61.4 million
Circuit breaker	-11.7 million
Targeting credit	-6.0 million
Other credits	-1.8 million
Net tax liability	$294.2 million

In other words, the credits reduce farm taxes by 37%.

Their impact is not uniform. The credits target relief to homesteads, small farms, and farms with less valuable land. This has implications for the distribution of credits among counties. For example, in Benton County, farm homestead taxes are reduced by the credits by 55.2%, while nonhomestead taxes are reduced by 13%. In total, Benton's farm taxes are cut in half by the two credits. In Jackson County, on the other hand, farm taxes are reduced on 28.3% by the credits. This is not coincidental. Jackson is one of the richest counties in the state in terms of per capita property valuation, while Benton is one of the poorest.

The 37% reduction in farm taxes may be compared to the benefit which homeowners receive from the credits, approximately a 42% reduction.[46] This comparison suggests that homeowners benefit more from credits than do owners of farmland. On the other hand, farms are favored over homeowners in terms of classification because farms are assessed at a lower proportion of their market value. As noted above, in 1982 farms were assessed at 12.7% of their indicated market value while residential property was assessed at 17.7% of its indicated market value. These figures do not lead to a conclusive resolution of the question about whether farms are over- or under-taxed. Other factors that ought to be considered in answering that question are the manner in which local aids and school aids are distributed, ability to pay, and the benefits received from government services.

The counties with the greatest tax benefits (a tax reduction of at least 40%) are primarily in the central and northeastern sections of the state. The counties with the smallest benefits (a tax reduction of 30% or less) are primarily in the rich grain areas along the southwestern border and the Red River Valley of the northwest. The median per capita assessed valuation in the twenty-five counties with the most benefit from the credits is 2.4 times as much as in the twenty counties with the least benefit.

It was mentioned earlier that there is relatively little difference in effective tax rates between affluent and poor farm counties. The system of credits deserves a significant share of the credit for this situation.

Although the credits are somewhat successful in reducing fiscal disparities, they could do even more if that were an objective of state policy. Currently the credits depend on a farm's acreage. This feature is less beneficial to areas where farms are large but value per acre is low than to areas where farms are small and value per acre is high. If the credits were pegged to various levels of a property's market value rather than to its acreage, this would help farms with poorer land. Second, by lowering the maximum limit on the benefit from a credit it becomes possible to make the credit more generous for farms not at the maximum. Finally, relying more on the circuit breaker approach would be helpful to less-affluent farmers.

HOW SHOULD FARM PROPERTY BE TAXED?

The major current policy issue related to agricultural taxation is whether the method of assessing farms should be changed. At the present time farm assessments are supposed to be based on market value as indicated by sales prices; there is a provision in the law that production value may be taken into account by assessors,[47] but that provision is not used. Agricultural interests promote the idea of substituting production value, which usually entails the use of soil surveys and measures of the farm income produced by the land.

A committee of the Minnesota Association of Assessing Officers (MAAO) has endorsed the proposal to abandon sole reliance on sales prices.[48] This year the legislature approved a finding that "the method of valuing farm property on the basis of sales of comparable properties overstates the value of farm property." However, the legislature rejected the methods of determining the production value of farm property used in other states, instead declaring that market value should be adjusted by some percentage to reflect farm production value. The department of revenue was instructed to consider alternative methods of determining production value and to recommend by January 1985 a percentage of market value to be used in setting 1985 assessments. This legislative act was recommended in a report by two staff members, Keith Carlson and Dana Frey, in a March 1984 report.[49]

Several interrelated questions should be considered in evaluating this issue. (1) Why should sales prices not be used to determine assessments? (2) If sales prices are not used, what alternative procedure is most preferable? (3) Is there a problem with the average level of assessments, or is the average level correct while assessments of individual properties are inaccurate? Considerable controversy and confusion surrounds these questions.

The method of assessing property affects aggregate farm taxes in two ways:

State aid to schools. Assessed values per pupil have an important influence on state school aid. If assessments are reduced, aid is increased because the school district is considered to be poorer. As discussed above, half of the assessment of school districts is already based on production value rather than sales prices.

Local tax shift. If farm assessments are lowered, the local tax burden tends to shift to nonfarm property. This factor is relatively insignificant in extremely rural areas because there is little nonfarm property to which taxes can be shifted. In the extreme case of a purely agricultural community, there would be no local tax shift to nonfarm property at all. However, if production value is used to assess land but not buildings, a tax shift may occur within the farm sector from land to buildings.

Numerous reasons have been suggested to justify a departure from sales prices:

1. Urban pressure. If land is more valuable for development than for farming, the tax system could excessively burden farm operations. Minnesota's green acres and metropolitan preserves programs are designed to take care of this problem, so there is no justification for a more general program.

2. Speculation. The value of land may be inflated by expectations that it will rise in value, giving it a value which cannot be justified by its use as farmland, some observers have claimed. This argument is much less common now than in the 1970s, when inflationary expectations were much greater. However, even now the expectation of future capital gains is probably inflating farm prices. The fact that most of the purchasers have been farmers may weaken this argument.

3. Other motives for purchasing. The MAAO Committee argued that land values are pushed up by land's role as a store of wealth and by "psychic" considerations such as the desire to have one of the largest local landholdings. The committee said that because stores of wealth such as gold and silver are exempt from the property tax, it is inconsistent to tax land on that basis.[50] However, such motives may also influence purchases of other kinds of property, including homes.

4. Lags in assessments. It is widely observed that recently assessments have often exceeded what land could be sold for. However, this may simply reflect the fact that assessments normally are adjusted a few years after market values change. In the 1970s, when land prices were rising sharply, this phenomenon operated to the advantage of owners of farmland. Now, because land values have been decreasing, it operates to their disadvantage.

5. Paucity of sales. The MAAO Committee emphasized that "assessors are required to utilize . . . a sliver of transactions in a 'thin' " market in determining values. It also noted that because there are relatively few "free market" transactions, an unusual one may have a dramatic impact on the apparent level of market values.[51] These problems can be significantly ameliorated by broadening the geographic area over which comparable sales are observed as well as by improving data on soil types and crop yields. There is no compelling reason why comparable sales can not be used from a multi-county region, as long as data are available for taking differences in the character of the land into account.

The MAAO report noted that unusual sales may either overstate or understate true market values. This does not indicate a bias in the level of sales prices (the point estimate) but only that there may be considerable variance (uncertainty) about the level. This problem is ameliorated by considering more counties than one at a time.

The Carlson-Frey report noted that the number of sales has been dropping and that a large proportion of those that do occur are "distress

sales" and hence should not be used for comparison purposes.[52] The latter point suggests that the "normal" market value may be higher than recent sales indicates.

Another point related to the small number of usable sales is that a large proportion of sales are on a contract basis with concessionary elements in the financial arrangements. This does not imply that these transactions cannot be used for equalization purposes but rather that the indicated sales price should be adjusted to reflect the terms of the sale. A law passed in 1984 requires the department of revenue to provide assessors with instructions on how to make such adjustments.[53]

6. Current income v. capital gains. While the return on investments in farmland is not particularly low in normal economic times, a significant portion of that return is in the form of capital gains rather than current income. Property taxes, however, must be paid out of current income. Therefore, farmers may have a cash flow problem.

This does not lead to an argument for relieving taxes permanently but rather for deferring them. That is, a lien which must be paid at a later date can be placed on the property for a portion of the taxes. Most state preferential assessment laws do have a deferral feature, but it is invariably limited in three important respects: (a) The interest rate on the deferred taxes is usually at a below-market rate, conferring a disguised subsidy. (b) Taxes must be repaid if land use changes but not if ownership changes. If a farmer realizes his capital gains, he is treating his farm as an investment and (according to this rationale) ought to pay his deferred taxes with interest; at the time of his sale, he no longer has a cash flow problem. (c) The period for which deferred taxes must be repaid is limited, providing another disguised subsidy.

There is a flaw in the argument for deferral aside from the practical difficulties of avoiding implicit subsidies (some of which stem from administrative difficulties). Owners of farmland are able to borrow against the increased value of their land, which theoretically allows them to mitigate or overcome any cash flow problems they may have.

7. Sales systematically distorted. One of the two most significant arguments against the present system is that the high proportion of sales made to farmers expanding their existing farm operations biases the property tax system. This argument is prominent in both the MAAO and the Carlson-Frey reports.

As noted in the first part of this chapter, surveys by the University of Minnesota indicate that expansion buyers accounted for 78% of 1983 transactions. Expansion buyers often are willing to pay more for the land than sole-tract buyers or investors. According to MAAO, this occurs for many reasons, perhaps the most important being that farmers tend "to value additions to their resource base only with respect to their average total cost of land after acquisition, instead of considering the marginal cost for

each additional acre added."[54] Carlson and Frey offer a different explanation. They maintain that many farmers have underutilized capital and labor resources, so they can take advantage of economies of scale, implying that they are able to obtain greater net income per acre than start-up farmers could. Carlson and Frey conclude that the production value of land is

> a continuum, with production value for an expansion buyer, who finances none of his or her purchase and who farms the subject parcel with maximum efficiency (i.e., with surplus labor and capital) at one extreme, and production value for a beginning farmer who finances the maximum amount of his or her purchase at the highest possible interest rate and farms with minimum efficiency at the other.[55]

Thus, market value, determined primarily by expansion buyers, exceeds production value for the typical farmer.

This result does not necessarily lead to the conclusion that assessments should not be based on sales prices. If a farm owner has the option of selling his property to an expansion buyer, its market value is whatever the expansion buyer is willing to pay. The marginal buyer determines the value of all kinds of property, not just farms.

8. Farm taxes too high. A final reason for assessing farmland on a preferential basis is the value judgment that otherwise farm taxes will be too high. Sales-based values may not be considered fair on either ability-to-pay or benefit grounds. Many people feel that income is a better measure of ability to pay than property value, and production value is usually related to income. Some identify ability to pay with income, but that is simplistic. Net worth should also be considered as part of ability to pay.[56] Another reason to object to sales-based assessments is that farm property allegedly receives considerably lower government services per dollar of market value than other types of property, particularly homes.

In conclusion, the case for assessing farms on a preferential basis rests heavily on whether one views farm taxes as being too high. The answer to this question is more complicated in Minnesota because the state employs a wide variety of property tax relief mechanisms not used to the same extent in other states. The great majority of other states have chosen preferential assessment as the means of easing farm property tax burdens. Minnesota has until the present chosen other means. It was shown above that farm taxes are not particularly high in comparison with other states.

Some of the seven reasons for preferential assessment noted above identify defects of the existing sales-based assessment system, but they do not necessarily justify abandoning reference to sales prices completely. Assessors and the department of revenue could make greater use of accessible information to improve the accuracy of assessments. For example, Carlson and Frey mentioned data on rentals, production, and appraisals of benchmark farms, as well as crop surveys and broadening the

geographic scope over which assessments are made as means of making more accurate assessments.

Even deciding to determine farm assessments according to the use value of the land implies nothing about what will happen to assessments. There is great diversity among states in the methods by which they measure use value. According to a 1980 survey which probably contains the best information available, fifteen states have no statutory guidelines to implement it. Nineteen states listed certain relevant factors to be considered, nine states relied on income capitalization, and three used the comparable sales approach.[57] Numerous states have altered the methods employed for measuring use value since the survey was conducted, and now the income capitalization method is clearly the most common single approach employed.[58]

Iowa is probably typical of a state with a well-articulated income capitalization approach. In Iowa the net income per acre of farmland in each county is estimated over a five-year period, based on surveys conducted by Iowa State University. This average net income is divided by a capitalization rate of 7%, which is legislatively determined.

The theory underlying the income capitalization method is that an asset's value is a function of the flow of net income derived from it. If this flow is a constant, the value of the asset should be equal to the result found by dividing it by the market capitalization rate. For example, if the income from the asset is $100 per acre and the capitalization rate is 5%, the value is $2,000.

There are two ways of measuring income flow. The method incorporated in the Minnesota statute repealed this year based it on rents actually paid by tenant farmers. This method is not the most common one used by states because of the unreliability of rental data. Land is often rented among neighbors based on long-standing relationships and may not reflect current market conditions. The proportion of land which is rented for cash is often rather low, since most land is either farmed by its owner or rented on a basis whereby the owner receives a share of the crop. There may also be difficulty in obtaining accurate rental data.

The more common method of measuring income flow is by estimating the average net income for a typical farmer in a county based on survey data on yields and costs. In theory such a calculation should normally yield a result approximating observed market prices, barring nonfarm influences on prices. However, as actually implemented, it usually produces a value substantially below market prices. In Iowa, for example, farm assessed values average about one-third of market values indicated by sales; in Illinois the ratio is approximately 41%.[59] There are two reasons why this occurs. It is customary to use a politically-determined capitalization rate considerably higher than the normal rate of return on farmland, which is the rate the market uses. In addition, the calculations usually consider only

the current yield from the land and ignore the prospective capital gains which are an important element of the prospective total return from owning the land.

Theoretically, farmland's use value should be found by dividing current and prospective net income by the capitalization rate, which is the sum of the opportunity cost of capital and the farm effective tax rate. How most states in fact measure use value is to divide recent net income (which does not reflect future increases due to inflation and higher productivity) by a rate which does reflect future inflation. This inconsistent treatment of inflation is the reason why assessments tend to be far below market values, even in places where the only prospective use of land is for farming.[60]

If Minnesota based agricultural assessments on the production value of farms rather than market value as indicated by sales prices, this might reduce farm property taxes, but it would not necessarily do so. This is true for two reasons. First, it depends on how production value is implemented. The rent capitalization method repealed this year was designed to leave total farm assessments statewide unchanged. (Its adoption would actually have lowered farm assessments on balance because the law provided that in counties where the rent formula raised assessments, it would not have been used. In other words, assessments would have been the lesser of rent-capitalized values or sales-based values.[61]) Second, it depends on whether offsetting changes are made in credits or classification ratios. As discussed above, Minnesota has used these other devices to relieve farm taxes in the past. There might be a trade-off between production-value assessment and them. For example, the 1984 tax law indicated that the classification ratios for farm property might be lowered in 1985. This would presumably not occur if assessments were based on production value as measured by the income capitalization method.

In other words, it is possible to provide any amount of property tax relief to farms without adopting production-value assessments. The issue of how much tax farms should pay is distinct from the issue of how they should be assessed. What, then, would be the effect of adopting production value rather than sales for farm assessment purposes?

- If sales prices are rising faster than production value, the rate of increase of farm taxes would be reduced—assuming that the state would not have done anything to cushion the effect of higher sales prices on tax burdens. Based on the experience of the past decade, this assumption is not realistic. However, owners of farmland would be less dependent on the vagaries of legislative action.
- The tax system would be complicated by abandoning the principle of tying assessments whenever possible to market values as indicated by sales prices.

- Some sections of the state would benefit more than others because the ratio of production value to market value would vary. How this worked out would depend on the method adopted for measuring production value.

There are several things that adopting production value would not do. It would not necessarily make farm property taxes stable. The recent gyrations of farm taxes, including the large increase in 1984, were not due to rising assessments but rather to changes in other aspects of the tax system, particularly involving state aid to schools and other features of school finance. It would also not necessarily remove debates on farm assessment procedures from the legislative agenda. Rather, the focus would shift from whether to adopt production value to how it should be implemented.

In conclusion, there does not appear to be any compelling reason why production value based on income capitalization should be adopted in Minnesota. Production value as envisioned in the 1984 tax law is a semantic matter: it may be merely a rationale for lowering the assessment ratio for farm property.[62] The production value issue is really secondary to a more fundamental question: how much taxes should farm property pay? The answer to that question is a political matter.

Another policy issue has to do with targeting relief measures. Primarily through its credits and to a minor extent through classification, Minnesota already targets relief to family farmers and small farms more than any other state. Additional targeting is possible, for example, by requiring that farm owners derive a certain proportion of income from farming to be eligible for relief. Credits could also have an income phaseout provision, as the targeting credit does for 1984 taxes (but not in 1985). Such measures could reduce or eliminate benefits to hobby farmers or wealthy landowners, if those are state policy objectives. The implementation of such enhanced targeting would be made easier if the state assumed responsibility for administering credits. A state takeover of this function would provide better information about the distribution of benefits from the credits and would make it possible to assure that owners with land in two different counties were not receiving more than the maximum credit allowed.

If production value were adopted for determining assessments, it would be the first farm relief program with no targeting element at all.

The targeting issue raises the question of the purpose of special provisions for farm property tax relief. As noted above, the goal of aiding family farmers does not justify aid to all owners of farmland. Nonhomestead property in Minnesota is already taxed preferentially in comparison with other major classes of property.

To summarize, the case for changing the method of assessing farm property in Minnesota is weak for a number of reasons:

- Use-value assessment would add a new complication to a tax system that is already regarded as overly complex.
- Minnesota has relieved farm taxes more than most other states, as indicated by the decrease in farm tax burdens relative to other states since 1970. Minnesota's farm taxes are neither particularly high nor particularly low compared to other states.
- Minnesota's provision of tax relief through classification and tax credits facilitates targeting of assistance to homesteads and small, low-value farms better than could be easily accomplished through use-value assessment. Reliance on the credit mechanisms also permits ready identification of the beneficiaries of relief.
- Minnesota is already one of the forty-six states with use-value assessment laws for farmland. The green acres and metropolitan preserves programs are tailored to the needs of farms threatened by urban expansion. In addition, Minnesota already employs use-value assessment of farms for distributing state aid to school districts. Many of the other forty-five states with use-value assessment do not apply it statewide but rather on a limited basis, as does Minnesota.

PERSONAL INCOME TAX

While farmers pay a relatively high proportion of their income in property tax, their personal income tax liability is lower than that of the average nonfarmer with a similar income. A number of tax advantages are enjoyed by farmers. Cash basis accounting enables them to shift receipts and costs between different tax years in order to minimize their tax liability. In other words, in a year with above-average income they can defer sales of products and accelerate outlays to cover costs and thereby reduce their taxable income. Farmers also benefit like other businesses from accelerated depreciation on capital investments. Livestock farmers are able to have their sales of breeding stock taxed at low capital-gains rates.

A study by University of Minnesota economists reviewed the experience of seventy-six single-proprietor farms over an extended period and found that from 1967 to 1978 farmers had become more sophisticated about taking advantage of tax management opportunities to reduce their liability. During the 1975-78 period, these provisions enabled the farmers studied to cut their federal and state income tax liability by more than half.[63]

For 1982, farm personal income taxes paid by persons who identified themselves as full-time farmers were $28.9 million, and another $3.7 million was paid by self-described part-time farmers. Farm personal income taxes are very volatile, reflecting swings in the farm economy. As Table 10 shows, tax payments by full-time farmers jumped from $9.4 million in 1971 to $58.7 million in 1974, dropped to about half that level in 1977 and rebounded to $46.3 million the next year. The number of full-time farm returns peaked in

TABLE 10
Personal Income Tax Payments
of Full-time Minnesota Farmers, 1971-82

Year	Tax Payments (millions of $)	Percent of Total State Income Tax Revenue
1982	$28.9	1.6%
1981	29.0	1.9
1980	36.0	2.5
1979	35.6	2.7
1978	46.3	3.7
1977	29.8	2.8
1976	34.6	3.6
1975	38.1	4.6
1974	58.7	7.4
1973	45.7	6.6
1972	20.9	3.7
1971	9.4	2.2

Note: Income taxes paid by part-time farmers varied from $2.1 million to $3.7 million in the 1973-82 period. They were $1.1 million in 1971 and $1.6 million in 1972.

1974 at 75,227 and was 19% lower in 1981. The income tax paid by full-time farmers was only 1.6% of state income tax revenue in 1982, the lowest proportion in more than ten years. The highest proportion was 7.4% in 1974.

Effective income tax rates are lower for farmers than for the average Minnesotan. For 1981, farm income taxes amounted to 1.8% of farm personal income in Minnesota, while total income taxes were 3.5% of Minnesota personal income. In 1982, the corresponding figures were 2.2% and 4.0% respectively. The erosion of the tax base is suggested by the fact that in 1982 farm Minnesota gross income (MGI) was 43.9% of farm personal income, while the ratio of total MGI to personal income was 69.3%.[64] Income tax was 4.59% of MGI for full-time farmers in 1981 compared to 4.83% of all returns.

Federal income tax provisions provide incentives for farm operators to substitute capital for labor. This in turn tends to encourage an expansion of farm size in order to make efficient use of capital investments, such as in machinery. The capital incentives and other features of the federal tax are more valuable to high-income taxpayers than low-income taxpayers.[65] These federal biases provide a rationale for property tax or other programs to favor small farms and low-income farmers.

Two other provisions of Minnesota law are noteworthy. First, Minnesota does not permit use of the accelerated cost recovery system (ACRS) by corporations although ACRS may be used by proprietorships and partnerships. Second, Minnesota limits the farm losses which may be claimed for income tax purposes, thereby reducing the attractiveness of

farming as a tax shelter for persons with large nonfarm income. A part-time farmer or one with outside income may offset a farm loss against other income only to the extent that the loss does not exceed $30,000. For farmers with outside income in excess of $30,000, the allowable farm loss is reduced by $3 for every $1 of other income in excess of $30,000. Therefore, a farmer with outside income in excess of $40,000 may not claim any farm loss. In 1982, when the limits on losses were lower ($15,000 and $22,500 rather than $30,000 and $40,000), the farm-loss modification affected 12,223 returns and resulted in adding $106.4 million to adjusted gross income.

GENERAL SALES TAX

Farmers have received relief from the sales tax by exempting their purchases of equipment from 2 cents of the 6 cents sales tax. Prior to 1981 farm equipment had been taxed at the same rate as other taxable products, 4%. Minnesota now occupies a middle position with regard to taxation of these purchases. As of 1982, twenty-five states exempted them completely, seven taxed them at a lower rate than other products, and the other thirteen states with sales taxes levied the same rate on them as other products.[66] (Five states have no general sales tax.)

The revenue department estimates that the sales tax paid on purchases of farm machinery and equipment in 1982 was $20 million and in 1983 was $22 million. The revenue loss due to the lower sales tax rate on these products is about half these amounts.

Like most states, Minnesota exempts feed, seed, and fertilizer used on farms.

ESTATE TAX

At one time the inheritance tax was a serious irritant to farmers because it sometimes imposed significant tax liability when property was transferred at death. However, Minnesota has taken a series of steps over the past decade to lower its death taxes. In 1976, it introduced a marital deduction, and in 1979 it repealed the inheritance tax, replacing it with an estate tax with a relatively large deduction, which has since been increased. It is estimated that by 1987 only 0.006% of persons dying will leave estates with taxes due.

The decrease in death taxes is revealed by data on collections. From $44.7 million in 1976 (including a gift tax repealed in 1979), revenue had fallen to $24.4 million in 1982. The bulk of this revenue is from the so-called "pick-up tax," for which estates receive full credit on the federal estate tax.

CONCLUSION

This report revolves around the property tax because it dwarfs all other taxes paid by farmers. The agricultural sector is rich in terms of property but relatively poor in terms of current income, and it receives favorable income tax treatment, so the property tax is the major tax paid by farmers.

Minnesota has done a great deal to provide property tax relief for owners of farmland, just as it has lowered reliance on the property tax generally. The tools Minnesota has used have been different from those commonly employed in other states. Like most states, Minnesota substantially increased aid to school districts, but unlike most others, Minnesota relied heavily on tax credits and changes in classification ratios to prevent farm taxes from rising steeply when farm values boomed in the 1970s.

Only a handful of other states use tax credits to relieve farm property taxes, and only a minority have classified property taxes. Most states have adopted a form of preferential assessment for farmland as their means of shielding farms from the effect of inflation in market values. Minnesota is one of the forty-six states with a form of preferential assessment in its statutes, but, unlike some states, Minnesota continues to assess most farmland according to its market value as indicated by sales.

There is no compelling reason for Minnesota to change the method by which it values most of its farmland for property tax purposes. The issue of how much tax farms should pay should be separated from the issue of how farms are assessed. If farm taxes are considered to be too high, they can be relieved through adjustments in the classification and credit systems. The main advantages of classification and credits are clarity of results and the potential for targeting. All farmers are not necessarily equally deserving of help, and use-value assessment is not a very discriminating method of providing relief.

Three scenarios are possible for adoption of a preferential assessment method:

- It could be implemented in such a way that total farm-assessed-valuation was not changed, although some farms would have increased and others decreased assessments. This would have been the result of the rent capitalization law repealed this year. If it went into effect, a new battle would erupt about increasing the capitalization rate, which would reduce farm assessments and farm taxes.
- It could be implemented as a substitute for classification or credits. This would complicate the tax system and help high-value, nonhomestead farms.
- It could be implemented in such a way as to lower farm taxes while retaining the existing system of credits and classification. This would shift the tax burden away from farms and to other sectors of the population. If

the objective is to lower farm taxes, that should be argued on its merits, not under the guise of debating how assessments should be determined.

The farm sector is currently depressed, which bolsters the case for easing its tax burden. But most farm operators are still much better off than they were prior to the farm boom that began in 1973. The current depressed state of the farm economy does not provide a justification for changing the method of assessing farmland.

ENDNOTES

1. U.S. Department of Agriculture, *Status of the Family Farm* (Senate Committee on Agriculture, Nutrition, and Forestry, June 18, 1979), p. 3.

2. Minnesota Department of Revenue, *Property Taxes Levied in Minnesota: 1982 Assessments, Taxes Payable in 1983*, p. 196; U.S. Census Bureau, *1982 Census of Agriculture, vol. 1, Geographic Area Series, Part 23. Minnesota State and County Data*, Table 11; Minnesota Agricultural Statistics Service, *Fact Sheet on Minnesota Agriculture: 1984*, p. 1.

3. This section is based on data from the Regional Economic Information System, Bureau of Economic Analysis, U.S. Department of Commerce.

4. *Report of the Governor's Advisory Commission on Agriprocessing* (February 14, 1983), p. 1.

5. Wilbur R. Maki, *Agriculture: Essential to Minnesota's Economy and Its Regions and Communities—An Update* (St. Paul: University of Minnesota, Institute of Agriculture, Forestry and Home Economics, December, 1982).

6. Maki.

7. U.S. Council of Economic Advisors, *Annual Report* (February 1984), p. 114.

8. U.S. Census Bureau, *1982 Census of Agriculture*, Table 1.

9. Data on the number of farms and acreage are from Minnesota Agricultural Statistics Service, *Fact Sheet on Minnesota Agriculture: 1984*.

10. U.S. Department of Agriculture, *Economic Indicators of the Farm Sector: State Income and Balance Sheet Statistics*, 1981 and 1982 editions.

11. Donna Downs, Matthew G. Smith, and Philip Raup, "The Minnesota Rural Real Estate Market in 1983," *Minnesota Agricultural Economist* (January 1984). This study considered only sales through July 1983. Since it is based on deed sales, some commentators believe it may understate the extent of the decrease in land value; many sales involve contracts with concessionary terms. Lee Egerstrom, "Land Values Squeeze Farmers," *Pioneer Press and Dispatch* (February 26, 1984).

12. The 1971 to 1981 data is cited in St. Paul Food Resources Project, *Food and Agriculture in Minnesota—1983* (December 1983). However, USDA officials report that the current data series goes back only to 1977, prior to which figures are not comparable. For this reason, the table begins in 1977.

13. Minnesota Agricultural Statistics Service, *Fact Sheet*, p. 4. The Service notes, "These exports are derived from each state's contribution to U.S. production and/or sales. They are not actual values but reflect each state's important stake in the national export market." National export data from Council of Economic Advisors, *Annual Report*, p. 121.

14. These statistics do not include food grains used on the farm where they are produced; including this use of grains, food grains accounted for 41 percent of the value of production. St. Paul Food Resources Project, *Food and Agriculture in Minnesota.*

15. The discussion of farm characteristics draws heavily on John R. Borchert and Neil C. Gustafson, *Atlas of Minnesota: Resources and Settlement* (Minneapolis: University of Minnesota Center for Urban and Regional Affairs, 1980), pp. 84-99. The 12% figure for tenant farms in 1982 is from the Census of Agriculture, which also reported that 33% of farms were operated by "part owners."

16. Downs, Smith, and Raup, "Rural Real Estate." The median distance of the buyer's residence from the tract purchased was four miles (p. 4).

17. Minnesota has a loan program for beginning farmers, but its size is so limited that it cannot help many potential applicants.

18. This section and the following one are drawn primarily from U.S. Council of Economic Advisors, *Annual Report* (February, 1984), ch. 4.

19. Data from the *Farm Finance Survey* conducted by the U.S. Census Bureau; obtained from Linda Wright, statistician for the Minnesota Department of Agriculture.

20. Ibid, p. 115.

21. Demand is more price-elastic than in the past because of the increased exposure to international markets. Council of Economic Advisors, p. 124.

22. Ibid.

23. Emanuel Melichar, "A Financial Perspective on Agriculture," *Federal Reserve Bulletin* (January 1984), pp. 9-10.

24. The quotation in the text is from U.S. Council of Economic Advisors, *Annual Report* (February 1984), p. 112. Data on bankruptcies are fragmentary and usually cover an area broader than just Minnesota. The best surveys are by the Federal Reserve Bank of Minneapolis, *Agricultural Credit Conditions Survey* (first quarter 1984), and Norwest Corporation, *Economic Indicators* (May 10, 1984). Norwest reported that "the consensus was that highly leveraged customers are in worse financial shape today than a year ago." The Federal Reserve Bank reported that in the October 1983-March 1984 period 0.7% of farms went out of business through bankruptcy proceedings, but another 2.7% went out of business for other reasons related to financial stress, such as foreclosure (1.4%).

25. Melichar, "Perspective," p. 1.

26. Ibid, p. 123-126.

27. Ibid, p. 126.

28. Farmers are estimated to have received $11.7 million from the circuit breaker and $6 million from the targeting credit in 1984, according to the department of revenue. These amounts have been subtracted from the $311.9 million in net taxes shown in Table 7.

29. This projection is from the House Research Department's Property Tax Model.

30. James M. Hrubovcak and Frances Burke, *Farm Real Estate Taxes, 1981* (USDA, 1983), p. 8. For years through 1979, USDA also published statistics on property tax revenue per $1,000 for farm income, but it has not done so since that year.

31. *Farm Real Estate Taxes in 1979* (U.S. Department of Agriculture), pp. 20-21.

32. These estimates take into account the following credits—homestead, agricultural, wetlands, native prairie, reduced assessment, and power lines. They do not consider the circuit breaker. The effective rate is the net tax divided by market value, which has been estimated using the Department of Revenue's sales ratio estimates. Minnesota Taxpayers Association, *Newsletter* (January 1984).

33. This is a crude calculation because it considers all property taxes regardless of which class of property pays them. The calculation divided taxes payable in 1983 by personal income in 1982 (the latest year available). The figure cited in the text is for the median county in each group. The 19 most rural counties do not contain any incorporated places with population of at least 2,500, according to the 1980 Census of Population. Hennepin and Ramsey counties have a considerably higher ratio of property tax to personal income than other urban counties because of their large amount of commercial-industrial property. Personal income data were reported in *Survey of Current Business* (April 1984), p. 42.

34. Minnesota Taxpayers Association, *Newsletter,* pp. 4-5.

35. For discussions of farm property tax relief, see Steven D. Gold, *Property Tax Relief* (Lexington, MA: D.C. Heath, 1979), ch. 5, and the sources cited therein; also Robert E. Coughlin and John C. Keene, ed., *National Agricultural Lands Study: The Protection of Farmland: A Reference Guidebook for State and Local Governments* (Amherst, MA: Regional Science Research Institute, undated).

36. Other counties in the Twin Cities area lost smaller amounts of farm acreage; these figures are from the U.S. Census of Agriculture.

37. This statement refers to the difference in effective tax rates; the larger the firm, the greater its absolute taxes.

38. Coughlin and Keene, *National Agricultural Lands Study,* pp. 56-59.

39. Robert J. Gloudemans, *Use-Value Farmland Assessments: Theory, Practice and Impact* (Chicago: International Association of Assessing Officers, 1974), pp. 29-30.

40. Information on Michigan was provided by Bob Cline and Rick Willets of the Department of Management and Budget, and information on Wisconsin was provided by Monica Jaehnig of the Legislative Fiscal Bureau.

41. All information on Minnesota programs was provided by the Department of Revenue, except that some data on the Agricultural Preserves Act was from a Metropolitan Council of the Twin Cities report.

42. The law had a provision that if the assessment based on the capitalized rental value exceeded the assessment based on prevailing practices, no change would be made. Otherwise, the rental-based method would have raised assessments in many counties.

43. Seasonal recreational residential property receives a very small proportion of the agricultural aid credit. More than 80% of the targeting credit's benefits will go to farms in 1984.

44. Minnesota Department of Revenue, *Property Taxes Levied in Minnesota: 1982 Assessments, Taxes Payable in 1983,* p. 38.

45. Raising the maximum credit from $2,000 to $4,000 increased benefits for an estimated 6,067 farms; only 208 farms are losing benefits as a result of the $4,000 maximum.

46. The estimate for homeowners is derived by subtracting $444.7 million for homestead credits and $75.5 million for circuit breaker benefits from gross taxes of

$1,238.6 million, leaving net taxes of $718.4 million. This estimate is not precise because the Department of Revenue includes buildings with four or less rental units in its residential category along with owner-occupied homes.

47. Minnesota Statutes section 273.12.

48. Minnesota Association of Assessing Officers (MAAO), *Report of M.A.A.O. Agricultural Committee* (July 1980).

49. Keith E. Carlson and Dana W. Frey, "The Valuation of Farm Real Estate for Property Tax Purposes" (March 1984).

50. MAAO, p. 5.

51. Ibid, p. 3.

52. Carlson and Frey, "Valuation," p. 12.

53. Douglas G. Tiffany, "Evaluating Contract for Deed Transfers" (Minnesota Department of Revenue, March 1982). Downs, Smith, and Raup report that in 1983, 51% of sales used contracts for deed, 26% used mortgage financing, and 23% of transfers were for cash. The proportion of contract sales was higher in the several previous years.

54. MAAO, p. 3.

55. Carlson and Frey include the financing cost in production value and assume that the opportunity cost of cash used for the purchase is below the cost of debt (p. 24).

56. Thomas A. Carlin and Edward I. Reinsel, "Combining Income and Wealth: An Analysis of Farm Family 'Well-Being'," *American Journal of Agricultural Economics* (February 1973), pp. 38-44.

57. Richard W. Dunford, "A Survey of Property Tax Relief Programs for the Retention of Agricultural and Open Space Lands," *Gonzaga Law Review* (1980), pp. 675-699. Robert W. Dunford and David E. O'Neill, "An Analysis of Alternative Approaches to Estimating Agricultural Use-Values," *Agricultural Law Review* (Summer 1981), pp. 285-307.

58. J. Fred Giertz and David L. Chicoine, "Tax Valuation of Farm Land: Non-neutrality with Respect to Inflation," *National Tax Journal* (June, 1984), pp. 253-58.

59. "A common element of most state farmland property tax programs . . . is that taxable values are well below market value, and, in addition, below actual use value based upon the productivity of land in agriculture. In practice, the statutory procedures most commonly used to determine legally specified use values actually value such land at only a fraction of its economic use value in farming. Such practices bestow implicit subsidies on the owners of farmland taxed on these values." Ibid, p. 253.

60. Ibid. For a good brief discussion of the economics underlying farmland prices, see Paul R. Hasbargen, "Land Prices: Why So High? Will they Go Higher?," *Minnesota Agricultural Economist* (August-September-October 1980).

61. Rent capitalization as repealed in 1984 would have raised assessments in 38 out of Minnesota's 87 counties, were it not for the provision that it would not be used where it raised assessments.

62. Giertz and Chicoine conclude that a classification adjustment as envisioned for Minnesota in 1985 is preferable to the complexities of use valuation. "Valuation of Farm Land," p. 257.

63. The study found average tax savings in 1975-78 of $5,806, but this included $1,633 from the investment tax credit, which was available only on federal returns.

The remaining tax savings of $4,173 compare to an average tax liability of $3,979 for the federal and Minnesota income taxes and the Social Security self-employment tax. Vernon E. Eidman, George D. Hansen, and Delane E. Welsch, "Tax Management and The Implications for Farm Size," Minnesota Agricultural Economist (December 1982).

64. Data on personal income are from the U.S. Commerce Department. A possible problem is that some farm income may be received by persons who do not identify themselves as farmers in Minnesota income tax returns, which would bias the estimates in the text downward.

65. Ibid; and Charles Davenport, Michael D. Boehlje, and David B.H. Martin, *The Effects of Tax Policy on American Agriculture* (USDA, Economic Research Service, Agricultural Economic Report no. 480, February 1982).

66. John Due and John Mikesell, *Sales Taxation: State and Local Structure and Administration* (Baltimore: Johns Hopkins Press, 1983), p. 64.

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