



Department of Revenue
Research Division

930606

Minnesota Tax Incidence Study

Who pays Minnesota's household and business taxes?

NOVEMBER 1993

HJ
2322
.M6
M55
1993

RECEIVED
DEC 09 1993
LEGISLATIVE REFERENCE LIBRARY
STATE CAPITOL
ST. PAUL, MN. 55155

Minnesota Tax Incidence Study

**Who pays Minnesota's household
and business taxes?**

**Minnesota Department of Revenue
Tax Research Division**

November 1993

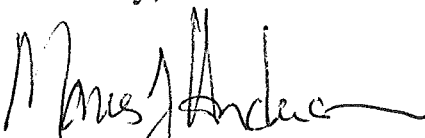
November 15, 1993

To the Members of the Legislature of the State of Minnesota:

I am pleased to transmit to you the second Minnesota Tax Incidence Study undertaken by the Department of Revenue in response to Minnesota Statutes, Section 270.0682 (Laws of 1990, Chapter 604, Article 10, Section 9).

This edition of the report is significantly expanded to include taxes on business as well as those on households. It provides comprehensive information on the overall distribution of state and local taxes in Minnesota by income level. This report also includes an analysis of representative tax burdens for typical taxpayers including elderly, single and married taxpayers at different income levels. The information presented herein can be used to evaluate the equity and fairness of Minnesota's tax system. It should also be valuable in considering any future changes in Minnesota's tax structure.

Sincerely,



Morris J. Anderson
Commissioner

ACKNOWLEDGEMENTS

This report was prepared under the overall direction and guidance of Rod Hoheisel, Assistant Director of the Tax Research Division. Particular gratitude is extended to Paul Wilson, who helped establish the business tax incidence framework for the report and provided extensive economic analysis for the study over the past year. His extensive contributions to the study are greatly appreciated.

Special thanks and appreciation are extended to several members of the Tax Research Division for their extensive contributions to this report. Tom Rosholt provided most of the technical computer support to develop the incidence study database. Diane Carter provided oversight on numerous aspects of the research and statistical database design. Bob Cline, Director of the Tax Research Division, contributed valuable insights along the way, as well as extensive effort in editing the final report. Finally, many thanks to Mary Buechner who was responsible for the production of the entire report.

Other individuals in the Tax Research Division made contributions to particular research aspects of this study. Though too numerous to mention here, special thanks to all of them and to all the individuals named above.

EXECUTIVE SUMMARY

This report presents estimates of the distribution of 1990 Minnesota state and local taxes by taxpayer income levels. It answers the question, "Who Pays Minnesota's Taxes?" This is the second biennial tax incidence study prepared in response to the statutory requirement adopted by the 1990 legislature. The major objective of this report is to provide taxpayers and policymakers with important information critical to evaluating the equity or fairness of the overall distribution of Minnesota taxes.

Scope of the Study

Six categories of taxes are included in the incidence study:

- Individual and corporate income taxes
- Sales, use and motor vehicle excise taxes
- Property taxes for homeowners, renters and businesses
- Excise taxes on tobacco, alcohol and gasoline
- Insurance premiums taxes
- Motor vehicle registration taxes

Coverage of taxes in this report has been significantly expanded to include taxes having an initial impact on businesses, including the corporate franchise tax and the sales tax on business purchases. The study includes \$6.6 billion of state taxes, (98 percent of all state taxes) and \$3.0 billion of local taxes (95 percent of local taxes). Together, the state and local taxes on individuals and businesses in this study account for over 97 percent of all Minnesota taxes collected in 1990.

In this report, tax burdens are measured by effective tax rates -- the ratio of taxes paid to a taxpayer's comprehensive money income. Effective tax rates are reported for taxpayers at different income levels. All taxpayers are grouped by income into population deciles; each population decile includes 10 percent of the state's households. For example, the first decile includes the 10 percent of Minnesota households with the lowest incomes; the tenth decile includes the 10 percent of households with the highest incomes.

The comprehensive money income measure used in this study includes income subject to the Minnesota personal income tax and nontaxable sources of income such as public assistance payments, tax-exempt interest and nontaxable social security and pension income. Importantly, the study covers the entire population of taxpayers in the state, including low income individuals or families that do not file tax returns.

The results of any incidence study are sensitive to the assumptions used to identify who ultimately pays each type of tax. The incidence of a tax identifies the reduction in a taxpayer's real income resulting from the tax. For example, taxes can reduce a taxpayer's real income directly by leaving taxpayers with less income to spend or indirectly by increasing prices for goods and services purchased by the taxpayer. Incidence, or the final resting place for the tax, can be quite different from the initial "impact" of a tax, which is usually prescribed by statute in terms of who is legally required to pay the tax. Incidence differs from impact when the tax is ultimately shifted to others. For example, landlords may shift a significant part of the local property tax to renters or the corporate franchise tax may be partly absorbed by workers.

This report carefully describes the incidence assumptions used to distribute Minnesota taxes having an initial impact on households and businesses to the major taxpayer groups: Minnesota consumers, workers, landowners and investors, and nonresidents. Taxes paid by each Minnesota group are then assigned to individual taxpayers to determine the overall distribution of state and local taxes.

This study discusses only tax incidence. It does not measure overall fiscal incidence which would include the distribution of both expenditure benefits and taxes for Minnesota residents. For example, while gasoline excise taxes are included in the study, the benefits of transportation spending financed by the tax are not. Government cash benefits paid directly to individuals (e.g., social security and public assistance payments), however, are included in the comprehensive definition of money income.

1990 Distribution of State and Local Taxes

The major findings in this study are summarized in *Table 1* and highlighted in *Figures 1 through 3*. The results show that the combined distribution of state and local taxes in Minnesota is essentially proportional. Overall, Minnesota residents paid an estimated 11.8 percent of their 1990 total income in state and local taxes. With the exception of the first decile, effective tax rates do not vary significantly with income. Based on taxes included in the study, effective tax rates vary between 10.7 and 12.0 percent for taxpayers in the second through tenth

deciles, who pay over 98 percent of the taxes included in the study. The higher-income deciles tend to pay the higher effective rates. Because the information for the first decile includes data anomalies and measurement limitations discussed in the study, effective tax rates for the first decile should be viewed with caution.

Table 1
Minnesota Effective Tax Rates by Population Deciles
All Taxpayers

<u>Deciles</u>	<u>Income Range</u>		<u>Income Tax</u>		<u>Sales Tax</u>	<u>Excise Taxes on Individuals</u>	<u>Total State Taxes</u>		
			<u>Individual</u>	<u>Corporate</u>			<u>Individual</u>	<u>Business</u>	<u>Total</u>
1	Under	\$4,611	0.2%	0.8%	6.8%	2.9%	9.0%	3.0%	12.0%
2	\$4,611 -	7,704	0.3	0.5	4.4	1.9	6.2	1.9	8.1
3	7,705 -	11,970	1.1	0.5	3.7	1.5	6.1	1.7	7.8
4	11,971 -	16,788	1.9	0.4	3.2	1.3	6.1	1.5	7.7
5	16,789 -	21,802	2.6	0.4	2.8	1.1	6.3	1.4	7.7
6	21,803 -	27,998	3.1	0.4	2.8	1.1	6.7	1.3	8.1
7	27,999 -	35,716	3.6	0.3	2.7	1.0	7.1	1.3	8.4
8	35,717 -	45,278	4.1	0.3	2.6	0.9	7.5	1.2	8.7
9	45,279 -	61,289	4.7	0.3	2.4	0.7	7.7	1.1	8.8
10	Over	\$61,289	5.5	0.3	1.9	0.4	7.4	1.1	8.5
Total			4.2%	0.3%	2.5%	0.8%	7.2%	1.2%	8.5%

<u>Deciles</u>	<u>Local Property Taxes</u>			<u>Total State and Local Taxes</u>		
	<u>Residential</u>	<u>Business</u>	<u>Total</u>	<u>Individual</u>	<u>Business</u>	<u>Total</u>
1	3.5%	2.4%	5.9%	12.5%	5.4%	17.9%
2	1.3	1.7	3.0	7.5	3.7	11.1
3	1.4	1.5	2.9	7.5	3.2	10.7
4	2.0	1.5	3.6	8.2	3.1	11.3
5	2.1	1.3	3.4	8.4	2.7	11.1
6	2.4	1.3	3.7	9.1	2.6	11.8
7	2.1	1.4	3.6	9.3	2.7	12.0
8	1.9	1.3	3.2	9.4	2.5	11.9
9	1.9	1.1	3.0	9.6	2.3	11.8
10	1.9	1.3	3.1	9.3	2.3	11.7
Total	2.0%	1.3%	3.3%	9.2%	2.6%	11.8%

Note: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses.

Figure 1
Effective Tax Rates for 1990
Minnesota State and Local Taxes
By Population Deciles

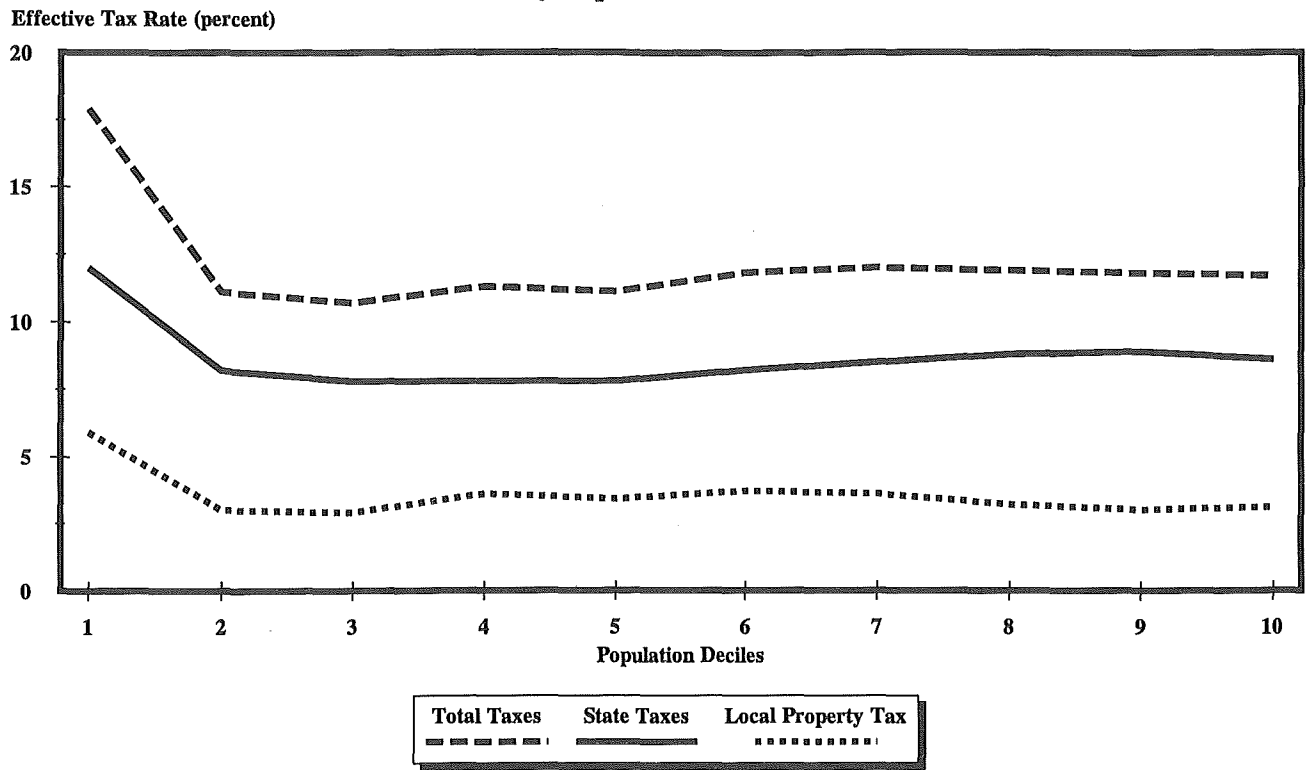
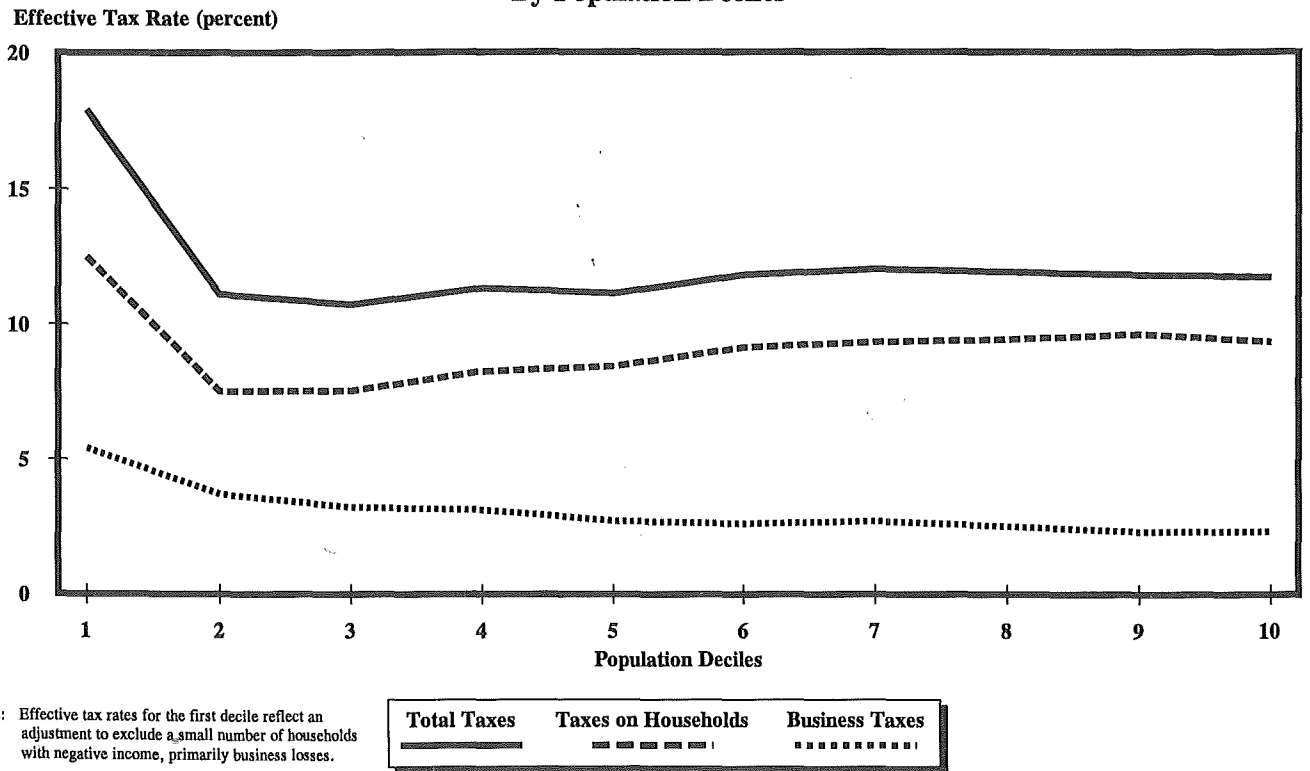
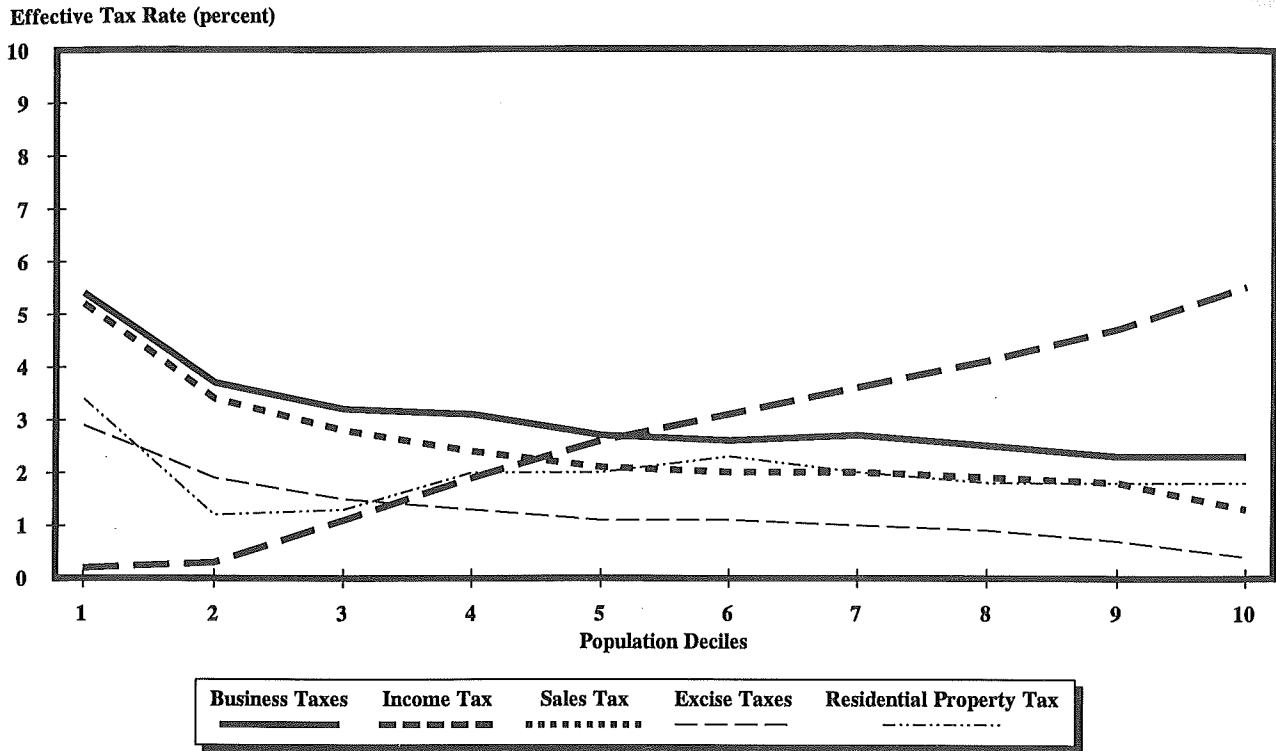


Figure 2
Effective Tax Rates for 1990 Minnesota
Household and Business Taxes
By Population Deciles



NOTE: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses.

Figure 3
1990 Effective Tax Rates by Tax Type
By Population Deciles



NOTE: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses.

As can also be seen in *Figure 1*, the system of state taxes in Minnesota is only slightly progressive overall. Effective tax rates rise with income from 8.1 percent in the second decile to 8.5 percent in the tenth decile. The local property tax (net of property tax refunds) distribution is also relatively flat, although the effective tax rates in the fourth through seventh deciles are slightly higher than the rates at either end of the distribution.

Figure 2 indicates that Minnesota state and local taxes on businesses are regressive with effective tax rates falling from 3.7 to 2.3 percent between the second and tenth deciles. However, progressive state and local taxes on households or individuals offset regressive business taxes, producing an almost proportional overall tax burden distribution.

The tax distributions in *Figure 3* highlight the role of the individual income tax in balancing Minnesota's state and local tax burden distribution. The individual income tax is significantly progressive with effective tax rates steadily increasing from 0.3 percent in the second decile to 5.5 percent in the tenth decile. As is discussed in this report, the regressivity of sales, excise and business taxes are offset by Minnesota's relatively heavy reliance on the progressive income tax.

Reflecting this reliance, Minnesota ranked 5th in the U.S. in the ratio of income taxes to personal income for fiscal year 1991.

Although limited interstate comparative information is available, it does suggest that most states have regressive state and local tax systems. While these comparisons do not indicate whether state and local taxes in Minnesota are too high or too low, the information does suggest that Minnesota's taxes are more equitably distributed than in most states.

Table 2 indicates the shares of the \$7.8 billion in total state and local taxes paid by Minnesota taxpayers in each decile. Taxpayers in the top decile pay 36.4 percent of the total tax burden and nearly 48 percent of the individual income tax burden; these taxpayers receive 36.8 percent of money income. Taxpayers in the first two deciles pay 3.4 percent of all taxes and receive 2.6 percent of household income; almost all of their tax burden is from property taxes and taxes on consumption.

Table 2
Shares of 1990 Minnesota Income and Taxes

<u>Decile</u>	<u>Total</u>	<u>Individual</u>	<u>Residential</u>					<u>Total</u>
	<u>Household</u>	<u>Income</u>	<u>Sales</u>	<u>Excise</u>	<u>Property</u>	<u>Other</u>	<u>Business</u>	
	<u>Income</u>	<u>Tax</u>	<u>Tax</u>	<u>Taxes</u>	<u>Taxes</u>	<u>Taxes</u>	<u>Taxes</u>	<u>Taxes</u>
First	0.7%	0.0%	2.1%	2.8%	2.6%	1.2%	2.7%	1.6%
Second	1.9	0.1	3.7	4.8	1.2	2.2	2.7	1.8
Third	3.1	0.8	4.8	6.0	2.2	3.7	3.8	2.8
Fourth	4.5	2.1	6.0	7.4	4.7	5.4	5.4	4.3
Fifth	6.1	3.7	7.1	8.8	6.3	6.7	6.3	5.7
Sixth	7.8	5.8	8.9	10.8	9.4	9.4	8.0	7.8
Seventh	10.0	8.6	11.1	12.6	10.8	11.4	10.5	10.1
Eighth	12.7	12.5	13.5	14.2	12.3	14.4	12.4	12.8
Ninth	16.5	18.4	16.4	15.3	15.4	18.2	14.6	16.6
Tenth	36.8	47.9	26.4	17.2	35.1	27.4	33.5	36.4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Amount (\$millions)	\$65,842.6	\$2,759.9	\$1,172.7	\$510.7	\$1,235.0	\$375.8	\$1,693.7	\$7,747.7

Tax System Objectives

The results of this study focus attention on the issue of fairness in the distribution of Minnesota state and local tax burdens. Fairness refers to both vertical equity (how tax burdens vary with the level of income) and horizontal equity (how tax burdens vary for taxpayers with comparable ability to pay). In

addition to fairness, there are other desirable tax-system objectives or characteristics which must be considered in evaluating the overall performance of Minnesota's tax structure. These objectives include understandability, efficiency, competitiveness and reliability. The Department of Revenue's *Model Revenue System for Minnesota* discusses each of these objectives in greater detail.

Understandability is important in achieving voluntary compliance with the tax laws; simplification of the tax structure is one method of enhancing understandability. Efficiency includes the objectives of reducing economic distortions created by taxation, maximizing clarity and accountability in terms of tax and spending decisions, and minimizing both taxpayer compliance costs and administrative costs of collecting taxes. Efficiency is enhanced by a balanced use of income, sales and property taxes with broad bases and competitive tax rates. Interstate tax competition for businesses and jobs may constrain a state's ability to raise tax rates relative to neighboring states.

The objective of reliability has several important dimensions, including stability and sufficiency. A balanced use of income, sales and property taxes provides greater revenue stability over the economic cycle and sufficient growth in taxes over time to finance desired government expenditures.

A significant insight from the information and results presented in this report is the importance of considering state and local taxes as a system in evaluating the equity of Minnesota's tax distribution. The highly progressive state income tax, for example, provides an important balance to regressive sales, excise and property taxes.

Unfortunately, most tax policy options involve tradeoffs among these objectives. For example, increased reliance on the income tax could result in improved vertical and horizontal equity but reduced stability, competitiveness and efficiency. The results of this study provide important information on the extent to which the Minnesota state and local tax structure achieves the equity objective. However, any policy recommendations for altering the progressivity of the tax system should be evaluated on the basis of each of the multiple objectives. The Department of Revenue's *Model Revenue System for Minnesota* provides a more detailed discussion of these objectives and makes specific recommendations for policy changes based on these objectives.

Summary

This report provides important information on the level and distribution of overall tax burdens in Minnesota. A unique methodology, including matching of income data from a number of different data sources for specific individuals and a consistent framework for analyzing tax shifting, is used to estimate the tax distribution. The study includes taxes imposed on both individuals and businesses. An explanation of the various components of the analysis, including assumptions and methodology, is provided in the main sections of the report. Detailed analysis of the results is provided in Chapter 6.

The results presented in this report should prove valuable to policymakers considering future changes in Minnesota's state and local taxes. It can be used to evaluate changes in the equity of specific taxes, as well as the overall tax burden distribution. In addition to equity, the results of the study are useful for addressing other tax policy issues, including overall progressivity and the balance in the state and local tax system. These policy issues are discussed in the final Chapter of the report, along with a brief description and analysis of Minnesota state and local tax changes through 1992.

TABLE OF CONTENTS

Chapter 1 Introduction	1
Chapter 2 Minnesota State and Local Taxes in 1990	3
Taxes on Income	6
Taxes on Consumption	9
Taxes on Property	11
Chapter 3 Measurement of Income	17
Income Concepts	17
Sources of Income Included	18
Adjusted Gross Income (AGI)	19
Additions to AGI	21
Income Not Included in Minnesota Money Income	22
The Accounting Period	22
Definition of Household	23
Differences in Household Size	24
Summary	25
Chapter 4 Building the Incidence Study Database	27
Individual Income Tax	27
Property Tax Refund	28
Other Sources of Income Data	30
Summary of Income Data Sources	30
Tax Calculations	32
Summary	36
Chapter 5 Tax Incidence Analysis	41
Introduction	41
Taxes on Households	43
Taxes on Business	46
Distribution of Taxpayer Categories	60
Business Tax Allocators	70

Chapter 6 Summary of Results	73
The Total Tax Burden	73
Overall Effective Tax Rates	76
Effective Tax Rates by Type of Tax	76
Effective Tax Rates in the First Decile	88
The Suits Index	90
Chapter 7 Detailed Results for Different Household Types	93
Introduction	93
Demographic Characteristics of Each Decile	93
Detailed Incidence Results for Five Different Household Types	95
Chapter 8 Conclusions	101
Overall Progressivity	101
Balanced State and Local Revenue System	102
Interstate Comparison	103
Recent Tax Changes	103
Summary	105
Appendix	107
Appendix A Additional Details on the Incidence of Business Taxes	109
Business Property Taxes	109
Sales Tax on Business Inputs	114
The Corporate Franchise Tax	119
Appendix B Incremental Tax Incidence	123
Appendix C Suits Index Calculations	127
Appendix D Minnesota Tax Burden Amounts by Population Decile	131
Appendix E Household Characteristics and Tax Burdens by Population Deciles	139
Legislative Mandate	145
Bibliography	147

LIST OF TABLES AND FIGURES

Tables

2-1	Minnesota State and Local Tax Collections in 1990	4
2-2	Schedule of Individual Income Tax Rates for 1990	7
2-3	Division of 1990 Taxes Among Resident Households, Nonresidents and Businesses	8
2-4	1990 Property Tax Class Rates	12
2-5	Property Tax on Homes of Different Value and on Different Classes of Property	13
2-6	1990 Property Tax Revenue by Type of Property	15
3-1	Derivation of Total Money Income	21
5-1	1990 Minnesota Taxes on Businesses	47
5-2	Distribution of Business Taxes by Taxpayer Category	61
6-1	Distribution of Taxes and Income by Population Deciles	75
6-2	Percent Distribution of Burden by Tax Type Within Deciles	77
6-3	Effective Tax Rates by Population Deciles	79
6-4	Incidence of Minnesota Business Taxes by Taxpayer Category	87
7-1	Average Tax Burdens by Household Type and Income Level	98

Appendix Tables

A-1	Business Property Taxes	110
A-2	Sales Tax on Business Inputs	116
A-3	Corporate Franchise Tax	122

Figures

2-1	Taxes Included in Minnesota Tax Incidence Studies	5
2-2	Sources of 1990 State and Local Tax Revenue	6
3-1	Computation of Money Income	19
4-1	Sources of Data on Household Income	31
4-2	Summary of Data Items for Each Household	37
5-1	Estimating Tax Incidence	42
5-2	Incidence of a Hypothetical \$120 Million Tax on Capital	53
5-3	Incidence of Business Property Taxes on MN Consumers, MN Labor, MN Capital, and Nonresidents by Industry	62
5-4	Incidence of Business Sales Tax on MN Consumers, MN Labor, MN Capital, and Nonresidents by Industry	59
5-5	Business Tax Allocators	70
6-1	Distribution of Minnesota State and Local Tax Burdens by Tax Type	74
6-2	Effective Tax Rates for 1990 Minnesota State and Local Taxes by Population Deciles	78
6-3	Effective Tax Rates for 1990 Minnesota Household and Business Taxes by Population Deciles	80

Figures (Cont.)

6-4	1990 Effective Tax Rates by Tax Type by Population Deciles	82
6-5	Comparison of Gross and Net Effective Property Tax Rates on Homeowners by Population Deciles	85
6-6	Comparison of Gross and Net Effective Property Tax Rates on Renters by Population Deciles	85
7-1	Households by Family Type	94
7-2	Housing Tenure by Decile	96

Appendix Figures

B-1	Incidence of Existing and Incremental Taxes Compared	124
C-1	Tax Concentration Curve	129
C-2	Minnesota Tax Concentration Curves	121
	Minnesota Tax Burden Amounts by Population Decile	
D-1	All Taxpayers	131
D-2	Homeowners	133
D-3	Renters	135
D-4	Others (farmers and those with no property tax)	137
	Household Characteristics and Tax Burdens by Population Deciles	
E-1	One-Person Households (Except Retired Elderly)	139
E-2	Retired Elderly	140
E-3	Single Parent Families	141
E-4	Married, No Children (Except Retired Elderly)	142
E-5	Married with Children	143

CHAPTER 1

INTRODUCTION

This study provides estimates of the distribution of state and local taxes among Minnesota households in 1990. These estimates are based on a stratified random sample of over 34,000 taxpayers representing over 2 million households. The sample is "blown up" to represent the total population, and effective tax rates are reported as a percent of total household income for groups of taxpayers. In determining effective tax rates, taxes are calculated as a percentage of a household's economic well-being. Chapter 2 discusses taxes included in the study, as well as the overall Minnesota tax structure in 1990.

This study, like others, uses income to measure economic well-being. The appropriate definition of income, however, is controversial. Chapter 3 describes the controversy over the measurement of income in incidence studies and then explains the income definition used in this study.

Chapter 4 explains how the household database was developed. The database consists of four types of data: (1) demographic information about the household (family size, housing tenure, rent payment or home value); (2) the household's total income (by source); (3) the household's estimated expenditures on taxable items; and (4) estimated taxes paid based on the household's income, purchases, and property. In some cases this tax information was obtained directly from tax records or other reported sources; in other cases, it was estimated based on a household's income, size, and other household characteristics.

Chapter 5 explains how the study allocates the burden (or "incidence") of each tax. In some cases (such as the sales tax on consumer purchases), a tax legally paid by business is assumed to be fully shifted to consumers in higher prices. In other cases (business property taxes and sales taxes on purchases by business), the distribution of the tax depends on the nature of the business and the magnitude of Minnesota tax rates relative to those levied in other states. In most cases, the tax burden is shared among the industry's owners, consumers, and workers. A full explanation of the logic used in allocating the burden of such business taxes is provided in Chapter 5, and details concerning how the methodology is applied to individual taxes is included in Appendix A.

Chapter 6 summarizes the results of the study. The tax burden of each household is estimated by combining the information in the database (from chapter 4) with the study's incidence assumptions (from chapter 5). Dividing Minnesota's households into ten deciles, from poorest to richest as measured by household income, this chapter shows how the total tax burden (and that of individual taxes) varies with income. The Suits index is used to measure the regressivity (or progressivity) of tax burdens. This measure has been used in many studies of tax incidence, and it is described in Appendix C.

Chapter 7 provides a more detailed look at how tax burdens vary for subgroups of taxpayers. It provides a description of the households in each decile, showing how household type and housing tenure vary with income, moving from the poorest to richest households. It also provides detailed results for five types of households -- senior citizens, one-person households, married couples without children, single parent families, and married couples with children.

Chapter 8 summarizes the major conclusions of the study. It includes a brief discussion of the estimated impact of tax law changes since 1990 on the distribution of state and local tax burdens.

Several appendices provide more detailed information. Appendix A includes a more detailed explanation of the method used to allocate the burden of each business tax. Appendix B contrasts the incidence of existing taxes (the subject of this study) with the incidence of an incremental increase in tax rates. As explained in Appendix B, the incidence of an existing business tax is very different from the incidence of an increase in that tax. This study's results should not be applied to proposals for incremental changes. The methodology to estimate the incidence of an incremental change in business taxes is described in Appendix B, and some results are shown. Appendix C describes the Suits index measure of tax progressivity. Appendix D includes more detailed tables of the overall incidence results shown in Chapter 6. Finally, Appendix E includes detailed tables on household characteristics and tax burdens by household type.

CHAPTER 2

MINNESOTA STATE AND LOCAL TAXES IN 1990

Minnesota collected almost \$9.9 billion in state and local taxes in 1990.¹ Approximately two-thirds were collected at the state level; local governments collected one-third of the total, primarily from property taxes. This study estimates how the burden of those taxes was distributed among the residents of Minnesota, with the primary emphasis on the distribution of tax burdens by income level. The study estimates the regressivity (or progressivity) of the total tax system and each individual tax. Tax burdens are also estimated for subgroups of the population, such as senior citizens, single-parent families, homeowners, and renters.

The coverage of this study is summarized in *Table 2-1*. It includes taxes on individuals and businesses accounting for over 97 percent of total state and local tax collections (98 percent of state collections and 95 percent of local collections).² This is a major expansion in coverage over the 1988 incidence study which did not include business taxes. *Figure 2-1* compares the taxes included in the 1988 and 1990 incidence studies.

¹Collection amounts are based on tax year 1990. Property tax collections are for taxes payable in 1990.

²Taxes omitted from this study include estate tax, gambling taxes, sales taxes imposed by local governments, gross earnings taxes on utilities, mortgage registry and deed transfer taxes, mining taxes, and state property taxes on aircraft.

Table 2-1
Minnesota State and Local Tax Collections in 1990
(\$millions)

<u>State</u>		<u>Local</u>	<u>Total State and Local</u>
Included		Included	
Individual income tax	\$2,838	Gross property taxes (after credits)	
Corporate franchise tax	431	Homestead property taxes	\$948
General sales and use tax	1,939	Property taxes on second homes	83
Motor vehicle excise tax	246	Rental property taxes (residential)	449
Motor fuels excise taxes	466	Other business property taxes	
Alcoholic beverage excise taxes	57	(including farming)	<u>1,656</u>
Cigarette & tobacco excise taxes	156	Subtotal	\$3,136
Insurance premiums tax	126		
Motor vehicle registration tax	<u>308</u>	Property tax refunds	<u>(128)</u>
Total	\$6,567	Total	\$3,008
			\$9,575
Omitted		Omitted	
Gambling taxes	\$58	Local sales taxes	\$50
Gross earnings taxes	33	Gross earnings taxes	27
Mining taxes	2	Mineral taxes	80
Other taxes	<u>37</u>	Other taxes	<u>2</u>
Total	\$130	Total	\$159
			\$289
Total Tax Collections	\$6,697	Total Tax Collections	\$3,167
			\$9,864

Figure 2-1
Taxes Included in Minnesota Tax Incidence Studies

<u>Tax</u>	<u>Tax Incidence Study</u>	
	<u>1988</u>	<u>1990</u>
Income Taxes		
Individual income tax	X	X
Corporate franchise tax		X
Consumption Taxes		
General sales and use tax		
Consumers	X	X
Business		X
Motor vehicle excise tax (MVET)		
Consumers	X	X
Business		X
Excise taxes (gasoline, tobacco and alcohol)		
Consumers	X	X
Business		X
Property Taxes		
Property taxes		
Residential		
Homesteads and apartments	X	X
Recreational property		X
Business		X
Property tax refunds		
Regular	X	X
Targeted		X
Motor vehicle registration		
Personal		X
Business		X
Other Taxes		
Insurance premiums tax		
Personal		X
Business		X

Figure 2-2
Sources of 1990 State and Local Tax Revenue

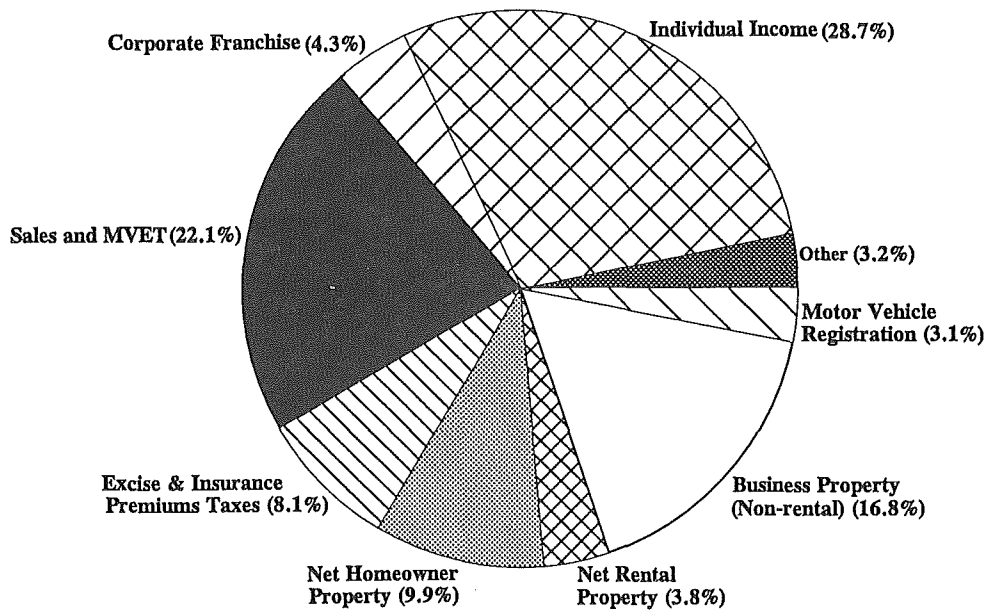


Figure 2-2 shows the percent of total tax revenue derived from each major type of tax in 1990. Taxes on income (individual and corporate) accounted for 33 percent of total collections. Taxes on consumption (sales tax, excise taxes, and insurance premiums tax) combined for 30 percent of total collections. Taxes on property (including second homes and the motor vehicle registration tax) accounted for about 34 percent of the total. The following sections describe the structure and magnitude of each type of tax.

Taxes on Income

Individual Income Tax

Minnesota enacted the state income tax in 1933 with initial rates ranging from 1 percent to 5 percent. By 1990, state income tax rates ranged from 6 to 8.5 percent. In 1987, Minnesota enacted most of the major provisions of the Federal Tax Reform Act of 1986. Since then, federal taxable income has been the starting point in computing the Minnesota tax, and the Minnesota tax structure has incorporated the federal personal exemptions, standard deduction, and itemized deductions. Other reforms adopted in 1987 included eliminating the 60 percent capital gains exclusion and the itemized deduction for sales taxes paid, broadening of the tax base by restricting various other deductions, and lowering state tax rates.³

³See Minnesota Department of Revenue, *Minnesota Tax Handbook*, January 1993, for more details on tax law changes over time.

Table 2-2
Schedule of Individual Income Tax Rates for 1990

Married-Joint Returns and Surviving Spouses

<u>Taxable Income</u>	<u>Rate</u>
\$ 1 - \$ 19,000	6.0%
19,001 - 75,500	8.0
75,501 - 165,000	8.5
165,001 and over	8.0

Single Persons

<u>Taxable Income</u>	<u>Rate</u>
\$ 1 - \$13,000	6.0%
13,001 - 42,700	8.0
42,701 - 93,000	8.5
93,001 and over	8.0

Married-Separate Returns, Estates, and Trusts

<u>Taxable Income</u>	<u>Rate</u>
\$ 1 - \$ 9,500	6.0%
9,501 - 37,750	8.0
37,751 - 127,500	8.5
127,501 and over	8.0

Heads of Households

<u>Taxable Income</u>	<u>Rate</u>
\$ 1 - \$16,000	6.0%
16,001 - 64,300	8.0
64,301 - 135,000	8.5
135,001 and over	8.0

In computing Minnesota taxable income in 1990, a small number of adjustments were made to federal taxable income. The graduated tax rates presented in *Table 2-2* were applied to taxable income to calculate 1990 gross income tax. This gross tax was then reduced by several tax credits (dependent care, enterprise zone, and income tax paid to other states) to yield net income tax liability.⁴

Individual income tax collections totaled \$2,828 million in 1990, accounting for almost 29 percent of total state and local tax revenue. All but 3 percent of total collections was paid by Minnesota residents (see *Table 2-3*).

Corporate Franchise Tax

Minnesota also enacted the state corporate income tax in 1933. As with the individual income tax, major changes in Minnesota corporate taxation followed the 1986 Federal Tax Reform Act. In 1987, the corporate income and bank excise taxes were replaced by a corporate franchise tax based on federal taxable income. In addition, the base of the tax was broadened and the tax rate lowered.

⁴Tax preference income was subject to an alternative minimum tax in 1990; there was no working family credit (enacted in 1991).

Table 2-3
Division of 1990 Taxes Among
Resident Households, Nonresidents and Businesses

	Total Collections (\$millions)	Percentage Distribution²⁾		
		Households		
		Residents	Nonresidents	Businesses
Taxes on Income (33.0%¹⁾)				
Individual income tax	\$2,838	97.3%	2.7%	0.0%
Corporate franchise tax	431	0.0	0.0	100.0
Taxes on Consumption (30.2%)				
General sales and use tax	\$1,939	49.7%	7.5%	42.8%
Motor vehicle excise tax	246	84.7	0.0	15.3
Motor fuels excise tax	466	67.0	10.0	23.0
Alcoholic beverage excise taxes	57	75.0	15.0	10.0
Cigarette and tobacco excise taxes	156	100.0	0.0	0.0
Insurance premiums tax	126	77.5	0.0	22.5
Taxes on Property (33.6%)				
Homestead property (gross)	\$948	100.0%	0.0%	0.0%
Rental property (gross)	449	0.0	0.0	100.0
Property tax refunds received	(128)	100.0	0.0	0.0
Second homes	83	80.0	20.0	0.0
Other business property	1,656	0.0	0.0	100.0
Motor vehicle registration tax	\$308	69.0%	0.0%	31.0%

¹⁾ Percent of total state and local tax collections. Totals add to less than 100 percent because about 3 percent of revenue is from taxes omitted from this study.

²⁾ For taxes on income and property, the percentage distribution reflects the legal liability of the tax. Consumption taxes are distributed based on the type of purchaser.

In computing Minnesota taxable income in 1990, a number of adjustments were made to federal taxable income. For corporations with operations or sales in other states, only a portion of their total income is taxable in Minnesota. That portion is calculated by an apportionment formula based on the Minnesota shares of the corporation's property, payroll, and sales. In apportioning corporate income to Minnesota, the sales factor is weighted 70 percent and payroll and property are each weighted 15 percent.⁵

⁵⁾ Domestic unitary reporting is used, and federal taxes are not deductible in computing Minnesota corporate taxes. The apportionment formula weights sales more heavily than in many states, with tax incidence implications that are discussed in Chapter 5.

In 1990, Minnesota taxable income was subject to a flat 9.8 percent tax rate; corporate franchise tax collections totaled \$431 million, accounting for 4.3 percent of total tax revenue. For tax year 1990, 54,000 corporations filed a state tax return.

Taxes on Consumption

A wide range of purchases by consumers and businesses are subject to taxation in Minnesota. The general retail sales tax is imposed on the purchase of tangible products and selected services. In addition, the purchases of specific products, such as cigarettes and gasoline, are subject to separate excise taxes. Insurance premiums taxes are also applied to purchases of personal and business insurance. In total, consumption taxes accounted for \$2,990 million of state and local collections in 1990 (30 percent of all taxes).

General Sales Tax and Motor Vehicle Excise Tax

The sales tax was first enacted in 1967 at a rate of 3 percent. The rates in effect during 1990 were as follows:

- 6.0% - General rate
- 8.5% - Liquor and beer
- 4.0% - Special tooling
- 2.0% - Farm machinery and logging equipment

The tax base is the sales price of tangible personal property and taxable services sold in the state. A complementary use tax is imposed on property purchased outside the state but used or consumed in Minnesota. Major exemptions from the tax base in 1990 included food consumed at home, clothing, prescription drugs, residential heating fuels, water services, vehicle repairs, and motor fuels. While motor vehicles are also exempt from the sales tax, they are subject to a separate motor vehicle excise tax at the general sales tax rate.

The sales tax base was significantly expanded in the late 1980s. Many services became taxable for the first time, including parking, laundry and dry cleaning, lawn and garden services, detective and security services, pet grooming, motor vehicle cleaning, building and residential cleaning, health clubs and tanning salons, interstate telephone service, club dues, and garbage collection. Also made taxable were most purchases by state government, nonprescription drugs, and railroad rolling stock.

Many purchases by businesses are subject to the sales and motor vehicle excise taxes. A general exemption is made for purchases of materials consumed in agricultural and industrial production (such as fuels and chemical ingredients) and for products purchased for resale (by wholesalers or retailers). Capital equipment for new and expanding industries is also exempt from tax. Nevertheless, many business purchases are taxed. Replacement capital equipment purchased by industrial firms and all capital equipment purchased by non-industrial companies is generally subject to tax. Business spending on meals, entertainment, hotels and motels, motor vehicles, and office supplies are generally subject to tax.

The general sales and use tax raised \$1,939 million in 1990. Combined with the motor vehicle excise tax (\$246 million), they accounted for 22 percent of total state and local tax collections in 1990. The distribution of taxes among purchases of Minnesota residents, nonresidents, and businesses is shown in *Table 2-3*. Approximately 50 percent of the sales and use tax revenues were collected on purchases by Minnesota consumers, while nonresident visitors accounted for an additional 7.5 percent. The remaining 42.8 percent was collected on purchases by businesses. For the motor vehicle excise tax, this study estimates that taxes on business purchases account for over 15 percent of total collections.⁶

Excise Taxes

The state gasoline tax, first adopted in 1925 at a rate of 2 cents per gallon, had risen to 20 cents per gallon in 1990. The cigarette tax was first levied in 1947 at 3 cents per pack. By 1990, it had risen to 38 cents per pack. Excise tax rates on alcoholic beverages in 1990 were \$2.40 per barrel of 3.2 percent beer and \$4.60 for strong beer, \$5.03 per gallon of liquor and from \$0.30 (under 14 percent) to \$3.52 per gallon (over 24 percent alcohol) per gallon for wine.

These three excise taxes accounted for a total of \$679 million in taxes in 1990, almost 7 percent of total state and local tax revenue. *Table 2-3* shows the division of taxed purchases among Minnesota consumers, nonresidents, and businesses.

⁶For the sales tax, the estimated percentages are derived from the 1990-91 Consumer Expenditure Survey and data on travel expenditures from the U.S. Travel Data Center. For the motor vehicle excise tax, net taxable business purchases of vehicles were estimated from Commerce Department investment data. For additional information on these estimates, and those for individual excise taxes, see Chapter 4.

Insurance Premiums Tax

Like most states, Minnesota levies a 2 percent tax on most insurance premiums written in Minnesota.⁷ All types of insurance are taxed including personal insurance (life, automobile, home, health and accident) and business insurance (business property and liability). Business insurance accounts for 23 percent of total premiums tax collections (see *Table 2-3*). The remainder is paid on personal insurance premiums paid by (or on behalf of) Minnesota residents. In 1990, insurance premiums taxes accounted for 1.3 percent of total state and local tax revenue.

Taxes on Property

Minnesota's property tax classification system was instituted in 1913 with only four classes of property. Over time, the number of property tax classes has grown dramatically. Numerous law changes have been adopted almost yearly in recent decades to modify credits, exemptions, tax rates and brackets for different classes of property, and to provide different levels of property tax relief. Today, the Minnesota property tax system is probably the most complex in the nation.

Under a property classification system, property of the same value is legally taxed at very different rates. *Table 2-4* shows the class rates in effect in 1990. The class rate for taxes payable in 1990 approximates the tax paid on that property, as a percent of its market value, at the state's average local tax rate. A class rate of 1.0 percent means that property would pay tax equal to one percent of its value if located in a taxing jurisdiction with average tax rates. As shown in *Table 2-5*, the class rate structure results in higher tax rates on higher-valued homes. A \$120,000 house, for example, paid taxes equal to 1.6 percent of market value, compared to 1.0 percent for a \$60,000 home. In 1990, the actual taxes paid on a \$120,000 home were over three times those on a \$60,000 home; the taxes on a \$360,000 home were over 15 times those on a \$60,000 home. *Table 2-5* also shows how class rates vary for different types of property. Apartments and commercial and industrial property valued at \$120,000 were taxed over twice as heavily as homes of equal value.

⁷The rates vary from 1.0 percent on small mutual property and casualty companies to 3 percent on surplus line agents, and there is an additional fire marshal tax on some insurance. Fraternal organizations and health maintenance organizations, among others, are exempt, and no tax is paid on self-insured plans even if administered by an insurance company.

Table 2-4
1990 Property Tax Class Rates

<u>Class</u>	<u>Description of Property</u>	<u>Class Rate (%)</u>	<u>Class</u>	<u>Description of Property</u>	<u>Class Rate (%)</u>
1a	Residential Homesteads		3b	Employment Property	
	First \$68,000 market value	1.0%		Competitive	
	\$68,000 - \$100,000	2.0		First \$50,000 market value	2.4%
	Over \$100,000	3.0		Over \$50,000	3.6
1b	Disabled/Blind Homesteads			Border	
	Residential			First \$100,000	3.3
	First \$32,000 market value	0.4		Over \$100,000	5.06
	[Over \$32,000 same as Class 1a]		4a	Apartments (4 or more units)	3.6
	Farm			Private hospitals	3.6
	First \$32,000	0.4	4b	Apartments (3 or less units)	3.0
	[Over 32,000 same as Class 2a]			Residential non-homestead	3.0
1c	Small Homestead Resorts			Farm non-homestead (HGA)	3.0
	First \$32,000 market value	0.4		Non-homestead manufactured housing	3.0
	Over \$32,000	1.0		Manufactured home parks	3.6
2a	Agricultural Homesteads			Post-secondary student housing	3.0
	House, garage & 1 acre		4c	Seasonal Recreational Residential	
	First \$68,000 market value	1.0		Commercial	2.4
	\$68,000 - \$100,000	2.0		Non-commercial (cabins)	2.4
	Over \$100,000	3.0		Non-profit community service property	2.4
	Farm land & buildings < 320 acres			Title II/MHFA housing (structures)	2.4
	First \$100,000	0.4		Section 8 and section 42 (structures)	2.4
	Over \$100,000	1.3		Apartment land	
	Farm land & buildings > 320 acres			3 or less units	3.0
	First \$100,000	0.4		4 or more units	3.6
	Over \$100,000	1.7		Neighborhood real estate trusts	2.4
2b	Timber	1.7	4d	FmHA (Structures)	1.7
	Farm non-homestead (land)	1.7	5	Public utility machinery	5.06
3a	Commercial/Industrial			Vacant land	5.06
	First \$100,000 market value	3.3		Unmined iron ore	5.06
	Over \$100,000	5.06		Low recovery iron ore	5.06

Note: Effective property tax rates (taxes as a percent of market value) equal the class rate multiplied by the local tax rate. In a taxing district with the average property tax rate of 99.768 in 1990, the class rate approximately equals the tax as a percent of market value. Property with a class rate of 3.0 therefore pays 3 times as much tax as property with equal market value and a class rate of 1.0.

Table 2-5
Property Tax on Homes of Different Value
and on Different Classes of Property

Value of Home	Taxes Paid in Taxing Jurisdiction with Average Local Tax Rates		
	Percent of Market Value	Total Tax	Ratio of Tax to Tax on \$60,000 Home
\$ 60,000 home	1.00%	\$600	1.0
\$120,000 home	1.60	1,920	3.2
\$360,000 home	2.53	9,120	15.2
Type of Property	Ratio of Tax to Tax on \$120,000 Home		
\$120,000 home	1.60%	\$1,920	1.0
\$120,000 rented duplex	3.00	3,600	1.8
\$120,000 apartment building (4 units)	3.60	4,320	2.2
\$120,000 commercial or industrial building	3.59	4,312	2.2
\$120,000 public utility machinery	5.06	6,072	3.1

Since 1971, Minnesota has not levied a property tax on either business and agricultural machinery and equipment or business inventories. Both are taxed in some other states. The only equipment taxed in Minnesota is public utility equipment (subject to tax in most other states). Educational facilities, religious and charitable organizations, Indian lands, cemeteries, and household personal property are also exempt from taxation.

1990 property tax revenues by type of property are shown in *Table 2-6*. Homeowners (including farm homes and cabins) paid about one-third of gross property taxes; rental housing accounted for 14 percent, and other business property (including farm property) accounted for slightly more than half.⁸

Property Tax Refunds

In 1990, homeowners and renters received a total of \$128 million in property tax refunds from the state. The refunds were in two forms. First, the "regular" property tax refund was based on the relationship between property taxes and household income. This refund was limited to those with household incomes under \$60,000 for homeowners and under \$35,000 for renters, with larger refunds generally paid to those with lower income. The second refund was "targeted" to those whose property taxes had increased by more than 10 percent, regardless of income. Total property tax refunds equaled 9 percent of total taxes paid on residential property.

Motor Vehicle Registration Tax

Minnesota's annual motor vehicle registration tax is a tax on property. In 1990, the general tax was \$10 plus 1.25 percent of the market value of the vehicle. Vehicles over 10 years old (or worth less than \$2,000) paid a minimum fee of \$35. A total of \$308 million was collected in taxes. Using data on collections by different categories of vehicles, an estimated 31 percent of this tax is paid on business vehicles (including apportioned taxes on large trucks); the other 69 percent is paid by Minnesota residents.

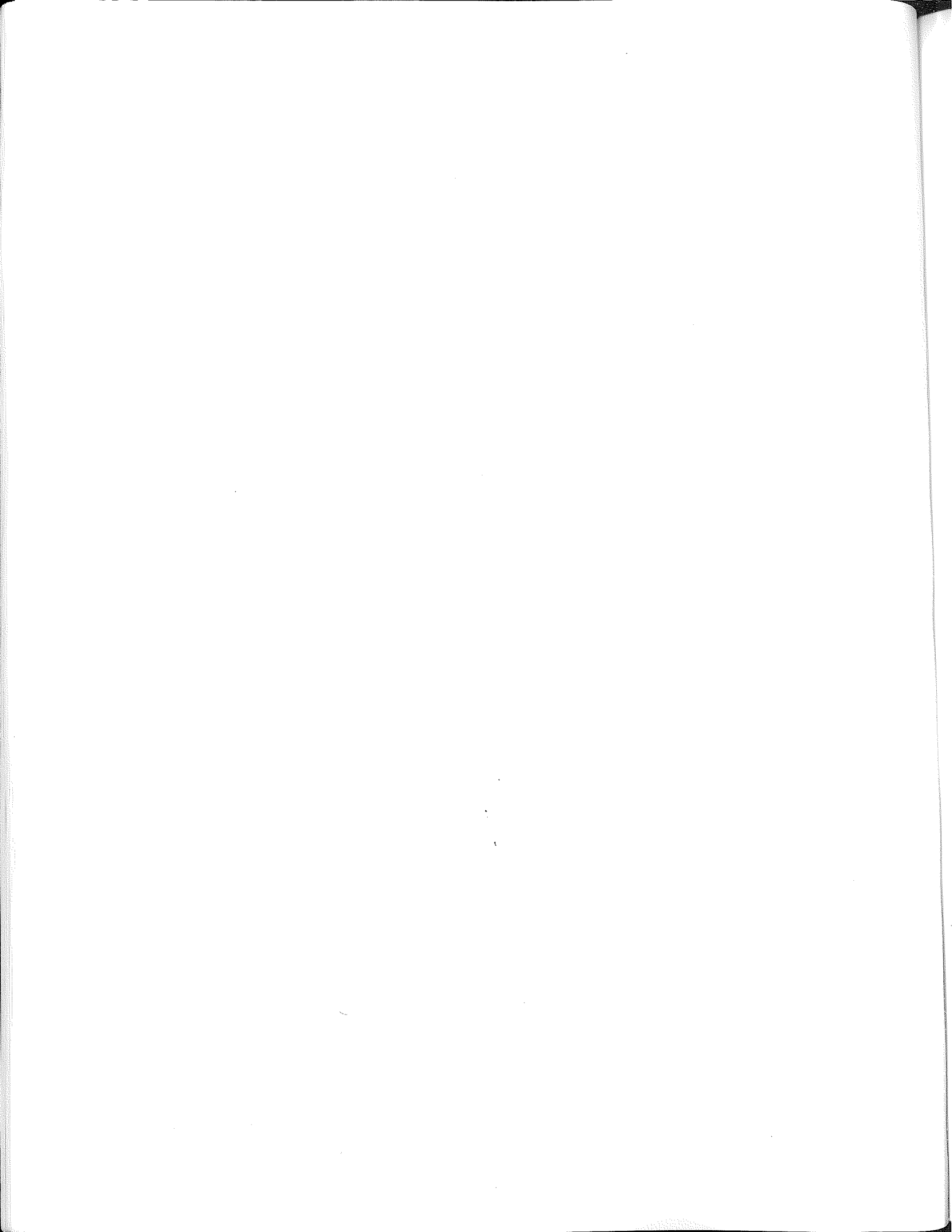
⁸These are the percentages of gross property tax, before subtracting any property tax refunds received by homeowners and renters. For net property taxes, see the footnote on *Table 2-6*.

Table 2-6
1990 Property Tax Revenue
by Type of Property

<u>Type of Property</u>	<u>Dollars¹⁾</u> <u>(\$millions)</u>	<u>Percent</u> <u>of Total²⁾</u>
Homeowners		
Residential homesteads	\$910	29.0%
Farm homesteads (house, garage & 1 acre)	38	1.2
Residential recreational (cabins)	<u>83</u>	<u>2.7</u>
Total	\$1,031	32.9%
Rental Residential Property		
Apartments	\$251	8.0%
Residential non-homestead	185	5.9
Farm non-homestead (house, garage & 1 acre)	<u>13</u>	<u>0.4</u>
Total	\$449	14.3%
Other Business Property		
Commercial	\$844	26.9%
Industrial	289	9.2
Public utility (real & personal)	247	7.9
Farms (land & farm buildings, homestead & non-homestead)	179	5.7
Railroad, timber, seasonal recreational commercial and mineral)	<u>24</u>	<u>0.8</u>
Total	\$1,583	50.5%
Vacant Land	<u>\$73</u>	<u>2.3%</u>
Total Property Tax	\$3,136	100.0%

¹⁾ Gross tax collections, before property tax refunds for homeowners and renters.

²⁾ Net property tax shares are: 32.6 percent for homeowners, 12.4 percent for rental property, 52.6 percent for other business property, and 2.4 percent for vacant land.



CHAPTER 3

MEASUREMENT OF INCOME

An appropriate measure of income is critical to any study of tax incidence. By definition, a tax incidence study compares taxes paid to some measure of a household's economic well-being or ability to pay. In this study, tax burdens are expressed as ratios of taxes paid to a broad measure of household money income. This comprehensive measure of money income includes not only income taxable on income tax returns but also nontaxable income, such as public assistance payments, tax-exempt interest, and nontaxable social security and pension income.

Income Concepts

The definition of income should be as consistent as possible with the public's perception of economic well-being. Households with equal incomes should be viewed as being equally well off, and those with higher incomes should be considered consistently better off than those in lower income groups. This argues for a comprehensive definition of income. If the chosen concept of income excludes major sources of income, then households with equal measured incomes will not be equally well off. An incidence study using too narrow a definition of income would overstate the ratio of taxes to income; it might also give a distorted picture of the regressivity or progressivity of the tax system.

Four distinct issues need to be addressed in choosing an income measure. The first concerns the sources of income to be included. Should the measure be restricted to money income or should it be extended to non-monetary components as well, such as employer-provided fringe benefits, imputed rent on owner-occupied housing, and in-kind government benefits (e.g., food stamps)? The second issue concerns the choice of the appropriate accounting period. Should economic well-being be measured by income received in a single year, or by a household's average income over a longer period of time? The third issue concerns the definition of a household. For many people, the tax unit and the household or family are the same. In some cases, however, a family may contain several tax filing units. Under what circumstances should those taxpaying units be combined into one household in a tax incidence study? The fourth issue concerns the treatment of families of different sizes. Is a single-person household with income of \$30,000 as well off as a family of six with the same income? How

(if at all) should the study adjust for differences in family size?

Comprehensive income in this study is defined as all cash income (but no non-monetary elements), received in a single year, by households (regardless of family size) which include all dependents (even if they filed a separate income tax return). The measurement and implications of this income definition are explained in this chapter.

Sources of Income Included

Conceptually, the broadest measure of a household's income is referred to by economists as the Haig-Simons (H-S) definition of income. By this definition, income is the amount that a family consumes in a year plus the net increase or decrease in the inflation-adjusted (real) value of their assets. This definition, widely accepted by economists, reflects economic well-being because it is the amount the family could consume this year without reducing its net worth or wealth.

The income measure used in tax incidence and distributional studies by the U.S. Treasury Department ("family economic income") approximates the Haig-Simons definition of income. The distinguishing characteristics of such a measure of income are: (1) the inclusion of non-monetary forms of income, including employer-provided fringe benefits, the imputed value of rent for homeowners, and food stamps; (2) the inclusion of capital gains and pension benefits when they accrue (not when realized); and (3) an adjustment for inflation that excludes the portion of interest and other capital income which simply represents inflation.⁹ There are two problems with such measures of income. First, they present formidable challenges in estimating the distribution of non-monetary sources of income and then imputing those benefits to individual households. Second, while the Haig-Simons definition of income is widely accepted by economists, it is not consistent with the average citizen's concept of income.¹⁰ Because of these

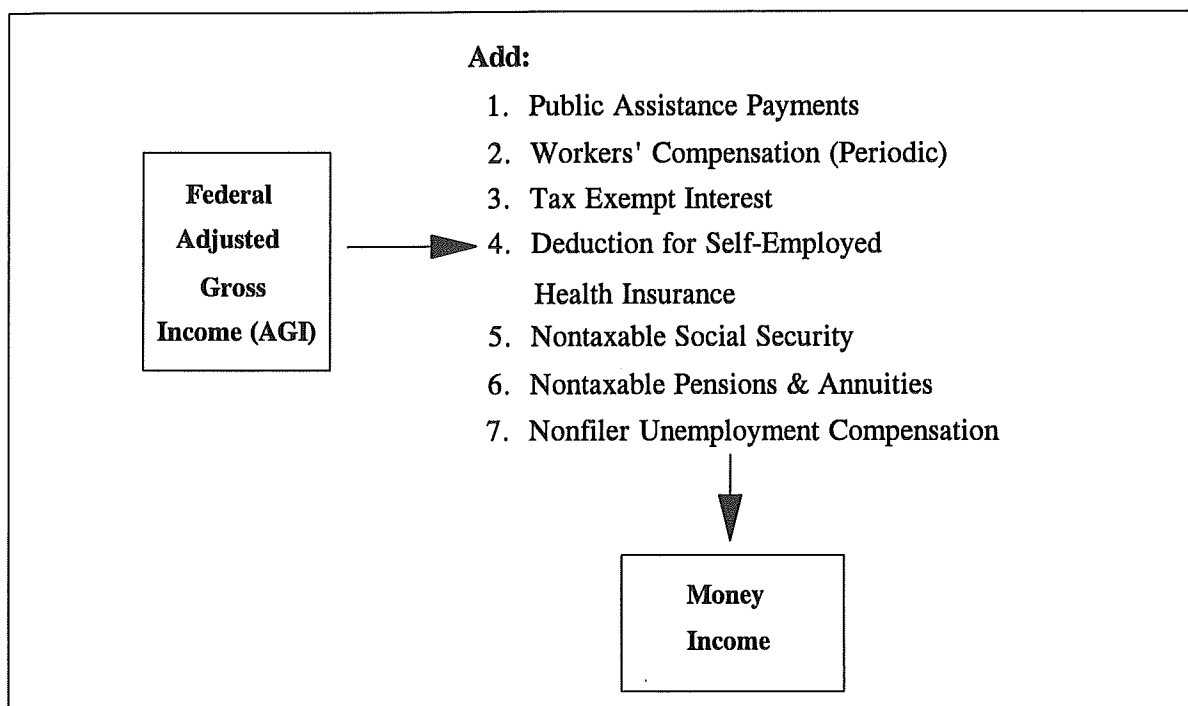
⁹The income measure used by the Joint Economic Committee, like that used by Treasury, includes many non-monetary sources of income, but it includes capital gains only when realized and makes no adjustment for inflation. The Commerce Department's concept of income (personal income as reported in the National Income and Product Accounts) is quite similar to the Treasury Department's income measure, including non-monetary benefits and measuring capital gains and pensions when they accrue. For a comparison of these alternative measures, see Nelson (1987).

¹⁰Barthold (1993) argues that the Haig-Simons concept of income is not supported by the public. For example, when President Clinton promised that his proposed taxes would affect only those with incomes over \$80,000, the number was based on the Treasury Department's

problems, the broader approaches to income measurement are not followed in this study.

Instead, this study includes only monetary sources of income. Capital gains and pension benefits are included when realized, not as they accrue, and no adjustment is made for inflation. As shown in *Figure 3-1*, the derivation of money income begins with federal adjusted gross income (AGI), the broadest income tax concept of income. Various measures of nontaxable income are added to AGI in deriving comprehensive money income, as discussed in the following sections.

Figure 3-1
Computation of Money Income



Adjusted Gross Income (AGI)

The federal government and many states use this measure of income as the starting point for determining individual income tax liabilities. Because AGI is limited to those forms of income that are taxable, it is rarely used as the measure

comprehensive measure of family income. The public outcry over including imputed rent of homeowners, employer-provided health insurance, and accrued (but unrealized) capital gains as income demonstrated the lack of public acceptance of the Haig-Simons definition of income, despite attempts by economists to explain it. It is unclear whether the public skepticism reflects a lack of economic understanding or a more basic difference in how the public defines economic well-being.

of income in tax incidence studies. However, because of its ready availability and reliability, it is often used as a base for the construction of a broader income measure.

Federal AGI is defined as total income from all taxable sources less certain expenses incurred in earning that income. The major taxable sources of income include (but are not limited to) the following:

- Wages and salaries
- Income from business
- Gains from sale of capital assets
- Interest, rent, royalties, and dividends
- Alimony
- Annuities and pensions
- Prizes and awards
- A portion of social security payments
- Unemployment compensation

Many sources of cash income are statutorily excluded from the federal income tax. Exclusions include cash received in the form of child support payments, welfare benefits, scholarships and fellowships, workers' compensation benefits, interest on most state and local bonds, and most social security benefits. Almost all non-monetary benefits are excluded, such as employer-provided fringe benefits, food stamps, low-income housing subsidies, and the imputed rental income of homeowners.

Federal AGI's usefulness in a tax incidence study is also limited because it excludes the income of "nonfilers", those taxpayers whose income falls below the reporting threshold. These taxpayers are not required to file income tax returns because they have too little income or because they derive most of their income from nontaxable sources. The nonfiler category includes most taxpayers with income below the poverty level and a significant percent of the elderly.¹¹

According to extrapolations from the incidence study database, 84 percent of the state's households (as defined later in this chapter) are accounted for on state individual income tax returns; the remaining 16 percent do not file income tax returns. Using additional information from property tax refund returns, the household coverage from all tax return filings increased to 90 percent. Only 10

¹¹Analysis of the 1982 Minnesota income tax sample indicated that only half of Minnesotans age 65 and over filed a tax return. See Minnesota Department of Revenue, *Pensions, Retirement and the Elderly: The Minnesota Pension Exclusion* (1986): 6.

percent of the households filed neither an income tax return nor a property tax refund claim. As explained below, a substantial proportion of the income of these nonfilers is obtained from other state and federal sources of income.

Additions to AGI

As shown in *Figure 3-1*, income from a number of sources is added to AGI in deriving a comprehensive measure of Minnesota money income. These include: public assistance payments, the wage replacement portion of workers' compensation, tax exempt interest, nontaxable social security, nontaxable pensions and annuities, unemployment compensation received by nonfilers, and other income (including wages and salaries) received by households not filing an income tax return but reported on property tax refund returns.

Table 3-1 summarizes the components of 1990 Minnesota total money income as measured in this study. The data source for each component of income is also identified. Federal AGI makes up over 89 percent of the \$65.8 billion in total money income. Nontaxable social security benefits were the largest source of additional money income, representing 5.5 percent of the total.

Table 3-1
Derivation of Total Money Income
(\$millions)

<u>Data Source</u>	<u>Income Source</u>	<u>Amount</u>
Income tax filers	Federal adjusted gross income	\$59,102.0
	Nontaxable interest income	633.0
	Nontaxable IRA income	311.2
	Nontaxable pension and annuity income	1,049.2
	Nontaxable social security benefits	2,249.8
	Municipal bond interest income	47.7
	Self-employed insurance deduction	46.6
	Workers' compensation	151.9
	Public assistance	115.8
Property tax refund filers who did not file income tax returns	Federal adjusted gross income	302.9
	Nontaxable social security benefits	697.4
	Public assistance	75.7
	Other income	145.6
Nonfilers	Public assistance	203.8
	Workers' compensation	28.9
	Social security benefits	652.4
	Unemployment compensation	28.7
Total		<u>\$65,842.6</u>

Income Not Included in Minnesota Money Income

Minnesota money income excludes many forms of income that would be included in the broadest income measure based on the Haig-Simons definition. It excludes all non-monetary forms of income (food stamps, housing subsidies, Medicare and Medicaid benefits, employer-provided fringe benefits, and imputed rent for homeowners). It includes capital gains and pension income only when realized, not when accrued. No adjustment is made for depreciation deductions in excess of economic depreciation, nor is a deduction made for the portion of interest income that represents inflation.

Given the lack of detailed data, these adjustments are simply too difficult to be justified at the state level. Fortunately, the use of money income rather than a more comprehensive measure of income has been shown to provide an accurate description of the regressivity of state and local taxes.¹² This definition of income is also more understandable for the average citizen.

Due to data limitations, Minnesota money income still excludes some forms of cash income. Three particular omissions should be noted. First, wage and salary income for taxpayers who file neither an income tax nor a property tax refund return could not be added to the identifiable sources of income such as public assistance and social security benefits for such nonfilers. This results in an overstatement of tax burdens for the lowest income groups. Second, veterans benefits are excluded (except for those reported on property tax refund returns). Although the dollar value of veterans benefits is significant, about \$300 million in 1990, actual payments could not be matched by social security number. Third, income not reported on the tax returns is also excluded.

The Accounting Period

Income received in a single year can be a misleading measure of economic well-being. Individual households may have unusually high or low income in a particular year due to business losses, unemployment, or the sale of capital assets. Because of such transitory income, a snapshot of the income

¹²The Wisconsin Tax Burden Study (1979, p. 72) reached the following conclusion after comparing tax burdens using both money income and a more comprehensive measure of income: "Although the income definition did affect the level of the tax rates, there was generally little difference in the shapes of the incidence curves. This held true not only for the aggregate tax burden but also for individual taxes."

distribution in a single year shows more income inequality than a time exposure over several years. For example, Slemrod (1992) showed that people with negative income in 1983 (an average loss of \$23,000) had an average annual positive income of \$35,000 over the seven-year period 1979-1985.

In addition, income varies over a household's life cycle. For these reasons, annual income may not be an accurate measure of a household's more permanent economic well-being. Empirical studies suggest that the shorter the time period under study, the more regressive the incidence results will be.¹³

In spite of these shortcomings, there are two strong reasons why this study uses annual rather than permanent income. First, an adequate record of the income of individual households over a longer period is rarely available. Consequently, state incidence studies have always used an annual accounting period. Second, an annual perspective may be preferred because taxes are paid out of a household's current income, not out of what might be earned in the future. As noted by Chernick and Reschovsky (1992, p. 29): "For a person with low income in his thirties, the fact that his income may be substantially higher during his forties does nothing to relieve the high tax burdens he faces during the earlier decade as long as he has no way to tap income that will accrue in the second decade." If the purpose of an incidence study is to make policy decisions regarding current ability to pay taxes, then it is reasonable to argue that the appropriate measure should be based on annual rather than permanent income.

Definition of a Household

The definition of a household should be consistent with the average citizen's use of the term. As a result, this study combines dependents who file their own income tax return with taxpayers claiming them as dependents to form a single household. Nearly 10 percent of all individual income tax returns are filed by persons claimed as dependents on someone else's tax return. The most common situation is a student working part-time and claimed as a dependent on the parent's tax return. If not combined into a single household, these part-time workers would be treated as separate, low-income individuals in the study, with misleading results.

In order to link dependents with actual families in the tax incidence database, data from tax returns in the 1990 Minnesota income tax sample were

¹³In addition to Slemrod (1992), see Fullerton and Rogers (1991), Lyon and Schwab (1991), Poterba (1989), and Chernick and Reschovsky (1992).

matched by name and address to generate overall income distribution characteristics of filers claiming these dependents. This distribution was then applied to the incidence study sample to assign sample dependent returns to actual families in the sample with these same characteristics.

An additional adjustment was made in cases where income information for nonfilers was initially reported separately for each member of a family (e.g., spouses having separate social security payment records). Available state agency files containing name and address information were used to combine such individuals into household units. This adjustment provided a more accurate picture of such households.

Despite these adjustments, there are a substantial number of individuals treated as separate households in this study who might more accurately be considered part of another household, e.g., single people living with parents (but not claimed as dependents) or an elderly person living with children. The appropriate treatment of such individuals depends on their particular situation. Given the lack of information, such individuals are treated as separate households in this study.¹⁴

Differences in Household Size

In this study, households are divided into income classes with no adjustment for household size. For example, all households with incomes between \$40,000 and \$50,000 are considered as a group, whether the household consists of a single person or a family of four. In the incidence study sample, the poorest 20 percent of households are mainly single-person households, while almost all high-income households include two or more individuals.

The ability to pay taxes is generally perceived to depend on the size of the household as well as on the household's income. This is reflected in the structure of federal and state income taxes and government benefit programs (e.g., food stamps, public assistance and financial aid for college). Holding income constant, larger families pay lower taxes and receive higher benefits. Several methods of adjusting tax burdens for differences in family size have been used elsewhere, and such an adjustment is generally included in tax

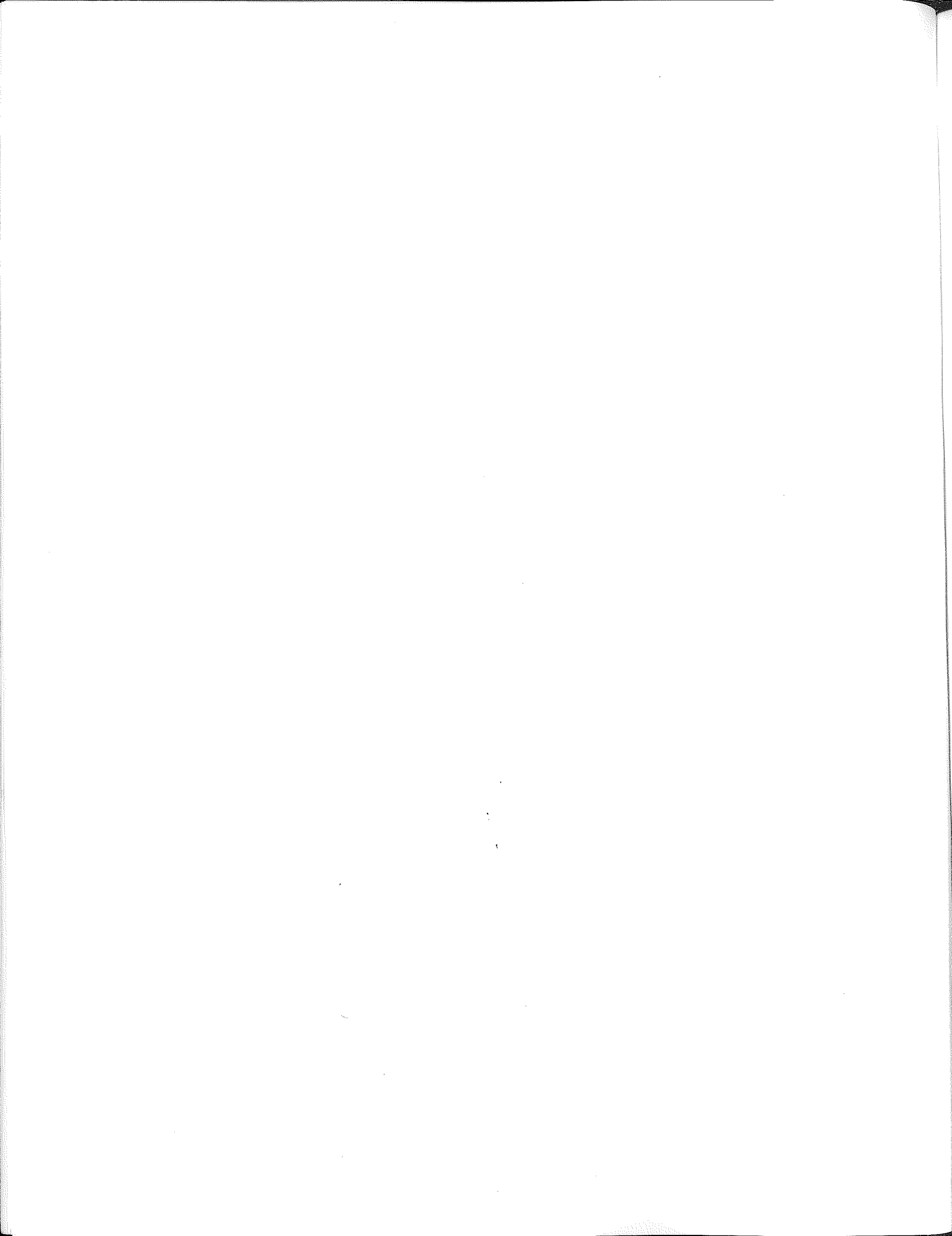
¹⁴These individuals are neither renters nor homeowners, so they are assumed to pay no property tax. This makes it difficult to interpret property tax burdens in the lowest deciles of the tax incidence study.

incidence results presented by the Congressional Budget Office (CBO).¹⁵ However, no consensus exists on the appropriate adjustment mechanism. Lacking such agreement, the incidence study results make no adjustment for family size.

Summary

The definition of income used in this study includes all identifiable forms of cash income received in a single year, including nontaxable sources of income. It is less comprehensive than the Haig-Simons definition of income because it includes no non-monetary benefits as income, measures capital gains and pensions when they are received (not when they accrue), and makes no adjustment for the impact of inflation on asset values. Nevertheless, it is a comprehensive definition of money income and is consistent with the public's perception of ability to pay.

¹⁵See Davis (1991) and Barthold (1993) for a discussion of these approaches and the difference they make. As Barthold notes, an adjustment for family size would not be appropriate if family size is viewed as a matter of personal consumption choice (p. 27).



CHAPTER 4

BUILDING THE INCIDENCE STUDY DATABASE

The 1990 incidence study database includes detailed information on income and taxes for a stratified random sample of 34,607 Minnesota households. This sample is then "blown up" to represent all 2,072,488 Minnesota households. Data from tax returns filed with the Department of Revenue -- mainly individual income tax and property tax refund returns -- were used as the primary source of information. Data for nontaxable sources of income (public assistance payments and social security benefits, for example) were obtained from alternative sources. This additional information was merged with tax return data to provide a more accurate measure of total household income, especially at the low end of the income distribution for individuals who did not meet tax filing requirements.

The use of social security numbers to merge income data from different sources for specific individuals is a unique and important aspect of this study. Income data was matched, for example, with property tax and market value information for individual homeowners. Most previous incidence studies have not been able to link separate income and tax data bases for identifiable taxpaying units. Because of these "hard matches", the need to impute estimated values of income and tax variables to households in the database is minimized.

The incidence study database was developed in three steps. First, data were taken from state and federal income tax returns. Second, additional data were taken from property tax refund returns. Third, additional income data were added from non-tax sources (social security, unemployment compensation, workers' compensation, and public assistance). Each of these steps is described more fully in this section. This is followed by an explanation of how the database is used to estimate each household's tax burden (including income, sales, excise, property, and business taxes).

Individual Income Tax

Individuals are required to file a state income tax return if they file a federal income tax return. In 1990 single persons were required to file a return if their gross income was \$5,300 or more; for married couples, the filing

threshold was income over \$9,550. A large majority of the working population in Minnesota file income tax returns, providing a wealth of information on income and family characteristics. For tax year 1990, approximately 2 million individual income tax returns were filed by Minnesota residents who paid \$2.75 billion in income tax. These income tax filers accounted for 84 percent of the state's households.

In addition to taxable sources of income, individual income tax returns contain information on some forms of nontaxable income. These include tax-exempt interest, total individual retirement account (IRA) distributions, total pensions and annuities received, and total social security benefits. As explained in the previous chapter, all of these untaxed forms of income are included in this study's measure of money income.

As part of processing individual income tax returns filed each year, selected information reported on each Form M-1 is electronically coded to verify taxpayer liabilities. Due to the large number of returns filed, however, only a limited amount of data essential to processing returns can be gathered at this stage. Because more detailed information is needed to forecast revenues and analyze tax law changes, a stratified, random sample of individual income tax returns is taken every year. This sample includes a wealth of detailed information from both the federal and Minnesota income tax returns. It is used in conjunction with a microsimulation model to forecast collections and estimate revenue impacts for legislative proposals, and it serves as the primary source for the incidence study database.

The 1990 individual income tax sample was used as the initial source of data for all income tax filers. It includes approximately 20,000 returns (about 1 percent of the filer population), selected randomly based on income levels. The number of sample records in the incidence study database is less, however, than the full sample; nonresidents are excluded, and filers claimed as dependents on another tax return are combined with that return to form one household.

Property Tax Refund

Since 1975, Minnesota has had a property tax refund (PTR) program, which reduces property taxes for both homeowners and renters. Homeowners and renters are eligible for regular property tax refunds based on the relationship of the property tax paid on a homestead (or rental unit) to total household income. Refunds vary depending on the actual ratio of taxes to

income, but they generally decline as income increases.¹⁶

In 1990, homeowners and renters were eligible for refunds if income was less than \$60,000 for homeowners and \$35,000 for renters. In that year, 449,000 regular PTR returns were filed, 192,000 for homeowners and 257,000 for renters. A total of \$122 million of refunds was received, of which \$79 million (65 percent) was received by renters.

The regular PTR is based on total household income. In addition to federal AGI, PTR filers must report nontaxable forms of money income such as workers' compensation, untaxed social security benefits, veterans' benefits, and public assistance payments. For the PTR program, this broader definition of income provides a more accurate measure of ability to pay, so refunds can be distributed more equitably. For this incidence study, it provides a rich source of information on nontaxable forms of money income. Furthermore, many property tax refund returns are filed by low income individuals who do not file income tax returns. For this reason, they provide valuable information (including wage income) to assist in filling in the bottom of the income distribution for the state's residents.

Information from the PTR returns was added to income tax information in two steps. First, for those in the income tax sample who also filed for a property tax refund, information from the PTR return was added to their existing income tax database record. This added information included nontaxable income sources reported on the PTR return, as well as property tax information. Second, new database records were added for a random sample of PTR filers who filed no income tax return. This PTR sample included 6,609 (5 percent) of the 132,180 PTR returns in this category. The new records included all sources of income reported on their PTR returns. The sample was then blown up to represent the entire population of households who filed only a PTR return.

At this step, PTR and income tax filers combined accounted for 90 percent of the state's households.

¹⁶There is also a special "targeting" property tax refund for those with large annual increases in property taxes, regardless of income. For 1990, a total of \$20 million in targeting refunds was received by 141,000 households. The numbers in the text refer only to the regular PTR, excluding targeting refunds. Both property tax refunds are included in calculating net property tax in this study, but the numbers in the following paragraph refer only to the regular refund.

Other Sources of Income Data

Additional sources of information were used to identify social security payments (including Supplementary Security Income), workers' compensation, unemployment compensation, and public assistance income (Aid to Families with Dependent Children, General Assistance, and Minnesota Supplemental Aid).¹⁷ In each case, social security numbers were used to match payments to specific households.

A two-step approach was used. First, payments received by individuals in either the income tax sample or the PTR sample were added to their existing database records. Second, new database records were added for a random sample of those who received payments from one or more of these sources but filed neither income tax nor PTR returns. The sample included 10,302 individual cases (5 percent) drawn from a total nonfiler population of 206,040 households. It was then blown up to represent the entire population of nonfilers. This population represented 10 percent of all Minnesota households. Although the money income of this population is understated somewhat (as explained in Chapter 3), the database captures the largest part of their income.

Summary of Income Data Sources

Figure 4-1 summarizes the construction of income data in the incidence study database. Each record has income data from either one, two, or three sources. To the initial sample of income tax filers are added (1) a PTR sample of households who filed a PTR return but no income tax return, and (2) a nonfiler sample of identifiable households who filed neither a PTR nor an income tax return, but had identifiable income sources.

¹⁷Data on public assistance payments were obtained from the Minnesota Department of Human Services. Information on workers' compensation and unemployment compensation were obtained from the Department of Labor and Industry and the Department of Jobs and Training, respectively. Only the cash portion of workers' compensation representing wage replacement was included in income; payment for medical care and one-time indemnity payments were excluded.

1990 data was used for all income sources except social security. Social security data (with social security numbers) was available only for 1987. This data was adjusted to approximately match Minnesota state totals (dollars and number of beneficiaries) for 1990.

**Figure 4-1
Sources of Data on Household Income**

Initial Source of Household Records	Source of Income Data			Sources of Data	Number in:	
	Individual Income Tax Returns	Property Tax Refund Returns	Non-tax Source		Sample	Population
Households filing individual income tax returns (17,696 sample records representing 1,734,268 households)				Only income tax	13,176	1,168,195
				Income tax + non-tax sources	1,073	170,636
				Income tax + PTR return + non-tax sources	273	57,037
				Income tax + PTR return	3,174	338,400
Households added from property tax refund returns (6,609 sample records representing 132,180 households)				Only PTR return	5,201	104,020
				PTR return + non-tax sources	1,408	28,160
Households added from other sources (10,302 sample records representing 206,040 households)				Only non-tax sources	10,302	206,040

Total	34,607	2,072,488
-------	--------	-----------

Tax Calculations

Taxes were calculated in the construction of the database from a variety of available information. In some cases, tax amounts were imputed based on income level, family size, sources of income, and other household characteristics. The following describes sources of information used and how taxes were estimated for each tax.

Individual Income Tax

Income tax payments were available directly from the 1990 income tax sample. As such, actual income tax liabilities from sample records were used to estimate income tax liabilities for the entire population of Minnesota residents.

Homestead Property Tax

The property tax for homeowners was derived from a unique dataset that includes the market value of every residential homestead in Minnesota. Counties provide this data to the state annually, along with the social security numbers for owners of homestead property, as required by law.¹⁸ From this information, property tax amounts were calculated for each homestead based on the local tax rate where the property is located.

These homestead property tax amounts were added to the appropriate sample records in the incidence study database by matching social security numbers. Any property tax refund received by a homeowner is also on the file (taken from the household's PTR return), so the household's net property tax can be calculated by subtracting the property tax refund from the gross property tax.

This method was used for all homestead property owners except for farms. By law, homestead property for farms is limited to the first 320 acres. Much of the farm homestead property tax is really a tax on the farm as a business. As a result, the study estimates a farmer's residential property tax using the average tax on a farm "house, garage, and one acre" in the county. Statewide, farm property taxes in 1990 for the house, garage, and one acre represented about 29 percent of total farm homestead property taxes; the remaining tax was treated as a business tax. For farm homesteads, the property tax refund is based on the tax on the first

¹⁸This unique market value-social security number file has been used extensively to analyze the relationship between market values, property taxes, and income for Minnesota homeowners. For additional details, see Minnesota Department of Revenue, *Property Tax Regressivity in Minnesota*, January 1993 and Minnesota House of Representatives (1989).

320 acres, not just the house, garage, and one acre. As a result, this study divides a farmer's property tax refund into a residential and a business component.¹⁹

Property Tax on Rental Housing

The total property tax paid on a rental unit was determined by one of two methods. First, for those filing a property tax refund, the property tax paid on the rental unit is listed on the PTR return. As explained above, this property tax amount is reported as part of the computation for a property tax refund. For PTR filers, therefore, the actual property tax on the rental unit is known.

For taxpayers who did not file a property tax refund return and were not homeowners, a rental property tax amount was imputed. Data from the U.S. Bureau of the Census show how rents vary with household income. This relationship was used to impute rent amounts for each rental household, based on its income.²⁰ Based on data from property tax refund returns, the property tax paid on rental units was assumed to average 16.5 percent of rent paid.²¹ In this way, a property tax amount is estimated for each renter's housing unit.²²

There are a substantial number of households in our sample who are neither homeowners nor renters. These include cases such as senior citizens living with relatives, adult children living at home (but not claimed as dependents on an income tax return) and, in some cases, people living in subsidized housing. Available Census data was used to estimate the number of rental households in Minnesota, by income class.²³ The remaining households, almost all of whom

¹⁹The residential portion of the refund is estimated based on the ratio of the county average tax on the house, garage, and one acre to the farmer's actual total tax on the first 320 acres.

²⁰U.S. Bureau of the Census, *1990 Census of Housing* provides data for Minnesota.

²¹This is smaller than the 20 percent figure used in the 1988 Minnesota incidence study. Property tax rates on rental property decreased between 1988 and 1990, accounting for part of this change. A detailed study of the relationship between rents and property taxes (using 1992 Minnesota data reported by landlords) will be completed next year.

²²The database includes the full amount of the tax paid on the household's rental unit. The landlord, however, is not able to shift all of the existing property tax to the renter in higher prices. Based on the incidence assumptions in Chapter 5, only part of the property tax is ultimately assigned to renters.

²³This is a difficult process because the Census definition of household is much different than that used in this study. Two or more unrelated individuals sharing an apartment are considered a household by the Census definition. In this study, they would be separate households. Also,

are lower-income single-person households, are assumed to pay no property taxes.

General Sales Tax and Excise Taxes

The initial step in estimating general sales (including the motor vehicle excise tax) and excise tax payments for individual households is to estimate each family's taxable consumer expenditures. The appropriate tax rate is then applied to this base to estimate the household's taxes. Expenditures subject to sales and excise taxes were estimated using consumer expenditure data from the Bureau of Labor Statistics, *1990-91 Consumer Expenditure Survey*.²⁴ This survey reports

the relationship between income and rent is only estimated for broad classes of income. Total rental property taxes are known, however, so the number of rental households must also be consistent with total tax collections.

²⁴U.S. Bureau of Labor Statistics, *Consumer Expenditure Survey 1990-91*. National data shows average expenditures by family size and household income (for 7 income classes). To more accurately estimate consumer expenditures, this basic data was adjusted in several ways.

Regional Adjustment: Midwest regional data is available by income class but not by household size (because the sample is too small). This study makes a regional adjustment by multiplying the national data, item by item, by the ratio of Midwest to national average expenditures on that item.

Adjustment for Incomes under \$5,000: The CES data seriously understates income for the lowest income class. As a result, total expenditures are as much as 13 times reported income. In this study, total expenditures were adjusted downward for this lowest income class by capping total expenditures at 250 percent of income (200 percent for single-person households). Because all households will pay some sales tax, households with reported incomes below \$2000 (including negative incomes) were assumed to have an income of \$2,000.

Data Smoothing: For each household size and most expenditure categories, regression equations were used to estimate a continuous relationship between income and expenditures. The regressions assumed a constant income elasticity, and the regression equation was used if R^2 exceeded 0.90 (53 of 85 cases). Otherwise, the same ratio of expenditures to income was assumed for all households in the income class.

Adjustment for High Incomes: Unfortunately, the very wide top income class (\$40,000 and over) includes about 25 percent of all households and accounts for about half of total sales tax revenues. It was clearly incorrect to assume that consumption is a constant fraction of income for all these higher-income families (whether \$40,000 or \$2,000,000). Regressions using unpublished national data were used to better estimate high-income expenditure patterns for households with incomes over about \$35,000. The national data divided the over-\$40,000 income class into five parts. (The study assumed a constant income elasticity above \$30,000.)

average household expenditures on a wide variety of items by household size, income, and region. In cases where the survey expenditure categories were only partially taxable, an estimate of the taxable portion was made.

The Consumer Expenditure Survey (CES) information was added to the incidence study household records based on the income level and household size reported on individual sample records. Using the state sales tax rate (6 percent in 1990), sales tax amounts were then computed based on the total household expenditures identified as being taxable. Sales tax payments by Minnesota resident consumers were estimated to total \$1,173 million (54 percent of the total), with the rest paid on purchases by nonresidents and businesses.

Each household's excise tax amount (for taxes on cigarettes, liquor, and motor fuels) was also estimated using data from the Consumer Expenditure Survey.

Miscellaneous Taxes

The consumer share of the motor vehicle registration tax was estimated from data provided by the Minnesota Department of Transportation. This tax was allocated based on household expenditures on motor vehicle purchases (net of trade-in), as estimated from the CES.²⁵

Minnesota collects a 2 percent insurance premiums tax on almost all insurance policies written in the state. Although this tax (like other sales and excise taxes) is collected by business, this study assumes that the tax is fully shifted to insurance buyers in higher prices. The tax paid on consumer insurance (personal auto, life, homeowner, accident and health) was estimated from collections data. The taxes on each type of insurance buyer was treated differently. Personal auto and life insurance taxes were estimated using CES data. The tax on premiums for homeowner insurance was allocated to homeowners based on the market value of their home. The tax on accident and health insurance

Other Adjustments: For the Motor Vehicle Excise Tax and excise taxes, tax amounts were adjusted to match actual collections data by proportionally increasing or decreasing the CES estimated expenditures.

²⁵The registration tax is 1.25 percent of a vehicle's value, except for vehicles valued under \$2,000 (or over 10 years old), which pay a flat \$35 fee. There was no way to identify the registration tax paid by actual sample households, nor was there good information about the relationship between automobile value and income. The distribution of average expenditures on motor vehicles (net of trade-in), however, should be quite similar to the distribution of the value of owned vehicles.

was estimated based on a national survey of the distribution of health insurance premiums by income level, and the burden of workers' compensation insurance taxes was allocated by wage and salary income (subject to a minimum and maximum).²⁶

The property tax levied on seasonal recreational property ("cabins") is not included in the homeowner property taxes discussed earlier. The relationship between property taxes on cabins and household income was estimated from special property tax refund returns filed in 1991 (the only year such property qualified for a refund). An average property tax on cabins was allocated to all homeowners, varying by income level.²⁷

Business Taxes

Taxes legally imposed on businesses may be ultimately borne by the owners, shifted to consumers in higher prices, or shifted to workers in lower wages. This study's estimates of the distribution of the tax burden among these groups are explained in the next chapter. Given an estimate of the dollar amount of tax paid by consumers, workers, or owners, that tax is then allocated among individual households using income and consumption information in the database.²⁸

Summary

The incidence study database includes individual records for 34,607 households. The content of each record is summarized in *Figure 4-2*. Each record includes the household's cash income as obtained from income tax returns,

²⁶Health insurance data was adapted from Hollahan and Zedlewski (1992). The tax on insurance purchased by employers as part of employee fringe benefits is assumed borne by employees. By raising the cost of these fringe benefits, the tax either reduces cash wages or other fringe benefits. Empirical support for this study's approach to workers' compensation is provided by Gruber and Krueger (1991), who estimate that almost all workers' compensation costs are borne by employees. The tax on workers' compensation premiums is allocated to all workers with wage and salary income exceeding \$2,000 per year, with a floor for those earning in the bottom fourth of the wage distribution and a cap for those in the top fourth. This reflects the structure of benefits provided by workers' compensation in Minnesota.

²⁷Given no dependable information on which households actually owned cabins, the tax burden was divided equally among all homeowners in a given income class. (Only 2 percent of the tax was paid by renters, and that portion was ignored.) It was estimated that 20 percent of the tax was paid by nonresident owners of recreational property.

²⁸These allocations are discussed in detail at the end of Chapter 5.

Figure 4-2
Summary of Data Items for Each Household

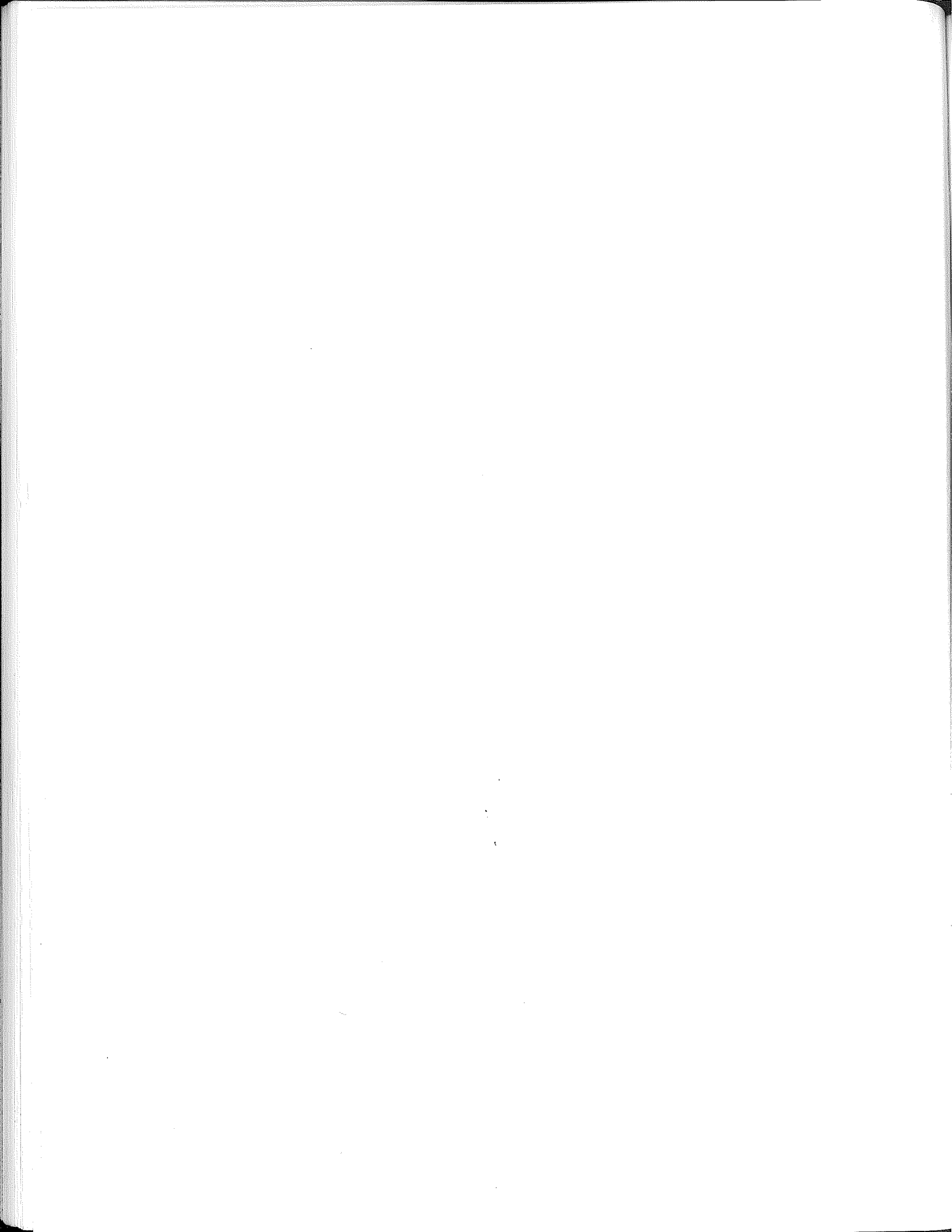
<p>General Information</p>	<p>Taxpayer social security number Spouse social security number Sample conversion rate Household size Number of adults in the household Number of dependents in the household Sample conversion rate Over 65 indicator (taxpayer) Over 65 indicator (spouse) Homeowner indicator Renter indicator Farmer indicator Mobile home owner indicator County of residence Date of birth</p>
<p>Individual Income Tax</p>	<p>Filing status Minnesota state income tax liability Dependent care credit Municipal bond interest Nontaxable pensions Federal filing status Personal exemptions Wages Taxable dividends Business income Rent, royalty, partnership and estate income Farm income Nontaxable interest Nontaxable IRA income Nontaxable pensions and annuities Federal adjusted gross income Dependent on other return indicator Federal taxable income Federal net tax liability Alternative minimum tax Earned income credit Real estate tax (schedule A) State/local income tax (schedule A) Total itemized deductions Depreciation (schedule C) Depreciation (schedule E) Rental gains (schedule E) Rental losses (schedule E) Passive partnership gains (schedule E) Passive partnership losses (schedule E) Non-passive partnership gains (schedule E) Non-passive partnership losses (schedule E) Section 179 loss (schedule E) Estate gain (schedule E) Estate loss (schedule E) Remic income (schedule E) Farm rent (schedule E) Taxes paid (schedule F) Depreciation (schedule F)</p>

Figure 4-2
Summary of Data Items for Each Household
(Cont.)

Property Tax Refund	Federal adjusted gross income Nontaxable social security payments IRA, Keogh, SEP, or other retirement plan payments Public assistance payments Other income (for PTR purposes) Renter's share of property tax Real estate taxes Mobile home rent Mobile home taxes Regular PTR Special PTR
Public Assistance	Aid to Families with Dependent Children General Assistance Minnesota Supplemental Aid
Miscellaneous	Workers' compensation Unemployment benefits Social security and supplemental security benefits
Property Tax	Homestead Estimated Market Value Homestead Property Tax
Consumer Expenditure Survey (calculated)	Entertainment expenditures Housekeeping expenditures Vehicle purchases Alcoholic beverage expenditures Tobacco expenditures Food expenditures (away from home) Utility expenditures Shelter expenditures (taxable) Miscellaneous taxable expenditures Apparel expenditures Gasoline and motor oil expenditures Automobile maintenance and repair expenditures Personal service expenditures Shelter expenditures (nontaxable) Food expenditures (at home) Health expenditures Miscellaneous nontaxable expenditures
Taxes (Calculated)	State sales tax Liquor excise tax Gasoline excise tax Tobacco excise tax Insurance premiums tax Motor vehicle registration tax
Business Taxes (Calculated)	Non-rental property taxes Rental property taxes State sales tax Corporate franchise tax Motor vehicle registration tax Gasoline excise tax Liquor excise tax Insurance premiums tax
Miscellaneous	PTR for farmers (individual) PTR for farmers (business) Seasonal/recreational property taxes

property tax refund returns, and other sources, all matched by social security numbers. Household income includes all taxable income plus almost all forms of nontaxable cash income (including tax-exempt interest, public assistance, untaxed social security income, and workers' compensation). Property taxes for homeowners (again identified by social security number) are obtained from a special data set. Finally, an estimate of each household's expenditures on a variety of items (including rent) is obtained from the Consumer Expenditure Survey, the Census of Housing, and other sources.

This unique database makes it possible to estimate taxes for each household. When blown up to match the total state population, it provides a detailed description of the distribution of the state and local taxes among Minnesota residents.



CHAPTER 5

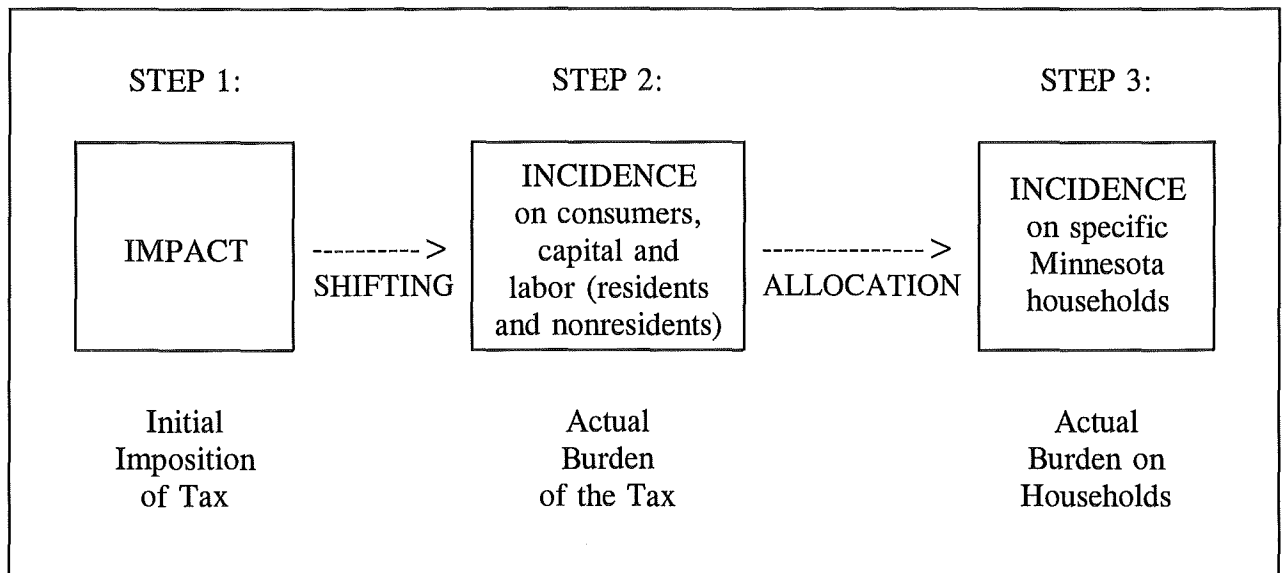
TAX INCIDENCE ANALYSIS

Introduction

Economists commonly distinguish between the initial "impact" of a tax and its "incidence." The initial impact of a tax is on the taxpayer legally liable to pay the tax, while the incidence of a tax is the final resting place of the tax. For example, the initial impact of a retail sales tax is on the retail business, which is legally liable to pay the tax. However, through a process referred to as "shifting," the actual incidence is likely to fall on consumers of the taxed product in the form of higher retail prices. Similarly, the impact of a property tax on manufacturing property is on the manufacturer, but the actual incidence may fall partly on consumers (in higher prices) or on workers (in lower wages).

This study measures the distribution of tax burdens among households after any such shifting has occurred. As outlined in *Figure 5-1*, determining the distribution of household tax burdens can be viewed as a three-step process. Step 1 is the collection of data about the initial impact of Minnesota taxes. This step includes compiling information on tax collections by sector, and other estimations, such as the amount of sales tax paid by tourists or on business purchases of capital equipment. Step 2 uses economic theory to estimate how much of the burden of each tax is "shifted" from the initial taxpayer to others. For each tax, Step 2 estimates how much of the tax burden falls on consumers, labor, capital, and land. The portion of the tax burden shifted to nonresidents is also estimated in Step 2. Step 3 combines the incidence assumptions from Step 2 with information on the characteristics of individual households (from the study's database) to estimate the tax burden falling on each of Minnesota's two million households. Each dollar of tax is "allocated" either to a specific Minnesota household or to nonresidents.

Figure 5-1
Estimating Tax Incidence



For example, consider the business property tax. Step 1 obtains data on total tax collections from each business sector (such as manufacturing, farming, apartments, and public utilities). Step 2 uses economic theory and information about the nature of each business sector to estimate how much of the each sector's property tax is borne by Minnesota consumers, Minnesota workers, Minnesota owners of capital, and nonresidents. Step 3 allocates the resident tax burden to specific Minnesota households, based on information about each household's total income, income sources, household size, and housing status (owner or renter).

The results of any incidence study are significantly determined by the study's incidence assumptions. This chapter describes and explains both the incidence assumptions used in this study (Step 2) and the method of allocating tax burdens to specific households (Step 3). This study's incidence assumptions are summarized as follows:

1. Incidence of Taxes on Households

- The personal income tax is paid by individual taxpayers, and the incidence is the same as the initial impact of the tax.
- Taxes on purchases by consumers (sales, excise, and insurance premiums taxes) are borne by consumers of the taxed items.
- The property tax on homeowners is borne by the homeowner.
- The motor vehicle registration tax on vehicles owned by households is borne by the owner of the vehicle.

2. Incidence of Taxes on Business²⁹

Taxes on business property, business purchases, and corporate income are partially shifted to consumers and workers. The amount of tax shifting varies by tax and by business sector, depending on the scope of the product market (local or national) and the magnitude of Minnesota's tax rates compared to those in other states.

The rationale for this study's incidence assumptions is discussed in the next two sections. First, taxes on households are discussed. The incidence of business taxes, however, is much more complex. Many issues are unsettled, and a wide variety of approaches have been used in previous incidence studies. As a result, this section provides an extended discussion of the methodology underlying this study's approach to business tax incidence.

Taxes on Households

Individual Income Tax

To shift a tax, the individual or business legally liable to pay the tax must alter their economic behavior because of the tax. For example, if a tax on wages reduces a worker's after-tax pay, the worker may reduce the number of hours worked. This could lead to higher before-tax wages which would shift a part of the tax to employers or consumers.

Most incidence studies assume that the burden of the individual income tax is not amenable to shifting. Shifting could occur, however, if the income tax raises gross income by increasing either wages or interest rates. This could occur in three ways:

- Minnesota workers respond to the tax on labor income by working fewer hours;
- Minnesota households respond to the tax on investment income by reducing their savings; or
- Workers leave Minnesota in response to the income tax.

²⁹The distinction between a "household tax" and a "business tax" is somewhat ambiguous. In this study, household taxes include all taxes where there is either no shifting (individual income, homeowner property, and motor vehicle excise taxes) or complete shifting (taxes on purchases by consumers). In the latter case, the taxes are called "household taxes" even though the initial impact is on business. Business taxes (except for the portion of the business property tax on land) refer to any tax that is partially shifted to consumers or workers.

Drawing from a number of economic studies, Pechman (1985) concluded that total hours worked and savings rates are both relatively fixed. Hence at the national level a "tax on income is borne by those on whom the tax is imposed" (p. 28).³⁰ Emigration out of a state in response to a state's income tax is unlikely unless the state's total tax burden is unusually high (compared to other states) and is not offset by higher government services. This study assumes that the combined package of taxes and services does not cause significant migration, so the income tax is not shifted.³¹ The state income tax burden equals each household's tax liability, as listed in the study's database.

Taxes on Consumer Purchases

Sales and Excise Taxes. This study, like most other incidence studies, assumes that businesses legally liable for sales and excise taxes on final products and services will be able to raise product prices by the full amount of the tax, leaving wages and the return to capital unchanged. Therefore, the tax burden is fully shifted to consumers as businesses adjust output and prices. The sales and excise tax burdens are allocated in proportion to each household's consumption of taxed items, as estimated in the study's database.

Given time for full adjustment, full shifting of the tax to consumers is expected. Supply curves for the taxed products are assumed to be horizontal (perfectly elastic), and any macroeconomic employment effects due to a drop in sales of the taxed products are likely to be offset by the increase in government spending.

Insurance Premiums Taxes. The insurance premiums tax equals a flat percentage of the premium on selected types of insurance. This tax is assumed to raise insurance premiums by the full amount of the tax, so its burden is distributed in proportion to each household's purchase of insurance subject to the tax. For auto, life, and household insurance, the tax burden was allocated in proportion to expenditures as estimated from the Consumer Expenditure Survey.

³⁰For reviews of the empirical evidence, see Rosen (1988, chapter 17) and Skinner and Feenberg (1990).

³¹Decisions to leave the state to avoid high taxes would be based on a comparison of total tax burden and total government services in different states. If high taxes are matched by high levels of government services, emigration is unlikely. However, a significant increase in the progressivity of the overall tax burden relative to other states might cause some emigration by high-wage workers. In that case, Minnesota businesses would have to pay higher wages to such workers to keep them from leaving, and part of the income tax burden might be shifted to consumers, landowners, and other Minnesota workers.

The premiums tax on insurance provided through employers (most health and workers' compensation) is assumed borne by the employee. By raising the cost of these fringe benefits, the tax either reduces cash wages or other fringe benefits.³² The tax on health insurance premiums was allocated according to the distribution of total health insurance premiums.³³ In Minnesota, workers' compensation policies are purchased from private insurers. Given the structure of wage replacement benefits, the premium per employee is assumed to be proportional to wages but subject to a minimum (for the lowest-paid quarter of wage-earners) and a maximum (for the highest-paid quarter).

Property Taxes on Non-Business Property

Homeowner Property Taxes. The homeowner is both the owner and consumer of housing. As a result, the homeowner bears the full tax burden, regardless of how the burden is split between consumers and owners. The tax liability on the household is equal to the total property taxes paid on the homestead, as listed on the incidence study database.³⁴ Similarly, the burden of the property tax on cabins is assumed borne by the owners.

Motor Vehicle Registration Tax. The registration tax on motor vehicles owned by households is assumed to be fully borne by the owner. The tax is generally proportional to the market value of the vehicle. Lacking data on the distribution of vehicle stock by income level, this study uses the distribution of vehicle purchases (net of trade-in) as an approximation. The tax burden is allocated in proportion to the average net vehicle expenditures by households of

³²Empirical support for this approach is provided by Gruber and Krueger (1991), who estimate that workers' compensation costs are almost entirely borne by employees.

³³Average total health insurance premiums for nonelderly households, by decile and household type (e.g., single, married worker with no children, married worker with children), were calculated from Hollohan and Zedlewski (1992). For the elderly, an estimate was made of the cost and coverage of Medigap policies in Minnesota (by decile). Although many types of health insurance are exempt from tax (including self-insured plans and health maintenance organizations), the distribution of taxed health insurance premiums was assumed to be similar to the estimated distribution of total health insurance premiums.

³⁴This conclusion ignores the possibility that the property tax is capitalized into the value of the home at the time the tax is imposed. If the house is sold, the new owner pays a lower price for the home based on the anticipated future taxes. Some would argue that the tax is borne not by the current owner but by whoever owned the home at the time the tax was first levied. On the other hand, the continued presence of the tax in the current year clearly imposes a burden on the current owner.

the same size and income level.

Adjustment for Burdens on Nonresident Households

The proportion of the total receipts from each of these taxes that is allocated to Minnesota households is shown in Chapter 2 (see *Table 2-3*). For the general sales and use tax, the Minnesota household share was estimated directly from the Consumer Expenditure Survey data. For the other taxes (excise, insurance premiums, property tax on cabins, and motor vehicle registration tax), the total burden on Minnesota households equals total collections minus estimates of taxes paid by business and nonresident visitors and tourists.

Some incidence studies reduce tax burdens for income and property taxes to reflect the "federal tax offset." These state taxes are deductible in calculating federal income tax liability, so higher Minnesota taxes mean lower federal income taxes (for those who itemized deductions). This study makes no adjustment for the federal tax offset. The reason for not adjusting for the federal tax offset is explained later in this chapter in the discussion of business taxes.

Taxes on Business

Introduction

This study includes over \$3.6 billion in business taxes as summarized in *Table 5-1*. These business taxes account for over one-third of Minnesota's state and local tax revenue. Business taxes include both taxes on capital (structures, capital equipment, and land) and taxes on business purchases of short-lived intermediate inputs (such as gasoline and restaurant meals).

Table 5-1
1990 Minnesota Taxes on Businesses

<i>Taxes on Capital</i>	
Business property taxes	\$2,105 million
Corporate franchise tax	431 million
Sales tax on capital equipment	376 million
Vehicle registration tax	96 million
Insurance premiums tax on business property insurance	17 million
 <i>Taxes on Intermediate Products</i>	
Sales tax on non-capital purchases	\$490 million
Motor fuels excise tax	107 million
Insurance premiums tax on business non-property insurance	11 million
Liquor excise tax paid by business	6 million
 <i>Total Business Taxes</i>	 \$3,639 million

This study estimates the incidence of each of these business taxes. While the initial impact of these taxes is on business, they are partially shifted to others - shifted forward to consumers in higher prices or shifted backward to labor in lower wages. Much of the tax is paid by nonresidents, either as consumers of Minnesota goods and services or as owners of capital and land located in Minnesota. This section explains how this study estimates the incidence of these business taxes, and how it allocates their tax burden to over 2 million Minnesota households.

The Conceptual Structure

The following six principles define this study's approach to estimating the incidence of Minnesota's existing business taxes.

1. *Capital moves to where it earns the highest return.* In the modern economy, investors are unwilling to accept rates of return below those available on similar investments elsewhere. If a tax on capital in a single state (or industry) reduces the after-tax rate of return, investors will move their capital to lower-tax locations (or industries). A tax levied on just one industry, for example, will reduce investment in that industry. As production falls, prices will rise until the after-tax rate of return in that industry is again equal to the after-tax rate of return elsewhere. Similarly, a tax on business in only one

state, if it cannot be fully shifted to consumers or workers, will reduce investment in that state. Only the average tax on all forms of capital in all states -- a tax which owners of capital cannot avoid -- will be fully borne by capital so long as capital is free to move in search of the highest rate of return.

2. *Minnesota's taxes do not occur in isolation.* Every state levies business taxes. The incidence of a tax levied at the same rate in all states differs greatly from the incidence of a tax levied only in Minnesota. If Minnesota alone levies a 1 percent tax on the value of business property, the rate of return on Minnesota companies would fall relative to that in other states. Given the ease of capital movement, such differences in after-tax rates of return cannot continue for long. Given some time, investors would shift their capital elsewhere. With lower production in Minnesota, either prices would rise or wages would fall. As such, a tax levied on business in only one state will be largely shifted to consumers and workers; capital is unlikely to bear much of the final burden. In contrast, if all states impose the identical one percent tax on the value of all business capital, investors cannot escape the tax. Such a "national" tax on capital is much more likely to be borne by capital, reducing the after-tax rate of return on capital throughout the nation.

This distinction between a single-state tax and a nation-wide tax is crucial to the results of this study. The incidence of a particular Minnesota tax on business depends on how Minnesota's tax rate compares to those of other states. If, for example, a particular Minnesota business tax rate is 10 percent above the national average, the incidence of this 10 percent "Minnesota differential" will differ greatly from the incidence of the remainder of the tax.

3. *Minnesota's tax structure evolved over time.* While adjustment to a new tax takes time, businesses have had time to fully adjust to the major differences between Minnesota's taxes and those of other states. In describing the incidence of existing business taxes, therefore, this study assumes that businesses, consumers, and workers have fully adjusted to these taxes.
4. *Some businesses, depending on their market, can shift Minnesota business taxes forward to consumers in higher prices.* Given time for full adjustment, the ability to shift taxes forward to consumers depends on the nature of the product being sold. Some producers compete only with other Minnesota companies. For example, after full adjustment, a higher tax on Minnesota restaurants would likely be fully shifted to consumers. The restaurant's competitors must also pay the tax, so the cost increase would affect them all equally, and prices would rise to cover their higher costs. Even if Minnesota

restaurant prices exceed those in Georgia, there is no danger that Minnesotans will drive to Atlanta for lunch. In contrast, a higher Minnesota tax on manufacturers is much harder to shift to consumers. Minnesota manufacturers compete in a national market. A higher Minnesota tax raises their costs but not those of most competitors. If Minnesota manufacturers raise prices to cover their higher costs, consumers will switch to manufacturers charging lower prices. This study makes a clear distinction between "local market products" (such as restaurants) and "national market products" (which includes most manufactured goods).

5. *A tax that reduces the competitiveness of Minnesota businesses will be borne by immobile resources -- those either unable or unwilling to leave the state.* If capital is mobile and prices cannot be increased (due to competition), the burden of business taxes will fall on production inputs that are geographically tied to the state. Workers tied to the state will see downward pressure on wages, and landowners will see downward pressure on the value of land.

6. *An increase in taxes reflects an increase in state and local government spending.* If Minnesota had lower taxes, Minnesota residents would lose the value of the services those taxes finance. If the value Minnesota residents place on those services fully offsets the burden of the higher taxes, the taxes create no incentive for workers to leave the state. Workers may move across state lines in response to interstate differences in the net benefit (or net cost) of state and local government; they do not move in response to differences in tax rates alone. The fact that spending and taxes move together greatly reduces the importance of interstate migration in response to tax changes. This study assumes that workers do not move between Minnesota and other states in response to changes in state taxes. In other words, labor (along with land) is assumed to be immobile.

This same logic might also appear to apply to owners of capital. If higher business taxes mean higher benefits to business, then higher taxes on capital would create no incentive for capital to move to other states. This study assumes that business tax differentials primarily reflect differences in benefits to Minnesota residents rather than differences in benefits to Minnesota-based capital (much of which is owned by nonresidents). Although some state and local spending provides direct benefits to business (spending that clearly reduces business costs), only a small portion of business tax revenue goes to

finance such direct benefits to business.³⁵

In summary, these six concepts guide this study's approach to estimating the incidence of Minnesota's existing business taxes. The study provides an answer to the question: What is the burden of Minnesota taxes on Minnesota residents, in a multistate context where Minnesota's taxes coexist with those of other states, assuming that producers and consumers have fully adjusted to existing tax rate differences.

Allocation of Business Taxes

The six concepts discussed above are used in this section to determine the allocation of business taxes among the four major taxpayer categories: Minnesota consumers, capital, labor, and nonresidents. The methodology used in this step is discussed in detail before the results are presented.

There are several major features of the tax incidence approach used in this study which are important to keep in mind. First, this study emphasizes the importance of Minnesota tax rates relative to those in other states. In estimating the incidence of existing business taxes, it is the relative tax rate that matters, not the absolute level of taxes. The incidence of a property tax on manufacturers depends on how heavily other states tax such property. Although this approach is consistent with the theoretical literature on tax incidence, only one other major empirical study (limited to property taxes) is based on this observation.³⁶

Second, this study emphasizes the difference between the incidence of existing business taxes and the incidence of an incremental increase in those taxes.

³⁵Many benefits to business, such as better education, are presumably reflected in higher wages received by workers. Educational spending is best considered to benefit *households* rather than business. Direct benefits to business include only services that reduce business costs. This would include some improvements in transportation and government spending that replaces spending by business. "Tax-increment financing," for example, allows property taxes paid by new businesses to be used in ways that directly benefit those businesses. Those benefits may completely offset the tax payments. For this reason, property taxes which are part of such agreements are omitted from this analysis.

³⁶The controversy between the "new view" and the "old view" of the property tax clarified the importance of relative tax rates. For a summary of the difference between these two views and a discussion of when each view is applicable, see McLure (1977). The one empirical study to estimate tax incidence based on relative taxes is Harmon (1989). The contrast between the new view and old view is not limited to the property tax, however. It applies to *any* business tax.

Much of an existing business tax is matched by taxes in other states. The incidence of an increase in such a tax (unmatched by increases in other states) is quite different.

This study focuses on the incidence of existing business taxes, but the approach can be extended to provide consistent estimates of the impact of increases in business taxes. Incremental incidence should be used to analyze proposals to change business taxes. The results for existing taxes, as reported in this study, should not be applied to increases in taxes. (See Appendix B.)

Third, this study estimates the burden of business taxes after businesses, consumers, and workers have fully adjusted to them. As in other recent studies, this approach considers the long-run effect that higher business taxes can have on the competitiveness of the Minnesota economy. For example, relatively high tax rates on capital may reduce wages of Minnesota workers through less capital investment. This long-term perspective is appropriate for estimating the incidence of either existing taxes or changes in taxes. This study's approach can be extended to provide consistent estimates of the impact of increases in business taxes from a short-term perspective, when business, consumers, and workers have only partially adjusted to the change in taxes (see *Appendix B*).

In short, this new approach is consistent with current incidence theory, and it provides consistent answers to the very different types of questions policy-makers raise concerning the incidence of Minnesota's business taxes.³⁷

To understand the approach used in this study, suppose that Minnesota levied a \$120 million tax on capital equipment or structures.³⁸ The owners of that capital are legally liable for the tax, but who would bear the ultimate burden? This section provides an overview of this study's methodology to answer that question. First, it explains how the study distributes the tax burden among capital owners, consumers, and labor. Second, it explains how the burden on Minnesota residents is separated from that of nonresidents. Third, it explains how this approach is modified for business taxes levied on purchases of non-capital inputs

³⁷This approach has not been used in other studies primarily because of its complexity. The calculation of average tax rates in other states (for each business tax and each business sector) is difficult.

³⁸This could be either a sales tax on equipment purchases or a property tax on the stock of equipment or structures. As explained below, the same approach will also apply to a corporate income tax.

(office supplies, business meals, gasoline, etc.).

Allocating the Burden Among Capital, Consumers, and Labor

For each of the business taxes on capital, the tax paid by a particular economic sector is divided into three parts:³⁹

- The portion representing the *national average tax rate on all capital*.
- The portion representing the *national sector differential*.
- The portion representing the *Minnesota sector differential*.

This 3-part division of the tax is based on the answers to three questions. The approach is summarized in *Figure 5-2*, using an example of a \$120 million tax on capital in the manufacturing sector.

Question 1. What portion of this \$120 million Minnesota tax represents the national average tax on all capital? If all states levied an identical tax on *all* forms of capital, capital would be unable to shift that tax to others. The owners of the capital equipment cannot escape the tax by moving capital to another state; nor can they escape the tax by shifting investment to a different sector. Total national investment is not likely to change in response to such a uniform tax on capital, so the entire burden of such a tax would be borne by capital.⁴⁰ Actual

³⁹This is similar to the approach taken by Harmon (1989) for property taxes. Using his notation, this study's 3-part division of the tax is summarized by the mathematical identity:

$$T_{MS} = T_{NA} + (T_{NS} - T_{NA}) + (T_{MS} - T_{NS})$$

where

- T_{MS} is the Minnesota tax rate on capital in sector S;
- T_{NA} is the National tax rate on All capital; and
- T_{NS} is the National tax rate on capital in sector S.

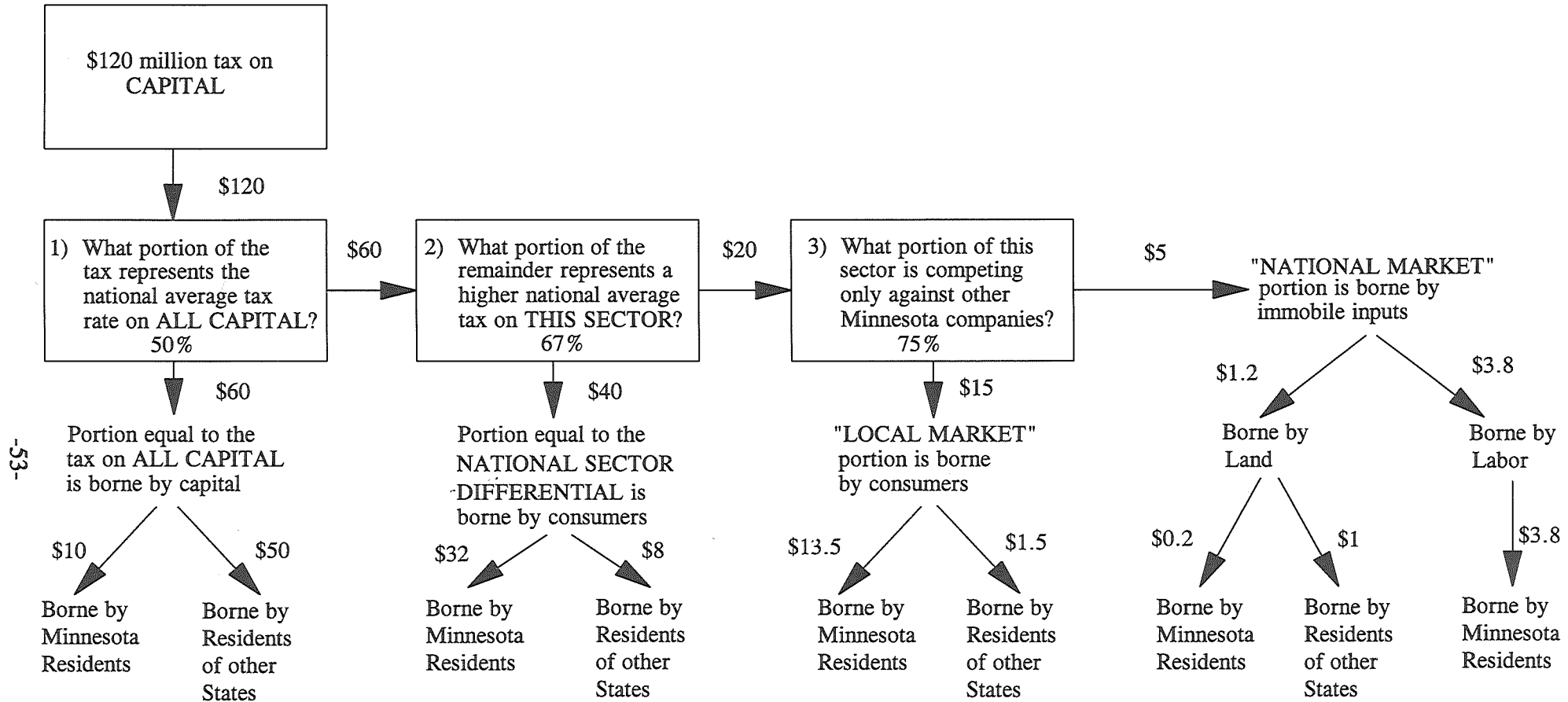
This study refers to the first part (T_{NA}) as the national tax on all capital, the second part ($T_{NS} - T_{NA}$) as the national sector differential, and the third part ($T_{MS} - T_{NS}$) as the Minnesota sector differential. (As noted below, we separate property taxes into *four* parts, the fourth part being the portion of the tax falling on land. For taxes on non-capital inputs, the tax is divided into *two* parts: $T_{MS} = T_{NS} + (T_{MS} - T_{NS})$.)

⁴⁰The assumption that national savings rates are unresponsive to changes in the after-tax rate of return on savings is certainly debatable. The economics literature suggests, however, that any change in savings would be small and uncertain, and including such an effect would greatly complicate our analysis.

Economic theory shows that the relationship between the after-tax rate of return and savings is ambiguous. If after-tax rates of return increase, people might either save more

Figure 5-2

Incidence of a Hypothetical \$120 Million Tax on Capital



Summary of Tax Incidence (\$millions)			
Taxpayer Category	Total	Minnesota Residents	Residents of Other States
Capital*	\$61.2	\$10.2	\$51.0
Consumers	55.0	45.5	9.5
Labor	3.8	3.8	0.0
Total	\$120.0	\$59.5	\$60.5

*Capital includes land.

capital taxes do not treat all forms of capital equally, of course, and tax rates vary among the states. The average tax rate on all capital can be estimated, however, by dividing total tax revenue (in all states) by the total national stock of capital. If capital moves to wherever it earns the highest rate of return, this assortment of tax rates will reduce the rate of return on all forms of capital (in all states) by the "average national tax rate on capital." Capital will flow to the lightly-taxed states and sectors. This will reduce the after-tax rate of return in these tax-favored sectors, while raising the after-tax rate of return in the now less-crowded sectors where tax rates are higher.

After capital has fully adjusted to the differences in tax rates, the rate of return on capital (adjusted for risk) should be approximately equal in all states and all sectors. If the Minnesota tax rate on a particular sector is equal to the national average tax rate on all capital, then the Minnesota tax will be borne entirely by the owners of capital. If (as is more common) the Minnesota tax rate exceeds the national average tax rate on all capital, then the initial portion of the Minnesota tax -- equal to the national average tax on all capital -- will be borne by capital.⁴¹ The remainder of the Minnesota tax would be shifted either forward to consumers or backward to labor and other immobile resources.

For each particular tax on capital, this study estimates the average national tax rate on all capital. If the Minnesota tax rate on a particular form of capital is twice the national average (as is assumed hypothetically in *Figure 5-2*), then the burden of the first half of the tax is assumed to fall on capital. What happens to the remaining half depends on the answers to the next two questions.

(because the rate of return is higher) or less (because they can now reach any particular savings goal, such as accumulating \$20,000 at the end of 10 years, by saving *less* each year). Early empirical studies suggested that these "substitution" and "income" effects largely offset one another. This conclusion was seriously challenged by Boskin (1978), who concluded that each one percent rise in the after-tax rate of interest increased private savings by 0.4 percent.

Recent surveys of the relevant literature are skeptical of Boskin's results, and a much smaller estimated response (0.07 percent) has been used more recently by Sheshinski (1990). Bovenberg's survey of the literature (1989) concluded that "the effect of tax policy on the level of private saving is relatively small and uncertain" (p. 123); Skinner and Feenberg (1990) note that "some studies have found positive effects of the interest rate on savings, but they are not robust to alternative empirical specifications" (p. 58); and Bosworth and Burtless (1992) argue for "the presumption that income tax incentives for savings are likely to fail" (p. 23).

⁴¹If the Minnesota tax is *less* than the national average tax on all capital, then the entire Minnesota tax is borne by capital. (From a national perspective, this capital bears all of the Minnesota tax plus some of the tax from other states, but we are only interested in determining who pays the Minnesota tax.)

Question 2. What portion of the remaining \$60 million represents a higher national average tax on this sector? Capital taxes are levied at different rates on different forms of capital. Some forms of capital are exempt from a particular tax, while others may be only partially taxed or taxed at lower rates. Consider the average national property tax rates on business property, for example. Commercial property is taxed at a considerably higher rate than manufacturing property, and both are taxed more heavily than agriculture. In our example, suppose the national tax rate in the manufacturing sector is 1.67 times as high as the national average tax on all capital. This higher-than-average tax rate for the manufacturing sector is referred to as its "national sector differential." Average taxes on manufacturing companies, regardless of location, would be 67 percent higher than the average for "all capital."

Despite these heavier taxes, however, the after-tax rate of return in manufacturing cannot remain lower than the rate of return available in other sectors. So long as the rate of return in manufacturing remains lower, that sector will shrink as capital moves to other more profitable sectors. With less production, prices for manufacturing products would rise nationwide. As a result, after producers and consumers have fully adjusted to the higher national tax rate on manufacturing, consumers will be paying those higher taxes in the form of higher prices. The portion of a tax on capital equal to this "national sector differential" is therefore borne entirely by consumers in the form of higher prices.

For each tax on capital, this study estimates the average national tax rate on capital invested in each sector. The share of the Minnesota tax representing the "national sector differential" is allocated to consumers of products produced in Minnesota (whether sold in Minnesota or in other states). (See *Figure 5-2.*)

The remaining tax (if any) is the "Minnesota sector differential" -- the amount by which Minnesota's tax rate on capital invested in this sector exceeds the national average tax rate in this sector. To determine who bears the burden of this "Minnesota differential," it is necessary to answer the third question.

Question 3. What portion of this sector's producers compete only against other Minnesota producers? If Minnesota's tax on capital invested in restaurants is higher than the national average tax on restaurants, that tax differential will be reflected in higher restaurant prices in Minnesota. Restaurants, like many other services, are competing almost entirely in a local market. For products sold in "local markets", the Minnesota differential will result in higher prices and fewer producers. If prices were not high enough to cover the higher costs, the rate of return on investment in the Minnesota restaurant sector would be lower than the

rate of return in other Minnesota sectors (and in restaurants in other states), and investment would flow out of Minnesota's restaurant industry.

In contrast, prices for products that compete in national markets (including most manufactured products) are determined nationally. A "Minnesota sector differential" on producers of such national market products cannot usually be shifted to consumers. Minnesota businesses charging higher prices would be undersold by lower-taxed producers in other states. If the price cannot rise and mobile capital will not continue to accept lower rates of return than are available elsewhere, then the burden of the tax must fall on any immobile resources used in production. One such immobile resource is land. Another such resource may be labor, either because (1) the cost of moving out of state (monetary and non-monetary) is high, or (2) the higher taxes finance offsetting benefits to residents, leaving no net incentive to leave. This study assumes that immobile labor and landowners share the burden of any Minnesota sector differential for national market products in proportion to their relative shares in production.⁴²

For business property taxes, the tax is divided into four parts, because this study assumes that the portion of the tax levied on land is borne by the landowner. Land is by definition immobile, and a tax on land generally cannot be shifted to consumers. For each sector, therefore, the study estimates the share of the property tax that is levied on the value of land as opposed to structures and equipment. The remaining ("non-land") property tax on structures and equipment is then divided into the remaining three parts, as explained above.

In summary, to allocate the burden of taxes among capital owners, consumers, and labor, this study divides the tax into three parts:

1. The portion representing the "national average tax on all capital" is borne by capital (50 percent in *Figure 5-2*).
2. The portion representing the "national sector differential" is borne by consumers (33 percent in *Figure 5-2*).

⁴²For the major sectors of the economy, this ratio is 95 percent labor and 5 percent land. We assume that the burden on land falls only on business owners of land. If labor is immobile and government expenditures rise in line with taxes, there will be no downward pressure on the value of *residential* land.

3. The portion representing the "Minnesota sector differential" is borne by:
- Consumers for products sold in "local markets" (13 percent in *Figure 5-2*);
 - Labor and landowners for products sold in "national markets" (4 percent in *Figure 5-2*).

This approach requires an estimate, for each tax, of the national average tax on all capital. For each tax and each sector, it requires an estimate of the Minnesota differential -- the excess of Minnesota taxes over the national average for that sector. The study also needs to estimate, for each sector, the extent to which its products are sold in local as opposed to national markets.

Allocating the Burden between Minnesota Residents and Nonresidents

Exported Tax Burden. A large amount of capital located in Minnesota is owned by nonresidents. For the portion of any tax borne by capital and land, much of the burden will fall on residents of other states. Economists refer to taxes paid by nonresidents as "exported taxes".⁴³ This study assumes that nonresidents own 90 percent of the stock in corporations subject to Minnesota tax, and 20 percent of most noncorporate businesses (but only 5 percent of non-homestead residential property). As such, in sectors which are predominantly corporate, most of the burden falling on capital is exported. In sectors with predominantly non-corporate ownership (defined to include S corporations), a smaller portion of the burden on capital is exported.

Consumers located in other states will pay some of the "national sector differential" shifted forward in higher prices. To the extent that a particular sector's taxes are higher throughout the nation, Minnesota producers (along with those in other states) will be able to raise prices on their products wherever they are sold. Some of this tax is therefore shifted to out-of-state consumers. In addition, nonresident visitors bear some of the tax shifted to in-state consumption. For each sector, this study estimates the proportion of sales made to (1) out-of-state consumers and (2) visitors.

The burden on labor (in the form of reduced wages) is assumed to fall entirely on Minnesota residents.

⁴³To avoid confusion, we refer to "exported tax burden" or "taxes paid by nonresidents" rather than "exported taxes". Since tax dollars are flowing into Minnesota, referring to them as exported taxes creates needless confusion.

Imported Tax Burden. Both Minnesota consumers and Minnesota owners of capital and land located in other states pay taxes to other states. It is likely that the tax Minnesotans pay to other states is approximately equal to the Minnesota tax paid by residents of other states. The exported tax burden is offset by an imported tax burden of approximately the same size.⁴⁴ Nevertheless, taxes that Minnesota residents pay to other states are ignored here. Therefore, this study estimates and analyzes the incidence of Minnesota taxes on Minnesota residents.

Federal Tax Offset. In estimating the incidence of existing Minnesota taxes, this study makes no adjustment for the "federal tax offset." It is true that Minnesota businesses deduct Minnesota business taxes in calculating federal taxable income. For a corporation facing a federal tax rate of 34 percent, each dollar of Minnesota tax lowers federal taxes by 34 cents, so an additional dollar of Minnesota tax only raises a company's costs by 66 cents. One-third of the Minnesota tax would be "paid" by the federal government (in lower tax revenues), so incidence studies often consider one-third of the tax burden to be "exported to the federal government."⁴⁵

Given the "multi-state" approach taken in this study, however, the federal tax offset is much smaller than this reasoning implies. All 50 states levy business taxes. Since one-third of *every* state's business taxes are offset by a reduction in federal revenues, the federal government has essentially replaced this lost tax revenue through higher federal tax rates. A state's "net" federal tax offset would be its "gross" federal tax offset minus the state's share of those increased federal tax payments. As a result, the net offset for the average state would be zero. States with lower than average business tax rates would lose; states with higher than average business tax rates would gain, but their net gain would be small. It has been estimated that Minnesota's net federal tax offset would be only about one-sixth of its gross federal tax offset for business taxes (a 5 percent reduction rather than the 34 percent gross offset in the example given above).⁴⁶ In theory this net

⁴⁴For estimates supporting this conclusion for Minnesota, see Morgan and Mutti (1985). The exported tax burden clearly exceeds the imported tax burden only in states with very large tourist industries (Nevada and Florida) or major mineral resources (Alaska).

⁴⁵The federal tax offset has further effects, since corporate profits are also taxed through the individual tax (as dividends or capital gains).

⁴⁶Morgan and Mutti (1985). Federal tax rates were lower in 1990, however, and this study includes additional business taxes. As a result, Minnesota's net offset in 1990 may be considerably lower than Morgan and Mutti's estimate. Mutti and Morgan (1983) estimated that Minnesota's net offset for personal taxes is only 4 percent of its gross offset.

federal offset should be included in the analysis. Given its small and uncertain size, however, this study simply assumes it is zero.

The same argument also applies to the federal tax offset for non-business taxes (the individual income tax, homeowner property tax, and motor vehicle registration tax). These are all deductible in calculating federal individual income tax liability, so higher Minnesota taxes mean lower federal income taxes for itemizers. As with business taxes, however, deductibility for all states' household taxes require higher federal tax rates. The net offset for the average state is again zero. For personal taxes in Minnesota, Mutti and Morgan (1983) estimated a net tax offset of approximately zero. Given the multistate perspective of this study, no federal tax offset for household taxes is calculated either.

It is worth emphasizing that the federal tax offset should, in contrast, be included in estimating the incidence of an *incremental* change in Minnesota's tax rates. Minnesota's economy is approximately 2 percent of the U.S. economy. If only Minnesota raises its tax rate, 98 percent of the burden of the resulting higher federal tax rates is borne by residents in other states. The net offset is approximately equal to the gross offset. In calculating the incidence of *existing* taxes, however, since all 50 states gain through tax deductibility, Minnesota's loss from resulting higher federal tax rates offsets most if not all of Minnesota's gain from state tax deductibility.

Taxes on Intermediate Business Inputs

The incidence of a tax on short-lived intermediate business inputs like gasoline, business meals, hotel bills, or liquor, is different from the incidence of a tax on capital. Capital refers to goods that are used to produce other goods and services, such as buildings, machinery and equipment. Other business purchases, such as gasoline, business meals and lodging, are also subject to tax. While a uniform national tax on all capital would be borne by capital, a uniform national tax on business purchases of gasoline, for example, would not. It would almost certainly be shifted forward to consumers in higher prices. Taxes on short-lived intermediate products raise the cost of production, but they do not raise the cost of capital.

Any estimate of this net federal tax offset requires an assumption about which tax rates the federal government would increase to replace the lost revenue. Mutti and Morgan's assumption (that all federal taxes are increased proportionally) seems as reasonable as any other.

As a result, the approach to the incidence of such taxes skips the first of the three questions asked about capital taxes. The tax on intermediate business purchases is divided into only two parts:

1. The portion representing the "average national tax rate on this sector" is shifted forward to consumers in higher prices.
2. The portion representing the "Minnesota differential" is borne by:
 - a. Consumers for products sold in "local markets;"
 - b. Labor and landowners for products sold in "national markets."

Distribution by Taxpayer Categories

A description of the incidence results for the distribution of each business tax to consumers, capital and labor (both residents and nonresidents) is provided in this section. A discussion of data sources and calculations for this division of each tax (by sector) is found in Appendix A, along with more detailed Step 2 information. The business tax allocators used to estimate the business tax burden for specific Minnesota households in Step 3 are discussed at the end of this chapter.

Business Property Taxes

The burden of the business property tax falls on property owners ("capital"), consumers, and labor. Capital's share of the tax burden is generally equal to the sum of the first two parts of the 4-part division of the tax -- the land share plus the national tax on all capital.⁴⁷ The consumers' share of the tax burden equals all of the national sector differential plus the Minnesota differential for products sold in "local markets." For products sold in "national markets," the Minnesota differential is borne largely by labor (with capital bearing a small portion of the burden falling on land).

As shown in the first section of *Table 5-2 and Figure 5-3*, 38 percent of the burden of business property taxes for all industries is exported to nonresidents. Almost 56 percent of the tax burden on capital falls on non-residents, as does 14 percent of the burden on consumers. The tax burden shifted to nonresidents is highest for manufacturing (85 percent), commercial (46 percent), and public utility

⁴⁷The exception is public utilities, where the land share of the tax is assumed to be shifted to consumers. Utility prices are regulated, guaranteeing an after-tax rate of return equal to a fixed proportion of the national average return on all capital. Capital still bears the share of the tax representing the national tax rate on all capital, however, because the property tax reduces the national rate of return.

Table 5-2
Distribution of Business Taxes by Taxpayer Category

	<u>Minnesota Taxpayers</u>			<u>Exported Taxes</u>
	<u>Consumers</u>	<u>Labor</u>	<u>Capital</u>	
Business Property Taxes				
Public Utility	57%	4%	2%	37%
Rental Housing	59	0	35	6
Commercial	34	4	16	46
Manufacturing	2	3	10	85
Farm	0	0	100	0
All Sectors	33%	3%	26%	38%
Sales Tax on Business Inputs				
Mining	9%	0%	1%	90%
Housing	80	0	17	3
Services	61	0	7	32
Wholesale	46	0	6	48
Finance	44	1	9	46
Retail	46	0	14	40
Utilities	37	0	5	58
Manufacturing	11	8	4	77
Transportation and Comm.	29	2	7	62
Farming	8	0	61	31
Construction	18	0	31	51
All Sectors	40%	2%	11%	47%
Corporate Franchise Tax				
Commercial	58%	4%	3%	35%
Public Utility	50	6	3	41
Manufacturing	12	8	3	77
Mining	5	15	3	77
All Sectors	40%	6%	3%	51%
Other Business Taxes				
Motor Vehicle Registration	36%	8%	12%	44%
Insurance Premium	25	0	17	58
Motor Fuels	62	6	1	31
Liquor Excise	64	4	1	31

Figure 5-3
Incidence of Business Property Taxes on
MN Consumers, MN Labor, MN Capital,
and Nonresidents by Industry

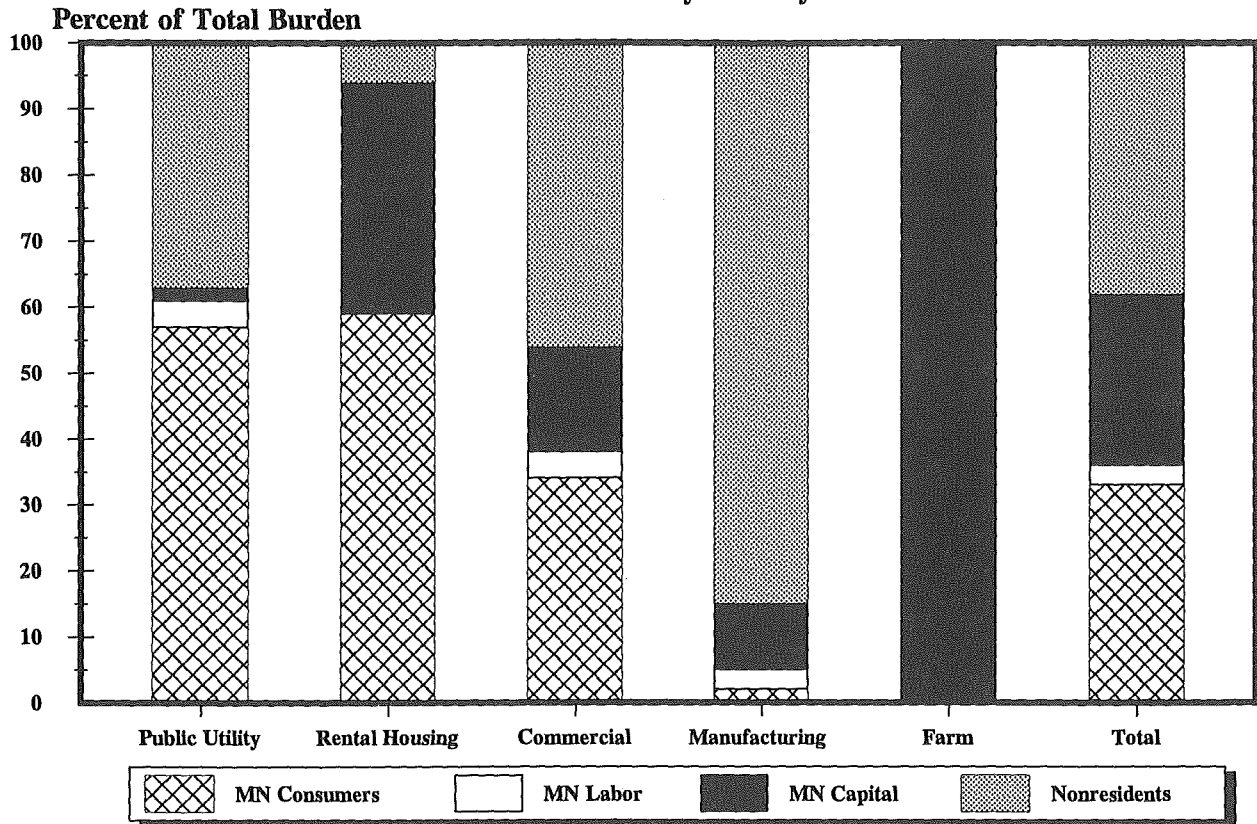
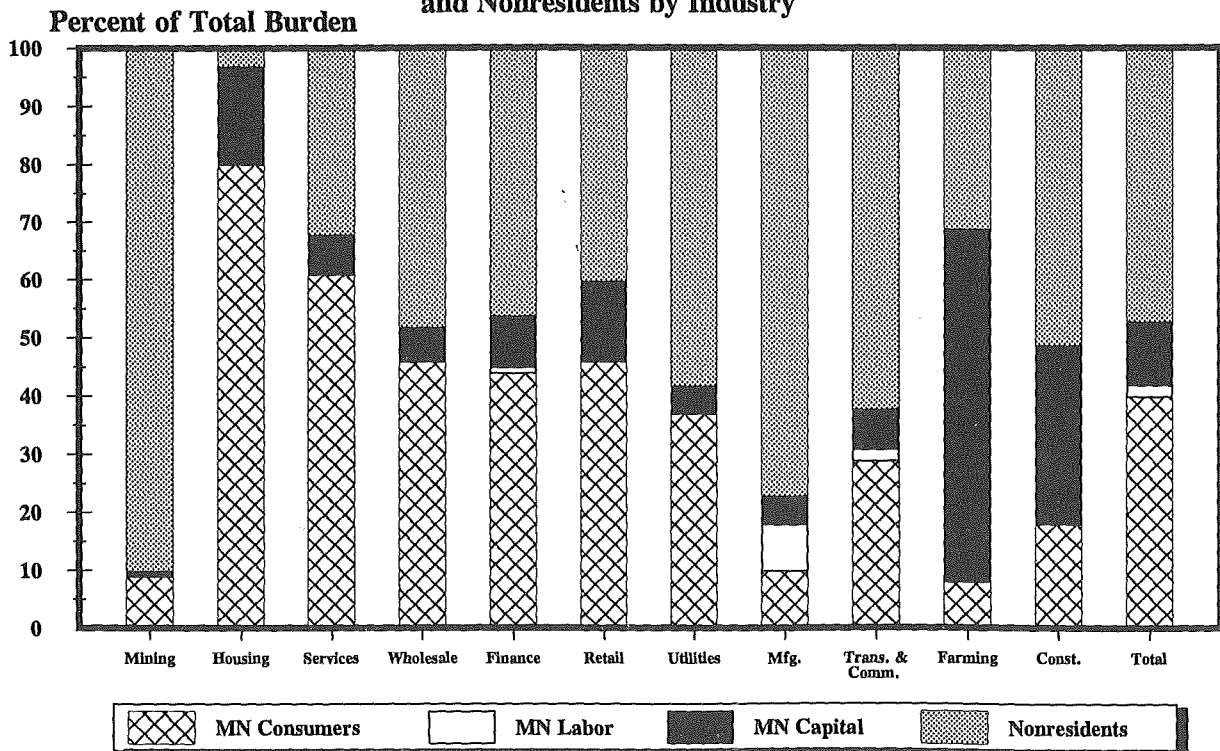


Figure 5-4
Incidence of Business Sales Tax on
MN Consumers, MN Labor, MN Capital,
and Nonresidents by Industry



property (37 percent). The tax on capital is almost entirely borne by non-Minnesotans in sectors where ownership is predominantly corporate (manufacturing and public utilities) because stock ownership is spread widely throughout the nation. Sole proprietors, partnerships, and S corporations (included in the noncorporate sector) are more locally owned, so more of the burden on these noncorporate owners is borne by Minnesota residents.⁴⁸

The tax borne by consumers is also shifted partly to nonresidents -- both to consumers purchasing Minnesota products in their home states and partly by visitors to Minnesota. The national sector differential is exported to nonresidents to the extent those products are sold out of state. The out-of-state proportion of sales is high for manufacturing and farms; it is negligible for rental housing and low for the commercial and public utility sectors.⁴⁹ The visitor share of in-state sales is significant only for the commercial sector.

The portion of business property taxes that are not exported are paid by Minnesota capital, labor and consumers. This study estimates that Minnesota capital bears 26 percent of the total burden of business property taxes, with consumers bearing 33 percent of the burden and labor bearing 3 percent. The burden on Minnesota capital is greatest in sectors where they are capital intensive and locally owned (farming and rental housing). The consumer share is highest in sectors where the Minnesota differential is high and the products or services are sold in local markets (public utilities, rental housing, and commercial). Labor would bear a significant burden only in sectors where the Minnesota differential is large and producers compete in a national market. For sectors competing in a national market (manufacturing and farming), the Minnesota differential is low. As a result, labor bears no more than 4 percent of the total burden in any sector.

This study treats taxes on apartments and other rental housing as business taxes. Individuals who invest their capital in rental housing, like those investing elsewhere, are assumed to respond to differences in after-tax rates of return. As with other business property taxes, part of the property tax on rental housing represents a tax on land, and part of it represents the average national tax on all capital. This study assumes that these portions of the rental property tax are borne by capital owners.

⁴⁸The division of the property tax into four parts is found in Appendix A, along with the sector-by-sector assumptions used to calculate the exported portion of each sector's tax (as reported in the following paragraphs).

⁴⁹Over a quarter of the consumer share of the public utility sector's tax is shifted to nonresidents, however, because the tax shifted to business purchasers is partly shifted to nonresident consumers of their products.

An estimated 59 percent of existing rental housing taxes are shifted to renters in higher rents, with landlords paying the remaining 41 percent. The assumption that existing rental property taxes are partially borne by landlords follows from the multistate approach used. If the average national property tax rate on all capital is borne by the owners of capital, this will be the case for rental property the same as for manufacturing or commercial property. However, in sharp contrast, an incremental increase in Minnesota rental property taxes unaccompanied by increases in other states would have quite different results. Almost all of an incremental increase is expected to be borne by renters.

Farm property taxes are levied almost entirely on land. Nationally, property tax rates on non-land capital in the farming sector are below the average taxes on all capital. As a result, the national sector differential is negative. Given the lack of a positive national sector differential and the fact that farm product prices are set in a national market, none of the property tax can be shifted to consumers. As a result, farm property taxes are assumed to be borne entirely by farm owners.

Sales Tax on Business Inputs

Two distinct kinds of business purchases are subject to sales tax: purchases of capital equipment (including motor vehicles) and purchases of non-capital intermediate inputs. Non-capital inputs include things such as general office supplies, business services, meals and entertainment and hotel charges. It is assumed that the sales tax on construction materials is shifted forward in higher prices for buildings. To the extent that the tax applies to materials used to build commercial and industrial buildings (including rental housing), the tax is treated in this study as an indirect tax on those capital inputs ("structures"). The capital tax rate on such structures equals the tax rate on construction materials times the materials' share in total building costs. The tax on materials used to construct owner-occupied housing is similarly assumed to be a tax on capital. The estimated total sales tax paid by Minnesota businesses in 1990 is:

Taxes on capital	
Capital equipment	\$331 million
Materials used to build structures:	
Business	46 million
Residential	101 million
Taxes on other intermediate inputs	<u>389 million</u>
Total Tax	\$867 million

The incidence of the sales tax on business inputs was estimated separately for each of 11 sectors. The sales tax on capital equipment applies only to

equipment purchased in the current year, only a fraction of businesses total equipment. The tax rate (as a proportion of the value of a company's total capital) is higher in industries which replace equipment more rapidly. A 6 percent tax on equipment purchases yields an effective tax rate of 2 percent for a company which replaces one-third of its equipment each year. For a company replacing only one-tenth of its equipment annually, the effective tax rate on total equipment is only 0.6 percent. Effective tax rates on capital were calculated for each sector by dividing current year taxes by the sector's total stock of capital.⁵⁰

For the tax on capital inputs, the tax was divided into 3 parts -- the national tax on all capital, the national sector differential, and the Minnesota differential. This process was essentially the same as for the property tax (discussed earlier) except that there is no land share with the sales tax. Since the tax on other intermediate inputs is not a tax on capital, it was divided into only 2 parts -- the average national sector tax and the Minnesota differential.

Capital's share of the tax burden is approximately equal to the national tax on all capital. The consumers' share of the tax burden equals all of the national sector differential plus the Minnesota differential for products sold in "local markets." For products sold in "national markets," the Minnesota differential is borne largely by labor (with capital bearing a small portion of the burden shifted backward to landowners).

For all industries, 47 percent of the business sales tax tax burden falls on nonresidents. (See *Table 5-2 and Figure 5-4*). This includes 73 percent of the tax burden on capital, along with 31 percent of the tax burden on consumers. The nonresident share of the burden on capital is highest in sectors where ownership is predominantly corporate (manufacturing, public utilities, transportation and communication, wholesale, and mining). Over half of the tax burden is shifted to nonresidents in five of the sectors, including 77 percent in manufacturing and 90 percent for mining. The nonresident share of the burden on consumers is largest for sectors whose products are mostly sold out-of-state (manufacturing, farming, and mining).

Minnesota consumers bear 40 percent of the total burden in higher prices. Minnesota consumers bear more than half of the tax burden in the housing and service sectors; they bear 10 percent or less in mining manufacturing and farming. Minnesota capital owners bear 11 percent of the total burden, ranging from high

⁵⁰In a steady state environment, this yields the correct result. For sectors which are expanding rapidly or undergoing major technical change the effective tax rates are only approximate.

of 61 percent of the taxes on farming and 31 percent on business construction to less than 10 percent in seven sectors. Minnesota labor bears 2 percent of the total burden (but 7 percent in manufacturing).

The Corporate Franchise Tax

The corporate franchise tax is a tax on the return to capital in the corporate sector.⁵¹ In estimating the incidence of this tax, as with other taxes levied on capital, this study divides the tax into 3 parts -- the average national tax rate on all capital (corporate and noncorporate), the national sector differential, and the Minnesota differential. For corporations, incidence is estimated separately for four sectors -- manufacturing, commercial, public utilities, and mining.

The national average (state) corporate tax rate in 1990 was 7.03 percent.⁵² The corporate tax is levied on a relatively small share of total national capital. Corporations own only 36 percent of all privately-owned, tangible, non-land capital, so the average tax rate on all capital is only 0.36 times 7.03 percent, or 2.53 percent.⁵³ The first 2.53 percent of Minnesota's corporate income tax is therefore assumed to be borne entirely by owners of capital.⁵⁴

⁵¹The corporate income tax is a tax on *accounting* profits, not *economic* profits. While the tax base includes economic profits for corporations earning above-normal returns in the current year, it is the *expected* rate of return that drives decisions concerning business location. For long-term incidence, therefore, the tax base is assumed to include no economic profits.

⁵²In calculating the average, states were weighted by corporate tax capacity, as estimated by the Advisory Commission on Intergovernmental Relations, *1988 State Fiscal Capacity* (Washington, D.C., August 1990), Table 5-24. (If states are weighted by gross state product instead, the average national tax rate is 6.99 percent.)

⁵³Calculated from U.S. Department of Commerce (1987) and updated information on capital stock (including inventories) from the *Survey of Current Business*.

⁵⁴The incidence of the 7.03 percent average state tax on corporate income is assumed to be the same as a 7.03 percent national tax on corporate income. This partial tax on capital lowers the return on all capital, corporate and non-corporate, as capital moves in search of the highest rate of return. Given the assumptions of competitive markets and a national capital stock unaffected by taxes, the tax is borne by all capital. This study's approach to the incidence of the tax is consistent with the approach taken with the other taxes on capital, and any alternative perspective on the corporate franchise tax would imply changes for other taxes as well.

McLure (1980) has suggested that the incidence of an apportioned state corporate income tax is the same as a combination of a separate tax on each of the three apportionment factors -- a sales tax, a payroll tax, and a property tax. Given this study's multi-state approach, this would presumably apply only to the "Minnesota differential." The results reported here are roughly

Minnesota's 1990 corporate tax rate, at 9.8 percent, was almost 40 percent higher than the national average state tax rate. However, this overstates the relative magnitude of the Minnesota tax for two reasons: first, the Minnesota apportionment formula is different from that used elsewhere, reducing the effective tax rate for the average taxable corporation; and second, Minnesota has no "throwback rule," used in about half of all states to increase the size of their tax base. After both adjustments, the estimated percent by which Minnesota's effective corporate tax rate for each sector exceeds the national average is:

Manufacturing	10.5%
Commercial	36.2
Public Utilities	34.0
Mining	24.6

The Minnesota corporate tax differential is, therefore, less than implied by simply comparing corporate tax rates, especially for manufacturing.

As seen in *Table 5-2*, 51 percent of the Minnesota corporate franchise tax burden is borne by nonresidents; Minnesota consumers bear 40 percent. Minnesota consumers bear over half of the burden in the commercial and public utility sectors (whose products are sold primarily in local markets) but 12 percent or less in manufacturing and mining (selling primarily in national markets). The burden on labor is highest in manufacturing and mining, and lowest in the commercial sector; the overall burden on labor is 6 percent.

Other Business Taxes

Motor Vehicle Registration Tax (Business Vehicles). Business pays an estimated 31 percent of annual motor vehicle registration taxes in Minnesota, including 15 percent of registration fees for automobiles, vans, and pickups, 100 percent for heavy trucks and buses, and 50 percent for utility trailers.⁵⁵ Minnesota registration fees for automobiles and pickups are substantially above the national average. A recent study by the District of Columbia (1991) shows that the Minnesota registration fee for a new \$7,900 automobile was three times the

consistent with the McLure assertions; in this analysis, the incidence of any of these three taxes in excess of the national average will be identical (because taxes are weighted by corporate profits). For a careful exposition of the McLure position, see Mieszkowski and Zodrow (1985).

⁵⁵The business share of the tax includes \$37 million from automobiles, vans, and pickups, \$30 million from in-state trucks and buses, and \$28 million from pro-rated trucks.

national average.⁵⁶ Data from the American Trucking Association show Minnesota truck registration and weight fees 58 percent above the national average, but some states charge mileage fees instead. Once those are included, Minnesota's rates on heavy trucks were close to the national average.⁵⁷ This study assumes registration fees for business (and personal) automobiles and pickups exceed the national average by 150 percent, while heavy truck registration fees are only 3 percent above the national average.

The \$95.5 million in motor vehicle registration fees paid by business were allocated among eleven sectors in proportion to each sector's share of automobile and truck purchases. For each sector, as with other taxes on capital, the tax was separated into three parts -- the national average tax on all capital, the national sector differential, and the Minnesota differential.

Over 44 percent of the tax is borne by nonresidents (including 74 percent of the capital share and 21 percent of the consumer share). The Minnesota burden of this tax is estimated to fall 12 percent on capital, 8 percent on labor, and 36 percent on consumers.

Insurance Premiums Tax (Business Insurance). The insurance premiums tax is a flat percentage tax (generally 2 percent) levied on the value of insurance premiums written in Minnesota. Tax rates vary little among states, and Minnesota's tax rate is equal to the national average. As a result, we assume the tax raises the price of insurance policies by the amount of the tax. In its impact, it is the same as a sales tax on insurance premiums.

Taxes on business insurance make up 22.5 percent of insurance premium tax revenues. Incidence is estimated in the same way as the incidence of the sales tax on business inputs. The tax base consists of two parts -- insurance on commercial property (fire, theft, auto) and other business insurance (malpractice, liability). The tax on property insurance (60 percent of the business total) is treated as a tax on capital, while the tax on other business insurance (40 percent) is considered a

⁵⁶The Minnesota differential will increase with the cost of the automobile, since most states charge a flat fee while Minnesota charges a percent of estimated market value. For older cars, the differential will be less. The District of Columbia study does not include local personal property taxes, which are charged on automobiles in some states.

⁵⁷Motor Vehicle Manufacturers Association, *Motor Vehicle Facts & Figures* (1990), p. 83. The figures estimate renewal rates for an 80,000 pound tractor-semitrailer traveling 80,000 miles annually, all in its home state.

tax on a non-capital intermediate product.⁵⁸ Most of the tax burden (58 percent) falls on nonresidents, with 25 percent borne by Minnesota consumers and 17 percent by Minnesota owners of capital.

Motor Fuels Excise Tax (Business Purchases). The tax on motor fuels is a tax on a non-capital intermediate product. As such, the average national tax rate is shifted to consumers and the Minnesota differential is shifted either to consumers (local market goods) or to labor and land (national market goods). Minnesota fuel taxes are significantly higher than the national average. In 1990, gasoline taxes were 20 to 30 percent above the national average, while diesel fuel taxes were 19 percent above the national average.⁵⁹ This study assumes that Minnesota fuel taxes paid by business were 22.5 percent above the national average. An estimated 31 percent of the tax burden falls on nonresidents with Minnesota shares equal to 1 percent for capital, 6 percent for labor and 62 percent for consumers.

Liquor Excise Tax (Business Purchases). Ten percent of total liquor excise tax revenues are assumed to be collected on purchases by business. Based on estimates from a study by the District of Columbia (1991), we assume that Minnesota liquor taxes are 16 percent above the national average.⁶⁰ This tax is levied on a non-capital intermediate product, so it largely shifted forward to consumers. This study estimates that 31 percent falls on nonresidents. For the

⁵⁸The tax on property insurance is distributed among sectors in proportion to the value of reproducible capital; the tax on other insurance is distributed among sectors in proportion to gross state product. Given a zero Minnesota differential, the tax on other insurance (as a non-capital intermediate product) is entirely shifted to consumers, while the tax on property insurance is borne entirely by capital.

⁵⁹Gasoline tax rates (and selected local tax rates) from ACIR's *Significant Features of Fiscal Federalism* (1991) and Macmillan's 1991 *All States Tax Handbook* were weighted by each state's gross product. Minnesota's tax rate was from 24 percent to 30 percent above the national average, depending on the adjustment for local taxes. A 1991 District of Columbia study of tax rates in each state's largest city, however, shows Minnesota's tax rate only 20 percent above the national average. The estimated Minnesota differential on diesel fuel is from Motor Vehicle Manufacturers Association, *Facts & Figures '90* (p. 83), after weighting by each state's gross product.

⁶⁰The ratio of Minnesota to national average tax rates (weighted by gross state product) was 0.72 for beer, 0.95 for wine, and 1.34 for spirits. The average of these three, using share of revenue as the weight, is 1.16. (Note that the ratios of the Minnesota tax rates to those in the median state are significantly higher -- .82 for beer, 1.27 for wine, and 1.52 for spirits, yielding a weighted average of 1.33.)

Minnesota burdens, less than one percent falls on capital, four percent on labor, and 64 percent on consumers.

Business Tax Allocators

After estimating the share of Minnesota business taxes borne by Minnesota owners of capital and land, consumers, and labor, those taxes are allocated to specific households (Step 3) based on each household's characteristics contained in the database records. In most cases, the study allocates to each household the average tax burden for households with the same characteristics. *Figure 5-5* summarizes the allocators used in this final step.

Figure 5-5
Business Tax Allocators

<u>Allocator</u>	<u>Used to distribute tax borne by:</u>
Dividend income	Corporate owners
Noncorporate capital ownership	Noncorporate owners
Total consumer expenditures	Consumers
Labor income	Workers
Farm income	Farmers using their own land
Farm rents	Farmers leasing their land

Burden on Consumers. Taxes shifted forward to consumers are allocated to consumers based on their share of total consumer expenditures, as estimated from the *1990-1991 Consumer Expenditure Survey*. The total expenditures for a particular household are estimated based on household income and size.

Burden on Renters. The portion of rental housing property tax shifted forward to renters is allocated to renters in proportion to their rent. For households filing for property tax refunds, actual rent is known. For other households, it is estimated based on household income and data from the *Census of Housing*.

Burden on Corporate Capital. The burden on corporate capital is allocated to households in proportion to taxable dividends received. Returns to investment in the corporate sector are received by owners of corporate stock in two forms -- as dividends or as capital gains on appreciated stock. Unfortunately, capital gains reported on 1990 tax returns do not measure the actual rise in stock value during

that year.⁶¹ Although dividends received may not always be a good measure of corporate ownership for particular individuals, the decile-by-decile distribution of dividend income should match the distribution of corporate capital fairly closely.

To the extent that high-income taxpayers receive a larger proportion of their return in the form of capital gains, the use of dividends alone may allocate too little of the burden to the highest income classes. However, allocation by dividends also ignores the ownership of stock by pension funds which would bias the results in the opposite direction. These two biases will partially offset one another.

Burden on Noncorporate Capital. Noncorporate business capital includes capital owned by sole proprietors, partnerships, and S corporations. Neither rental income (from Schedule E) nor sole proprietor income (from Schedule C) are acceptable as proxies for ownership of noncorporate capital. Schedule C income is largely labor income; the distribution of Schedule C income is virtually identical to the distribution of wage income, and the ratio of depreciation to income is less than 25 percent as large for sole proprietors as for partnerships (and only 10 percent as high as for rental income).

Schedule E income is net income, gains minus losses. Despite very large gains and losses, net income from passive partnerships in Minnesota was essentially zero in 1990, even though this reflected a large amount of capital. At the national level, 62 percent of the total depreciation claimed by partnerships is taken by those with negative Schedule E income. Since large losses generally reflect large amounts of capital, some method is needed to impute capital ownership to those reporting losses.

This study uses various information from Schedules C and E to develop a reasonable estimate of each household's ownership of noncorporate capital. The construction of this measure makes sure that: (1) households with large business losses are assigned some capital ownership (based on either claimed depreciation or the size of claimed losses); and (2) the shares of capital ownership imputed to those with sole proprietor income, rental income, and partnership and S corporation income are roughly proportional to each income source's aggregate

⁶¹Capital gains generally "accrue" every year as the value of stock rises, but a capital gain is "realized" only when the stock is sold. While some measure of accrued gains is desired, only realized gains are reported on tax returns. Many gains accruing in 1990 were not realized in 1990, and many gains realized in 1990 accrued in earlier years.

share of claimed depreciation.⁶²

Burden on Farmers. Rental land accounts for a substantial proportion of Minnesota farm land. Approximately half of all farm property taxes are paid on rented land. Therefore about half of the farm property tax burden is allocated in proportion to farm income (reported on Schedule F) and the rest is allocated in proportion to farm rents (reported on Schedule E).⁶³

Burden on Labor. The burden on labor (through lower wages) is allocated based on the share of wages (plus the three-quarters of sole proprietor income that is assumed to be labor income).

Given the assignment of taxes to resident and nonresident consumers, capital, labor and land, the allocators are used to assign specific tax amounts to households based on their characteristics. The results of this allocation are reported in Chapter 6 by income levels.

⁶²The measure includes: (1) the larger of 25 percent of Schedule C income or claimed Schedule C depreciation; plus (2) the larger of rental income or depreciation on rental property; plus (3) the simple sum of gains and losses for passive partnership income, nonpassive partnership income, and estate income. REMIC income was also included; farm rents were excluded. The shares of claimed depreciation (from *Statistics of Income* and the 1990 Minnesota income tax sample) closely matched the shares of capital ownership attributed to those with sole proprietor, rental, and partnership income.

⁶³The high proportion of property taxes on rental land partly reflects Minnesota's class rate structure, which taxes non-homestead farms much more heavily than homestead farms. This study's allocation of other farm business taxes uses the same allocators.

CHAPTER 6

SUMMARY OF RESULTS

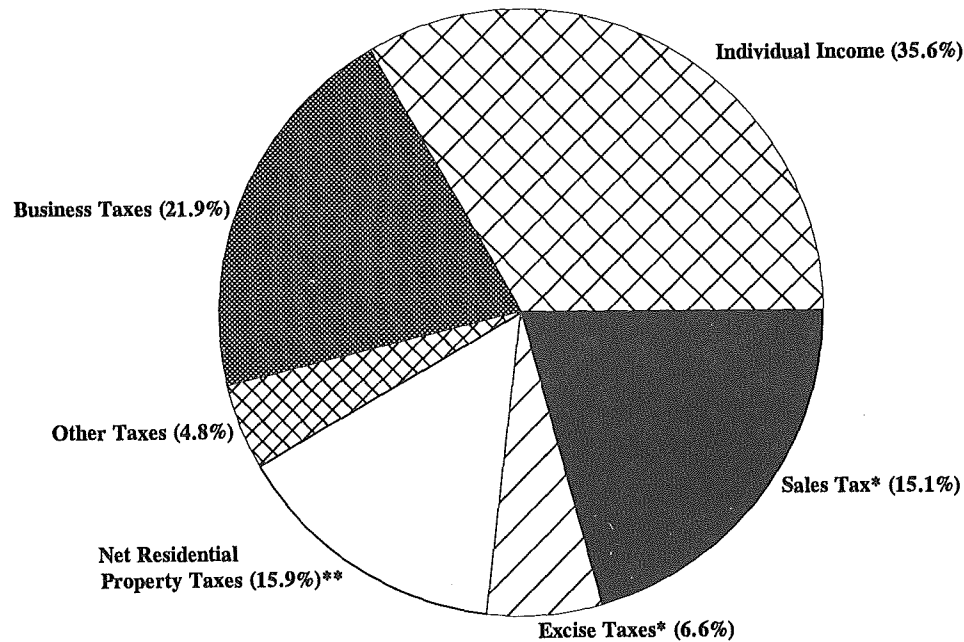
This section examines the state and local tax burdens imposed on Minnesota taxpayers in 1990. All major taxes are included, those imposed on businesses as well as those imposed directly on households. The taxes included account for 97 percent of Minnesota state and local tax revenue in 1990. Only taxes paid by Minnesota residents are included in these results; Minnesota taxes paid by nonresidents and taxes paid by Minnesota residents to other states are excluded. For business taxes, the study estimates the extent to which they are shifted forward to Minnesota consumers in higher prices or backward to Minnesota workers in lower wages. The incidence results for the entire system of state and local taxes in Minnesota are reported both in terms of the overall distribution of tax burdens and by tax type.

The Total Tax Burden

For 1990, Minnesota residents paid a total of \$7.75 billion in taxes while earning \$65.8 billion in total money income.⁶⁴ Minnesota residents thus paid 11.8 percent of their total income in state and local taxes. As shown in *Figure 6-1*, the individual income tax accounts for over one-third of the total taxes. Residential property taxes and the consumer sales tax (including motor vehicle excise tax) account for 15.9 percent and 15.1 percent of the total, respectively. The three excise taxes (on alcohol, tobacco, and gasoline) account for 6.6 percent, while other taxes (insurance, motor vehicle registration, and property tax on cabins) account for 4.8 percent. Business taxes account for the remaining 21.9 percent of total state and local taxes paid by Minnesota residents.

⁶⁴Minnesota residents paid \$7.75 billion out of a total of \$9.57 billion of state and local taxes included in the study. The difference of \$1.82 billion is exported to other states, i.e., paid by nonresidents. Business taxes account for 82 percent of all exported taxes, \$1.488 billion out of the \$1.82 billion total. The amounts for other taxes exported are: individual income tax, \$78 million; sales tax, \$147 million; excise taxes, \$55 million; residential property tax, \$29 million; and, other taxes, \$17 million.

**Figure 6-1
Distribution of Minnesota
State and Local Tax Burdens by Tax Type**



*Consumer portion only.
**Excludes seasonal recreational property.

To summarize the distribution of tax burdens by income level, the population of Minnesota households is divided into ten equal groups or *deciles* based on household income levels. There are approximately 207,000 taxpaying households in each population decile. The first decile includes the 10 percent of households with the lowest income levels; the tenth decile includes the highest-income 10 percent of households.

Examining the distribution of total tax burden by population decile (ranked by income level), one finds that taxpayers in the top decile (incomes above \$61,289) bear about 36 percent of the total tax burden and account for an equal share of total income. (See *Table 6-1*). By tax type, taxpayers in the top decile pay nearly half of the individual income tax, 26 percent of the general sales tax, 17 percent of the excise tax, 35 percent of the net residential property tax, and 33 percent of business taxes.

In contrast, taxpayers in the bottom decile (incomes below \$4,611) bear only 1.6 percent of the total tax burden and receive 0.7 percent of total income. With regard to each of the tax types, the bottom decile taxpayers pay less than a tenth of a percent of the individual income tax, 2.1 percent of the consumer sales tax, 2.8 percent of the excise tax, 2.6 percent of net residential property tax, and 2.7 percent of business taxes.

**Table 6-1
Distribution of Taxes and Income by Population Deciles
(\$thousands)**

Decile	Income Range		Total	Individual	Sales Tax	Excise Taxes	Residential	Other Taxes ²	Business Taxes ³	Total Taxes
			Household Income	Income Tax			Property Taxes ¹			
First	\$4,610 &	Under	\$460,827	\$784	\$25,079	\$14,196	\$31,655	\$4,442	\$46,445	\$122,601
Second	4,611 -	7,704	1,268,699	3,345	42,884	24,573	15,371	8,408	46,567	141,149
Third	7,705 -	11,970	2,019,289	22,999	56,622	30,642	26,991	14,032	64,520	215,807
Fourth	11,971 -	16,788	2,979,697	57,324	70,506	38,010	58,141	20,233	92,199	336,413
Fifth	16,789 -	21,802	3,993,787	103,059	83,266	45,111	77,995	25,109	107,170	441,710
Sixth	21,803 -	27,998	5,148,916	158,699	104,780	55,334	116,083	35,264	136,099	606,260
Seventh	27,999 -	35,716	6,561,728	237,816	129,709	64,472	133,031	42,953	177,216	785,196
Eighth	35,717 -	45,278	8,341,165	345,894	158,590	72,570	151,315	54,074	209,859	992,303
Ninth	45,279 -	61,289	10,849,245	508,327	192,082	78,111	190,537	68,226	246,536	1,283,819
Tenth	61,290 &	Over	24,219,246	1,321,639	309,157	87,643	433,895	103,067	567,085	2,822,486
Total			\$65,842,600	\$2,759,888	\$1,172,676	\$510,661	\$1,235,013	\$375,809	\$1,693,696	\$7,747,743
Top 5%	\$80,228 &	Over	\$17,069,640	\$959,258	\$193,538	\$46,990	\$309,736	\$62,315	\$408,115	\$1,979,952
Top 1%	\$171,283 &	Over	8,207,188	482,088	70,341	12,027	131,694	20,420	201,623	\$918,192

Percentages of Taxes and Income by Population Deciles

Decile	Income Range		Total	Individual	Sales Tax	Excise Taxes	Residential	Other Taxes ²	Business Taxes ³	Total Taxes
			Household Income	Income Tax			Property Taxes ¹			
First	\$4,610 &	Under	0.7%	0.0%	2.1%	2.8%	2.6%	1.2%	2.7%	1.6%
Second	4,611 -	7,704	1.9	0.1	3.7	4.8	1.2	2.2	2.7	1.8
Third	7,705 -	11,970	3.1	0.8	4.8	6.0	2.2	3.7	3.8	2.8
Fourth	11,971 -	16,788	4.5	2.1	6.0	7.4	4.7	5.4	5.4	4.3
Fifth	16,789 -	21,802	6.1	3.7	7.1	8.8	6.3	6.7	6.3	5.7
Sixth	21,803 -	27,998	7.8	5.8	8.9	10.8	9.4	9.4	8.0	7.8
Seventh	27,999 -	35,716	10.0	8.6	11.1	12.6	10.8	11.4	10.5	10.1
Eighth	35,717 -	45,278	12.7	12.5	13.5	14.2	12.3	14.4	12.4	12.8
Ninth	45,279 -	61,289	16.5	18.4	16.4	15.3	15.4	18.2	14.6	16.6
Tenth	61,290 &	Over	36.8	47.9	26.4	17.2	35.1	27.4	33.5	36.4
Total			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Top 5%	\$80,228 &	Over	25.9%	34.8%	16.5%	9.2%	25.1%	16.6%	24.1%	25.6%
Top 1%	\$171,283 &	Over	12.5	17.5	6.0	2.4	10.7	5.4	11.9%	11.9%

NOTES:

¹Net of renters' property tax refunds. Includes both the renter and landlord share of rental property taxes.

²Other taxes include motor vehicle registration tax, insurance premiums tax on personal insurance, and property tax on second homes (cabins).

³Excludes the property tax on rental housing.

Table 6-2 summarizes the distribution of the total burden by tax type for each decile. Business taxes, residential property taxes, and the consumer sales tax account for the largest percentage of taxes paid in the lowest deciles. Income tax accounts for only a small percent of tax paid in the first and second deciles. In the top deciles, income tax contributes the largest share of taxes paid, with almost half of the total tax in the tenth decile coming from the income tax. Another fifth of the top decile's tax burden comes from business taxes.

To evaluate the fairness or equity in the distribution of tax burdens by income level, tax burdens must be compared to the underlying distribution of income. The following section examines this relationship.

Overall Effective Tax Rates

One measure of tax equity is the effective tax rate, which is defined as the ratio of taxes paid to income. The effective tax rate provides a way to evaluate the equity of the tax burden at different levels of income. The distribution of tax burdens is characterized as progressive if the effective tax rate rises with income, proportional if it is constant for all income levels, or regressive if it falls as income rises.

Figure 6-2 shows overall effective tax rates for Minnesota's state and local tax system and summarizes the basic findings in this study. The actual effective tax rates are reported in *Table 6-3* and in more detail in Appendix *Tables D-1 through D-4*. The effective tax rate is shown on the vertical axis; population deciles are shown on the horizontal axis (each decile contains 10 percent of total taxpayers). The state and local tax system, except for the first decile, is close to proportional as measured by the Suits index discussed later. Effective tax rates vary from 10.7 to 12.0 percent for the second through tenth deciles, with the higher effective tax rates occurring in the upper deciles. The effective tax rate declines slightly in the top three deciles, falling from 12.0 percent (seventh decile) to 11.7 percent (top decile). *Figure 6-2* also shows effective tax rates for state and local taxes, including both business taxes and taxes on households in each. Except for the first decile, state taxes are only slightly progressive overall with slightly higher effective tax rates in the upper deciles. Effective tax rates for the local property tax (net of refunds) are highest in the middle deciles. Tax burdens in the first decile will be discussed in more detail below.

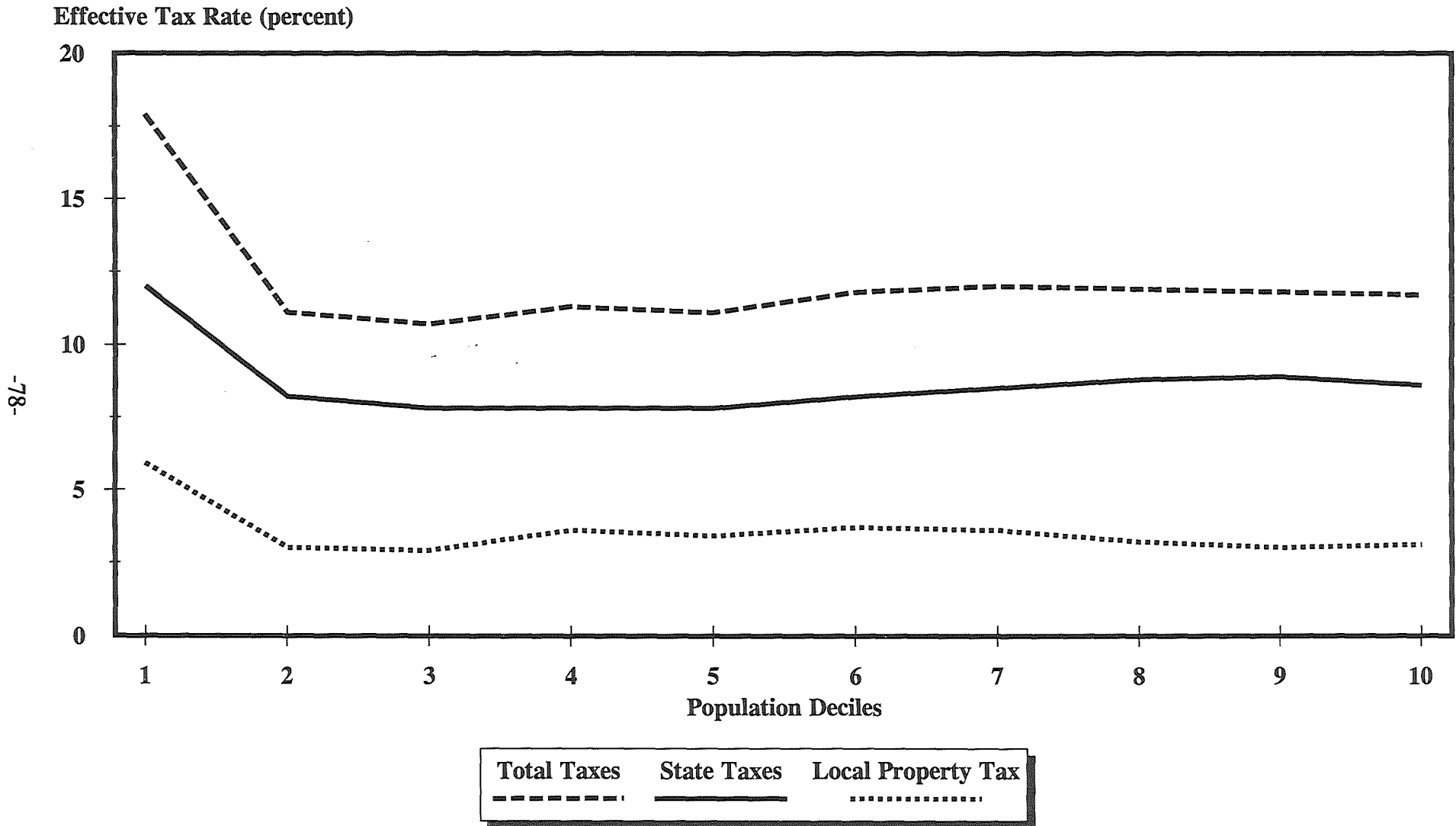
Effective Tax Rates by Type of Tax

As shown in *Figure 6-3*, taxes imposed directly on households are progressive overall, as effective tax rates increase from 7.5 to 9.6 percent from the

**Table 6-2
Percent Distribution of Burden
by Tax Type Within Deciles**

<u>Decile</u>	<u>Income Tax</u>	<u>Sales Tax</u>	<u>Excise Taxes</u>	<u>Residential Property Tax (Net of Refunds)</u>	<u>Other Taxes</u>	<u>Business Taxes</u>	<u>Total Taxes</u>
First	0.6%	20.5%	11.6%	25.8%	3.6%	37.9%	100.0%
Second	2.4	30.4	17.4	10.9	6.0	33.0	100.0
Third	10.7	26.2	14.2	12.5	6.5	29.9	100.0
Fourth	17.0	21.0	11.3	17.3	6.0	27.4	100.0
Fifth	23.3	18.9	10.2	17.7	5.7	24.3	100.0
Sixth	26.2	17.3	9.1	19.1	5.8	22.4	100.0
Seventh	30.3	16.5	8.2	16.9	5.5	22.6	100.0
Eighth	34.9	16.0	7.3	15.2	5.4	21.1	100.0
Ninth	39.6	15.0	6.1	14.8	5.3	19.2	100.0
Tenth	46.8	11.0	3.1	15.4	3.7	20.1	100.0
Total	35.6%	15.1%	6.6%	15.9%	4.9%	21.9%	100.0%
Top 5%	48.4%	9.8%	2.4%	15.6%	3.1%	20.6%	100.0%
Top 1%	52.5	7.7	1.3	14.3	2.2	22.0	100.0

Figure 6-2
Effective Tax Rates for 1990
Minnesota State and Local Taxes
By Population Deciles



NOTE: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses.

Table 6-3
Effective Tax Rates by Population Deciles
(All Taxpayers)

<u>Decile</u>	<u>Income Range</u>	<u>Taxes on Households</u>							<u>Total Taxes</u>
		<u>Income Tax</u>	<u>Sales Tax</u>	<u>Excise Taxes</u>	<u>Residential Property Tax¹</u>	<u>Other Taxes²</u>	<u>Total Household Taxes</u>	<u>Business Taxes³</u>	
First ⁴	\$4,610 - Under	0.2%	5.2%	2.9%	3.4%	0.8%	12.5%	5.4%	17.9%
Second	4,611 - 7,704	0.3	3.4	1.9	1.2	0.7	7.5	3.7	11.1
Third	7,705 - 11,970	1.1	2.8	1.5	1.3	0.7	7.5	3.2	10.7
Fourth	11,971 - 16,788	1.9	2.4	1.3	2.0	0.7	8.2	3.1	11.3
Fifth	16,789 - 21,802	2.6	2.1	1.1	2.0	0.6	8.4	2.7	11.1
Sixth	21,803 - 27,998	3.1	2.0	1.1	2.3	0.7	9.1	2.6	11.8
Seventh	27,999 - 35,716	3.6	2.0	1.0	2.0	0.7	9.3	2.7	12.0
Eighth	35,717 - 45,278	4.1	1.9	0.9	1.8	0.6	9.4	2.5	11.9
Ninth	45,279 - 61,289	4.7	1.8	0.7	1.8	0.6	9.6	2.3	11.8
Tenth	61,290 & Over	5.5	1.3	0.4	1.8	0.4	9.3	2.3	11.7
Total		4.2%	1.8%	0.8%	1.9%	0.6%	9.2%	2.6%	11.8%
Top 5%	\$80,228 & Over	5.6	1.1	0.3	1.8	0.4	9.2	2.4	11.6
Top 1%	171,283 & Over	5.9	0.9	0.1	1.6	0.2	8.7	2.5	11.2

NOTES:

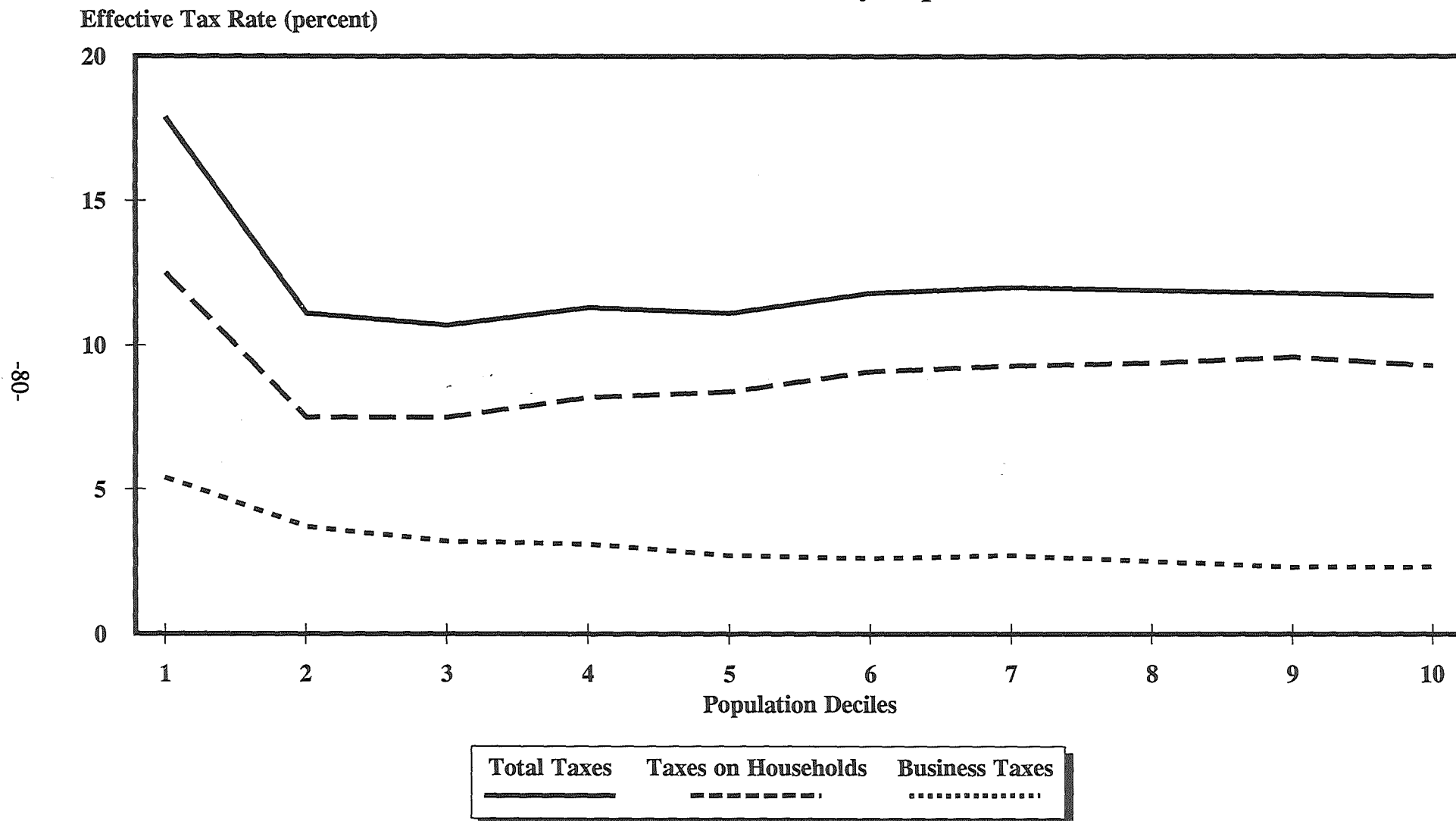
¹Net of renters' property tax refunds. Includes both the renter and landlord share of rental property taxes.

²Other taxes include motor vehicle registration tax, insurance premiums tax on personal insurance, and property tax on second homes (cabins).

³Excludes the property tax on rental housing.

⁴As explained later in this chapter, effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses. Unadjusted figures are reported in Appendix *Table D-1*.

Figure 6-3
Effective Tax Rates for 1990 Minnesota
Household and Business Taxes by Population Deciles



NOTE: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses.

second to the ninth decile as income increases. Business taxes, however, are somewhat regressive; that is, effective tax rates decline as one moves up the income scale.

Effective tax rates by population deciles for the six major categories of taxes in this study are presented in *Table 6-3* and are illustrated in *Figure 6-4*. The results show that the individual income tax is very progressive, while the five remaining taxes are all regressive. Because the individual income tax accounts for over a third of the total tax burden and is very progressive, it offsets the regressivity of the other state and local taxes. Hence, as a whole, the state and local system of taxation in Minnesota is close to proportional, as shown in *Figure 6-2*.

The Individual Income Tax

Because of its graduated structure and allowance of personal exemptions and deductions, the individual income tax is designed to be progressive. As shown in *Table 6-3*, effective tax rates do increase significantly as incomes increase. At the low end, the effective tax rate for the income tax equals 0.2 percent and 0.3 percent for the first and second deciles, respectively, and rises steadily to 5.5 percent for the tenth decile.

As shown above in *Table 6-1*, nearly 80 percent of the entire individual income tax burden is borne by the top three deciles (incomes above \$35,716), and these taxpayers account for 66 percent of money income. The middle four deciles account for most of the remaining tax, about 20 percent, while accounting for 28 percent of total income.

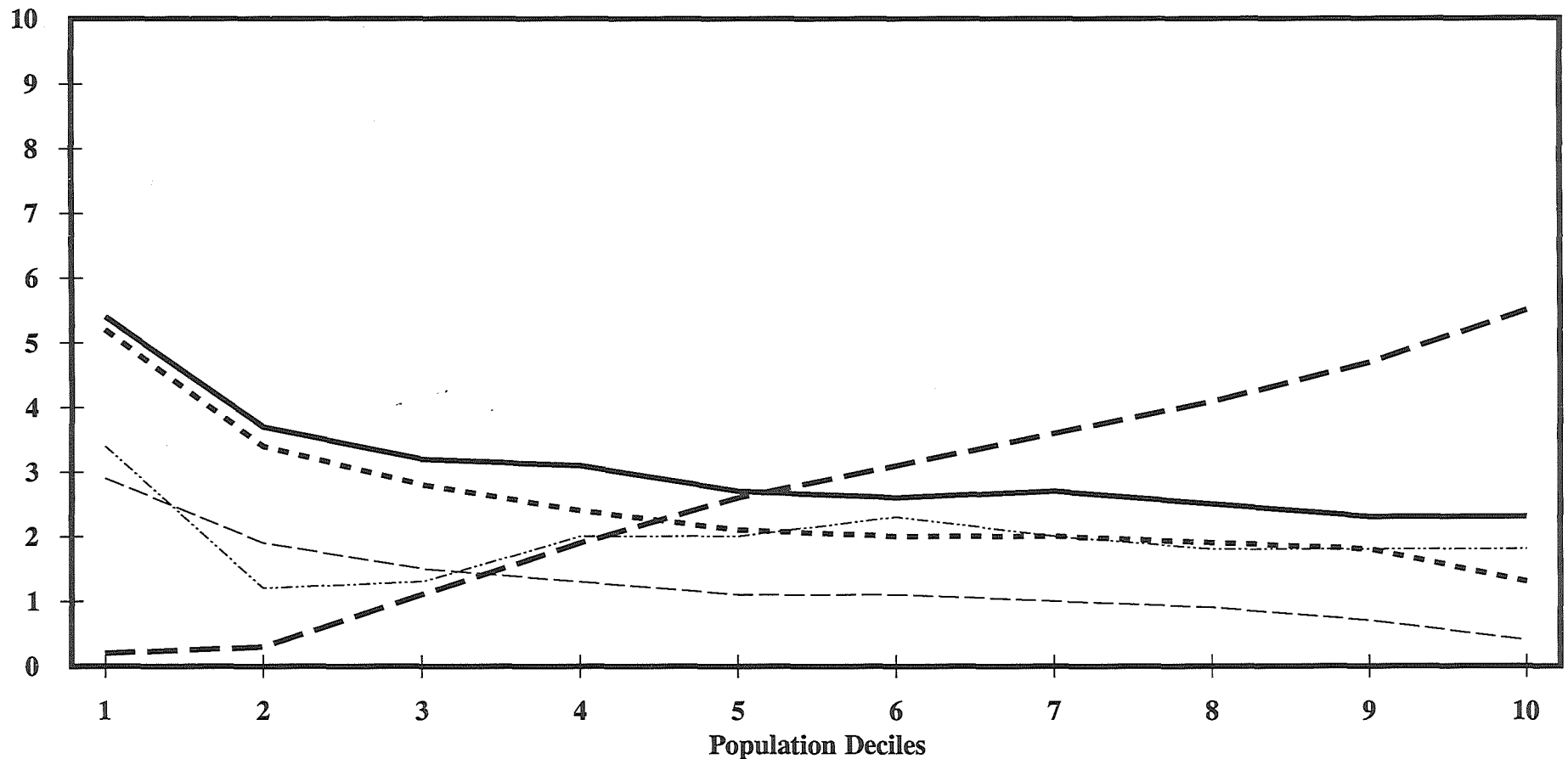
The individual income tax is the largest tax included in the analysis, representing over a third of the total taxes. It is also the only one of the six categories of tax that is progressive. As such, the individual income tax plays a crucial role in achieving overall equity in Minnesota's state and local tax system.

Sales Tax on Consumer Purchases

In agreement with most incidence studies, this analysis finds the consumer portion of the sales tax to be regressive, especially at the low end of the scale. (The sales tax on business purchases is included with the business tax category.) This is due to the fact that the share of income represented by taxable consumption tends to be smaller for high income households than for low income ones. Hence, tax burdens as a proportion of income tend to decline as one moves up the income scale.

Figure 6-4
1990 Effective Tax Rates by Tax Type
By Population Deciles

Effective Tax Rate (percent)



Business Taxes	Income Tax	Sales Tax	Excise Taxes	Residential Property Tax
—————	- - - - -	- - - - -

NOTE: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses.

The effective sales tax rate for the bottom decile is 5.2 percent, compared to the rate for the top decile of 1.3 percent (see *Table 6-3*). Households in the bottom decile thus pay an effective tax rate more than four times as large as the effective tax rate on households in the top decile. However, the effective tax rates for the third through ninth deciles, which represent 70 percent of all taxpayers, range from 2.8 to 1.8 percent.

Excise Taxes on Consumer Purchases

Three excise taxes are included in this study: gasoline, tobacco, and alcohol taxes. Because each is relatively small individually, the three were combined to arrive at one aggregate measure for this analysis. Like the sales tax, the excise taxes are regressive. This is predictable since lower income households spend a greater proportion of their income on consumer goods subject to the excise taxes than higher income households. As a result, effective excise tax rates are higher for low income households than for higher income ones. As shown in *Table 6-3*, the effective tax rate for the bottom decile is 2.9 percent. It ranges from 1.9 percent to 0.9 percent from the second to the eighth deciles; it declines to 0.4 percent for the tenth decile.

Residential Property Taxes

The tax incidence study provides information on the distribution of property taxes by decile which is important for property tax policy discussions. The incidence data base can be used to calculate effective property tax rates for renters, homeowners and all forms of residential property.

Homeowner Property Taxes. The property tax on owned homes, net of property tax refunds, is regressive. Generally, burdens decline as taxpayers move up the income scale. The net effective property tax rate for homeowners is 4.2 percent for the second decile and gradually declines to 1.5 percent in the tenth decile.

As shown in *Figure 6-5*, this regressivity is reduced by the impact of the property tax refund (PTR) program which targets relief on taxpayers with high property taxes relative to income. Comparing gross property tax rates (before refunds) to net effective rates (after refunds) shows that effective tax rates are reduced for low to moderate income taxpayers in the lower deciles. For example, the effective property tax rate for homeowners in the second decile is reduced by 1.3 percent, declining to 0.4 percent in the fifth decile.

Rental Property Taxes. This study's estimates of the property tax burden on renters is consistent with the approach used for business taxes more generally. Taxes on rental property, like taxes on other business property, might be totally shifted to renters, or they might be partially paid by the property owners. Using the methodology applied to business taxes more generally, this study estimates that a sizeable portion of the 1990 level of rental property tax (41 percent) is borne by the investors who own rental housing, the remaining share (59 percent) is assumed to be paid by renters in higher prices. The effective tax rate on renters is, therefore, lower than it would be if a greater percent or all of the tax was passed along in higher rents.

As shown in *Figure 6-6*, the gross property tax burden borne by renters (59 percent of the total tax on rental property) is regressive. Gross effective property tax rates gradually decline from 3.6 percent in the second decile to 2.5 percent in the fifth decile and to 0.7 percent in the tenth decile.

The pattern of net effective property tax rates is, however, very different. In this study, the entire amount of property tax refunds received by renter households is subtracted from the portion of the tax estimated to be borne by renters. As *Figure 6-6* illustrates, this offset dramatically reduces effective tax rates calculated in the lower deciles, and completely offsets the tax in the second decile (net effective tax rate equals 0.0 percent). The net effective property tax rate for renters increases from 0.7 percent in the third decile to 2.0 percent in the sixth decile, then falls to 0.7 percent in the top decile.

The rather unexpected relationship between gross and net property taxes on renters can be better understood by comparing the incidence assumption in the study to the incidence assumption implicit in the renter property tax refund program. In this study, renters are assumed to bear 59 percent of rental property taxes in the form of higher rents. However, the property tax refund program assumes that the entire property tax (100 percent) on rental property is borne by renters. For lower income renters actual property tax refunds may offset most or all of the property tax burden assigned to renters in this study.

As such, in every decile, the net property tax burden on renters is less than the net property tax burden on homeowners. While over half of the rental tax is shifted forward to renters, some of the burden falls on the property owners. In contrast, homeowners bear the entire burden of homeowner property taxes since

Figure 6-5

Comparison of Gross and Net Effective Property Tax Rates on Homeowners by Population Deciles

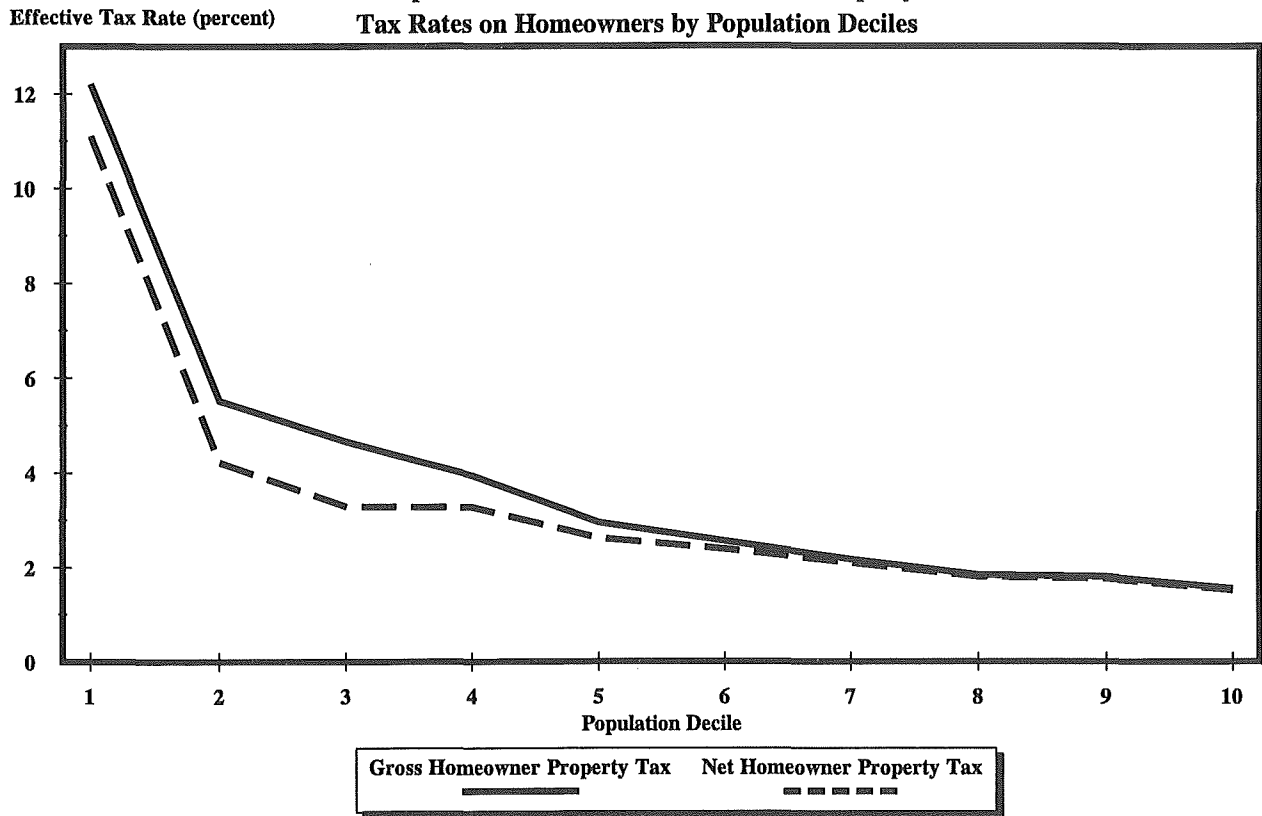
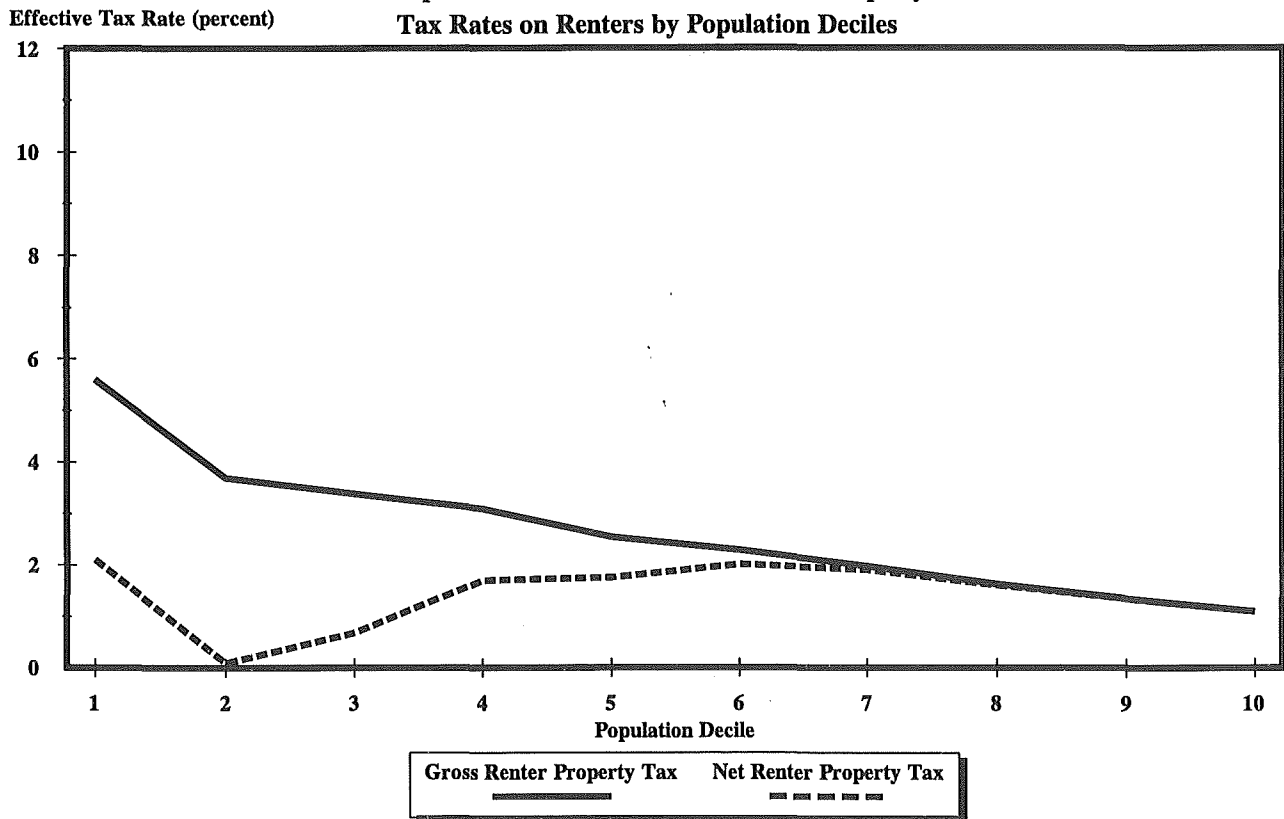


Figure 6-6

Comparison of Gross and Net Effective Property Tax Rates on Renters by Population Deciles



NOTE: Effective tax rates for the first decile reflect an adjustment to exclude a small number of households with negative income, primarily business losses. Also, effective tax rates for renters only reflect the portion of the property tax assumed to be borne by renters.

they are both the housing consumer and property owner.⁶⁵

Net Residential Property Taxes. The above discussions of property tax burdens included only property taxes paid by homeowners and renters. Alternatively, effective tax rates can be calculated for all property taxes on residential property regardless of who bears the tax.

As shown in *Table 6-3*, net effective residential property tax rates except for the first decile, are highest in the middle deciles. This distribution adds the portion of the property tax on rental housing assumed to be borne by the landlord to the taxes paid by homeowners and renters. The assumption that landlords bear a sizeable portion of the property tax on rental housing has a significant impact on this distribution and offsets the regressivity usually associated with overall residential property taxes.

Business Taxes

As shown in *Figure 6-1* above, business taxes account for 22 percent of the total tax burden on Minnesota residents. Business taxes include the following:

- Business property taxes (other than rental housing)
- Corporate franchise tax
- Sales tax paid on purchases of capital equipment and other intermediate inputs
- Motor vehicle registration fees paid by business
- Excise taxes paid by business (motor fuels and liquor)
- Insurance premiums tax on business insurance

Although the legal impact of each of these taxes falls on the business entity, each is partially shifted to consumers (in higher prices), labor (in lower wages), or to capital owners in a lower rate of return. Part of each of these taxes is also

⁶⁵A simple comparison of net homeowner and net renter property tax burdens is misleading. The net renter property tax burden includes only the burden on renters as consumers of housing. The net homeowner burden includes the total burden, both the burden on the housing consumer and the burden on the property owner. If property tax rates on homes and rental property were identical, then the share of the homeowner tax burden falling on the owner of the property would be the same as the share of the rental property tax falling on the owner of the rental property (here estimated to be 41 percent). Under Minnesota's class rate system, however, property taxes on rental housing exceed those on homes. As shown in Chapter 5, the portion of a state or local tax on capital shifted forward to consumers increases with the tax rate. As a result, the consumer share of the property tax on renters is much higher than the consumer share of the property tax on homeowners.

shifted to nonresidents. This study estimates the degree to which such shifting occurs and then allocates the estimated burden to Minnesota households based on each household's sources of income and patterns of spending. (An explanation of tax shifting and the method of estimating the incidence of business taxes for this study is found in Chapter 5.)

To determine the incidence of each business tax, the study first estimates tax payments made by the different business sectors (manufacturing, mining, retail trade, etc.). Then market characteristics of each business sector are used to estimate the degree to which taxes are shifted to consumers, labor, and nonresidents (see Appendix A for details). Finally, taxes paid by each of these taxpayer categories (factors) are distributed to individual households in the sample.

Table 6-4 summarizes the estimated incidence of business taxes. The overall burden of business taxes is shared almost equally by consumers (47 percent) and owners of capital (50 percent); labor bears the remaining 3 percent. Since capital ownership is concentrated among high income households, it is possible that business taxes are progressive.

However, the proportion of the business tax burden that falls on nonresidents is much higher for owners of capital than for consumers. Of the tax burden on capital, 67 percent is paid by nonresidents compared to 28 percent of the tax borne by consumers. As a result, *Table 6-3* and *Figure 6-4* show that the burden of Minnesota business taxes on Minnesota households is regressive. The effective tax rate falls continuously as income increases. The effective tax rate is 3.7 percent in the second decile; it falls to 2.3 percent in the tenth decile.

Table 6-4
Incidence of Minnesota Business Taxes by Taxpayer Category

<u>Taxpayer Category</u>	<u>Total Tax Burden</u>		<u>Exported to Nonresidents</u>		<u>Paid by Minnesota Residents</u>	
	<u>Percent</u>	<u>Amount</u> (\$millions)	<u>Percent</u>	<u>Amount</u> (\$millions)	<u>Percent</u>	<u>Amount</u> (\$millions)
Capital:	50.0%	\$1,596	71.6%	\$1,065	31.2%	\$531
Corporate	35.3	1,126	68.1	1,014	6.6	113
Noncorporate	14.7	470	3.5	52	24.6	418
Labor	3.4	107	0.0	0	6.3	107
Consumers	46.6	1,486	28.4	423	62.5	1,063
Total	100.0%	\$3,190	100.0%	\$1,488	100.0%	\$1,702

Other Taxes

Other taxes include the motor vehicle registration tax paid directly by households, the insurance premiums tax paid on personal insurance (homeowner, motor vehicle, life, health, and accident), and the property tax on cabins. As shown in *Table 6-3*, the sum of these three taxes is regressive.

Effective Tax Rates in the First Decile

As shown in *Table 6-3*, low income taxpayers in the first decile have significantly higher sales, excise, net property, and business tax burdens than taxpayers with higher incomes. The total effective tax rate of 17.9 percent for taxpayers in the first decile is much higher than the rate in other deciles. This 17.9 percent effective tax rate includes an adjustment to exclude households with negative incomes, as discussed below. (Without this adjustment, the effective tax rate for the first decile is even higher (26.7 percent) as shown in *Appendix Table D-1*). These higher effective tax rates require further discussion and explanation.

The unadjusted effective tax rate for the first decile is overstated for several reasons. First, the lowest decile includes households who have temporarily low incomes or have better overall economic well-being than is indicated by money income in 1990. A portion of retirees, for example, may be living primarily on savings or other assets but report small amounts of annual money income received. Due to unemployment or business fluctuations, some households who normally have higher incomes are also included in the first decile.

One identifiable group of first-decile households is particularly noteworthy. About 7 percent of all first-decile households are in this decile only because they reported business losses for income tax purposes in 1990, and almost all of these 14,000 households had *negative* household income. Although their average loss was \$27,000, their average tax burden was estimated to be \$2,936.⁶⁶ Few of these households are actually poor. A high percentage are homeowners, with homes valued over \$70,000, on average. Most had significant amounts of business activity as sole proprietors or partners, and the reported losses are probably temporary.⁶⁷ *Excluding this small group of households with negative income from*

⁶⁶In this study, households with large business losses and negative income (due perhaps to large depreciation deductions) were assumed to still bear large amounts of business taxes. In addition, all households were assumed to bear a minimum amount of sales and excise taxes.

⁶⁷Slemrod (1992) found that U.S. households who reported negative incomes in 1983 (averaging -\$23,000) had positive incomes averaging over \$35,000 between 1979 and 1985. He

the first decile reduces the effective tax rate from 26.6 percent to 17.9 percent.

Another reason why effective tax rates for the first decile are overstated concerns the measurement of income. The incidence sample does not identify all sources of income. Over 50 percent of first-decile households filed neither an income tax nor a property tax refund return. These nonfilers may have sources of income which were not identified in this study. In 1990, a single-person household with income below \$5,300 (the sum of the personal exemption and the standard deduction) was not required to file an income tax return; for a couple, the filing threshold was \$9,550. As such, income in the first decile is understated in some cases where return filings are not required. An underestimate of household income generally causes effective tax rates to be overestimated.⁶⁸

Household income is also underestimated in the Consumer Expenditure Survey used to estimate sales and excise tax burdens. To the extent that income is subject to relatively greater underreporting than consumption, the spending ratios calculated from CES will be overstated, again resulting in effective tax rates being overestimated.⁶⁹ This seems particularly likely for low-income households. Poterba (1991, p. 157) argues that the high ratios of spending to income found for low-income families in CES results from the systematic underreporting of income. In describing the accuracy of the data, he refers to the bottom of the CES income distribution as "noise" (1991, p. 151).

A final reason why the effective tax rates for the lowest decile may be overstated concerns the definition of a household. An unknown but significant number of low-income households might more accurately be considered members of another household. Almost half of these households are single adults living with family members. They also include a significant number of elderly parents living with children.

concluded: "Not only are these people not poor, but on average they are solidly middle class" (p. 117).

⁶⁸For sales and rental property taxes, the tax is estimated as a portion of income. If income is underestimated, so is the tax. But the estimated tax changes proportionally by more than income, so the effective tax rate rises.

⁶⁹To partly adjust for the unreliability of the CES data, the ratio of consumption to income is adjusted downward for the lowest decile. This adjustment is largely offset, however, by another adjustment for those with low or negative incomes. In computing sales, excise, and rental property tax burdens, those with incomes below \$3,000 were assumed to spend as if they had incomes of \$3,000. Even those with zero income were assumed to have some taxable purchases.

The problems with interpreting tax burdens in the first decile have been recognized in other tax incidence studies. The Wisconsin study excluded all households with incomes below \$3,000, partly because "sole proprietors and farm families report very low or negative incomes" (Wisconsin, 1979 p. 58). In the most comprehensive study of federal, state, and local tax burdens, Pechman (1985) totally excludes the lowest 5 percent of all households. According to Pechman, this is designed to "compensate for the overstatement of tax burdens at the lower end of the income distribution in annual data..." (1985, p. 51).

While this study does adjust for negative incomes for a small number of households, no attempt has been made to adjust for possible underreported income or for other differences between transitory and long-run measures of income. Consequently, money income at the low end of the income distribution does not provide an accurate measure of overall economic well-being in the first decile. As such, effective tax rates in the first decile are overstated by an unknown but significant amount.

The Suits Index

The previous sections looked at effective tax rates for each of the six categories of taxes examined in this study. The effective tax rate -- that is, the ratio of taxes paid to income -- can be used to compare tax burdens across income categories. However, it is difficult to summarize the overall distribution of a tax (progressive, proportional or regressive) from the individual effective tax rates. This section uses the Suits Index as a summary measure of the overall distribution for a specific tax.

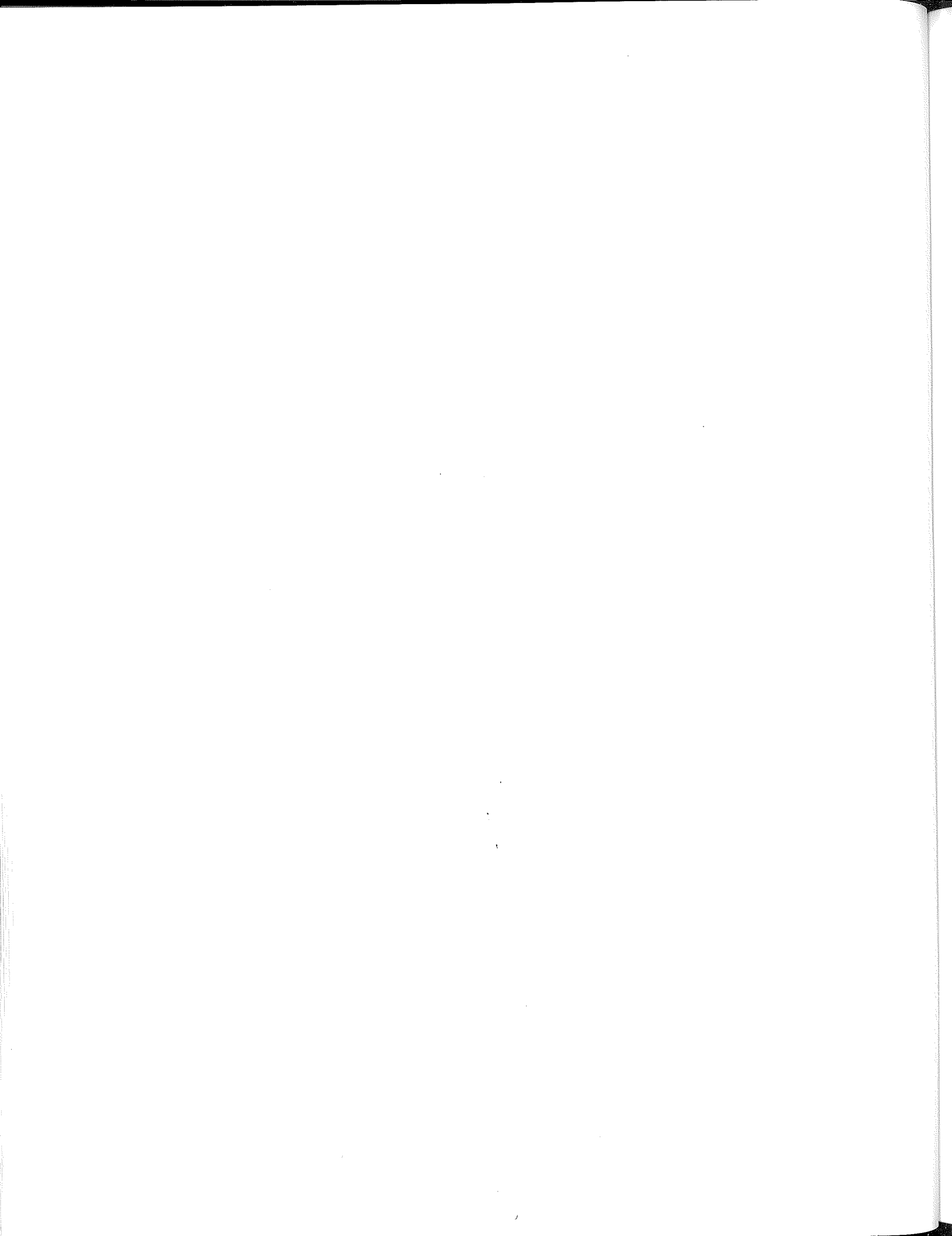
As explained in *Appendix C*, the Suits Index is based on the tax concentration curve which graphs the cumulative percentage of the total tax burden against the cumulative percentage of total income. A proportional tax is presented graphically by a diagonal (45-degree line) and has a Suits Index equal to zero. A progressive tax is represented by a concentration curve below the diagonal and has a positive index. In the extreme case, when the total tax burden is paid by those in the highest income bracket, the index has a value of +1.0. For a regressive tax, the tax concentration curve lies above the diagonal and has a negative index value of between 0 and -1. The further the concentration curve is above the diagonal, the more regressive the tax.

The Suits indexes for the taxes in this study are:

<u>Tax Category</u>	<u>Suits Index</u>
Excise Taxes	- 0.28
Consumer Sales Tax	- 0.15
Other Taxes	- 0.10
Business Taxes	- 0.07
Net Residential Property Tax ⁷⁰	- 0.03
Personal Income Tax	+ 0.17
State Taxes	+ 0.01
Total Taxes	- 0.00

The only progressive tax is the personal income tax with a positive Suits index of +0.17. The excise tax is the most regressive, followed by the sales tax. Taken as a whole, the system of Minnesota taxes is close to proportional (a Suits index of -0.004). If one excludes the locally-imposed property tax, however, the system becomes slightly progressive (+0.01).

⁷⁰The Suits index for the gross property tax is -0.09.



Chapter 7

Detailed Results for Different Household Types

Introduction

This chapter provides additional information on the demographic characteristics of households in each decile; these characteristics vary greatly by decile. The lower deciles are much more likely to be single-person households and elderly households. Only a small proportion of the households in the lowest deciles include children. In contrast, most of the upper decile households are married couples and families. These detailed characteristics provide further information that can be used to analyze and interpret the results of this study.

Demographic Characteristics of Each Decile

The demographic characteristics of the incidence sample vary greatly across the ten deciles. As shown in *Figure 7-1*, 85 percent of households in the first two deciles are single-person households. Only about 10 percent of the households in the first decile and 15 percent of the households in the second and third deciles include children. In contrast, only 7 percent of households in the top two deciles are single-person households, while 60 percent include children.

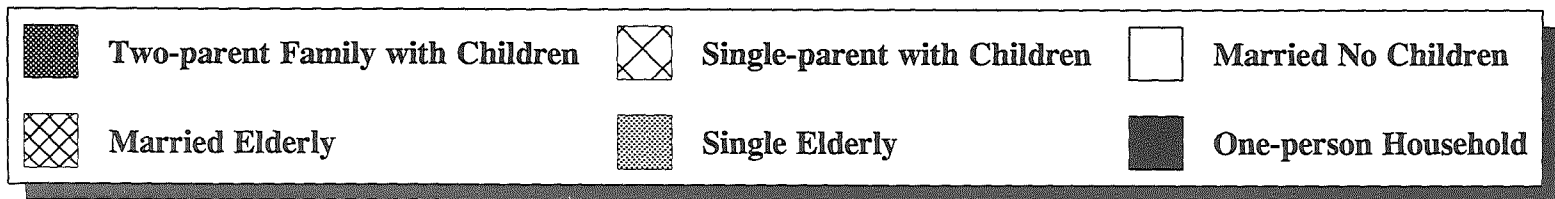
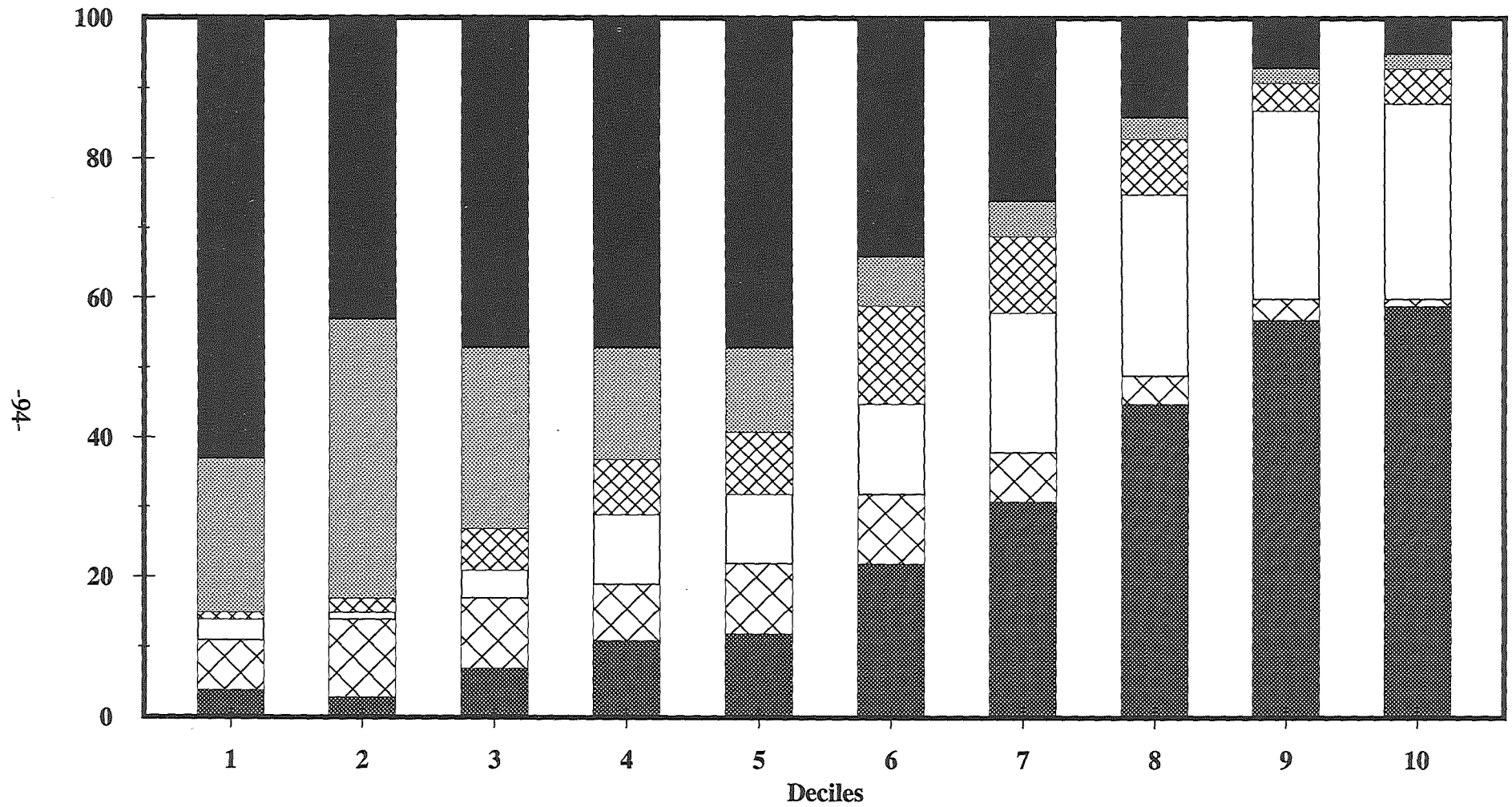
Figure 7-1 also shows that elderly households (both married and single) account for over 40 percent of all second decile households and over 30 percent of all third decile households. In the lowest deciles, single elderly far outnumber elderly couples; in the top deciles, elderly couples are more common than single-person elderly households.⁷¹

Households with children are primarily single-parent households in the first three deciles. The percent of households with children that include two parents increases fairly steadily with income. About 85 percent of the total number of

⁷¹For most households the incidence sample includes no breakdown by age. Here elderly is defined as all Social Security recipients not known to be under age 62 years of age whose Social Security benefits are at least twice as large as earned income. This category therefore excludes some over age 65 (who have not retired) and includes some under age 65 (those retiring at age 62 plus some who are disabled).

Figure 7-1
Households by Family Type

Percent of all Households



households in the top two deciles include married persons, with or without children.

Figure 7-2 shows how housing status varies with income. As expected, homeownership rates rise steadily with income, from 21 percent in the first decile to 91 percent in the tenth decile. The first decile contains 1.5 renter households for every homeownership household; the tenth decile contains 11.5 homeowner households for every renter household. Farm homesteads are spread fairly evenly among all deciles, but with more in the top five deciles than in the bottom five deciles.⁷²

A substantial proportion of households in the first five deciles are classified as neither homeowners nor renters. (See *Figure 7-2*.) This "other" category is largely the result of this study's definition of a household. While census data generally defines a household to include all living in a particular housing unit, this study (like other tax incidence studies) generally defines a household as a taxpayer, a taxpayer's spouse, and all others claimed as dependents for income tax purposes.

This study has estimated the number of households in the "other" category using census data for Minnesota. The study estimates the number of unrelated individuals sharing apartments and treats them as sharing the burden of rental property taxes. Related households living together are treated differently, however. Students and other older children living with parents (but not claimed as dependents) or elderly parents living with children are assumed to pay no property taxes. These secondary households make up most of the group labelled "other" in *Figure 7-2*. While it might make sense to combine these households into one single household (as in Census data), the incidence sample provides no means of matching such secondary households with a primary household. As a result, a substantial number of lower-income households in the incidence sample do not fit the usual definition of a household. The sizeable number of these households should be kept in mind when interpreting the overall incidence results.

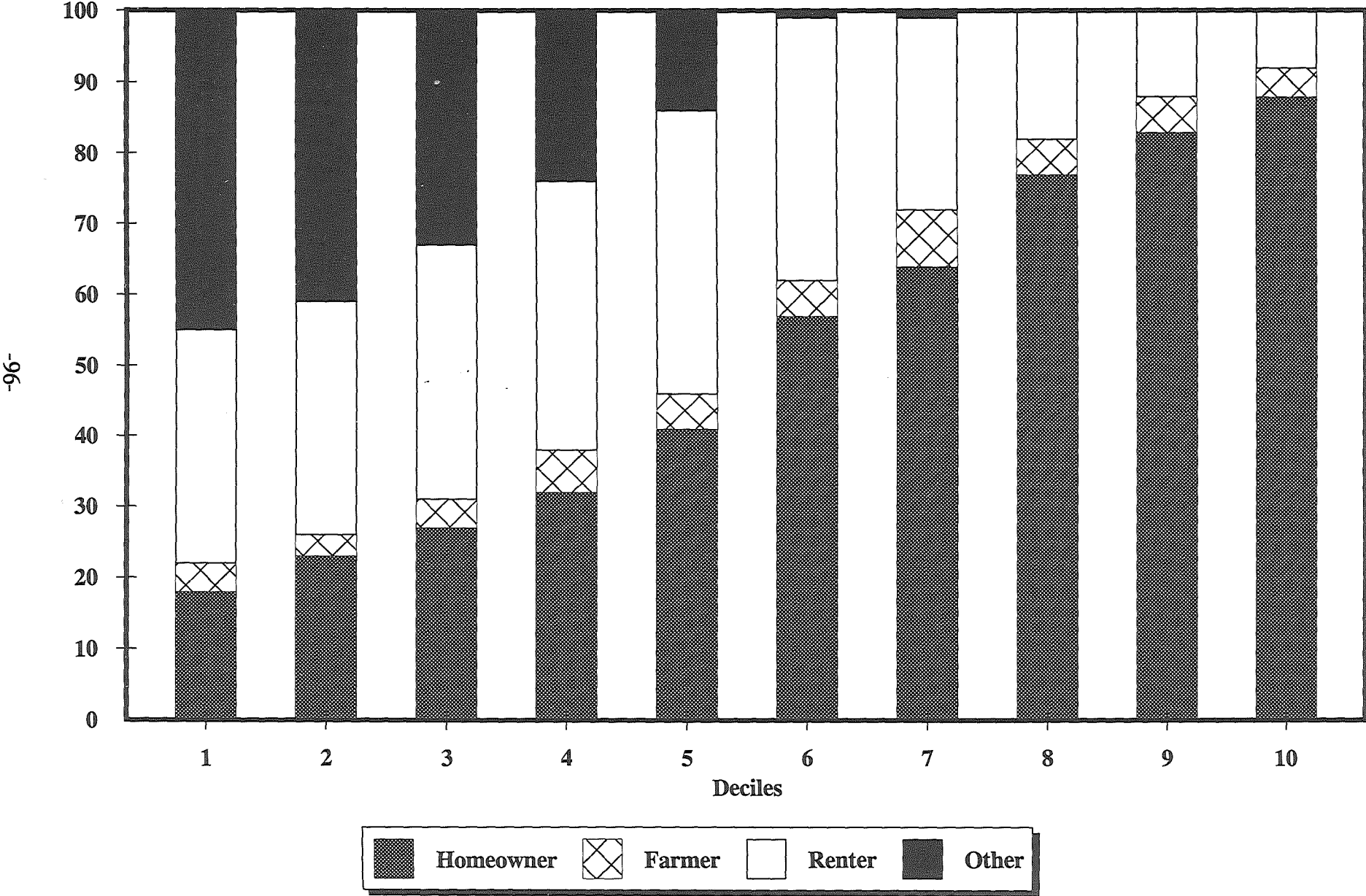
Detailed Incidence Results for Five Different Household Types

The differences in household types and their housing tenure make it difficult to interpret overall incidence results, particularly in the lower deciles. To compare

⁷²Farm households include only those living on farm homestead property. This excludes active farmers who farm only rented land or do not live on a farm homestead. In this study, "homeowners" generally include only non-farm homesteads, but the homeownership rates in this chapter include both farm and non-farm homesteads.

Figure 7-2
Housing Tenure by Decile

Percent of all Households



tax burdens and summarize some of the detailed results, *Table 7-1* shows average tax burdens by household type for taxpayers in the third decile (lower incomes), sixth decile (middle incomes), and the ninth decile (higher incomes). This information makes it possible to compare burdens for each tax for different types of households having the same overall income. These average tax burdens reflect "representative households" for each decile.

The variation in individual income tax burdens (see *Table 7-1*) reflects the allowance of income exclusions, exemptions and deductions for different household types. Retired elderly households have the lowest income tax burdens. This is because relative to total income, a larger part of their income, such as social security benefits, is exempt from tax. Single person households have the highest income tax burdens.

As would be expected, the highest sales and excise tax burdens occur for married couples and families, due to their higher levels of consumption. The examples also show that business taxes are a significant proportion of overall tax burdens. Higher income retired elderly and married households have the largest business tax burdens, reflecting the size of their overall capital ownership and consumption levels.

Appendix *Tables E1 through E5* provide additional detailed information, showing how effective tax rates vary with income for each of five separate demographic groups:

- Retired elderly households
- Single-person (non-elderly) households
- Single-parent families
- Married (non-elderly) couples with no children
- Married couples with children

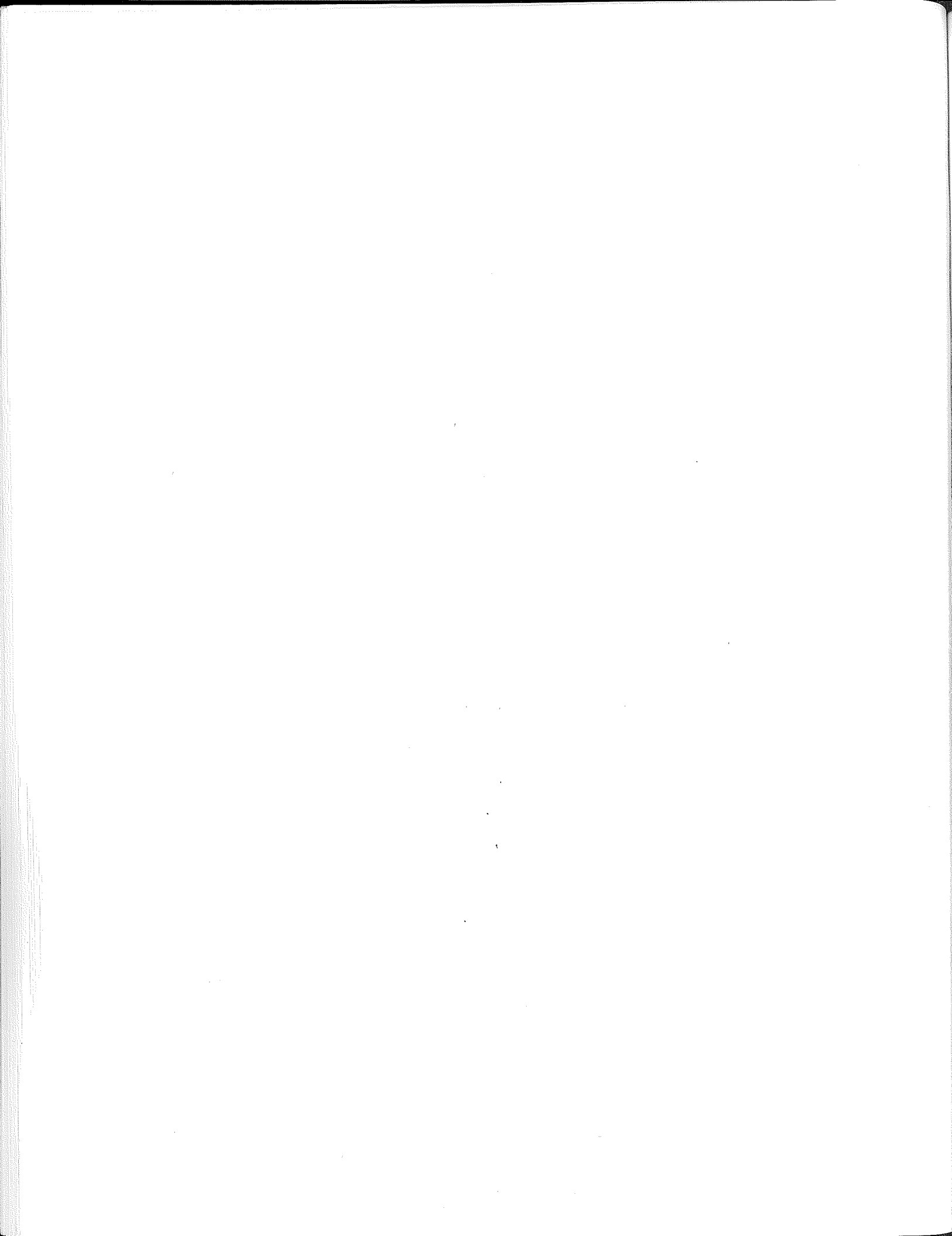
These detailed tables show the number and characteristics of each type of household by population decile. Information for each group and decile includes household size, household income, housing status (including average rent and home value), average tax burden (for each tax), and effective overall tax rates.

Table 7-1
Average Tax Burdens by Household Type and Income Level¹⁾

	<u>One-Person Households</u>	<u>Retired Elderly</u>	<u>Single Parent Families</u>	<u>Married No Children</u>	<u>Married With Children</u>
Third Decile Households					
Net Property Tax:					
Homeowners	\$391	\$307	\$289	\$367	\$283
Renters	137	(10)	(9)	35	41
All Taxpayers	91	164	73	154	163
State Income Tax	230	0	3	28	(8)
Sales Tax	246	261	350	358	361
Excise Taxes	125	137	209	200	242
Other Taxes	50	60	110	123	134
Business Taxes	282	334	341	458	554
Total Taxes	\$1,023	\$956	\$1,086	\$1,319	\$1,446
Effective Tax Rate	10.5%	9.9%	11.3%	12.8%	14.5%
Sixth Decile Households					
Net Property Tax:					
Homeowners	\$645	\$600	\$537	\$604	\$545
Renters	507	435	445	488	463
All Taxpayers	549	550	497	542	487
State Income Tax	1,182	304	798	729	545
Sales Tax	447	517	542	549	543
Excise Taxes	200	257	307	285	353
Other Taxes	124	182	179	215	201
Business Taxes	528	743	601	795	914
Total Taxes	\$3,030	\$2,553	\$2,922	\$3,115	\$3,043
Effective Tax Rate	12.3%	10.2%	11.9%	12.5%	12.1%
Ninth Decile Households					
Net Property Tax:					
Homeowners	\$1,259	\$945	\$1,120	\$891	\$899
Renters	658	663	645	650	660
All Taxpayers	1,102	836	967	825	854
State Income Tax	2,961	1,930	2,210	2,734	2,328
Sales Tax	727	841	898	901	975
Excise Taxes	249	313	364	344	415
Other Taxes	169	236	301	323	363
Business Taxes	1,190	1,698	1,243	1,236	1,246
Total Taxes	\$6,398	\$5,853	\$5,983	\$6,362	\$6,181
Effective Tax Rate	12.3%	11.2%	11.8%	12.1%	11.8%

¹⁾The third decile includes households with 1990 incomes of \$7,705 to \$11,970; the income ranges for the sixth and ninth decile are \$21,803 to \$27,998 and \$45,279 to \$61,289, respectively.

Effective tax rates are shown both for all households and separately for renters and homeowners (excluding those in the "other" category). In some deciles, the number of households of a particular type is very small. For example, single-parent families account for only one percent of all tenth-decile households. Whenever a particular household type accounts for less than 5 percent of a decile's households, the numbers in the Appendix tables may include some error resulting from the small sample size for that particular cell.



CHAPTER 8

CONCLUSIONS

The purpose of the tax incidence study is to identify who pays Minnesota's taxes. This information is needed by policymakers as they consider future changes in Minnesota's tax system. This section highlights results from the study which should be considered in evaluating tax policy options. It also includes a brief discussion of the probably impact of tax law changes since 1990 on the distribution of Minnesota tax burdens.

Overall Progressivity

The most important conclusion from the tax incidence report is that Minnesota's state and local tax structure is close to proportional (as measured by the Suits index) for the 90 percent of state taxpayers falling in the second to tenth population deciles who pay almost 99 percent of all taxes included in this study.⁷³ Only in the first decile are measured effective tax rates significantly higher than the overall average of 11.8 percent due to high sales and net property tax effective tax rates. Given the results of this study, the critical policy issue is what changes, if any, should be made in this distribution.

In addressing this policy issue it should be recognized that a proportional state-local tax system is unusual; what little multistate information there is suggests that most states have regressive distributions of state-local tax burdens. Pechman (1985) found that state and local taxes in the aggregate were clearly regressive under the assumption that consumers pay the property tax through higher prices for housing and other consumer products and services. An interstate study by the Citizens for Tax Justice (1991) comparing effective tax rates for major state-local taxes concludes that only two states, Vermont and Delaware, have even slightly

⁷³This is essentially the same conclusion reached in the previous study for 1988, which excluded business taxes. However, in addition to adding business taxes, this study includes a number of estimation and methodological changes compared to the first study. Consequently, the detailed results for each tax are not directly comparable to the 1988 results. Therefore, no attempt is made to analyze changes in the tax system between 1988 and 1990. Future studies including all state and local taxes will allow for a more consistent comparison to the 1990 results.

progressive overall tax systems (before the federal offset).⁷⁴

While state personal income taxes are recognized as being progressive, the results of the Minnesota tax incidence study, as well as studies by other researchers, show that state and local tax systems, including all types of taxes, are generally regressive or proportional at best. It is clear from the Minnesota picture that heavy reliance on a significantly progressive personal income tax is necessary to offset the regressivity of other state-local taxes to achieve even a proportional tax distribution.

Balanced State and Local Revenue System

There are, however, limits to how much weight can be given to the income tax to achieve greater progressivity. Two significant limiting factors are Minnesota's income tax progressivity relative to other states and the balance in Minnesota's revenue system. A balanced system is needed because it is not possible to design a single tax that achieves all desired tax-system objectives, including *fairness* (horizontal and vertical equity), *efficiency and accountability*, *competitiveness and reliability* (revenue stability and long-run responsiveness). Progressivity, although an important objective, is only one of several often conflicting objectives.

The Department of Revenue's *Model Revenue System* (1992), which discusses the tax-system objectives in some detail, recommends that Minnesota's individual income tax provide 25 to 30 percent of total state and local taxes. This target share for income taxes is necessary to provide a balanced tax system.

Currently, Minnesota's personal income tax is at the high end of the target range, accounting for over 29 percent of total state-local taxes. Increased reliance on the income tax would make it more difficult to achieve other important revenue-system objectives. Of particular concern would be revenue stability. High dependency on an income tax which is also very progressive makes the whole revenue system more sensitive to economic conditions. This would increase the volatility of state revenues over the economic cycle.

Minnesota's ability to increase top income tax rates relative to other states is ultimately constrained by interstate tax competition for business and individuals.

⁷⁴The measure of progressivity used in the Citizens for Tax Justice report is the ratio of effective tax rates for the average taxpayer in the top one percent of the income distribution compared to the rate for the average taxpayer in the bottom twenty percent of the income distribution.

A recent study of 1991 individual income tax burdens (Minnesota Department of Revenue, 1992) indicates that Minnesota's income tax progressivity is high relative to other states. Minnesota's interstate ranking in terms of income taxes on wages and salaries jumps from 38th for taxpayers with wages of \$7,500 to 7th for taxpayers with wages of \$100,000 and above.

Interstate Comparison

In evaluating policy options which would affect the distribution of Minnesota state and local tax burdens, consideration should be given to Minnesota's interstate rankings for the taxes included in the incidence study. Comparisons of the aggregate tax burdens for each tax across states provide a useful benchmark for evaluating Minnesota's tax structure. This is particularly important in addressing the objective of competitiveness.

Measured by the ratio of taxes collected to state personal income, Minnesota's interstate tax rankings in fiscal year 1991, the latest year available, were:

<u>Tax</u>	<u>Ranking</u>
Property tax (all property)	19
Individual income tax	5
State sales tax	20
Excise taxes (gasoline, tobacco and alcohol)	18
Total state and local taxes	8

Minnesota's rank of 5th in the U.S. in the aggregate individual income tax burden reflects the State's relatively heavy reliance on the income tax. In contrast, Minnesota's property tax burden for all types of property was 19th highest in 1991 and the state sales tax burden was 20th in the nation.⁷⁵ Including all state and local taxes, Minnesota ranked 8th in fiscal year 1991.

Recent Tax Changes

A number of tax changes passed since 1990 have affected the distribution of tax burdens for the taxes studied in this report. Because the tax incidence database reflects income and tax information for 1990, the results of the tax

⁷⁵The state sales tax rankings do not include the motor vehicle excise tax. If these taxes in lieu of the sales tax are included for the states, Minnesota's sales tax ranking climbs from 20th to 17th in 1991.

incidence study do not include these changes. This section describes the changes since 1990 and summarizes the probable impact (estimated for the 1992 tax year) on the distribution from other data sources or simulation models.

The most significant changes since 1990 were enacted during the 1991 legislative session. For the individual income tax, the 1991 tax bill adopted federal changes which phase out personal exemptions and itemized deductions for high-income taxpayers. The top marginal tax rate was increased from 8 percent to 8.5 percent and a refundable working family credit, based on 10 percent of the federal earned income credit, was enacted. The working family credit was increased to 15 percent in 1993.

Although taxpayers at most income levels were not impacted, the 1991 changes added to the progressivity of the income tax. The increase in income taxes (\$40 million in fiscal year 1993) mainly affected high income taxpayers. In aggregate, income taxes were increased by an estimated four percent for taxpayers with incomes corresponding to the top decile (\$61,290 and above) in this study. Tax relief (\$10 million) was provided for low income individuals eligible for the new working family credit which slightly lowered effective tax rates in the lower-income deciles. Overall, the progressivity of the income tax was increased relative to the 1990 law.

The most significant change made in 1991 was the adoption of a one-half cent local option sales tax which raises an estimated \$196 million currently. (The revenue from the rate increase is deposited in the Local Government Trust Fund to help fund property tax relief.) In effect, the total general sales tax rate was raised from 6 percent to 6.5 percent. The change in the sales tax rate is essentially a proportional sales tax increase for all consumers. However, because the sales tax is a greater percentage of the total tax burden for lower-income taxpayers, this change alone increases the regressivity of the state and local tax system.

Numerous property tax changes were also made in 1991. For residential property, class rates on rental housing and middle to high-valued homes were reduced. Specifically, the class rate on the top tier of homestead market value was reduced from 3 percent to 2.5 percent for taxes payable in 1992 (and to 2 percent for taxes payable in 1993), and the 1 percent class rate was extended from \$68,000 to \$72,000. The class rate for commercial and industrial property was also reduced. Changes in local government aid payments and in levy limits also affected the amount of total property tax paid.

For overall property taxes, effective tax rates have increased since 1990, in part from both state aid payment changes and local property tax rate increases.

State class rate changes in 1991 and 1992 have primarily affected the distribution of property taxes, not the overall level. For homeowners, effective tax rates have increased the most for middle-valued homesteads (based on estimates for taxes payable in 1992). Effective tax rates for renters have risen less than those for homeowners, and by only a modest amount for aggregate business property taxes. As such, the 1991 changes add to the regressivity of the property tax for homeowners. The overall change for total residential and business property taxes since 1990 is a slight increase in the estimated regressivity of the tax.

The excise tax on cigarettes has increased twice since 1990. In 1991, the rate was increased from 38 cents to 43 cents per pack. The rate was increased to its current 48 cents per pack in 1992. These changes have increased effective tax rates by a small amount for low income taxpayers.

Summarizing the recent changes, increased progressivity in the income tax has roughly offset the increased regressivity of sales, excise and property tax changes. Therefore, the overall change in the total distribution of state and local revenue for estimated 1992 taxes, compared to 1990, is only a very slight increase in regressivity.

Summary

An important policy implication highlighted by the results in this report is that questions of vertical equity or fairness in the distribution of state-local tax burdens in Minnesota must be addressed within the context of the entire system of state and local taxes. It is the combined impact of income taxes, sales and excise taxes, and property taxes that should be the focus of the equity debate.

Each tax plays a different role in achieving the multiple tax system policy objectives of understandability, fairness, competitiveness, reliability and efficiency. For example, a progressive state income tax is needed to offset regressive state and local taxes, and regressive excise taxes may be justified on the basis of being benefit charges or taxes which compensate for external costs generated by private consumption decisions. A recognition of these roles is necessary to determine the most effective way to achieve the desired degree of equity in the Minnesota state and local tax system.



APPENDIX

This appendix includes several sections that provide additional information as a supplement to this report.

Appendix A provides a more detailed explanation of the methodology used to determine the incidence of each business tax.

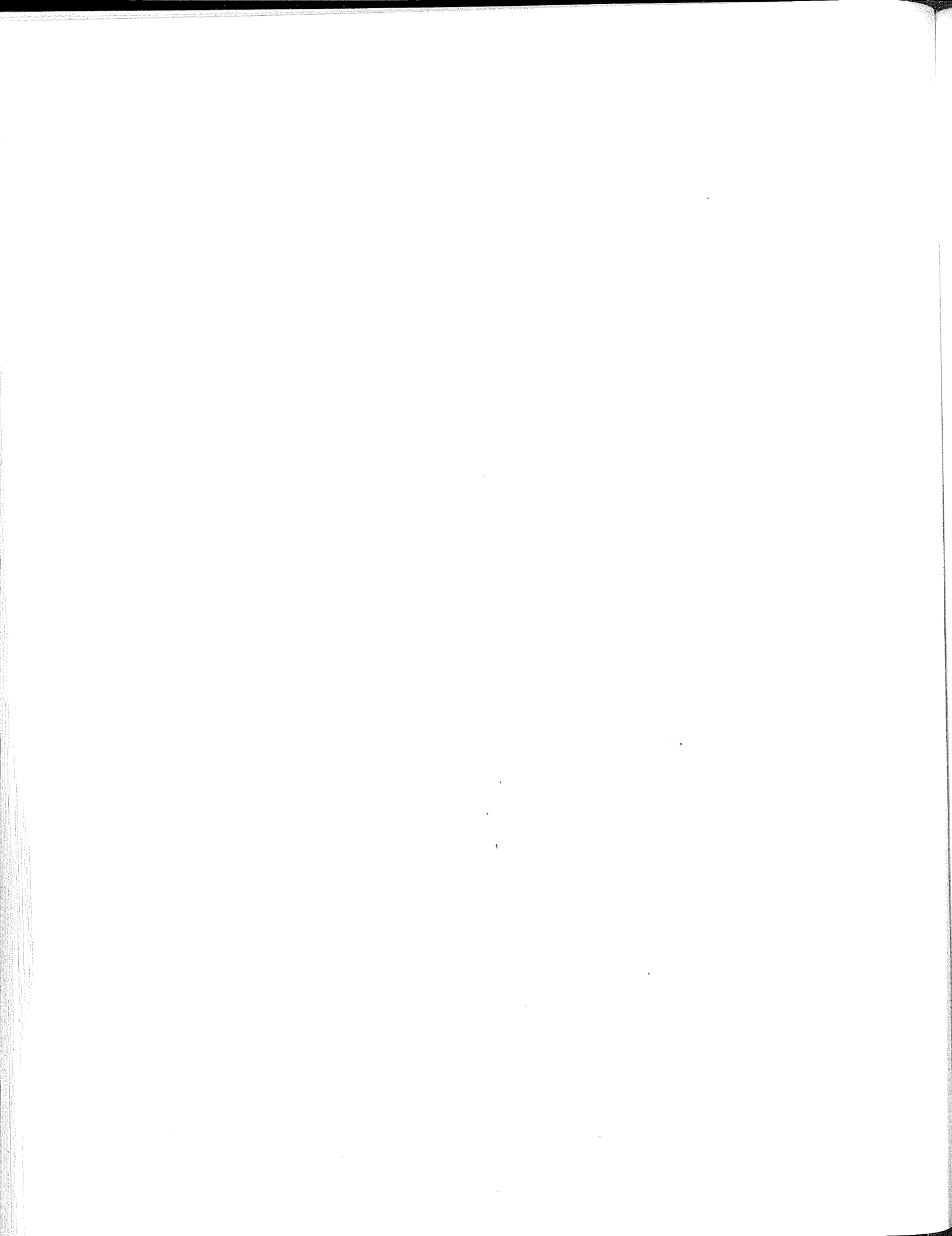
Appendix B compares the incidence of an incremental increase in Minnesota taxes (an increase unmatched by changes in taxes in other states) to the results of this study which are based on the incidence of existing taxes.

Appendix C describes the Suits index which is used to measure the overall progressivity or regressivity of state and local taxes.

Appendix D includes several tables that contain detailed information on the distribution of income, taxes and tax burdens by population deciles. These tables also provide breakdowns by types of taxpayers including homeowners, renters and other taxpayers.

Appendix E includes tables showing household characteristics and representative tax burdens by household type. Detailed information is shown for five household types, including single, retired elderly, single parent families, married families with children and married couples without children.

A copy of the legislative mandate for the tax incidence study is also included.



APPENDIX A

ADDITIONAL DETAILS ON THE INCIDENCE OF BUSINESS TAXES

Business Property Taxes

Total Taxes by Sector

Minnesota business property tax collections are reported separately for eleven types of business property -- manufacturing, commercial, apartment, non-homestead residential, public utility, farm, vacant land, railroads, timber, seasonal recreational, and minerals. The incidence of the property tax is estimated separately for each of these eleven sectors. The tax on each sector is divided into the four parts described in Chapter 5.

The 4-Part Division of the Property Tax. The land share of the property tax is calculated using Minnesota county assessment records, which provide separate market values for land and structures. The land share for farms is adjusted to exclude the value of the house, garage and one acre, which is not considered to be business property. The estimated land share for each sector is shown in *Table A-1*.

The national average property tax rate on all capital is calculated by dividing total national property tax collections on (non-land) capital by the national stock of (non-land) capital.

Total property tax collection ⁷⁶	\$155,613 million
<u>Land share of tax⁷⁷</u>	<u>(38,389)</u>
Total non-land property taxes	\$117,224 million

⁷⁶For the 1989-90 fiscal year. Bureau of the Census, *Government Finances: 1989-90* (December 1991), Table 29.

⁷⁷Calculated combining data on (1) the share of property taxes collected on real (rather than personal) property, from *1987 Census of Governments*, Vol. 2, Table 2; (2) 1990 value of farm and non-farm structures, from Musgrave (1992); and (3) a breakdown of real property into land and structures (for Minnesota), from *Minnesota Property Tax Bulletin No. 20*, Table 33.

**Table A-1
Business Property Taxes**

	<u>Commercial</u>	<u>Manufacturing</u>	<u>Apartments</u>	<u>Non-Homestead Residential</u>	<u>Public Utility</u>	<u>Farm</u>	<u>Vacant Land</u>	<u>Railroads</u>	<u>Timber</u>	<u>Seasonal Recreation</u>	<u>Minerals</u>	<u>Total</u>
Tax (\$millions)	\$843.6	\$288.7	\$231.9	\$197.5	\$246.8	\$179.5	\$73.0	\$14.1	\$5.4	\$3.2	\$0.9	\$2,084.6
4-Part Division of Tax												
Land share	25.3%	25.7%	10.7%	16.1%	15.6%	86.0%	100.0%	75.3%	100.0%	47.1%	50.0%	
National tax on all capital	31.0	63.9	26.2	29.8	17.8	12.7	0.0	6.4	0.0	37.9	11.9	
National sector differential	14.6	6.5	17.9	13.4	33.3	0.0	0.0	11.5	0.0	7.5	24.0	
Minnesota differential	<u>29.1</u>	<u>3.9</u>	<u>45.2</u>	<u>40.6</u>	<u>33.3</u>	<u>1.3</u>	<u>0.0</u>	<u>6.8</u>	<u>0.0</u>	<u>7.5</u>	<u>14.1</u>	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
Ownership												
Corporate	73.8%	98.8%	10.5%	0.0%	100.0%	0.0%	25.0%	100.0%	75.0%	10.0%	95.0%	
Noncorporate	26.2	1.2	89.5	100.0	0.0	100.0	75.0	0.0	25.0	90.0	5.0	
Locus of Competition												
Local	85.0%	15.0%	100.0%	100.0%	100.0%	0.0%	n/a	10.0%	0.0%	100.0%	8.0%	
National	15.0	85.0	0.0	0.0	0.0	100.0	n/a	90.0	100.0	0.0	92.0	
Product Sales												
Out of state	10.0%	80.0%	0.0%	0.0%	0.0%	80.0%	n/a	80.0%	90.0%	0.0%	90.0%	
In-state to residents	81.0	19.0	100.0	100.0	100.0	20.0	n/a	20.0	10.0	80.0	10.0	
In-state to visitors	9.0	1.0	0.0	0.0	0.0	0.0	n/a	0.0	0.0	20.0	0.0	
Immobile Factors												
Labor	95.0%	95.0%	95.0%	95.0%	95.0%	20.0%	0.0%	50.0%	20.0%	95.0%	75.0%	
Land	5.0	5.0	5.0	5.0	5.0	80.0	100.0	50.0	80.0	5.0	25.0	
Tax Incidence												
Capital	56.6%	89.8%	37.0%	46.0%	18.0%	100.0%	100.0%	84.8%	100.0%	85.0%	65.2%	59.1%
Labor	4.1	3.1	0.0	0.0	4.0	0.0	0.0	3.0	0.0	0.0	9.7	2.6
Consumers	<u>39.3</u>	<u>7.1</u>	<u>63.0</u>	<u>54.0</u>	<u>78.0</u>	<u>0.0</u>	<u>0.0</u>	<u>12.2</u>	<u>0.0</u>	<u>15.0</u>	<u>25.1</u>	<u>38.4</u>
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Minnesota Capital												
Minnesota Capital	16.0%	9.7%	27.0%	44.0%	2.0%	100.0%	62.0%	8.5%	27.0%	62.0%	8.8%	26.2%
Minnesota Labor	4.1	3.1	0.0	0.0	4.0	0.0	0.0	3.0	0.0	0.0	9.7	2.6
Minnesota Consumers	<u>34.0</u>	<u>1.8</u>	<u>63.0</u>	<u>54.0</u>	<u>57.0</u>	<u>0.0</u>	<u>0.0</u>	<u>3.0</u>	<u>0.0</u>	<u>12.0</u>	<u>3.5</u>	<u>33.0</u>
Total Borne by Minn. Residents	54.2%	14.6%	90.0%	98.0%	63.0%	100.0%	62.0%	14.5%	27.0%	74.0%	22.0%	61.8%
Nonresident Capital												
Nonresident Capital	40.5%	80.1%	10.0%	2.0%	16.0%	0.0%	38.0%	76.3%	76.3%	22.9%	56.4%	32.8%
Nonresident Labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nonresident Consumers	<u>5.2</u>	<u>5.3</u>	<u>0.0</u>	<u>0.0</u>	<u>21.0</u>	<u>0.0</u>	<u>0.0</u>	<u>9.2</u>	<u>9.2</u>	<u>3.0</u>	<u>21.6</u>	<u>5.4</u>
Total Borne by Nonresidents	45.8%	85.4%	10.0%	2.0%	37.0%	0.0%	38.0%	85.5%	85.5%	26.0%	80.0%	38.2%

NOTES: (1) Noncorporate includes S Corporations. (2) Public utility property includes personal as well as real property. (3) Apartment taxes do not include \$19.4 million of taxes paid by the federal government as part of low-income housing subsidies. (4) Non-homestead residential includes \$12.7 million in farm non-homestead HGA. (5) Public utilities shift much of the tax forward to businesses, and much of this is shifted through to consumers. Results include this secondary shifting. (6) Tax borne by farm owners included in burden on capital. (7) Tax burden on renters is gross tax, prior to any property tax refund. (8) Tax on farms excludes tax on house, garage, and one acre (HGA). (9) Tax on farms is gross tax, prior to the portion of property tax refund on first 320 acres that is allocated to business property (rather than HGA).

The total stock of capital can be calculated from Commerce Department data, as shown below:⁷⁸

<u>Type of Capital</u>	<u>Total U.S. Market Value</u> (\$billions)
Private residential	\$4,682
Private nonresidential:	
Structures	2,839
Equipment	2,318
Business inventories ⁷⁹	<u>1,983</u>
Total residential and business capital	\$11,822
Consumer durables	<u>1,082</u>
Total private (non-land) property	\$12,904

Dividing total national property tax revenue by the total stock of private capital yields the national average property tax rate used in this study -- 0.91 percent.⁸⁰

To calculate the Minnesota sector differentials, we apply Minnesota and average national tax rates from the most recent version of the Wisconsin Department of Revenue's study of corporate tax climate.⁸¹ For each sector, the

⁷⁸To match fiscal year property tax collections data, this is calculated as the simple average of totals for 1989 and 1990. Except where otherwise noted, all estimates are from Musgrave (1992).

⁷⁹*Survey of Current Business* (January 1992), Table 5.12.

⁸⁰This measure of the capital stock excludes all government owned capital, estimated at approximately \$3 trillion in 1990. Including this capital, the average national tax rate on all (non-land) capital would be 0.74 percent. This study assumes that capital is not mobile between the private and public sectors in response to differing rates of return. In Netzer's words, we are assuming that the private and public capital markets are "entirely isolated from one another" (Netzer, 1973, p. 522). Using the 0.74 percent rate would implicitly assume that a higher tax rate, by reducing the after-tax rate of return on private sector investment, would persuade voters to increase public sector investment. Because the allocation of capital between the public and private sectors is determined by a political process, it seems most appropriate to exclude government owned capital from the denominator.

⁸¹Wisconsin Department of Revenue, *Corporate Tax Climate: A Comparison of 19 States* (Wisconsin Department of Revenue, 1990). The limitation to 19 states is outweighed by the high quality of the effective tax rate estimates. Minnesota's relative tax rates were also estimated using two alternative sets of state-by-state property tax data. The results provided

(9) Tax on farms is gross tax, prior to the portion of property tax refund on first 320 acres that is allocated to business property (rather than 100%).

mix of equipment, structures, inventories, and land is estimated from Commerce Department data.⁸² The Minnesota and average tax rates in the Wisconsin study were then applied to a company with that "representative" mix of capital.⁸³ The percent by which the Minnesota tax rates exceed the national average for each sector is estimated to be:

Manufacturing	5%
Commercial	64
Apartments	102
Non-homestead residential	94
Railroads	37
Seasonal recreation	15
Minerals	37

In the remaining sectors (farming, public utilities, vacant land, and timber land), a separate estimate of the Minnesota sector differential was not needed.⁸⁴ The results show that Minnesota's property taxes are far above the national

confirmation that the Wisconsin study's 19 states are reasonably representative of the nation.

⁸²The portions of land, structures, equipment, and inventories for each sector's "representative firm" were estimated using (1) Minnesota sector-specific ratios of land to structures and (2) national sector values of structures, equipment, and inventories (from Department of Commerce, *Fixed Reproducible Tangible Wealth in the United States 1925-85* (1987) and updates in *Survey of Current Business*). The estimated capital mix for each sector was also adjusted to take account of differences between Minnesota's within-sector industry mix and that of the nation.

⁸³Separate tax rates are included for land, structures, capital equipment, and inventories. The tax rates provided in the Wisconsin study apply to the manufacturing sector. Before applying the tax rates to other business sectors, therefore, the rates were adjusted to eliminate special tax treatment for the manufacturing sector in several states.

⁸⁴For farming, Department of Agriculture statistics (in *Agricultural Statistics 1990*, Table 543) show that the national sector differential is negative: farm property (other than land) is taxed at a rate below the national average tax rate (0.91 percent). All farm products are sold in national markets, so any Minnesota differential is borne entirely by the farm owners. The entire tax burden falls on farm owners, therefore, and no separate estimate of the Minnesota differential is needed.

For public utilities, price regulation is assumed to result in full forward shifting. (Approximately half of public utility sales are to businesses, however. In calculating how much of those higher costs are shifted to consumers, Minnesota utility taxes are assumed to be 20 percent above the national average.) For vacant land and timber land, the entire tax is assumed borne by the owners of the land, so no separate Minnesota differential need be estimated.

average for both the commercial sector and rental housing; in contrast, tax rates for industrial property are only slightly above the national average.⁸⁵

Minnesota actual business property tax rates (by sector), as a percent of the value of all forms of capital (equipment, inventories, and structures), are calculated by dividing Minnesota property taxes for each sector by the total amount of capital invested in that sector. The average national sector tax rate is estimated indirectly, based on the estimated Minnesota sector tax rate and the estimated Minnesota sector differential.

For commercial property, the land share of the tax is estimated to be 25.3 percent. The Minnesota tax rate on reproducible capital in the commercial sector is estimated to be 2.19 percent of market value of capital stock, and Minnesota's tax is estimated to be 63.7 percent above the national average. Therefore, the national average tax is $(2.19 \text{ percent} / (1 + 0.637)) = 1.34 \text{ percent}$ of market value. The 4-part division of the tax is therefore:

Land share		= 25.3%
National tax on all capital	$[(0.91\% / 2.19\%) (.747)]$	= 31.0
National sector differential	$[(1.34\% - 0.91\%) / 2.19\%) (.747)]$	= 14.6
Minnesota differential	$[(2.19\% - 1.34\%) / 2.19\%) (.747)]$	= 29.1

The 4-part division of the business property tax for each of the 11 sectors is shown in *Table A-1*.

Other Assumptions. Additional assumptions for each sector are also shown in *Table A-1*, including: ownership (corporate or noncorporate), locus of competition (local or national), product sales (out of state, in-state to residents, in-state to visitors), and immobile factors (proportions of labor and land).

These assumptions, in combination with the 4-part division of the property tax, determined the distribution of burden among Minnesota capital, non-resident capital, Minnesota consumers, non-resident consumers, and Minnesota labor (also shown in *Table A-1*).

⁸⁵The lower relative tax rate for manufacturing is due to the small proportion of manufacturing property in the form of land and structures. While some other states tax capital equipment and inventories, Minnesota does not.

Sales Tax on Business Inputs

Total Taxes by Sector

Total sales tax collections on business inputs (including motor vehicles) are estimated as a residual, equal to all sales tax revenue *not* attributed to consumers:

Total sales and use tax collections (including MVET)	\$ 2,184.8 million
Sales tax paid by Minnesota consumers	-1,172.7 million
Sales tax paid by visitors to Minnesota	<u>-145.6 million</u>
Sales tax on business inputs	\$866.5 million

Sales tax paid by Minnesota consumers was estimated using the CES data. Sales tax paid by visitors was estimated using data from the National Travel Data Center (for total visitor expenditures) and the REMI input-output model (to estimate the fraction subject to tax). Consumers paid an estimated 60.34 percent of the total sales tax, with visitors accounting for 11 percent of the total consumer share (or 6.66 percent of total sales taxes). The remaining 39.66 percent (\$866.5 million) was allocated to business purchases.⁸⁶

Two distinct kinds of business purchases are subject to tax: (1) purchases of capital equipment (including motor vehicles) and structures; and (2) purchases of other (non-capital) intermediate inputs. Non-capital inputs include things such as general office supplies, business services, meals and entertainment, and hotel charges. The tax on construction materials is assumed to be shifted forward in higher prices for buildings. To the extent that the tax applies to materials used to build commercial and industrial buildings, the sales tax is treated as an indirect tax on those capital inputs ("structures"). The capital tax rate on such structures equals the tax rate on construction materials times the materials' share of building costs. (By the same reasoning, the tax on materials used to construct owner-occupied housing is assumed shifted to home buyers.)

The Commerce Department provides annual estimates of business purchases of 50 different types of capital equipment and structures by each of 60 U.S. industries. To calculate investment purchases by Minnesota companies, these national totals were adjusted for differences between Minnesota's industry mix and that of the nation as a whole. The estimated capital purchases were then multiplied by the estimated average Minnesota sales tax rate on each type of purchase, a rate

⁸⁶The estimate of the sales tax on capital goods used in this study is fairly accurate (as explained below); it is assumed that the rest of the \$866.5 million in tax is paid on short-lived intermediate business inputs.

which varies both by type of input and by industry. The estimated total tax paid on Minnesota purchases of capital equipment and structures in 1990 is:

Capital equipment	\$331.4 million
Non-residential structures	45.8 million
Residential structures	<u>100.8 million</u>
Total	\$478.0 million

Given a total of \$866.5 million in Minnesota sales and use taxes to allocate to business, this implies that business paid an additional \$389.5 million in taxes on other non-capital purchases.

The 60 different industries included in the Commerce Department investment data were aggregated into 11 sectors: manufacturing, public utilities, transportation and communication, residential housing, other construction and real estate, finance and insurance, services, wholesale, retail, farming, and mining. Total taxes paid on capital equipment and structures by each of the 11 sectors were estimated directly from the Commerce Department data by summing the taxes paid by each industry in that sector. The allocation of the \$389.5 million in other intermediate products is more difficult. Given the lack of specific input-output estimates for Minnesota, these taxes were allocated using the same proportions as in the 1993 Peat Marwick study of Iowa's sales tax (estimated from an input-output model they have developed for this purpose).⁸⁷ Each sector's estimated sales tax payments on capital and non-capital purchases were added together, giving the estimate of the total sales taxes paid by that sector.

Table A-2 shows total estimated tax payments for each sector, along with the percentage of tax payments on purchases of capital inputs (rather than intermediate inputs).

The 3-Part (or 2-Part) Division of the Tax

The incidence of the sales tax on business inputs was estimated separately for each of these 11 sectors (see *Table A-2*). For the tax on capital inputs, we divided the tax into 3 parts -- the national tax on all capital, the national sector differential, and the Minnesota differential. This process was essentially the same

⁸⁷The ratio of each sector's tax to state gross product was adapted from the Peat Marwick study. The estimates of the sales taxes collected on non-capital purchases per dollar of value added (adjusted for industry mix) were only two-thirds as large as the Peat Marwick study estimate for Iowa; consequently, each sector's ratio of tax to gross state product was adjusted downward proportionally.

Table A-2
Sales Tax on Business Inputs

	<u>Manufacturing</u>	<u>Public Utilities</u>	<u>Transportation & Communication</u>	<u>Residential Housing</u>	<u>Other Construction/ Real Estate</u>	<u>Finance/ Insurance</u>
Tax (\$millions)	\$159.9	\$64.1	\$89.4	\$100.8	\$69.5	\$40.9
Paid on capital purchases	53%	49%	63%	0%	81%	50%
Summary of 3-Part and 2-Part Division of Tax						
National tax on all capital	43.0%	46.9%	57.4%	n/a	80.9%	37.9%
National sector differential	46.9	*	36.7	n/a	18.9	59.9
Minnesota differential	<u>10.1</u>	<u>*</u>	<u>5.9</u>	n/a	<u>0.2</u>	<u>2.2</u>
Total	100.0%	100.0%	100.0%	n/a	100.0%	100.0%
Ownership						
Corporate	98.8%	100.0%	95.0%	n/a	60.0%	80.0%
Noncorporate	1.2	0.0	5.0	n/a	40.0	20.0
Locus of Competition						
Local	15%	100%	65%	100%	100%	60%
National	85	0	35	0	0	40
Product Sales						
Out of state	80%	0%	25%	0%	0%	25%
In-state to residents	19	100	68	100	94	72
In-state to visitors	1	0	7	0	6	3
Tax Incidence						
Capital (exported)	44% (39)%	47% (42)%	57% (50)%	20% (3)%	81% (50)%	38% (29)%
Labor (exported)	8 (0)	0 (0)	2 (0)	0 (0)	0 (0)	1 (0)
Consumers (exported)	<u>48 (38)</u>	<u>53 (16)</u>	<u>41 (12)</u>	<u>80 (0)</u>	<u>19 (1)</u>	<u>61 (17)</u>
Total (exported)	100% (77)%	100% (58)%	100% (62)%	100% (3)%	100% (51)%	100% (46)%

**Table A-2 (Cont.)
Sales Tax on Business Inputs**

	<u>Services</u>	<u>Wholesale</u>	<u>Retail</u>	<u>Farming</u>	<u>Mining</u>	<u>Total</u>
Tax (\$millions)	\$154.9	\$84.4	\$65.5	\$24.8	\$12.2	\$866.5
Paid on capital purchases	32%	36%	46%	61%	11%	43%
Summary of 3-Part and 2-Part Division of Tax						
National tax on all capital	20.5%	36.3%	45.7%	57.5%	11.2%	
National sector differential	79.0	63.7	54.3	38.8	88.8	
Minnesota differential	0.6	0.0	0.0	3.8	0.0	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	
Ownership						
Corporate	60%	90%	70%	0%	95%	
Noncorporate	40	10	30	100	5	
Locus of Competition						
Local	95%	60%	100%	0%	0%	
National	5	40	0	100	100	
Product Sales						
Out of state	5%	25%	0%	80%	90%	
In-state to residents	76	72	85	20	10	
In-state to visitors	19	3	15	0	0	
Tax Incidence						
Capital (exported)	20% (13)%	36% (30)%	46% (32)%	61% (0)%	11% (10)%	40% (29)%
Labor (exported)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (0)
Consumers (exported)	80 (19)	64 (18)	54 (8)	39 (31)	89 (80)	58 (18)
Total (exported)	100% (32)%	100% (48)%	100% (40)%	100% (31)%	100% (90)%	100% (47)%

NOTES:

- 1) Tax amounts include motor vehicle excise tax.
- 2) Noncorporate sector include S Corporations.
- 3) For public utilities, the sum of the "national sector differential" and "Minnesota differential" is 53.1 percent.
- 4) Tax on building materials is assumed to be fully shifted to the buyers of business structures, rental housing, and owned homes.
- 5) Capital purchases include capital equipment and business structures.

as for the property tax (discussed above) except that there is no land share with the sales tax. Since the tax on non-capital inputs is not a tax on capital, it was divided into only 2 parts, the average national sector tax and the Minnesota differential.

Average national sales tax rates on capital equipment and structures were estimated in a recent study by Joulfaian and Mackie.⁸⁸ Their estimates for 1987 included both state and local sales taxes. We assume that, between 1987 and 1990, the average national tax rate on each category of equipment and structures increased at the same rate as state sales tax rates (rising by 4.7 percent). These estimated national tax rates on all forms of capital (including exempt purchases such as inventories and fully-taxed forms of capital such as consumer durable goods) are used to calculate the average national sales tax rate on capital, equal to 0.433 percent of the value of the total capital stock. Applying Minnesota and national average tax rates to capital purchases in each sector, one finds that Minnesota's sales tax on capital purchases exceeds the national average by more than 5 percent in only three sectors: manufacturing (23 percent above the national average), transportation and communication (10 percent), and farming (6 percent).

Minnesota's sales tax rate on non-capital inputs in 1990, at 6.0 percent, was not significantly different from the national average tax rate (including both state and local levies, with states weighted by gross state product).⁸⁹ As a result, the Minnesota differential on non-capital purchases by business (including building materials) is zero. Since the tax on these inputs is the same in Minnesota as in the nation generally, businesses will be able to shift the entire tax on non-capital inputs forward to consumers even if they are competing in a national market.

⁸⁸David Joulfaian and James Mackie, "Sales Taxes, Investment, and the Tax Reform Act of 1986," *National Tax Journal* 45 (March 1992): 89-105.

⁸⁹Even though Minnesota's state tax rate exceeds the national average state rate, other states include much higher local government sales taxes. Weighting Joulfaian and Mackie's average state and local sales tax rates by each state's share in gross state product yields a 1987 average tax rate of 5.88 percent. If this grew by a factor of 1.047 between 1987 and 1990 (equal to the growth in state tax rates), the 1990 average state tax rate would be 6.16 percent. Minnesota's state tax rate was 6.00 percent, but city sales taxes of 1 percent in Minneapolis and Duluth and 0.5 percent in Rochester raised the state average slightly to about 6.145 percent. This is essentially the same as the estimated national average in 1990. In the above calculations, Minnesota's tax base (for non-capital business inputs) is assumed to be the same as in the average state.

The Corporate Franchise Tax

The Corporate Tax by Sector

Corporate tax revenue for each of four sectors (manufacturing, commercial, public utilities, and mining) was obtained from the product codes listed on U.S. corporate income tax returns (which are attached to all Minnesota returns). The incidence is estimated separately for each of the four sectors.

3-Part Division of the Tax

The national average (state) corporate tax rate in 1990 was 7.03 percent.⁹⁰ The corporate tax is levied on a relatively small share of total national capital. Corporations own only about 36.4 percent of all privately-owned, tangible, non-land capital, so the average tax rate on all capital is only 2.56 percent (36.4 percent x 7.03 percent).⁹¹

Minnesota's 1990 corporate tax rate, at 9.8 percent, exceeded the national average tax rate (on corporate income) by almost 40 percent. However, this overstates the relative magnitude of the Minnesota tax for two reasons: (1) the Minnesota apportionment formula is different from that used elsewhere, reducing the effective tax rate for the average taxable corporation; and (2) Minnesota has no "throwback rule," used in about half of all states to increase the size of their tax base. The estimated Minnesota differential, taking both of these differences into account, is significantly below the 40 percent differential implied by tax rate differences alone.

In calculating the share of a corporation's total income that is taxable in Minnesota, Minnesota uses the following formula:

$$\text{Taxable portion} = 0.70(\text{MN sales}/\text{total sales}) \text{ plus } 0.15(\text{MN payroll}/\text{total payroll}) \text{ plus } 0.15(\text{MN property}/\text{total property})$$

⁹⁰In calculating the average, state nominal tax rates were weighted by corporate tax capacity, as estimated by Advisory Commission on Intergovernmental Relations, *1988 State Fiscal Capacity* (Washington, D.C.: August 1990), Table 5-24. (If states are weighted by gross state product instead, the average national tax rate is 6.99 percent.)

⁹¹Calculated from U.S. Department of Commerce, *Fixed Reproducible Tangible Wealth in the United States: 1925-85* (Washington: U.S. Government Printing Office, 1987) and updated information on capital stock (including inventories) in the *Survey of Current Business*.

Other states use varying formulas, but the average formula (weighted by corporate tax capacity) gives less weight to sales and more weight to payroll and property:

$$\begin{aligned} \text{Taxable portion} = & 0.406(\text{in-state sales}/\text{total sales}) \text{ plus } 0.297 \\ & (\text{in-state payroll}/\text{total payroll}) \text{ plus } 0.297 \\ & (\text{in-state property}/\text{total property}). \end{aligned}$$

Actual 1990 Minnesota corporate tax return data suggests that the Minnesota apportionment formula (compared to the average national formula) reduces the average corporation's tax by over 5 percent. It is particularly significant for industries in which the Minnesota proportion of sales is much smaller than the Minnesota proportion of payroll and property. These "export industries" pay lower taxes because the Minnesota apportionment formula weights the sales' share more heavily. Minnesota corporate returns show apportioned income (and hence taxes) falling by 20.1 percent in manufacturing and 9.6 percent in mining as a result of this difference. The commercial sector's taxes, on the other hand, are largely unaffected, falling by less than 1 percent. The large impact on the manufacturing sector has major implications for the incidence of this tax.⁹²

Minnesota's relative tax rate is lower than the simple tax rate comparison suggests for a second reason as well. Minnesota has no "throwback rule," a rule that taxes some corporate income that would otherwise escape tax in any state.⁹³ Existence of a throwback rule would raise apportioned sales by an estimated 9.5 percent. Only half of this percent is used in the calculations, since only half of the other states have throwback rules. This reduces the Minnesota corporate income tax (relative to other states) by 2.4 percent.⁹⁴ Lacking any way to make

⁹²The 1993 Peat Marwick study of Iowa's tax system estimated that Iowa's even more extreme apportionment formula (sales weighted 100 percent, property and payroll weighted 0 percent) had a much smaller impact on effective tax rates. Our results, however, are based on a sample of returns including over 90 percent of all tax paid in 1990.

⁹³The income is untaxed either because the state in which sales occur has no corporate tax or because the sales do not provide nexus for that state's tax.

⁹⁴Estimates of the revenue impact of throwback rules vary, but the *Minnesota Tax Expenditure Budget* (1993) estimates that the lack of such a rule reduces Minnesota corporate tax revenue by 4.8 percent. Because each dollar of Minnesota apportionable income raises taxable income by only 74 cents, this implies that the throwback rule would raise apportioned income by 4.8 percent / 0.74 = 6.5 percent. To raise apportioned income by 6.5 percent, given the 70 percent weight on sales in the apportionment formula, total dollars of apportioned sales must rise by 6.5 percent / 0.7 = 9.5 percent.

adjustments by sector, it is assumed that a throwback rule would affect all sectors equally.

After both adjustments, the percent by which Minnesota's effective corporate tax rate exceeds the national average is:

Manufacturing	10.5%
Commercial	36.2
Public Utilities	34.0
Mining	24.6

The calculation of the 3-part division of Minnesota's corporate franchise tax can be illustrated for the manufacturing sector. First, three effective tax rates are calculated:⁹⁵

National average corporate tax rate on all capital	2.56%
National average corporate sector tax rate	7.03%
Minnesota corporate tax rate on manufacturing (1.105 x 7.03%)	7.77%

The Minnesota tax rate on manufacturing (7.77 percent) is then divided into its three parts. The national average tax rate on all capital accounts for 2.56 of the 7.77 percentage points of tax, or 32.9 percent of the total Minnesota tax. The national corporate sector differential accounts for (7.03 - 2.56) 4.47 of the 7.77 percentage points of tax, or 57.6 percent of the total Minnesota tax. Finally, the Minnesota differential accounts for (7.77 - 7.03) 0.74 of the 7.77 percentage points of tax, or 9.5 percent of the total tax.

Table A-3 summarizes the sector-by-sector assumptions and incidence results for the corporate franchise tax.

⁹⁵These are calculated relative to the national tax rate. They could just as easily have been calculated relative to Minnesota's 9.8 percent statutory rate instead. (It is implicitly assumed here that the national average corporate tax rates do not vary among sectors.)

Table A-3
Corporate Franchise Tax

	<u>Commercial</u>	<u>Manufacturing</u>	<u>Public Utility</u>	<u>Mining</u>	<u>Total</u>
Tax (\$millions)	\$232.2	\$155.9	\$42.2	\$1.1	\$431.4
3-Part Division of Tax					
National tax on all capital	26.7%	32.9%	27.2%	29.2%	
National sector differential	46.7	57.6	47.5	51.0	
Minnesota differential	<u>26.6</u>	<u>9.5</u>	<u>25.4</u>	<u>19.7</u>	
Total	100.0%	100.0%	100.0%	100.0%	
Locus of Competition					
Local	85%	15%	100%	0%	
National	15	85	0	100	
Product Sales					
Out of state	10%	80%	0%	90%	
In-state to residents	81	19	100	10	
In-state to visitors	9	1	0	0	
Tax Incidence					
Capital (exported)	27% (24)%	33% (30)%	28% (25)%	34% (31)%	29% (26)%
Labor (exported)	4 (0)	8 (0)	6 (0)	15 (0)	6 (0)
Consumers (exported)	<u>69 (11)</u>	<u>59 (47)</u>	<u>66 (16)</u>	<u>51 (46)</u>	<u>65 (25)</u>
Total (exported)	100% (35)%	100% (77)%	100% (40)%	100% (77)%	100% (51)%

APPENDIX B

INCREMENTAL TAX INCIDENCE

This study provides estimates of the incidence of the current (1990) level of Minnesota taxes in a multistate setting. As noted in the introduction, the incidence of an incremental increase or decrease in business taxes would likely be quite different. Incremental analysis examines the distribution of a marginal change in Minnesota taxes unmatched by changes in other states. Minnesota's tax rates are generally above the national average; as a result, if Minnesota tax rates rise (and other states remain the same), each additional dollar of tax would add to the Minnesota differential.⁹⁶ Some of this increased Minnesota differential would, over time, be shifted forward to consumers by producers of local market goods, but increased taxes on producers of national market goods would be entirely shifted backward to labor (primarily) and land. None of the incremental tax would be borne by mobile capital which can still earn the average rate of return in other states.

As a result, compared to the findings in the incidence study, an incremental increase in business taxes will be borne:

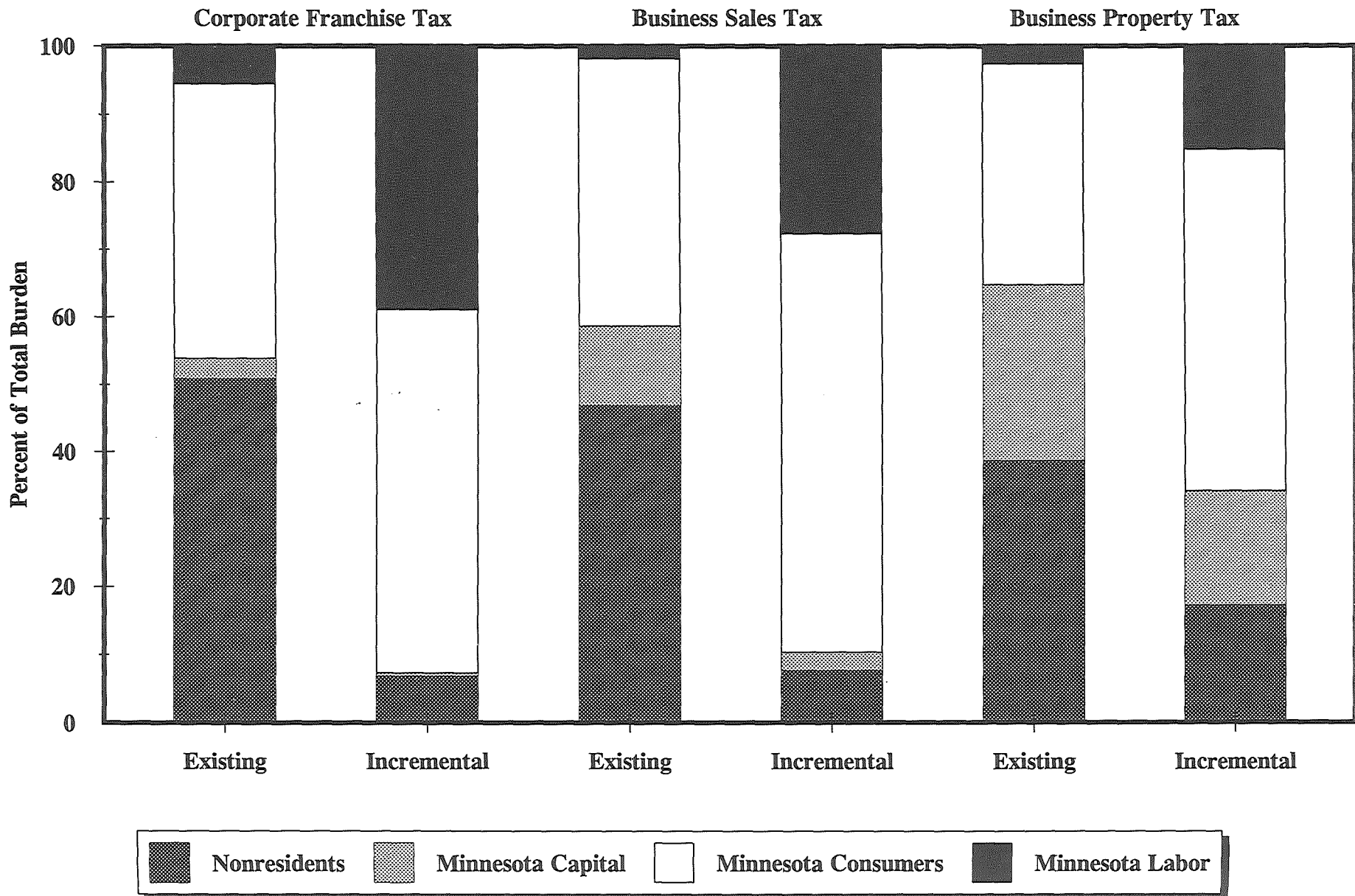
- much more by labor,
- much more by Minnesota consumers,
- much less by non-residents, and
- much less by Minnesota owners of capital.

This is illustrated in *Figure B-1*, which contrasts the incidence of existing and incremental taxes for three types of taxes (the corporate franchise tax, the sales tax on business inputs, and business property taxes).

⁹⁶The increase in Minnesota's tax rates would raise the national average slightly, of course, but 98 percent of it would represent an increase in the Minnesota differential. (In the case of property taxes, the land share of any increase would still fall on landowners.)

For states with taxes below the national average, the difference between the incidence of existing and incremental taxes would be smaller.

**Figure B-1
Incidence of Existing and Incremental
Taxes Compared**

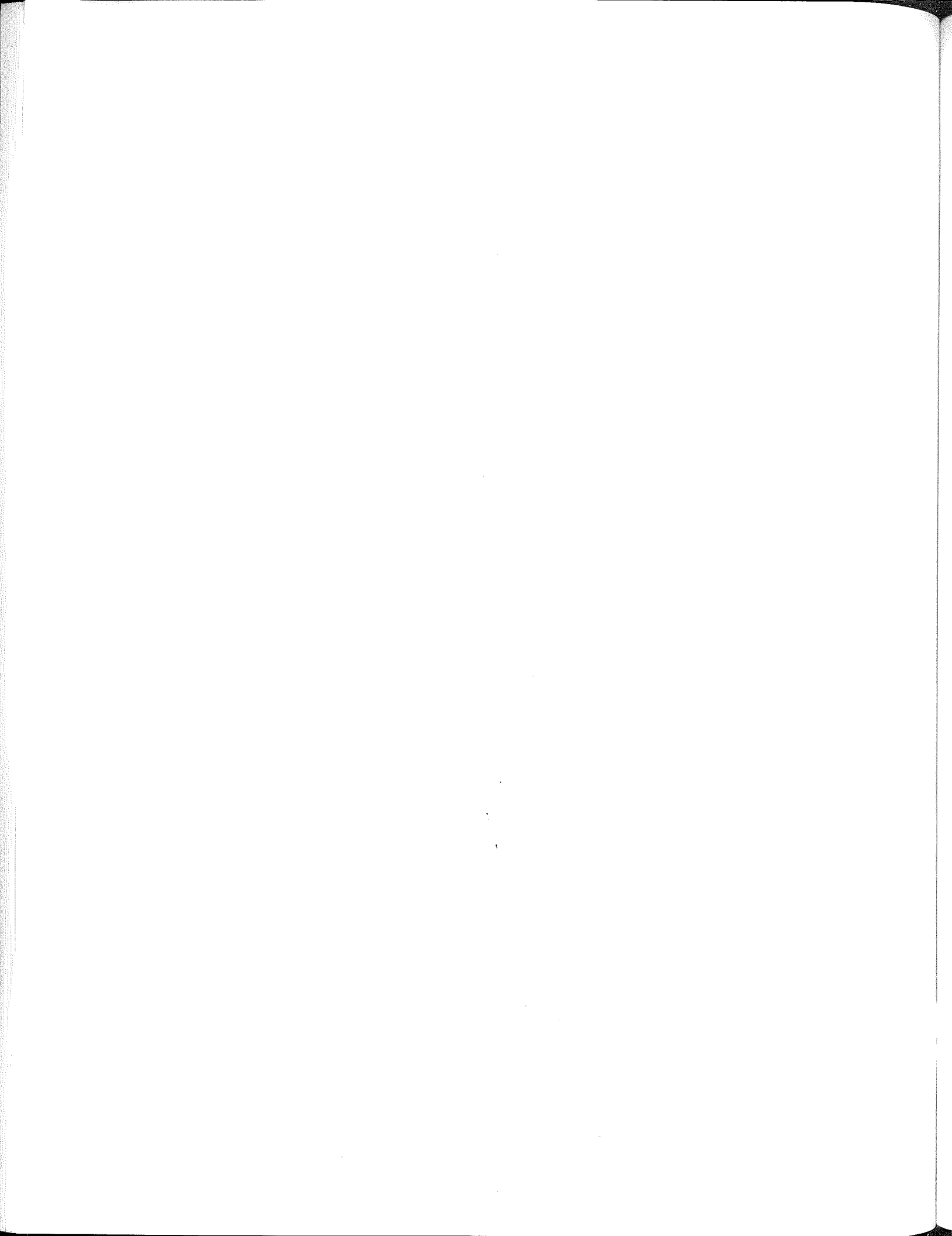


With an incremental increase in Minnesota taxes, the burden on Minnesota residents shifts from capital to consumers and labor, so incremental tax increases will be more regressive than suggested by the results for existing business taxes. In most cases, however, the change in overall regressivity is not large.

This discussion of incremental taxes has assumed that taxes increase only in Minnesota. If property taxes increase by the same proportion both in Minnesota and in the rest of the nation, then the incidence of the increased Minnesota tax would be the same as for existing taxes analyzed in this study. In estimating the incidence of tax changes, however, it is usually correct to assume that taxes in other states are unchanged.

Incremental tax incidence, as discussed above, assumes that the economy has fully adjusted to the change in the rates. It is the long-run incidence of the tax change. The incidence of an increase in taxes in the short-run, before prices and wages have fully adjusted to the change, is quite different from long-run incidence. In general, the initial short-run incidence of a change in business taxes is borne primarily by non-residents and capital owners. As prices and wages adjust over time, the incidence of the change in taxes shifts to Minnesota resident consumers and workers.

The time it takes to reach full adjustment will vary from sector to sector. Since it is most important to look at the long-term consequences of tax changes, an emphasis on incidence after full adjustment is usually warranted. However, the difference in incidence effects between short-run versus long-run should be noted. Readers of tax incidence studies should be careful to identify the context of the estimates including long-run versus short-run time frames and analysis of existing level changes versus incremental changes.

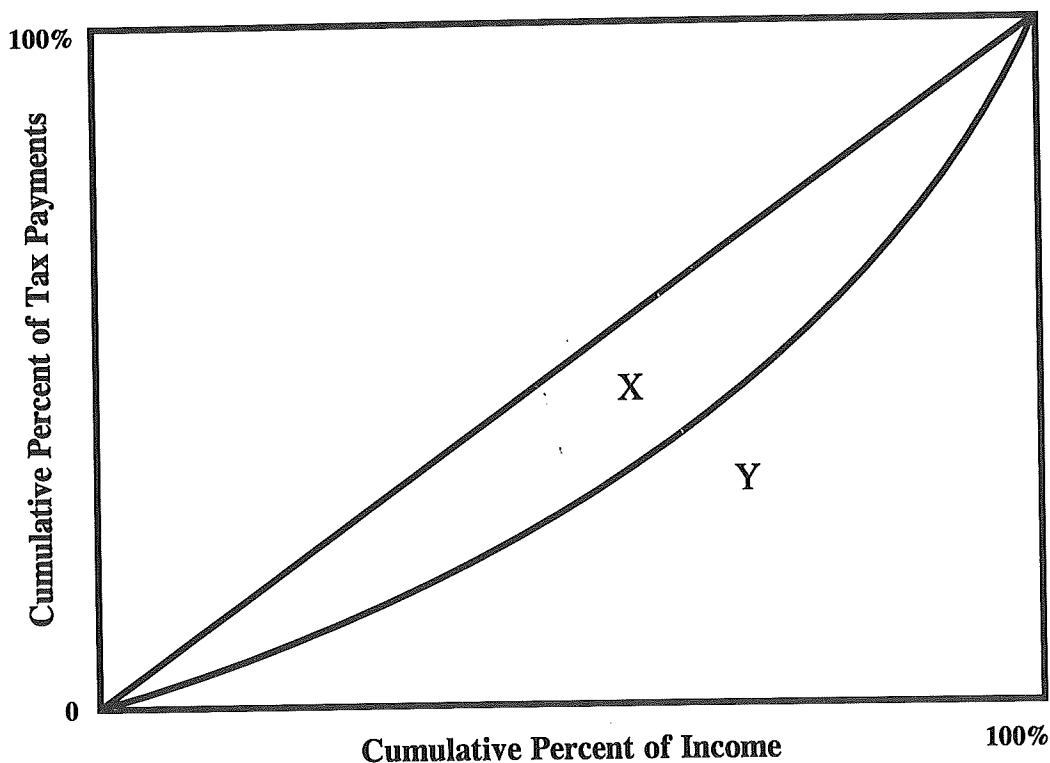


APPENDIX C

SUITS INDEX CALCULATIONS

The Suits index is used in this study to provide an overall summary measure of the distribution of Minnesota state and local taxes. This index is derived from a graphic concept, the "tax concentration curve," which compares the cumulative percentage of total taxes paid to the accumulated percentage of total income for taxpayers ranked by income level. The former is plotted on the vertical axis of the graph and the latter on the horizontal axis (see *Figure C-1*). The Suits index is the ratio of area x to area $x + y$ in *Figure C-1*. Area x is the area between the 45-degree line and the concentration curve; area $x + y$ equals the total area underneath the 45-degree line.

Figure C-1
Tax Concentration Curve



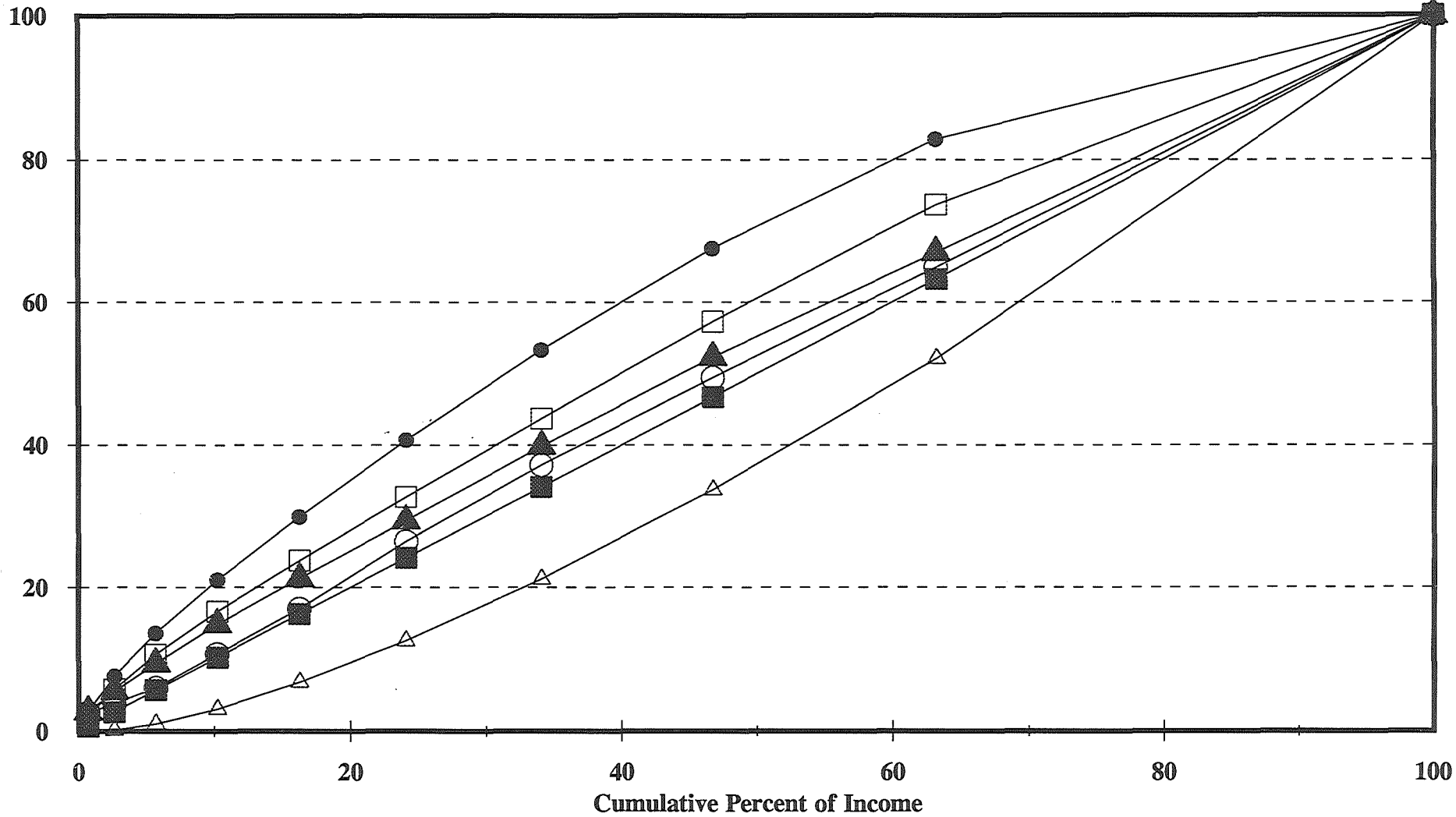
A proportional tax is represented in the diagram by the diagonal or 45-degree line and has a Suits index of 0. A progressive tax is represented by a curve below the diagonal and has a positive index value. The more progressive the tax, the higher the Suits index. In the extreme case, when the total tax burden is paid by those in the highest income bracket, the index has a value of +1. For a regressive tax, the tax concentration curve lies above the diagonal and has a negative index value between 0 and -1.

The Suits index can be discussed in terms of both a summary index and a tax concentration curve. The summary index provides an overall measure of progressivity for the tax or tax system as a whole. It cannot, however, provide any meaningful information regarding differences in progressivity at different levels of income. The Suits measure in its graphical form, however, can be used for this purpose. A comparison of the slope of the concentration curve with the 45-degree line illustrates relative income and tax shares at different income levels. This information can be used to answer the question: How is the total tax burden distributed along the income scale?

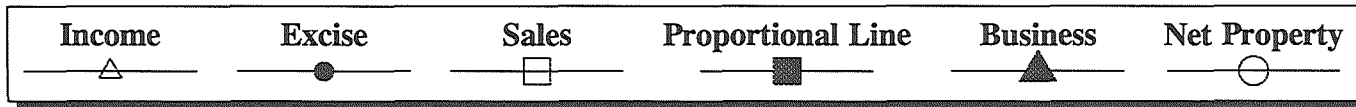
Figure C-2 illustrates the tax concentration curves for five major tax types examined in this study. The Suits indexes for the respective concentration curves are: personal income tax, 0.17; excise taxes, -0.28; consumer sales tax, -0.15; business taxes, -0.07; net residential property tax, -0.03. As indicated, the personal income tax is the only progressive tax; the remaining taxes are regressive.

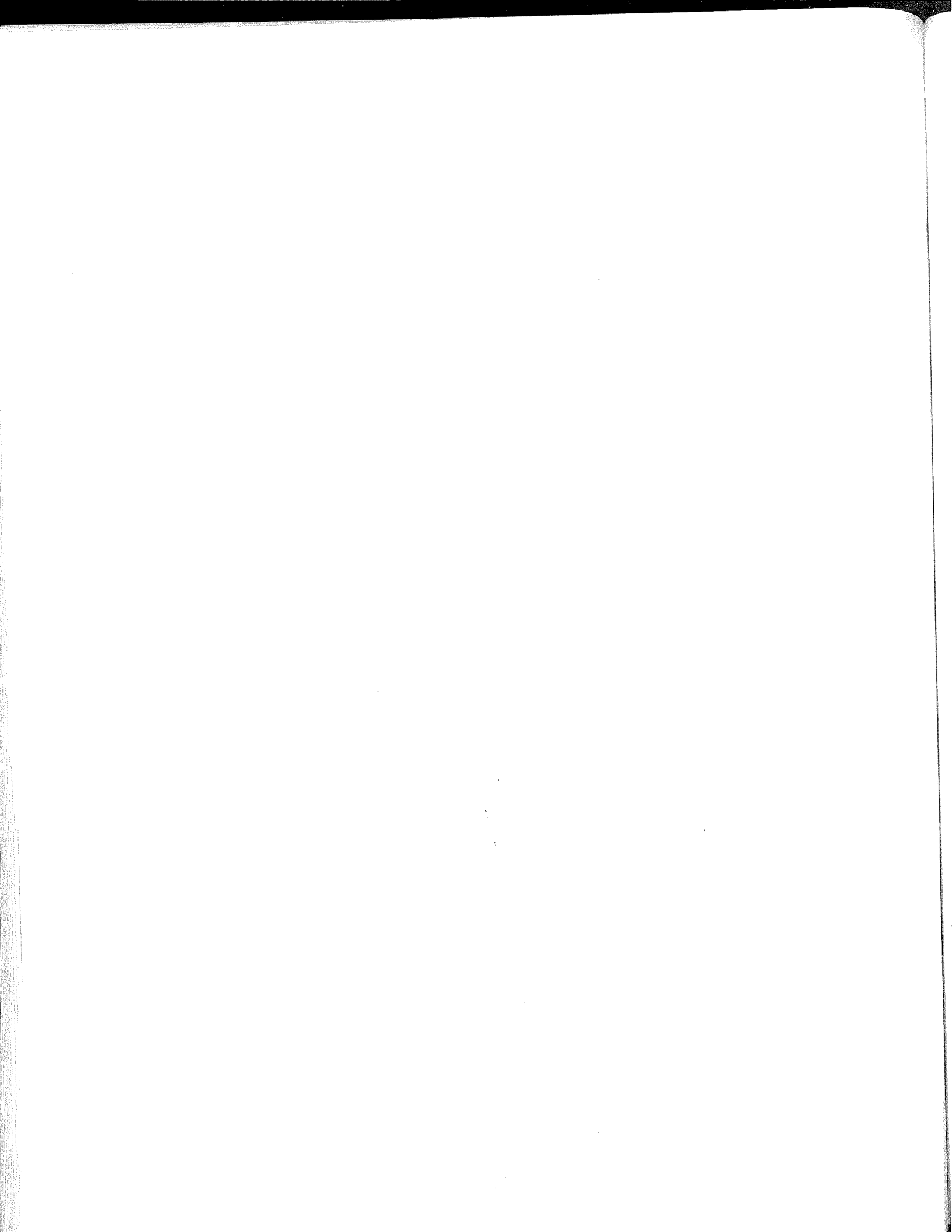
Figure C-2
Minnesota Tax Concentration Curves

Cumulative Percent of Tax Paid



-129-





1990 Minnesota Tax Incidence Study
TABLE D-1
Minnesota Tax Burden Amounts by Population Decile
All Taxpayers
(Dollar Amounts in Thousands)

Population Decile	Income Range	Number of Households	Total Household Income	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
				Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	207,257	\$460,827	\$784	\$3,994	\$25,079	\$12,046	\$37,125	\$14,196	\$3,324	\$3,255	\$43,383	\$19,295	\$62,677
Second	\$4,611 - 7,704	207,245	1,268,699	3,345	6,586	42,884	13,444	56,329	24,573	7,639	4,453	78,441	24,483	102,925
Third	\$7,705 - 11,970	207,392	2,019,289	22,999	9,196	56,622	18,583	75,204	30,642	12,564	6,132	122,827	33,910	156,738
Fourth	\$11,971 - 16,788	207,157	2,979,697	57,324	12,330	70,506	25,416	95,922	38,010	17,329	8,313	183,170	46,059	229,228
Fifth	\$16,789 - 21,802	207,221	3,993,787	103,059	15,201	83,266	30,430	113,697	45,111	20,725	10,036	252,161	55,667	307,828
Sixth	\$21,803 - 27,998	207,496	5,148,916	158,699	18,617	104,780	37,816	142,596	55,334	28,488	12,466	347,301	68,898	416,200
Seventh	\$27,999 - 35,716	207,246	6,561,728	237,816	22,506	129,709	45,991	175,699	64,472	35,530	15,428	467,526	83,924	551,450
Eighth	\$35,717 - 45,278	207,127	8,341,165	345,894	27,350	158,590	55,406	213,997	72,570	45,216	18,608	622,270	101,363	723,634
Ninth	\$45,279 - 61,289	207,119	10,849,245	508,327	33,991	192,082	67,278	259,360	78,111	55,907	22,703	834,427	123,972	958,399
Tenth	\$61,290 & Over	207,228	24,219,246	1,321,639	62,080	309,157	153,140	462,297	87,643	83,725	42,871	1,802,164	258,091	2,060,255
TOTAL		2,072,488	\$65,842,600	\$2,759,888	\$211,849	\$1,172,676	\$459,550	\$1,632,226	\$510,661	\$310,447	\$144,264	\$4,753,671	\$815,663	\$5,569,334
Top 5%	\$80,228 & Over	103,635	\$17,069,640	\$959,258	\$40,922	\$193,538	\$110,508	\$304,047	\$46,990	\$50,521	\$28,685	\$1,250,307	\$180,115	\$1,430,422
Top 1%	\$171,283 & Over	20,722	\$8,207,188	\$482,088	\$16,771	\$70,341	\$54,998	\$125,338	\$12,027	\$16,750	\$12,177	\$581,205	\$83,945	\$665,151

-131-

Population Decile	Income Range	Net Residential Property Taxes						Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Homeowner	Rental			Seasonal/Recreational	Total Residential			
			Renter	Landlord	Total					
First	\$4,610 & Under	\$19,271	\$3,275	\$9,109	\$12,384	\$1,118	\$32,773	\$27,150	\$59,923	\$122,601
Second	\$4,611 - 7,704	14,165	84	1,122	1,205	769	16,140	22,084	38,224	141,149
Third	\$7,705 - 11,970	20,022	4,751	2,218	6,969	1,468	28,459	30,610	59,069	215,807
Fourth	\$11,971 - 16,788	35,195	18,980	3,966	22,947	2,904	61,045	46,140	107,185	336,413
Fifth	\$16,789 - 21,802	46,525	27,169	4,301	31,470	4,384	82,379	51,503	133,882	441,710
Sixth	\$21,803 - 27,998	72,637	37,268	6,177	43,445	6,776	122,859	67,201	190,060	606,260
Seventh	\$27,999 - 35,716	94,051	32,537	6,443	38,980	7,423	140,454	93,292	233,746	785,196
Eighth	\$35,717 - 45,278	118,317	23,686	9,311	32,998	8,858	160,173	108,496	268,669	992,303
Ninth	\$45,279 - 61,289	162,961	16,107	11,469	27,576	12,319	202,856	122,564	325,420	1,283,819
Tenth	\$61,290 & Over	326,527	13,145	94,222	107,367	19,342	453,237	308,994	762,231	2,822,486
TOTAL		\$909,672	\$177,002	\$148,339	\$325,341	\$65,362	\$1,300,375	\$878,034	\$2,178,409	\$7,747,743
Top 5%	\$80,228 & Over	\$218,200	\$6,227	\$85,309	\$91,536	\$11,794	\$321,530	\$228,000	\$549,530	\$1,979,952
Top 1%	\$171,283 & Over	\$70,814	\$2,214	\$58,665	\$60,879	\$3,670	\$135,364	\$117,678	\$253,042	\$918,192

1990 Minnesota Tax Incidence Study
TABLE D-1 (continued)
Effective Tax Rates by Population Decile
All Taxpayers

Population Decile	Income Range	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
		Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	0.2%	0.9%	5.4%	2.6%	8.1%	3.1%	0.7%	0.7%	9.4%	4.2%	13.6%
Second	\$4,611 - 7,704	0.3%	0.5%	3.4%	1.1%	4.4%	1.9%	0.6%	0.4%	6.2%	1.9%	8.1%
Third	\$7,705 - 11,970	1.1%	0.5%	2.8%	0.9%	3.7%	1.5%	0.6%	0.3%	6.1%	1.7%	7.8%
Fourth	\$11,971 - 16,788	1.9%	0.4%	2.4%	0.9%	3.2%	1.3%	0.6%	0.3%	6.1%	1.5%	7.7%
Fifth	\$16,789 - 21,802	2.6%	0.4%	2.1%	0.8%	2.8%	1.1%	0.5%	0.3%	6.3%	1.4%	7.7%
Sixth	\$21,803 - 27,998	3.1%	0.4%	2.0%	0.7%	2.8%	1.1%	0.6%	0.2%	6.7%	1.3%	8.1%
Seventh	\$27,999 - 35,716	3.6%	0.3%	2.0%	0.7%	2.7%	1.0%	0.5%	0.2%	7.1%	1.3%	8.4%
Eighth	\$35,717 - 45,278	4.1%	0.3%	1.9%	0.7%	2.6%	0.9%	0.5%	0.2%	7.5%	1.2%	8.7%
Ninth	\$45,279 - 61,289	4.7%	0.3%	1.8%	0.6%	2.4%	0.7%	0.5%	0.2%	7.7%	1.1%	8.8%
Tenth	\$61,290 & Over	5.5%	0.3%	1.3%	0.6%	1.9%	0.4%	0.3%	0.2%	7.4%	1.1%	8.5%
TOTAL		4.2%	0.3%	1.8%	0.7%	2.5%	0.8%	0.5%	0.2%	7.2%	1.2%	8.5%
Top 5%	\$80,228 & Over	5.6%	0.2%	1.1%	0.6%	1.8%	0.3%	0.3%	0.2%	7.3%	1.1%	8.4%
Top 1%	\$171,283 & Over	5.9%	0.2%	0.9%	0.7%	1.5%	0.1%	0.2%	0.1%	7.1%	1.0%	8.1%

Population Decile	Income Range	Net Residential Property Taxes						Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Homeowner	Rental			Seasonal/Recreational	Total Residential			
			Renter	Landlord	Total					
First	\$4,610 & Under	4.2%	0.7%	2.0%	2.7%	0.2%	7.1%	5.9%	13.0%	26.6%
Second	\$4,611 - 7,704	1.1%	0.0%	0.1%	0.1%	0.1%	1.3%	1.7%	3.0%	11.1%
Third	\$7,705 - 11,970	1.0%	0.2%	0.1%	0.3%	0.1%	1.4%	1.5%	2.9%	10.7%
Fourth	\$11,971 - 16,788	1.2%	0.6%	0.1%	0.8%	0.1%	2.0%	1.5%	3.6%	11.3%
Fifth	\$16,789 - 21,802	1.2%	0.7%	0.1%	0.8%	0.1%	2.1%	1.3%	3.4%	11.1%
Sixth	\$21,803 - 27,998	1.4%	0.7%	0.1%	0.8%	0.1%	2.4%	1.3%	3.7%	11.8%
Seventh	\$27,999 - 35,716	1.4%	0.5%	0.1%	0.6%	0.1%	2.1%	1.4%	3.6%	12.0%
Eighth	\$35,717 - 45,278	1.4%	0.3%	0.1%	0.4%	0.1%	1.9%	1.3%	3.2%	11.9%
Ninth	\$45,279 - 61,289	1.5%	0.1%	0.1%	0.3%	0.1%	1.9%	1.1%	3.0%	11.8%
Tenth	\$61,290 & Over	1.3%	0.1%	0.4%	0.4%	0.1%	1.9%	1.3%	3.1%	11.7%
TOTAL		1.4%	0.3%	0.2%	0.5%	0.1%	2.0%	1.3%	3.3%	11.8%
Top 5%	\$80,228 & Over	1.3%	0.0%	0.5%	0.5%	0.1%	1.9%	1.3%	3.2%	11.6%
Top 1%	\$171,283 & Over	0.9%	0.0%	0.7%	0.7%	0.0%	1.6%	1.4%	3.1%	11.2%

1990 Minnesota Tax Incidence Study
TABLE D-2
Minnesota Tax Burden Amounts by Population Decile
Homeowners
(Dollar Amounts in Thousands)

Population Decile	Income Range	Number of Households	Total Household Income	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
				Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	36,725	\$93,737	\$440	\$808	\$4,870	\$3,487	\$8,357	\$2,787	\$793	\$710	\$8,890	\$5,005	\$13,896
Second	\$4,611 - 7,704	46,926	290,355	203	1,469	9,731	2,997	12,729	5,520	1,834	960	17,287	5,426	22,714
Third	\$7,705 - 11,970	55,146	537,638	1,820	2,492	15,692	5,330	21,022	8,659	3,807	1,635	29,979	9,457	39,436
Fourth	\$11,971 - 16,788	66,897	969,225	11,146	4,017	23,826	8,729	32,556	12,871	6,353	2,674	54,197	15,420	69,617
Fifth	\$16,789 - 21,802	85,404	1,652,768	31,177	6,375	35,504	13,218	48,722	19,790	9,225	4,175	95,696	23,768	119,464
Sixth	\$21,803 - 27,998	117,210	2,917,865	74,418	10,635	60,491	21,746	82,238	32,456	16,902	6,980	184,267	39,361	223,628
Seventh	\$27,999 - 35,716	133,292	4,239,250	141,360	14,688	85,308	28,974	114,282	42,742	24,168	9,582	293,578	53,244	346,821
Eighth	\$35,717 - 45,278	158,077	6,369,928	258,595	21,032	122,281	41,624	163,905	56,248	35,729	13,852	472,853	76,508	549,361
Ninth	\$45,279 - 61,289	171,413	9,005,773	419,121	28,310	160,100	54,297	214,397	65,119	47,191	18,347	691,532	100,953	792,485
Tenth	\$61,290 & Over	181,126	21,314,288	1,165,307	54,713	272,370	132,083	404,454	77,109	74,463	36,975	1,589,249	223,771	1,813,020
TOTAL		1,052,216	\$47,390,827	\$2,103,588	\$144,539	\$790,174	\$312,486	\$1,102,660	\$323,300	\$220,466	\$95,888	\$3,437,528	\$552,914	\$3,990,441
Top 5%	\$80,228 & Over	92,187	\$15,173,982	\$852,943	\$36,484	\$172,627	\$96,538	\$269,166	\$41,988	\$45,472	\$25,067	\$1,113,030	\$158,090	\$1,271,120
Top 1%	\$171,283 & Over	18,483	\$7,323,631	\$429,558	\$15,065	\$62,993	\$48,660	\$111,653	\$10,766	\$15,139	\$10,799	\$518,456	\$74,525	\$592,980

-133-

Population Decile	Income Range	Net Residential Property Taxes					Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Homeowner Gross	Homeowner Net	Rental (Landlord)	Seasonal/Recreational	Total Residential			
First	\$4,610 & Under	\$18,726	\$16,855	\$4,766	\$1,118	\$22,739	\$6,962	\$29,701	\$43,596
Second	\$4,611 - 7,704	16,021	12,253	399	769	13,421	4,047	17,468	40,182
Third	\$7,705 - 11,970	25,051	17,657	1,342	1,468	20,467	8,021	28,488	67,924
Fourth	\$11,971 - 16,788	38,187	31,701	2,525	2,904	37,129	14,398	51,527	121,144
Fifth	\$16,789 - 21,802	48,772	43,305	2,957	4,384	50,646	20,912	71,558	191,022
Sixth	\$21,803 - 27,998	74,417	69,413	4,191	6,776	80,380	35,836	116,216	339,844
Seventh	\$27,999 - 35,716	92,002	88,573	4,160	7,423	100,156	48,612	148,768	495,590
Eighth	\$35,717 - 45,278	117,366	114,345	7,771	8,858	130,973	70,506	201,479	750,841
Ninth	\$45,279 - 61,289	162,166	158,891	8,680	12,319	179,890	86,587	266,477	1,058,962
Tenth	\$61,290 & Over	330,719	322,570	80,963	19,342	422,876	249,428	672,304	2,485,324
TOTAL		\$923,427	\$875,562	\$117,754	\$65,362	\$1,058,678	\$545,309	\$1,603,987	\$5,594,428
Top 5%	\$80,228 & Over	\$222,264	\$216,078	\$74,308	\$11,794	\$302,180	\$188,641	\$490,821	\$1,761,941
Top 1%	\$171,283 & Over	\$73,580	\$70,351	\$51,452	\$3,670	\$125,474	\$102,157	\$227,631	\$820,611

1990 Minnesota Tax Incidence Study
TABLE D-2 (continued)
Effective Tax Rates by Population Decile
Homeowners

Population Decile	Income Range	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
		Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	0.5%	0.9%	5.2%	3.7%	8.9%	3.0%	0.8%	0.8%	9.5%	5.3%	14.8%
Second	\$4,611 - 7,704	0.1%	0.5%	3.4%	1.0%	4.4%	1.9%	0.6%	0.3%	6.0%	1.9%	7.8%
Third	\$7,705 - 11,970	0.3%	0.5%	2.9%	1.0%	3.9%	1.6%	0.7%	0.3%	5.6%	1.8%	7.3%
Fourth	\$11,971 - 16,788	1.2%	0.4%	2.5%	0.9%	3.4%	1.3%	0.7%	0.3%	5.6%	1.6%	7.2%
Fifth	\$16,789 - 21,802	1.9%	0.4%	2.1%	0.8%	2.9%	1.2%	0.6%	0.3%	5.8%	1.4%	7.2%
Sixth	\$21,803 - 27,998	2.6%	0.4%	2.1%	0.7%	2.8%	1.1%	0.6%	0.2%	6.3%	1.3%	7.7%
Seventh	\$27,999 - 35,716	3.3%	0.3%	2.0%	0.7%	2.7%	1.0%	0.6%	0.2%	6.9%	1.3%	8.2%
Eighth	\$35,717 - 45,278	4.1%	0.3%	1.9%	0.7%	2.6%	0.9%	0.6%	0.2%	7.4%	1.2%	8.6%
Ninth	\$45,279 - 61,289	4.7%	0.3%	1.8%	0.6%	2.4%	0.7%	0.5%	0.2%	7.7%	1.1%	8.8%
Tenth	\$61,290 & Over	5.5%	0.3%	1.3%	0.6%	1.9%	0.4%	0.3%	0.2%	7.5%	1.0%	8.5%
TOTAL		4.4%	0.3%	1.7%	0.7%	2.3%	0.7%	0.5%	0.2%	7.3%	1.2%	8.4%
Top 5%	\$80,228 & Over	5.6%	0.2%	1.1%	0.6%	1.8%	0.3%	0.3%	0.2%	7.3%	1.0%	8.4%
Top 1%	\$171,283 & Over	5.9%	0.2%	0.9%	0.7%	1.5%	0.1%	0.2%	0.1%	7.1%	1.0%	8.1%

Population Decile	Income Range	Net Residential Property Taxes					Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Homeowner Gross	Homeowner Net	Rental (Landlord)	Seasonal/Recreational	Total Residential			
First	\$4,610 & Under	20.0%	18.0%	5.1%	1.2%	24.3%	7.4%	31.7%	46.5%
Second	\$4,611 - 7,704	5.5%	4.2%	0.1%	0.3%	4.6%	1.4%	6.0%	13.8%
Third	\$7,705 - 11,970	4.7%	3.3%	0.2%	0.3%	3.8%	1.5%	5.3%	12.6%
Fourth	\$11,971 - 16,788	3.9%	3.3%	0.3%	0.3%	3.8%	1.5%	5.3%	12.5%
Fifth	\$16,789 - 21,802	3.0%	2.6%	0.2%	0.3%	3.1%	1.3%	4.3%	11.6%
Sixth	\$21,803 - 27,998	2.6%	2.4%	0.1%	0.2%	2.8%	1.2%	4.0%	11.6%
Seventh	\$27,999 - 35,716	2.2%	2.1%	0.1%	0.2%	2.4%	1.1%	3.5%	11.7%
Eighth	\$35,717 - 45,278	1.8%	1.8%	0.1%	0.1%	2.1%	1.1%	3.2%	11.8%
Ninth	\$45,279 - 61,289	1.8%	1.8%	0.1%	0.1%	2.0%	1.0%	3.0%	11.8%
Tenth	\$61,290 & Over	1.6%	1.5%	0.4%	0.1%	2.0%	1.2%	3.2%	11.7%
TOTAL		1.9%	1.8%	0.2%	0.1%	2.2%	1.2%	3.4%	11.8%
Top 5%	\$80,228 & Over	1.5%	1.4%	0.5%	0.1%	2.0%	1.2%	3.2%	11.6%
Top 1%	\$171,283 & Over	1.0%	1.0%	0.7%	0.1%	1.7%	1.4%	3.1%	11.2%

1990 Minnesota Tax Incidence Study
TABLE D-3
Minnesota Tax Burden Amounts by Population Decile
Renters
(Dollar Amounts in Thousands)

Population Decile	Income Range	Number of Households	Total Household Income	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
				Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	69,063	\$160,965	\$88	\$1,318	\$8,461	\$2,693	\$11,154	\$4,743	\$1,046	\$871	\$14,338	\$4,883	\$19,221
Second	\$4,611 - 7,704	68,367	418,703	1,008	2,151	14,108	4,270	18,378	8,033	2,385	1,405	25,535	7,826	33,361
Third	\$7,705 - 11,970	73,607	727,493	8,358	3,258	20,065	6,229	26,294	10,815	4,333	2,087	43,571	11,575	55,146
Fourth	\$11,971 - 16,788	79,152	1,131,593	25,191	4,660	26,163	8,717	34,880	14,035	6,094	2,951	71,483	16,328	87,811
Fifth	\$16,789 - 21,802	81,807	1,589,972	49,880	5,944	32,389	11,084	43,473	17,022	7,825	3,788	107,116	20,817	127,933
Sixth	\$21,803 - 27,998	77,021	1,897,422	74,720	6,762	37,286	12,553	49,839	18,925	9,629	4,315	140,560	23,630	164,189
Seventh	\$27,999 - 35,716	56,140	1,759,428	77,544	5,927	33,114	11,196	44,311	15,937	8,334	3,862	134,929	20,986	155,915
Eighth	\$35,717 - 45,278	37,828	1,513,613	68,713	4,871	27,512	9,448	36,959	12,304	7,020	3,255	115,548	17,573	133,122
Ninth	\$45,279 - 61,289	24,722	1,272,010	61,477	3,938	21,880	7,502	29,382	8,850	5,926	2,541	98,133	13,981	112,115
Tenth	\$61,290 & Over	16,459	1,824,219	95,778	4,775	22,724	11,818	34,542	6,467	5,600	3,243	130,570	19,837	150,407
TOTAL		584,166	\$12,295,420	\$462,757	\$43,605	\$243,702	\$85,512	\$329,213	\$117,133	\$58,191	\$28,320	\$881,783	\$157,437	\$1,039,220
Top 5%	\$80,228 & Over	6,613	\$1,145,811	\$62,668	\$2,801	\$12,222	\$7,713	\$19,935	\$2,851	\$2,874	\$1,916	\$80,616	\$12,430	\$93,046
Top 1%	\$171,283 & Over	1,338	\$559,847	\$33,616	\$1,110	\$4,510	\$3,905	\$8,415	\$754	\$965	\$839	\$39,845	\$5,855	\$45,700

-135-

Population Decile	Income Range	Net Residential Property Taxes				Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Renter Gross	Renter Net	Rental (Landlord)	Total Residential			
First	\$4,610 & Under	\$9,330	\$3,275	\$418	\$3,694	\$3,695	\$7,389	\$26,609
Second	\$4,611 - 7,704	15,155	84	309	393	5,932	6,325	39,686
Third	\$7,705 - 11,970	24,262	4,751	305	5,056	8,439	13,495	68,641
Fourth	\$11,971 - 16,788	34,729	18,980	227	19,208	12,400	31,608	119,419
Fifth	\$16,789 - 21,802	39,833	27,169	601	27,770	16,100	43,870	171,804
Sixth	\$21,803 - 27,998	42,393	37,268	917	38,185	17,990	56,175	220,364
Seventh	\$27,999 - 35,716	33,695	32,537	895	33,432	18,807	52,239	208,154
Eighth	\$35,717 - 45,278	24,016	23,686	580	24,266	18,596	42,862	175,984
Ninth	\$45,279 - 61,289	16,269	16,107	947	17,054	12,315	29,369	141,484
Tenth	\$61,290 & Over	13,255	13,145	6,800	19,944	24,975	44,919	195,326
TOTAL		\$252,936	\$177,002	\$12,000	\$189,002	\$139,249	\$328,251	\$1,367,470
Top 5%	\$80,228 & Over	\$6,334	\$6,227	\$5,847	\$12,074	\$16,680	\$28,754	\$121,800
Top 1%	\$171,283 & Over	\$2,214	\$2,214	\$4,275	\$6,489	\$9,157	\$15,646	\$61,346

1990 Minnesota Tax Incidence Study
 TABLE D-3 (continued)
 Effective Tax Rates by Population Decile
 Renters

Population Decile	Income Range	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
		Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	0.1%	0.8%	5.3%	1.7%	6.9%	2.9%	0.6%	0.5%	8.9%	3.0%	11.9%
Second	\$4,611 - 7,704	0.2%	0.5%	3.4%	1.0%	4.4%	1.9%	0.6%	0.3%	6.1%	1.9%	8.0%
Third	\$7,705 - 11,970	1.1%	0.4%	2.8%	0.9%	3.6%	1.5%	0.6%	0.3%	6.0%	1.6%	7.6%
Fourth	\$11,971 - 16,788	2.2%	0.4%	2.3%	0.8%	3.1%	1.2%	0.5%	0.3%	6.3%	1.4%	7.8%
Fifth	\$16,789 - 21,802	3.1%	0.4%	2.0%	0.7%	2.7%	1.1%	0.5%	0.2%	6.7%	1.3%	8.0%
Sixth	\$21,803 - 27,998	3.9%	0.4%	2.0%	0.7%	2.6%	1.0%	0.5%	0.2%	7.4%	1.2%	8.7%
Seventh	\$27,999 - 35,716	4.4%	0.3%	1.9%	0.6%	2.5%	0.9%	0.5%	0.2%	7.7%	1.2%	8.9%
Eighth	\$35,717 - 45,278	4.5%	0.3%	1.8%	0.6%	2.4%	0.8%	0.5%	0.2%	7.6%	1.2%	8.8%
Ninth	\$45,279 - 61,289	4.8%	0.3%	1.7%	0.6%	2.3%	0.7%	0.5%	0.2%	7.7%	1.1%	8.8%
Tenth	\$61,290 & Over	5.3%	0.3%	1.2%	0.6%	1.9%	0.4%	0.3%	0.2%	7.2%	1.1%	8.2%
	TOTAL	3.8%	0.4%	2.0%	0.7%	2.7%	1.0%	0.5%	0.2%	7.2%	1.3%	8.5%
Top 5%	\$80,228 & Over	5.5%	0.2%	1.1%	0.7%	1.7%	0.2%	0.3%	0.2%	7.0%	1.1%	8.1%
Top 1%	\$171,283 & Over	6.0%	0.2%	0.8%	0.7%	1.5%	0.1%	0.2%	0.1%	7.1%	1.0%	8.2%

Population Decile	Income Range	Residential Property Taxes				Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Renter Gross	Renter Net	Rental (Landlord)	Total Residential			
First	\$4,610 & Under	5.8%	2.0%	0.3%	2.3%	2.3%	4.6%	16.5%
Second	\$4,611 - 7,704	3.6%	0.0%	0.1%	0.1%	1.4%	1.5%	9.5%
Third	\$7,705 - 11,970	3.3%	0.7%	0.0%	0.7%	1.2%	1.9%	9.4%
Fourth	\$11,971 - 16,788	3.1%	1.7%	0.0%	1.7%	1.1%	2.8%	10.6%
Fifth	\$16,789 - 21,802	2.5%	1.7%	0.0%	1.7%	1.0%	2.8%	10.8%
Sixth	\$21,803 - 27,998	2.2%	2.0%	0.0%	2.0%	0.9%	3.0%	11.6%
Seventh	\$27,999 - 35,716	1.9%	1.8%	0.1%	1.9%	1.1%	3.0%	11.8%
Eighth	\$35,717 - 45,278	1.6%	1.6%	0.0%	1.6%	1.2%	2.8%	11.6%
Ninth	\$45,279 - 61,289	1.3%	1.3%	0.1%	1.3%	1.0%	2.3%	11.1%
Tenth	\$61,290 & Over	0.7%	0.7%	0.4%	1.1%	1.4%	2.5%	10.7%
	TOTAL	2.1%	1.4%	0.1%	1.5%	1.1%	2.7%	11.1%
Top 5%	\$80,228 & Over	0.6%	0.5%	0.5%	1.1%	1.5%	2.5%	10.6%
Top 1%	\$171,283 & Over	0.4%	0.4%	0.8%	1.2%	1.6%	2.8%	11.0%

1990 Minnesota Tax Incidence Study
TABLE D-4
Minnesota Tax Burden Amounts by Population Decile
Others (farmers and those with no property tax)
(Dollar Amounts in Thousands)

Population Decile	Income Range	Number of Households	Total Household Income	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
				Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	101,469	\$206,126	\$256	\$1,867	\$11,748	\$5,865	\$17,613	\$6,665	\$1,485	\$1,674	\$20,154	\$9,407	\$29,561
Second	\$4,611 - 7,704	91,952	559,641	2,135	2,967	19,045	6,177	25,222	11,020	3,420	2,088	35,619	11,231	46,850
Third	\$7,705 - 11,970	78,639	754,157	12,822	3,445	20,864	7,024	27,888	11,168	4,424	2,410	49,278	12,878	62,156
Fourth	\$11,971 - 16,788	61,108	878,879	20,987	3,653	20,517	7,970	28,487	11,104	4,882	2,688	57,490	14,310	71,800
Fifth	\$16,789 - 21,802	40,010	751,047	22,002	2,881	15,373	6,128	21,501	8,298	3,675	2,073	49,348	11,082	60,430
Sixth	\$21,803 - 27,998	13,265	333,628	9,562	1,220	7,003	3,517	10,520	3,953	1,956	1,171	22,475	5,907	28,382
Seventh	\$27,999 - 35,716	17,814	563,049	18,911	1,890	11,287	5,821	17,107	5,793	3,028	1,983	39,019	9,695	48,714
Eighth	\$35,717 - 45,278	11,222	457,625	18,586	1,446	8,798	4,334	13,132	4,018	2,467	1,501	33,869	7,282	41,151
Ninth	\$45,279 - 61,289	10,984	571,462	27,729	1,743	10,102	5,479	15,581	4,141	2,790	1,815	44,762	9,037	53,799
Tenth	\$61,290 & Over	9,643	1,080,739	60,553	2,591	14,062	9,238	23,301	4,067	3,662	2,653	82,345	14,483	96,828
TOTAL		436,106	\$6,156,354	\$193,543	\$23,704	\$138,800	\$61,552	\$200,352	\$70,228	\$31,790	\$20,056	\$434,360	\$105,313	\$539,673
Top 5%	\$80,228 & Over	4,835	\$749,847	\$43,648	\$1,637	\$8,689	\$6,257	\$14,946	\$2,151	\$2,174	\$1,701	\$56,662	\$9,594	\$66,256
Top 1%	\$171,283 & Over	901	\$323,710	\$18,913	\$595	\$2,838	\$2,432	\$5,271	\$507	\$646	\$539	\$22,905	\$3,566	\$26,471

-137-

Population Decile	Income Range	Net Residential Property Taxes				Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Homeowner Gross	Homeowner Net	Rental (Landlord)	Total Residential			
First	\$4,610 & Under	\$3,064	\$2,416	\$3,925	\$6,341	\$16,493	\$22,834	\$52,395
Second	\$4,611 - 7,704	2,437	1,913	413	2,326	12,105	14,431	61,281
Third	\$7,705 - 11,970	3,298	2,365	571	2,936	14,150	17,086	79,242
Fourth	\$11,971 - 16,788	4,215	3,494	1,214	4,708	19,342	24,050	95,850
Fifth	\$16,789 - 21,802	3,698	3,220	743	3,963	14,491	18,454	78,884
Sixth	\$21,803 - 27,998	3,461	3,225	1,070	4,294	13,375	17,669	46,052
Seventh	\$27,999 - 35,716	5,803	5,478	1,389	6,867	25,873	32,740	81,453
Eighth	\$35,717 - 45,278	4,165	3,972	960	4,933	19,394	24,327	65,478
Ninth	\$45,279 - 61,289	4,233	4,071	1,841	5,912	23,662	29,574	83,373
Tenth	\$61,290 & Over	4,187	3,957	6,460	10,416	34,591	45,007	141,836
TOTAL		\$38,559	\$34,110	\$18,586	\$52,695	\$193,476	\$246,171	\$785,844
Top 5%	\$80,228 & Over	\$2,218	\$2,122	\$5,154	\$7,276	\$22,679	\$29,955	\$96,211
Top 1%	\$171,283 & Over	\$486	\$463	\$2,938	\$3,401	\$6,364	\$9,765	\$36,236

1990 Minnesota Tax Incidence Study
TABLE D-4 (continued)
Effective Tax Rates by Population Decile
Others (farmers and those with no property tax)

Population Decile	Income Range	State Income Tax		State Sales Tax			Excise & Miscellaneous Taxes			Total State Taxes		
		Individual	Corporate	Consumer	Business	Total	Excise	Other	Business	Individual	Business	Total
First	\$4,610 & Under	0.1%	0.9%	5.7%	2.8%	8.5%	3.2%	0.7%	0.8%	9.8%	4.6%	14.3%
Second	\$4,611 - 7,704	0.4%	0.5%	3.4%	1.1%	4.5%	2.0%	0.6%	0.4%	6.4%	2.0%	8.4%
Third	\$7,705 - 11,970	1.7%	0.5%	2.8%	0.9%	3.7%	1.5%	0.6%	0.3%	6.5%	1.7%	8.2%
Fourth	\$11,971 - 16,788	2.4%	0.4%	2.3%	0.9%	3.2%	1.3%	0.6%	0.3%	6.5%	1.6%	8.2%
Fifth	\$16,789 - 21,802	2.9%	0.4%	2.0%	0.8%	2.9%	1.1%	0.5%	0.3%	6.6%	1.5%	8.0%
Sixth	\$21,803 - 27,998	2.9%	0.4%	2.1%	1.1%	3.2%	1.2%	0.6%	0.4%	6.7%	1.8%	8.5%
Seventh	\$27,999 - 35,716	3.4%	0.3%	2.0%	1.0%	3.0%	1.0%	0.5%	0.4%	6.9%	1.7%	8.7%
Eighth	\$35,717 - 45,278	4.1%	0.3%	1.9%	0.9%	2.9%	0.9%	0.5%	0.3%	7.4%	1.6%	9.0%
Ninth	\$45,279 - 61,289	4.9%	0.3%	1.8%	1.0%	2.7%	0.7%	0.5%	0.3%	7.8%	1.6%	9.4%
Tenth	\$61,290 & Over	5.6%	0.2%	1.3%	0.9%	2.2%	0.4%	0.3%	0.2%	7.6%	1.3%	9.0%
TOTAL		3.1%	0.4%	2.3%	1.0%	3.3%	1.1%	0.5%	0.3%	7.1%	1.7%	8.8%
Top 5%	\$80,228 & Over	5.8%	0.2%	1.2%	0.8%	2.0%	0.3%	0.3%	0.2%	7.6%	1.3%	8.8%
Top 1%	\$171,283 & Over	5.8%	0.2%	0.9%	0.8%	1.6%	0.2%	0.2%	0.2%	7.1%	1.1%	8.2%

Population Decile	Income Range	Residential Property Taxes				Non-Residential Property Tax	Total Local Property Taxes	Total State and Local Taxes
		Homeowner Gross	Homeowner Net	Rental (Landlord)	Total Residential			
First	\$4,610 & Under	1.5%	1.2%	1.9%	3.1%	8.0%	11.1%	25.4%
Second	\$4,611 - 7,704	0.4%	0.3%	0.1%	0.4%	2.2%	2.6%	11.0%
Third	\$7,705 - 11,970	0.4%	0.3%	0.1%	0.4%	1.9%	2.3%	10.5%
Fourth	\$11,971 - 16,788	0.5%	0.4%	0.1%	0.5%	2.2%	2.7%	10.9%
Fifth	\$16,789 - 21,802	0.5%	0.4%	0.1%	0.5%	1.9%	2.5%	10.5%
Sixth	\$21,803 - 27,998	1.0%	1.0%	0.3%	1.3%	4.0%	5.3%	13.8%
Seventh	\$27,999 - 35,716	1.0%	1.0%	0.2%	1.2%	4.6%	5.8%	14.5%
Eighth	\$35,717 - 45,278	0.9%	0.9%	0.2%	1.1%	4.2%	5.3%	14.3%
Ninth	\$45,279 - 61,289	0.7%	0.7%	0.3%	1.0%	4.1%	5.2%	14.6%
Tenth	\$61,290 & Over	0.4%	0.4%	0.6%	1.0%	3.2%	4.2%	13.1%
TOTAL		0.6%	0.6%	0.3%	0.9%	3.1%	4.0%	12.8%
Top 5%	\$80,228 & Over	0.3%	0.3%	0.7%	1.0%	3.0%	4.0%	12.8%
Top 1%	\$171,283 & Over	0.2%	0.1%	0.9%	1.1%	2.0%	3.0%	11.2%

Table E-1
Household Characteristics and Tax Burdens by Population Deciles
One-Person Households (Except Retired Elderly)

	Population Decile										Total
	1	2	3	4	5	6	7	8	9	10	
Total Number of Households	125,219	89,296	99,141	98,309	96,135	71,968	53,128	30,062	14,446	9,232	692,156
Percent of households	60%	43%	48%	47%	46%	35%	26%	15%	7%	4%	33%
Average Household Income	\$1,989	\$6,120	\$9,733	\$14,365	\$19,131	\$24,546	\$31,329	\$39,685	\$51,833	\$142,179	\$16,905
Percent with earned income	47%	76%	92%	95%	96%	97%	97%	97%	97%	93%	84%
Average earned income	\$2,473	\$5,725	\$9,148	\$13,385	\$17,843	\$23,127	\$29,486	\$36,320	\$44,446	\$80,802	\$16,856
Housing Status											
Homeowners	8%	13%	10%	20%	26%	39%	46%	64%	75%	75%	24%
Renters	38%	32%	36%	44%	49%	58%	50%	35%	23%	21%	42%
Farmers	1%	2%	1%	0%	1%	1%	2%	1%	2%	4%	1%
Other	53%	53%	53%	35%	23%	2%	2%	0%	0%	0%	33%
Average market value of home	\$42,131	\$33,525	\$41,471	\$45,281	\$53,512	\$57,452	\$63,310	\$68,159	\$88,089	\$109,442	\$58,184
Average monthly rent	\$115	\$199	\$290	\$367	\$406	\$473	\$507	\$539	\$563	\$747	\$344
Average Tax Burden											
Property Tax											
All Households											
Gross tax	\$91	\$123	\$174	\$292	\$398	\$585	\$645	\$728	\$1,111	\$1,572	\$343
- Property tax refund	-39	-79	-83	-69	-57	-36	-12	-5	-9	-41	-53
Net tax	\$52	\$43	\$91	\$223	\$341	\$549	\$632	\$723	\$1,102	\$1,531	\$290
Renters Only											
Gross tax on rental unit	\$228	\$395	\$574	\$727	\$803	\$936	\$1,004	\$1,068	\$1,115	\$1,478	\$681
- Landlord's burden	-93	-162	-235	-298	-329	-384	-412	-438	-457	-606	-279
Gross tax paid by renter	\$134	\$233	\$339	\$429	\$474	\$552	\$592	\$630	\$658	\$872	\$402
- Property tax refund	-95	-218	-201	-123	-92	-45	-8	0	0	0	-104
Net tax paid by renter	\$39	\$15	\$137	\$306	\$382	\$507	\$584	\$630	\$658	\$872	\$298
Homeowners Only											
Gross tax	\$451	\$317	\$490	\$507	\$605	\$672	\$736	\$783	\$1,270	\$1,828	\$705
- Property tax refund	-25	-61	-99	-72	-43	-26	-16	-7	-11	-54	-38
Net tax	\$426	\$257	\$391	\$435	\$562	\$645	\$720	\$776	\$1,259	\$1,774	\$667
State Income Tax	\$5	\$40	\$230	\$494	\$764	\$1,182	\$1,657	\$2,192	\$2,961	\$8,404	\$734
Sales Tax	110	193	246	298	359	447	524	610	727	1,314	319
Excise Taxes	60	106	125	148	173	200	222	236	249	310	145
Other Taxes	16	35	50	70	90	124	125	136	169	254	72
Business Taxes	114	203	282	370	452	528	649	819	1,190	4,975	449
Total State & Local Taxes	\$356	\$619	\$1,023	\$1,603	\$2,178	\$3,030	\$3,810	\$4,716	\$6,398	\$16,787	\$2,009
Effective Tax Rate	17.9%	10.1%	10.5%	11.2%	11.4%	12.3%	12.2%	11.9%	12.3%	11.8%	11.9%
Renters only	16.2%	9.5%	10.7%	11.6%	11.6%	12.3%	12.3%	11.9%	11.7%	11.9%	11.9%
Homeowners only	34.9%	14.0%	14.0%	12.8%	12.5%	12.5%	12.0%	11.9%	12.5%	11.9%	12.4%

See notes at end of table.

Table E-2
Household Characteristics and Tax Burdens by Population Deciles
Retired Elderly

	Population Decile										Total
	1	2	3	4	5	6	7	8	9	10	
Total Number of Households	46,065	86,343	65,689	50,676	43,196	42,823	34,042	21,899	11,906	14,258	418,491
Percent of households	22%	42%	32%	24%	21%	21%	16%	11%	6%	7%	20%
Average Household Income	\$3,246	\$6,106	\$9,664	\$14,248	\$19,326	\$24,959	\$31,626	\$40,390	\$52,368	\$125,503	\$19,865
Social security income	\$3,163	\$5,642	\$7,157	\$7,880	\$8,593	\$9,260	\$9,769	\$8,781	\$6,139	\$7,380	\$7,127
As percent of income	97%	92%	74%	55%	44%	37%	31%	22%	12%	6%	36%
Percent Married	1%	5%	19%	34%	44%	67%	70%	76%	68%	77%	34%
Housing Status											
Homeowners	37%	36%	48%	53%	62%	75%	74%	65%	74%	78%	54%
Renters	30%	35%	35%	31%	26%	20%	15%	26%	15%	17%	28%
Farmers	4%	4%	8%	9%	6%	5%	11%	8%	11%	4%	7%
Other	30%	26%	10%	8%	5%	0%	0%	0%	0%	0%	12%
Average market value of home	\$32,656	\$35,009	\$42,441	\$55,663	\$57,848	\$57,697	\$55,887	\$69,553	\$74,132	\$105,003	\$53,917
Average monthly rent	\$120	\$174	\$277	\$407	\$459	\$459	\$525	\$541	\$568	\$686	\$317
Average Tax Burden											
Property Tax											
All Households											
Gross tax	\$158	\$209	\$354	\$524	\$587	\$619	\$622	\$733	\$851	\$1,517	\$470
- Property tax refund	-28	-103	-190	-189	-141	-68	-41	-31	-15	-51	-106
Net tax	\$130	\$105	\$164	\$336	\$446	\$550	\$581	\$703	\$836	\$1,466	\$363
Renters Only											
Gross tax on rental unit	\$237	\$344	\$548	\$805	\$909	\$908	\$1,039	\$1,070	\$1,124	\$1,358	\$627
- Landlord's burden	-97	-141	-225	-330	-373	-372	-426	-439	-461	-557	-257
Gross tax paid by renter	\$140	\$203	\$323	\$475	\$536	\$536	\$613	\$632	\$663	\$801	\$370
- Property tax refund	-66	-203	-334	-372	-299	-101	-53	0	0	0	-213
Net tax paid by renter	\$74	\$0	(\$10)	\$104	\$237	\$435	\$560	\$632	\$663	\$801	\$157
Homeowners Only											
Gross tax	\$282	\$351	\$447	\$649	\$671	\$662	\$667	\$830	\$963	\$1,737	\$637
- Property tax refund	-20	-86	-140	-128	-94	-62	-41	-44	-18	-65	-80
Net tax	\$262	\$264	\$307	\$522	\$577	\$600	\$626	\$786	\$945	\$1,672	\$557
State Income Tax	\$1	\$0	\$0	\$30	\$132	\$304	\$631	\$1,156	\$1,930	\$4,786	\$378
Sales Tax	142	197	261	334	399	517	611	725	841	1,450	393
Excise Taxes	78	109	137	173	210	257	288	310	313	372	183
Other Taxes	23	37	60	93	121	182	199	216	236	393	110
Business Taxes	141	199	334	490	559	743	1,267	1,755	1,698	4,656	707
Total State & Local Taxes	\$515	\$647	\$956	\$1,457	\$1,866	\$2,553	\$3,577	\$4,864	\$5,853	\$13,123	\$2,134
Effective Tax Rate	15.9%	10.6%	9.9%	10.2%	9.7%	10.2%	11.3%	12.0%	11.2%	10.5%	10.7%
Renters only	14.2%	8.8%	7.0%	7.5%	8.1%	9.4%	10.9%	11.7%	9.5%	9.2%	9.2%
Homeowners only	20.4%	13.1%	11.1%	11.5%	10.3%	10.3%	10.7%	11.6%	11.2%	10.3%	10.9%

-140-

See notes at end of table.

Table E-3
Household Characteristics and Tax Burdens by Population Deciles
Single Parent Families

	Population Decile										Total
	1	2	3	4	5	6	7	8	9	10	
Total Number of Households	13,518	23,735	20,429	16,245	20,591	20,253	13,779	8,372	5,509	2,899	146,198
Percent of households	7%	11%	10%	8%	10%	10%	7%	4%	3%	1%	7%
Average Number of Children	1.6	1.6	1.7	1.5	1.6	1.4	1.6	1.5	1.4	1.5	1.5
Average Household Income	\$2,431	\$6,114	\$9,624	\$14,531	\$19,209	\$24,638	\$31,367	\$40,134	\$50,761	\$130,899	\$20,062
Percent with earned income	19%	30%	87%	98%	99%	99%	100%	99%	98%	96%	78%
Average earned income	\$3,044	\$5,564	\$7,765	\$13,150	\$17,541	\$23,419	\$29,883	\$37,481	\$44,206	\$82,329	\$21,073
Housing Status											
Homeowners	15%	13%	27%	21%	40%	58%	63%	70%	73%	79%	38%
Renters	31%	34%	48%	63%	48%	38%	34%	28%	21%	19%	40%
Farmers	3%	1%	0%	0%	1%	2%	1%	2%	6%	2%	2%
Other	52%	51%	25%	16%	11%	1%	1%	0%	0%	0%	20%
Average market value of home	\$43,208	\$32,390	\$37,801	\$35,744	\$40,736	\$54,692	\$62,840	\$67,494	\$84,440	\$115,841	\$55,615
Average monthly rent	\$98	\$209	\$258	\$367	\$432	\$481	\$509	\$548	\$552	\$666	\$359
Average Tax Burden											
Property Tax											
All Households											
Gross tax	\$111	\$133	\$252	\$349	\$428	\$567	\$687	\$763	\$1,000	\$1,718	\$428
- Property tax refund	-32	-104	-180	-135	-155	-70	-28	-20	-33	-41	-98
Net tax	\$79	\$29	\$73	\$214	\$273	\$497	\$659	\$743	\$967	\$1,677	\$330
Renters Only											
Gross tax on rental unit	\$195	\$413	\$512	\$727	\$855	\$953	\$1,009	\$1,085	\$1,092	\$1,318	\$711
- Landlord's burden	-80	-170	-210	-298	-350	-391	-414	-445	-448	-540	-292
Gross tax paid by renter	\$115	\$244	\$302	\$429	\$504	\$562	\$595	\$640	\$645	\$778	\$420
- Property tax refund	-47	-277	-311	-188	-243	-117	-15	0	0	0	-184
Net tax paid by renter	\$68	(\$33)	(\$9)	\$240	\$262	\$445	\$580	\$640	\$645	\$778	\$235
Homeowners Only											
Gross tax	\$430	\$342	\$401	\$384	\$448	\$580	\$756	\$812	\$1,164	\$1,972	\$667
- Property tax refund	-72	-76	-112	-81	-94	-43	-36	-20	-45	-51	-60
Net tax	\$358	\$267	\$289	\$302	\$354	\$537	\$720	\$793	\$1,120	\$1,922	\$607
State Income Tax	\$0	(\$1)	\$3	\$146	\$403	\$798	\$1,246	\$1,831	\$2,210	\$7,422	\$636
Sales Tax	152	270	350	419	461	542	659	777	898	1,586	466
Excise Taxes	98	177	209	243	278	307	347	368	364	421	252
Other Taxes	20	63	110	136	151	179	223	266	301	489	146
Business Taxes	156	273	341	414	522	601	742	840	1,243	3,594	553
Total State & Local Taxes	\$506	\$811	\$1,086	\$1,571	\$2,088	\$2,922	\$3,876	\$4,824	\$5,983	\$15,189	\$2,384
Effective Tax Rate	20.8%	13.3%	11.3%	10.8%	10.9%	11.9%	12.4%	12.0%	11.8%	11.6%	11.9%
Renters only	19.6%	11.9%	10.3%	11.1%	10.7%	11.7%	12.1%	12.2%	12.0%	12.3%	11.5%
Homeowners only	28.9%	17.0%	13.9%	11.3%	11.5%	12.0%	12.3%	12.0%	11.5%	11.4%	12.0%

Table E-4
Household Characteristics and Tax Burdens by Population Deciles
Married, No Children (Except Retired Elderly)

	Population Decile										Total
	1	2	3	4	5	6	7	8	9	10	
Total Number of Households	3,649	1,818	8,267	20,141	21,546	27,166	41,889	52,940	56,021	58,956	295,204
Percent of households	2%	1%	4%	10%	10%	13%	20%	26%	27%	28%	14%
Average Household Income	\$2,029	\$6,399	\$10,289	\$14,452	\$19,468	\$24,929	\$31,926	\$40,442	\$52,668	\$124,921	\$51,784
Percent with earned income	50%	55%	88%	86%	98%	94%	98%	99%	99%	99%	96%
Average earned income	\$4,123	\$5,301	\$8,357	\$10,439	\$15,540	\$17,767	\$25,924	\$34,906	\$45,602	\$80,248	\$39,425
Housing Status											
Homeowners	33%	7%	34%	50%	58%	67%	69%	77%	79%	86%	71%
Renters	25%	26%	33%	16%	24%	21%	17%	14%	15%	8%	16%
Farmers	21%	19%	8%	22%	13%	11%	14%	8%	6%	5%	10%
Other	20%	48%	25%	12%	5%	1%	0%	0%	0%	0%	3%
Average market value of home	\$39,747	\$49,867	\$53,204	\$51,042	\$49,228	\$56,127	\$58,484	\$63,583	\$73,304	\$107,852	\$73,678
Average monthly rent	\$96	\$204	\$341	\$359	\$430	\$478	\$501	\$539	\$556	\$700	\$496
Average Tax Burden											
Property Tax											
All Households											
Gross tax	\$260	\$175	\$347	\$443	\$484	\$577	\$627	\$675	\$837	\$1,603	\$836
- Property tax refund	-79	-141	-193	-81	-50	-34	-22	-12	-13	-41	-37
Net tax	\$182	\$34	\$154	\$362	\$434	\$542	\$605	\$663	\$825	\$1,562	\$799
Renters Only											
Gross tax on rental unit	\$190	\$405	\$676	\$711	\$851	\$946	\$992	\$1,068	\$1,101	\$1,386	\$982
- Landlord's burden	-78	-166	-277	-291	-349	-388	-407	-438	-452	-568	-403
Gross tax paid by renter	\$112	\$239	\$399	\$419	\$502	\$558	\$585	\$630	\$650	\$818	\$580
- Property tax refund	-68	-316	-363	-192	-127	-71	-15	0	0	0	-65
Net tax paid by renter	\$44	(\$77)	\$35	\$228	\$375	\$488	\$570	\$630	\$650	\$818	\$514
Homeowners Only											
Gross tax	\$503	\$515	\$574	\$610	\$555	\$632	\$689	\$720	\$905	\$1,752	\$992
- Property tax refund	-177	-296	-207	-82	-27	-28	-24	-14	-15	-46	-33
Net tax	\$326	\$219	\$367	\$529	\$528	\$604	\$665	\$706	\$891	\$1,706	\$958
State Income Tax	\$49	\$0	\$28	\$193	\$429	\$729	\$1,179	\$1,851	\$2,734	\$7,044	\$2,538
Sales Tax	146	269	358	411	452	549	652	761	901	1,490	824
Excise Taxes	91	168	200	228	259	285	317	334	344	393	318
Other Taxes	36	60	123	160	170	215	238	272	323	492	290
Business Taxes	335	313	458	669	784	795	978	1,024	1,236	3,334	1,453
Total State & Local Taxes	\$839	\$843	\$1,319	\$2,022	\$2,529	\$3,115	\$3,968	\$4,904	\$6,362	\$14,316	\$6,221
Effective Tax Rate	41.3%	13.2%	12.8%	14.0%	13.0%	12.5%	12.4%	12.1%	12.1%	11.5%	12.0%
Renters only	37.8%	10.2%	10.4%	11.1%	11.7%	11.9%	11.9%	11.8%	11.2%	10.5%	11.2%
Homeowners only	39.6%	16.0%	16.9%	14.2%	12.9%	12.4%	11.9%	12.1%	12.0%	11.4%	11.9%

See notes at end of table.

Table E-5
Household Characteristics and Tax Burdens by Population Deciles
Married with Children

	Population Decile										Total
	1	2	3	4	5	6	7	8	9	10	
Total Number of Households	4,428	6,053	13,866	21,788	25,754	45,287	64,409	92,764	118,734	121,549	518,518
Percent of households	2%	3%	7%	11%	12%	22%	31%	45%	57%	59%	25%
Average Number of Children	2.34	2.09	2.46	2.26	2.11	2.14	2.06	2.01	1.96	2.01	2.05
Average Household Income	\$2,590	\$6,320	\$9,944	\$14,612	\$19,602	\$25,114	\$31,846	\$40,364	\$52,409	\$109,725	\$53,048
Percent with earned income	15%	44%	85%	95%	99%	98%	100%	100%	100%	99%	97%
Average earned income	\$4,015	\$5,405	\$8,339	\$12,944	\$17,423	\$22,904	\$30,261	\$37,943	\$49,134	\$89,379	\$47,448
Housing Status											
Homeowners	27%	26%	44%	33%	49%	60%	71%	84%	87%	90%	76%
Renters	29%	17%	20%	29%	30%	30%	19%	12%	8%	5%	14%
Farmers	0%	18%	12%	14%	13%	10%	9%	5%	5%	4%	7%
Other	43%	40%	24%	24%	8%	1%	0%	0%	0%	0%	3%
Average market value of home	\$23,588	\$37,024	\$39,535	\$47,378	\$36,915	\$49,973	\$56,950	\$63,497	\$75,267	\$112,541	\$76,878
Average monthly rent	\$96	\$227	\$253	\$379	\$394	\$466	\$532	\$544	\$565	\$684	\$487
Average Tax Burden											
Property Tax											
All Households											
Gross tax	\$105	\$187	\$300	\$334	\$365	\$542	\$626	\$698	\$873	\$1,747	\$907
- Property tax refund	-8	-102	-137	-129	-105	-55	-24	-17	-19	-39	-41
<u>Net tax</u>	<u>\$96</u>	<u>\$86</u>	<u>\$163</u>	<u>\$205</u>	<u>\$260</u>	<u>\$487</u>	<u>\$602</u>	<u>\$680</u>	<u>\$854</u>	<u>\$1,708</u>	<u>\$866</u>
Renters Only											
Gross tax on rental unit	\$191	\$449	\$501	\$750	\$780	\$922	\$1,054	\$1,077	\$1,118	\$1,354	\$965
- Landlord's burden	-78	-184	-205	-308	-320	-378	-432	-442	-458	-555	-396
Gross tax paid by renter	\$113	\$265	\$296	\$443	\$460	\$544	\$622	\$635	\$660	\$799	\$569
- Property tax refund	-17	-317	-255	-317	-232	-81	-38	0	0	0	-90
<u>Net tax paid by renter</u>	<u>\$96</u>	<u>(\$52)</u>	<u>\$41</u>	<u>\$126</u>	<u>\$228</u>	<u>\$463</u>	<u>\$584</u>	<u>\$635</u>	<u>\$660</u>	<u>\$799</u>	<u>\$479</u>
Homeowners Only											
Gross tax	\$263	\$314	\$430	\$486	\$386	\$591	\$667	\$723	\$920	\$1,866	\$1,056
- Property tax refund	-12	-94	-147	-80	-59	-46	-21	-20	-21	-42	-34
<u>Net tax</u>	<u>\$251</u>	<u>\$220</u>	<u>\$283</u>	<u>\$407</u>	<u>\$327</u>	<u>\$545</u>	<u>\$645</u>	<u>\$703</u>	<u>\$899</u>	<u>\$1,824</u>	<u>\$1,023</u>
State Income Tax	\$0	(\$25)	(\$8)	\$44	\$248	\$545	\$959	\$1,509	\$2,328	\$6,072	\$2,407
Sales Tax	\$145	\$286	\$361	\$422	\$476	\$543	\$693	\$828	\$975	\$1,509	\$915
Excise Taxes	100	205	242	281	315	353	385	405	415	452	390
Other Taxes	36	86	134	149	173	201	256	306	363	531	332
Business Taxes	152	1,088	554	766	725	914	902	1,055	1,246	2,812	1,437
Total State & Local Taxes	\$560	\$1,725	\$1,446	\$1,868	\$2,198	\$3,043	\$3,798	\$4,784	\$6,181	\$13,085	\$6,348
Effective Tax Rate	20.4%	27.3%	14.5%	12.8%	11.2%	12.1%	11.9%	11.9%	11.8%	11.9%	12.0%
Renters only	20.3%	17.3%	11.3%	10.4%	10.1%	11.1%	11.4%	11.4%	11.1%	11.2%	11.2%
Homeowners only	26.1%	22.6%	15.6%	14.1%	11.4%	11.9%	11.9%	11.7%	11.7%	11.9%	11.9%

The Notes for Table E-1 through E-5:

Adjustments to Data:

1. Tax rates for the first decile are calculated after excluding (a) households with business losses (sum of income reported on Schedules C, E, and F less than zero) and (b) households with negative total incomes. Those in the bottom decile because of business losses (about 7 percent of the total) are unusual. When they are included, effective tax rates are much higher, particularly for "married no children" and "married with children." The excluded households have incomes averaging -\$27,100 compared to \$2,335 for those remaining. Average home values for the excluded group exceeded \$70,000 compared to \$36,200 for those remaining.
2. A small number of renter households in the upper deciles are excluded to adjust for some property tax refund reporting inconsistencies.

Definitions:

1. Retired elderly includes social security recipients not known to be under 62 years of age, whose social security benefits are at least twice as large as earned income. Earned income includes wage and salary income plus self-employment income from Schedules C and F. This category includes some under age 65 and excludes some over age 65.
2. "Children" include anyone claimed as a dependent on an income tax return or public assistance file. "Single parent families" are all those with only one adult and one or more children.
3. Homeowners do not include those living in farm homesteads.
4. Farmers are defined as those who own farm homestead property, not those actively farming.
5. Those who are not renters, homeowners, or farmers are classified as "other." Examples would include a person living with parents (but not claimed as a dependent on tax forms), senior citizens living with children, or someone living in fully subsidized housing.
6. Earned income is defined as the sum of wage and salary income and positive amounts from Schedules C (sole proprietor) and F (farms).
7. Landlord's share of rental property taxes is included in business taxes.

LEGISLATIVE MANDATE

270.0682 Tax Incidence Reports

Subdivision 1. Biennial report. The commissioner of revenue shall report to the legislature by March 1 of each odd-numbered year on the overall incidence of the income tax, sales and excise taxes, and property tax. The report shall present information on the distribution of the tax burden (1) for the overall income distribution, using a systemwide incidence measure such as the Suits index or other appropriate measures of equality and inequality, (2) by income classes, including at a minimum deciles of the income distribution, and (3) by other appropriate taxpayer characteristics.

Subdivision 2. Bill analyses. At the request of the chair of the house tax committee or the senate committee on taxes and tax laws, the commissioner of revenue shall prepare an incidence impact analysis of a bill or a proposal to change the tax system which increases, decreases, or redistributes taxes by more than \$20,000,000. To the extent data is available on the changes in the distribution of the tax burden that are affected by the bill or proposal, the analysis shall report on the incidence effects that would result if the bill were enacted. The report may present information using systemwide measures, such as Suits or other similar indexes, by income classes, taxpayer characteristics, or other relevant categories. The report may include analyses of the effect of the bill or proposal on representative taxpayers. The analysis must include a statement of the incidence assumptions that were used in computing the burdens.

Subdivision 3. Income measure. The incidence analyses shall use the broadest measure of economic income for which reliable data is available.

History: 1990 c 604 art 10 s 9.

BIBLIOGRAPHY

- Aaron, H. (1974). "A New View of Property Tax Incidence," American Economic Review, May, pp. 212-221.
- Aaron H. (1975). Who Pays the Property Tax?: A New View. Washington D.C.: The Bookings Institution.
- Advisory Commission on Intergovernmental Relations (1991). Significant Features of Fiscal Federalism. Washington, D.C.: ACIR.
- Advisory Commission on Intergovernmental Relations (1990). 1988 State Fiscal Capacity. Washington, D.C.: ACIR.
- Bania, N. and L.N. Calkins (1992). "Interstate Differentials in State and Local Business Taxation, 1971-86," Environment and Planning C: Government and Policy, May, pp. 147-158.
- Barthold, T. (1993). "How Should We Measure Distribution?" National Tax Journal, September.
- Bartik, T.J. (1991). Who Benefits from State and Local Economic Development Policies?, Kalamazoo, Michigan, Upjohn Institute.
- Boskin, M.J. (1978). "Taxation, Savings, and the Rate of Interest," Journal of Political Economy, April, pp. S3-S28.
- Bosworth, B. and G. Burtless (1992). "Effects of Tax Reform on Labor Supply, Investment, and Saving," Journal of Economic Perspectives, Winter, pp. 3-26.
- Bovenberg, A.L. (1989). "Tax Policy and National Savings in the United States: A Survey," National Tax Journal, June, pp. 123-138.
- Bradbury, K.L. and H.F. Ladd (1985). "Changes in the Revenue-Raising Capacity of U.S. Cities," New England Economic Review, March/April, pp. 32-37.

- Case, K.E. and J.H. Grant (1991). "Property Tax Incidence in a Multijurisdictional Neoclassical Model," Public Finance Quarterly, October, pp. 379-392.
- Chernick, H. and A. Reschovsky (1992). "Is the Gasoline Tax Regressive?" University of Wisconsin - Madison, Institute for Research on Poverty, Discussion Paper No. 980-92.
- Citizens for Tax Justice (1991). A Far Cry From Fair. Washington, D.C.
- Courant, P.N. (1982). "The Property Tax," in H.E. Brazer, ed., Michigan's Fiscal and Economic Structure, Ann Arbor, Michigan: University of Michigan Press, pp. 485-529.
- Dahlby, B.G. (1982). "Traditional View of the Incidence of the Property Tax: An Examination," Public Finance Quarterly, July, pp. 369-383.
- District of Columbia (1991). Tax Rates and Tax Burdens in the District of Columbia: A Nationwide Comparison, Washington D.C., June.
- Davis, A.J. (1991). "Measuring the Distributional Effects of Tax Changes for the Congress," National Tax Journal, September, pp. 257-267.
- Derrick, F. and C. Scott (1993). "Businesses and the Incidence of Sales and Use Taxes," Public Finance Quarterly, April, pp. 210-226.
- Fisher, R.C. (1988). State and Local Public Finance. Glenview, Illinois: Scott, Foresman and Company.
- Florida State Legislature (1992). Who Pays Florida's Sales Tax?, July.
- Fromby, J.P., W. Smith and D. Sykes. (1986). "Intersecting Tax Concentration Curves and the Measurement of Tax Progressivity," National Tax Journal, vol. 39, March, pp. 115-120.
- Fullerton, D. and J.B. Mackie (1989). "Economic Efficiency in Recent Tax Reform History: Policy Reversals or Consistent Improvements?" National Tax Journal, March, pp. 1-13.
- Fullerton, D. and D.L. Rogers (1991). "Lifetime Versus Annual Perspectives on Tax Incidence." National Tax Journal, September, pp. 277-287.

- Gorman, J.A., J.C. Musgrave, G. Silversein, and K.A. Comins (1985). "Fixed Private Capital in the United States." Survey of Current Business, July, pp. 36-47.
- Gruber, J. and A.B. Krueger (1991). "The Incidence of Mandated Employer-Provided Insurance: Lessons from Workers' Compensation Insurance," in D. Bradford, ed., Tax Policy and the Economy, Cambridge, Massachusetts: MIT Press, pp. 111-143.
- Harberger, A.C. (1962). "The Incidence of the Corporation Income Tax," Journal of Political Economy, June, pp. 215-240.
- Harmon, O.R. (1989). "A New View of the Incidence of the Property Tax: The Case of New Jersey," Public Finance Quarterly, vol. 17, July, pp. 323-348.
- Hollahan, J. and S. Zedlewski (1992). "Who Pays for Health Care in the United States? Implications for Health System Reform," Inquiry, Summer, pp. 231-248.
- Hosek, W.R. and F. Zahn (1984). "Real Rates of Return and Aggregate Investment," Southern Economic Journal, July, pp. 37-43.
- Joulfaian, D. and J. Mackie (1992). "Sales Taxes, Investment, and the Tax Reform Act of 1986," National Tax Journal, March, pp. 89-105.
- Kakwani, N.C. (1976). "Measurement of Tax Progressivity: An International Comparison," The Economic Journal, vol. 87, March, pp. 71-80.
- Kakwani, N.C. (1977). "Applications of Lorenz Curves in Economic Analysis," Econometrica, vol. 45, April, pp. 719-727.
- Kiefer, D.W. (1984). "Distributional Tax Progressivity Indexes," National Tax Journal, vol. 37, December, pp. 497-513.
- Kiefer, D.W. (1991). "A Comparative Analysis of Tax Progressivity in the United States: A Reexamination," Public Finance Quarterly, vol. 19, January, pp. 94-108.
- Ladd, H.L., A. Reschovsky, and J. Yinger (1991). Measuring the Fiscal Condition of Cities in Minnesota, Final Report submitted to Minnesota Legislative Commission on Planning and Fiscal Policy, March.

- Lyon, A.B. and R.M. Schwab (1991). "Consumption Taxes in a Life-Cycle Framework: Are Sin Taxes Regressive?," National Bureau of Economic Research, Working Paper No. 3932, December.
- Maxwell-Macmillan (1991). All States Tax Handbook. Englewood Cliffs, New Jersey: Maxwell Macmillan Publishers.
- McLure, C.E. (1967). "The Interstate Exporting of State and Local Estimates: Estimates for 1962," National Tax Journal, March, pp. 49-77.
- McLure, C.E. (1977). "The 'New View' of the Property Tax: A Caveat," National Tax Journal, vol. 30, March, pp. 69-76.
- McLure, C.E. (1980). "The State Corporate Income Tax: Lambs in Wolves' Clothing," in H.J. Aaron and M. Boskin, eds., The Economics of Taxation, Washington, D.C.: Brookings Institution, pp. 327-346.
- McLure, C.E. (1981). "The Elusive Incidence of the Corporate Income Tax: The State Case," Public Finance Quarterly, October, pp. 395-413.
- Mieszkowski, P.M. (1972). "The Property Tax: An Excise Tax or a Profits Tax?," Journal of Public Economics, vol. 1, pp. 73-76.
- Mieszkowski, P.M. and J. Morgan (1984). "The National Effects of Differential State Corporate Income Taxes on Multistate Corporations," in C.E. McLure, ed., The State Corporation Income Tax: Issues in Worldwide Unitary Combination, Stanford, California: Hoover Institution Press, pp. 253-263.
- Mieszkowski, P. and G. Zodrow (1985). "The Incidence of a Partial State Corporate Income Tax," National Tax Journal, vol. 38, December, pp. 489-495.
- Mikesell, J.L. (1986). "Retail Sales and Use Taxation in Minnesota," in R. Ebel and T. McGuire, eds., Final Report of the Minnesota Study Commission, Volume 2, St. Paul: Butterworths, pp. 155-188.
- Minnesota Department of Revenue, Property Taxes Levied in Minnesota, Taxes Payable in 1990.

- Minnesota Department of Revenue (1989). Business Property Taxes: How Does Minnesota Compare With Other States?, Report prepared by A. Wolman, January.
- Minnesota Department of Revenue (1991). Minnesota Tax Incidence Study. Tax Research Division, October.
- Minnesota Department of Revenue (1992). Comparison of 1991 Individual Income Tax Burdens by State. Tax Research Division, January.
- Minnesota Department of Revenue (1993). Minnesota Tax Expenditure Budget. Tax Research Division.
- Minnesota Department of Revenue (1993). Property Tax Regressivity in Minnesota. Tax Research Division, January.
- Minnesota House of Representatives (1989). Linking Minnesota Property Taxes and Income, A Research Report, February.
- Minnesota Senate (1987). A Comparison of Industrial Property Tax Burdens in Selected Cities, Report prepared by S. Stevenson, January.
- Morgan, W.E. and J.H. Mutti (1985). "The Exportation of State and Local Taxes in a Multilateral Framework: The Case of Business Type Taxes," National Tax Journal, June, pp. 191-208.
- Motor Vehicle Manufacturers Association (1990). Motor Vehicle Facts & Figures. Detroit, Michigan.
- Musgrave, R.A. and T. Thin (1948). "Income Tax Progression, 1929-48," Journal of Political Economy, vol. 56, pp. 498-514.
- Musgrave, J.C. (1992). "Fixed Reproducible Tangible Wealth in the United States: Revised Estimates," Survey of Current Business, January, pp. 106-137.
- Mutti, J.H. and W.E. Morgan (1983). "The Exportation of State and Local Taxes in a Multilateral Framework: The Case of Household Type Taxes," National Tax Journal, December, pp. 459-475.

- Nelson, S.C. (1987). "Family Economic Income and Other Income Concepts Used in Analyzing Tax Reform," Compendium of Tax Research, Department of Treasury, Office of Tax Analysis, pp. 77-99.
- Netzer, D. (1973). "The Incidence of the Property Tax Revisited," National Tax Journal, vol. 26, December, pp. 515-535.
- Papke, L.E. (1987). "Subnational Taxation and Capital Mobility: Estimates of Tax-Price Elasticities," National Tax Journal, June, pp. 191-204.
- Peat Marwick (1991). Report on the Connecticut Sales Tax, Study prepared for State of Connecticut's Task Force on State Tax Revenue, January.
- Peat Marwick (1993). A Study of the Iowa State and Local Tax Structure, January.
- Pechman, J. (1985). Who Paid the Taxes?, 1966-85. Washington D.C.: The Brookings Institution.
- Pechman, J. and B. Okner (1974). Who Bears the Tax Burden?, Washington D.C.: The Brookings Institution.
- Phares, D. (1980). Who Pays State and Local Taxes?, Cambridge, Massachusetts: Oelgeschlager, Gunn & Hain.
- Phares, D. (1985). Who Pays New York Taxes?, State of New York.
- Pollock, S.H. (1991). "Mechanisms for Exporting the State Sales Tax Burden in the Absence of Federal Deductibility," National Tax Journal, September, pp. 297-310.
- Poterba, J.M. (1989). "Lifetime Incidence and the Distributional Burden of Excise Taxes." American Economic Review, vol. 79, pp. 325-330.
- Poterba, J.M. (1991). "Is the Gasoline Tax Regressive?" in D. Bradford, ed., Tax Policy and the Economy, Cambridge, Massachusetts: MIT Press, pp. 145-164.
- Ring, R.J. (1989). "The Proportion of Consumers' and Producers' Goods in the General Sales Tax," National Tax Journal, vol. 42, pp. 167-179.
- Rosen, H.S. (1988). Public Finance (2nd ed). Homewood, Illinois: Irwin Press.

- Rosen, H.S. (1988). Public Finance (2nd ed). Homewood, Illinois: Irwin Press.
- Sheshinski, E. (1990). "Treatment of Capital Income in Recent Tax Reforms and the Cost of Capital in Industrialized Countries," in L.H. Summers, ed., Tax Policy and the Economy, Cambridge, Massachusetts: MIT Press, pp. 25-42.
- Sinn, H.W. (1991). "Taxation and the Cost of Capital: The 'Old' View, the 'New' View, and Another View," in D. Bradford, ed., Tax Policy and the Economy, Cambridge, Massachusetts: MIT Press, pp. 25-54.
- Skinner, J. and D. Feenberg (1990). "The Impact of the 1986 Tax Reform on Personal Savings," in J. Slemrod, ed., Do Taxes Matter, Cambridge, Massachusetts: MIT Press, pp. 50-79.
- Slemrod, J. (1992). "Taxation and Inequality: A Time-Exposure Perspective," in J. Poterba, ed., Tax Policy and the Economy, Cambridge, Massachusetts: MIT Press, pp. 105-127.
- Suits, D.B. (1977). "Measurement of Tax Progressivity," American Economic Review, September, pp. 747-752.
- Taylor, L.L. (1991). "Government Budgets and Property Values," Economic Review, Federal Reserve Bank of Dallas, September, pp. 1-7.
- U.S. Department of Commerce (1987). Bureau of Economic Analysis, Fixed Reproducible Tangible Wealth in the United States: 1925-1985. Washington, D.C.: U.S. Government Printing Office.
- Wasylenko, M. and T. McGuire (1985). "Jobs and Taxes: The Effect of Business Climate on States' Employment Growth Rates," National Tax Journal, December, pp. 497-511.
- Wheaton, W.C. (1983). "Interstate Differences in the Level of Business Taxation," National Tax Journal, March, pp. 83-94.
- Wheaton, W.C. (1984). "The Incidence of Interjurisdictional Differences in Commercial Property Taxes," National Tax Journal, vol. 37, December, pp. 515-528.

Wisconsin Department of Revenue (1979). Wisconsin Tax Burden Study.
Division of Research and Analysis.

Wisconsin Department of Revenue (1990). Corporate Tax Climate: A
Comparison of Nineteen States. Madison: Wisconsin Department of
Revenue.

Wong, L., J. Michael and D. Wilson, (1990). "The Distributive Effect of
Expanding the Sales Tax," Public Finance Quarterly, vol. 18, October,
pp. 465-479.