Developing the Capacity to Analyze the Distributional Impact of State and Local Taxes

Issues and Options for States

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CENTER ON BUDGET AND POLICY PRIORITIES

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I. Introduction

During the late 1990s, many states enacted large tax cuts as they enjoyed their best fiscal health in years. Now, most states are in financial distress because of the recession that began in early 2001, and some are likely to find it necessary to raise taxes — at least temporarily. Whether states are considering tax cuts or tax increases, however, two questions are important and often asked by policymakers, the media, and the public: "How much will this tax change cost?" and, "Who will pay more or less in taxes as a result of this change?"

All states have developed sophisticated methods for determining how much proposed tax cuts will cost or tax increases will raise. In addition, they have methods in place for estimating the total amount of revenue that will be generated by their current tax structure.

States are much less well-prepared to answer the second question: "Who will pay more or less in taxes as a result of this change?" Fewer than one-fifth of the states have developed the capacity to analyze comprehensively how proposed changes in their tax laws would affect the amount of taxes owed by different income groups in their populations or how total tax obligations are distributed across income groups at a particular point in time. Even fewer states — only Maine, Minnesota, and Texas — actually require that a distributional analysis of their tax laws, formally called a "tax incidence study," be conducted.

At the federal level, by contrast, both the Treasury Department and Congress's Joint Committee on Taxation provide at least some information on how major tax proposals will affect taxpayers at a variety of economic levels. The information contained in these "distributional analyses" are frequently cited during debates and often affect the contents of final tax packages. This type of information, however, rarely is available as states debate tax policy.

The benefits to a state and its residents of developing the capacity to determine the incidence of its tax structure are many.

- Making information about the distribution of tax liabilities across different income groups available to policymakers and to the public at large ensures that discussion about "who pays?" and "who *should* pay?" state and local taxes can be included in the debate that accompanies the formulation of tax policy.

- The availability of such information makes it much more possible for lawmakers to formulate tax change proposals that affect tax burdens in the way they intend. For example, in California during the 2000 legislative session, proponents of competing tax plans each claimed to want to cut taxes for all, across the board. However, a distributional analysis showed that a proposed cut in the income tax rate would have reduced taxes almost exclusively for upper-middle income and wealthy taxpayers. This was contrasted to a sales tax reduction, which would have benefitted taxpayers at all income levels.

State Tax Systems and Local Property Taxes

This report presumes that an ability to analyze the distribution of liability for local property taxes among households of different income levels is an essential element of a comprehensive "state" tax distribution analysis capability. Although the vast majority of property taxes are levied and collected by school systems, cities, counties, and other local governments, the level, structure, and distribution among households of local property taxes generally is tightly constrained by state law. Moreover, a large share of the attention devoted by state legislatures to tax policy in recent years has involved efforts to relieve and change the distribution of property tax liabilities by increasing state aid to local governments financed through higher state income or sales taxes. When income or sales taxes are increased for this purpose, the distributional impacts of these two state taxes are sometimes changed as well. Thus, although this report will refer to the distributional impact of state tax systems or state tax changes, it should be understood that these are intended to encompass as well changes in the distribution of local property taxes.

- States can use information about how tax proposals affect the distribution of their tax systems to ensure that tax changes complement rather than work against the priorities that have shaped spending decisions. For example, the tax systems of most states are regressive, that is, they take a larger proportion of the income of lower-income families than the income of more affluent families. Tax proposals that make already regressive tax structures weigh more heavily on low-income families not only burden families that can least afford to pay those taxes, but also can hamper other policies states are pursuing to make families self-sufficient and less dependent on state assistance such as welfare.

- Moreover, it is important to prepare distributional analyses periodically and not just when major tax changes are being considered. A comprehensive study of the

> overall distribution of state and local tax burdens by income at regular intervals allows elected officials and the residents of a state to step back from time to time and assess the implications of changes in tax policy that may have been made piecemeal over the course of years. Regular tax incidence studies also allow policymakers and the public to determine whether changes in a state's economy have resulted in an unintended shift in tax burdens among people in different economic circumstances. This knowledge can lead to initiatives to change the resulting distribution. In addition, developing the capacity to do regular tax incidence studies usually means that the capacity exists to study tax changes when they are proposed.

There are no insurmountable technical or logistical problems to producing such information. A few states do provide regular, comprehensive "tax incidence" studies that tell legislators and the public how the state tax burden is distributed among the population and how specific proposals would change that burden. Such analyses require both the technical capacity to conduct such analyses and the procedural requirements that the analyses be conducted and made publicly available in a timely fashion during legislative debates.

Experience shows that tax incidence analyses can inform and improve the debate over tax proposals. For example, in Minnesota in 1997, the governor proposed the creation of tax-free education savings accounts. A Department of Revenue analysis showed that the bulk of the benefits from such a proposal would go to families with incomes above $100,000, an analysis that arguably prompted the legislature to reject that proposal and instead enact tax breaks for education that were more tightly targeted to low- and middle-income taxpayers. Similarly, an analysis by the Legislative Budget Board in Texas in 1997 showed that a sweeping proposal submitted by the governor to cut property taxes and raise some sales and business taxes would have provided the largest benefits, both in dollar and percentage terms, to the wealthiest Texans. The proposal did not pass.

This report describes in detail the primary methods states can use to assess the distributional impact of their tax structures on families or households. Three methods are described. They are called, respectively, the economic incidence model, the initial tax impact model, and the representative taxpayer model.

Both the economic incidence model and the initial tax impact model are based on developing a sample of actual taxpayers that is representative of the total population of taxpayers in the state. These types of models yield data on the total and average amount of taxes paid by taxpayers in different economic circumstances. The economic incidence model is more comprehensive in that it incorporates assumptions that certain taxes initially imposed on business — such as corporate income taxes and property and sales taxes paid by businesses — are passed through or shifted to households in the form of higher prices, lower wages, or reduced returns on business investments. The initial tax impact model, by contrast, generally includes only those taxes that are paid directly by individuals and households — such as personal income taxes, sales taxes, and property taxes on owner-occupied homes.

The representative taxpayer model is a very different method of determining the impact of a state's tax structure on persons in different economic circumstances. This method involves constructing profiles of a limited number of hypothetical "typical" families and determining their tax liability under the existing state and local tax structures or under different tax proposals.

For each method, the report includes a description of the method, an example of the use of this type of model, a discussion of the pros and cons of the method, and case studies of its use in state legislative debates. In addition, the report includes a summary of the existing capacity of the states to do these types of analyses, and a discussion of some of the choices states must make in setting up this capacity.

The information and examples included in this report can assist states in developing or expanding a much-needed capacity to analyze the distribution of their tax systems. In this era of computerization and information access, no state should determine tax policy without the ability to assess the impact of that policy on the state's citizens at all income levels.

Evaluation Criteria for State Tax Incidence Models

To be useful, a tax incidence model must:

- provide a comprehensive picture of the distribution of state and local tax obligations,
- provide results that are readily interpretable,
- allow rapid testing of the distributional impact of a wide variety of alternative tax policies,
- be robust (that is, provide results that do not change dramatically if the underlying assumptions in the model are varied to a modest degree),
- be based upon commonly-accepted economic assumptions,
- be as inexpensive to build and maintain as possible, and
- use readily-available and reliable data.

Of course, in seeking to satisfy these criteria, significant tradeoffs are likely to be encountered. For example, the more comprehensive a model, the higher its construction and maintenance costs are likely to be.

The three principal approaches to tax distribution analysis differ significantly with respect to their satisfaction of these criteria. Economic incidence models unquestionably provide the most comprehensive picture of the distribution of state and local tax liabilities among different income groups. They tend to be constructed in a manner that permits analysis of a wide variety of quite specific changes in a state's tax structure. However, they are more costly to build and maintain than initial tax impact and representative taxpayer models. Moreover, in their effort to account for taxes imposed on businesses but passed through to individuals, economic incidence models must rely on economic assumptions subject to dispute and on economic and tax data of less-than-ideal quality. When they are used to analyze the overall incidence of a state's entire tax system, economic incidence models are reasonably robust. However, when they are used to analyze the distributional impact of changing a single tax — particularly a tax imposed on businesses — changes in economic incidence assumptions can have a significant impact on the output of the model.

Initial tax impact models inherently give a less complete picture of the distribution of tax liabilities than do economic incidence models because they do not seek to evaluate the incidence of business taxes. This can be a significant shortcoming, particularly when it comes to analyzing the incidence of proposed legislation that simultaneously changes household and business taxes. On the other hand, initial tax impact models have fewer data reliability issues than do economic incidence models and, in foregoing business tax analysis, avoid many economic theory-related controversies about tax incidence.

Representative taxpayer models can provide only a very limited illustration of the distributional impact of a state's tax system or of proposed changes in tax laws. The output of such models cannot be generalized to the entire population of a state nor summarize the distributional impact of a state's tax system. Moreover, representative tax models are not robust; small changes in the underlying assumptions about the tax-related characteristics of the hypothetical "typical" families in the model can have a significant impact on the models' output. In addition, such models generally do not incorporate detailed provisions of state tax structures, limiting their usefulness in analyzing the distributional impact of many proposed tax changes that policymakers may consider. (For example, a representative taxpayer model typically would not permit an analysis of the incidence of extending the sales tax to a few specific services.) Notwithstanding these limitations, representative taxpayer models can play a useful role in tax incidence analysis. They have the potential to illustrate the distributional impact of specific changes in tax law in a manner that is transparent and easy for policymakers to understand. Moreover, they can be constructed using off-the-shelf personal computer spreadsheet software, making them relatively simple and inexpensive to build and maintain.

II. Tax Incidence Models: Common Threads and Dividing Lines

As noted in the Introduction, there are three basic approaches to modeling how state and local tax obligations are distributed among different income segments of a state's population. The models vary in their comprehensiveness, with "economic incidence" models having the most analytical power, "initial tax impact models" lacking the capacity to answer certain questions that economic incidence models can, and "representative taxpayer" models having the most restricted utility. Before exploring the three approaches in depth, it is useful to examine their common features and major differences.[1]

Common Threads

All three tax incidence models are alike in that they have the same two basic building blocks: a method for calculating the taxes to which state residents are subject, and a method for determining and constructing the sample of taxpayers to which those calculations will be applied to estimate the overall incidence of the taxes.

- All three types of tax incidence models incorporate a set of computer programs that replicate the calculations that determine a particular taxpayer's tax liability.

[1] There are a number of methodological issues that arise in tax distribution analysis regardless of the model adopted. These include whether tax filing units or households are the appropriate unit of analysis and how household income should be measured. Detailed discussion of these issues is beyond the scope of this report. They are discussed briefly in Andrew Reschovsky, "The Progressivity of State Tax Systems," in David Brunori, editor, *The Future of State Tax Systems*, (Washington, DC: Urban Institute Press) 1998, at pp. 169-171. A more comprehensive discussion of the methodological and conceptual issues in tax distribution analysis can be found in Congressional Joint Committee on Taxation, *Staff Description of Methodology and Issues in Measuring Changes in Distribution of Tax Burdens*, (JCS-7-93), June 22, 1993. One of these issues — the time frame over which incomes and tax obligations should be measured — is discussed in Appendix 1 of this report.

The model will include a separate calculation "module" for each of the state taxes to be included in the model, such as income taxes and sales taxes.

- All three models also need a set of taxpayer data that is "fed" into these calculation modules. The database is comprised of a series of records for individual taxpayers, with each taxpayer record including all the information needed to calculate that taxpayer's liability for each of the taxes included in the model. For example, a tax incidence model that included income taxes, sales taxes, and property taxes would have to include — at a minimum — data for such variables as the taxpayer's income (broken down by detailed source, for example, wages, transfer payments, and capital gains), family size, amount of taxable and non-taxable goods and services purchased, amount of expenditures that may be deducted from taxable income (such as charitable contributions) and the assessed and true market value of the taxpayer's home. Much of this information is obtained from state and federal income tax returns, but some must be obtained from other sources, such as Census data.

All three tax incidence models are also alike with respect to their tax calculation modules. The tax calculation modules *for the taxes that are common to all three models* are essentially interchangeable. For each taxpayer record, liability for the major taxes will be calculated as follows:

- State and local income taxes are calculated by replicating each line of the income tax form, using information in each taxpayer record about the size and sources of income, the size of the family, the magnitude of itemized deductions, and other taxpayer variables that determine income tax liability.

- Property taxes are calculated based on estimated home values, the actual current property tax rate in the jurisdiction in which the family lives, and any property tax relief provisions for which the family would be eligible.

- Sales and excise taxes are calculated taking into account the actual consumption patterns of the taxpayer. A low-income taxpayer, for example, would be expected to devote a relatively large share of her income to purchases of food, while an upper-income family might devote larger shares to personal services. More detailed models might even take account of the fact that lower-income people are more likely to own older, less fuel-efficient cars, and, therefore, to consume more gasoline. If the state has local sales taxes that vary within the state, the taxpayer record would also have to identify the specific jurisdiction in which the taxpayer lived and calculate the local sales tax accordingly.

Dividing Lines

The most significant difference among the three approaches to tax incidence analysis involves the characteristics of the second building-block — the taxpayer-specific data for a series of households or families that is fed into the tax calculation module(s).

- Both the "economic incidence" model and the "initial tax impact" model are based on a rigorous application of statistical principles and techniques. For example, the families or households included in the database are selected as a carefully-developed random sample, usually from state income tax returns. Moreover, any supplementary information added to those individual family or household profiles from third-party data sources is also selected using statistical matching techniques. As discussed at greater length below, the application of statistical techniques to the selection of taxpayer profiles in the economic incidence and initial tax impact models means that the models' output can be considered to be truly representative of how tax liabilities are distributed among a state's entire population.

- In contrast, the taxpayer profiles included in a "representative taxpayer" distribution model are not selected from real-world taxpayers but rather are subjectively created to be *illustrative* of how a state's tax system distributes tax liabilities among households of different income levels. While the subjective nature of the profile creation process imposes major limitations on the applicability of representative taxpayer models, this method is not without advantages. These will be discussed in Chapter V.

A second significant difference between the three tax incidence models is the range of state and local taxes they typically cover.

- "Initial tax impact" and "representative taxpayer" models usually will be limited to taxes imposed directly on households. Both models ideally will encompass state and local personal income taxes, state and local general sales taxes, state excise taxes (like those imposed on gasoline, cigarettes, and alcohol), and local property taxes.[2] Together these taxes account for more than 80 percent of all tax revenues collected by state and local governments.

- In contrast, "economic incidence" models not only will include the household-level taxes analyzed in the other two models, but will also incorporate estimates

[2] Technically, some excise and sales taxes are in fact imposed initially on businesses. Since businesses have the right (and are usually required) to pass the tax along to the purchaser, the incidence of both kinds of taxes is almost always deemed to be on the purchaser in tax distribution models.

Figure 1
Principal Differences Among Tax Incidence Models

	Taxes Included	**Selection Method for Taxpayer Data**
"Economic" Incidence Model	Household taxes and Business taxes passed-through to households	Statistics-based sample of actual taxpayers
Initial Tax Impact Model	Household taxes only*	Statistics-based sample of actual taxpayers
Representative Taxpayer Model	Household taxes only*	Subjective construction of hypothetical taxpayers

*Both models sometimes include estimates of property taxes on rental properties owned by businesses that are passed-through into rent payments of households.

of taxes initially imposed on businesses that are passed-through to individuals according to economic theory. Taxes may be passed-through to individuals in their capacity as consumers (in the form of higher prices for the goods and services they buy), workers (in the form of lower wages, salaries, and benefits), and investors (in the form of lower interest, dividends, and capital gains). The business taxes that are most often accounted for in economic tax incidence models are corporate income taxes, state and local sales taxes levied on business purchases, and property taxes imposed on business property.

- Some tax incidence models that fundamentally are "initial tax impact" or "representative taxpayer" models have one feature that makes them a slight hybrid of an economic incidence model. Initial tax impact and representative taxpayer models may incorporate in their estimates of household tax liabilities an estimated amount of local property taxes that are imposed on businesses that own rental real estate and then passed through to renters in the form of higher rent payments.

Figure 1 summarizes the common and divergent features of the three principal approaches to tax incidence analysis. Chapters III-V discuss each of the models in greater detail.

III. The Economic Incidence Model

The "economic incidence" model is the most comprehensive method of determining how tax obligations are distributed among income groups at a particular point in time and how changes in tax laws will alter that distribution. An economic incidence model incorporates the impact both of taxes imposed directly on households — such as the personal income tax, sales tax, and property tax — and of taxes that are imposed initially on businesses and then passed through to households — such as the corporate income tax. The model is based on a representative sample of all taxpayers, and the model's results therefore can be generalized to the entire population of a state.

The economic incidence model requires more preparation and data collection than the initial tax impact model or the representative taxpayer model that are described in later chapters. Nonetheless, most states that have decided to develop a capability to analyze the distributional impacts of their tax laws have concluded that the power of economic incidence models justifies these somewhat greater efforts and costs.

Description of the Model

The construction of an economic incidence model usually begins with the development of a rigorous statistical sample of actual state income tax returns.[3] The return provides

[3] As will be discussed below, a majority of states with income taxes already maintain detailed databases of sampled state personal income tax returns. Most of these databases originally were assembled for the purpose of constructing models used to forecast income tax revenues. Five states — Alaska, Florida, Nevada, South Dakota, and Wyoming — do not impose personal income taxes, and New Hampshire and Tennessee tax only interest and dividend income. These seven states do not have income-related data available to them from state income tax

(continued...)

information about family size (because of the number of personal exemptions claimed) and the amount of income the family receives from most sources. In states that allow itemized deductions, there also will be information on property tax payments for families that itemize deductions. The property tax payment data can be combined with information about the applicable property tax rate in the jurisdiction in which the family resides and any property tax relief programs for which the family likely is eligible to "back into" an estimate of the value of the home owned by the family.

Information from the tax returns is supplemented with information about sources of income not reported on the return, home values (for non-itemizing taxpayers), monthly rent payments, and similar variables that may affect income tax or property tax liabilities. Such information typically comes from the Census Bureau or another federal agency that collects relevant data.[4] The information is added to each taxpayer profile in one of two ways. If the actual Census survey form or other government form filled out by the household whose income tax return is in the taxpayer database can be identified — a so-called "hard match" — the needed data will be taken from that form. More often, "statistical matching" is done. Statistical matching supplies a value for a missing piece of data by using a sample of households with characteristics similar to the household for which the tax return is available. For example, to supply a home value for a household whose tax return is part of the database, the average home value for households of the same size, in the same income class, and residing in the same Census tract (geographical area) might be used. Such information would be pulled from the computer tapes on which Census data are compiled.

Estimates of family expenditure patterns generally are drawn from the federal Consumer Expenditure Survey and are added to all of the household profiles. This information is used most often to analyze the distribution of sales and excise tax liabilities. Expenditure information must be added from a third-party source because very little relevant information of this kind can be gleaned from income tax returns.

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[3] (...continued)
returns. However, if one of these states wished to build a model to estimate the incidence of enacting a comprehensive income tax, it could do so by sampling the *federal* income tax returns of its residents. The Internal Revenue Service will make federal income tax returns of a state's residents available to the state revenue department under a contract guaranteeing that the return will be kept confidential.

[4] Another reason Census or other third-party data may be added to data pulled from income tax returns in constructing economic incidence models is to facilitate incidence analysis of tax law changes that affect items of income or consumption that are not required to be reported on income tax returns under current law. For example, if policymakers wanted to estimate the incidence effects of a state-specific income tax credit for charitable contributions made by people who did not itemize deductions on their state income tax returns, the model would have to include an estimated amount of charitable contributions for each household for which this value could not be taken directly from the return.

Who Pays State and Local Taxes? Legal Liability Versus Economic Incidence

Economic theory can justify a wide variety of scenarios in which taxes are shifted from the persons or businesses upon which they are initially imposed. In an economic sense, all taxes on businesses are shifted to individuals in the form of higher prices, lower wages, or lower returns on business ownership. It is even possible for taxes that appear to be imposed on individuals to be borne by the owners of businesses. For example, if sales taxes are imposed on goods for which there are good untaxed substitutes, businesses selling the taxed goods may be compelled to lower their prices so that the after-tax cost of the goods are no higher than before the tax was imposed. In that instance, the sales tax is economically borne by the owners of the business, whose profits will be lower because the business has been forced by competition to lower its prices.

It is not always clear how and to whom business taxes are shifted. With respect to the state corporate income tax, for example, many economists conclude that the tax is borne by the owners of equity capital, and others assert that its economic burden is shared by consumers, workers, *and* equity owners.

Despite the wide variety of theoretically-justifiable assumptions that can be made about the economic incidence of state and local taxes, most state distributional models incorporate relatively similar assumptions. All state tax incidence models assume that the economic incidence of individual income taxes is, in fact, on the individuals earning the income. All state models also assume that the incidence of sales taxes charged to individuals remains on the individuals, and that the incidence of homeowner property taxes is on homeowners.

Some proportion of property taxes imposed on owners of residential rental property are generally assumed to be passed through to renters in the form of higher rents, and the remainder of property taxes are assumed to be borne by the owner (which may be a business or an individual). The economic incidence of property taxes on non-residential property, sales taxes on business purchases subject to sales tax, and the corporate income tax is generally assumed to be divided between the customers of the business and the owners of the business. (That is, these taxes are assumed to be partially passed on to customers in the form of higher prices and to owners in the form of lower returns on investment.)

If some or all taxes initially imposed on in-state businesses are assumed to be passed through to customers and owners, a certain portion of them will be "exported" to customers and owners located in other states. One consequence of choosing an economic incidence model, therefore, is that estimates must be made of the extent to which the customers and owners of in-state businesses subject to the taxes are located in-state.

Finally, some profiles have to be created *entirely* from information statistically sampled from Census Bureau and other third-party sources to account for families whose incomes are too low to necessitate their filing a state income tax return.

As discussed in Chapter II, the taxpayer profile data are fed into software modules that calculate tax liability for whatever household-level taxes are included in the economic incidence model. In an economic incidence model, modules also exist to estimate the amount of business taxes that should be assigned to each household profile. The models incorporate assumptions concerning the extent to which business taxes like the state corporate income tax or sales or property taxes paid by businesses are passed on to individuals through higher prices for consumers, lower wages for workers, or lower returns to shareholders.

There is considerable debate among economists concerning the extent to which business taxes are shifted to individuals and the categories of individuals to whom they are shifted. However, most state economic incidence models incorporate relatively similar assumptions about the incidence of business taxes. (The box on the previous page discusses the most common assumptions in more detail.) In contrast to the rather intricate procedure by which household-level taxes are calculated for each taxpayer profile in an economic incidence model, taxes imposed on businesses are likely to be apportioned to the household profiles in a coarser, more aggregated process. For example, state corporate income tax liability may be assigned based on nationwide estimates of the amount of corporate stock owned by households at different income levels.

The models are programmed to aggregate and average the tax liabilities for all of the households whose liabilities are calculated, as well as to divide the population into groupings of income. Most models will generate results for quintiles (fifths) or deciles (tenths) of households ranked by income from lowest to highest. Some models may allow the user to generate results for other population segments of interest, such as the five percent of households with the highest incomes, renters versus homeowners, or families with children versus childless families.

The information most commonly generated from an economic incidence model is the share of income devoted to paying a specific tax or all taxes by various segments of the income distribution. For example, a run of the Texas tax incidence model generated an estimate that the "bottom decile" of the population devoted 10.7 percent of its income to paying sales taxes. (See Table 1.) Another run of the same model revealed that the bottom decile would receive 4.6 percent of a proposed reduction in sales taxes ($7.7 million in sales tax savings out of a total sales tax cut of $168.4 million), while the top income decile would reap more than 20 percent of the tax savings ($34.3 million of the $168.4 million). This was true even though the percentage of total sales taxes paid by lower-income households declined. (See Table 2.)

As these two examples from Texas illustrate, an economic incidence model can be used for two purposes. The model can provide a picture of the distributional impact of a state's overall tax system or of a specific tax at a point in time. Alternatively, tax rates, exemptions, property tax relief mechanisms, and similar parameters in the model can be modified to replicate legislative proposals for changes in tax law, and then the resulting distribution of tax liabilities can be compared with the distribution of tax liabilities under current law.

Table 1

Final Incidence of Texas Sales and Use Tax Liability by Family Income Decile, Fiscal 2002 (dollar amounts in millions)			
Decile	Family Income	Amount	Tax as a Percent of Total Income
Decile 1:	less than $10,250	$ 486.8	10.7%
Decile 2:	$10,250 to 17,876	543.5	5.0%
Decile 3:	$17,876 to 25,056	622.7	3.8%
Decile 4:	$25,056 to 32,312	815.2	3.5%
Decile 5:	$32,312 to 40,431	939.7	3.3%
Decile 6:	$40,431 to 51,146	1,098.2	3.1%
Decile 7:	$51,146 to 64,577	1,245.4	2.8%
Decile 8:	$64,577 to 82,950	1,449.2	2.5%
Decile 9:	$82,950 to 114,409	1,788.9	2.4%
Decile 10:	$114,409 and over	2,332.3	1.6%
Source: Texas Comptroller of Public Accounts, Table 1, Initial Distribution and Final Incidence of Total Limited Sales and Use Tax Revenue, available at www.window.state.tx.us/taxinfo/incidence/table1_49.html.			

Example: The Minnesota Tax Incidence Study

Every two years since 1991, the Minnesota Department of Revenue has issued the most comprehensive, sophisticated analysis available from any state of the economic incidence of its entire state and local tax system. The *2001 Minnesota Tax Incidence Study* was published in March 2001.[5] Minnesota has issued these reports under a statutory mandate. (See Appendix 2 for the text of Minnesota's 1990 law mandating that tax incidence analyses be conducted.)

The 2001 Minnesota study is based on a sample of approximately 49,000 state income tax returns; information from the state return is combined with information extracted from the federal return. (Appendix 3 contains a complete list of the information included for each sample household.) Minnesota also adds to each household profile in the sample considerable

[5] The *2001 Minnesota Tax Incidence Study* is available at www.taxes.state.mn.us/reports/incid01.html.

Table 2

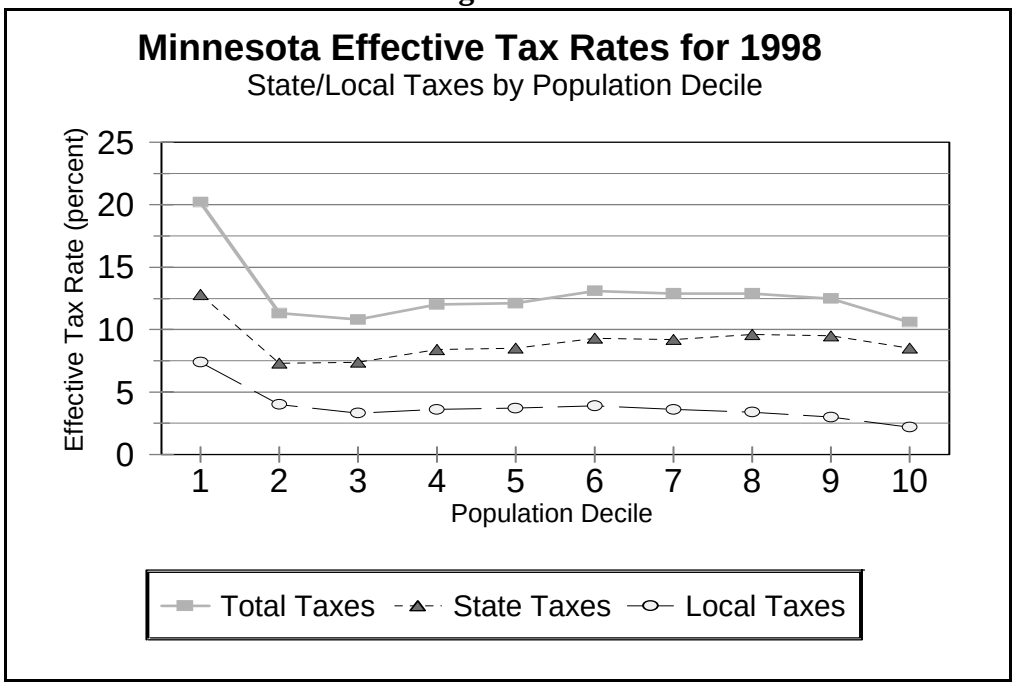
Tax Incidence by Income Decile
Current Law vs. [Texas] Senate Bill 441 As Passed 2nd House
Fiscal Year 2001
Comparisons include Property Tax, Sales Taxes, Excise Taxes and Taxes on Business

Family Expanded Income Decile and Range (Dollars)				Current Law Tax (Millions)	SB 441 Tax (Millions)	Change in Tax (Millions)	Percent Change in Tax
1	$0	to	$9,704	$1,451.9	$1,444.2	($7.7)	(0.53) %
2	9,704	to	15,520	1,744.8	1,734.9	(9.9)	(0.57) %
3	15,520	to	21,254	2,179.1	2,167.6	(11.5)	(0.53) %
4	21,254	to	27,480	2,392.5	2,378.9	(13.6)	(0.57) %
5	27,480	to	36,042	2,863.5	2,848.7	(14.8)	(0.52) %
6	36,042	to	46,363	3,228.3	3,212.6	(15.7)	(0.49) %
7	46,363	to	60,219	3,649.4	3,632.3	(17.1)	(0.47) %
8	60,219	to	78,022	4,404.4	4,385.0	(19.4)	(0.44) %
9	78,022	to	113,044	5,097.4	5073.0	(24.4)	(0.48) %
10	Over		113,004	7,436.4	7,402.1	(34.3)	(0.46) %
Total				$34,447.7	$34,279.3	($168.4)	(0.49) %

Source: Texas Legislative Budget Board, Tax/Fee Equity Note, Senate Bill 441, May 27, 1999, Table 3b. Senate Bill 441 exempted from sales tax a portion of charges for Internet access and information services, certain types of clothing, certain non-prescription medicines, and several other items.

information obtained from third-party sources concerning sources of cash income not required to be reported on income tax returns. This includes non-taxable Social Security benefits, welfare benefits, and unemployment compensation benefits. Minnesota also has a program under which many households with incomes too low to obligate them to file state or federal income tax returns can nonetheless claim a refund of a portion of their property taxes if they file a return providing information about their sources of income and their property tax liabilities (as estimated by their landlords). This information is used to construct profiles of low-income households. Most other states that build tax incidence models construct profiles for low-income households from scratch using Census data.

Figure 2



Source: Minnesota Department of Revenue, Tax Research Division, *2001 Minnesota Tax Incidence Study*, March 2001, Table 1, p. iii.

Minnesota's economic incidence model estimates the distribution across income deciles of liability for fully nine categories of taxes: individual and corporate income taxes; sales taxes; property taxes; excise taxes on tobacco, alcohol, and gasoline; insurance premiums taxes; motor vehicle registration taxes; gambling taxes; mortgage and deed taxes; and its MinnesotaCare tax (a tax on health providers used to fund health coverage for the uninsured).

For a number of these taxes (including the corporate income tax, the sales tax, and the property tax), relatively complex, multi-stage calculations are made to estimate the share of the tax imposed on businesses that is assumed to be passed through to Minnesota households. Minnesota's ability to perform a complex estimation of the incidence of property taxes initially imposed on businesses is enhanced by the detailed data it must maintain on these business property tax payments because of both its property tax classification system and its program providing property tax rebates to renters.[6] Minnesota also has invested in a detailed input-output model of its economy that breaks down consumer versus business purchases from dozens of industry sectors; this allows it to rely less directly on federal Consumer Expenditure Survey data

[6] A "classified" property tax system taxes different types of property at different effective rates as a matter of law.

in calculating the distribution of sales tax liabilities than states without such a model would be compelled to do. (Appendix 4 discusses some of the pitfalls of using Consumer Expenditure Survey data for tax incidence analysis.)

The output of Minnesota's economic incidence model is total taxes owed and tax liability as a share of income for each of the individual taxes and for total taxes. This information is available for each decile of the state's population. Figure 2 and Tables 3 and 4 provide examples of the output of the model. The study also reports the average dollar amount of each of the taxes paid by the average household in each population decile. Separate results for homeowners and renters are also provided. Finally, the published results from the model include separate figures for taxes imposed directly on households and for taxes imposed on businesses but assumed to be passed-through to households. If users of the report disagree with the incidence assumptions made with respect to business taxes, this breakout permits users to make rough estimates of how the overall results would change if the incidence assumptions were altered.

Benefits and Drawbacks of the Economic Incidence Model

The economic incidence model is the most comprehensive of the three basic approaches to analyzing the distribution of state and local tax liabilities among different income groups. The economic incidence model is more comprehensive than the "initial tax impact" and "representative taxpayer" models in two principal ways.

First, the economic incidence model stands alone in seeking to account for the distribution not only of taxes that are imposed on households, but also of taxes that are imposed on businesses but passed through to households. Since the ultimate incidence of all business taxes *is* on individuals in their capacities as customers, employees, or business owners, the economic incidence model is, in a sense, the only theoretically complete one of the three.

Second, the economic incidence model provides a comprehensive picture of the actual distribution of tax liabilities among a state's *entire population*. Because economic incidence models are built on the foundation of a statistically-representative sample of actual households, it is possible to extrapolate results to specific segments of the income distribution in a particular state and to the state population as a whole. Using an economic incidence model, it is possible to estimate the share of a specific tax or total taxes paid by particular income groups under current law and after a set of proposed tax changes, the share of income devoted to a specific tax or total taxes by particular income groups (again, before and after tax policy changes), and the share of a tax increase or tax cut that is received by various income groups. It also is possible to calculate mathematically-meaningful summary measures, for example, the average change in tax liability for the one-fifth of families in the middle of the income distribution that would result from an increase in the standard deduction. In contrast — and as will be discussed below — the "representative taxpayer" approach to modeling tax incidence does not permit broad generalizations about the distribution of tax liabilities. The representative taxpayer approach

Table 3
1998 Distribution of Minnesota Households, Income, and Taxes, by Population Decile
($ Thousands)

Population Decile	Income Range	Number of Households	Total Household Income	Individual Income Tax	Consumer Sales Tax	Consumer Excise Taxes	Residential Property Taxes	Other Taxes on Individuals	Business Taxes	Total Taxes
First	$7,971 & Under	223,267	$1,094,370	-$5,507	$56,670	$24,099	$32,950	$16,504	$96,155	$220,872
Second	7,971 - 13,047	223,267	2,351,235	-5,642	67,865	29,433	46,560	20,332	106,422	264,969
Third	13,047 - 18,550	223,267	3,540,996	16,601	95,993	39,580	66,559	31,699	130,597	381,031
Fourth	18,550 - 24,885	223,267	4,831,312	88,452	123,581	43,132	94,610	45,604	180,573	575,952
Fifth	24,885 - 31,890	223,267	6,317,248	176,407	140,556	43,460	143,723	53,588	209,223	766,956
Sixth	31,890 - 40,645	223,267	8,060,426	284,030	187,276	49,985	189,366	76,241	272,404	1,059,301
Seventh	40,645 - 51,669	223,267	10,219,180	401,286	217,081	55,957	234,029	91,255	315,057	1,314,666
Eighth	51,669 - 66,043	223,267	13,018,657	585,782	265,911	59,304	270,365	116,061	387,195	1,684,620
Ninth	66,043 - 92,346	223,267	17,300,119	842,633	318,693	65,710	344,142	140,478	446,010	2,157,667
Tenth	92,346 & Over	223,267	47,895,415	2,716,428	539,713	74,309	622,249	210,104	937,512	5,100,315
Total		2,232,670	$114,610,958	$5,100,470	$2,013,339	$484,969	$2,044,553	$801,866	$3,081,148	$13,526,349
Top 5%	$127,880 & Over	111,680	$36,014,107	$2,085,014	$351,661	$42,360	$393,171	$130,240	$643,676	$3,646,122
Top 1%	$310,014 & Over	22,358	19,774,737	1,191,069	83,747	9,405	123,527	31,066	207,142	1,645,956

Source: Minnesota Department of Revenue, Tax Research Division, *2001 Minnesota Tax Incidence Study*, March 2001, Table 2-1, page 11. Available at www.taxes.state.mn.us/reports/incid01.html.

Table 4

1998 Effective Minnesota Tax Rates by Population Decile
(All Taxpayers)

Population Decile	Number of Households	Individual Income Tax	Consumer Sales Tax	Consumer Excise Tax	Residential Property Tax	Other Taxes on Individuals	Total Individual Taxes	Business Taxes	Total Taxes
First	223,267	-0.5%	5.2%	2.2%	3.0%	1.5%	11.4%	8.8%	20.2%
Second	223,267	-0.2	2.9	1.3	2.0	0.9	6.7	4.5	11.3
Third	223,267	0.5	2.7	1.1	1.9	0.9	7.1	3.7	10.8
Fourth	223,267	1.8	2.6	0.9	2.0	0.9	8.2	3.8	12.0
Fifth	223,267	2.8	2.2	0.7	2.3	0.8	8.8	3.3	12.1
Sixth	223,267	3.5	2.3	0.6	2.3	0.9	9.8	3.4	13.1
Seventh	223,267	3.9	2.1	0.5	2.3	0.9	9.8	3.1	12.9
Eighth	223,267	4.5	2.0	0.5	2.1	0.9	10.0	3.0	12.9
Ninth	223,267	4.9	1.8	0.4	2.0	0.8	9.9	2.6	12.5
Tenth	223,267	5.7	1.1	0.2	1.3	0.4	8.7	2.0	10.6
Total	2,232,670	4.5%	1.8%	0.4%	1.8%	0.7%	9.1%	2.7%	11.8%
Top 5%	111,680	5.8%	1.0%	0.1%	1.1%	0.4%	8.3%	1.8%	10.1%
Top 1%	22,358	6.0%	0.4%	0.0%	0.6%	0.2%	7.3%	1.0%	8.3%

Source: Minnesota Department of Revenue, Tax Research Division, *2001 Minnesota Tax Incidence Study*, March 2001, Table 2-3, page 14. Available at www.taxes.state.mn.us/reports/incid01.html.

does not allow statements along the lines of "the average family of four will receive a tax cut of X dollars under this proposal" or "the 50 percent of families with the lowest incomes in this state pay X percent of all state and local taxes."

The comprehensiveness of the economic incidence model generates some significant tradeoffs, however. One set of tradeoffs is associated with the inclusion in economic incidence models of taxes initially imposed on businesses. The second category of tradeoffs is more general and relates to the greater resource demands of statistically-rigorous tax incidence models. It is important for policymakers who are considering developing a tax incidence analysis capability to be aware of these tradeoffs, which are discussed in the following sections. Despite the existence of these tradeoffs, the benefits of the economic incidence approach to modeling the distribution of state tax liabilities appear to outweigh the drawbacks.

Incorporating the Incidence of Taxes Initially Imposed on Businesses

There are both theory-related and practical tradeoffs entailed in incorporating into a tax distribution model the estimated incidence on individuals of taxes that are initially imposed on businesses.

The principal problem created by economic theory is that there is no firm consensus among economists regarding the economic incidence of at least two of the three major state and local taxes imposed on businesses — the state corporate income tax and property taxes.[7] With respect to the state corporate income tax, many economists conclude that the tax is borne by the owners of equity capital, and others assert that its economic burden is shared by consumers, workers, *and* equity owners.[8] A decades-old debate still rages within the economics profession concerning the extent to which the economic incidence of property taxes rests on owners of real estate versus all owners of capital assets.[9] This lack of consensus obviously provides grounds for those whose tax policy positions are discredited politically by the output of an economic incidence model to dismiss that output. This possibility may discourage states from developing an economic incidence model in the first place.

Even if a consensus existed with respect to the economic incidence of state and local taxes on businesses, little reliable data exists with which to estimate this incidence for many taxes. For example, it is not possible to make much more than an educated guess about the

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[7] There is somewhat stronger consensus that the third tax — the state/local sales tax on business purchases — is passed through to consumers in the form of higher prices.

[8] Charles E. McLure, Jr., "The State Corporate Income Tax: Lambs in Wolves' Clothing," in Charles E. McLure, Jr., editor, *Economic Perspectives on State Taxation of Multijurisdictional Corporations* (Arlington, Virginia: Tax Analysts), 1986, pp. 7-26.

[9] See: George R. Zodrow, "Reflections on the New View and the Benefit View of the Property Tax," *State Tax Notes*, May 22, 2000, pp. 1805-21.

proportion of the total stock of corporations subject to a particular state's corporate income tax that is held by the residents of that state; such an estimate must be made if the incidence of the state corporate income tax is assumed to be on owners of the corporation's stock. In addition, only those states with "classified" property tax systems (systems in which business property is taxed at a higher rate than residential property) are likely to be able to estimate accurately the share of property taxes paid by businesses versus the share paid by households. However, such estimates are needed to incorporate into an economic incidence model an assumption that a certain proportion of property taxes imposed on businesses is passed through to consumers. Finally, virtually no reliable data exist on the portions of state and local sales taxes paid by businesses versus individuals; states simply do not require businesses collecting and remitting sales taxes to report the extent to which their customers are individuals versus other businesses.

Despite these problems, most of the states that have invested in comprehensive multi-tax distribution models have acquired economic incidence models that incorporate pass-throughs of business taxes. (See Chapter VI.) One factor explaining why states have chosen to adopt the economic incidence approach has probably been the fact that state corporate income taxes, local taxes on business property, and state and local sales taxes on business purchases taken together likely account for less than one-third of total state and local taxes. This means that whatever the theoretical and measurement uncertainties may be with respect to the incidence of state and local business taxes, these uncertainties are unlikely to alter significantly the estimated incidence of the overall state tax system.

Varying theoretical assumptions about the economic incidence of particular taxes and shortcomings in available data can have a more significant impact on the outcome of a distributional analysis when a single tax is under study. For example, if a state is contemplating an increase in its corporate income tax, the estimated incidence of such a change obviously will differ significantly depending upon whether it is assumed that 50 percent of such a tax increase is passed on to consumers or that the tax is entirely borne by stockholders. Accordingly, if economic incidence models *are* to be used for analyzing the distributional impact of changes in specific taxes, it would appear to be prudent to include so-called "sensitivity analyses" in such studies. That is, policymakers should be provided with sets of results that highlight how the estimated distribution of tax payments would differ if reasonable, alternative assumptions were made concerning the economic incidence of the tax under study.

The Heavy Resource Demands of Economic Incidence Models

As discussed above, the power of tax incidence models built on statistically-valid samples of actual taxpayer returns is that the models provide a comprehensive picture of the distribution of tax liabilities among a state's entire population. The tradeoff for this analytical power is that statistical models are costly and complex to build and maintain. Fortunately, a large number of states already have assembled the personal income tax sub-component of an integrated statistical model of the state's tax distribution, a so-called "microsimulation" personal income tax model. (See Chapter VI.) These models, often constructed initially for the purpose of predicting

personal income tax *revenues*, are composed of statistically-sampled state personal income tax returns and are programmed to replicate the income tax liability calculation for each taxpayer profile in the sample. They usually are readily adaptable to distributional analysis of state personal income taxes; indeed, most states use them for this purpose already.

For the nearly 20 states that do not already have them, however, the construction of a personal income tax microsimulation model would be a significant undertaking. While it appears that most states are moving toward scanning all personal income tax returns into databases, it is a labor-intensive and time-consuming process to clean the databases for scanning errors and post-filing adjustments resulting from audits and the submission of amended tax returns. Drawing a statistically-valid sample of the returns can also be complex, particularly since the sample will need to be representative not only of the income distribution of the state, but also of the geographic distribution of taxpayers. (Since property taxes vary significantly within a state, if the income tax return sample is to form the foundation of a model capable of measuring the incidence of property taxes, it must also be representative geographically.)

Even after the underlying personal income tax microsimulation model has been built, considerable work is required to transform that subcomponent into a model that is capable of evaluating the incidence of all major state and local taxes. As noted previously, profiles of taxpayers whose incomes are too low for them to be subject to state income taxes must be constructed from Census data or other sources, and the profiles must be statistically-valid representations of the low-income population in the particular state. "Hard" or statistical matching of income tax returns with third-party property tax data can also be difficult. Adjustments must also be made for certain underlying weaknesses in the federal Consumer Expenditure Survey data that are usually used to make the model capable of evaluating the incidence of sales and excise taxes.

Finally, data availability and reliability problems may also impede the construction of statistical distribution models, particularly with respect to property taxes. Few states collect data on the value of homes owned by people of different income levels in different local jurisdictions. This can increase the difficulty of building comprehensive statistical models capable of analyzing the distributional impacts of various property tax relief mechanisms.

None of these are insurmountable obstacles — as evidenced by the fact that a large number of states have already built or acquired models capable of analyzing the incidence of either the personal income tax or all major state and local taxes. Nonetheless, policymakers need to have an appreciation of the complexity of statistical tax-incidence models as they formulate a strategy for acquiring a tax-incidence analysis capacity and evaluate proposed budgets and contractor bids for such projects.

State Experience

The availability of tax distribution data flowing from an economic incidence model played a role in the modification of property tax reform legislation in 1997 in Texas. In January 1997, Governor George W. Bush proposed to reduce property taxes devoted to schools by increasing the state's homestead exemption (a fixed amount of a home's value exempt from tax) from $5,000 to $25,000, exempting business inventories from certain school property taxes, and requiring a rollback in school property tax rates. Governor Bush proposed to have the state make up the revenue loss to local school systems by tapping the state's surplus, increasing the state sales tax rate by one-half percent, and enacting a new state business tax modeled on the Michigan Single Business Tax as a substitute for the state's franchise tax on corporations.[10]

The proposal was controversial for a number of reasons, including its potential impact on the distribution of state and local tax payments. The state's Legislative Budget Board (LBB) prepared an analysis indicating that families earning between $75,000 and $100,000 would have enjoyed the largest percentage cut in tax liability — 3.8 percent — while families earning between $10,000 and $20,000 would have received only a 1.8 percent net reduction in their state and local tax liabilities — the smallest of any income group. (See Table 5.)

The Budget Board's analysis was greeted with surprise; the chair of the House Committee considering the proposal remarked: "I really did not think the overall tax [burden resulting from the plan] would be more regressive than the current system. This is not as fair as what we've been led to believe." Governor Bush disputed the report's assumptions and findings, but the non-partisan Budget Board's analysis apparently had substantial credibility.[11] A number of articles appeared in subsequent weeks raising questions about the distributional impact of the Governor's package.[12] Within a month of the release of the LBB analysis, the House had abandoned the Governor's tax increase proposals. Instead of accepting an across-the-board sales tax increase and a new sales-tax-like business tax, the House built its plan on a base of expanding

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[10] Sandra Sanchez, "Texas Governor Lays Out Bold Plan, Calling for Big School Funding Change," *State Tax Notes*, February 3, 1997. Michael W. McLoughlin, "Texas Governor Proposes Overhaul of State's Business Taxes," *State Tax Notes*, February 17, 1997.

[11] Wayne Slater, "Bush Defends Tax Plan; Study Says Affluent Would Benefit Most," *Dallas Morning News*, February 20, 1997, p. A1. Michele Kay, "Analyst Finds Only 3% Tax Cut in Bush's Plan," *Austin American-Statesman*, February 19, 1997, p. A1.

[12] See: "The Bush Tax Plan from Top to Bottom," *Dallas Morning News*, March 2, 1997; Todd J. Gillman, "Democratic Leader Says Bush Tax Plan Will Cost Average Texans, Benefit Rich," *Dallas Morning News*, March 1, 1997; John Cole, "Bush Tax Plan Fails to Solve School Budget Troubles," Guest Commentary, *Dallas Morning News*, March 6, 1997.

Table 5

Tax Incidence by Income Group
Current Law vs. [Texas] House Bill 4
Fiscal Year 1999

Family Expanded Income Group $Dollars	Current Law Tax Incidence $Millions	H.B. 4 Tax Incidence $Millions	Change in Tax Incidence $Millions	Percent Change in Tax Incidence
0 < 10,000	$1,712.9	$1,666.4	($46.5)	-2.7%
10,001 < 20,000	$2,737.2	$2,689.2	($48.0)	-1.8%
20,001 < 30,000	$1,751.3	$1,714.6	($36.7)	-2.1%
30,001 < 50,000	$5,492.0	$5,359.4	($132.5)	-2.4%
50,001 < 75,000	$6,001.1	$5,812.2	($188.9)	-3.1%
75,001 < 100,000	$3,826.4	$3,682.0	($144.5)	-3.8%
100,001 < 200,000	$3,956.6	$3,810.6	($146.0)	-3.7%
Over 200,000	$2,393.3	$2,319.7	($73.6)	-3.1%
Total	$27,870.9	$27,054.1	($816.8)	-2.9%

Source: Texas Legislative Budget Board, Tax Equity Note Analysis of House Bill 4, February 17, 1997, Table 3, page 6. H.B. 4 would have repealed Texas' corporate franchise tax, exempted business inventories from property taxes, and increased the homestead exemption by $20,000. The revenue loss from these provisions would have been recouped by increasing the sales tax rate by 0.5 percentage points and instituting a 1.25 percent "Business Activity Tax," a form of value-added tax.

the sales tax base to include some goods and services purchased disproportionately by upper-income households and of extending the corporate franchise tax to partnerships.[13]

[13] The House's initial concerns about the distributional impact of Governor Bush's tax package proved to be short-lived. The tax package it ultimately adopted actually was slightly more regressive than Governor Bush's initial proposal, primarily because it chose to make up property tax losses in part through increases in highly-regressive tobacco, alcohol, and insurance taxes. See: Texas Legislative Budget Board, *Tax Equity Note Analysis of the Committee Substitution for House Bill* 4, April 18, 1997, p. 10. The House and the Senate were unable to reconcile their property tax reform proposals and settled for a relatively progressive plan to simply increase the state's homestead exemption. The major shortcoming of this package from a distributional standpoint was that it provided no property tax relief to renters.

As will be discussed below (see Chapter VI), Texas is one of only a few states equipped to analyze the type of tax overhaul package that Governor Bush put forward — one that proposed to change simultaneously taxes imposed directly on households and taxes imposed on businesses and passed-through to households. Only *economic* tax incidence models can convey a comprehensive picture of the distributional impact of such legislation.

IV. The Initial Tax Impact Model

The "initial tax impact" model is identical to the economic incidence model in its approach to analyzing the distribution among income groups of taxes directly imposed on households — personal income taxes, homeowner property taxes, sales taxes, and excise taxes on gasoline, alcohol, and tobacco. Both models construct household profiles from sampled income tax returns and third-party data using statistical sampling and matching methods. The key difference between initial tax impact and economic incidence models is that the former attempts to analyze *only* those taxes with an initial impact on households themselves; taxes initially imposed on businesses are omitted.[14] Because initial tax impact models are simply a less-comprehensive variant of economic incidence models, there is no need to describe them again in this Chapter; readers are referred to pages 11-14 above.

Initial tax impact models avoid some of the resource demands and economic theory disputes that are entailed in integrating taxes imposed on business into a tax distribution model. However, the inability of initial tax impact models to evaluate the ultimate incidence on individuals of taxes imposed on businesses evidently is viewed as a serious limitation by most policymakers; at this point in time Utah is apparently the only state to be using such a model.

Example: Utah's 2001 Initial Tax Impact Study

The Utah Tax Commission issued a report in July 2001 that is illustrative of the "initial tax impact" or "tax burden" approach to distributional analysis. The report was titled *Utah's*

[14] But see footnote 2 and the note in Figure 1.

Household Tax Burdens.[15] Utah's tax distribution model is based on a random sample of 34,000 individual income tax returns. State and local sales, motor fuel, cigarette, tobacco, beer, liquor, local utility, and insurance tax liabilities are estimated for each return in the sample based on spending patterns revealed in the U.S. Labor Department's Consumer Expenditure Survey. Local property tax liabilities are taken from the schedule of itemized deductions for households that itemize and estimated for households that do not itemize based on property tax expenditures reported in the Consumer Expenditure Survey. The Utah study also estimates a share of property taxes presumed paid by renters, making it in this one respect slightly akin to an economic incidence analysis. No other taxes imposed on businesses are presumed to be passed through to households in the Utah study.

An example of the output of the Utah model is provided in Table 6. Utah reports average tax liabilities for each income group examined rather than the share of total taxes paid by that income group. The income groups are defined as specific income classes (e.g., $5,001-$10,000) rather than the more typical equal-size shares of the population ranked by income (e.g., deciles — tenths of the population — or quintiles — fifths of the population).[16] Results of the model are extrapolated to the entire state population and then separately reported both for non-elderly households comprised of from one to six members and for elderly households of one and two members. For each income class and each household size, average tax payments are reported for each of the four taxes separately (income, sales, property and excise) and in total.[17] Finally, to illustrate tax burdens for each income class, the tax payments are shown both as a share of mean household income for households in each income class and as a share of an "ability to pay" measure. This latter variable subtracts from income the federal standard deduction and the total amount of federal personal exemptions that could be claimed by a household of the size being evaluated; the notion is that special attention should be called to households that are compelled to pay tax on a very low level of discretionary income.

Benefits and Drawbacks of the Initial Tax Impact Model

The benefits and drawbacks of the initial tax impact model are the mirror-image of those discussed in connection with the economic incidence model. The initial tax impact model avoids the additional resource demands entailed in gathering and maintaining necessary data and programming the model to calculate business liabilities for various taxes and assign them to

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[15] The Utah tax incidence study is available at http://txdtm01.tax.ex.state.ut/ESU/BURDENS/HB_2001TXT.HTM.

[16] The lowest income class for which results are reported is all households with less than $5,000 of income, and the highest income class is over $250,000 of income. There are 22 income classes, which jump by $5,000, $10,000, and — at the highest income levels — $25,000 increments.

[17] The Utah study also shows state tax liability net of the savings that results from being able to deduct property taxes and state income taxes on federal income tax returns.

Table 6

Mean Household Tax Payments of Utah Households
Based on 2001 Income Taxes, 1999 Taxpayer Sample, and 1998 Expenditure Survey
Age=Under 65 Size=4

Income Class	Count	Income	State Income Tax	Net State Income Tax	Sales	Property Tax	Net Property Tax	Excise	Total State	Net Total State
	Sum	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
$1 - $5,000	366	$2,923	$0	$0	$1,049	$1,180	$1,180	$308	$2,537	$2,537
$5,001 - $10,000	1,268	$7,744	$0	$0	$828	$820	$820	$190	$1,839	$1,839
$10,001 - $15,000	2,536	$12,326	$0	$0	$776	$612	$612	$211	$1,599	$1,599
$15,001 - $20,000	3,595	$17,198	$11	$11	$899	$736	$735	$236	$1,884	$1,882
$20,001 - $25,000	3,359	$22,595	$196	$189	$990	$901	$882	$251	$2,339	$2,312
$25,001 - $30,000	4,065	$27,777	$466	$402	$1,102	$995	$867	$287	$2,849	$2,658
$30,001 - $35,000	3,378	$32,929	$694	$595	$1,172	$898	$778	$319	$3,084	$2,865
$35,001 - $40,000	5,392	$37,633	$983	$840	$1,118	$1,099	$944	$326	$3,527	$3,228
$40,001 - $45,000	4,938	$42,806	$1,312	$1,115	$1,189	$1,030	$875	$373	$3,904	$3,552
$45,001 - $50,000	4,615	$47,564	$1,495	$1,273	$1,337	$1,070	$919	$391	$4,294	$3,921
$50,001 - $60,000	10,517	$55,083	$1,991	$1,690	$1,429	$1,049	$890	$386	$4,854	$4,395
$60,001 - $70,000	9,562	$64,684	$2,556	$2,159	$1,501	$1,161	$983	$404	$5,622	$5,046
$70,001 - $80,000	6,113	$74,468	$3,156	$2,415	$1,651	$1,217	$941	$443	$6,466	$5,450
$80,001 - $90,000	6,065	$85,234	$3,702	$2,703	$1,742	$1,263	$930	$461	$7,169	$5,836
$90,001 - $100,000	4,076	$95,162	$4,236	$3,072	$1,852	$1,443	$1,047	$454	$7,984	$6,424
$100,001 - $125,000	5,032	$110,837	$4,984	$3,610	$1,985	$1,523	$1,103	$479	$8,972	$7,178
$125,001 - $150,000	2,386	$135,861	$6,282	$4,528	$1,941	$1,783	$1,291	$552	$10,558	$8,312
$150,001 - $175,000	1,089	$161,741	$7,832	$5,530	$2,186	$2,062	$1,464	$565	$12,645	$9,745
$175,001 - $200,000	738	$185,640	$8,887	$6,182	$2,335	$2,515	$1,762	$474	$14,212	$10,753
$200,001 - $225,000	525	$212,979	$10,527	$7,211	$2,493	$2,463	$1,691	$443	$15,927	$11,838
$225,001 - $250,000	369	$236,856	$11,986	$7,941	$2,633	$2,804	$1,864	$454	$17,876	$12,891
Over $250,000	1,578	$624,817	$32,775	$21,287	$5,143	$3,874	$2,532	$636	$42,428	$29,598
All	81,563	$73,270	$3,002	$2,234	$1,510	$1,218	$980	$387	$6,117	$5,112

Source: Thomas M. Williams, *Utah's Household Tax Burdens*, Economic and Statistical Unit, Utah State Tax Commission, July 2001, Table 1. Available at http://txdtm01.tax.ex.state.ut.us/ESU/BURDENS/CESTAB1.HTM.

different income groups. Initial tax impact models also avoid many of the most controversial ongoing theoretical disputes about the economic incidence of state and local taxes. For this reason, their results may have more credibility and be less subject to dispute than analyses generated by economic incidence models.

The flip side of this advantage is that initial tax impact models give an incomplete picture of the incidence of state and local tax systems. The shortcomings associated with omitting business taxes are likely to be most glaring in instances in which an initial tax impact model is used to evaluate the incidence of a tax "package" that changes both business and household taxes.

Consider, for example, a tax bill that extends the state sales tax to a large number of services that tend to be purchased by upper-income households and uses the revenue to finance aid to local governments aimed at permitting them to implement an across-the-board reduction in property tax rates. Given the high proportion of property taxes paid by businesses, an initial tax impact model that omits business property taxes would give an incomplete and perhaps misleading picture of the true incidence of the overall package. An initial tax impact model might well report that the tax package increased the progressivity of the state tax system, since the revenue raised by a progressive tax change (the extension of the sales tax to services purchased primarily by upper-income households) was being used to relieve a regressive tax (homeowner and renter property taxes). However, since much of the benefit of the property tax relief would flow to businesses — which tend to be owned by relatively affluent households — an economic incidence model likely would report that the tax package was not as progressive as suggested by an initial tax impact model. The output of an economic incidence model likely would be far more useful to policymakers in such a situation, even were it necessary to provide a range of estimates showing how the results would differ if varying assumptions were made about the incidence of business property taxes.

The initial tax impact model shares with the economic incidence model the advantage of outputting tax incidence estimates that can be generalized to the entire population of a state. The relative limitations of representative taxpayer models, which do not permit such generalization, are discussed in Chapter V.

State Experience

The availability of tax incidence information facilitated informed tax policy debate in the Maryland legislature in late 1996 and early 1997. In November 1996, Maryland Governor Parris Glendening proposed to cut the top rate of Maryland's personal income tax from 5.0 percent to 4.5 percent over three years — primarily in the belief that this would stimulate job creation in the

state. The Governor also proposed to offset a portion of the associated revenue loss by doubling the state cigarette tax.

An initial tax impact-type incidence model is sufficient to analyze the net, combined incidence of such a proposal, since the proposal does not include increased taxes on business. Maryland does not have such model; however, Citizens for Tax Justice used the incidence model of its affiliated Institute for Taxation and Economic Policy to analyze the net impact of Governor Glendening's proposal.[18] In testimony before the legislature, CTJ Director Robert S. McIntyre reported that the Governor's proposal actually would have resulted in a net tax increase for the bottom 20 percent of Maryland families. The CTJ analysis also showed that the proposal would have reduced the progressivity of Maryland's already-regressive tax system by providing income tax cuts that steadily increased as a *share* of income as family income increased. The CTJ findings are reproduced in Tables 7 and 8.

With this information available to it, the legislature moved to modify Glendening's proposal. The cigarette tax cut was put on hold, and legislation was introduced to substitute an increase in the personal exemption for a cut in tax rates. Although Maryland does not have a full-blown initial tax impact-type incidence model, it does have a critical building block of such a model — a personal income tax "microsimulation" model that is used for both revenue forecasting and incidence analysis. (A personal income tax microsimulation model is based upon a statistical sample of actual state income tax returns and reproduces the personal income tax calculation for each taxpaying unit in the sample. Such a model permits policymakers to calculate the incidence of changes in tax law that affect most specific lines on the return.) This model was used to compare the distribution of tax savings from the Governor's proposal and the alternative plan to increase the personal exemption. Runs of the microsimulation model revealed that:

- the 10 percent of taxpayers with household incomes above $100,000 would have received 43 percent of the tax savings from Glendening's proposal to cut the tax rate (when it was fully phased in) but just 19 percent of the tax savings from an increased personal exemption;

- the 47 percent of taxpayers with incomes below $30,000 would have received only eight percent of the total tax cut resulting from a cut in the top tax rate;

[18] ITEP's model is an economic incidence-type model that is capable of analyzing the ultimate household incidence of taxes imposed on businesses. When business taxes are not involved, however, the output of an economic incidence model essentially is the same as that of a model capable of analyzing only the initial household impact of tax policy changes.

- 90 percent of the state's 2.1 million income tax filers would have received a greater tax savings from the increase in the personal exemption than from the rate reduction.[19]

Effects of the Governor's Proposed 10% Maryland Income Tax Cut & Doubling of the Cigarette Tax on Non-elderly Maryland Married Couple Families (1995 Income Levels)

Table 7

Family Income Group		Average Family Income	Average Tax Changes			
			Md PIT Cut	Federal Tax Hike	Cig Tax Hike	Net Tax Change
Lowest 20%		$ 23,000	$ -50	$ +1	$ +50	$ +2
Second 20%		43,700	-140	+9	+63	-68
Middle 20%		60,000	-207	+32	+61	-113
Fourth 20%		78,500	-283	+68	+61	-154
Top 20%	Next 15%	114,200	-412	+111	+58	-244
	Next 4%	248,000	-901	+298	+57	-546
	Top 1%	982,000	-3,808	+1,398	+62	-2,349

Table 8

Family Income Group		Average Family Income	Tax Changes as Shares of Income				% Tax Chng*
			Md PIT Cut	Federal Tax Hike	Cig Tax Hike	Net Tax Chng	
Lowest 20%		$ 23,000	-0.22%	+0.01%	+0.22%	+0.01%	+0.1%
Second 20%		43,700	-0.32%	+0.02%	+0.14%	-0.16%	-1.5%
Middle 20%		60,000	-0.35%	+0.05%	+0.10%	-0.19%	-1.9%
Fourth 20%		78,500	-0.36%	+0.09%	+0.08%	-0.20%	-2.2%
Top 20%	Next 15%	114,200	-0.36%	+0.10%	+0.05%	-0.21%	-2.6%
	Next 4%	248,000	-0.36%	+0.12%	+0.02%	-0.22%	-3.3%
	Top 1%	982,000	-0.39%	+0.14%	+0.01%	-0.24%	-4.3%

[19] Michael Abramowitz, "Tax Rate Cut Aids the Rich, Analysts Say," *Washington Post*, January 22, 1997. William F. Zorzi, Jr. and Thomas W. Waldron, "Glendening Tax Plan Has Strong Rival," *Baltimore Sun*, January 23, 1997.

* Percent reduction in total Maryland state and local taxes, after federal itemized deduction offsets.

Source: Summary of Statement of Robert S. McIntyre, Director of Citizens for Tax Justice, Before the Special Joint House Committee on Competitive Taxation and Economic Development of the Maryland House of Delegates, December 11, 1996.

Ultimately, the Maryland legislature blended the two proposals, opting for a reduction in the top tax rate *and* an increase in the personal exemption — both somewhat smaller than originally proposed.[20] The availability of tax incidence-related information had allowed the legislature and the Governor to balance pressures for a cut in the top rate in the name of "economic development" with tax equity concerns.

[20] House Bill 511, signed into law by Governor Glendening on April 8, 1997.

V. The Representative Taxpayer Model

The defining characteristic of the "representative taxpayer" approach to analyzing tax incidence is that it compares tax liabilities at different income levels by calculating state and local taxes that would be paid by *hypothetical* "typical" households. Because taxpayer profiles are constructed subjectively rather than sampled from the real world, the results of a representative taxpayer model are only an illustration of how tax liabilities are distributed among income groups rather than a statistically-valid delineation of the tax liabilities of the entire population. Nonetheless, representative taxpayer models have some potential benefits, particularly if they are used in conjunction with one of the statistics-based approaches.

Description of the Model

A representative taxpayer model calculates the state and local taxes that would be paid by *hypothetical* "typical" families or households whose income, consumption, homeownership, and demographic characteristics are assigned subjectively, based on data available from both state and federal government sources. A limited number of family profiles are created. Varying levels of income are assigned to the profiles (for example, starting at $10,000 and rising in $10,000 increments to, say, $150,000), and then additional characteristics affecting tax liability that would be typical for families of each income level are assigned. For example, lower-income profiles might be assumed to receive all of their income from wages, while upper-income profiles might be assumed to have shares of income from interest, dividends, and capital gains that are typical for families in the income groups into which the profiles fall. (These income shares usually would be obtained from Internal Revenue Service compilations of tax return data.) Similarly, IRS data could be used to classify the households as itemizers or non-itemizers and then to assign to the former amounts of deductible charitable contributions, medical expenses, and mortgage interest payments that would be typical for households of those income levels.

Other variables potentially affecting state and local tax liabilities are also assigned to each profile. For example, profiles are assumed to be renters or homeowners, and data from the Census Bureau are used to assign typical home values for families at each income level. Data from the U.S. Labor Department's Consumer Expenditure Survey may be used to estimate the share of income for each profile devoted to purchasing different types of goods and services, which determines the families' sales tax liabilities.[21] Family sizes and ages of household members are assigned, which affect the number (and in many states the magnitude) of personal exemptions subtracted on state income tax returns. Finally, assumptions are made concerning the location of the profiled families within the state, since property tax rates usually vary widely among different local jurisdictions.

Ideally, a state would devote sufficient resources to the construction of a representative taxpayer model to permit the analysis of permutations of the profiles that vary by characteristics other than income. For example, two complete sets of profiles might be constructed, one in which the family is assumed to be a two-parent family with two children and one in which the family is comprised of a single parent with two children. Such an analysis would highlight the impact on tax liability of differences in household composition. Or three sets of profiles might be constructed, one in which the family is assumed to live in an urban location (with home values and property tax rates typical of such a location), one in which a suburban location is assumed, and one in which a rural location is assumed.

A representative taxpayer model calculates the liability of its hypothetical households for the various taxes included in the model analogously to how liabilities are calculated under the other two models. In practice, however, representative taxpayer models are likely to be programmed to take into account a narrower range of tax policy-related variables than the other two models. For example, it is unlikely that a representative taxpayer model would be programmed to measure the distributional impact of a wide variety of potential changes in a state's sales tax base. Because of the model's lack of statistical validity, states are unlikely to expend resources to enable it to evaluate the distributional impacts of highly-specific policy options.

The results of the tax liability calculations are typically shown both in absolute dollar terms and as a share of the assumed household income to provide information on the relative progressivity of the state's tax system. Such a display provides a snapshot of the distribution of tax liabilities at a particular point in time. In addition, if the profiles are calculated under both a current law scenario and a scenario incorporating proposed changes in one or more taxes, the changes in dollar liability and liability as a share of income can provide easily grasped

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[21] It is worth re-emphasizing here that the basic difference between the statistical models — the economic incidence and initial tax impact models — and the representative taxpayer model is that the latter constructs its taxpayer profiles subjectively rather than sampling them statistically from real-world data. However, that does not preclude the use under a representative taxpayer approach of many of the same third-party data sources that are used in the other two models — such as Census data on home values, IRS data on income sources and deductions, and Labor Department data on consumer expenditures.

information about the distributional impact of such a change. For example, if running a proposed income tax cut scenario through the representative taxpayer model indicates that the bottom two income profiles receive a cut in their total family tax liabilities equal to five percent of their incomes and the top two profiles receive a tax cut equal to 40 percent of their incomes, this is a good indication that a large share of the benefits of the proposal are likely to accrue to a relatively small segment of the population comprised of upper-income families.

Example: The District of Columbia's Annual Representative Taxpayer Study

Using a representative taxpayer approach, the District of Columbia Department of Finance and Revenue publishes an annual study that seeks to compare the overall tax burdens of families of different income levels in the District with those of families residing in the largest city in each state. The most recent such study, *Tax Rates and Tax Burdens in the District of Columbia: A Nationwide Comparison*, was published in August 2001.

The D.C. study calculates the tax liability of five non-elderly, two-earner households with two children and assumed incomes of $25,000, $50,000, $75,000, $100,000, and $150,000. Total tax liability is calculated for state and local income and sales taxes, residential property taxes, and automobile-related taxes and fees (gasoline taxes, personal property taxes on cars, vehicle registration fees, and miscellaneous excise taxes). Incomes are assumed to consist of wages, interest, and (for the three highest-income profiles) long-term capital gains. Itemized deduction amounts are assumed for mortgage interest and charitable contributions and are calculated for property taxes based on assumed home values, property tax rates, and property tax relief provisions in effect. Assumed home values for each city are calculated based on the ratio of median home value to median income reported in the Census of Housing, with adjustments made to increase this ratio for the $25,000 profile and decrease it for the $100,000 and $150,000 profiles. All five profiles are assumed to be homeowners. The calculation of sales tax liabilities takes into account major exemption categories in each state, and the calculation of automobile taxes is based on assumed automobile values and fuel efficiencies.

The study reports the dollar amounts of each of the five categories of taxes individually and in the aggregate at each of the five income levels. Total taxes as a share of assumed income is also reported. (See Tables 9 and 10.) Finally, the study presents an index that permits a rough comparison of the overall progressivity or regressivity of the tax system in each state by calculating the ratio of taxes as a share of income at the $25,000 income level to taxes as a share of income at the $150,000 income level. A ratio greater than 1.0 suggests the existence of a regressive tax system, in which low-income households devote a greater share of income to state and local taxes than high-income households.

Benefits and Drawbacks of the Representative Taxpayer Model

Representative taxpayer models are the least costly and complex to maintain because they are only intended to be illustrative of the tax situation of hypothetical households rather than representative of a state's actual population. One of the more laborious, complicated, and expensive aspects of constructing a model to analyze either the initial impact of state and local taxes or their economic incidence is the development of a statistically-valid sample of actual state personal income tax returns. This may require an annual sampling of thousands of returns, which must be manually corrected for errors or omissions, matched with Census data, and then weighted to be reflective of the population. The representative taxpayer approach avoids this effort entirely because it only involves setting up a spreadsheet that replicates the calculation of the household's income tax liability using the assumed incomes, deductions, and exemptions for the household profiles fed into it.

Modeling the distribution of property tax and sales tax liabilities in a representative taxpayer model will be a simpler undertaking as well relative to the other two approaches. Construction of the representative taxpayer model may entail an examination of the same data sources as would be used in the other two models to assign home values and household expenditures for food, clothing, cigarettes, and other goods and services to each profile for purposes of estimating property, sales, and excise tax liabilities. However, it is simpler to assign values for these variables that appear to be reasonable given the household income levels selected for the profiles than it is to perform a rigorous statistical match or estimation.

Table 9

Tax Liability for Hypothetical Families of Four Residing in Washington, DC
2000

TAX	$25,000 Income Level
Income	$ 932
Sales	658
Property	344
Automobile	213
Total	2,146
TAX	**$50,000 Income Level**
Income	$2,427
Sales	775
Property	915
Automobile	218
Total	4,335
TAX	**$75,000 Income Level**
Income	$4,418
Sales	1,158
Property	1,517
Automobile	363
Total	7,455
TAX	**$100,000 Income Level**
Income	$6,538
Sales	1,544
Property	1,998
Automobile	380
Total	10,459
TAX	**$150,000 Income Level**
Income	$10,722
Sales	2,315
Property	2,960
Automobile	380
Total	16,377

Source: DC Office of Tax and Revenue, *Tax Rates and Tax Burdens in the District of Columbia — A Nationwide Comparison, 2000,* Table 1.

Table 10
Summary of Average Tax Liabilities for Hypothetical Families of Four Residing in the District of Columbia, 2000

Income Level	Tax Liability	Percent of Income
	Total Taxes	
$ 25,000	$2,146	8.6
$ 50,000	$4,335	8.7
$ 75,000	$7,455	9.9
$100,000	$10,459	10.5
$150,000	$16,377	10.9
	Individual Income Taxes	
$ 25,000	$932	3.7
$ 50,000	$2,427	4.9
$ 75,000	$4,418	5.9
$100,000	$6,538	6.5
$150,000	$10,722	7.1
	Sales Taxes	
$ 25,000	$658	2.6
$ 50,000	$775	1.6
$ 75,000	$1,158	1.5
$100,000	$1,544	1.5
$150,000	$2,315	1.5
	Property Taxes	
$ 25,000	$344	1.4
$ 50,000	$915	1.8
$ 75,000	$1,517	2.0
$100,000	$1,998	2.0
$150,000	$2,960	2.0
	Automobile-related Taxes	
$ 25,000	$213	0.9
$ 50,000	$218	0.4
$ 75,000	$363	0.5
$100,000	$380	0.4
$150,000	$380	0.3

Source: DC Office of Tax and Revenue, *Tax Rates and Tax Burdens in the District of Columbia — A Nationwide Comparison, 2000.* Table 1.

Finally, a representative taxpayer model is simpler to construct than an economic incidence model because a representative taxpayer model does not generally attempt to incorporate estimates of taxes initially imposed on businesses that are passed through to households.[22] This eliminates the need for another set of complicated assumptions and calculations.

The cost of the greater simplicity of representative taxpayer models, however, is that they cannot provide a comprehensive picture of the distribution of tax liabilities among a state's population or the impact of proposed tax changes. By definition, representative taxpayer models only illustrate how the tax system affects the specific profiles that have been constructed. With a representative taxpayer model, it is not possible to determine the overall share of state and/or local taxes paid by a particular income segment of the population, the share of income devoted to state and local taxes by a particular income segment, or the share of a tax increase or decrease that will be received by a particular income segment.

One other significant shortcoming of the representative taxpayer approach is that it is relatively easy to manipulate the output of the model by changing the characteristics of the profile. Since the models are not constructed with any pretense of statistical rigor, it is easy to justify incorporating variables that will shift the results dramatically. For example, in a given community, many households with $50,000 of income may own $75,000 homes, and many may own $150,000 homes. Which of these home values is assumed for the profile constructed for a family with a $50,000 income could have a dramatic impact on the estimated effect of a proposed change in a property tax relief program that is based on the share of income devoted to paying property taxes.

Because of their inability to provide a statistically reliable picture of the characteristics of a state's population that determine household tax liabilities (for example, amount and sources of income, consumption patterns, and real estate ownership), representative taxpayer models are unlikely to be acceptable to most states as the principle mechanism for evaluating the distribution of tax obligations. Nonetheless, they can be a useful supplement to the other two methods. One of the positive aspects of a representative taxpayer model is that the profiles and output are transparent and easy to understand. Assume a two-earner family with two children living in City X with such-and-such an income broken down among such-and-such sources, assume the family owns a home of a certain value, assume it allocates its income among food, clothing, savings, and other consumption in a certain manner, and the model shows how much income, sales, and property tax it will pay before and after a particular set of tax law changes in both dollars and as a share of income. Now assume that their neighbors are identical in all characteristics except that they rent their home; the model will show how the neighbors' tax liability will differ. With this

[22] It would be possible and simple to incorporate in a representative taxpayer model an assumption that renters effectively pay a certain share of the property taxes initially imposed on landlords. This might be desirable if a representative taxpayer model were being used to evaluate the distributional impact of property tax relief mechanisms like income tax deductions for property taxes or so-called property tax "circuit-breakers."

kind of information from a representative taxpayer model, a policymaker can evaluate in a straightforward way whether she would *want* tax liability to differ to that extent between two families in those two situations and, if not, adjust the proposal accordingly.

State Experience

Colorado is one state that has recently relied upon a representative taxpayer approach to tax incidence analysis to guide policy-making. In September, 1998, the legislature was called into special session to decide how to refund to taxpayers revenue in excess of a state expenditure ceiling. The refund was mandated by the state's Taxpayer Bill of Rights (TABOR), a provision of its constitution. Three basic approaches to implementing the refund — each of them embodied in proposed legislation — were under consideration:

- a temporary cut in the state's (flat) income tax rate;
- a partial rebate of estimated state sales tax liability, scaled according to income class; and
- a blend of the two approaches.

The legislators also confronted the possibility that voters would approve a November 1998 referendum reducing the size of the rebate by allowing a portion to be dedicated to state transportation and education infrastructure needs. They wished to deal with this contingency in advance in order to avoid a second special legislative session following the election.

To assist legislators in understanding the distributional impact of the three approaches to implementing the refund under both approval and disapproval scenarios for the referendum, legislative staff prepared a simple representative taxpayer analysis. The analysis took into account the fact that the sales tax rebate would not be subject to federal income taxation but that the income tax cut would generate higher federal tax liability for Colorado households that deduct state income tax payments. Legislative staff prepared a table summarizing the tax distribution analysis. (See Table 11.)

This table served to highlight the fact that tying the refund in whole or in part to a household's state income tax liability would have significantly reduced — or indeed eliminated — benefits to families with incomes too low to pay Colorado income taxes as compared to the sales tax rebate option. The Governor and others pointed out the inequity of such a policy in light of the fact that all citizens of the state paid sales and excise taxes that also had contributed

Table 11
Example Impacts of [Colorado] House Bills 98-1228, 98-1412, and 98-1417
for Various Income Levels, Taking into Account Federal Tax Implications
For Married Taxpayers with One Child

Proposal	Federal Adjusted Gross Income				
	$15,000	$50,000	$60,000	$80,000	$130,000
Assuming Voters Do NOT Approve House Bill 98-1256					
HB 98-1228 Only (HB 98-1228 would reduce the state income tax rate) — *Net TABOR Refund*	$0	$235	$303	$369	$657
HB 98-1417 (HB 98-1417 would give a sales tax refund based on federal adjusted gross income) — *TABOR Refund from HB 98-1417*	$250	$500	$600	$800	$800
45% HB 98-1228 and 55% HB 98-1412 (HB 1412 would give a sales tax refund based on federal adjusted gross income) — *Net TABOR Refund*	$164	$367	$398	$428	$636
Assuming Voters Approve House Bill 98-1256					
HB 98-1228 Only (HB 98-1228 would reduce the state income tax rate) — *Net TABOR Refund*	$0	$150	$194	$236	$420
HB 98-1417 (HB 98-1417 would give a sales tax refund based on federal adjusted gross income) — *TABOR Refund from HB 98-1417*	$162	$324	$388	$518	$518
45% HB 98-1228 and 55% HB 98-1412 (HB 1412 would give a sales tax refund based on federal adjusted gross income) — *Net TABOR Refund*	$106	$237	$$256	$275	$409

This table shows the impacts of these bills on five representative households. The household with federal adjusted gross income of $15,000 does not itemize deductions while the other households do.

Source: Colorado Legislative Council Staff, Office of Legislative Legal Services, and Joint Budget Committee Staff, *The FY 1997-98 TABOR Refund*, August 19, 1998, Table 6, p. 11. Reproduced as-is from the original.

to the surplus that was to be rebated.[23] This argument ultimately carried the day. The legislature enacted a broad-based TABOR rebate of a portion of estimated sales tax liability that benefitted all households that were willing to file a tax return to claim it — even those with no state income tax liability.[24]

[23] See: Nicholas Johnson and Elizabeth C. McNichol, *A Broad-Based Tabor Rebate Maximizes Benefits to Colorado Residents*, Center on Budget and Policy Priorities, August 26, 1998.

[24] See: Robert A. Wherry, Jr., "Colorado Adopts Four-Tier Tax Refund Method," *State Tax Notes*, September 17, 1998.

VI. Which States Do Perform or Can Perform Distributional Analysis?

Although there are very real tradeoffs and obstacles that states confront as they construct models for analyzing the distributional impacts of their tax systems, the case studies presented in earlier chapters demonstrate that the problems are not insurmountable and that readily-usable models can be built that can provide valuable information to policymakers. This chapter presents results from a survey conducted by the Center on Budget and Policy Priorities in the Fall of 1999 aimed at determining the extent to which states are performing (or at least have the capacity to perform) distributional analyses of their overall tax systems or of proposed tax changes. The 1998 survey was updated with a telephone survey of selected states in January 2002. The Center's survey information was supplemented with information from a 1991 Federation of Tax Administrators (FTA) survey and other sources that discuss state distributional analysis practices and capacities.[25] The good news is that a significant number of states (although still a minority) have in hand or under development the capacity to perform a comprehensive distributional impact analysis of their overall tax system. A much larger number may be closer to this capacity

[25] The 1991 FTA survey focused on state revenue estimating practices; however, it also asked questions concerning tax incidence analysis activities of states and the availability of personal income tax microsimulation models (which can be used for both revenue forecasting and tax incidence analysis purposes). See: Federation of Tax Administrators, *State Revenue Forecasting and Estimation Practices*, March 1993, tables 6 and 8. The other sources consulted for this chapter were articles published by principals of two accounting firms, KPMG Peat Marwick and PriceWaterhouse, which discuss tax incidence analysis models they had developed for states. See: Michael Vlaisavljevich (KPMG Peat Marwick), "Measuring Tax Burdens in Evaluating State Tax Policy Options," *State Tax Notes*, November 1, 1993; John Hudder (Price Waterhouse), "Use of Models in Tax Policy and Revenue Analysis: A Great Leap Forward," *State Tax Notes*, May 17, 1993; KPMG Peat Marwick, "Fiscal Analysis Services for State and Local Governments, *State Tax Notes microfiche service* 1993; Pennsylvania Tax Blueprint Project, "Project Team Qualifications" (detailing state tax models constructed by both KPMG Peat Marwick and Price Waterhouse), print-out of discontinued Web site, 1996.

than they realize, because they have constructed one or more building blocks of an integrated tax incidence model.

Figure 4 summarizes the current "lay of the land" with respect to state tax distributional analysis capabilities and practices.[26] At least nine states — Colorado, Maine, Minnesota, Missouri, Nebraska, Oregon, Texas, Utah, and Washington — are in possession of comprehensive multi-tax incidence models.[27] At least two additional states — Alabama and New Hampshire — are in the process of acquiring such models.

Six of the nine states with incidence models in hand — Colorado, Maine, Minnesota, Oregon, Texas and Utah — have issued one or more periodic reports detailing the overall incidence of their tax systems at a point in time.[28] All of the nine states except Utah reported in response to the Center's survey that their models are used to evaluate the incidence of proposed tax law changes; Utah indicated that its model is not used for this purpose.

Twenty-two states that do not currently have a comprehensive, multi-tax incidence model reported to the Center a capability to analyze the distributional impact of their state's personal income tax using a microsimulation model. All of these states except Ohio indicated that their models were, in fact, routinely used for this purpose. As noted above, a microsimulation model is constructed by sampling actual state income tax returns and, as such, is a key building block of a comprehensive multi-tax incidence model.

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[26] Not all states responded to the Center's survey.

As discussed in Chapter V, the District of Columbia has constructed a representative taxpayer model that appears to be used solely for purposes of a periodic comparison of the District's tax system to that of other states and other local jurisdictions in the D.C. metropolitan area.

[27] The economic incidence models of Nebraska and Oregon are not the microsimulation-type models discussed in Chapter III. Rather, they are so-called "Computable General Equilibrium" models that have been built primarily to forecast the revenue and economic impact of tax changes. They are capable, however, of providing some information concerning the incidence of the state's tax structure and of proposed changes in tax law. For a detailed description of Oregon's CGE model, see: Oregon Legislative Revenue Office and Oregon State University, *The Oregon Tax Incidence Model (OTIM)*, LRE Research Report Number 2-01, March 16, 2001.

[28] Such a periodic study is mandated by state law in Minnesota, Maine, and Texas (see Appendix 2). The Minnesota and Utah studies are cited and discussed in Chapters III and IV, respectively. The Oregon tax incidence "snapshot" is presented on pp. 66-68 of the report cited in footnote 27. The current Texas tax incidence report is available at www.window.state.tx.us/taxinfo/incidence/index.html. The most recent Colorado tax incidence report is Colorado Department of Revenue, *Colorado Tax Profile Study 1994*. The first snapshot study mandated by Maine's law, *Maine Tax Incidence Study: A Distributional Analysis of Maine's State and Local Taxes*, was published by the Research Division of Maine Revenue Services in December, 2000.

Figure 4
Summary of State Tax Incidence Analysis Capacity

States with Multi-tax Economic Incidence Models	Latest periodic "snapshot" report
Colorado	1994
Maine	2000
Minnesota	2001
Missouri	None
Nebraska	None
Oregon	2001
Texas	2001
Washington	None

States Developing Multi-tax Economic Incidence Models
Alabama
New Hampshire

States with Multi-tax Initial Tax Impact-Type Models	Latest periodic "snapshot" report
Utah	2001

States with Personal Income Tax Microsimulation Models		
Arizona	Massachusetts	Ohio
California	Michigan	Pennsylvania
Delaware	Mississippi	Rhode Island
Illinois	Montana	Vermont
Iowa	New Jersey	Virginia
Kansas	New Mexico	Wisconsin
Kentucky	New York	
Maryland	North Carolina	

States Lacking a Significant Tax Incidence Analysis Capacity		
Alaska*	Hawaii	Oklahoma
Arkansas	Idaho	South Carolina
Connecticut	Indiana	South Dakota*
Dist. of Columbia	Louisiana	Tennessee*
Florida*	Nevada*	West Virginia
Georgia	North Dakota	Wyoming*

*States without personal income taxes

A number of states reported having available additional building blocks of a comprehensive multi-tax incidence model. For example, the personal income tax models of Illinois and Wisconsin incorporate property tax information in such a manner that the combined incidence of property and income tax changes can be evaluated. A handful of additional states indicated some limited capability to analyze the distribution of sales tax liabilities.

In sum, while only a small minority of states have in hand or under development comprehensive tax incidence analysis models, a majority of states have already invested in a costly and important building block of such a model — a personal income tax microsimulation model. With an additional investment, these states could achieve the capability to take periodic snapshots of the distribution of their overall tax systems and to analyze the distributional impact of proposed changes in most major state and local taxes.

VII. Developing and Using Distributional Models: Additional Considerations

Once policymakers have decided that developing a distributional analysis capability for their state is desirable, there are a number of important process-related decisions that need to be made. It may also be worthwhile to give some advance thought to the procedures that will govern the use of the model once it is developed.

Acquiring the Model

The first two process decisions are interrelated. They are: a) whether to seek to develop a full-blown distributional model covering the state's entire tax system immediately or to develop an analytical capability in stages; and b) whether to build the distributional model in-house or to contract the work out to one of the private accounting or economic consulting firms that have developed a specialty in building these models.

As previously noted, many states have already developed a personal income tax microsimulation model that is based on a sample of state income tax returns and that is used for income tax incidence analysis. For such states, the in-house option for building an integrated, multi-tax incidence model may be attractive, since this can be done incrementally. As resources permit, states can first add property tax-related variables like rent payments or home values to the individual household profiles in the model and then, later, information on consumption patterns needed to estimate the distribution of sales and excise tax liabilities.[29] For states

[29] An additional option for states is to initially include property tax-related data obtained from third-party sources like Census surveys and then, as resources permit, to substitute more specific information on property values, rents (continued...)

without up-to-date income tax models, the comprehensive "turn-key" option offered by outside firms may be relatively more attractive.

Additional considerations affecting the choice between in-house and contracted-out development include:

- relative costs,
- ability to free-up the time of in-house staff,
- the pre-existing expertise of in-house staff (or at least the time needed to develop it) as opposed to the expertise of consultants who may already have built a number of tax incidence models,
- credibility (some elected officials may view a contracted-out model as more "objective," others may be less willing to accept the accuracy of a model built by "outsiders" — particularly if it relies heavily on third-party data sources) and
- usability (the intimate familiarity with the nuances of a model that comes from building and fine-tuning it oneself arguably makes it easier to update and to "jerry-rig" an in-house model for unusual scenarios than a model that is built by outside consultants).[30]

A third decision to be made is how to allocate available resources between the construction of the model and the development or enhancement of the databases upon which it relies. A model is only as good as the available data; as discussed earlier, there are significant deficiencies in many of the data sources that are used to develop tax distribution models. It would probably not be cost-effective for individual states to conduct their own surveys of the household consumption patterns that determine sales and excise tax liabilities. However, states could on their own develop much better information than most of them currently possess regarding the value of homes owned and the amount of property taxes and rents paid by households of various income levels in various geographic areas. Much of this information is in the hands of their local governments; compiling it at the state level would greatly enhance the ability of states to evaluate the distributional impacts of their tax systems and to better target property tax relief. A major step in the right direction would be something as simple as asking

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[29] (...continued)
paid, and property taxes paid gathered from state-specific sources.

[30] Unfortunately, a number of states that purchased comprehensive tax incidence analysis models in the past from outside consulting firms — including Alabama, Iowa, and Rhode Island — apparently failed to keep them up to date. (See the sources cited in footnote 25.) Perhaps this is an indication that it is difficult for state personnel not intimately involved in the construction of a model to obtain sufficient understanding of its operation to be capable of updating it.

taxpayers to supply on their income tax returns information about their currently monthly rent payments and the most recent assessed valuation reported on their property tax bills. In short, in budgeting for the cost of developing distributional models, states need to factor-in the costs of data gathering.

Another issue to consider in budgeting for the development of distributional models is the tradeoff between minimizing current costs and building in a capacity to evaluate tax changes that are not currently on the state's policy agenda but that could conceivably be in the future. At some point, states may consider a substantial expansion of their sales taxes to include services, providing property tax relief to renters in addition to homeowners, substituting a Michigan- or New Hampshire-style value-added tax for their corporate income taxes, enacting a sales or income tax for the first time, and other major changes in their tax systems. Resources permitting, it would seem prudent to ensure that the distributional model and the underlying databases are up to the task of evaluating fundamental as well as incremental changes in the state's tax system.

Using the Model

Whether to "house" the model in an executive branch or legislative branch agency is an additional issue to be considered. Practical considerations would seem to weigh on the side of an executive branch agency, particularly the state's department of revenue. Ensuring the accuracy of the model and evaluating unusual results that sometimes appear (particularly at the high end of the income distribution, where a relatively few taxpayers will account for a disproportionate share of tax liability) may necessitate having access to the actual tax returns that are in the model sample. Some states may also decide to do "hard matches" between state income tax and local government property tax records in building the model. State revenue department staff will be more used to and may be better equipped to handle the confidentiality issues that these activities raise than legislative staff will be. On the other hand, it seems likely that a model "housed" within a legislative agency would be used to analyze the distributional impact of proposed tax changes more often than would one under the control of the executive branch.

Finally, there is a whole set of issues that need to be considered revolving around the question of when the state's tax distribution model actually will be put to use. As discussed above, there are now three states — Maine, Minnesota, and Texas — that have enacted a law mandating that a periodic benchmark report be published detailing the overall distribution of the state's tax system. The Introduction discussed the benefits of such a periodic report over and above the benefits of evaluating the distributional impact of proposed tax changes. The fact that at least three states — Missouri, Nebraska, and Washington — appear to have a comprehensive tax incidence analysis capability but have not seen fit to publish a benchmark report would appear to be compelling evidence that unless such reports are mandated, they are unlikely to be prepared.

The case for legally mandating the conduct and publication of distributional analyses of proposed tax *changes* would appear to be even stronger. Without such a mandate, whether to conduct and publish a distributional analysis has considerable potential to become a partisan issue, with one side or the other tempted to suppress analyses that are expected to hinder its efforts to block or enact a tax law change. Concerns about generating an excessive workload for the staff responsible for preparing the analyses can be handled, as Maine, Minnesota, and Texas have all done, by setting a minimum revenue impact (in dollars) that must be exceeded before the tax incidence analysis must be performed. Providing discretion to tax committees or their chairs to determine whether incidence analyses will be performed — as all three states have also done — seems to be an invitation to trouble when both houses of the legislature and the governorship are controlled by the same party. If such discretion *is* established to control staff workload (in addition to or in lieu of a revenue impact threshold), then it would seem to be essential that the ranking minority member of a tax committee or legislative leadership of the minority party also be granted authority to direct that an incidence analysis be prepared and published.[31]

[31] It would also seem advisable that the authority to compel the preparation of a tax incidence analysis be granted to the chairs and ranking minority members of legislative conference committees. Many important tax bills emerge from conference committees rather than the tax committees that developed them; it is essential that legislators have access to an incidence analysis of the final bill they are voting on.

VIII. Conclusion

Regardless of one's opinions about how state and local tax liabilities ought to be distributed across income classes, it seems self-evident that the distribution should be determined consciously rather than by accident. An intended allocation of tax obligations among income groups cannot be readily implemented in a large number of states, however, until such time as the states significantly enhance their tax incidence analysis capacity. Most states need to build comprehensive, multi-tax distribution models and develop databases of personal income tax and property tax information upon which the models rely.

Now is an opportune time for additional states to begin planning to develop this capacity. The coming period seems likely to be a time of considerable ferment in state tax policy. Sharp drops in state and local revenues due to the current economic downturn seem likely to compel some state and local governments to raise tax rates, broaden their tax bases, or a combination of both. Devolution of responsibilities to state and local governments seems likely to continue as a policy trend, and a variety of major demographic and economic changes — from the aging of the population to the growth in Internet commerce — continue to have significant impacts on state and local finances. All of these factors may compel a large number of states to revamp their tax systems significantly in the next decade.[32] What better time than the present to ensure that the next major round of state tax changes will not be made in an information vacuum with regard to their distributional effects?

[32] A 1998 book by Tom Bonnett, *Is the New Global Economy Leaving State-Local Tax Structures Behind?* provides an excellent overview of some of the forces expected to drive state tax policymaking in the next decade. The book was published by the National Conference of State Legislatures, the National Governors' Association, and the National League of Cities. See: www.ncsl.org/programs/fiscal/GLOBECON.htm.

For people who have concerns about the current distribution of state and local tax obligations among income groups, seeing that a comprehensive tax incidence analysis capability exists in as many states as possible should have an especially high priority. State tax systems are and have long been regressive — that is, low-income families must devote a significantly greater share of their incomes to paying state and local taxes than affluent families must.[33] What is particularly troubling, however, is that this regressivity has clearly worsened rather than improved in recent years in a significant number of states.[34] It is questionable that this development has been intentional. Taxing away a disproportionate share of the incomes of low-income families runs counter to other concerted steps that have been taken by states to "make work pay" for families leaving welfare. Increasing regressivity of some states' tax systems may simply be a reflection of the fact that neither the analytical capacity nor a mandate has existed to monitor how the distributional impact of the tax system has changed over time. If the analytical capacity existed and a legal requirement to use it were in effect, the trend toward greater regressivity in state tax systems might change.

From time to time, state and local public finance experts question whether state and local officials really care very much about the distributional impacts of their tax policy decisions.[35] Perhaps in reply, former New York State Deputy Commissioner for Tax Policy John Hudder has suggested that tax policy analysis capability may well fulfill an old (and otherwise discredited) economic theory known as Say's Law: "Supply creates its own demand."[36] Or, to quote a more well known restatement in popular culture: "If you build it, they will come." It is true that distributional questions too often are absent from state tax policy debates. If the analytical capacity existed to answer them, however, they might be asked more often. As a democracy, do we not have an obligation to ensure that important and legitimate questions that may be asked about public policy are capable of receiving an answer?

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[33] According to the Institute on Taxation and Economic Policy, nationally, on average, the 20 percent of married families with the lowest incomes devote 12.5 percent of their incomes to paying state and local taxes, while the one percent of married families with the highest incomes devote only 7.9 percent. See: ITEP, *Who Pays? A Distributional Analysis of the Tax Systems of All 50 States*, available at www.ctj.org/html/whopay.htm. ITEP, a non-partisan, non-profit research institute, has developed an economic incidence model that covers all 50 states and the District of Columbia. ITEP's model is often called upon to perform tax incidence analyses in states that have not yet developed an in-house capability. The use of ITEP's model in Maryland was discussed at pp. 30 - 32 above.

[34] See: Nicholas Johnson and Daniel Tenny, *The Rising Regressivity of State Taxes*, Center on Budget and Policy Priorities, January 2002.

[35] For example, see: Laird Graeser, Al Maury, Tom Clifford, and Michael McKee, "Notes on Tax Burden and Other Technical Studies," in *Proceedings of the National Tax Association*, 1996 Annual Meeting, Boston.

[36] John J. Hudder, "Use of Models in Tax Policy and Revenue Analysis: A Great Leap Forward," *State Tax Notes*, May 17, 1993.

Appendix 1

Measuring Household Income in Tax Incidence Analysis

Measuring state and local taxes as a share of income for different income classes in a state's population presupposes an agreed-upon definition of income. This is not as straightforward a matter as it may seem. Questions routinely arise about how broad a definition of income to use, for example, whether to include sources of income that are not taxed (such as "unrealized" capital gains, disability insurance payments and the untaxed share of Social Security benefits) as well as in-kind forms of "income" (like Food Stamps and the insurance value of Medicaid). Whether to include these types of income in a taxes-as-a-share-of-income measure of tax incidence poses both conceptual issues (is it appropriate for someone's measured tax burden to go down merely because the value of her home — and hence her unrealized capital gain income — rises?) and practical problems (it is difficult to identify and measure sources of income that do not have to be reported on an income tax return).

In addition to questions that arise about whether various categories of income should be considered "income" for purposes of measuring tax incidence, some economists question the appropriateness of measuring income and tax incidence on an annual basis. They argue that doing so can give a distorted picture of the distribution of tax obligations across income groups and, in particular, can exaggerate the regressivity of state and local taxes. These critics point out, for example, that many households that report low incomes are comprised of elderly people who are living off their savings — much of which is simply income accumulated over a long period of time. If consumption by the elderly is subject to state sales taxes but that consumption is financed out of savings rather than current income, then the ratio of sales taxes to income will appear — artificially — to be high. The same type of distortion occurs, it is argued, when a household faced with a temporary loss of income taps into its savings or borrows money to maintain its consumption expenditure at its "normal" level. (Such short-term income drops may

be attributable to a spell of unemployment or, in the case of a family-owned business, to an unprofitable year.)

These are legitimate criticisms of short-term tax incidence measures. However, the suggested alternatives have their own problems. Critics of using annual income often argue that tax policy should be evaluated with respect to its effect on the distribution of tax obligations of families over their lifetimes. Since lifetime income is difficult if not impossible either to measure or to predict with much accuracy, the critics often argue that a family's current annual consumption spending should be used as a proxy for the average amount of income it can expect to receive over a long period of time. The high rate of personal bankruptcy is good evidence that this is a questionable assumption; people often live beyond their means and must sometimes scale back their consumption drastically.

More importantly, using consumption as a proxy for income or focusing on tax burdens over a taxpayer's lifetime downplays legitimate interests that policymakers have in moderating tax burdens of families at particular points in their life-cycles. The "lifetime" perspective on tax incidence implies that policymakers should not care much if families just starting out face high sales tax burdens because they're incurring the costs of furnishing new homes or buying diapers or clothes for young children; it is argued that this will even out in a few years when the parents hit their peak earning years and begin saving large share of their income for college and retirement rather than spending it on taxable goods. Likewise, the lifetime perspective downplays the very real problem of elderly homeowners who may be "house-rich" (because they enjoyed sufficiently high lifetime incomes to be able to afford houses) but are now income-poor and face significant difficulties in coping with high property tax liabilities.

The exaggerated regressivity of state and local taxes that can arise from short-term income measurement can be addressed by building into tax incidence models a capability to report separate results for non-elderly households and for a sample of the population that excludes households reporting business losses or unemployment insurance benefits. Building incidence models using "lifetime income" estimates or current consumption as a proxy for income goes too far in the opposite direction. Such models essentially define away one of the most troublesome features of state and local tax systems: high tax burdens for families whose consumption is high relative to their current incomes.[37]

[37] A recent article by economists Howard Chernick and Andrew Reschovsky reviews and critiques many of the assumptions underlying lifetime incidence analysis. It finds that the incidence of the gasoline tax is regressive even if income is averaged over a long period of time and faults lifetime incidence analysis for insufficient rigor in analyzing how changes in family composition over the lifetimes of family members affect income mobility. See: "Yes! Consumption Taxes Are Regressive," *State Tax Notes*, October 16, 2000, pp. 1023-33.

Appendix 2

State Statutes Mandating Tax Incidence Analyses

Three states — Maine, Minnesota, and Texas — have enacted laws mandating the conduct of both periodic studies of the incidence of the overall state tax system and analyses of the distributional impact of proposed tax legislation. The text of these statutes is reproduced below.

Maine

Title 36. Taxation
Part 1. General Provisions
Chapter 9. Justification of Tax Expenditures

200. Bureau of revenue services report on revenue incidence

1. Impact of taxes on individuals. The bureau shall submit a report containing the information required by this subsection to the legislature by July 1, 1999 and by October 1st of each even-numbered year thereafter.

a. Part 1 of the report must describe the overall incidence of all state, local and county taxes. The report must present information on the distribution of the tax burden:

(1) for the overall income distribution, using a measure of system-wide incidence that appropriately measures equality and inequality;

(2) by income classes, including, at a minimum, deciles of the income distribution; and

(3) by other appropriate taxpayer characteristics.

b. Part 2 of the report must describe the impact of the tax system on business and industrial sectors. The report must:

(1) describe the impact of taxes on major sectors of the business and industrial economy relative to other sectors; and

(2) describe the relative impact of each tax on business and industrial sectors.

c. When determining the overall incidence of taxes under this subsection, the bureau shall reduce the amount of taxes collected by the amount of taxes that are returned directly to taxpayers through tax relief programs.

2. Legislation analysis. At the request of the joint standing committee of the legislature having jurisdiction over taxation matters, the bureau shall prepare an incidence impact analysis of any legislation or proposal to change the tax laws that 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 effected by that legislation or proposal, the analysis must report on the incidence effects that would result if the legislation were enacted. The report may present information, using system-wide measures, by income classes, taxpayer characteristics or other relevant categories. The report may include analyses of the effect of the legislation proposal on representative taxpayers. The analysis must include a statement of the incidence assumptions that were used in computing the tax burdens.

Added by Chapter 744, 4/14/98.

Minnesota

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.

Subd. 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.

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

Texas

§ 403.0141. Report on Incidence of Tax

(a) Before each regular session of the legislature, the comptroller shall report to the legislature and the governor on the overall incidence of the school district property tax and any state tax generating more than 2.5 percent of state tax revenue in the prior fiscal year. The analysis shall report on the distribution of the tax burden for the taxes included in the report.

(b) At the request of the chair of a committee of the senate or house of representatives to which has been referred a bill or resolution to change the tax system that would increase, decrease, or redistribute tax by more than $20 million, the Legislative Budget Board with the assistance, as requested, of the comptroller shall prepare an incidence impact analysis of the bill or resolution. The analysis shall report on the incidence effects that would result if the bill or resolution were enacted.

(c) To the extent data is available, the incidence impact analysis under Subsections (a) and (b):

(1) shall evaluate the tax burden:

> (A) on the overall income distribution, using a systemwide incidence measure or other appropriate measures of equality and inequality; and
>
> (B) on income classes, including, at a minimum, quintiles of the income distribution, on renters and homeowners, on industry or business classes, as appropriate, and on various types of business organizations;

(2) may evaluate the tax burden:

(A) by other appropriate taxpayer characteristics, such as whether the taxpayer is a farmer, rancher, retired elderly, or resident or nonresident of the state; and

(B) by distribution of impact on consumers, labor, capital, and out-of-state persons and entities;

(3) shall evaluate the effect of each tax on total income by income group; and

(4) shall:

(A) use the broadest measure of economic income for which reliable data is available; and

(B) include a statement of the incidence assumptions that were used in making the analysis.

Added by Acts 1997, 75th Leg., ch. 1035, § 48, eff. Sept. 1, 1997.

Amended by Acts 1999, 76th Leg., ch. 1467, § 2.03, eff. Oct. 1, 1999.

Appendix 3

Summary of Data Items for Each Sample Household in the Minnesota Tax Incidence Model

Household Characteristics, Income, and Taxes	
General Information	Taxpayer and spouse social security numbers Household size Number of adults in household Number of dependents in household Sample conversion rate Over age 65 indicator (taxpayer or spouse) Housing type: homeowner, renter, farmer or mobilehomeowner
Minnesota Individual Income Tax	State income tax filing status State income tax liability Working family credit Dependent care credit Income additions and subtractions
Federal Individual Income Tax	Federal income tax filing status Wages, salaries and tips Taxable interest Taxable dividends Business income Capital gains and losses Rent, royalty, partnership and estate income Farm income Social security benefits Nontaxable interest Nontaxable IRA income Nontaxable pensions and annuities Nontaxable social security benefits Self-employed health insurance deduction Adjusted gross income Taxable income Net tax liability Alternative minimum tax Earned income credit Dependent care credit Elderly credit Schedule A: Real estate taxes Home mortgage interest and points State and local income tax Total itemized deductions Schedule C: depreciation Schedule E: Depreciation Rental gains and losses Passive partnership gains and losses Nonpassive partnership gains and losses Section 179 losses Estate gains and losses REMIC income Farm rent Schedule F: taxes paid, depreciation
Minnesota Property Tax Refund	Federal adjusted gross income Nontaxable social security payments Nontaxable contributions to IRA, Keogh, SEP, or other retirement plans Public assistance payments Other income (including worker's compensation, pensions, veterans' payments, nontaxable interest) Renter's property tax Real estate taxes Mobilehome property taxes and rent Regular and special property tax refunds
Miscellaneous	Public assistance payments (including AFDC, MFIP, Refugee Cash Assistance, GA, FGA, MSA, EA, and Special Needs payments) Workers' compensation benefits Unemployment benefits Social security benefits Mortgage interest Wages, salaries and tips Pension income Dividend income Interest income
Local Property	Homestead limited market value for homeowners Homestead property tax for homeowners

Estimated Expenditures and Taxes	
Consumer Expenditures	Expenditures used in calculating sales, excise, insurance, vehicle registration and other taxes: Total household expenditures Hotel and motel Food (taxable) Alcohol Tobacco Gasoline Vehicles (before trade-in) Vehicles (net of trade-in) Other vehicle expenses Furniture and equipment Household supplies Home maintenance Utilities (taxable) Miscellaneous manufactured items Entertainment Prescription drugs (taxable) Life insurance Automobile insurance Homeowners insurance Health insurance Gambling Medical
State taxes	State sales tax and motor vehicle excise tax Alcoholic beverage excise tax Motor fuels excise tax Cigarette and tobacco products excise taxes Insurance premiums tax Motor vehicle registration tax Gambling tax MinnesotaCare tax Mortgage and deed taxes
Local Property Taxes	Homestead estimated limited market value for farmers Homestead property tax for farmers Renter's property tax Seasonal/recreational property tax Property tax refund for farmers split into individual and business parts
Business Taxes	Nonrental property taxes Renter property taxes State sales tax and motor vehicle excise tax Corporate franchise tax Motor fuels excise tax Motor vehicle registration tax Insurance premiums tax Mortgage and deed taxes

Source: Minnesota Department of Revenue, *1999 Minnesota Tax Incidence Study*, Appendix A, available at www.taxes.state.mn.us/reports/fiscal/incidence1999/appena.pdf

Appendix 4

The Flawed Federal Consumer Expenditure Survey: A Data Reliability Problem Common to All Three Distributional Models

No state surveys households to determine how they spend their incomes because it would not be cost-effective to do so. Analyzing the distribution of sales and excise tax liabilities therefore requires that states rely on the federal Consumer Expenditure Survey (CES). Unfortunately, the CES is generally conceded to have some significant flaws when it is used for this purpose. Thus, all three approaches to tax distribution analysis are plagued by significant data reliability problems when it comes to estimating the distribution of sales and excise tax liabilities.

The most significant problem of the CES is its questionable accuracy at the low end of the income distribution. An examination of CES data indicates that, on average, the bottom two or three quintiles (fifths) of the income distribution devote far in excess of their reported incomes to household consumption. While a certain percentage of the low-income households sampled for the CES are elderly people living on their own savings and college students being supported by their parents, experts agree that these groups account for only a small portion of the CES households that report spending in excess of income. Since non-elderly, low-income people are likely to have relatively small savings and only limited access to credit to permit them to spend far in excess of income, it appears that there is significant under-reporting of income by the low-income households in the CES sample. If consumption as a share of income is overstated because the denominator, income, is under-reported, then taxes on that consumption as a share of income are also going to be overstated. In other words, under-reporting of income at the low end of the income distribution appears to exaggerate the regressivity of the states' sales and excise taxes to an unknown extent.

In addition, an unknown portion of the CES households reporting low incomes and consuming in excess of their incomes are likely to be households in which incomes are only temporarily low. (Incomes could be low due to a period of unemployment experienced by the earner(s) or losses suffered by a family-owned business). While there are legitimate reasons to treat such families in a tax distribution analysis no differently than families whose incomes are low for an extended period of time, it is also true that for tax policy evaluation purposes it would be useful to be able to look at the tax liabilities only of the latter group. Unfortunately, the CES is essentially a snapshot of the income and expenditures of a constantly-changing sample of households, so it is not possible to isolate households whose incomes are only temporarily low. (See the longer discussion of the issue of measuring incomes for tax distribution purposes on a long-term versus short term basis in Appendix 1.)

A third shortcoming of the CES is that it does not draw a sample that is large enough to permit statistically-valid state-specific expenditure data to be extracted. Therefore, it is necessary to assume that the expenditure patterns characteristic of particular income groups for the U.S. as a whole are replicated in each state. This seems unlikely to be true, for example, with respect to heating and gasoline expenditures incurred by low-income families; winter temperatures, driving distances, and the availability of public transportation obviously differ considerably throughout the country. Local housing markets also differ enormously within the U.S., leading to significant variability within nationwide income classes of the amount of income devoted to rent or mortgage payments.

Still, with all its flaws, the CES remains the best available comprehensive source of information about how families allocate their incomes between various categories of spending and savings. It is relied on by economists at all levels of government who analyze the distributional impact of taxes imposed on household consumption. It undoubtedly provides reasonably accurate results, but its shortcomings should be kept in mind when those results are evaluated.