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## **THE STATE CORPORATE INCOME TAX: A SYNTHESIS OF RECENT RESEARCH**

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### **1.0 INTRODUCTION**

State and local taxation (SALT) has been the focus of a growing body of tax research over the past twenty-five years. Part of the reason for this is because it is such a fascinating area for research: fifty states with taxing regimes that are in many ways so similar, and yet in many ways very different, provide a ready field laboratory for testing theories about taxation in general. The variations in state tax regimes also provide a unique setting for studying multi-jurisdictional issues. Much of the work done in this area has broad policy implications. Research that provides evidence on how firms and taxing jurisdictions react to various provisions and changes in tax law can inform the legislative process. SALT research can aid policymakers to structure the laws in such a way as to maximize aggregate welfare while minimizing the economic distortions and administrative and compliance costs created by the state corporate income tax. Likewise, research into the effects of formulary apportionment and the firm-level and state-level behavior it elicits is informative both to state policymakers as well as to the continuing debate at the federal level over the multinational allocation of income.

Another reason for the increased interest in SALT research is the fact that the state and local tax burden has grown to be almost as onerous as that of federal taxes. In a 1992 Coopers and Lybrand survey, participants indicated that their SALT burden had grown significantly in recent years; it then represented 46 percent of firms' total tax burden, and further increases were expected [Baroni, 1993]. Over the past twenty-five years there has been a constant trend of change in how states tax corporate income: 28 states have altered their apportionment formula, and all 50 states have increased the level and/or variety of business taxes and financial incentives [Tannenwald, 2001]. As our economy continues to shift from production/consumption of goods to services, as e-commerce proliferates, as federal cutbacks in state subsidies continue, and as inter-state competition intensifies, more changes are likely to take place in state taxation of business.

Why should accountants conduct research into state-level corporate income taxes? SALT has become an area of specialty for practicing accountants, both because of the technical complexity of the issues involved and because it has proven to be a fruitful ground for tax planning to lower clients' overall tax

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burdens [Gupta and Mills, 2002]. SALT has become an area of interest to accounting researchers for the same reasons. While many of the questions regarding state-level taxation rightfully reside in the realm of macroeconomic research, accountants' knowledge of the institutional detail and the technical aspects of state corporate income taxation gives them a unique vantage point for evaluating the effect of such taxation on business decisions. And it is the response to these taxes at the firm level that drives the macroeconomic consequences observed at the state level.

In the broadest sense, SALT encompasses all of the taxes imposed by state and local governments—property taxes, sales/use taxes, franchise taxes, excise taxes, income taxes, as well as other more specialized taxes on specific transactions, commodities, or industries. In this paper, the focus is on accounting research involving state-level taxation of corporate income.<sup>1</sup> The remainder of this paper is organized as follows: Section 2 presents a brief summary of how state corporate income taxation works, section 3 introduces the types of questions and issues addressed by researchers in this area, section 4 discusses data sources and measurement issues, section 5 presents a detailed review of the literature, and section 6 presents suggestions for future research.

## 2.0 STATE TAXATION OF CORPORATE INCOME

### 2.1 The corporate income tax

States vary somewhat in their methods of taxing business profits. Nevada, South Dakota, and Wyoming do not impose a tax of any kind on the income of corporations (South Dakota does impose a franchise tax on financial institutions). Washington's Business and Occupation Tax is a tax on gross receipts, with rates that vary across industries and business activities. Michigan's Single Business Tax is a consumption-type value-added tax; although computation of the tax base starts with federal taxable income, major modifications are made such that it cannot accurately be considered a tax on income. The remaining forty-five states levy a tax that is based primarily on the current earnings of the corporation. In some cases, the corporate income tax is defined as a franchise tax on the privilege of doing business within the state; in others, it is a direct tax on the income earned within the state.<sup>2</sup> For almost every state, the computation of the income tax base begins with federal taxable income. Modifications involve primarily the specific types of income included/excluded from gross income, depreciation methods, and other specific deductions allowed/disallowed. State tax rates on corporate income currently vary from 4.5% to 12%. States also vary as to the number and types of credits allowed against the income tax.

<sup>1</sup> There is a great deal of overlap between economics research and accounting research in this area. Some of the studies discussed in this paper were conducted by economists (and a growing number of studies are collaborations between accountants and economists), but the primary focus of this review is on accounting research.

<sup>2</sup> The distinction is primarily a legal one; it affects whether the state can tax foreign or out-of-state corporations, and whether it can tax interest earned on federal obligations [CCH, 2002b, par. 5-000 and 10-000].

## 2.2 The Apportionment Formula

The complexity in state corporate income taxation arises when firms conduct business in more than one state. When a corporation has business activities in several states, then each state with which the firm has nexus can tax the income earned within that state.<sup>3</sup> Measuring income earned within each of several jurisdictions presents conceptual problems. Rather than require separate accounting, which would necessitate the pricing of non-marketed intermediate products that are transferred across state lines, state governments have adopted formulary apportionment. The taxable income of a multistate firm is distributed among the states in which it does business in accordance with the relative proportions of its sales, payroll, and property sourced in each state. A firm's income tax expense in state  $i$  would be found by applying the following formula:

$$x_i = r_i * \left[ \left( w_i^S * \frac{S_i}{S} \right) + \left( w_i^L * \frac{L_i}{L} \right) + \left( w_i^P * \frac{P_i}{P} \right) \right] * \pi \quad (1)$$

$x_i$	=	the firm's income tax expense in state $i$
$r_i$	=	statutory income tax rate in state $i$
$w_i^S, w_i^L, w_i^P$	=	the factor weights assigned to the sales, payroll, and property factors by state $i$ 's apportionment formula—they must sum to one
$S_i, L_i, P_i$	=	the firm's sales, payroll, and property sourced in state $i$
$S, L, P$	=	the firm's total sales, payroll, and property
$\pi$	=	the firm's nationwide (or possibly worldwide) taxable income, as adjusted by state-specific rules

The bracketed term in Equation (1) is the apportionment formula, and it is designed to capture the in-state presence of the corporation, or the state's contribution to the total income earned by the corporation.

Traditionally, the states used equal weights for the three factors. But since 1978, when the Supreme Court upheld the right of states to deviate from the equally weighted formula [*Moorman Manufacturing Company v Blair*, 437 US 267, 1978], many states have changed to double-weighted sales, or to 100% sales. The resulting lack of uniformity can result in some firms paying state

<sup>3</sup> In general, there is sufficient nexus for taxability when a corporation carries on business activity in the taxing state. Any one of the following factors can also provide the required nexus: (1) owning or leasing property in the state, (2) having capital or property employed in the state, (3) employing personnel in the state, or (4) deriving income from activities or other sources in the state. The nexus standards for corporations engaged in the sale and manufacture of goods were changed in 1959 by P. L. 86-272. This federal statute immunizes such corporations from taxation if the corporation's only business activity in the taxing state is the solicitation of orders for the sale of tangible personal property and if resulting orders are sent outside the state for approval and filled by shipment or delivery from outside the state [CCH, 2002a, par. 210].

income taxes on more than 100% of their U.S. taxable income. It also presents opportunities for firms to strategically locate/report sales, payroll and property so as to pay state income tax on substantially less than 100% of their nationwide taxable income.<sup>4</sup>

### 2.3 The Throwback Rule

Another feature of formulary apportionment that varies across states is the definition of which sales, wages, and property are included in the numerators of the apportionment formula. With sales, for example, most states use the destination rule: sales are sourced to the state to which the goods are delivered. If the firm does not have nexus in the state of destination, those sales are not included in the numerator of the apportionment formula for any state—they are called “nowhere sales”. Twenty-five states currently have a throwback rule, which requires that nowhere sales be thrown back to the state of origin, to be included in the numerator of the apportionment formula in such state. West Virginia has a “throw-out” rule, in which nowhere sales are eliminated from the denominator.

### 2.4 Combined Reporting

A further complexity arises when the multistate corporation is a member of an affiliated group. States typically use one of two methods to define the tax base of such a taxpayer: combined (unitary) reporting or separate reporting. Combined reporting treats related corporations considered to be members of a unitary group as a single entity; each member's apportionable income and apportionment factors are added together, and the income taxable to the state is computed as though the group were one taxpayer (even though, in some cases, some of the affiliates do not have nexus in the taxing state).<sup>5</sup> Separate reporting requires a state to apply its apportionment formula to each separate corporation operating in the state. Some states require combined reporting, some prohibit it, and some permit its use at the option of the firm. Among states that require or permit combined reporting, some require inclusion of foreign members of the unitary group (worldwide), while others specify only domestic affiliates should be included. States that require worldwide combined reporting typically allow multinational corporations to make a water's-edge election, which restricts the application of the unitary method to domestic affiliates.

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<sup>4</sup> For example, a firm that locates substantially all of its property and payroll in a state that uses only the sales factor and sells primarily into nexus states with equally-weighted apportionment formulas could pay state income tax on as little as 33% of its total taxable income.

<sup>5</sup> Related corporations are included in the unitary group if their activities are considered to be an integral part of the unitary group's business. Combined reporting is not to be confused with consolidated reporting. A number of states permit or require affiliated groups of corporations to file a consolidated return if a consolidated return has been filed for federal purposes. Consolidated state returns include only those members of the affiliated group that are taxable (have nexus) in the state [CCH, 2002a, par. 1608].

Table 1 summarizes the salient features of state taxation of corporate income, and allows a comparison across states of the income tax variables discussed above: tax type, tax base, tax rate, tax credits allowed, factor weights used in the apportionment formula, presence of a throw-back rule, requirement/permission of combined reporting, as well as a list of other major types of taxes imposed on corporations by the states.

### **3.0 ACCOUNTING RESEARCH ISSUES**

#### **3.1 General tax research questions**

Shackelford and Shevlin [2001], in their seminal review of empirical tax research in accounting, begin by reiterating the three basic questions of scholarly and policy interest: "Do taxes matter? If not, why not? If so, how much?" Tax research involving the state-level corporate income tax is used to address all three questions. At first glance it might seem that state corporate income tax research is redundant with the research dealing with the federal corporate income tax, or is confined to unique provisions in the states' tax codes. But many general questions about income taxation can be addressed more effectively at the state level. The differences between state and federal corporate income tax rules, and more importantly the differences among the states themselves, provide empirical research opportunities that do not exist at the federal level. It is possible to exploit the differences in state tax regimes to test for tax effects in what is virtually a quasi-experimental setting. Thus, one can study firms in the same industry, over the same time period, and observe the effect of different state tax laws/rates on particular business decisions.

A number of recent studies have explored the heterogeneity of state tax systems to answer some basic "Do taxes matter?" questions. For example, does the type of tax imposed (income tax, value-added tax, franchise tax, gross receipts tax) influence business decisions [Porter, 1998; Petroni and Shackelford, 1999]? How do businesses respond to variation in the tax rate [Klassen and Shackelford, 1998; Hines, 1996], or to the taxability/deductibility of a particular line item [Sawyers and Beasley, 1998; Beatty and Harris, 2001]? Firms' responses to taxation can be categorized as accounting responses, such as the use of discretionary accruals, choice of particular accounting methods, etc., or as economic responses, such as choice of organizational form, firm location, and choices involving investing and financing alternatives. Accounting choices are more easily made in the short run, and therefore often more easily detected than economic responses [Slemrod, 1990]. Also, documenting the existence of a tax effect is much easier than quantifying that effect.

#### **3.2 Multijurisdictional issues**

The exploration of multi-jurisdictional issues is another area where state corporate income tax research makes a major contribution to the literature. When firms operate in multiple jurisdictions, each with differing tax regimes,

Table 1  
Summary of State Taxation of Corporate Income

State	Tax Type and Tax Base <sup>a</sup>	Top Marginal Rate <sup>b</sup>	Apportionment Formula <sup>c</sup>	Throw-back Rule <sup>d</sup>	Combined Reporting <sup>e</sup> (Unitary)	Credits Against the Tax <sup>f</sup>	Other Taxes Imposed <sup>g</sup>
Alabama	Income Net Income	6.5%	33-33-33	Y	Not allowed	INV, EZN, TRN, EDV, coal	B, S/U, V
Alaska	Income Taxable income	9.4% >90,000	33-33-33	Y	Required, WW	INV, EDU	V
Arizona	Income Net income	6.968%	50-25-25	Y	Required, Dom.	EZN, R&D, JOBS, TRN, ENV	S/U, V
Arkansas	Income Net income	6.5% >100,000	50-25-25	Y	Not allowed	INV, EZN, TRN, ENV, EDV, CNS, CAP, HSG, FAM	F, S/U, V
California	Franchise <sup>1</sup> Net income	8.84%	50-25-25	Y	Required, WW; W/E	INV, EZN, R&D, JOBS, ENV, CNS, CAP, HSG, FAM	BE, S/U, V
Colorado	Income Net income	4.63%	33-33-33 or 50-50-0	Y	Optional; may require	INV, EZN, JOBS, ENV, HIST, CNS, CAP, HSG, FAM	S/U, V
Connecticut	Franchise Net income <sup>2</sup>	7.5%	50-25-25	N	Not allowed	INV, EZN, R&D, JOBS, TRN, ENV, EDV, HIST, CAP, HSG	S/U
Delaware	Income Taxable income	8.7%	33-33-33	N	Not allowed	INV, R&D, ENV, HIST, CNS	BE, F
Florida	Franchise Net income	5.5%	50-25-25	N	Not allowed	EZN, JOBS, ENV, CAP, HSG, FAM	BE, I, S/U, V

Table 1 - (Continued)  
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State	Tax Type and Tax Base <sup>a</sup>	Top Marginal Rate <sup>b</sup>	Apportionment Formula <sup>c</sup>	Throw-back Rule <sup>d</sup>	Combined Reporting <sup>e</sup> (Unitary)	Credits Against the Tax <sup>f</sup>	Other Taxes Imposed <sup>g</sup>
Georgia	Income Taxable net inc.	6%	50-25-25	N	Optional	EZN, R&D, JOBS, TRN, ENV, EDV, HSG, FAM	F, S/U
Hawaii	Income Taxable income	6.4% >100,000	33-33-33	Y	Required, domestic	INV, EZN, R&D, ENV, CNS, CAP, HSG	BE, S/U
Idaho	Franchise <sup>1</sup> Taxable income	8%	50-25-25	Y	Required, WW; W/E	INV, R&D, JOBS, ENV, CNS, EDU	S/U, V
Illinois	Income Net income	7.3%	100-0-0	Y	Required	INV, EZN, R&D, TRN, EDV, FAM	F, S/U
Indiana	Income Net income <sup>3</sup>	4.5% <sup>3</sup>	50-25-25	Y	Optional, may require	IND, EZN, R&D, JOBS, ENV, EDV, HIST, CAP, EDU	BE, S/U, V
Iowa	Income Taxable income	12% >250,000	100-0-0	N	Not allowed	INV, EZN, R&D, JOBS, HIST, CAP, motor fuel	BE, S/U
Kansas	Income Taxable income	7.35% >50,000	33-33-33 50-50-0 <sup>9</sup>	Y	Required, Dom.	INV, TRN, ENV, EDV, HIST, CNS, CAP, FAM	BE, F, S/U, V
Kentucky	Income Net income	8.25% >250,000	50-25-25	N	Optional, may require	INV, EZN, JOBS, TRN, ENV, EDV, coal	F, S/U, V
Louisiana	Income Net income	8% >200,000	50-25-25	N	Not allowed	EZN, R&D, JOBS, TRN, ENV, EDV, CAP, EDU	BE, F, P, S/U, V

Table 1 - (Continued)  
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Maine	Income Net income	8.93% >250,000	50-25-25	Y	Required, WW	INV, R&D, JOBS, ENV, HIST, CAP, FAM	S/U
Maryland	Income Taxable income	7%	50-25-25; 100-0-0 <sup>g</sup>	N	Not allowed	EZN, R&D, JOBS, ENV, EDU, HIST, CNS, coal	S/U
Massachusetts	Franchise <sup>1</sup> Net income	9.5%	50-25-25	Y	Not allowed	INV, EZN, R&D, JOBS, ENV, HSG, vanpooling	BE, S/U
Michigan	Value-added Mich. tax base <sup>4</sup>	2.1% <sup>4</sup>	90-5-5	N	Optional, may require	INV, EZN, TRN, ENV, EDV, HIST, CAP, public contrib.	S/U, V
Minnesota	Franchise, Net income	9.8%	75-12.5- 12.5	N	Required, Dom.	EZN, R&D, JOBS	S/U, V
Mississippi	Income Net taxable inc.	5% >10,000	100-0-0 <sup>10</sup>	Y	Optional	JOBS, TRN, EDV, FAM	F, I, S/U, V
Missouri	Income Taxable income	6.35%	33-33-33 or 100-0-0	Y	Not allowed	INV, EZN, R&D, JOBS, TRN, ENV, EDV, HIST, CAP, HSG, FAM	F, S/U
Montana	Franchise <sup>1</sup> Net income	6.75%	33-33-33	Y	Required, WW; W/E	R&D, JOBS, ENV, HIST, CAP, FAM, EDU, coal	V
Nebraska	Income Taxable income	7.81% >50,000	100-0-0	N	Required	JOBS, EDV, FAM, motor fuel	BE, F, S/U, V
Nevada	No income tax on corporations						S/U, V



Table 1 - (Continued)  
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New Hampshire	Income Taxable profits	8.5%	50-25-25	Y	Required, Dom.	EDV	
New Jersey	Income <sup>5</sup> Net income	9% 100,000	50-25-25	N	Not allowed	INV, EZN, R&D, JOBS, ENV, EDV, FAM	BE, S/U
New Mexico	Income Net income	6.4% >1,000,000	33-33-33; 50-25-25 <sup>9</sup>	Y	Optional	EZN, JOBS, ENV, EDV, HIST, FAM	F, S/U, V
New York	Franchise Net income <sup>6</sup>	8%	50-25-25	N	Optional	INV, EZN, JOBS, ENV, EDV, HIST, CAP, HSG	BE, F, S/U
North Carolina	Income Taxable income	6.9%	50-25-25	N	Not allowed; may require	INV, EZN, R&D, JOBS, TRN, ENV, HIST, CNS, HSG	F, S/U
North Dakota	Income Taxable income	10.5% >50,000	33-33-33	Y	Required, WW: W/E	INV, EZN, R&D JOBS, ENV, CAP, HSG, EDU	BE, S/U, V
Ohio	Franchise Taxable income <sup>2</sup>	8.5% >50,000	60-20-20	N	Optional, may require	INV, EZN, R&D JOBS, ENV, CAP, FAM	F, I, S/U, V
Oklahoma	Income Taxable income	6%	33-33-33; 50-25-25 <sup>9</sup>	Y	Not allowed	INV, EZN, JOBS, ENV, EDV, HIST, CAP, FAM	BE, F, S/U, V
Oregon	Franchise <sup>1</sup> Taxable income	6.6%	50-25-25 80-10-10 <sup>11</sup>	Y	Not allowed	INV, EZN, ENV, CNS, CAP, HSG, FAM	

Table 1 - (Continued)  
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Pennsylvania	Franchise Taxable income	9.99%	60-20-20	N	Not allowed	EZN, R&D, JOBS, ENV, EDU	F, I, S/U
Rhode Island	Income Net Income	9%	33-33-33	N	Not allowed	INV, EZN, R&D, JOBS, TRN, ENV, HIST, CAP, FAM	BE, F, S/U
South Carolina	Income Net Income	5%	50-25-25	N	Not allowed	INV, EZN, R&D, JOBS, ENV, EDV, CNS, CAP, FAM	BE, F, S/U, V
South Dakota	No income tax on corporations						BE, S/U
Tennessee	Franchise Net earnings	6%	50-25-25	N	Not allowed	INV, JOBS, FAM	S/U, V
Texas	Franchise Earned surplus <sup>7</sup>	4.5% <sup>7</sup>	100-0-0	Y	Not allowed	INV, EZN, JOBS, R&D, FAM	S/U, V
Utah	Franchise <sup>1</sup> Net income	5%	33-33-33	Y	Required	EZN, R&D, JOBS, ENV, HIST, HSG, EDU	S/U, V
Vermont	Income Taxable income	9.75% >250,000	33-33-33	Y	Not allowed	INV, R&D, TRN, EDV, HIST, CAP, HSG	F, S/U
Virginia	Income Taxable income	6%	50-25-25	N	Optional	EZN, JOBS, TRN, EDV, EDV, HIST, CNS, HSG, FAM, coal	F, S/U

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Washington	Franchise Gross receipts <sup>h</sup>	0.484% for mfg <sup>h</sup>	N/A	N/A	N/A	R&D, TRN, ENV	F
West Virginia	Income Taxable income	9%	50-25-25	N <sup>12</sup>	Optional	INV, R&D, JOBS, ENV, HIST, CAP, HSG	F, I, P, S/U, V
Wisconsin	Franchise <sup>i</sup> Net income	7.9%	50-25-25	Y	Not allowed	EZN, R&D, HIST, CNS, CAP	S/U, V
Wyoming	No income tax on corporations						F, S/U, V

Source: CCH Multistate Corporate Income Tax Guide, 2002. Data reflects tax laws in effect for 2001.

#### Notes to accompany TABLE 1

<sup>a</sup>A franchise tax is a tax on the privilege of doing business within the state; an income tax is a direct tax on the income of the firm. For all states in which the tax base is a measure of income (except Arkansas), the starting point for computation of state taxable income is federal taxable income.

<sup>b</sup>For states with graduated rates, the top marginal tax rate is indicated, as well as the income threshold at which it becomes effective. If no income threshold is indicated, the tax is imposed at a flat rate.

<sup>c</sup>The apportionment formula indicates the weights placed on sales, property, and payroll, respectively, in computing the percentage of a multistate corporation's income taxable within the state. In each case, they sum to 100%.

<sup>d</sup>In all states but Louisiana, sales are sourced in the state of destination. For states with a throwback rule, sales to states where the corporation is not taxable are thrown back to the state of origin, to be included in the apportionment formula for that state.

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<sup>a</sup>States may allow or require a corporation to file a combined return with all affiliates that form a unitary group. The sales, property and payroll of all entities in the group are used to compute the apportionment of combined income. WW indicates worldwide; the state requires inclusion of foreign affiliates; W/E (water's-edge) election indicates that the corporation may elect to include only domestic affiliates. Dom. indicates that only domestic affiliates can be included.

<sup>b</sup>This is not intended to be a comprehensive list of credits allowed. Credits have been grouped into categories; if a category code is listed, it means that the state has at least one credit in that category. The credit category codes are:

INV	Investment credits for purchase of property, plant, equipment, technology, etc.
EZN	Enterprise Zone credits for establishing/expanding business and/or employment within designated geographic regions
R&D	Research credits for amounts expended on research and development
JOBS	Job creation or hiring credits
TRN	Worker training and education, apprenticeship programs
ENV	Environment: energy conservation, alternative fuels, recycling, waste reduction, pollution control, etc.
EDV	Economic development: community revitalization/neighborhood assistance programs, industrial development, exports, etc.
HIST	Historical property preservation/rehabilitation
CONS	Conservation: easements, reforestation, and land and water conservation
CAP	Capital Investment; investment in venture capital companies or state capital investment funds
HSG	Housing: low-income housing, employer-assisted housing
FAM	Employer-assisted child or dependent care programs

<sup>g</sup>Other major taxes imposed on corporations by state governments include: BE, bank excise; F, franchise tax on capital stock; I, property tax on intangible assets; P, general property tax; S/U, sales and use taxes; and V, severance taxes.

<sup>1</sup>A franchise tax on income is imposed on corporations doing business in the state; an income tax is imposed on income derived from sources in the state by firms not otherwise engaged in business in the state, or on income derived within the state not otherwise taxable under the franchise tax

<sup>2</sup>The tax is computed both on a net income basis and on a capital stock (or net worth) basis and paid on the basis yielding the higher tax

Table 1 - (Continued)  
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<sup>3</sup>The tax is the greater of 0.3% of gross receipts or 3.4% of adjusted gross income (net income); plus 4.5% of supplemental net income (adjusted gross income less the greater of the gross income tax or the adjusted gross income tax).

<sup>4</sup>The Michigan tax base is determined by adding compensation and depreciation expenses back to federal taxable income, and subtracting a statutory exemption, as well as deductions for capital acquisitions and business losses. The rate of 2.1% is being reduced by 0.1% each year, providing certain state revenue targets are met, until it is completely phased out.

<sup>5</sup>New Hampshire also imposes the Business Enterprise Tax, a value-added tax, on corporations. The tax is equal to 0.75% of the "enterprise value tax base", which is computed as the sum of compensation, interest and dividends paid or accrued during the tax year.

<sup>6</sup>The tax is calculated on four alternative tax bases: entire net income, capital, minimum taxable income, fixed dollar minimum; and paid using the tax base that yields the highest tax. Net income is the measure most commonly applied.

<sup>7</sup>The tax is the greater of 0.25% of net taxable capital (stockholders' equity), or 4.5% of taxable earned surplus (modified federal taxable income, with compensation of officers added back).

<sup>8</sup>Washington's "Business and Occupation" tax is based on the value of goods and services sold (gross receipts for most firms). Different rates apply to various classifications of business activities.

<sup>9</sup>Option available for qualifying firms.

<sup>10</sup>Retailers and service firms, 100-0-0; Manufacturers selling at retail, 50-25-25; manufacturers selling at wholesale, 33-33-33.

<sup>11</sup>The apportionment formula will change to 80-10-10 effective in 2003.

<sup>12</sup>Sales to non-nexus states are omitted from both numerator and denominator.

to what extent do they use accounting, financing, and investing strategies to minimize their total tax burdens? A number of studies have explored cross-jurisdictional income shifting at the international level [e.g., Harris, 1993; Klassen, Lang and Wolfson, 1993; Collins, Kemsley and Lang, 1998]. The results of some of these studies, particularly the earlier ones, could be characterized as ambiguous or weak. One of the problems encountered in this type of research is that there are many confounding factors: foreign currency fluctuations, differences in capital markets, differences in accounting, tax, and legal systems, variation in economic and technological development, etc., all of which add noise to the analysis and make it difficult to isolate a significant tax effect. Another problem is the forced reliance on data from only one jurisdiction—these studies use primarily public financial statement data and the geographic segment disclosures required by generally accepted accounting principles in the United States.

The fifty states represent a far more homogenous population as far as geographic, political, cultural, and economic influences; some accounting/tax data is available at the state level and is prepared in accordance with similar sets of rules across states. In other words, many of the non-tax variables that might affect multi-jurisdictional business decisions are already controlled for, at least partially. Thus, many of the limitations of multi-national tax research are not present in multi-state tax research.<sup>6</sup> Klassen and Shackelford [1998] and Petroni and Shackelford [1999] use state-level taxes to study tax-motivated income shifting across states with differing tax rates.

### 3.3 Issues involving formulary apportionment

An important distinction between multinational and multistate taxation, however, is in the way the tax base is distributed among jurisdictions in order to avoid multiple taxation. At the international level, separate accounting is maintained, and for U.S. based multinationals the foreign tax credit is used to ameliorate the effects of overlapping taxation. The United States has detailed rules for the sourcing of income, and regulation of transfer pricing is the primary mechanism used to constrain income shifting. In contrast, the taxable income of multistate firms is apportioned among states using an arbitrary formula, as described in Part 2. If a state requires worldwide combined reporting, the transfer-pricing game is virtually shut down [Smith, 2000].

The effects of formulary apportionment on firm-level accounting and business decisions, as well as its effects on state-level economic development, have generated a significant amount of research interest. Does an increased weight on the sales (payroll, property) factor lead to decreased amounts of shipments reported (wages paid, capital invested) in a state [Klassen and Shackelford, 1998; Lightner, 1999; Goolsbee and Maydew, 2000; Weiner, 1996a; Gupta and

<sup>6</sup> Unfortunately, the lack of significant geographic, economic, cultural, and political differences across states, while enhancing a study's "internal validity," may limit its "external validity". The multinational business world is considerably more complex and dynamic than the multistate world; thus, multistate research may not be directly generalizable to the multinational arena.

1996a; Gupta and Hofmann, 2002]? Does the requirement for combined reporting affect foreign investment and the inter-state location of property and labor [Moore, Steece and Swenson, 1987; Weiner, 1996a; Williams, Swenson and Lease, 2001; Gupta and Hofmann, 2002]? These are all highly specialized versions of the basic question, "Do taxes matter?," but they are of interest to SALT practitioners as well as tax policymakers. There has been some discussion in academic circles about converting international taxation in the United States to an apportionment formula style system [Musgrave, 1972; Tax Analysts, 1995; Wetzler, 1995; Weiner, 1996b; Shackelford and Slemrod, 1998]; research revealing economic externalities of formulary apportionment informs this debate as well.

#### 4.0 DATA SOURCES AND MEASUREMENT ISSUES

##### 4.1 Firm-level data

A major limitation to research in the state corporate income tax area is the availability of firm/state-level data. Multistate firms do not disclose state segmented data, nor do state departments of revenue disclose details from the tax returns of corporations. Some researchers have used surveys to obtain firm-specific data [Porter, 1998; Gupta and Mills, 2002]. Some industry-specific data is available at the state level, and within certain industries firm/state-level data may be obtained. Insurance companies, for example, being subject to state regulation, prepare state-segmented financial disclosures. Petroni and Shackelford [1995, 1999] use firm-level data from disclosures mandated by the National Association of Insurance Commissioners.<sup>7</sup> For research questions that do not involve multi-jurisdictional issues, it may be possible to identify firms with operations in only one state. Sawyers and Beasley [1998] and Beatty and Harris [2001] study the effects of differential state taxation of U.S. Government obligations by using the financial reports of banks whose activities are confined to a single state.

##### 4.2 State-level data

There exists a much larger variety of data available that has been aggregated at the state level—much of it from government sources. Various agencies of the U.S. Department of Commerce publish a wealth of data, much of it aggregated by state, relating to business and economic activity. The Department of Labor provides statistics quantifying employment; the Department of Energy provides data on energy costs and consumption. The U.S. Census Bureau's *Annual Survey of Manufactures* tabulates data on employment, manufacturing costs, capital expenditures, and value of shipments for the manufacturing

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<sup>7</sup> A potential drawback to using industry-specific data is that the results may not be generalizable to other industries. This is especially a problem for the insurance industry, which differs from most other industries along a number of dimensions. Furthermore, most states impose a premium tax, rather than an income tax, on insurance firms.

sector, which can be broken down by state and SIC code; and the Bureau of Economic Analysis provides national and regional economic statistics, including data on foreign direct investment. The American Council on Intergovernmental Relations publishes a compendium of information on budgets, revenues, expenditures, tax systems, employment, etc., across all levels of government, taken from a variety of government and non-government sources, in their annual *Significant Features of Fiscal Federalism*. Summaries as well as details regarding each state's tax laws are available from CCH's *State Tax Guide*, *Multistate Corporate Income Tax Guide*, and individual state reporters, and RIA's *All States Tax Handbook*. Many of the studies discussed in this paper utilize data aggregated at the state level [Moore, Steece and Swenson, 1987; Hines, 1996; Weiner, 1996a; Klassen and Shackelford, 1998; Lightner, 1999; Goolsbee and Maydew, 2000; Gupta and Hofmann, 2002; Omer and Shelley, 2002]. Appendix A provides a list of many of the sources of data that have been used by SALT researchers.

#### 4.3 Measurement issues

Limitations on the type of data available lead to measurement issues. For example, the use of state-aggregated data substantially reduces the power of statistical tests. The richness of firm-level detail is lost, and the effects of competing influences on firm decisions are not easily disentangled. Even when firm-level data is available, it is typically in the form of publicly available financial statements or reports filed with various regulatory agencies, not tax returns. Thus, the variables of crucial interest to the tax research question are not directly observable. The firm's taxable income or marginal tax rate, for example, can only be roughly estimated from public financial disclosures.<sup>8</sup> For studies using state-aggregated data, it is even less clear as to the appropriate rate to use to reflect the average marginal tax rate. Some studies simply use the top statutory marginal rate [Klassen and Shackelford, 1998; Goolsbee and Maydew, 2000; Gupta and Hofmann, 2002]; this tends to overstate the tax variable, because it does not reflect tax reductions provided by exemptions, lower tax brackets, and tax credits. Other studies have used an effective rate computed by dividing state corporate tax collections by a measure of total state corporate income [Petroni and Shackelford, 1995, 1999; Moore Steece and Swenson, 1987]; this method is fraught with measurement error, because the tax measure used may include taxes other than the corporate income tax, and the income measured may include other than the income being taxed.<sup>9</sup>

Furthermore, for multistate firms, tax rates alone are often an inappropriate measure of differential tax burdens across states. It is not just the state corporate income tax *rate*, but the way it is apportioned across sales, payroll, and property, as well as the tax base to which it is applied (combined or separate

<sup>8</sup> There has been a great deal of academic research dealing with the estimation of the marginal or average income tax rate. Callihan [1994] reviews this literature, and Shackelford and Shevlin [2001] include a discussion of more recent work.

<sup>9</sup> Papke [1991] uses an after-tax rate of return. However, Knight [2001] discusses why this may not be an appropriate measure of tax burden.



reporting), that is likely to influence firm decisions. Accountants have been able to exploit their knowledge of the institutional details of multistate corporate income taxation to improve the research in this area. For example, much of the economic research involving the influence of taxes on business location and capital investment decisions concludes that taxes in general, and state corporate income taxes in particular, have little if any influence [Carlton, 1979, 1983; Bartik, 1985; Helms, 1985; Papke, 1987, 1991; Wasylenko, 1997]. Unfortunately, most of these studies overlook the way that multi-state income is apportioned, and the specific effect the payroll (property) factor weight has on the cost of locating labor (property) in a state. Later studies that incorporate more of the features of the state income tax, especially the apportionment formula factor weights, find significant tax effects on employment and capital spending across states [Goolsbee and Maydew, 2000; Gupta and Hofmann, 2002].

## **5.0 REVIEW OF RECENT RESEARCH**

The research involving the state corporate income tax is here divided, somewhat arbitrarily, into two categories. Section 5.1 presents studies that examine general taxation questions relating to variation in the type of tax, tax rates, and deduction rules. Section 5.2 looks at the analytical and empirical work involving multistate taxation, most of which addresses questions relating to specific features of the apportionment formula or the combined reporting requirement. Table 2 summarizes the major studies discussed in this section.

### **5.1 Exploring state variation in tax regimes**

The heterogeneity in state taxation of corporate income has been exploited to address a number of "Do taxes matter?" questions. For example, variations in the type of tax imposed provide an opportunity to test the degree to which the tax regime influences accounting and economic choices made by firms. As discussed in Part 2, 45 states tax business profits using a corporate income tax, while several states have chosen alternative regimes. Porter [1998] compares levels of discretionary accruals and the levels of debt financing among firms with operations primarily in California (income tax), Michigan (value-added tax), and Texas (franchise tax). Because the pre-1991 Texas franchise tax is a balance sheet tax, based on net worth, the use of debt financing and the deferral of profits through accruals management results in a permanent avoidance of tax. In contrast, the tax base for Michigan's value-added tax does not allow for interest/debt deductions, and provides little opportunity to use accruals for tax avoidance purposes.

Porter finds that multistate firms with a high proportion of operations in Texas have significantly lower discretionary accruals than do multistate firms with a high proportion of operations in Michigan, suggesting that firms manage accruals for tax purposes. Porter finds no significant differences in debt levels

Table 2  
A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

Study/Research question	Dependent variable	Tax Variable(s)	Controls	Data Level and Sources <sup>b</sup>	Results
<b>Porter, 1998</b> Do different tax regimes result in different accounting/financing choices?	Debt/assets ratio Discretionary accruals	Apportionment factors in CA, MI, TX	Earnings variability Non-debt tax shields % of assets fixed Industry Size	Firm-level: <i>Disclosure</i> Mail survey	No significant differences in debt levels More discretionary accruals in MI than in TX
<b>Sawyers and Beasley, 1998</b> Does deductibility of related expenses result in greater investment in tax-exempt securities?	Investment in U.S. government obligations	Marginal statutory rate; Indicator for deductibility of expenses relating to tax-exempt investments	Fed. marginal tax rate Size Growth Regulatory capital	Firm level; FDIC	Mixed evidence that deductibility of investment expenses affects levels of investment in US government securities, increasing in state tax rates.
<b>Beatty and Harris, 2001</b> Does state taxation of U.S. obligations affect banks portfolio choices?	Proportion of banks' total assets invested in U.S. obligations	Indicator variable for state taxation of U.S. obligations	Size State dummies	Firm level; FDIC and Federal Reserve	Banks in taxing states hold less U.S obligations than banks in non-taxing states; also, evidence of implicit taxes

*Panel A: Empirical studies addressing general taxation issues:*

Table 2 - (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

Study/Research question	Dependent variable	Tax Variable(s)	Controls	Data Level and Sources <sup>b</sup>	Results
<b>Petroni and Shackelford, 1995</b> Does tax structure influence choice of organizational form (subsidiary vs. licence)?	Number of multi-state insurance companies domiciled in the state; Value of premia written by domiciled multistate insurers	Effective state tax rate (total taxes collected/total premia written)	Regulatory stringency State population	Firm-level; NAIC Statistical Abstract	Negative coefficients on tax variable, consistent with tax avoidance: firms are more likely to establish subsidiaries in states with lower taxes.
<b>Petroni and Shackelford, 1999</b> Do multistate insurers shift income to jurisdictions with lower tax rates?	Firm/state Premium/loss ratio	Effective state tax rate (total taxes collected/total premia written); Statutory premium tax and income tax rates	State rate regulation No-fault insurance Population density of insurers Size	Firm level; NAIC Statistical Abstract	Premium/loss ratios are decreasing in state taxes, consistent with income-shifting; increased income shifting in states with income tax rather than premium tax

*Panel A: Empirical studies addressing general taxation issues:*

Study/Research question

Dependent variable

Tax Variable(s)

Controls

Data Level and Sources<sup>b</sup>

Results

**Petroni and Shackelford, 1995**  
Does tax structure influence choice of organizational form (subsidiary vs. licence)?

**Petroni and Shackelford, 1999**  
Do multistate insurers shift income to jurisdictions with lower tax rates?

Table 2 - (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

*Panel A: Empirical studies addressing general taxation issues:*

Study/Research question	Dependent variable	Tax Variable(s)	Controls	Data Level and Sources <sup>b</sup>	Results
<b>Ke, Petroni and Shackelford, 2000</b> Do state taxes reduce purchases of property-casualty insurance?	Insured losses	Effective state tax rate (total taxes collected/total premia written)	Population Per-capita GSP Catastrophic losses in the state	State level; NAIC Statistical Abstract	A positive relation between self-insurance and state taxes is found, consistent with consumers bearing the incidence of state taxes.
<b>Hines, 1996</b> Do tax rates influence foreign direct investment?	A state's share of each foreign country's ownership of U.S. manufacturing assets.	Top statutory rates		State-level; BEA CCH	High state tax rates have a significantly negative effect on foreign direct investment.
<b>Moore, Steece and Swenson, 1987</b> Do tax rates and/or the unitary method impact foreign investment?	Net foreign investment in gross manufacturing assets	Worldwide combined reporting; Domestic combined reporting; Effective corporate tax rate	Population Unemployment Business climate	State-level; BEA Statistical Abstract	Unitary tax structure influences foreign investment: tax rates less so

Table 2 - (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

Study/Research question	Model/Assumptions	Results	Conclusions
<p><b>McClure, 1980</b>            What is the economic impact of formulary apportionment?</p>	<p>A multistate corporation's after-tax profits in a state are defined and evaluated in light of formulary apportionment. Taxes in other than the taxing state are taken as given.</p>	<p>The sales-related portion of the state corporate income tax causes marginal revenue to exceed marginal cost at the sales level that maximizes the firm's profits.</p>	<p>Formulary apportionment of taxable income causes the state corporate income tax to have the same effects on corporate behavior as separate discriminatory taxes on corporate sales, payrolls, and property. Formula apportionment tends to discourage investment in high-tax states.</p>
<p><b>Gordon and Wilson, 1986</b>            How does formulary apportionment affect the locational incentives of firms?</p>	<p>An economy with multiple jurisdictions is analyzed in a partial equilibrium model. Capital is perfectly mobile, while labor is immobile. All firms have access to the same production technology, which is separable between states, and provides constant returns to scale. Prices are fixed at equilibrium levels. Factor weights are uniform across states, but rates vary.</p>	<p>Allocation of multistate income using the property factor creates distortions to the marginal cost of capital in the taxing state. Inclusion of payroll in the apportionment formula has similar effects. When sales are included in the apportionment formula, interstate trade no longer equalizes product prices.</p>	<p>Formulary apportionment creates complex incentives for firms to diversify or merge across state lines, or to engage in cross hauling of goods from high (low) to low-(high) tax states. It also creates incentives for states to choose inefficiently low tax rates and expenditure levels. Formulary apportionment is politically unstable.</p>

Table 2 – (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

Study/Research question	Model/Assumptions	Results	Conclusions
<p><b>Anand and Sansing, 2000</b>            Why do states choose different apportionment formulas?</p>	<p>Analytical (game-theory) model. Demand for a single good differs between two states. Production can take place in either state. Some capital is immobile. State tax rates are uniform, but apportionment weights vary. In competitive equilibrium, firms have zero after-tax profits.</p>	<p>Aggregate welfare is maximized when states choose the same formula weights. Producer surplus increases with a decrease in payroll/property weights; an increase in such weights drives out production. The immobility of capital creates conflicting incentives for weighting payroll/property.</p>	<p>States have unilateral incentives to deviate from a coordinated apportionment system. Natural-resource importing states have incentives to increase the weight on the sales factor, while natural-resource exporting states will tend to increase the weight on their payroll/property factors.</p>
<p><b>Edmiston, 2002</b>            How does the change to a single (sales) factor apportionment formula affect a state's economic development and tax revenue collection?</p>	<p>An eight-region general equilibrium model is used in a simulation study of the impact of strategic apportionment. The objective of each firm is to maximize after-tax economic profits. Labor and capital are mobile. Regional governments are subject to a constant budget constraint.</p>	<p>When imposed independently, single-factor sales policies have negligible short-run, but significant positive long-run impacts on economic development. When imposed simultaneously, there are clear winners and losers. The revenue impacts are immediate and more substantial.</p>	<p>Strategic apportionment is a prisoner's dilemma: each state's best economic development strategy is to move to a single-factor (sales) apportionment formula, because once one state does so, all other states gain from doing so as well.</p>

Table 2 - (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

<i>Panel B. Analytical/simulation studies addressing multistate income apportionment</i>					
Study/Research question	Model/Assumptions	Results	Conclusions		
<b>Williams, Swenson and Lease, 2001</b> How do changes in tax rates affect multistate firm location choices?	A single firm operates in two states; management chooses levels of capital and labor at each facility to maximize after-tax profits. Demand is downward sloping. Wage rates differ between states.	Tax rate changes in a non-unitary state may cause little or no change in resources used; while changes in a unitary state's tax rate can result in a significant shift in resources between the two states.	Non-unitary states may be more successful in attracting investment by using investment-related tax credits or non-tax incentives, rather than lowering tax rates or property factor weights.		
<i>Panel C. Empirical studies addressing specific features of multistate income apportionment</i>					
Study/Research question	Dependent variable	Tax Variable(s)	Controls Data Level and Sources <sup>b</sup>	Results	
<b>Klassen and Shackelford, 1998</b> Do firms shift income and/or sales to avoid taxes?	Corporate income tax collected by state/province  Sales reported by manufacturers in state/province	Top statutory rate and its squared term  (Top statutory rate* sales factor weight); Throwback rule	State/provincial GDP Political climate Value-added by mfg in the state	State-level; ACIR, BEA, Census, CCH, Canadian Tax Foundation, Statistics Canada	Evidence of income shifting: state corporate tax collections are concave in tax rates; reported sales decrease in tax burden on sales in throwback states.

Table 2 - (Continued)  
A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

Panel C: Empirical studies addressing specific features of multistate income apportionment

Study/Research question	Dependent variable	Tax Variable(s)	Controls	Data Level and Sources <sup>b</sup>	Results
<b>Gupta and Mills, 2001</b> Do multistate firms exploit the lack of uniformity across state tax regimes to lower overall state tax burdens?	State ETR, measured as firm's current state income tax expense divided by US pretax income	Number of states in which a return is filed; Sales intensity (sales divided by the sum of sales, property, and payroll)	Size Industry Proportion of foreign assets Expenditures for tax planning	Firm-level; Survey Compustat	State ETRs first decrease, then increase as a function of the number of state returns filed; state ETRs decrease in sales intensity, suggesting that firms use sales factor apportionment to reduce state tax burdens.
<b>Lightner, 1999</b> Does formulaary apportionment affect state-level manufacturing employment?	% change in state's employment from 1994 to 1995	Top statutory rate Factor weights Throwback rule	Expenditure/personal income growth; Worker's comp Avg. hourly mfg. wage Union membership Gas prices	State-level; BEA Census Bureau CCH State Rankings 1996	Lower factor burdens are associated with higher employment; rates, rather than factor weights drive results; throwback rule has little effect.





Table 2 – (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

<i>Panel C: Empirical studies addressing specific features of multistate income apportionment</i>					
Study/Research question	Dependent variable	Tax Variable(s)	Controls	Data Level and Sources <sup>b</sup>	Results
<b>Goolsbee and Maydew, 2000</b> Does formulary apportionment affect state-level employment?	Natural log of manufacturing employment in each state/year	Top statutory rate Payroll factor weight	Mean other states' tax burden on payroll; Personal income growth; Unemployment rate; State fixed defects	State-level; ACIR BEA CCH	Reducing payroll weight increases employment in the state and decreases employment in other states
<b>Weiner, 1996a</b> Does formulary apportionment affect state-level capital spending?	New capital expenditures by manufacturers	Property factor weight Statutory tax rate Worldwide reporting	Population (size) Labor productivity Public expenditures Gas prices Census regions	State-level; Census Bureau ACIR	States that increase the weight on the sales factor appear to stimulate new capital spending in the state.
<b>Gupta and Hofmann, 2002</b> Does state tax structure affect new capital spending?	New capital expenditures by manufacturers	Top statutory rate Property factor weight Incentives available Unitary requirement Throwback rule	Value-added by the mfg. sector (size) Energy costs Public expenditures State fixed effects	State-level; Census Bureau CCH Dept. of Energy ACIR <i>Site Selection</i>	New capital spending decreases in property burden and increases in incentives—especially in states requiring unitary or throwback

Table 2 – (Continued)  
 A Summary of Accounting Research Involving the State Corporate Income Tax<sup>a</sup>

<i>Panel C: Empirical studies addressing specific features of multistate income apportionment</i>					
Study/Research question	Dependent variable	Tax Variable(s)	Controls	Data Level and Sources <sup>b</sup>	Results
Omer and Shelley, 2002 Do states use changes in apportionment weights as a strategic response to other states' changes in tax policies?	Change in apportionment formula	Number of neighboring states changing apportionment formula before or at the same time	Number of bordering states; Political factors GSP Personal income Unemployment Urbanization	State-level; BEA Census Bureau <i>Book of States</i>	States change their apportionment formula (AF) in response to neighboring states' tax changes; Change in AF is also related to political climate, unemployment, and mobility of capital.

<sup>a</sup> There is a great deal of overlap between economics research and accounting research in this area. Some of the studies discussed in this paper were conducted by economists (and a growing number of studies are collaborations between accountants and economists), but the primary focus of this review is on accounting research.

<sup>b</sup> Data sources described more fully in Appendix A.

among firms operating primarily in Texas, California, or Michigan; however, her failure to find the hypothesized result may be due to methodological weaknesses.<sup>10</sup>

In the insurance industry, most states impose a premiums tax on insurance companies, which functions like a gross receipts tax. The tax base is unaffected by claims losses paid out. A few states, however, tax the net income of insurance companies. This provides incentive for the shifting of losses on multistate policies to states where income reductions result in tax reductions. Petroni and Shackelford [1999] find that insurance firms report 5.4% lower premium/loss ratios in states where they face an income tax rather than a premium tax, consistent with increased income/loss shifting to avoid income taxes.

### 5.1.1 Exploring variation in state tax rules and rates: banking and insurance industries

Two studies use data from the banking industry to examine the extent to which differential taxation of U.S. government obligations (USOs) affects investment portfolio choices. Sawyers and Beasley [1998] examine differences in the level of USOs held by state-chartered banks in states that allow a deduction for interest expense allocable to tax-exempt income, compared to banks in states that do not allow such a deduction. Though plagued by problems with multicollinearity and measurement error, they find limited support for their hypothesis that banks in high-tax/deduction states will hold more USOs. Beatty and Harris [2001] compare the investment portfolios of banks in states that tax USOs to banks in states that do not. They find that banks in taxing states hold about 40 percent less USOs, hold a riskier mix of assets, and hold greater amounts of capital than banks in non-taxing states.

A series of studies [Petroni and Shackelford (P&S) 1995, 1999; Ke, Petroni and Shackelford (KPS), 2000] exploit the unique reporting requirements for the insurance industry to examine the influence of state tax rates. The richness of the data available in this industry makes it an ideal setting to test for multijurisdictional tax effects. In their annual statutory reports, insurers are required to disclose direct premiums earned and direct losses incurred by state and to allocate premiums and losses from multistate policies across states. Because states may charge out-of-state insurers "retaliatory taxes" on premiums (income) earned in the state, different insurers in the same state may pay different rates. This adds significant variation and aids in the ability to disentangle the effects of tax rate from other state-specific factors.

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<sup>10</sup> The debt-to-assets ratio that Porter uses to measure financing choice does not really capture *incremental* financing decisions (see discussion in MacKie-Mason [1990]). State-level taxes have historically been quite small in comparison to federal taxes, and thus may not have had an influential effect on the *cumulative* financing decisions represented by the debt-to-assets ratio. Furthermore, the way that the income of multistate firms is allocated and apportioned among states may very well obscure some of the effects Porter was looking for. A cleaner test would use single-state firms from states with differing tax regimes, and would focus on incremental financing decisions.

P&S [1995] find that variation in state tax rates influences the choice of organizational form: property-casualty insurers structure their cross-state expansion to mitigate state tax costs. Insurers are more likely to expand into low-tax states using subsidiaries, and to use licensing to expand into higher-taxed states. P&S [1999] provide the strongest evidence to date of tax-motivated income shifting; they also provide some quantification of the tax effect. P&S estimate that over all, insurers would respond to a standard-deviation increase in state effective tax rates by understating the premium-loss ratios they report to state regulators and tax officials by 1.7 to 2.2 percent: 3.0 to 3.5 percent for insurers specializing in multistate lines of business. KPS detect a positive relationship between self-insurance and state tax rates, suggesting that consumers (which would include businesses as well as individuals) may opt to self-insure rather than bear the incidence of higher insurance taxes.

### 5.1.2 Foreign direct investment

Do state corporate income taxes affect the location of foreign direct investment? Two studies come to differing conclusions. Hines [1996] finds that state tax rates significantly influence the location of foreign direct investment in the United States, and estimates the magnitude of the effect: state corporate tax rate differences of one percent are associated with differences of 9-11 percent between the investment shares of foreign-tax-credit investors and the investment shares of investors whose foreign income is fully taxed.<sup>11</sup> Hines uses a single year of data (1987), and statutory tax rates (his model does not incorporate the effect of formulary apportionment or combined reporting). An earlier study by Moore, Steece and Swenson [1987] (MSS) finds that the presence or absence of a worldwide combined reporting requirement has a substantial impact on levels of foreign investment in a state, while corporate income tax rates have little effect. MSS use an effective tax rate and run five separate yearly regressions (1977-1981). The differences in research design and construct measurement make it difficult to reconcile the results of these two studies, which serves to illustrate the importance of choosing and defining tax variables carefully.

A number of facts can be concluded from the above research involving the heterogeneity of the state-level corporate income tax. From the perspective of firm behavior, three main points emerge. First, the state corporate income tax exerts a significant influence on business decisions. Although state rates are relatively low (even more so after considering federal deductibility), the state corporate income tax has been shown to affect economic choices. Second, variations in tax regimes, tax bases, deductions, rates, etc., elicit different responses from affected firms. This further illustrates the point that firms respond to tax incentives and that, within cost/benefit constraints, firms act to minimize their total tax costs. Finally and following from the previous point, multistate

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<sup>11</sup> Hines does not conduct a direct test of FDI, but rather is comparing the FDI from countries with foreign tax credits to FDI from countries without any such provision. Hines reports that the results of most of his tests become insignificant if he excludes data from the five states with no corporate income tax.

firms can and do exploit the lack of uniformity across state tax systems to minimize total state income tax liabilities. These results can hardly be considered new or surprising, but they do confirm previous tax research.

## 5.2 Research involving the apportionment formula

### 5.2.1 Analytical work

A review of the research exploring the effects of the apportionment formula on inter-state business must begin with the early analytical work of McClure [1980] and Gordon and Wilson [1986]. These studies laid the theoretical foundation for much of the empirical work that follows. McClure examines the economic impact of formulary apportionment. He shows that the three-factor apportionment formula effectively transforms the income tax into separate taxes on sales, payroll, and property. If the state's tax rate,  $r_i$  in Equation (1), is distributed to the three terms in the brackets, it can be seen that each factor bears its own share of the tax burden. McClure compares the effect of the sales-related portion of the state corporate income tax to the effects of both a true income tax and a sales tax imposed on the seller (gross receipts tax). He differentiates net after-tax profits with respect to the quantity of sales in state  $i$ , and shows that the sales portion of the income tax causes marginal revenue to exceed marginal cost at the sales level that maximizes profits. This economic distortion exceeds that created by an income tax on accounting profits, and more closely parallels the effect of a gross receipts tax. The payroll and property-related portions of the income tax behave in an analogous fashion.

Gordon and Wilson [1986] (G&W) analytically explore more of the distortions that result from formula apportionment, particularly involving the location of property. Initially, they assume that all states use the same apportionment formula—a 100% property factor, but rates vary across states. Due to differing property burdens in different states, there exists tax-induced pressure for firms to diversify (or merge with competitors) across state lines until they all possess identical effective tax rates. When payroll, which is more mobile than property, is used to apportion taxable income, cross-state mergers are discouraged. When sales enter the apportionment formula, there are incentives for production from low-tax states to be sold in high-tax states, and *vice versa* (referred to as cross hauling). These distortions do not arise when separate accounting, rather than formula apportionment, is used.

Building on McClure and Gordon and Wilson, Anand and Sansing [2000] (A&S) further explore the consequences of formulary apportionment. Unlike Gordon and Wilson, A&S assume that the tax rate is constant across states, but the apportionment factor weights are allowed to vary. Using a two-state equilibrium model of locational choice, they show that aggregate social welfare (defined as tax revenues collected plus consumer and producer surpluses in both states) is maximized when both states use the same formula weights (regardless of what those weights are). However, they go on to show that both states have incentives to deviate from the coordinated solution; they will never voluntarily choose identical formula weights. Importing states will maximize

state welfare by increasing their sales factors to 100%, while exporting states have strong incentives to increase their property and payroll factors.

The analytical work discussed so far provides compelling theoretical reasons why changing the apportionment formula should result in firms responding in such a way as to increase investment and or employment in the state, but it stops short of quantifying that effect. Edmiston [2002], using an eight-region applied general equilibrium model to simulate the effects of heavier sales factor weights on economic development and corporate tax revenues, finds that a significant positive impact on economic development exists only in the very long run and that the short-run effects are negligible. A number of empirical studies attempt to document that firms do in fact respond to variation in apportionment formula, and to quantify the economic impact of such variation.

### 5.2.2 Empirical studies of the economic effects of formulary apportionment

Each of the three apportionment factors influences the amount of taxable income apportioned to a particular state. The state income tax *burden* on each factor is equal to the marginal tax rate times the factor weight. Sales increase the income apportioned to the state of destination, provided the firm has nexus with that state. Firms can minimize total state income tax, therefore, by shipping to nexus states with lower income tax burdens on sales, and by shipping to non-nexus states from non-throwback states. Do firms actually employ this type of tax strategy? Klassen and Shackelford [1998] find that the sales reported in a state is decreasing in the sales burden, and that this relationship is stronger for throwback states than for non-throwback states. This evidence suggests that multi-state firms shift sales in order to minimize state income tax costs. Gupta and Mills [2002] find evidence that firms filing in multiple states, particularly firms with high sales intensity, achieve lower state effective tax burdens; this is consistent with firms being able to exploit the heterogeneity of state tax regimes, and/or shift sales, in order to reduce taxes.

Paying compensation to employees in a state will also cause a portion of the firm's income to be taxable in that state. Lightner [1999] finds the change in manufacturing employment levels across states to be negatively associated with the income tax burdens on sales, property, and payroll; but further analysis suggests that it is the tax rate, and not the factor weights, driving employment growth.<sup>12</sup> Goolsbee and Maydew [2000], using a 17-year panel of data and more sophisticated econometric methods, find evidence that the apportionment formula has a large and significant effect on employment levels across states. A reduction of the payroll weight from one-third to one-fourth increases manufacturing employment in the state by one to three percent; and a reduction by other states decreases manufacturing employment in state *i*. They further note that employment gains in states that cut their payroll weights come

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<sup>12</sup> Lightner's study suffers from research design problems that call her results into question. See Klassen's [1999] discussion of the Lightner [1999] paper.

at the expense of jobs in other states. This strongly suggests that multistate firms adjust employment levels at their various locations in order to minimize state taxes.

Property is the least mobile of the three factors, and thus the least likely to be affected in the short run by changes in corporate income tax rates or apportionment weights. Weiner [1996a] finds that apportionment has no effect on capital-labor ratios across states, and finds only weak evidence that states that change their apportionment formula (to more heavily weight sales) may stimulate new capital spending. Gupta and Hofmann [2002] (G&H) find that new capital expenditures in the manufacturing sector are negatively related to the property burden (the product of the property factor weight and income tax rate) across states. Unlike previous studies, G&H also control for investment-related tax incentives, and find them to be positively related to new capital expenditures. These tax effects are of greater magnitude and significance in states requiring combined reporting, consistent with the predictions of Williams, Swenson and Lease [2001].<sup>13</sup>

Several compelling conclusions can be drawn from the empirical research involving formulary apportionment. First, McClure's [1980] assertion that the factor-apportioned income tax transforms into separate taxes on the factors seems to be borne out by the evidence. Firms do in fact behave as if they face separate taxes on sales, payroll, and property, and respond to variation in apportionment factor weights and rates. State tax policymakers must consider the fact that the economic impact of these factor burdens is not the same as the economic impact of a true income tax. While a corporate income tax with a graduated rate schedule is purported to be progressive, sales and payroll taxes tend to be regressive. Second is the conclusion that tax policy decisions cannot be made in isolation. Scholes and Wolfson [1992] point out that effective tax planning requires firms to consider the tax ramifications of a proposed course of action for *all* of the parties involved. This advice applies to the taxing authorities as well. Policymakers considering a change in a state's corporate income tax or apportionment formula must take into account the likely responses of in-state and out-of-state firms, and the possible reactions of other states. This leads to the final conclusion: formulary apportionment is politically unstable [Gordon and Wilson, 1986], and encourages tax competition among states.<sup>14</sup>

### 5.2.3 The apportionment formula and tax competition

There has been a flurry of research investigating the economic and political factors that drive a state's decision to alter its apportionment formula, and

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<sup>13</sup> Williams, Swenson and Lease [2001] show analytically and through the use of simulations that tax rate changes in nonunitary states result in little change in the location of property or payroll, but changes in tax rates in states requiring unitary accounting result in significant resource changes in both the unitary state and other states.

<sup>14</sup> Aggressive use of the tax system to attract new business and/or jobs to a state invites retaliatory action by other states. This type of tax competition, though more commonly associated with property taxes, is now being addressed by researchers in connection with state income taxes as well. See Wilson [1999] for a review of recent research on tax competition.

the tax competition in which the apportionment formula plays a role. The early analytical work shows that due to the incentives for states to compete for business by lowering the tax rate or changing the factor weights, formula apportionment is politically unstable [Gordon and Wilson, 1986]. States can increase their individual welfare by weighting their apportionment formula towards sales (net importers) or property and payroll (net exporters) [Anand and Sansing, 2000]. But such actions are likely to be followed by similar or retaliatory actions by neighboring states [Goolsbee and Maydew, 2000]. Omer and Shelley [2002] investigate the economic and political factors that influence a state to alter its apportionment formula. Using data from 1978 to 1998, and an "event history" analysis methodology, they document an association between a state's apportionment change and apportionment changes by neighboring states. Their results strongly suggest that many apportionment changes are strategic attempts by states to avoid future negative economic consequences of neighboring-states' tax policy changes.

Many academic researchers and tax practitioners have decried what they see as the growing tax competition between the states, characterizing it as a race to the bottom. As sales, jobs, and property are relocated to states with lower tax burdens, other states move to alter their apportionment formulae and/or rate structure as well. In the long run, a new equilibrium is reached where all states are collecting less tax revenue and providing fewer public goods. Anand and Sansing [2000] show that aggregate welfare is maximized when all states follow a uniform income apportionment system.<sup>15</sup> But as they point out, the socially efficient outcome will never be attained if each state acts independently to maximize its own welfare. In addition to the harmful macro-economic side effects of tax competition, the growing non-uniformity in state apportionment formulae also results in higher compliance costs for multi-state corporations. Slemrod and Blumenthal [1996] find that state and local income tax compliance costs comprise approximately 30% of total tax compliance costs for large firms in the IRS's Coordinated Examination Program. One of the driving determinants of compliance cost is the number of state returns filed, and the most commonly cited source of complexity for state and local taxes is the lack of uniformity among the states' apportionment formulas and depreciation rules.

In light of this political instability and economic inefficiency, many researchers have been led to conclude that the apportionment formula should be set at the federal level, as it is in Canada [e.g., Klassen and Shackelford, 1998; Goolsbee and Maydew, 2000; Weiner, 1996b; Tannenwald, 2001]. Some have gone so far as to suggest that the federal government dictate the formula, the rate, and collect and distribute the tax [Pogue, 1992; Slemrod and Blumenthal, 1996]. Whether federal regulation of state corporate income taxation would be constitutional is a legal question; but it is probably the only way that uniformity across states could be imposed and enforced. Yet, as McClure [1980] and Gordon and Wilson [1986] show, it is not just the lack of uniformity but also

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<sup>15</sup> See also Daly and Weiner's [1993] recommendations for tax harmonization among the countries in the European Community.



the very nature of formulary apportionment that creates economic distortions. Gordon and Wilson propose an alternative formula that would more closely approximate the economic incentives elicited by separate accounting. Unfortunately, the formula becomes impossible to apply if there are tax rate and/or tax base variations across states. McClure [1980] proposes the abolishment of the state corporate income tax and a shift to direct taxes on the factors, or the imposition of an incremental federal tax with subsidies to the states. Given the current legal and political climate in which the state governments operate, it seems unlikely that any of the above suggestions will be implemented in the near future.

Finally, the above facts make it clear that formulary apportionment is not the answer to income allocation for multinational firms. While separate accounting and transfer pricing are problematic, formulary apportionment does not emerge as a positive improvement [Weiner, 1996b]. The tax competition documented in the Goolsbee and Maydew [2000] and Omer and Shelley [2002] studies would most certainly manifest itself in the multinational arena as well.

## **6.0 DIRECTIONS FOR FUTURE RESEARCH**

The accounting research regarding state taxation of corporate income has made significant progress in the recent past. The level of sophistication in the quantitative methodologies employed has increased substantially from simple regressions with one tax variable, to fixed-effects and two-stage regressions using a variety of inter-related tax variables. As we move forward into the future, accounting researchers will continue to refine their research design and methodology to enhance the statistical and economic validity of their work. Tax research is also moving from mere documentation of a "taxes matter" effect to quantification of the economic impact, and detailed examination of the non-tax factors that work with or against the tax factors to achieve that effect [Shackelford and Shevlin, 2001]. Identification and quantification of implicit tax effects is another refinement that the most recent research has begun to incorporate. It is also important for accounting researchers to study the public finance and public economics literatures on state and local taxation and economic development, and to incorporate in their own research designs the economic variables that have been shown to be influential.

A significant improvement that could be made in this area of inquiry is to develop more sources of firm-level data. While a survey is always a potential source of firm-level data, such data tends to be "messy" and brings with it the potential for self-selection bias. Edmiston and Arze [2002] were recently able to obtain a panel of data from corporate income tax returns (anonymized) filed in the state of Georgia. Tax-return data enables researchers to design better, more powerful tests of tax effects. If a database similar to those made available by the Internal Revenue Service's Statistics of Income Division could be developed for state-level corporate income tax returns, major strides could be made in the research in this area. Ideally such a database should include tax returns from multiple states. However, researchers would need to be able to match returns filed by the same firm in different years and/or states, which

would require state departments of revenue to coordinate their procedures for anonymizing the data.

There have been numerous studies examining the effects of various features of state taxes on accounting and economic variables; but the results are often weak, and inconsistencies still remain. A potential avenue for future research would be to find a way to reconfirm or reconcile some of these studies. The use of better data, more sophisticated econometric methodology, and/or a more comprehensive set of explanatory variables might help to allay some of the ambiguity. Some researchers have hinted at the possibility that rate or apportionment changes had more impact in earlier years, and less impact as the economy has changed or as more and more states make such changes [Lightner, 1999]. Some type of event study might document this diminishing response.

Not much has been done in the compliance area, using state corporate income tax data. Administratively, states face unique problems in enforcing compliance with their corporate income tax codes, since many of the firms within their taxing jurisdiction are located out-of-state. Many states are working cooperatively with each other to identify non-compliant firms. Some states are also negotiating voluntary disclosure agreements (similar to an amnesty but with important distinctions) to encourage non-compliant firms to come forward [Boucher and Lundeen, 2000]. This topic area has potential for a creative researcher.

There are other emerging issues in the state corporate income tax arena that will provide fruitful ground for future research. Changes in technology, and de-regulation in industries such as telecommunications and financial services are blurring the borders between states. As commerce over the Internet grows, the issue of nexus becomes crucial, not only for the imposition of the sales/use tax, but also for the apportionment of income for the income tax. Research is needed to help inform policymakers how best to structure taxes in these areas. (Initially, this would be theoretical, analytical research, accompanied by model building, simulations, etc. until appropriate data is available for empirical research.) As the political and economic environments surrounding the states continue to change, new taxation issues will continue to emerge.

## APPENDIX A

## Some Sources of Publicly Available Data for State Tax Researchers

Firm-level data:

**COMPUSTAT.** Standard & Poors. Database of information taken from annual reports and SEC filings of publicly traded corporations. See [www.compustat.com](http://www.compustat.com) for more information.

**Disclosure Database.** Thompson Financial, Bethesda, Maryland. Provides business and financial information on approximately 12,000 public companies, derived from reports filed with the U.S. Securities and Exchange Commission (SEC).

**EDGAR.** Securities and Exchange Commission. Registration statements, periodic reports, and other forms filed with the SEC by public companies.

[www.sec.gov/edgar.shtml](http://www.sec.gov/edgar.shtml)

Bank data:

**Federal Deposit Insurance Corporation (FDIC).** The FDIC gathers data about individual financial institutions and the banking industry. The data is published in searchable databases, periodic reports, compilations of statistics and analyses that document the condition of individual institutions and identify and project financial, economic and industry trends as they relate to banking. [www.fdic.gov/bank/](http://www.fdic.gov/bank/).

**The Federal Reserve Board.** Consolidated Reports of Condition and Income are filed quarterly by banks. Additional information is also accumulated in the Board's National Information Center database. [www.federalreserve.gov/releases/](http://www.federalreserve.gov/releases/)

Insurance industry data:

**The National Association of Insurance Commissioners (NAIC)** maintains the world's largest insurance database, with annual and quarterly data for more than 6,000 Life/Health, Property/Casualty, Fraternal, Health and Title companies. A list of products available for purchase can be seen at [www.naic.org/1dbproducts/Catalog\\_contents.htm](http://www.naic.org/1dbproducts/Catalog_contents.htm).

**Fact Book.** Insurance Information Institute (III), New York, NY. The almanac of the property/casualty insurance industry with thousands of facts, figures, tables and graphs, including factors affecting costs, and losses by category. The III website also provides a list of additional resources, including state departments of insurance and commissioners. [www.iii.org](http://www.iii.org)

State-level data:

**All States Tax Handbook, All States Tax Guide.** Research Institute of America (RIA), New York, NY. Annual, print, CD and on-line services. Concise summaries of all taxes levied in each state, with citations to official materials. Includes coverage of interstate law and uniform acts, income allocation and apportionment, the Multistate Tax Commission, general principles governing state income, sales and use, and property taxes. Lists official state contacts with addresses and phone numbers. RIA also publishes comprehensive state tax reporter services. [www.riahome.com](http://www.riahome.com)

## APPENDIX A – (Continued)

## Some Sources of Publicly Available Data for State Tax Researchers

***Multistate Corporate Income Tax Guide; State Tax Handbook; State Tax Reporters.*** Commerce Clearing House (CCH), Chicago, Illinois. Print, CD, or on-line services available. Summarized and/or detailed information regarding state taxation: rates, tax bases, inclusions/exclusions, deductions, apportionment, credits, etc. [www.cch.com](http://www.cch.com)

***Multistate Corporate Tax Guide.*** Aspen Publishers, New York, NY. Annual, print or CD. A compilation of easy-to-access charts that summarize each state's answers to key issues in income, sales, and use taxation. Aspen also publishes other SALT-related resources, including the *Journal of State Taxation*. [www.aspenpublishers.com](http://www.aspenpublishers.com)

***Significant Features of Fiscal Federalism.*** American Council on Intergovernmental Relations (ACIR, formerly the U.S. Advisory Council on Intergovernmental Relations). Annual, most recent issue covers fiscal 1995. A compendium of information on budgets, revenues, expenditures, tax systems, employment, etc., across all levels of government, taken from a variety of government and non-government sources. [www.library.unt.edu/gpo/acir/acir.html](http://www.library.unt.edu/gpo/acir/acir.html).

***The Book of the States.*** The Council of State Governments (CSG) collects data and information from 50 state governments and U.S. jurisdictions, and analyzes, organizes and converts this information into easy-to-read summaries, tables, charts and lists for quick access. The CSG website also has a list of other resources for state and local research. [www.statesnews.org/](http://www.statesnews.org/)

***State Rankings.*** Morgan Quitno Press, Lawrence, Kansas. Agriculture, crime, defense, government finance, health, economy, education, energy, environment, geography, housing, population, social welfare and transportation are examined state-by-state in this collection of statistics. 569 tables of state comparisons. *State Perspectives* show an individual state's data and rank for each of the categories. [www.morganquitno.com](http://www.morganquitno.com)

***Site Selection,*** a bi-monthly publication of the International Development Research Council, publishes information for expansion planning decision-makers, including data on new plants and expansions, business climate rankings, and demographic information at the city, county, state and country level. [www.sitenet.com](http://www.sitenet.com)

U.S. Government data:

***Statistical Abstract of the United States.*** U.S. Census Bureau. Available in print or on-line. Tables and collections of statistics on social and economic conditions in the U.S.: population, employment, personal income, government revenues and expenditures, etc. Also includes an appendix with a bibliography of sources for state statistical abstracts. [www.census.gov](http://www.census.gov)

## APPENDIX A – (Continued)

## Some Sources of Publicly Available Data for State Tax Researchers

***Annual Survey of Manufactures.*** U.S. Census Bureau. Available in print or on-line. Tables of data on employees, payroll, production workers, hours, wages, value added by manufacture, cost of materials, value of shipments, new capital expenditures, inventories, etc, for the manufacturing sector, broken down by geographic area and/or industry. [www.census.gov](http://www.census.gov)

***Employment, Hours, and Earnings from the Current Employment Statistics survey (State and Metro Area); Local Area Unemployment Statistics.*** U.S. Bureau of Labor Statistics. A variety of labor and employment statistics, as well as Consumer and Producer Price Indexes, are available on-line at [www.bls.gov](http://www.bls.gov).

***State Personal Income; Gross State Product.*** U. S. Bureau of Economic Analysis. A variety of national and regional economic data is available at [www.bea.doc.gov/](http://www.bea.doc.gov/).

***Industrial Sector Energy Price and Expenditure Estimates by Source.*** U.S. Department of Energy, Energy Information Administration. Prices and expenditures for a variety of energy sources, over a 25-year span. Additional data regarding energy costs and use available at [www.eia.doe.gov/](http://www.eia.doe.gov/)

***Annual State Exports.*** Massachusetts Institute for Social and Economic Research (MISER). MISER has improved the U.S. database on both the state of origin of export data, for which it is the national release point, and the exporter database. [www.umass.edu/miser](http://www.umass.edu/miser)

Canadian data:

***The National Finances.*** Canadian Tax Foundation. Annual review of expenditures and revenues of the federal, provincial, and local governments of Canada. [www.ctf.ca/](http://www.ctf.ca/)

***Statistics Canada,*** at [www.statcan.ca/](http://www.statcan.ca/), provides Canadian census and survey-based demographic, economic, and government data.

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Anand and Sansing (A&S) explore the consequences of formulary apportionment in an analytical setting. In a two-state equilibrium model of locational choice, holding the tax rate constant across states but allowing the apportionment factor weights to vary, aggregate social welfare (defined as tax revenues collected plus consumer and producer surpluses in both states) is maximized when both states use the same formula weights. However, both states have incentives to deviate from the coordinated solution. Importing states will maximize state welfare by increasing their sales factors to 100%, while exporting states have strong incentives to increase their property and payroll factors. A&S follow their analytical model with an empirical test of the relationship between the formula weights and net export positions of the 46 states with corporate income taxes. A probit regression is run, where the dependent variable is equal to one if state  $i$  has deviated from the equally weighted apportionment formula, and zero if it has not. The coefficient of net exports is negative and significant, implying that net importers are more likely to have increased the weight on the sales factor.

2. Beatty, A. and D. Harris. 2001. The impact of explicit and implicit state taxation of U.S. government obligations on the structure of banks' investment and financing portfolios. *Journal of the American Taxation Association* 23(2): 1-19.

Beatty and Harris (B&H) examine how differential state taxation of U.S. Government obligations (USOs) affects banks' investment and financing decisions. Roughly half of the states tax USOs. Using data from the reports filed by banks with the FDIC and Federal Reserve, B&H first compare banks in states taxing USOs to banks in non-taxing states. Banks in taxing states hold about 40 percent less USOs, hold a riskier mix of assets, and hold greater amounts of capital than banks in non-taxing states. B&H also examine how USO investment varies among banks in taxing states with respect to state tax rates, and find that banks' investments in USOs are declining in the state tax rate. They interpret this as evidence of an implicit tax benefit associated with locally priced investments such as loans. They also find that in taxing states, higher state tax rates are associated with a riskier asset mix, which is not completely offset by additional capital.

3. Goolsbee, A. and E. Maydew. 2000. Coveting thy neighbor's manufacturing: The dilemma of state income apportionment. *Journal of Public Economics* 75(1): 125-143.

Goolsbee & Maydew (G&M) use data from 1978-1995 in a fixed-effects panel-data regression to examine the relationship between state apportionment

formulas and state employment levels. They propose that employment will be higher when a state puts less weight on the payroll factor. Their basic model regresses the log of manufacturing employment in a state on the payroll burden in that state and the average payroll burden for all states in that year; controlling for time trends and macro-economic variables. The results support their proposition. Furthermore, they find robust evidence that it is the payroll weight, and not the tax rate, driving these results. G&M further ascertain that the change in manufacturing employment is not due to a shift from other sectors, nor do the new jobs pay lower wages. Further, the increased employment leads to higher personal income tax revenues for the state. They show that when all of the taxes affecting payroll are considered, the deadweight loss from using payroll as a factor for apportionment is 30% of the revenue generated. Finally, they find that employment gains in states that cut their payroll weights come at the expense of jobs in other states.

4. Gupta, S. and L. Mills. 2002. Corporate multistate tax planning: Benefits of multiple jurisdictions. *Journal of Accounting and Economics* 33(1): 117-139.

Gupta and Mills (G&M) investigate whether multistate firms are able to use differences in state tax regimes to lower their total state tax burdens. They use confidential survey data from firms included in the IRS's Coordinated Examination Program, supplemented with COMPUSTAT data. G&M find that firms' state-level effective tax rates (ETRs) first decrease then increase as a function of the number of states in which they file returns, and are minimized at an estimated 24 states. While they do not have data on each firm's apportionment factors in each state, they are able to construct a variable measuring sales intensity (sales divided by the sum of sales, property, and payroll). Firms with high sales intensity should possess greater opportunity to shift sales to low-tax or non-nexus states (sales are more easily shifted than property or payroll). Higher sales intensity is found to be associated with lower state ETRs, consistent with firms exploiting the non-uniformity in state apportionment formulae to lower overall state tax burdens.

5. Klassen, K. and D. Shackelford. 1998. State and provincial corporate tax planning: income shifting and sales apportionment factor management. *Journal of Accounting and Economics* 25: 385-406.

Klassen and Shackelford (K&S) start with a simple premise: in the absence of income shifting, total tax revenue collected by a state or province should be a linear function of the tax rate. A concave relationship suggests that income is being shifted to lower-tax-rate jurisdictions. Using data aggregated at the state/province level, they regress the per-capita amount of tax collected by each subnation on the top statutory income tax rate; controlling for per-capita GDP, nation, and political climate. They include a squared tax-rate term: the fact that its coefficient is strongly negative and significant is taken as evidence of income shifting. K&S further hypothesize that the amount of sales reported

in a state is decreasing in the sales *burden* (the product of the sales factor weight and the top statutory corporate income tax rate). They expect this relationship to be stronger for throwback states than for non-throwback states. They regress the dollar amount of sales reported by manufacturers in each state on the state sales burden, an indicator variable for non-throwback states, and the interaction of the two, as well as control variables for size and pro-business climate. Their results support their hypotheses.

6. Moore, M., B. Steece, and C. Swenson. 1987. An analysis of the impact of state income tax rates and bases on foreign investment. *The Accounting Review* 62(4): 671-685.

Moore, Steece, and Swenson (MSS) investigate two related propositions: that there is a negative relationship between state corporate income tax rates and the level of foreign investment, and that the requirement of combined reporting, which effectively expands the tax base, negatively affects foreign investment. Using data on net foreign investment in gross manufacturing assets by state for the period 1977-1981 as a dependent variable and state-specific economic and tax variables for the same period as independent variables, and running separate regressions for each of the five years, MSS find that the state corporate income tax rate (measured as corporate income taxes attributable to manufacturing in the state divided by business income accruing to the manufacturing sector in the same state for the same year) is not significant, but the presence of a domestic or worldwide combined reporting requirement lowers investment by approximately 40 percent.

7. Petroni, K. and D. Shackelford. 1999. Managing annual accounting reports to avoid state taxes: An analysis of property-casualty insurers. *The Accounting Review* 74(3): 371-393.

Petroni and Shackelford (P&S) examine the influence of state tax rates (premium taxes and income taxes) on the accounting allocation of income by multistate property/casualty insurers. Insurers have an incentive to shift premiums to states with lower premium (income) taxes, and/or to shift losses to states with higher income tax rates. P&S's hypothesis is that the premium-loss ratios (PLR) that multistate insurers report to state tax authorities are decreasing in the marginal tax rate applied to their premiums (income) in the state. They regress the PLR for each insurer-state observation on the tax rate applicable to that insurer in that state; controlling for state and insurer-specific non-tax factors that influence the PLR. Their results are consistent with the hypothesis; the coefficients on the tax rate variables are always negative and significant, across several alternative specifications of the model.

8. Porter, S. 1998. The effects of alternative state tax regimes on firms' accounting and financing decisions. *Journal of the American Taxation Association* 20(S): 54-76.



Porter examines the financing choices and the level of discretionary accruals used by firms with varying levels of activity in California, Michigan, and Texas: states which exclusively use the income tax, value-added tax, and net worth tax (respectively) to tax corporations. Porter hypothesizes that firms with higher levels of activity in Michigan will use relatively less debt (because there is no debt or interest deduction for the value-added tax), and that firms with higher levels of activity in Texas will have smaller discretionary accruals (since deferral of income results in a permanent tax savings under the net-worth tax). Using a model similar to Dhaliwal, Trezevant and Wang [1992], Porter regresses the debt-to-assets ratio on tax regime and other variables known to affect capital structure, but finds no significant differences in debt levels across the three regimes. Using an earnings management model similar to Dechow, Sloan and Sweeney [1995], Porter finds that the level of discretionary accruals is significantly smaller for firms operating primarily in Texas when compared to Michigan firms. Although the results are not strong, this is an important first work in exploring the effects of differing tax regimes.

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