Estimating State and Local Tax Exporting Between 1999 and 2012

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In fiscal year 2012, state and local governments collected $1.4 trillion in taxes. Using various data sources, this paper presents state-by-state estimates of the amount that each state is able to export of its tax burden to non-residents, including the export effects of federal deductibility. Overall, based on the economic incidence assumptions outlined in this paper, between 12.5 percent and 45 percent of state and local tax collections were ultimately borne by out-of-state residents in FY 2012. This large range is the result of the uncertainty pertaining to the economic incidence of the property tax.

INTRODUCTION

Using advancements in data availability, computability, and economic research on tax incidence, this paper provides a detailed update and extension to McLure's (1967) estimates of interstate tax exporting in the United States. Using a tax-exporting model that relies on hundreds of local, state and national tax and economic variables to distribute tax collections from each state to their ultimate taxpayers' state of residence, this model provides estimates of how much states export their state and local taxes to other states and how much interstate tax exporting has changed over the past decade. Furthermore, this paper provides sensitivity analysis to these questions in two respects: (1) how do alternative tax incidence assumptions affect the results, and (2) to what extent does federal deductibility for state and local taxes paid increase tax exporting? The estimates presented in this paper are not only worthwhile as a stand-alone research product given that they provide a useful benchmark on an important public finance issue, but they can also serve as a key data source for future empirical research in areas of economics and political science. Overall, the paper finds that between 12.5 percent and 45 percent of state and local taxes levied in the United States were borne by out-of-state residents in 2012. The degree of exporting depends primarily on the incidence assumption of the property tax and whether or not federal deductibility is included. The paper finds that the trend upwards or downwards in tax exporting since 1999 also depends on the property tax incidence assumption used.

The remainder of this paper is outlined as follows: Section I discusses the relevance of tax exporting from a political economy perspective and more generally provides a review of the tax exporting literature. Section II discusses the methodological approach to estimating interstate tax exporting that is employed in this paper. This includes a detailed discussion of key incidence assumptions and the data sources employed to best approximate those incidence assumptions. Section III delves into the results, while section IV discusses the limitations of the analysis. Finally, section V concludes.

REVIEW OF TAX EXPORTING LITERATURE

The work on the exportation of taxes has followed two major veins: (1) exportation of taxes based on local tax structure along with the incidence of the tax structure (within a federal system or between countries) and (2) shifting of the state and local tax burden through the deductibility of state and local taxes from a federal tax base.

State and Local Tax Structure and Incidence

The structure and incidence of the local tax structure is a major vehicle for tax exportation. In terms of the portfolio of taxes from which to choose, when looking to shift the burden to non-residents, local governments may choose from a menu of taxes such as tourism taxes, taxes on non-resident property owners, sales taxes, etc. The incidence of these taxes is the crucial assumption in the estimate of the exportation. If a large majority of productive capital is owned by non-resident shareholders, a tax on corporate capital (through profits, capital, or income), may or not be exported depending on the ability of the producer/owners to shift the burden forward. If capital is assumed to be fully immobile and the producer has no ability to shift the tax, the majority of the tax will be exported. If on the other hand, all of the tax can be 100 percent shifted forward to local consumers of the commodity, the tax exportation rate would fall to zero. A number of theoretical papers have closely modeled the ability of localities to export their tax burden based on a variety of assumptions regarding mobility and tax heterogeneity, for example Peralta (2007), Peralta and van Ypresele (2002), Braid (1996/2000).

One of the early studies to actually attempt to quantify the exportation of state and local taxes was McLure (1967). Using a partial equilibrium model, McLure estimated that approximately 23 percent of state and local taxes were exported, based on 1962 data. Important to the findings of McLure's work were the assumptions that in the short-run factors of production (capital and labor) were immobile between states, but that in the short run, the majority of the taxes could/would be shifted forward if a given industry within a state demonstrated a majority market share nationally. McLure examined the various state and local taxes on a one-by-one basis, ignoring the interrelation of the state and local tax structures. Phares (1980) expanded the earlier work of McLure by looking at the incidence of state and local taxes on individuals by income class. He also included tax importing, a feature that was absent from McLure's earlier work. Mutti and Morgan (1981/1983/1985/1986) published a series of papers during the 1980's which also looked at the issue of tax exportation. In their models, they make the assumption that there is a fixed supply of capital in the short run, so that the short-run incidence of capital and profits taxes fall on the owners of capital, unlike Phares and McLure who assumed a greater degree of forward shifting in the short run. More recently, Cline, et al. (2010) estimated the fraction of additional business taxes in each state that would ultimately be borne by that own state's residents, concluding that a large fraction of the tax increase would indeed be borne by own-state residents due to the high mobility of capital across states.

In addition to the partial equilibrium examination of tax exportation, a number of authors have also used a general equilibrium framework. For example, Courant (1977) looked at the substitutability of a portfolio of property taxes between local jurisdictions that produce a similar commodity, assuming capital mobility, but using land as a fixed factor. Olson (1984) looked at severance tax exportation in a general equilibrium framework. He found that partial equilibrium estimates overstated the true gain from exportation of local taxes.

Deductibility of State and Local Taxes

Another way in which local taxing jurisdictions can export part of their tax burden is through the deductibility of local taxes as an itemized federal deduction. Through the deduction process, the burden of certain state and local taxes is spread among all federal taxpayers as a general federal subsidy. The Tax Reform Act of 1986 eliminated the deductibility of sales taxes, so currently the redistribution comes primarily through income and property taxes. (As part of a recent tax extension, taxpayers are permitted to deduct sales taxes in lieu of deducting income taxes; in most cases, however, state sales taxes paid are

almost always less than income taxes except in those states without an income tax.) State and local taxes are still one of the largest federal tax expenditures. According to the Joint Committee on Taxation (2013), the deductions for real estate taxes and state and local income taxes combined to cost the Treasury $68 billion in FY 2012. The justification for the deductibility of state and local taxes at the federal level is to account for jurisdictional spillover externalities. There has been a large body of work that has focused on the deductibility of state and local taxes. Feldstein and Metcalf (1987) examined the impact of federal deductibility on the portfolio of state and local taxes. They found that although the overall spending level of state and local governments was unaffected by the deductibility, the overall mix of taxes was impacted by the deduction. Others such as Gade and Adkins (1990) and Holtz-Eakin and Rosen (1986) have reached similar conclusions. Metcalf (2011) provides an excellent overview of the issues associated with federal deductibility.

ESTIMATION METHODOLOGY

The goal of this paper is to estimate gross tax exporting and gross tax importing for each state under two property tax incidence assumptions: the new view and the traditional view. Under these two scenarios, the fraction of each state's tax collections that are exported to other states is calculated, as well as the net tax exporting amount for each state. Generally, the estimation procedure can be summarized as follows: The model starts with the amount of tax collected by each state for every type of tax and then distributes that tax revenue amount to each state, whether that be itself or another state (or country). For each tax, an allocator is chosen based on the assumed economic incidence of the tax so that the tax can be distributed to each state. The allocator is chosen to best approximate the economic incidence given available data.

For example, individual income taxes collected by the state of New York are assumed to be borne by the income earners themselves. (This is the economic incidence assumption.) Then an allocator is chosen seeking to answer the question: What is the best source of data for the state of residence of those remitting income tax to state and local governments in New York? It turns out that the New York Department of Revenue provides data on the state of residence of income taxpayers. (Of course, a large majority are paid by New York residents themselves.) Therefore, the Census tax collections total for New York is distributed to each state based on each state's share of the income tax remitted from the Department of Revenue report.

Finally, the model accounts for the implicit exporting that is accomplished via the federal deduction for certain state and local taxes. This analysis does not account for other types of fiscal redistribution between states such as that provided to state and local governments through the federal income tax exclusion of interest income derived from state and local municipal bonds.

It is important to note that the estimates presented in this paper are based on the average incidence of the existing state and local tax burden, assumed to have been fully implemented under two lagged time horizons. This is different from estimating the incidence of a marginal tax change. Therefore, these estimates should not be interpreted as the exact tax exporting that would take place under any additional tax increase or decrease in a given state. Furthermore, it is assumed for the purposes of tax incidence assumptions that each tax is imposed independently of all others. This paper uses the economic incidence uncovered from previous economic literature, when available, to determine the appropriate allocator. These previous tax incidence papers have used both partial and general equilibrium analysis to determine the incidence, as well as both econometric and simulation modeling.

The state and local tax collection amounts come directly from the U.S. Census Bureau's Government Finances Division. Included as a tax in this study is each of the categories classified by Census as a tax (codes T01 - T99) in addition to the special assessments revenue category (code U01). Special assessments are included as a tax in this analysis given that the Bureau of Economic Analysis classifies it as a tax in its *taxes on production and imports* statistic. The full list of taxes, along with incidence assumptions and the data sources used for each tax, are presented in the appendix, while the methodology for major taxes is discussed below.

TABLE 1
SOURCES OF STATE AND LOCAL TAX REVENUE, U.S. AGGREGATE, 1999 vs. 2012
(CURRENT YEAR DOLLARS)

Type of Tax	Total Taxes Paid ($ billions)	Share (%)	Total Taxes Paid ($ billions)	Share (%)
	Fiscal Year 1999		Fiscal Year 2012	
Property taxes	239.7	29.3	447.1	32.0
General sales	200.6	24.5	314.1	22.5
Selective sales	90.4	11.0	162.4	11.6
Individual income	189.3	23.1	307.3	22.0
Corporate income	33.9	4.1	48.9	3.5
Other taxes	65.1	7.9	115.5	8.3
Total taxes	819.0	100	1,395.3	100

Property Taxes

As Table 1 shows, in fiscal year 2012, state and local governments across the United States collected over $400 billion in property taxes, making it one of the largest sources of state and local government revenue. Property taxes are collected mostly by local government assessments on residential and commercial real estate property. Non-real estate business property and personal property are also subject to property taxation in many states and localities. Regarding personal property taxes, which are typically assigned to automobiles and boats, it is assumed in this study that the full burden is borne by the property owner, and for simplicity, that the individual resides in the same state as the government levying the tax. The data source for the personal property tax component is BEA's state personal income tables. The large property tax residual (i.e., non-personal property taxes) contains taxes derived from five components: (1) non-real estate business property, (2) commercial real estate excluding rental housing, (3) commercial real estate in the form of rental housing (e.g., apartment complexes), (4) residential owner-occupied real estate (excluding seasonal homes), and (5) residential seasonal housing.

The two main challenges for distributing property taxes are determining the fraction of property taxes that goes into each of these five bins and choosing the proper allocator to use to distribute that bin's tax amount to each state's residents. The first step in this process is to divide the property tax into business and non-business. The non-business portion is estimated using data from the IRS Statistics of Income Division by state for the real estate taxes itemized deduction. The non-itemized residential real estate taxes amount is estimated using the number of owner-occupied homes in a state courtesy of the Census Bureau's Housing Vacancy Survey and the average real estate deduction for itemized tax returns with adjusted gross incomes less than $50,000. Adjustments were made for seasonal homes. The non-owner occupied residual is assumed to be commercial property (real estate or equipment/machinery), which is then split between real estate and non-real estate business property using a combination of BEA data on taxes on production and imports for the real estate industry and Census housing tenure data. Business property taxes remitted by all industries with the exception of real estate are classified as non-residential business property, while the real estate industry's portion is broken down further into residential real estate (i.e., rental properties) and commercial real estate using data from the Economic Census. After all of these adjustments, each of the six property tax subcategories cited above are filled for each state.

There are three basic views of the incidence of the property tax from the literature. The "traditional view" (see Netzer (1966)), assumes that local property taxes are shifted forward to the local owners of capital. The burden of the property tax is borne by consumers of housing as well as the owners of local factors of production. The "benefit view" (see Hamilton (1976)), assumes that benefits received through the property tax are fully capitalized into local housing prices, so that the property tax basically functions

as a benefit tax. The mobility of consumers (similar to Tiebout, 1956) insures that consumers would move to a community where the cost of taxation (including the property tax) would match their desire for services. The third popular view, the "new view," (see Zodrow and Mieszkowski (1983)), treats the property tax as a distortionary tax on capital. The differentials in property tax rates among jurisdictions drives mobile capital out of high tax jurisdictions and into "low tax" jurisdictions resulting in a distortion in the allocation of the capital. This distortion result is reflected in price differentials in the housing, commodity and land markets. This paper provides estimates under both the traditional view and the new view.

For personal property taxes on items such as boats and cars, it is assumed in this paper that the entire tax burden falls on the property owners. Unfortunately, there is very little empirical literature on the topic of personal property tax to guide our assumption for this tax. However, because taxes on such items make up only about 0.5 percent of all state and local tax collections, the effect of this methodological decision is likely to simply be a rounding error in the final results.

For property taxes on housing under the traditional view, it is assumed in this study that the tax falls 15 percent on the tenant and 85 percent on the owner. This assumption is based on the empirical findings of Carroll and Yinger (1994), which analyzed Boston rental housing. Therefore, 15 percent of the state's property tax collections from rental-occupied housing are allocated exclusively to that state, while 85 percent are assumed to be borne by the owner-landlord and are allocated to the state of residence of the owner-landlord. For owner-occupied housing, 100 percent of a state's property tax collections from that category are assumed to be borne by that state's residents. Note that for both rental and owner-occupied housing, adjustments are made for that portion that is seasonal housing owned by out-of-state residents (such as vacation homes). Under the new view, it is assumed that the incidence of property taxes on housing falls on all owners of capital with an excise tax differential adjustment. In calculating the new view excise component and capital component, the property tax rate for each state (and the nation) is approximated using property tax collections (excluding personal property) as a percentage of state GDP.

For non-residential property, the incidence is assumed borne by owners of the specific taxed assets under the traditional view and all owners of capital under the new view, with the new view using an excise tax differential adjustment to properly account for local non-residential capital and out-of-state non-residential capital. Readers should note that throughout this paper, ownership of capital is assumed to be proportional to capital income, which is defined as the sum of interest income, dividend income, capital gains income, retirement income, and one-third of proprietor's income.

Corporate Income Taxes

In addition to the property tax, the economic incidence of the corporate income tax is also fairly controversial. There is no clear consensus on the incidence of the corporate income tax at the federal level despite fifty years of research on the question since Harberger's seminal paper (Harberger, 1962), and state-level corporate income taxes add other dimensions of complexity. First, both labor and capital are mobile between states, whereas internationally labor is mostly immobile. Second, sales factor apportionment rules dominate state-level corporate income taxes, implying that the incidence of such taxes within the United States may come closer to resembling a gross receipts tax than a tax on capital. McLure (1981) first outlined the problem with simply assuming that the incidence of a national corporate income tax would be identical to those levied by states in the presence of arbitrary apportionment rules to allocate income between states. McLure, as well as Gordon and Wilson (1986), find that corporate income taxes with apportionment rules effectively transform corporate income taxes into taxes on the economic activity that is used to apportion the income.

In this study, the incidence of each state's corporate income tax is treated as a separate tax for each apportionment factor with the importance of each determined by the apportionment factor weight. Payroll factors are allocated to the workers in that state. Sales taxes are allocated to the ultimate consumers of all goods sold in the state. (Business-to-business taxes are assumed passed forward to the end-use consumer for the product.) Finally, property apportionment is allocated 50/50 between workers in the state and owners of that capital located in the state.

Severance Taxes

For the United States as a whole, severance taxes are not a major source of revenue; they make up just over 1 percent of total state and local tax collections. For specific states such as Alaska and North Dakota, however, they can be significant. Severance taxes are imposed mostly on energy sources but also on other resources such as timber in Washington. Shelton and Vogt (1982) lay out the severance tax incidence question as pitting politicians, who believe the incidence falls on (mostly out-of-state) consumers, against economists, who they summarize as believing that the tax falls on the owners of resource deposits given that no state has global market dominance over any commodity. Using empirical evidence for coal severance taxes, the authors find that both politicians and economists are right (and wrong). They find that between 29 and 40 percent of coal severances taxes are passed forward to consumers in a five-year window. They admit that such a finding may not hold for the long-term.

McLure (1979) is one of the economists cited by Shelton and Vogt arguing the economic theory side. McLure states that in the short-run, severance taxes are likely borne by the extractor and in the long-run, when drilling contracts are renegotiable, by the owner of the resource. For the purposes of this paper, there is little data on the length of such contracts nor is there data on the state of residence of the owner of the mineral rights in each state. It would be simple to assume that the rights to all extractive materials lying beneath Wyoming land is owned by actual residents of Wyoming, but that is likely not to be the case. So even if one sides with McLure and other economists that severances tax are not exported to other states through higher consumer prices, exportation can occur to other states on the production side, including via possible rents earned by capital and/or labor residing out-of-state.

For this paper, it is assumed that severance taxes are borne by those involved in the production process, specifically the owners of the extracting firms and the laborers who are potentially earning high rents. (The splits between capital and labor are determined by BEA KLEM tables.) Although this is a strong assumption, because of the limited national magnitude of severance taxes, the effect of alternative assumptions on the national figures is small. There are significant effects for some states however.

Individual Income Taxes

Given the practice of federal agencies such as the Congressional Budget Office and Joint Committee on Taxation to assume that the federal individual income tax is fully borne by the individual taxpayer (i.e., the person whose name is on the 1040), that assumption is applied to state and local individual income taxes in this paper. Technically, this may be slightly inaccurate given that a fraction of the individual income tax is a tax on the return to capital and thereby likely to face a similar incidence fate as that of the corporate income tax, which over the long-term is not assumed borne by merely the owner of that taxed capital.

Although the model operates under the assumption that the statutory incidence of the individual income tax is equal to the economic incidence, it is true that the legal burden can travel across state lines. For example, many Illinois residents work in St. Louis, Missouri and pay city income tax to St. Louis. This study accounts for this interstate tax payment using one of two sources: (1) state income tax statistics that break down the residence of the income taxpayer (when available), or (2) Census Bureau's Journey to Work data combined with average BEA wage data by industry by state after accounting for the existence of reciprocity agreements between states which are provided from the CCH State Tax Handbook.

General Sales Taxes

The legal incidence of the sales tax falls upon the consumers that purchase the products. The variation in the literature centers around the progressivity of the sales tax, with alternative measures (lifetime vs. annual income) and deductions and credits reducing or eliminating the progressivity of the general sales tax. Due (1953) was one of the first to indicate that much of the sales tax burden would be reflected in immediately higher prices for consumers. A number of authors conducting distributional studies (Morgan (1964), Phares (1980), and McIntyre, Ettinger, Kelly and Fray (1991)) assume that the burden of the sales tax is fully shifted onto consumers. Poterba (1996) through an examination of the change in retail prices, using two data sets between 1923 and 1938 and between 1944 and 1977, confirms that price increases

tend to reflect changes in the sales tax rate, an assumption adopted in this paper. That is, general sales and gross receipts taxes, in addition to Census's "other selective sales taxes" category, are assumed to be passed-forward to consumers in the form of higher prices, regardless of whether or not they are initially on business-to-business transactions. Besley and Rosen (1999) also find significant forward-shifting of sales taxes, including over-shifting, although they find the degree of shifting varying by product.

In order to allocate sales taxes to their ultimate end-user, sales taxes are divided into sub-categories, which are then allocated to each state based on a chosen allocator. These sub-categories include many business-to-business sales taxes paid broken down by industry, as well as direct end-use consumer categories such as gasoline, restaurant sales, tourism, etc. The amount of sales tax remitted on business-to-business transactions in each state is determined using Ernst & Young's *State and Local Business Taxes* publication that is conducted annually for the Council on State Taxation (COST).

For the purposes of this study, it is assumed that each industry's share of this business-to-business sales tax total is proportionate to the industry's share of private-sector GDP in the state. These state-by-state industry-by-industry sales taxes on business-to-business inputs are then allocated across the nation to each state based on various allocators. These allocators are chosen based on the assumption that the embedded tax is fully passed forward to end-users of that industry's product. For example, sales taxes remitted by the oil industry in Texas, Alaska, Louisiana, etc. are assumed to be passed forward to energy consumers nationwide. Similarly, for business taxes paid by the agriculture sector in Iowa, Kansas, Illinois, etc., the ultimate long-run consumer incidence is distributed to each state based upon its estimated food consumption. On the other hand, taxes paid on business inputs of service-industries such as entertainment in Nevada, Florida, etc. are assumed to remain in the state, borne ultimately by consumers engaging in transactions in the state.

Readers should note that the final location of sale does not mean that only that state's residents pay the tax. Tourism and typical interstate travel (e.g., commuters from Virginia into D.C.) mean that economic transactions in a state are not solely done by that state's residents. This is accounted for by using various data sources such as the American Travel Survey and the Census Bureau's Journey to Work publication. The American Travel Survey, for example, provides a state-by-state breakdown of visitors to each state by state of origin, along with various trip characteristics such as length of visit, mode of transportation, and place of stay.

Selective Sales Taxes and Licenses

In addition to general sales taxes, significant revenues are raised by state and local governments from taxes imposed on select products such as motor fuels, tobacco and alcohol products, insurance policies, public utilities, amusement parks and pari-mutuels. Also, Census classifies as taxes licenses, such as those imposed on businesses or individuals for motor vehicles, and they are thereby included in this analysis. The economic assumptions relating to each of these other taxes are as follows.

For tobacco taxes, a number of studies, such as Gruber and Botond (2002) have analyzed the taxation of tobacco (predominately cigarettes). These studies have consistently found that there is considerable forward shifting and that the tax is regressive, although Gruber and Botond argues the tax is not as regressive as most would assume due to paternalistic benefits. This study assumes 100 percent forward shifting and accounts for interstate tax exporting, some of which is due to smuggling, using a combination of CDC data on state smoking rates and Census tobacco tax revenue data. Specifically, CDC survey data was used to allocate cigarette consumption across states, allowing net exporting to be estimated as the difference between cigarettes consumed by a state's residents and cigarettes sold in the state. One potential downside to relying on CDC survey data is of course some respondents not reporting truthfully.

For alcohol taxes, Young and Bielieska-Kwapisz (2001) examine the impact of increases in alcohol taxes on beverage prices. They find that the taxes are, at a minimum fully shifted forward, and in many cases over shifted. This study assumes 100 percent forward shifting. Like tobacco taxes, interstate exporting is accounted for using a combination of CDC and Census revenue data.

Business licenses (alcohol, utility, occupational, etc), which are classified as a tax by the Census Bureau, are assumed to be 100 percent backward shifted onto owners of the business. For amusement

taxes and pari-mutuel taxes, they are assumed to be 100 percent forward shifted to consumers. Similarly, insurance receipts taxes are assumed to be ultimately borne by consumers – either in their role as direct consumers of insurance or as consumers of businesses who purchase insurance policies. Specifically, for individual policies, it is assumed that taxes on insurance receipts are borne by consumers. For business policies, it is assumed that taxes on insurance receipts are borne by consumers of all products in the long-run.

Finally, motor fuel taxes are a relatively large source of revenue compared to other selective taxes. Chouinard and Perloff (2004) examine the incidence of both federal and state gasoline taxes. They find that the federal tax incidence is about 50/50 between consumers and firms. For state taxes, the incidence varies, with smaller states showing almost 100 percent incidence on consumers and larger states showing smaller forward shifting. In this study, it is assumed that the entire incidence of motor fuels taxes is passed forward to consumers in the form of higher prices of all products. Readers should note that adjustments were made for cross-border purchases of gasoline using the same methods as were applied to estimating cross-border general sales tax activity. Specifically, adjustments are made for gasoline purchases by tourists using state-level tourism data and non-tourist cross-border sales using earnings by place of work data.

State and Local Tax Deduction

After the allocation of the Census state and local tax aggregates, the final procedure is to account for the exporting that results from the federal deduction for state and local taxes. Using state-by-state IRS data by income cohort, the model first estimates the initial tax return savings from the deduction for each cohort within each state. This initial tax return estimate from the deduction is calculated by multiplying the deduction claimed by that cohort in the state by an estimate of the average marginal tax rate for that income cohort. This initial tax return savings estimate is then used as the allocator for distributing the Joint Committee on Taxation's aggregate tax expenditure estimate for each of the two state and local tax deduction categories: income/sales/personal property tax deduction and real estate tax deduction. Finally, the model adjusts for the alternative minimum tax in each state, which disallows the state and local deduction, as well as the limitation on itemized deductions for high-income taxpayers.

While the first-order tax savings from any deduction flows to the person whose name is on the 1040 form, the economic incidence of deducting a tax is assumed to be the same as a reduction in the tax itself. Therefore, the model distributes each state's tax savings value for the real estate taxes deduction and the state and local sales/income tax deduction using the same incidence assumptions as used elsewhere in the model. For the real estate taxes deduction, it is assumed that the incidence of the deduction is the same as the incidence of the owner-occupied housing portion of state and local property taxes and is thereby distributed in exactly the same way. For the state and local deduction for general sales or income taxes (and personal property taxes), the assumption is that the incidence of the deduction falls on the actual federal income tax filer. Under this assumption, the deduction itself is not exported across states.

Obviously the state and local tax deduction leads to lower taxes by itself (ceteris paribus). However, the deduction must be financed in some form – either today or in the future. In this paper, it is assumed this financing is done via proportionally higher federal individual income taxes. (In other words, it is assumed that federal income tax collections would remain constant if the deduction was eliminated. This assumption is based on the view that under the current political climate in Washington the most likely means by which the deduction would be eliminated would be part of a revenue-neutral tax reform that broadened the tax base while reducing marginal rates.) In summary, the final net tax exporting amount for each state from the state and local deduction is the difference between a state's share of the state and local tax deduction (after accounting for exporting of the real estate taxes deduction itself) and the higher federal individual income taxes paid to finance the deduction.

RESULTS

Table 2 presents overall results for interstate tax exporting for fiscal years 1999-2012, for the United States as a whole, while Table 3 presents the fraction of each state's tax collections that were exported under both property tax assumptions and both with and without federal tax deductibility for 2012. Table 4 presents the net tax exporting estimate for each state under the four scenarios, which is calculated as gross tax exported less gross tax imported. Overall, approximately 45 percent of state and local tax collections in 2012 were exported when the new view of the property tax is assumed and the federal deductibility of state and local taxes is included. When federal deductibility for state and local taxes is excluded, that figure drops to 42 percent. When the traditional view of property taxes is assumed instead of the new view, the overall fraction of state and local taxes that is exported falls dramatically to between 12 and 16 percent. The magnitude of the property tax methodology in driving the results is noteworthy. Given that property taxes make up nearly one-third of all state and local tax revenue combined with the fact that the property tax incidence assumptions are so disparate, the methodologies lead to these markedly different results.

Factors Affecting a State's Ability to Export Its Tax Burden

Three primary factors affect the ability of states to export their tax burdens given the incidence assumptions made for this paper: (1) reliance on property taxes (and other taxes on capital), (2) ability to tax energy-intensive production, and (3) the presence of a heavy tourism sector. As mentioned earlier, property taxes play a major role in our tax exportation results and are the strongest determinant of the new view state-by-state results in Table 3. Under the new view, states with high property tax rates have greater "excise tax" components of the property tax and thereby bear a large percentage of their own property tax. States with "excise subsidy" components of their property tax are able to export a large fraction of their own property tax. While one may expect Florida to be a main exporter of taxes due to its sizeable tourism sector, the state is actually below average in terms of percentage of tax collections that are exported due to its high property tax rates that feed into the new view calculation and the large fraction of its revenues that come from property taxes. Furthermore, Florida's disproportionate share of capital income means that it retains a larger share of its own property tax. Under the traditional view, there is much less disparity between states resulting from the property tax.

Assuming the incidence of severance taxes are borne primarily by owners of extracting firms and laborers in the energy sector as this paper does, it is easy to see why severance tax-heavy Alaska, North Dakota, and Wyoming are able to export such a large fraction of their tax burdens. That is because most of the owners of the firms and even a large fraction of the laborers is employed out of state. In Alaska and Wyoming, energy taxes are so large that they are able to use such revenue to avoid levying other major taxes such as state income taxes. As discussed earlier, however, this ability to export severance taxes is sensitive to incidence assumptions.

Finally, Nevada's tourism sector enables it to export a fairly large fraction of its tax burden and avoid having to levy a state income tax, while the District of Columbia's sales tax collections from out-of-state residents (tourists and Virginians/Marylanders) enabled it to export a significant fraction of its tax burden despite the legal restriction imposed on it by Congress that forbids the District from taxing the wages of out-of-state commuters. Delaware is unique given its heavy reliance on corporate income tax collections.

TABLE 2
TAX EXPORTING, UNITED STATES (TOTAL), 1999-2012

Year	Percentage of tax collections exported (New View of Property Taxes)		Percentage of tax collections exported (Traditional View of Property Taxes)	
	Excluding Federal Deductibility	Including Federal Deductibility	Excluding Federal Deductibility	Including Federal Deductibility
1999	38.9%	42.8%	12.2%	17.7%
2000	38.2%	42.3%	12.2%	17.9%
2001	38.6%	42.9%	12.1%	18.1%
2002	40.1%	44.8%	11.9%	18.4%
2003	40.7%	45.4%	11.9%	18.2%
2004	40.5%	44.8%	11.7%	17.3%
2005	39.5%	43.2%	11.6%	16.5%
2006	39.6%	42.9%	12.1%	16.7%
2007	40.1%	43.5%	12.2%	16.7%
2008	40.8%	44.2%	12.4%	16.8%
2009	44.7%	48.0%	11.9%	16.2%
2010	45.2%	48.3%	11.7%	15.7%
2011	42.0%	44.9%	12.2%	15.8%
2012	42.1%	45.0%	12.5%	16.0%

TABLE 3
TAX EXPORTING BY STATE, FISCAL YEAR 2012

State	Fraction exported (New View)		Fraction exported (Traditional View)	
	Excl. Deductibility	Incl. Deductibility	Excl. Deductibility	Incl. Deductibility
AL	49.3%	50.9%	13.1%	16.4%
AK	65.7%	65.8%	52.7%	53.4%
AZ	46.4%	48.7%	13.9%	17.8%
AR	50.4%	51.6%	14.3%	17.3%
CA	35.9%	39.0%	8.0%	12.5%
CO	45.4%	48.6%	11.9%	16.8%
CT	37.7%	41.4%	11.2%	16.3%
DE	52.5%	53.7%	16.8%	19.8%
DC	58.4%	61.0%	42.0%	45.9%
FL	40.6%	41.5%	11.5%	13.8%
GA	46.5%	49.4%	11.3%	15.9%
HI	49.0%	50.7%	23.6%	26.5%
ID	42.6%	44.5%	9.6%	13.2%
IL	37.8%	40.8%	9.8%	14.2%
IN	45.1%	46.6%	12.4%	15.6%
IA	43.7%	45.6%	13.5%	16.9%
KS	44.8%	47.2%	16.4%	20.1%
KY	48.9%	50.8%	15.7%	19.3%
LA	60.7%	61.9%	26.9%	29.8%
ME	34.0%	36.6%	12.1%	15.8%
MD	36.1%	40.4%	8.0%	13.8%
MA	40.7%	44.4%	9.4%	14.8%
MI	38.9%	41.5%	8.4%	12.5%
MN	39.1%	41.9%	10.6%	14.9%

MS	42.2%	43.4%	17.1%	19.6%
MO	47.5%	49.9%	13.8%	17.8%
MT	38.6%	41.1%	10.6%	14.4%
NE	49.1%	50.9%	14.2%	17.7%
NV	64.6%	65.0%	34.6%	36.5%
NH	45.2%	47.7%	12.6%	16.7%
NJ	36.7%	39.7%	9.7%	14.2%
NM	50.8%	52.3%	24.8%	27.6%
NY	34.3%	36.7%	14.1%	17.5%
NC	43.0%	45.5%	9.6%	13.7%
ND	61.7%	62.1%	44.8%	46.0%
OH	40.7%	42.8%	9.2%	12.9%
OK	44.6%	46.8%	16.4%	19.9%
OR	46.6%	49.3%	7.0%	11.7%
PA	39.1%	41.6%	10.6%	14.6%
RI	39.0%	41.8%	13.6%	17.8%
SC	43.8%	46.1%	12.1%	16.0%
SD	58.7%	57.9%	18.7%	19.9%
TN	78.4%	77.1%	18.5%	20.2%
TX	45.1%	45.9%	13.0%	15.3%
UT	46.3%	48.3%	10.8%	14.6%
VT	39.5%	41.8%	15.0%	18.4%
VA	41.9%	46.3%	8.4%	14.5%
WA	51.5%	52.2%	16.3%	18.8%
WV	38.9%	40.4%	18.5%	20.9%
WI	37.2%	40.1%	8.3%	12.7%
WY	64.6%	64.3%	36.4%	37.5%

TABLE 4
NET TAX EXPORTING PER CAPITA BY STATE, FISCAL YEAR 2012

State	Net Tax Exported (New View)		Net Tax Exported (Traditional View)	
	Excl. Deductibility	Incl. Deductibility	Excl. Deductibility	Incl. Deductibility
AL	31	2	-28	-50
AK	6,902	5,781	6,856	5,743
AZ	75	55	56	41
AR	347	289	128	102
CA	20	56	7	45
CO	-340	-271	-24	-28
CT	-781	-666	-644	-545
DE	-113	-107	-542	-451
DC	2,888	2,610	3,065	2,804
FL	-706	-611	-46	-103
GA	110	95	-51	-28
HI	921	818	1,021	900
ID	-547	-426	-284	-228
IL	140	151	24	46
IN	276	225	-4	-21
IA	-45	-39	86	79
KS	-46	-30	98	96
KY	386	345	144	135
LA	706	639	619	559
ME	-57	-9	73	105
MD	-467	-349	-496	-376
MA	-100	-82	-193	-165

MI	4	-3	-61	-65
MN	253	243	114	124
MS	104	87	155	131
MO	-36	-35	-61	-56
MT	-608	-527	-129	-121
NE	63	52	122	105
NV	791	504	1,134	729
NH	-763	-702	-640	-602
NJ	-684	-601	-896	-794
NM	354	293	528	436
NY	507	522	547	560
NC	80	72	-64	-39
ND	3,802	3,427	4,015	3,617
OH	197	182	-12	-12
OK	-316	-290	137	98
OR	146	144	-191	-133
PA	-45	-48	-85	-85
RI	-214	-162	-216	-166
SC	-127	-97	-96	-74
SD	-565	-581	72	-34
TN	1,065	834	175	98
TX	-25	-94	159	44
UT	50	33	-106	-82
VT	-33	-1	45	67
VA	-396	-307	-362	-279
WA	264	178	221	144
WV	188	165	276	246
WI	56	86	-115	-66
WY	829	583	1,835	1,404

Trends in Interstate Tax Exporting from 1999 to 2012

As indicated in Table 2, interstate tax exporting has grown under the new view due to a larger reliance on the property tax among states, which is heavily exported. In 1999, state and local governments combined nationwide collected 29.3 percent of their revenue from property taxes. In 2012, that figure was 32.0 percent. Other factors such as a greater reliance on tourism taxes, as well as greater tax collections from energy sources, along with a relative decline in the role of the income tax as a revenue source at the state and local level, also support this general trend of greater interstate tax exporting under the new view. However, under the traditional view, where the property tax has a much smaller degree of influence on interstate exporting, overall tax exporting in the United States fell from 1999 to 2012.

Under the new view, interstate tax exporting grew between 1999 and 2012 both when federal deductibility is excluded and included. However, the growth in interstate tax exporting was somewhat smaller when one includes federal deductibility. This is due to changes in federal tax law that reduced the deduction's value as discussed below. Under the traditional view, the reduced value of federal deductibility resulting from the federal tax law changes magnifies the decline in tax exporting that is seen under the traditional view from 1999 to 2012.

The Impact of Federal Deductibility of State and Local Taxes

As Tables 2 and 3 indicate, the federal deductibility of state and local taxes can significantly affect the degree of interstate tax exporting. The impact of the federal deductibility is greatest under the traditional view due to its incidence assumptions relating to the property tax. Specifically, the federal itemized deduction for real estate taxes is distributed based upon the property tax incidence assumptions used in this study. (The deduction effectively reduces the property tax.) Therefore, under the traditional

view, it is assumed to benefit the actual homeowner. Under the new view, however, the deduction is assumed to benefit all owners of capital (just like the property tax). Therefore, the tax savings from the deduction itself is largely exported under the new view.

Because state and local individual income taxes are assumed borne by the income earners themselves, the benefits of the deductibility of state and local income tax accrues entirely to the state in which it was claimed. Therefore, states with a significant number of high-income earners and high individual income tax rates can export a significant fraction of the burden to other states via federal deductibility. That is because the federal deduction is worth more for those in higher federal income tax brackets. Since 2003, the federal government has allowed for taxpayers to choose between deducting their state and local income taxes paid and their state and local sales taxes paid. This choice is most valuable for those in states with no state income tax. For simplicity, it is assumed that this sales tax deduction, like the state income tax deduction, benefits the taxpayer only and is thereby not exported. (This assumption is made because most taxpayers claiming the state sales tax deduction use a tool provided by the IRS that provides an estimate of the sales tax paid based upon characteristics such as income, size of family, and zip code. It is not tied to specific consumption but is rather based upon income.)

All else being equal, higher federal marginal income tax rates make the federal deduction more valuable. Therefore, when federal tax rates were reduced as part of the 2001 and 2003 "Bush tax cuts," the value of the deduction was reduced, which is why the deduction's role in supporting tax exporting has diminished, as seen in Table 2. It should also be noted that the alternative minimum tax (AMT) disallows the federal deduction for state and local taxes, thereby reducing the amount of interstate tax exporting. The AMT affects around 2-3 percent of taxpayers each year, generally those residing in high-tax states with incomes between $200,000 and $500,000.)

METHODOLOGICAL CAVEATS

In addition to the uncertainty over the incidence of various taxes and the implications for the results presented in the previous section, there are a few other key methodological topics relating to this work that should be discussed. These include the definition of what constitutes a tax, the absence of the excess burden from this analysis, and the absence of accounting for the geographic distribution of the benefits of state and local government spending financed by taxes.

First, while the definition of a tax used for this study is defined by BEA and Census, from the perspective of public finance economics, the answer is not always clear cut as to what constitutes a tax given that other revenue items have tax-like features. For example, tolls, lotteries and government liquor store proceeds are not included in this study. While one may consider these items user fees for government services and market-like transactions since the benefits are contingent upon payment, there is the issue of monopoly profits being earned by government on these market-like transactions. For example, state governments earn considerable economic profits (beyond the normal rate of return) in operating lotteries and liquor stores by charging a net price in excess of what a competitive free market would charge consumers. Although lawyers may disagree, from the perspective of economists, this is like an implicit tax on consumers of the lottery and liquor stores. Even excessive fines on traffic violations (i.e., fines in excess of their Pigouvian optimal levels) are often used by governments as a means of raising revenue, like taxes. On the other hand, cigarette taxes, alcohol taxes, and motor fuel taxes are at least partially Pigouvian, whose revenues are partially designed to offset externalities.

But including liquor store and lottery economic profits would magnify another issue with this study: excess burdens. It would seem unfair to count liquor store profits or lotteries as taxes if another state merely outlawed liquor or lotteries. That's because the latter would be imposing a *de facto* prohibition tax that collected no revenue but still had had a huge deadweight loss. This study does not account for the excess burden of state and local taxes and merely counts the revenue portion as the tax "burden" amount. To illustrate the potential problem with ignoring the excess burden, imagine a right-side of the Laffer Curve scenario such as a state charging a tax rate of 70 percent on labor income (on top of the federal rate). Lowering the tax rate would undoubtedly raise revenue. By the metric used in this study (revenue),

it would appear that the state is raising taxes by cutting tax rates because revenues have gone up when, in fact, the overall tax burden (revenue plus deadweight loss) has become smaller. Thankfully, such an illustrative scenario does not currently exist. However, excess burdens in state and local taxation (especially when one also adds federal tax rates) are still real and can be, in some cases, significant portions of the tax burden that would affect the actual degree of net tax burden exporting.

Finally, while this study provides a measure of the degree to which the cost of state and local governments is exported, there are benefits to government spending as well, which can cross state borders. Tourists benefit from many government services provided by the locales to which they are visiting such as transportation and public safety. Public universities conduct research whose benefits do not stop at the state lines. Measuring the incidence and thus the exporting of the benefits of state and local government services is beyond the scope of this paper.

CONCLUSION

This study provides an estimate of the level of interstate tax exporting in the United States, estimating that approximately 45 percent of gross state tax collections were exported outside of their levying state in the latest fiscal year included in the study, 2012, under a new view assumption of the incidence of the property tax, while 16 percent were exported under a traditional view of property tax incidence. Excluding the federal deductibility for state and local taxes, those figures are 42 percent and 12 percent, respectively. This study finds that between 1999 and 2011, the degree of state and local tax exporting has risen under the new view assumption of property tax incidence and fallen under the traditional view. This study also breaks down the tax exporting figures on a state-by-state basis, finding that three key factors determine the degree to which a state is able to export its tax burden: (1) presence of natural resources like oil and gas, (2) reliance on the property tax and property tax rates, and (3) tourism. Finally, the study shows that uncertainty surrounding the economic incidence of the property tax has significant implications for estimating how much state and local taxes are exported between states. And similarly, the economic incidence of the severance tax has significant implications for estimating tax exporting in those states that rely heavily on severance tax revenues.

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APPENDIX
COMPLETE LIST OF INCIDENCE ASSUMPTIONS AND DATA SOURCES

Tax Category (Census Code)	**Data Sources**	**Method of Allocation**
Property taxes (T01)	Census Government Finances, BEA Regional SAPI, Census Housing Survey, 1995 American Travel Survey extrapolated using Travel Industry Association data; IRS data by state	Personal property: Assumed to be borne entirely by own-state residents. Owner-occupied housing: Traditional view entirely borne by homeowner. New view borne 100 percent by all owners of capital. (Adjustments are made for seasonal housing using travel data.) Renter-occupied housing: Traditional view split between owner (85%) and tenant (15%). New view borne 100 percent by all owners of capital. Business property: Traditional view borne by owners of specific business remitting the tax. New view borne 100 percent by all owners of capital with excise tax differential adjustment.
General sales taxes (T09+T19)	Census Government Finances, Ernst & Young/COST, 1995 American Travel Survey extrapolated using Travel Industry Association data, BEA Regional GDP by State, BEA Regional SAPI, BEA Tourism Accounts	Each state's collections split into sales tax paid on business inputs using Ernst & Young COST Study of Business Taxation and sales tax paid on direct end-use consumer products. Embedded tax on business inputs assumed to be borne by consumers of final products. Consumption of products within state is estimated using number of days that tourists from each state are present in the destination state. Adjustments are made for products that are more likely to be purchased by tourists (propensity based upon national data from BEA Tourism Accounts). Also adjustment for commuters/non-tourist out-of-state residents is based upon location of workers in a state.
Alcoholic beverage sales taxes (T10)	Census Government Finances, CDC BRFSS data, *Brewer's Almanac*	State is assumed to be either a net importer or exporter. National alcohol consumption distributed based upon CDC BRFSS drinking data and number of drinks consumed in state estimated using *Brewer's Almanac* data. Difference between distribution is whether state is importer or exporter
Amusement and pari-mutuel tax (T11+T14)	Census Government Finances, 1995 American Travel Survey extrapolated using Travel Industry Association data,	Split into tourists and non-tourists using combination of national BEA Tourism Accounts data and American Travel Survey data extrapolated using Travel Industry Association data. Tourists allocated using ATS data while non-tourists allocated to own state with adjustment for non-tourist out-of-state residents based upon location of wage earners that work in a state.

Insurance premiums taxes (T12)	Census Government Finances, BEA Regional SAPI	Borne by consumer of insurance. In the case of business insurance policies, assumed to be borne by consumers in the form of higher prices.
Motor fuel sales taxes (T13)	Census Government Finances, EIA State Energy Data System (SEDS), BEA Regional SAPI, 1995 American Travel Survey extrapolated using Travel Industry Association data	Split into diesel, aviation, and motor gasoline using EIA SEDS data. Diesel assumed to be borne by end-use consumers in long-run. Aviation fuel tax borne by aviation tourists, allocated for travel within each state using extrapolated ATS data. Motor gasoline assumed borne entirely by personal consumers of gasoline, adjusted for tourists and other out-of-state consumers.
Public utilities sales taxes (T15)	Economic Census.	Split into water, phone, electricity, television. Water/phone/electricity: Business portion borne by end-use consumers in long-run (with adjustment for tourists and products exported out of state). Direct household portion borne by own-state residents only. Television borne by households.
Tobacco sales taxes (T16)	Census Government Finances, CDC BRFSS data, *Tax Burden on Tobacco*	State is assumed to be either a net importer or exporter. National cigarettes smoked distributed based upon CDC BRFSS smoking data and number of cigarettes smoked in state estimated using tax collections divided by per pack rate. Difference between distribution is whether state is importer or exporter of tobacco sales taxes.
Alcoholic beverage licenses (T20)	Census Government Finances, BEA Regional SAPI, IRS data by state	Assumed to fall on license holders (owners of firm holding license).
Amusement licenses (T21)	Census Government Finances, BEA Regional SAPI, IRS data by state	Assumed to fall on license holders (owners of firm holding license).
Corporate licenses (T22)	Census Government Finances, BEA Regional SAPI, IRS data by state	Assumed to fall on license holders (owners of firm holding license).
Hunting, fishing and other licenses (T23+T29)	Census Government Finances, BEA Regional SAPI, IRS data by state	Assumed to fall on license holders and is assumed to fall entirely by residents of the state collecting the tax.
Motor vehicle and vehicle operator licenses (T24+T25)	Census Government Finances, BEA Regional SAPI, IRS data by state (SOI)	Assumed to fall on license holders. In the case of business licenses, tax assumed to fall on owners of companies.
Public utility licenses (T27)	Census Government Finances, BEA Regional SAPI, IRS data by state	Assumed to fall on owners of utility companies.
Occupation & business licenses (T28)	Census Government Finances, BEA Regional SAPI, IRS data by state	Assumed to fall on workers and owners of businesses.
Individual income taxes (T40)	Census Government Finances, BEA Avg. Worker Wages, Census Journey to Work (as used	Assumed to fall on income taxpayer. Adjustment made for taxes collected from out-of-state income earner, using various state revenue publications that break out resident/non-resident. If no data from DOR, Journey to

	by BEA), BEA Regional SAPI, Various state revenue publications	Work data combined with BEA average worker wages and state reciprocity rules (per CCH State Tax Handbook) are used to determine out-of-state amount/distribution. In the case of business entities that are subject to individual income tax regardless of reciprocity rules, adjustments are made using data on flow-through income by state.
Corporate income taxes (T41)	Census Government Finances, BEA Regional SAPI, IRS data by state (SOI)	Based on apportionment rules in each state. Sales portion allocated based on general consumption in the state. Property portion allocated based on ownership of capital in state. Payroll portion allocated based on earnings in the state.
Death and gift taxes (T50)	Census Government Finances	Assumed to fall entirely on the donor or person who deceased, and thereby is assumed to be borne entirely by residents of the state collecting the tax.
Documentary and stock taxes (T51)	Census Government Finances	Assumed to be borne entirely by residents of the state collecting the tax.
Severance taxes (T53)	Census Government Finances	Borne by those in the extraction process, specifically labor and owners of extracting firms.
Other taxes, NEC (T99)	Census Government Finances	Assumed to be borne entirely by residents of the state collecting the tax.
Special assessments (U01)	Census Government Finances	Distributed according to non-personal property taxes.