



**Tax Burden of Californians:  
Development of a Model to Estimate the Economic Incidence  
of Proposed Tax Changes and the Current Tax Structure**

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## Introduction

The question of who bears the burden of a tax is one of the most important questions policy makers need to address when considering a tax policy change. Although the answer to this question may appear straightforward (the person writing the check pays the tax), from an economic standpoint, the answer is often quite different. If a merchant is able to pass along all of the costs of higher sales taxes to customers in the form of higher prices, then it is the customer who bears the burden, even if the merchant writes the check to the State Board of Equalization (California's sales tax collection agency). Similarly, if a manufacturer responds to a corporation tax increase by lowering the wages paid to workers in order to keep prices stable, then it is the workers who bear the burden of the tax. Economists refer to this distinction as the statutory versus the economic incidence of a tax.

Public finance economists have developed various methods in an effort to address the question of who bears the burden of tax. Because of the complexity of modern economies where global companies sell products to local consumers and local companies sell product across the globe, all of which are subject to national, state and local taxation, developing an analytical framework or model that can accurately estimate the incidence of an existing tax or a tax change is a daunting challenge. This challenge expands by degrees when considering the simultaneous effects of multiple tax changes.<sup>1</sup>

Because incidence analysis, fundamentally, is an exercise aimed at understanding who actually ends up paying the tax (in economic terms), developing an approach that can calculate results for multiple, varying groups is paramount. Although instructive to

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<sup>1</sup> As is the case with the changes proposed by the Think Long Committee which form the impetus for the development of the incidence model described in this report.

note, for example, how much of a tax is paid by consumers, it is even more instructive to identify the specific types of consumers who pay more (and those that pay less). An approach that can identify the specific sub-groups (e.g., low income, moderate income, consumers, workers, owners of capital) who will be affected is particularly important under the current circumstances, in which changes to multiple taxes have been proposed.

## **The Model**

In response to tax reform proposals under consideration by a variety of groups, including the Think Long for California Committee, the Blue Sky Consulting Group, along with Capitol Maxtix Consulting, was engaged to develop a tax incidence model. The idea was to develop a model that could estimate the distribution of the current major taxes (income, property, sales, and corporation) among California households, as well as estimate how a variety of potential proposed tax changes would affect this overall landscape.

The result was a flexible, user-adjustable tax incidence model that can rapidly produce incidence results in response to changes in tax proposals, such as adjustments to rates, deductions, tax bases, or other factors that may affect the amount of revenue collected or the economic incidence of a tax change.

## **Methodology**

In order to develop a model transparent and flexible enough to address these issues, we conducted an empirical incidence analysis that draws on both analysis of micro-level data (personal income tax return and consumer expenditure survey data, among other sources) as well as the established economic literature in calculating results. Our approach compares the level of taxation in California, both before and after proposed

changes, to the level of taxation in other states, in order to determine the extent to which California businesses can shift the burden of a tax change onto consumers, workers, or owners of capital. Because the extent of these shifts varies by tax and by industry sector, our analysis was conducted for each of the tax sources affected and for multiple industry sectors in order to develop an accurate picture of the impact of the proposed changes on each part of the California economy and its residents.

Our approach is modeled on the methodology developed by the Minnesota Department of Revenue. The Minnesota approach embodies several key assumptions, which are shared by our approach:

1. Personal income taxes are borne by the taxpayer directly without additional shifting<sup>2</sup>
2. Sales taxes on consumer purchases are paid by the consumer
3. Business taxes are split into three categories: price changes, wage changes, and changes in returns to capital. The relative share borne by any one of these groups depends on the relative tax rates for a particular industry in a particular state.

Using the Minnesota approach as a starting point, we made two important adjustments. First, similar to the methodology employed by Robert Cline of Ernst and Young, we combined all business taxes together, rather than considering each tax separately, as does the Minnesota Department of Revenue.<sup>3</sup> Because businesses consider the impact of taxes on overall returns on their investments, treating the taxes as a group

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<sup>2</sup> For purposes of this analysis, the portion of the personal income tax paid by S corporations, partnerships, and other business entities was treated as a business tax.

<sup>3</sup> Cline, Robert, et. al., "The Economic Incidence of Additional State Business Taxes." *State Tax Notes*, January 11, 2010

makes sense from an economic as well as a practical modeling standpoint. Second, our analysis considers labor to be mobile over the long run, but immobile in the short run. Thus, for current taxes, labor and capital are assumed to be mobile and capable of migrating to the place where the highest wages or returns, respectively, can be obtained. In the short run (including the time horizon relevant for consideration of a tax change), however, labor is considered to be immobile.

The basic premise of the Minnesota DOR approach is that the incidence of a business tax depends on the relative levels of taxation for a particular industry in a particular state. Because capital is mobile, above average taxes on capital in one state will not be borne by owners of capital. Instead, if tax rates are raised and prices or wages do not adjust to keep returns to capital unchanged, capital investment will decrease until returns to capital increase to the point at which they are competitive with returns to capital in other states. Therefore, the only portion of a business tax borne by owners of capital is that portion that is equal to capital's share of the national average tax rate on factors of production. Any amount of tax over this national average is shifted forward to consumers in the form of higher prices or back to wages or immobile factors of production in the form of lower wages or lower returns to immobile capital. The relative extent of these shifts depends on the specific characteristics of the industry. Industries that compete nationally have a much more limited ability to increase prices in the face of higher taxes. Therefore, taxes on these industries are shifted back on to labor and immobile capital. Industries that compete locally, in contrast, can raise prices in response to higher taxes, since all similarly situated industries face the same tax. In these locally

competitive industries taxes are shifted forward to consumers in the form of higher prices.

In sum, the overall effective business tax rate (calculated as total business taxes for a particular industry divided by total gross state product for that industry) can be divided into three parts:

1. That portion of the tax equal to the national average tax on factors of production. This portion of the tax is shared by capital and labor in proportion to their national shares of production.
2. That portion of the tax equal to the (national) industry differential for the industry. This portion of the tax is shifted forward to consumers in the form of higher prices, since all consumers face the same tax regardless of where they purchase the industry's output.
3. That portion of the tax equal to the state-specific differential. This portion of the tax is paid by consumers for locally competitive industries or by labor and owners of immobile capital for nationally competitive industries.<sup>4</sup>

### ***Allocation to Households***

Using the approach outlined above, effective tax rates for California industries were compared to effective tax rates nationally, and the fraction of taxes born by consumers, labor, and capital were estimated.<sup>5</sup> In addition, because non-Californians purchase goods and services from California businesses and own shares in California

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<sup>4</sup> This same basic process is used to calculate the incidence of a business tax change, except that calculations apply only to the state-specific sector differential, since neither the national average tax on factors of production nor the average industry differential is (materially) affected by a change in a specific state.

<sup>5</sup> Data sources for this analysis are noted in the appendix.

companies, the fraction of the tax burden that is exported to non-Californians was also estimated.

The remaining portion of taxes borne by California consumers, workers, and capital owners was allocated to households (or, more specifically, to tax filing units). Allocation of the price increases was done using data from the Consumer Expenditure Survey. Allocation of wage changes was made based on wage income estimated from personal income tax return data and, for non-filers, the Census. Allocation of changes in returns to capital was based on capital ownership, as estimated by dividend payments reported on personal income tax returns.

The impact of the business tax changes was combined with the estimated effects on consumers and personal income tax payers of the current and proposed set of sales and income taxes.

## **Results**

As an example of the usefulness of the model, the results of an incidence analysis have been used to inform the decision making of the Think Long Committee and have been made available to California Forward, as well as other interested parties. The model output for the Think Long Committee proposal is attached as Appendix A.

The model developed has the capability to estimate incidence effects “on the fly” of various tax changes, such as a change in the income, corporation, or sales tax rates. This capability allows decision makers to readily incorporate incidence results into their policy making.

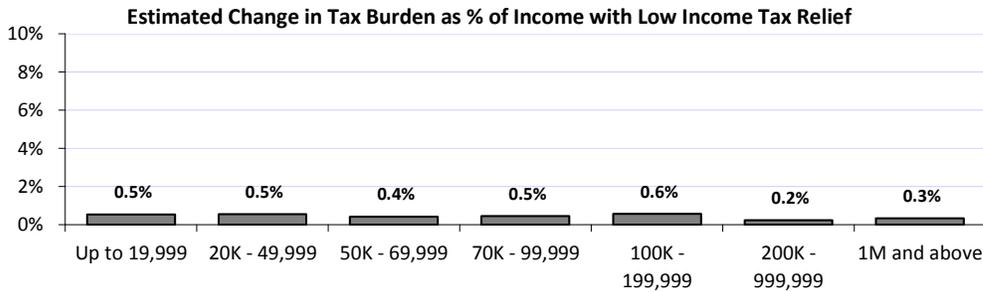
## **Data Sources**

We relied on the following data sources to complete our analysis:

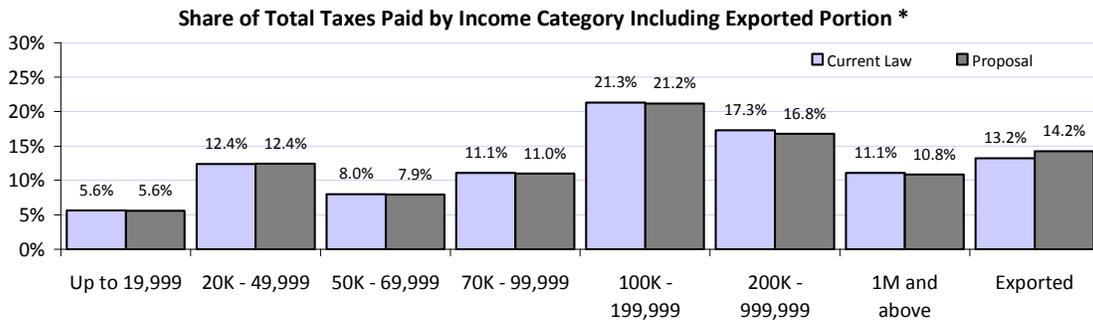
1. Personal income tax data from the Franchise Tax Board
2. Sales tax data from the Board of Equalization
3. Consumer expenditure data from the BEA Consumer Expenditure Survey
4. Industry output and input data from the Minnesota IMPLAN Group
5. 50 State business tax data from Ernst and Young
6. Gross state product and employee compensation data from the Bureau of Economic Analysis

# Appendix A: Model Output for Think Long Committee Proposal

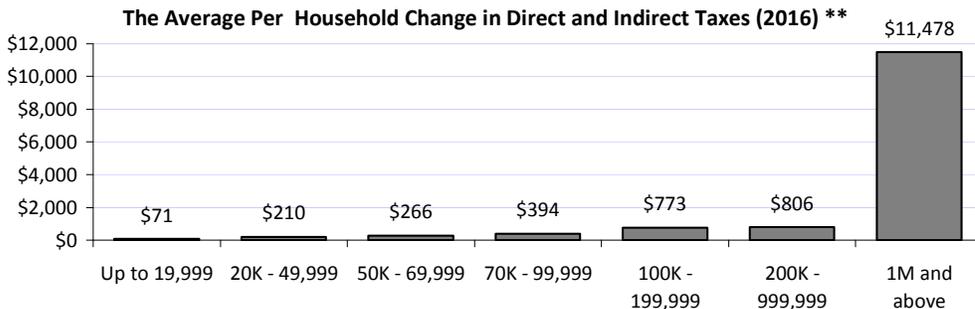
Revenue Source	Change in Revenue (\$B) (2016-17)	Assumptions
		<b>2, 7.5% rates; \$47,232 Standard Deduction (Joint) for 2016; Eliminates Itemized Deductions Except for Mortgage Interest, Charitable Contributions, and Local Taxes; Eliminates Credits Except for Renter's and R&amp;D; Itemized Deductions Phased Out as in Current Law</b>
Personal Income Tax	(13.0)	
Sales Tax Services	33.1	5.125 % rate
Sales Tax Goods	( 3.2)	0.5 % rate reduction
Corporation Tax	( 1.8)	7%, Mandatory Single Sales Factor
Homeowner's Exemption	( 0.5)	Doubled and Indexed
Tax Rebate	( 4.5)	\$4.5 B in relief at 90% take-up rate, Phased out at \$42K Single, \$84K Joint
Prop 63 (Mental Health)	0.0	Includes Existing Law: Prop 63 (1% Tax > \$1M)
<b>Total Revenue</b>	<b>10.1</b>	<b>\$10.1 B</b>



Note: The results presented here are an illustration based on the above assumptions regarding the allocation of the tax rebate. The Legislature will ultimately specify eligibility for the rebate. Estimated change in tax burden assumes a 100% take-up rate for purposes of this illustration.



\* Includes state and local sales taxes, personal income taxes, corporation taxes, and property taxes.



\*\* For the purposes of this analysis, households and tax filing units are considered to be equivalent.

NOTE: All of the CA AGI categories presented above represent the 2009 AGI.