



**Peter Franchot**  
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December 5, 2014

Honorable Martin O'Malley  
Governor of Maryland  
State House  
Annapolis, Maryland 21404

Honorable Thomas V. "Mike" Miller, Jr.  
President of the Senate  
State House  
Annapolis, Maryland 21404

Honorable Michael E. Busch  
Speaker of the House  
State House  
Annapolis, Maryland 21404

Dear Governor, President and Speaker:

As required by Maryland State Finance and Procurement Article Section 6-104, I am submitting this tax incidence study measuring the burden of major taxes imposed by the State and how that burden is shared among taxpayers of different income levels. This study examines Maryland's individual income tax, sales and use tax, and the excise taxes for calendar year 2011, the year for which the most recent, complete tax data is available.

For the tax types considered in this study, the effective tax rate incurred by Maryland residents decreases slightly as household income increases. The degree that the tax burden is concentrated on lower income households has been somewhat alleviated over time.

I hope you find this report informative. If you should have any questions or concerns regarding the report, please do not hesitate to contact me at 410-260-7450.

Sincerely,

Andrew M. Schaufele

cc. Honorable Peter Franchot  
Len Foxwell  
David F. Roose

## RESULTS AND ANALYSIS

The level of progressivity or regressivity of Maryland's tax system is determined using a Suits Index. If the same percentage of income is paid as tax at all income levels, then the tax is proportional and the Suits Index would be 0. The tax is progressive or regressive depending on whether the percentage of tax paid increases or decreases, respectively, with household income. If the tax is progressive the Suits Index would be between 0 and 1. If the tax is regressive the Suits Index would be between 0 and -1. The closer the number is to 1 or -1, the more progressive or regressive, respectively, the tax.

For the tax types considered in this study, based on 2011 data, the Suits Index for Maryland is -0.09, indicating that Maryland's tax system is slightly regressive. The tables below show the effective tax rates and Suits Indexes for each tax type. The sales and use and excise taxes are shown to be more regressive, as lower income households generally spend a greater share of their income on consumer items that are subject to these taxes. The individual income tax, on the other hand, is slightly progressive due to the State's graduated tax rates, the phase-out of certain deductions and subtractions and the availability of various credits – both refundable and nonrefundable – for low income taxpayers.

Table 1  
Effective Tax Rates and Suits Index by Tax Type, 2011 Data

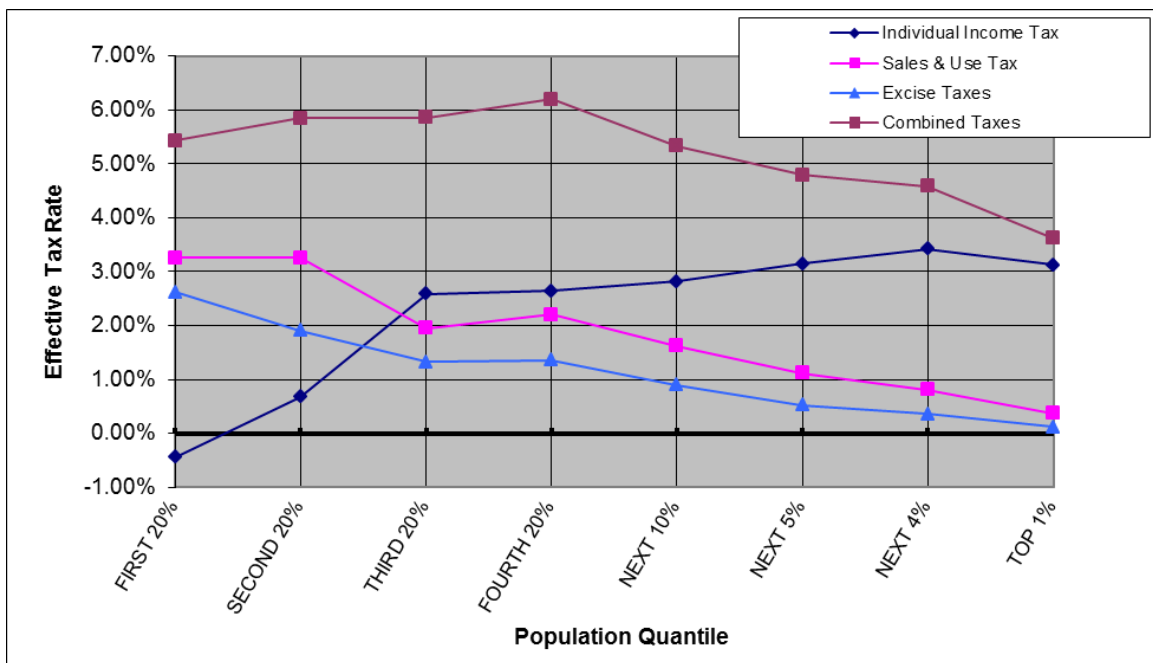
	Effective Tax Rate	Suits Index
Income Tax	2.76%	0.11
Sales & Use Tax	1.51%	(0.29)
Excise Taxes	0.88%	(0.36)
<b>Combined Taxes</b>	<b>5.15%</b>	<b>(0.09)</b>

Table 2  
Effective Tax Rates by Population Quintile, 2011 Data

Population Quintile	Income Range	Individual Income Tax	Sales & Use Tax	Excise Taxes	Combined Taxes
FIRST 20%	\$ 0 - 10,361	-0.44%	3.25%	2.62%	5.43%
SECOND 20%	10,361 - 28,013	0.68%	3.26%	1.91%	5.84%
THIRD 20%	28,013 - 57,216	2.59%	1.95%	1.32%	5.86%
FOURTH 20%	57,216 - 108,141	2.64%	2.20%	1.35%	6.20%
<b>TOP 20%:</b>					
NEXT 10%	108,141 - 154,940	2.82%	1.62%	0.90%	5.33%
NEXT 5%	154,940 - 209,007	3.15%	1.12%	0.52%	4.79%
NEXT 4%	209,007 - 454,762	3.42%	0.81%	0.36%	4.59%
TOP 1%	454,762 & Over	3.12%	0.37%	0.12%	3.62%
<b>Total</b>		<b>2.76%</b>	<b>1.51%</b>	<b>0.88%</b>	<b>5.15%</b>

Graph 1 shows the combined effective tax rates for each quintile. The rightward skew of the graph for the combined taxes demonstrates that Maryland's tax system is slightly regressive.

Graph 1  
Effective Tax Rates, 2011 Data



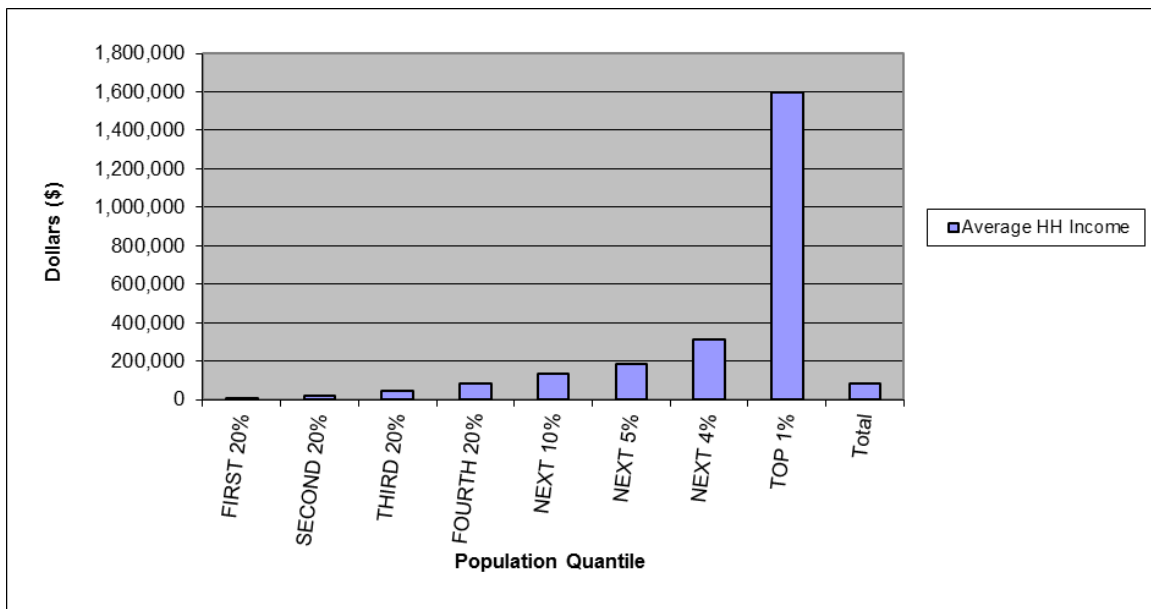
## Individual Income Tax

The individual income tax is the largest State source of general fund revenue. A variety of subtractions, deductions, and exemptions reduce the overall rate of tax on income earned. Table 3 shows the distribution of household income by the population quintiles described above.

Table 3  
Household Data by Population Quintile, 2011 Data

Population Quintile	Household Income Range	Number of Households	Sum of HH Income (\$ thousands)	Income Tax Liability (\$ thousands)	Effective Tax Rate
FIRST 20%	\$ 0 - 10,361	529,420	3,163,251	-14,056	-0.44%
SECOND 20%	10,361 - 28,013	529,420	12,368,656	83,622	0.68%
THIRD 20%	28,013 - 57,216	529,420	24,959,198	645,445	2.59%
FOURTH 20%	57,216 - 108,141	529,420	45,935,207	1,212,926	2.64%
<u>TOP 20%:</u>					
NEXT 10%	108,141 - 154,940	264,710	35,618,805	1,002,886	2.82%
NEXT 5%	154,940 - 209,007	132,355	24,426,191	769,269	3.15%
NEXT 4%	209,007 - 454,762	105,884	30,727,269	1,051,334	3.42%
TOP 1%	454,762 & Over	26,472	36,503,630	1,139,797	3.12%
<b>Total</b>		<b>2,647,101</b>	<b>213,702,208</b>	<b>5,891,222</b>	<b>2.76%</b>

Graph 2  
Average Household Income by Population Quintile, 2011 Data



## Sales and Use Tax

The Maryland sales and use tax provides the second largest source of general fund revenue in the State. The tax is assessed on a variety of final-stage consumer and business purchases. The final burden of the sales and use tax is summarized in Table 4.

Table 4  
Sales and Use Tax Paid by Population Quintile

Population Quintile	Income Range	Sum of SUT Paid (\$ thousands)	% Total SUT
FIRST 20%	\$ 0 - 10,361	102,870	3.18%
SECOND 20%	10,361 - 28,013	402,990	12.45%
THIRD 20%	28,013 - 57,216	486,518	15.03%
FOURTH 20%	57,216 - 108,141	1,011,602	31.25%
<u>TOP 20%:</u>			
NEXT 10%	108,141 - 154,940	576,895	17.82%
NEXT 5%	154,940 - 209,007	272,921	8.43%
NEXT 4%	209,007 - 454,762	247,595	7.65%
TOP 1%	454,762 & Over	135,558	4.19%
<b>Total</b>		<b>3,236,949</b>	<b>100.00%</b>

## Excise Taxes

Although relatively small in terms of annual tax collections, the major excise taxes – alcohol, tobacco, motor fuel and the motor vehicle titling tax – were also included in this study due to their similarity to the sales and use tax and the availability of relevant consumption data. A summary of the amount of all the excise taxes paid is shown below in Table 5.

Table 5  
Excise Taxes Paid by Population Quintile

Population Quintile	Income Range	Sum of Excise Tax Paid (\$ thousands)	% Total Excise Tax
FIRST 20%	\$ 0 - 10,361	82,862	2.56%
SECOND 20%	10,361 - 28,013	236,208	7.30%
THIRD 20%	28,013 - 57,216	330,657	10.22%
FOURTH 20%	57,216 - 108,141	622,035	19.22%
<u>TOP 20%:</u>			
NEXT 10%	108,141 - 154,940	319,641	9.87%
NEXT 5%	154,940 - 209,007	127,507	3.94%
NEXT 4%	209,007 - 454,762	109,945	3.40%
TOP 1%	454,762 & Over	44,434	1.37%
<b>Total</b>		<b>1,873,288</b>	<b>100.00%</b>

## Comparing 2008 and 2011 Tax Systems

As is shown in Table 6, Maryland's overall tax system became less regressive between tax years 2008 and 2011. The individual income tax shows an increase in progressivity despite the sunset of an elevated tax rate on income above \$1.0 million after tax year 2010, while the other tax types became less regressive.

Table 6  
Comparison of Combined Suits Index 2008 vs. 2011

	2008	2011	Change
Income Tax	0.06	0.11	0.05
Sales & Use Tax	(0.31)	(0.29)	0.02
Excise Taxes	(0.39)	(0.36)	0.03
Taxes Combined	-0.13	-0.09	0.04

Economic changes between tax year 2008 and 2011 may explain why the system became less regressive despite law changes that would intuitively lead the system to become more regressive. As losses are converted to income for purposes of this study, substantial losses in tax year 2008 during the contraction of the Great Recession would result in a lower effective tax rate against individuals with high income. Lower income households spending less of their income on taxable goods may signal that the spending habits of lower income individuals were affected by the Great Recession to a greater degree than higher income individuals.

Table 7 depicts the effective tax rates of the individual tax types and the overall system for tax years 2008 and 2011. The sales and use and excise taxes remain fairly stable, while the effective tax rate on personal income rises by almost 10%.

Table 7  
Comparison of Effective Tax Rates 2008 vs. 2011

	2008	2011	Change
Income Tax	2.56	2.76	0.20
Sales & Use Tax	1.51	1.51	0.00
Excise Taxes	0.87	0.88	0.01
Taxes Combined	4.94	5.15	0.21

## **APPENDIX: METHODOLOGY**

### **Definition of a Household**

This study examines aggregate household income rather than individual income, as the majority of the U.S. Census data used to analyze consumption patterns is reported by household. It relies on data from the U.S. Census as well as individual taxpayer information from the Bureau of Revenue Estimates' Statistics of Income (SOI) database. Because this study is an analysis of the tax incidence for residents of Maryland, nonresident and part-year resident returns were not considered.

### **Household Income**

For purposes of this study, total income in Maryland includes income earned from labor and income earned from capital sources. Labor income includes wages and salaries, IRA and other retirement distributions, unemployment benefits, taxable and nontaxable Social Security income, and the State Temporary Cash Assistance transfer. Labor income also includes 75 percent of the income reported on federal Schedule C, which is used to report income earned by sole proprietorships.

Total income also includes income earned from capital sources: interest and dividends, 25 percent of sole proprietorship income reported on federal Schedule C, farm income, capital gains, rents and royalties from federal Schedule E, and earnings classified as "Other Income" on the federal tax return. Capital gains and pension income are included only when realized – i.e., when reported on a tax return – not when accrued. While tax law may allow some Schedule E income to be treated as labor income, a significant portion of this income is assumed to be passive investment in rental property, and therefore is treated solely as income from capital.

For purposes of this study, an adjustment was made to income from capital sources. In an attempt to more accurately reflect the actual value of the assets held by taxpaying entities, any reported capital losses were converted to gains of the same amount. Household income was then calculated using the adjusted capital income figures. This should more accurately reflect the actual household income class of the taxpayer, both in terms of the tax incidence for these taxpayers and in consumption patterns in the Consumer Expenditures Survey, which is described later in the methodology. It must be noted the treatment of capital income will vary across different tax incidence studies, as no standard method has been developed for calculating this type of income.

Finally, the total amount of positive income was aggregated for each household. This number was used to allocate a portion of the sales and use tax burden – a concept which will be discussed in more detail later in this report.

Additional sources of non-taxable income were not included in this study due to a lack of reliable data, such as foreign earned income excluded from taxation, as well as

indirect sources – such as the employer-paid portion of insurance premiums and payroll taxes – and additional government transfer payments such as Medicare and Medicaid.

Table 8  
Sources of Household Income data

<u>Type of Income</u>	<u>Information Source</u>
<ul style="list-style-type: none"> <li>• Wages/Salaries</li> <li>• IRA and pension distributions</li> <li>• Unemployment benefits</li> <li>• Non-taxable Social Security</li> <li>• Interest &amp; Dividends</li> <li>• Business &amp; Farm income</li> <li>• Capital gains</li> <li>• Rents and royalties</li> <li>• Other income</li> </ul>	Maryland 2011 SOI Database
<ul style="list-style-type: none"> <li>• Worker’s Compensation</li> <li>• Government Cash Assistance</li> <li>• Information for non-filers</li> </ul>	U.S. Census Bureau – 2011 American Community Survey (ACS) Public Use Microdata (PUMS) files
<ul style="list-style-type: none"> <li>• Total Social Security Benefits</li> </ul>	Maryland 2011 SOI Database and Census ACS

### **Shifting of the Individual Income Tax**

It is assumed that none of the individual income tax is shifted to other taxpayers. While some sole proprietorship and S-corporation income is reported on individual income tax returns, business income makes up only a small portion of the individual income tax collected, and also accounts for much of the reported income loss. Therefore, this tax is assumed to be borne entirely by individuals.

### **Shifting of the Sales and Use Tax**

As discussed in the introduction to this report, the economic incidence of the SUT falls on three groups: consumers, laborers, and owners of capital (i.e. shareholders). Within these three groups, the tax burden is also shared between residents and nonresidents of Maryland. Despite the many years of research dedicated to tax incidence, a standard model for determining how shifting to these three categories occurs has not been developed. The amount shifted to each group will depend on a number of factors, including the relative competitiveness of an industry, the dominant industries in the state, the availability and mobility of labor in the state, the tax rates of surrounding states, and the relative amount of capital ownership by residents of the state. In this study, as in previous Maryland tax incidence studies, tax exporting – whereby Maryland residents pay taxes to other states when traveling out of state – was not considered. This is primarily because Maryland officials have no control over the level of taxation in other states, just as they cannot control the burden of federal taxes.



### **First Shift**

The first step in identifying how the tax is shifted is to determine, for each sales tax category reported to the Comptroller's office, the portion of the total sales tax collected that is paid by nonresident consumers or businesses (such as tourists, traveling businesspeople and other visitors to the state), the portion paid by Maryland consumers, and the portion paid by Maryland businesses. The amount shifted to nonresidents of the State was determined based on the industry reporting the tax. For example, taxes collected from businesses in hospitality-related industries are assumed to be paid by nonresidents to a greater extent than taxes collected from business whose customers are primarily Maryland residents.

### **Second Shift**

The next step is to determine how capital expenditures and other types of purchases by Maryland businesses are shifted to Maryland taxpayers. Of the amount of sales tax paid by businesses on capital expenditures, a portion is passed on to consumers in the form of higher prices – which is added to the amount paid by consumers in the first shift – a portion is shifted to labor in the form of lower wages or benefits, and the remaining amount is absorbed by owners of the capital of the firm. Because the State does not track which businesses make purchases in each SUT category, some assumptions had to be made regarding which types of businesses would make certain purchases in each category. Based on the industry assumed to be making the purchase, an estimate was made as to how easily the business could shift its costs to the consumers of their products, their workers, or their owners of capital. Of the amount shifted to labor, Maryland residents are assumed to bear 100% of the tax.

### **Third Shift**

Finally, of the portion of the SUT borne by owners of capital, a percentage of the tax is paid by owners or stockholders located in Maryland, and the remaining amount is paid by nonresident owners of the capital. The apportionment of this amount between resident and nonresident owners of capital was estimated based on the industry reporting the sales tax collection – whether businesses in that industry are assumed to be owned primarily by Maryland residents (industries with primarily non-publicly traded companies) or nonresidents (industries made up of companies that are primarily publicly traded).

Taking all of the above factors into account, the total burden of the sales and use tax on Maryland residents is the sum of the amounts identified for each SUT category in the three steps above. The portion paid directly by the resident consumer represents the total *direct burden*, the amount of the business portion passed along to the Maryland consumer represents the total *indirect burden*, the amount shifted to labor makes up the total *labor* portion, and the amount borne by owners of capital living in the State makes up the total shift to *owners of capital*. The total passed to *nonresidents* is the sum of the two shifts to nonresidents shown in the chart below.

### Exhibit A: Shifting of Sales and Use Tax

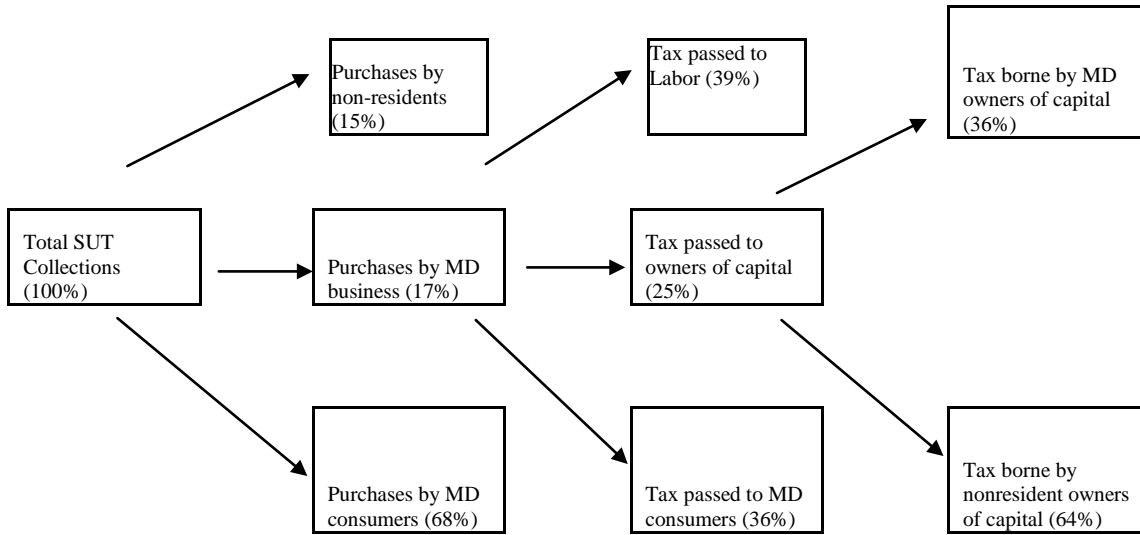


Table 9  
Distribution of Sales Tax Collections among  
Consumers, Labor, Capital & Nonresidents, 2011 Data

	% of total SUT collected
MD Consumers – Direct Burden	67.9
MD Consumers – Indirect Burden	6.1
MD Laborers	6.6
MD Owners of Capital	1.5
Nonresidents	18.0

After determining the amount shifted to each of the above groups, the next step is to apportion the SUT expenditure across the previously identified household income classes. A separate distribution is done for each of the above resident groups.

### Sales Tax Paid Directly by Maryland Consumers

In order to estimate how much each household pays in sales tax, the 2011 Consumer Expenditure Survey (CE) – conducted by the Bureau of Labor Statistics – was used to analyze consumption patterns for each household income group. While the CE was designed primarily as a measure to analyze changes in consumption in order to more accurately calculate the U.S. Consumer Price Index, it has played a central role in nearly all past incidence studies, both in Maryland and across the country. While the data is far from perfect, it is the best consumption data that is readily available for public use.

In past Maryland incidence studies, the consumption patterns of the CE Northeast region were used to allocate the burden of sales tax. However, despite the availability of

regional data, national patterns were used in this study to allocate Maryland consumption across each household income group. There are several reasons for this: First, the national household income brackets are broken out by the CE up to an income level of \$150,000, while the regional brackets are only broken out up to \$70,000. Second, there were a number of sampling errors reported in the regional tables due to the smaller sample size, especially at lower income levels. Finally, for some consumption categories, Maryland consumer patterns will likely follow those of the Northeast region, but for other categories the patterns will more closely resemble those of other U.S. regions. For the sake of consistency, national consumption patterns were used.

For each Maryland-assigned SUT category, an equivalent CE expenditure category was assigned to the State category. For situations where a SUT category did not directly match a CE category, the closest possible match was used. The consumer portion of the SUT collected was then apportioned among household income classes based on the expenditure percentages for each CE category. Once the SUT amounts were apportioned across the CE household income classes, the CE-defined income classes were aggregated to roughly match the household income classes represented by the SOI data, as determined in the household income distribution step of the analysis.

While the CE will provide information regarding consumption at different income levels over the course of the year being considered, it will not provide information on how long consumers have been, or expect to be, at a certain income level. Consumers do, in fact, make purchases based on future expected earnings and past earnings. For example, due to the availability of credit or savings amassed in past years, some consumers may spend more than what they actually earn in a given year. The ideal study of tax incidence would consider income and consumption over the lifetime of a household. However, lifetime income data is rarely available, would have to be tracked until death, and requires a number of assumptions to be made related to future income growth, future spending, variability in tax rates and tax policy, and other economic factors. Assumptions such as these are out of the scope of this analysis. It is important, however, to understand this limitation when drawing conclusions based on this study.

### **Sales Tax Paid by Business**

The Maryland resident labor, capital and indirect consumer portions of the sales tax incidence must also be distributed across household income classes. This distribution was made according to the distribution of labor, capital and positive income established in the first step of the study. Positive income serves as a proxy for the consumer's income available for consumption.

### **Shifting of the Excise Tax**

Allocation of the excise taxes across quintiles is done using aggregate consumption numbers as reported by the CE, although there are some shortcomings to this approach. For example, alcohol is taxed by volume, with beer, wine and spirits taxed at different rates at the wholesale level before the sales tax is applied at the consumer

level. Additionally, different types of motor fuels are taxed at different rates. Depending on which type of each of these products a household is purchasing, the proportion of the cost that goes towards paying the tax will vary from purchase to purchase. However, it is very difficult to determine which products households are buying using the most readily available data, which is why aggregate consumption numbers were used in this study.

Alcohol and tobacco taxes were assumed to be borne completely by resident consumers. While some nonresidents – and in some cases businesses – do indeed purchase these products, the amount is likely very small and is not significant enough to warrant allocation. Therefore, these two taxes were allocated across household income classes based on the consumption patterns of alcohol and tobacco products, as reported by the CE.

The motor fuel tax, on the other hand, was distributed across consumption, labor and capital using the same three-step allocation process as was used with the sales tax, since both nonresidents and businesses purchase motor fuel and thus pay a portion of the tax. In addition, a certain amount of motor fuel tax will be absorbed by fuel retailers and distributors. Regular motor fuel, special motor fuel, jet fuel and International Fuel Tax Agreement taxes were all considered for the study; collections for penalties, permits and other fees were not included.

Finally, motor vehicle titling taxes – taxes paid by consumers when registering their motor vehicles in the State – are assumed to be borne entirely by resident consumers.