

Tax Incidence Report: Tax Year 2017

Comptroller of Maryland

Bureau of Revenue Estimates

Annapolis, MD



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July 27, 2021

Honorable Lawrence J. "Larry" Hogan
Governor of Maryland
State House
Annapolis, Maryland 21404

Honorable William C. Ferguson IV
President of the Senate
State House
Annapolis, Maryland 21404

Honorable Adrienne A. Jones
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 (d), I am pleased to present you with the Tax Year 2017 *Tax Incidence Report*, which measures the burden of the major taxes imposed by the State and how that burden is shared among taxpayers of different income levels.

Sincerely,

Andrew Schaufele
Director,
Bureau of Revenue Estimates

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Introduction

Tax Incidence is the ultimate distribution of the total cost, or burden, of a tax among the population affected by the tax. The cost of any tax is typically born in part by people who do not directly pay the tax. Maryland State Finance and Procurement Article Section 6-104 (d) requires the Bureau of Revenue Estimates (the Bureau) to submit “a tax incidence study measuring the burden of all the major taxes imposed by the State and how that burden is shared among taxpayers of different income levels.”

For the purposes of this report, the Personal Income Tax (PIT) and the Sales and Use Tax (SUT) are considered major tax types for tax year 2017. Section 6-104 (d) also requires the Bureau to produce the Statistics of Income (SOI) report, which provides many income and tax statistics by taxpayer income. Therefore, data from, or consistent with, the SOI is used where possible. While not considered a major tax type in this report, an SOI report is available for the Corporate Income Tax (CIT). In that report, income figures for multi-state firms are not shared down to the amounts attributable to activity within the State of Maryland.

The table below displays the total burden of the PIT and SUT, measured as a percentage of total Personal Income (PI).

Table 1: Burden of Major Tax Types in TY 2017

Tax Type	Revenue (\$s, 000s)	As % of PI
PIT	7,711,232	2.1%
SUT	4,924,429	1.3%
Total	12,635,660	3.5%
Total MD Personal Income (\$s, millions): 365,998		
Source: US Bureau of Economic Analysis; MD Bureau of Revenue Estimates		

The PIT is a tax on income earned by taxpayers in the State. It is remitted to the State directly by the taxpayer, along with information necessary to calculate tax liability. The SUT is a tax on consumption of tangible goods and a handful of specific services. Information on a taxpayer’s income is necessarily collected for the PIT but is not collected for the SUT. Therefore, the report below goes into greater detail and relies less on simplifying assumptions for the PIT than the SUT.

Personal Income Tax

In tax year 2017, Total Income claimed by Maryland residents on tax returns was \$235.6 billion. This section of the report focuses on residents. Each non-resident apportions their income to what is earned in Maryland and the Bureau is unable to reproduce these individual calculations in aggregated data. The Personal SOI report has numerous income and tax statistics on non-residents for those interested. Resident taxpayers paid a net total of \$7.7 billion in PIT, or 3.3% of Total Income. The tables below show the breakdown of Gross and Net Tax revenue by Maryland Adjusted Gross Income (AGI) level. Gross Tax is the amount owed before tax credits are claimed, while Net Tax is the amount that taxpayers end up paying. Net Tax for residents earning less than \$25,000 in 2017 is often negative due to the State's refundable Earned Income Tax Credit (EITC), which acts as a wage subsidy for low income workers. Gross Tax and Net Tax are displayed to illustrate the impact of credits.

The table below presents Maryland AGI, Gross Tax, and Net Tax return counts and dollars. Return counts vary across the columns because, consistent with the SOI reports, zero-dollar returns are not counted except in Net Tax (in order to capture the impact of refundable credits).

Table 2: AGI and Tax Amounts in TY 2017

Maryland Adjusted Gross Income	Maryland AGI		Gross Maryland Tax		Net MD Tax	
	Returns	\$, 000s	Returns	\$, 000s	Returns	\$, 000s
< 25,000	585,319	6,976,167	489,236	193,974	908,217	(2,174)
25,000 < 50,000	649,882	23,720,857	632,592	705,164	619,412	575,439
50,000 < 75,000	399,138	24,532,363	396,103	829,592	384,704	785,606
75,000 < 100,000	258,255	22,397,383	257,277	795,989	250,749	760,649
100,000 < 125,000	177,217	19,788,670	176,852	732,938	172,975	704,994
125,000 < 150,000	120,891	16,530,081	120,711	630,980	118,392	608,519
150,000 < 175,000	82,972	13,420,174	82,896	536,433	81,400	518,655
175,000 < 200,000	58,001	10,833,200	57,958	446,185	57,031	432,188
200,000 < 250,000	69,347	15,404,607	69,306	657,949	68,324	637,978
250,000 < 500,000	78,486	25,823,835	78,442	1,179,685	77,221	1,122,745
500,000 < 1,000,000	18,803	12,635,358	18,792	634,041	18,533	574,126
> 1,000,000	8,901	22,927,264	8,889	1,204,788	8,777	992,506
Total	2,507,212	214,989,959	2,389,054	8,547,718	2,765,735	7,711,232

For reference, and to illustrate how statutory and effective rates differ, the table below presents statutory income tax brackets and rates.

Table 3: Statutory Tax Brackets and Rates in TY 2017

Maryland Individual Income Tax Rates	
Rates	Brackets
2.00%	< \$1,001
3.00%	\$1,000 < \$ 2,001
4.00%	\$2,000 < \$3,001
4.75%	\$3,000 < \$100,001
5.00%	\$100,000 < \$125, 001
5.25%	\$125,000 < \$150,001
5.50%	\$150,000 < \$250, 001
5.75%	> \$250,000

The table below presents Gross and Net Tax dollars as a percentage of income by cohort. The result is the effective tax rate by income, which is a measure of the burden of the PIT across the income distribution. Effective tax rates as a percentage of Maryland AGI is the most relevant measure of income to use for State policymakers because AGI is used to determine taxable income at the State level. Effective tax rates as a percentage of Total Income is arguably the most relevant measure of the burden of taxation generally because it is the broadest measure of income available in the data.

Table 4: PIT Effective Tax Rates in TY 2017

Maryland Adjusted Gross Income	As % of AGI		As % of Taxable Net Income		As % of Total Income	
	Gross	Net	Gross	Net	Gross	Net
< \$25,000	2.8%	0.0%	4.2%	0.0%	1.7%	0.0%
\$25,000 < \$50,000	3.0%	2.4%	4.5%	3.7%	2.5%	2.1%
\$50,000 < \$75,000	3.4%	3.2%	4.6%	4.4%	3.0%	2.8%
\$75,000 < \$100,000	3.6%	3.4%	4.7%	4.5%	3.2%	3.1%
\$100,000 < \$125,000	3.7%	3.6%	4.7%	4.5%	3.4%	3.3%
\$125,000 < \$150,000	3.8%	3.7%	4.7%	4.5%	3.6%	3.5%
\$150,000 < \$175,000	4.0%	3.9%	4.7%	4.6%	3.8%	3.7%
\$175,000 < \$200,000	4.1%	4.0%	4.8%	4.6%	3.9%	3.8%
\$200,000 < \$250,000	4.3%	4.1%	4.8%	4.7%	4.1%	4.0%
\$250,000 < \$500,000	4.6%	4.3%	5.1%	4.8%	4.4%	4.1%
\$500,000 < \$1,000,000	5.0%	4.5%	5.4%	4.9%	4.8%	4.4%
> \$1,000,000	5.3%	4.3%	5.7%	4.7%	5.2%	4.3%
Total	4.0%	3.6%	4.9%	4.4%	3.6%	3.3%

The data presented so far includes only resident tax filers. However, each year the State collects withholding from workers' paychecks that is never claimed on an income tax return. In other words, withholding collected from non-filers. This is referred to as unallocated withholding. To account for non-filers, who pay income tax through withholding, unallocated withholding dollars are distributed among the income cohorts in proportion to the distribution of wage income. For example, taxpayers earning between \$50,000 and \$75,000 in Maryland AGI accounted for 10.2% of total wage income. It is assumed that this cohort also accounts for 10.2% of unallocated withholding collections. The above calculations are repeated to include unallocated withholding dollars. The results are shown in the tables below.

Table 5: PIT Effective Tax Rates (incl. Unallocated Withholding) in TY 2017

Maryland Adjusted Gross Income	As % of AGI		As % of Taxable Net Income		As % of Total Income	
	Gross	Net	Gross	Net	Gross	Net
< \$25,000	3.3%	0.5%	4.9%	0.7%	2.0%	0.3%
\$25,000 < \$50,000	3.3%	2.8%	5.1%	4.2%	2.8%	2.4%
\$50,000 < \$75,000	3.7%	3.5%	5.1%	4.8%	3.3%	3.1%
\$75,000 < \$100,000	3.9%	3.7%	5.1%	4.9%	3.5%	3.4%
\$100,000 < \$125,000	4.0%	3.9%	5.1%	4.9%	3.8%	3.6%
\$125,000 < \$150,000	4.2%	4.0%	5.1%	5.0%	3.9%	3.8%
\$150,000 < \$175,000	4.3%	4.2%	5.1%	5.0%	4.1%	4.0%
\$175,000 < \$200,000	4.4%	4.3%	5.1%	5.0%	4.2%	4.1%
\$200,000 < \$250,000	4.6%	4.5%	5.2%	5.0%	4.4%	4.3%
\$250,000 < \$500,000	4.9%	4.6%	5.4%	5.1%	4.6%	4.4%
\$500,000 < \$1,000,000	5.2%	4.8%	5.6%	5.1%	5.1%	4.6%
> \$1,000,000	5.4%	4.5%	5.8%	4.8%	5.3%	4.4%
Total	4.3%	3.9%	5.3%	4.8%	3.9%	3.6%

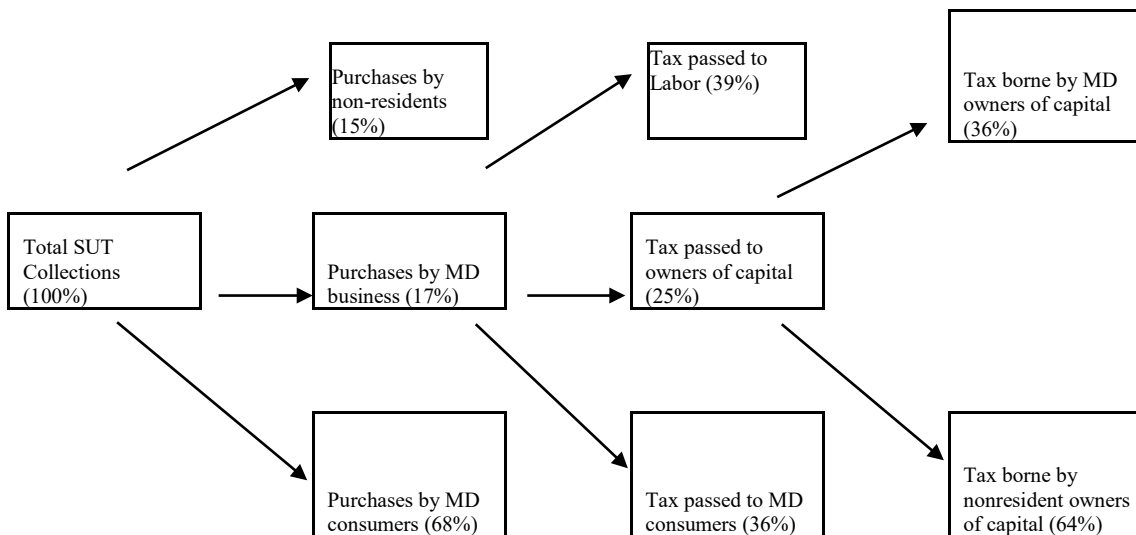
As the data show, statutory marginal rates and the ultimate effective tax rates vary. The progressive bracket structure and myriad tax expenditures (deductions, exemptions, subtractions, etc.) explain the difference between the highest statutory bracket a taxpayer is in and the Gross Tax collected. Tax credits, another type of tax expenditure, explain the difference between Gross and Net Tax. Credits have their greatest impact at the ends of the income spectrum. For taxpayers making less than \$25,000, their average state PIT burden is practically eliminated due primarily to the EITC. For taxpayers making more than \$1 million, their average effective tax rate is reduced by a variety of credits.

Sales and Use Tax

The SUT is composed of the sales tax and the use tax. Businesses collect sales tax on taxable sales and remit the tax to the State. In theory, consumers directly remit use tax on taxable purchases made from retailers who do not have economic nexus with the State. The SUT is imposed on the sale of tangible goods and a handful of specific services to both consumers and businesses. In the case of taxable sales to businesses, a business will either pass the cost on to consumers through higher prices, absorb the cost through lower margins, or both. In the case of lower margins, the incidence, or final burden, of the tax does not fall on the business entity that makes the purchase, but on the people who compose the entity. That is, the incidence falls on shareholders (capital) and workers (labor). Within consumers, capital, and labor the tax incidence is shared between residents and non-residents of Maryland.

Using industry level data the Comptroller has available, which is subject to numerous caveats, assumptions were made as to how much SUT revenue for each industry is shifted to resident and non-resident consumers, workers, and shareholders. While the Bureau views these assumptions as reasonable, they are based on very limited data and best guesses. The flowchart below displays the process of tax shifting as well as the assumed percentages of revenue shifted to certain groups.

Exhibit A: Shifting of Sales and Use Tax



Because of the nature of the sales tax, the Comptroller only knows which retailer is remitting the tax, not the consumer that paid the tax. Therefore, the incidence of the SUT across the income distribution can only be estimated using simplifying assumptions.

Consumers

For SUT paid by Maryland resident consumers, data from the US Bureau of Labor Statistics' (BLS) Consumer Expenditure survey (CEX) is used. In 2017, the CEX provides average expenditure data across income cohorts. CEX expenditure categories were matched with their closest SUT industry label. It is assumed that the distribution of average expenditures across income groups in each matched CEX category is the same for Maryland consumers. Further elaboration on methodology is in Appendix A. The below table shows the consumer portion of the tax incidence of the SUT.

Table 6: Consumer SUT Incidence in TY 2017

\$, 000s	Residents			
	Direct	Indirect	Total	Share by Cohort
< 15,000	180,273	20,339	200,613	5.7%
15,000 to 29,999	307,271	35,167	342,438	9.7%
30,000 to 39,999	223,273	24,029	247,301	7.0%
40,000 to 49,999	204,014	21,974	225,988	6.4%
50,000 to 69,999	393,980	40,321	434,301	12.3%
70,000 to 99,999	529,636	55,125	584,761	16.6%
100,000 to 149,999	597,100	57,973	655,073	18.5%
150,000 to 199,999	326,301	33,142	359,443	10.2%
> 200,000	437,213	45,184	482,397	13.7%
Resident Total	3,199,060	333,255	3,532,315	100.0%
Non-Residents	1,009,216			
Total			4,541,531	

Capital and Labor

For SUT industry categories that include business purchases, it is assumed that the incidence of taxation is distributed across the income spectrum in the same proportion as total capital and labor income, as recorded in the Personal SOI report. For example, according to the SOI, taxpayers earning between \$50,000 and \$75,000 in 2017 earned 12.9% of the State's total labor income. It is assumed that they also account for 12.9% of SUT collections passed on to labor. The table below displays the assumed indirect tax incidence on capital and labor. Because this calculation uses data from the SOI, a greater level of detail across in the income distribution is possible.

Table 7: SUT Incidence on Businesses in TY 2017

Passed on to:	Capital	Labor	Total	Share
Income Cohort				
< 25,000	1,884	17,717	19,601	5.1%
25,000 to 50,000	5,055	41,935	46,990	12.3%
50,000 to 75,000	4,751	41,981	46,732	12.2%
75,000 to 100,000	4,100	37,546	41,646	10.9%
100,000 to 125,000	3,429	32,832	36,261	9.5%
125,000 to 150,000	2,904	27,066	29,970	7.8%
150,000 to 175,000	2,434	21,654	24,088	6.3%
175,000 to 200,000	2,039	17,239	19,278	5.0%
200,000 to 250,000	3,175	23,881	27,056	7.1%
250,000 to 500,000	7,651	35,594	43,245	11.3%
500,000 to 1,000,000	5,678	13,433	19,111	5.0%
> 1,000,000	15,333	13,587	28,920	7.6%
Total	58,433	324,465	382,898	100.0%

Taken together, the portions of SUT paid by consumers, capital, and labor is displayed in the table below.

Table 8: SUT Incidence in TY 2017

Paid by:	\$, 000s	Share of Total
Resident Consumers	3,532,315	71.7%
of which:		
Direct	3,199,060	65.0%
Indirect	333,255	6.8%
Non-Resident Consumers	1,009,216	20.5%
MD Businesses		
Capital	58,433	1.2%
Labor	324,465	6.6%
Total	4,924,429	100.0%

Appendix A: Methodology

Personal Income Tax

Methods consistent with the Personal SOI report are used throughout the PIT incidence estimates. The metric of Net Tax, not found in the Personal SOI, adds in taxpayers who have a negative net income tax liability, likely due to the refundable EITC.

Each year, PIT withholding is collected from workers who do not file a final return. Essentially, this withholding is never claimed by a taxpayer. It is referred to as “unallocated” withholding. It is assumed in this report that unallocated withholding is collected from taxpayers in each income cohort in the same proportion as the distribution of wage income across cohorts. While it is possible that the actual distribution of unallocated withholding is different than that of wage income generally, the Bureau lacks the data on which to make such a judgement.

It is assumed that none of the PIT 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 PIT collected, and accounts for much of the reported income loss. Therefore, this tax is assumed to be borne entirely by the taxpayer who is remitting it.

Sales and Use Tax

Tax Shifting

As discussed in this report, the economic incidence of the SUT falls on three groups: consumers, laborers, and capital owners. Within these three groups, the tax burden is also shared between residents and non-residents 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, taxes that Marylanders pay to other states were not considered. These assumptions are merely informed judgement calls; the Bureau lacks the data for a more sophisticated analysis. The resulting estimates of tax incidence should be viewed only as ballpark estimates.

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 non-resident consumers or businesses (such as tourists, traveling business people and other visitors to the state), the portion paid by Maryland consumers, and the portion paid by Maryland businesses. The amount assumed to be shifted to non-residents of the State is based on the industry reporting the tax. For example, taxes

collected from businesses in hospitality-related industries are assumed to be paid by non-residents to a greater extent than taxes collected from business whose customers are primarily Maryland residents. However, as mentioned above, industry level SUT data must be taken with a grain of salt. Reporting errors have been discovered and corrected in the past, and businesses increasingly serve multiple industries.

Second Shift

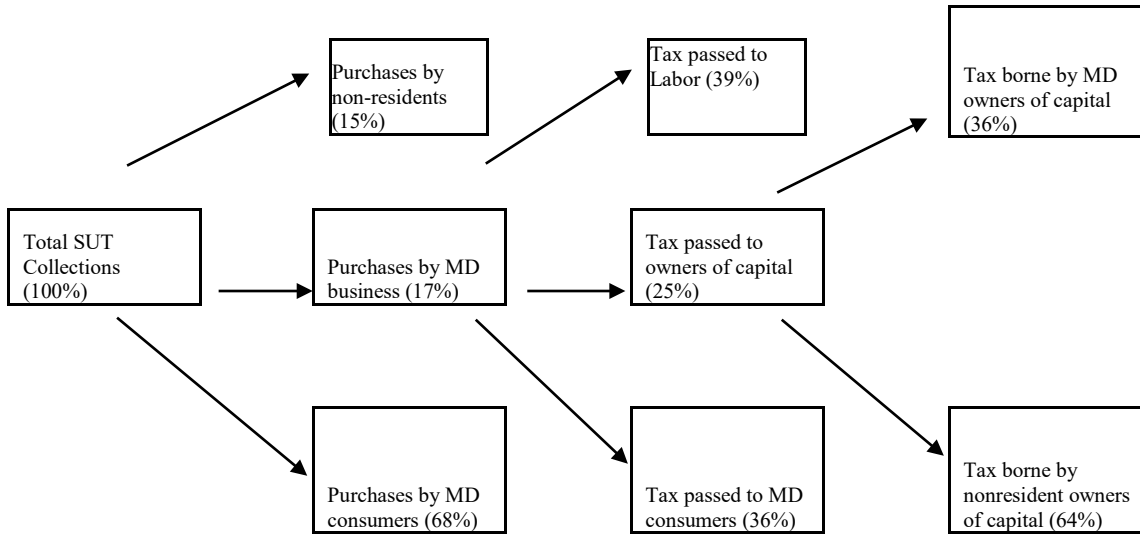
The next step is to estimate how capital expenditures and other types of purchases by Maryland businesses are shifted to Maryland taxpayers. Of the amount of sales tax paid by businesses on capital expenditures, a portion is passed on to consumers in the form of higher prices – which is added to the 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 educated guess was made as to how easily the business could shift its costs to the consumers of their products, their workers, or their capital owners. 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 capital owners, a percentage of the tax is paid by owners or stockholders located in Maryland, and the remaining amount is effectively paid by non-resident owners of the capital. The apportionment of this amount between resident and non-resident capital owners is 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 non-residents (industries made up of companies that are primarily publicly traded).

The total burden of the SUT on Maryland residents is the sum of the amounts of each SUT category in the three steps above. The portion directly paid by resident consumers is the *direct burden*. The *indirect burden* has three components: the portion passed on by businesses as higher prices for resident consumers is the *consumer burden*; the portion passed on by businesses in the form of lower wages is the *labor burden*; and the portion passed on by businesses to resident capital owners through lower profits is the *capital burden*. The total passed to *non-residents* is the sum of the two shifts to non-residents shown in the chart below.

Exhibit A: Shifting of Sales and Use Tax



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, national level data from the 2017 CEX, conducted by the Bureau of Labor Statistics, was used to analyze consumption patterns for each household income group. While the CEX 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. It is the best consumption data that is readily available for public use.

For each Maryland-assigned SUT category, an equivalent CEX expenditure category was assigned to the State category. For situations where a SUT category did not directly match a CEX category, the closest possible match was used. The consumer portion of the SUT collected was then apportioned among household income classes based on each income classes' share of total expenditures within each CEX category. Once the SUT amounts were apportioned across the CEX household income classes, the CEX-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 CEX 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 and would have to be tracked until death. It would also require 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.

Appendix B: Glossary

Household

It is assumed that a household represents a taxpayer for the purposes of this report. This study relies on data from the Bureau's SOI database, which presents data on a taxpayer basis. For those who are married filing jointly, particularly if they claim dependents, taxpayer income is analogous to family or household income. The BLS' CEX survey, used for estimating the tax incidence of the SUT in this report, presents income and expenditures on a household basis.

Income

- **Adjusted Gross (AGI)** – Federal Adjusted Gross Income is line 37 from IRS Form 1040; Maryland AGI adjusts Federal AGI for certain additions and subtractions, line 16 of Maryland Form 502
- **Personal** – Defined by the US Bureau of Economic Analysis as “the income received by, or on behalf of, all the residents of an area (nation, state, or county) from all sources.”
- **Taxable Net** – The AGI after it's adjusted based on exemptions and deductions, or the amount of income subject to tax. Maryland Taxable Net Income is found on line 20 of Form 502
- **Total** – IRS measure of income, line 22 of IRS Form 1040. The broadest measure of income in the available tax data.

Tax

- **Burden** – the economic cost of imposing a tax
 - **Capital Burden** – the portion of SUT burden passed on by businesses to resident capital owners through lower profits
 - **Consumer Burden** – the portion passed on by businesses as higher prices for Maryland consumers
 - **Direct Burden** – the portion of SUT paid directly by Maryland consumers
 - **Indirect Burden** – the cost, in terms of higher prices and lower output, of the SUT passed on by businesses to consumers, labor, and capital owners
 - **Labor Burden** – the portion passed on by businesses in the form of lower wages
- **Incidence** – the distribution of the tax burden among economic actors. There is a distinction between entities who ultimately bear the tax burden and those on whom tax is initially imposed. Tax incidence falls on those who ultimately experience lower real incomes due to the tax.
- **Gross** – Tax owed on Taxable Net Income before tax credits, line 22 of Maryland Form 502
- **Net** – Tax owed on Taxable Net Income after tax credits. The final amount taxpayers actually owe (after factoring in withholding)