



**TAX POLICY CENTER**  
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## FEDERAL-STATE INCOME TAX PROGRESSIVITY

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### ABSTRACT

This report finds that both federal and state income taxes are generally progressive but (1) state systems are much less progressive than the federal system and (2) the degree of progressivity varies widely among the states. Federal income taxes became more progressive following 2012 legislation that increased high-income tax rates. The higher federal tax rates also increased the subsidy provided by the federal deduction for state income taxes. Despite this incentive for states to raise their own income tax rates, more states lowered tax rates than raised them. Nonetheless, there was little change in the overall progressivity of state income taxes.

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## SUMMARY AND INTRODUCTION

Both the federal and state income tax systems are generally progressive: the fraction of income paid in taxes rises with income. Several features common to the federal and most state systems contribute to the progressivity of income taxes, including graduated marginal tax rates (tax rates that are higher in higher income tax brackets) and exemptions, deductions, and credits targeted toward low- and moderate-income households.

Federal and state income taxes are linked in many ways, but most directly through the federal deduction for state and local taxes. Taxpayers who itemize their federal deductions can deduct state and local real estate taxes, personal property taxes, and either income or sales taxes in calculating their federal taxable income. Taxpayers subject to the federal alternative minimum tax (AMT), however, lose the deduction.

Because the likelihood of itemizing, the amount of state taxes paid, and the tax savings from each dollar deducted all rise with income, the federal deduction reduces the progressivity of federal income taxes. But the deduction may also cause state income taxes to be more progressive than they otherwise would be. Because the federal government reimburses taxpayers for some portion of the state income taxes they pay and because that subsidy rises with income, states can raise income tax rates on high-income taxpayers, increasing the progressivity of their state income taxes, without those taxpayers bearing the full cost of the tax increase.

In this report we examine the progressivity of federal and state income taxes, using a sample of federal individual income tax returns with state representative weights. We calculate federal and state income taxes and analyze the distribution of those taxes across household income groups in 2011. We also explore how that distribution changed under 2014 tax rules following enactment of the American Taxpayer Relief Act of 2012 (ATRA) at the federal level and the many changes to state income laws enacted between 2011 and 2014.

Federal income taxes are much more progressive than state income taxes. We find that in 2011 the average federal individual income tax rate ranged from about -5 percent in the lowest income quintile to 13 percent in the highest income quintile and to 20 percent for the 1 percent of people with the very highest incomes.<sup>1</sup> The average federal tax rate is negative in the lowest income quintile because refundable tax credits exceeded the amount of income tax liability for those households. In contrast, the overall average state individual income tax rate in 2011 ranged from zero for the lowest quintile to 3 percent for the highest income quintile and to just over 4 percent for the top 1 percent.

We also calculate two tax progressivity indexes for federal and state income taxes separately and combined, and for state income taxes in each of the 43 states with an individual income tax and the District of Columbia (DC). These indexes measure the progressivity of taxes in different ways; the first compares the distribution of income before and after income taxes and the second measures the concentration of income tax payments across households ranked by income. Not surprisingly, we find a great deal of variation in income tax progressivity across the states, though all state income tax systems are progressive to some degree according to both indexes.

Income taxes, however, are just one part of both the federal and state tax systems. Other taxes, notably federal payroll and excise taxes, and state sales taxes, are either less progressive than income taxes or regressive (with lower-income households paying a larger share of their income than higher-income households). A complete assessment of the progressivity of federal and state tax systems would include all taxes.<sup>2</sup>

Federal income taxes became more progressive following passage of ATRA. The act permanently extended the temporary lower tax rates that were put in place in 2001 and 2003, but allowed the tax rate on income over \$400,000 (\$450,000 for couples), to revert to its higher pre-2001 level. One consequence of the higher federal tax rate was an increase in the implicit federal subsidy for state income taxes because each dollar of state income taxes claimed as a federal deduction by taxpayers in the highest federal tax bracket led to a larger reduction in federal income taxes.

States could have taken advantage of this increased subsidy by raising state income tax rates for high-income taxpayers affected by the federal change, but most did not. In fact, many states did just the opposite, cutting tax rates across the board or reducing only the top tax rates. Consequently, we find that although federal income taxes became more progressive between 2011 and 2014 the overall progressivity of state income taxes was unchanged, although income tax progressivity increased in a small number of states and decreased in others.

## **OVERVIEW OF FEDERAL AND STATE INCOME TAXES**

Individual income taxes are the largest single source of federal revenue, accounting for 47 percent of total revenue in 2015. Individual income taxes also are the most significant factor contributing to the progressivity of total federal taxes. Other tax sources, such as estate and gift taxes, may be more progressive than individual income taxes, but their comparatively modest size limits their contribution to overall federal tax progressivity.

Multiple features contribute to the progressivity of federal income taxes. Graduated marginal tax rates (tax rates on additional dollars of income that are higher in higher income tax

brackets) raise average tax rates (taxes divided by before-tax income) as income increases. Deductions and exemptions that apply equally to all taxpayers regardless of their income, such as the standard deduction and personal exemptions (up to certain income limits), reduce average tax rates more for middle- and lower-income households than for higher-income households.<sup>3</sup> Finally, credits that phase out at higher incomes, such as the child tax credit (CTC), the child and dependent care tax credit (CDCTC), and the earned income tax credit (EITC) reduce or eliminate taxes for moderate- and low-income households. The federal EITC and the CTC (with certain restrictions) are refundable: taxpayers receive credits in excess of their income tax liability as a payment from the government, further increasing federal income tax progressivity. Although average income tax rates for households receiving refundable credits can be less than zero, their overall average federal tax rate may be greater than zero because they also pay payroll and other federal taxes.

Some features of the federal income tax system tend to reduce the progressivity of federal income taxes, however. Among these are reduced tax rates on capital gains and dividends (income disproportionately received by higher-income households) and the option to itemize deductions rather than claim a standard deduction.<sup>4</sup>

In contrast to federal revenue, individual income taxes account for a modest share of state revenue—about 18 percent of state general revenue overall.<sup>5</sup> Forty-three states and DC have individual income taxes. The definition of taxable income varies by state, but most states levy income taxes on a broad income base that generally follows the federal system. New Hampshire and Tennessee tax only income from dividends and interest. Alaska, Florida, Nevada, South Dakota, Texas, Washington, and Wyoming do not tax personal income.

State income taxes mirror many of the features in the federal system. Of the 41 states with a broad-based income tax, 33 have a graduated rate structure with multiple tax brackets and rates, as does DC; 8 states (Colorado, Illinois, Indiana, Massachusetts, Michigan, North Carolina, Pennsylvania, and Utah) apply a single tax rate.<sup>6</sup> Top marginal tax rates for state income taxes in 2016 range from 2.9 percent in North Dakota to 13.3 percent in California, including the additional 1 percent surcharge on income over \$1 million levied in that state. Most state income taxes are fairly flat, even in those states that apply graduated tax rates. In several states the top tax bracket begins at a very low level of taxable income. Alabama, for example, starts its top rate at taxable income above \$3,000 (\$6,000 for couples). In other states the difference between the lowest and the highest tax rates is small, for example, 2 percentage points or less in Arizona, Kansas, Maine, Mississippi, and North Dakota.

Like the federal system, most states with broad-based income taxes allow taxpayers to claim personal exemptions and a standard deduction, though the state amounts often differ from the federal amounts. Several states use tax credits in place of exemptions and deductions. Unlike the federal income tax, many state income tax systems tax capital gains and dividends at the

same rate as other income, a feature that increases state income tax progressivity compared to the federal system.

A majority of the states also have tax credits targeted toward low-income households. Twenty-six states and DC have enacted their own EITC, although Washington has not implemented its credit. All jurisdictions except Minnesota calculate the state credit as a percentage of the federal credit. Like the federal EITC, the state credit is refundable in most states but not in Delaware, Ohio, and Virginia. About half the states have their own child and dependent care tax credit but very few states (only California, New York, North Carolina, and Oklahoma) have a child tax credit.

In addition to a flatter rate structure, certain features of state income tax systems, such as special exemptions and deductions, can further reduce their progressivity. Alabama, Iowa, Louisiana, Missouri, Montana, and Oregon, for example, allow a deduction for federal income taxes, in effect a subsidy from those states to the federal government.

## **HOW PROGRESSIVE ARE FEDERAL AND STATE INCOME TAXES?**

Both federal and state individual income taxes are progressive, but state taxes are much less so. In 2011, the average federal individual income tax rate (federal income taxes divided by before-tax income) ranged from -4.8 percent in the lowest income quintile to 13.1 percent in the highest quintile and to 20.2 percent for the 1 percent of people with the highest incomes (table 1). The average federal tax rate was negative in the lowest two income quintiles because, on average, refundable tax credits exceeded the amount of income tax liability for those households. The average state individual income tax rate ranged from zero for the lowest quintile to 3.0 percent for the highest.<sup>7</sup> Average federal individual income taxes were much larger than average state income taxes; the overall average federal tax rate was 8.1 percent compared with an average state income tax rate of 2.2 percent for the all the states combined. The overall distribution of combined federal and state income taxes was progressive, with an average tax rate that ranged from -4.9 percent for the lowest quintile to 16.2 percent for the highest and to 24.5 percent for the top 1 percent.

**TABLE 1**

## Federal and State Average Income Tax Rates by Expanded Cash Income Percentile 2011



	Average Income Tax Rate in 2011		
	Federal	State	Combined
Bottom Quintile	-4.8	0.0	-4.9
Second Quintile	-1.9	0.7	-1.3
Middle Quintile	2.9	1.3	4.2
Fourth Quintile	6.1	1.8	7.9
Top Quintile	13.1	3.0	16.2
All	8.1	2.2	10.2
Addendum			
80–90	8.0	2.2	10.2
90–95	10.0	2.5	12.5
95–99	13.9	3.0	16.9
Top 1 Percent	20.2	4.3	24.5

**Source:** Urban-Brookings Tax Policy Center.

### *Average Income Tax Rates by State*

The average federal income tax rate in 2011, which was 8.1 percent nationally, ranged from 11.3 percent in DC and Connecticut to 4.6 percent in Mississippi (table 2). DC, Connecticut, New York, and Massachusetts all had an average federal tax rate of 10 percent or more; Mississippi, Idaho, South Carolina, and Arkansas had an average federal tax rate under 6 percent.

Differences in average federal income tax rates across the country reflect the demographic and economic diversity among the states including differences in (1) average household income and its distribution; (2) the composition of income, such as the share from tax-favored sources such as dividends and capital gains; (3) family sizes and other demographic characteristics, which determine the value of personal exemptions and certain tax credits; and (4) the portion of income used for tax-preferred items, such as contributions to tax-favored retirement and education saving accounts, or for tax-deductible expenditures such as mortgage interest payments, state and local taxes, and charitable contributions.

The overall average state income tax rate (total state income taxes divided by total before tax income) was 2.2 percent, including the seven states with no income tax (table 2). The average excluding those seven states was 2.7 percent. Nine states and DC had a rate of 3 percent or more, with the average state income tax rate at or above 4 percent in DC and Oregon. Ten states with a broad-based income tax had an average state income tax rate of 2 percent or less. New Hampshire and Tennessee, which tax only interest and dividends, had an average rate below 0.5 percent. Differences in average state income tax rates across the states reflect structural differences in state income tax systems as well as the economic and demographic factors previously mentioned.

TABLE 2

## Federal and State Average Income Tax Rates by state, 2011



	Average Income Tax Rate in 2011		
	Federal	State	Combined
District of Columbia	11.3	4.2	15.5
Connecticut	11.2	3.4	14.7
New York	10.1	3.9	14.0
Massachusetts	10.2	3.3	13.6
New Jersey	9.8	2.7	12.5
Minnesota	8.2	3.7	11.9
California	8.6	3.0	11.6
Virginia	8.6	2.9	11.5
Illinois	8.5	2.8	11.2
Maryland	8.9	2.2	11.1
Oregon	6.8	4.0	10.9
Colorado	8.4	2.2	10.7
Delaware	7.6	2.5	10.2
North Dakota	8.9	1.2	10.1
Kansas	7.3	2.7	10.1
Wisconsin	7.1	2.8	10.0
Rhode Island	7.7	2.2	9.9
Iowa	7.0	2.9	9.9
Nebraska	7.1	2.7	9.8
Pennsylvania	8.0	1.8	9.8
Hawaii	6.8	3.0	9.7
Maine	6.6	3.0	9.7
North Carolina	6.4	3.2	9.6
Vermont	7.1	2.3	9.4
Oklahoma	7.1	2.2	9.3
Missouri	6.9	2.5	9.3
West Virginia	6.2	3.0	9.2
Montana	6.5	2.7	9.2
Ohio	7.1	2.0	9.1
Michigan	7.0	2.0	9.0
New Hampshire	8.7	0.3	9.0
Georgia	6.5	2.4	8.9
Kentucky	6.1	2.6	8.7
Utah	6.0	2.6	8.7
Arkansas	5.8	2.8	8.6
Alaska	8.6	--	8.6
Wyoming	8.5	--	8.5
Louisiana	6.7	1.7	8.5
Indiana	6.4	1.9	8.4
Washington	8.4	--	8.4
Texas	8.3	--	8.3
Idaho	5.5	2.8	8.3
Arizona	6.7	1.5	8.2
South Carolina	5.8	2.3	8.0
Alabama	6.2	1.7	7.9
Florida	7.8	--	7.8
New Mexico	6.0	1.6	7.7
South Dakota	7.5	--	7.5
Nevada	7.5	--	7.5
Tennessee	6.6	0.2	6.8
Mississippi	4.6	1.7	6.3
United States	8.1	2.2	10.2

Source: Urban-Brookings Tax Policy Center.



The average combined federal and state income tax rate was 10.2 percent. It ranged from 15.5 percent in DC to 6.3 percent in Mississippi. States that did not have a state income tax were not necessarily the states with the lowest combined average tax rate. The average federal tax rate, which reflects the demographic and economic characteristics of taxpayers in each state, was in some cases higher in those states than the average combined federal and state income tax rate in several states with an income tax.

The average state income tax rates we calculate do not include additional income taxes levied by cities, counties, municipalities, and school districts within the states. According to the data from the US Census Bureau, only 13 states reported any local income tax revenue in 2013.<sup>8</sup> In seven of those states local income tax revenue was less than 6 percent of combined state and local income tax revenue, but it was sizable in the remaining six states: local income tax revenue was 20 percent of combined state and local income tax revenue in Indiana and New York, 24 percent in Kentucky, 30 percent in Pennsylvania, 33 percent in Ohio, and 37 percent in Maryland.

In some of the states with significant local income tax revenue local taxes apply to all or nearly all residents. For example, all counties in Maryland and the city of Baltimore levy an income tax, as do all counties in Indiana, and almost all municipalities and school districts in Pennsylvania. While not quite as broad, most municipalities and school districts in Ohio and many cities and counties in Kentucky levy a local income tax. Only two local jurisdictions in New York levy an income tax: New York City and Yonkers.

Local income taxes in Indiana, Maryland, and New York are levied on the same broad income base as the state income tax, and taxpayers file a single return for their state and local taxes. Local income tax rates in Indiana and Maryland generally fall in the range of about 1 to 3 percent. For example, excluding Worcester County (which has a tax rate of 1.25 percent and contains less than 1 percent of the state's population) local tax rates for Maryland residents range from 2.4 percent to 3.2 percent, but about half of Maryland residents live in jurisdictions in which the local tax rate is 3.2 percent. Local tax rates in New York City range from 2.907 percent to 3.648 percent, and the local income tax in Yonkers is equal to 16.75 percent of the state income tax.

Local income taxes in Kentucky and Pennsylvania do not use the same tax base as the state income tax but instead are levied on earnings and business profits. Local income taxes levied by school districts in Ohio mostly use the same tax base as state income taxes, but some only tax earnings. Local income taxes levied by municipalities in Ohio use a different base than the state income tax.

Local income taxes are less distinguishable from the state income tax in Indiana and Maryland where they apply to all or nearly all state residents, follow the same tax base as the state income tax, and are filed on the state income tax return. Including local income taxes in

those states would raise the average state tax rate approximately 0.4 percentage points in Indiana and 1.3 percentage points in Maryland. Because Maryland's state income tax has graduated rates but local taxes in that states are levied at a single rate (with some variation across counties), adding local income taxes to the state tax would result in a less progressive rate schedule. Both the state and local income taxes in Indiana are levied at a single rate with some variation in rates across counties.

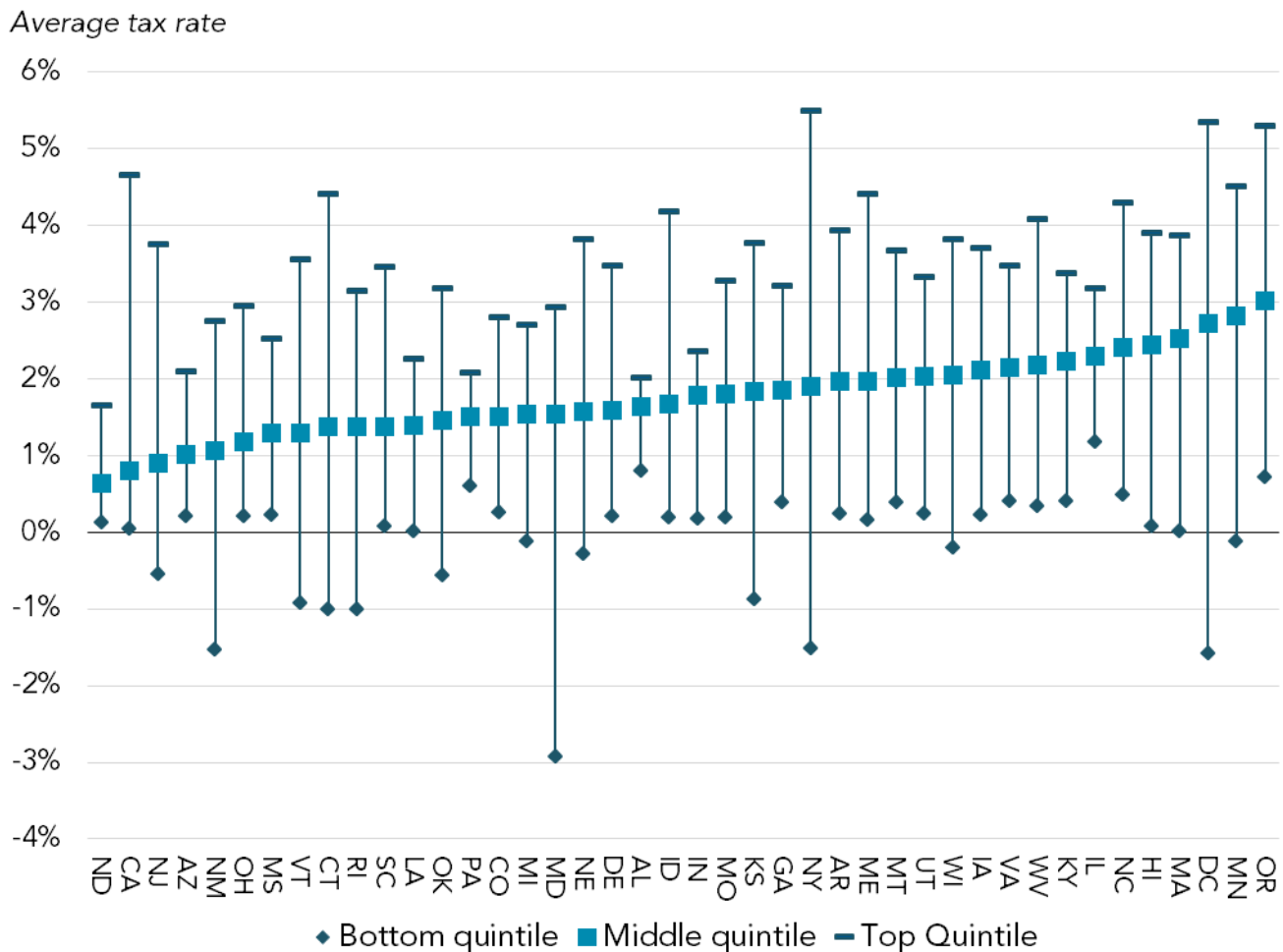
### ***Distribution of State Income Tax Rates by Income***

The progressivity of state individual income taxes ranged widely across the states in 2011. To make comparisons across states, taxpayers in each state are ranked by income according to national percentiles. For example, we ranked California taxpayers in the highest income quintile if their income placed them in the 20 percent of the U.S. population with the highest income. The calculations include only the 41 states and DC with broad-based income taxes. They do not include local income taxes in those jurisdictions.

The range of average tax rates in the middle income quintile (approximately the tax rate for the median income taxpayer) was fairly compressed ranging from 0.6 percent in North Dakota, 0.8 percent in California, and 0.9 percent in New Jersey to 3.0 percent in Oregon. The average tax rate in the top income quintile was lowest in North Dakota and highest in New York. The average tax rate in the lowest income quintile was less than zero as a result of refundable tax credits that exceeded income tax liability in 13 states and DC.

FIGURE 1

# Average State Income Tax Rates by state and income quintile, 2011



Source: Urban-Brookings Tax Policy Center

The difference between the average tax rate in the lowest and highest income quintiles was smallest in Alabama (1.2 percentage points), Pennsylvania (1.5 percentage points), and North Dakota (1.5 percentage points) and greatest in New York and DC (7 percentage points).

The spread between average tax rates in the lowest and highest income quintiles was generally lower in 6 of the 7 states with a single tax rate (Colorado, Illinois, Indiana, Michigan, Pennsylvania, and Utah) than in other states, but that was not always the case. The difference in average tax rates in Massachusetts, which also has a single tax rate, was among the upper half of states mostly due to provisions that reduced or eliminated income taxes for low-income households, such as a no-tax income threshold, a limited income tax credit, and a refundable earned income tax credit.

## Summary Indexes of Income Tax Progressivity

We calculate two statistical indexes to summarize the overall progressivity of taxes. The first is the Reynolds-Smolensky (RS) index, which compares the concentration of income before and after taxes. It is calculated as the difference between the Gini coefficient for income before income taxes and the Gini coefficient for income after income taxes.<sup>9</sup> The second is the Kakwani (K) index, which compares the concentration of income taxes with the concentration of income before tax. It is calculated as the difference between the tax concentration index and the Gini coefficient for before-tax income.<sup>10</sup>

If taxes are proportional to before-tax income, the before-tax Gini index will equal the after-tax Gini index and the RS index will be zero. Likewise, with a proportional tax system, the distribution of taxes across the population ranked by income will be the same as the distribution of before-tax income, and the K index will also have a value of zero. In a progressive tax system, where average tax rates rise with income, both indexes will exceed zero, the RS index because after-tax income is less concentrated than before-tax income and the K index because taxes are more concentrated than income.

An important difference between the two measures is that the average tax rate for the population matters for the RS index, but not for the K index. Thus, a small tax levied only on millionaires would have little effect on the after-tax distribution of income, yielding a value close to zero for the RS index, but the concentration of the tax among upper-income taxpayers would yield a positive value for the K index.<sup>11</sup>

The RS index and the K index for federal, state, and combined individual income taxes summarize the information in the distribution of average tax rates by income quintiles (table 3). The RS index is positive for both federal and state income taxes but much larger for federal taxes. Because federal taxes are more progressive than state income taxes and twice the size, they have a much bigger equalizing effect on the distribution of after-tax income. The K index (the tax concentration index minus the before-tax Gini coefficient) is also positive for both federal and state income taxes because both taxes are more concentrated than before-tax income. The index is larger for federal taxes because higher-income households pay a larger share of federal income taxes than their share of state income taxes.

**TABLE 3**

**Tax Progressivity Indexes  
2011**



	Gini Index		Tax Concentration Index	Reynolds-Smolensky Index (X 100)	Kakwani Index
	Before-tax income	After-tax income			
Federal Income Taxes	0.581	0.553	0.917	2.86	0.34
State Income Taxes	0.581	0.577	0.783	0.45	0.20
Federal and State Income Taxes Combined	0.581	0.547	0.888	3.39	0.31

Source: Urban-Brookings Tax Policy Center.

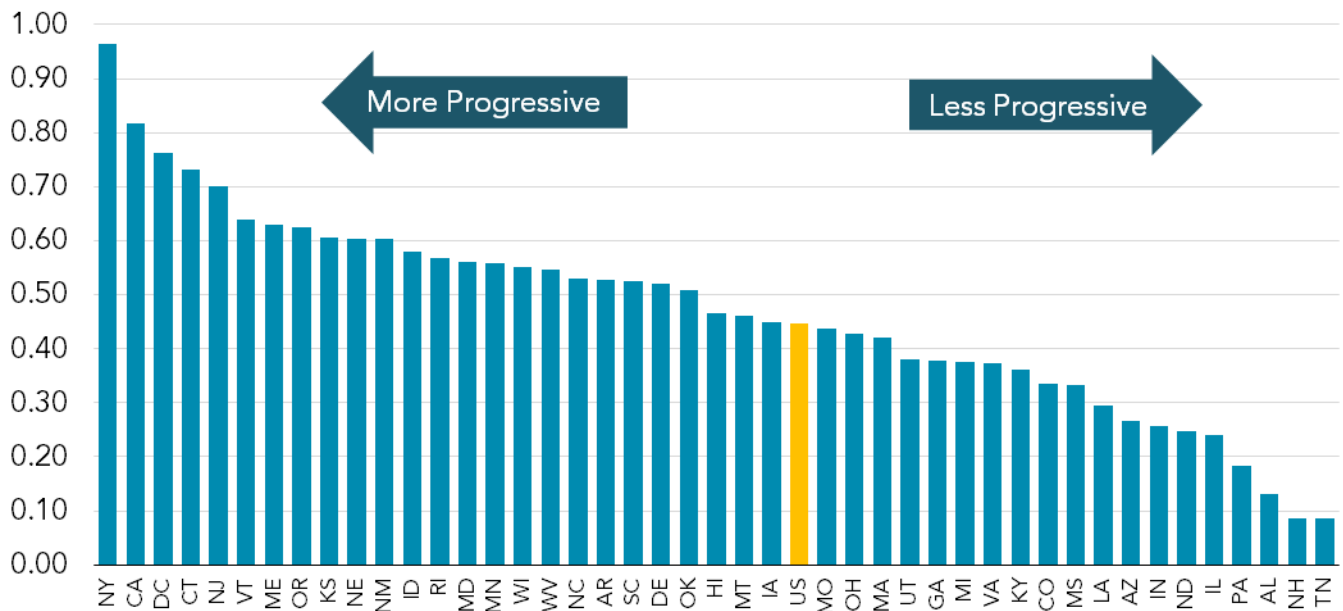
Both indexes vary across the states. The RS index is highest in New York, California, DC, Connecticut, and New Jersey and, among states with broad based income taxes, lowest in Alabama, Pennsylvania, Illinois, North Dakota, Indiana, and Arizona (figure 2). Income taxes do more to equalize the distribution of income in states with high index values and less in states with low values.

**FIGURE 2**

**Reynolds-Smolensky Progressivity Index for State  
Income Taxes**



2011

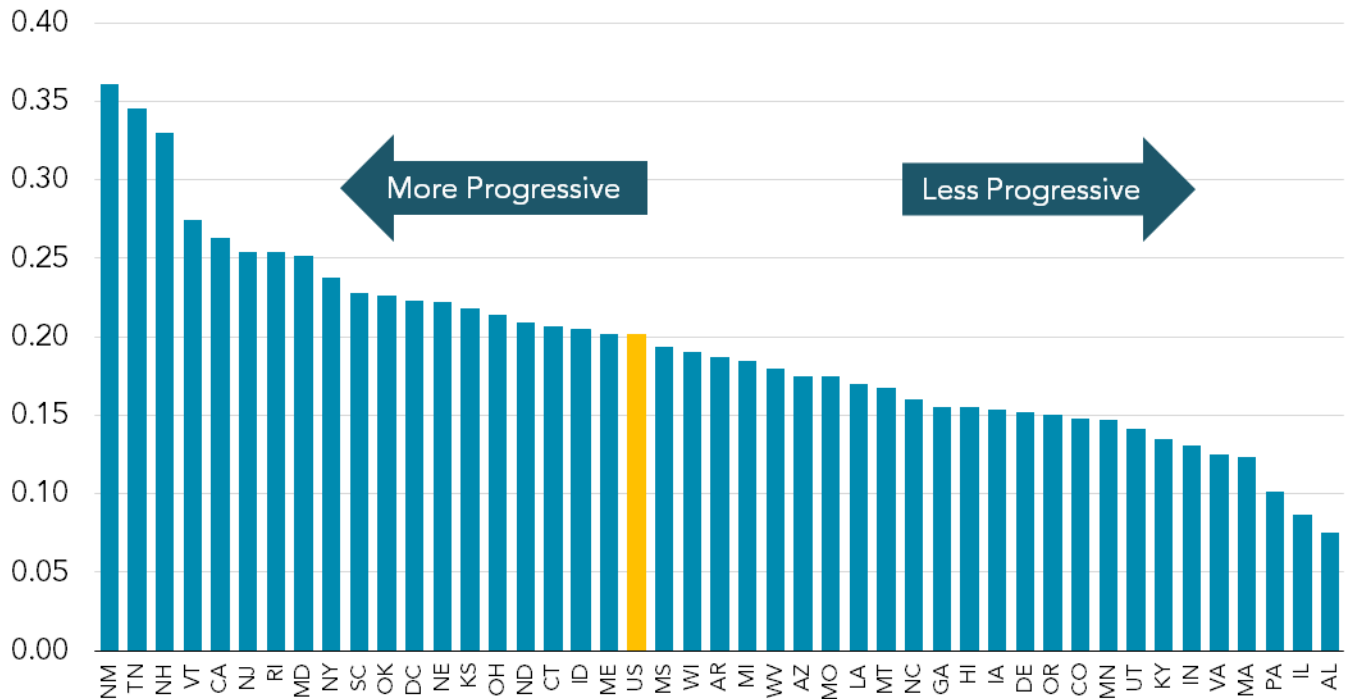


Source: Urban-Brookings Tax Policy Center.

Among states with a broad-based income tax, the K index is highest in New Mexico, Vermont, California, New Jersey, Rhode Island, and Maryland; and lowest in Alabama, Illinois, and Pennsylvania (figure 2). It is worth reiterating that both indexes would look quite different if we were measuring the effect of all taxes rather than just income taxes.

**FIGURE 3**

## Kakwani Progressivity Index for State Income Taxes 2011



Source: Urban-Brookings Tax Policy Center.

The results for New Hampshire and Tennessee illustrate the difference between the two indexes. The K index is much higher and the RS index much lower than the national average in both states. Because New Hampshire and Tennessee only tax income from dividends and interest, their tax systems are relatively small and thus have little effect on the distribution of income, which results in a low value for the RS index. But income taxes are highly concentrated among high-income taxpayers in both states, and thus they have a high value for the K index.

New Mexico is another interesting example. It has the highest value for the K index of any state, but its value for the RS index, while high, is not quite among the top ten. New Mexico's income tax has several features that contribute to progressivity and thus cause it to rank high according to the K index. These include graduated tax rates, personal exemptions and a standard deduction equal to the federal amounts, additional low- and middle-income personal exemptions, a low-income tax rebate, and a 10 percent refundable EITC. However, the average state income

tax rate in New Mexico was among the lowest among states with a broad-based income tax. Income taxes thus had a modest effect on the difference between the before-tax and after-tax distribution of income within the state, causing it to rank somewhat lower according to the RS index.

## INTERACTION BETWEEN FEDERAL AND STATE TAXES

Federal and state income tax systems interact in significant ways. All states take advantage of federal tax administration and reporting by conforming to the federal rules and definitions for the income tax base to some degree.<sup>12</sup> Of the 41 states with broad-based individual income taxes, 29 states and DC start with federal adjusted gross income, 7 start with federal taxable income, and 5 use their own starting point. In the past, some states went even further by simply computing state income tax as a percentage of the federal income tax, but no state currently follows that practice.

Because the federal income tax base is the starting point for state income tax bases, federal rules governing income exclusions (such as for employer-provided health insurance) and “above-the-line” adjustments (such as the deduction for student loan interest) directly flow through to the calculation of state taxable income. The same is true for federal rules concerning the standard or itemized deductions. Eleven states use the federal standard deduction and 33 states allow itemized deductions based on federal itemized deductions, although most states do not carry over the federal deduction for state and local taxes.

The federal and state income tax systems interact directly through the SALT deduction.<sup>13</sup> Taxpayers who itemize deductions on their federal income tax returns can deduct certain state and local taxes from their federal taxable income. These include taxes on real estate, personal property, and either income taxes or general sales taxes.<sup>14</sup> About 30 percent of tax filers opt to itemize deductions on their federal returns, and virtually all who do claim a deduction for state and local taxes paid. State and local income taxes and real estate taxes make up the majority of the SALT deduction; about 60 percent and 35 percent respectively; sales taxes and personal property taxes account for the remaining 5 percent. Because most property taxes are local taxes, income taxes account for the overwhelming portion of deductible state taxes.

### *Effect of the SALT Deduction on Federal Income Tax Progressivity*

High-income households are more likely than low-or moderate-income households to benefit directly from the state and local tax (SALT) deduction. The amount of state and local taxes paid, the probability of itemizing deductions, and the reduction in federal income taxes for each dollar of state and local taxes deducted all increase with income.

Individuals who claim the SALT deduction decrease their federal tax liability by the amount of their deductible state and local taxes multiplied by their federal marginal income tax rate. For example, each additional \$100 of state income tax for taxpayers in the 35 percent federal tax bracket would increase their net combined federal and state tax by only \$65 if they claimed the SALT deduction on their federal return. Because both the likelihood of itemizing and the marginal tax rate increase with income, a large share of the benefits from the deduction is concentrated among taxpayers in the upper part of the income distribution.

Taxpayers who claim the SALT deduction may not be able to reduce their taxes if they pay the individual AMT. The AMT is a parallel tax to the regular individual income tax, intended to limit the use of certain deductions, exemptions, and exclusions by higher-income taxpayers, although not all AMT taxpayers have particularly high income. Taxpayers potentially subject to the AMT must calculate their taxes separately under the rules for the regular income tax and the rules for the AMT and pay the higher of the two.<sup>15</sup> When calculating the AMT, taxpayers may not claim personal exemptions and certain itemized deductions, the largest of which is the SALT deduction. The disallowance of the SALT deduction is the reason why a majority of AMT taxpayers are subject to the AMT.

In 2011, 76 percent of the reduction in federal income taxes from the SALT deduction went to people in the top income quintile; 28 percent of the tax saving went to people in the top 1 percent (table 4). The deduction was worth 1.1 percent of after-tax income for the taxpayers in top quintile on average and 1.6 percent for those in the top 1 percent. The tax saving was slightly lower for taxpayers in the 95th to 99th percentile of the income distribution than for other groups in the top quintile because a larger percentage of taxpayers in the 95th to 99th percentile pay the AMT and thus lose the tax saving from the SALT deduction.



TABLE 4

## Benefit from the Federal Deduction for State and Local Taxes by Expanded Cash Income Percentile, 2011



	Tax Units With Federal Income Tax Benefit		Benefit as a Percent of After-Tax Income	Share of Total Federal Tax Benefit	Average Tax Benefit (\$)
	Pct of tax Units	Average tax benefit			
Lowest Quintile	0.5	126	0.0	0.0	1
Second Quintile	6.7	260	0.1	0.9	17
Middle Quintile	24.0	491	0.2	5.3	118
Fourth Quintile	49.8	924	0.6	17.8	460
Top Quintile	77.5	3,019	1.1	76.0	2,341
All	25.1	1,697	0.7	100.0	427
Addendum					
80–90	75.0	1,655	1.0	20.6	1,241
90–95	85.2	2,411	1.2	16.7	2,055
95–99	74.2	2,398	0.7	11.0	1,779
Top 1 Percent	77.8	23,169	1.6	27.7	18,019

Source: Urban-Brookings Tax Policy Center.

### *Effect of the SALT Deduction on State Income Tax Progressivity*

The SALT deduction encourages states to rely more heavily on deductible taxes, such as income or sales taxes, than they would without the deduction. It can also encourage states to shift more of the state income tax burden to higher-income taxpayers who are more likely to claim a federal deduction for those taxes and who save more in federal income taxes for each dollar of state income taxes claimed. This shifting of state income tax burdens is one of the ways low- and moderate-income taxpayers benefit indirectly from the SALT deduction.

An important consideration is how much the SALT deduction actually affects state and local tax policy. Several empirical studies have found a measurable effect of the SALT deduction on the mix of state and local taxes, but only a few of them also have found an effect of the deduction on either total state and local revenues or expenditures. For the most part, these studies all consider the effect of the “tax price” of raising state and local revenues—that is, what fraction of the tax people actually pay.

The tax price of one dollar of state and local taxes is one dollar for most taxpayers in the state or locality—they bear the full cost of the tax— but the tax price for taxpayers who itemize their federal deductions is less than one because each dollar paid in state and local taxes reduces their federal income tax. For example, the net cost to a taxpayer in the 35 percent federal income tax bracket who itemizes his or her tax deductions is \$0.65 (\$1.00 of state taxes minus \$0.35 of federal tax saving). The marginal tax price of deductible taxes across all taxpayers with the state

or locality will thus depend on the proportion of taxpayers who itemize federal deductions and their federal marginal tax rates.

States might be expected to shift more or less of their tax burden to high-income taxpayers (or to make compensating changes to the distribution of spending) in response to changes in the tax price. They can do this by making the income tax more or less progressive or shifting to or from other taxes, such as the sales tax. Several studies found that the degree of progressivity of state income taxes is sensitive to the tax price. Chernick (1992) looked at the effect of the tax price on state income tax progressivity for a cross-section of states in 1985. He found that a higher tax price, either because a state had fewer itemizers or because itemizers in the state had lower federal tax rates, was consistent with a less progressive income tax structure.

Scott and Triest (1993) measured the progressivity of state taxes before and after enactment of the Economic Recovery Tax Act of 1981 and the Tax Reform Act of 1986. Among many other changes, both acts reduced federal marginal income tax rates. This not only raised the tax price of state income taxes but also increased their effective progressivity, where the effective progressivity includes the value of the federal subsidy for the SALT deduction. If state lawmakers take account of the SALT deduction in setting tax policy, the expected response to a reduction in federal marginal tax rates and the resulting decrease in the federal subsidy might include lowering state income tax rates for higher-income taxpayers which would reduce the statutory progressivity of those taxes. Scott and Triest found evidence that this occurred but that the changes were not large enough to fully offset the federal changes. Thus, the effective progressivity of state income taxes increased following the federal reforms.

## **THE SALT DEDUCTION AND RECENT STATE INCOME TAX REFORMS**

Increases in federal marginal tax rates raise the value of the SALT deduction and lower the effective tax price of deductible state and local taxes for high-income taxpayers. They also reduce the effective progressivity of state income taxes if the tax saving from the federal deduction is subtracted from state income taxes. An interesting question is whether some states, particularly those with many high-income taxpayers affected by recent federal income tax increases, responded to the lower tax price and the effective reduction in state income tax progressivity by raising their own top tax rates in response, driven by the ability to export these tax increases.

### ***Changes in Federal Income Taxes between 2011 and 2014***

The American Taxpayer Relief Act of 2012 permanently extended many of the federal tax cuts that were temporarily enacted in 2001 and 2003 but let the temporary rate cuts expire for taxpayers with taxable income exceeding \$400,000 (\$450,000 for married couples). This

effectively raised the marginal tax rates on ordinary income from 35 percent to 39.6 percent and the rate on dividends and capital gains from 15 percent to 20 percent for those taxpayers starting in 2013. In addition, a 3.8 percent surtax on net investment income for taxpayers with income exceeding \$200,000 (\$250,000 for married couples) enacted by Affordable Care Act took effect in 2013. The surtax, which is not indexed for inflation, raised the top tax rate on some investment income to 43.4 percent and the top rate on capital gains and dividends to 23.8 percent (not including the effect of provisions, such as the limit on itemized deductions, that phase-out certain tax benefits for high-income taxpayers).

The increase in the top federal rates thus lowered the tax price of a dollar of state and local taxes from 65 cents to 60.4 cents for high-income taxpayers who claimed a deduction for those taxes (and who were not subject to AMT).<sup>16</sup> In effect, the federal government paid about 40 percent of any additional state taxes levied on high-income taxpayers.

### ***Changes in State Income Taxes between 2011 and 2014***

Very few states took advantage of the increase in the federal subsidy by raising their tax rates. In fact, more states lowered their top tax rates than raised them. These actions occurred in part because several states had temporarily raised marginal tax rates to help balance their budgets following the Great Recession and they allowed those increases to expire as scheduled. These changes also reflected changes in policies by state governments as many states proposed or enacted reductions in individual and corporate income taxes while increasing sales taxes.<sup>17</sup>

California was one of the few states that raised its top tax rate. In 2011, the highest regular income tax rate of 9.3 percent in California applied to income over \$48,000 (\$96,000 for couples). An additional 1 percent tax on income over \$1 million brought the top rate to 10.3 percent. Following passage of a voter-approved referendum in December 2012 (Proposition 30), the regular income tax rate rose to 10.3 percent for income over \$250,000 (\$500,000 for couples), 11.3 percent for income over \$300,000 (\$600,000 for couples), and 12.30 percent for income over \$500,000 (\$1 million for couples). With the additional 1 percent tax on income over \$1 million still in place, the top tax rate became 13.3 percent.

Several other states also raised their top marginal income tax rates by lesser amounts.

- Connecticut raised the top marginal income tax rate from 6.5 percent on income exceeding \$500,000 to 6.7 percent on income exceeding \$250,000 starting January 1, 2012, and replaced its three-bracket system with a six-bracket system;
- DC raised its marginal tax rate on income above \$350,000 from 8.5 percent to 8.95 percent starting in 2012;

- Maryland raised its top marginal tax rate from 5.5 percent to 5.75 percent for taxpayers with income over \$100,000 (\$150,000 for married couples) starting in 2012; and
- Minnesota introduced a new top tax bracket for joint filers with income over \$250,000 and a tax rate of 9.85 percent in 2012.

In contrast, many more states reduced their tax rates after 2011, Kansas and North Carolina enacted the most sweeping tax cuts. Kansas passed legislation in 2012 reducing the number of tax brackets from three to two and cutting the top rate from 6.45 percent to 4.9 percent in 2013, and to 4.8 percent in 2014. It also repealed several income tax credits and exempted non-wage business income of pass-through business (such as sole proprietorships, partnerships, and S-corporations) from income tax. North Carolina replaced its graduated tax rates of 6.0 percent, 7.0 percent, and a top rate of 7.75 percent with a single flat rate of 5.8 percent in 2014 and 5.75 percent thereafter. It also eliminated certain deductions, exemptions, and tax credits, including the state EITC.

Other states also reduced income tax rates after 2011.

- Delaware's top rate dropped from 6.95 percent in 2011 to 6.6 percent in 2014, although it had been scheduled to revert to its pre-2010 rate of 5.95 percent;
- Idaho reduced its top rate from 7.8 percent to 7.4 percent;
- Maine approved legislation in 2011 reducing the number of tax brackets from four to three and the top income tax rate from 8.5 percent to 7.95 percent starting in 2013;
- North Dakota reduced its top rate from 3.99 to 3.22 percent starting in 2013;
- Ohio reduced tax rates by 9 percent, taking the top rate down from 5.925 percent to 5.392 percent;
- Oregon reduced its two top tax rates from 10.8 percent and 11.0 percent in the top two brackets to 9.9 percent in a single top bracket that combined the previous two; and
- Oklahoma and Wisconsin also reduced their top tax rate between 2011 and 2014.

New York's top tax rate in 2012 was lower than the rate in 2011, but it was higher than the rate that was scheduled to take effect when temporary tax increases enacted in 2009 expired. New York introduced two additional tax brackets for higher-income taxpayers in 2009. This so-called "millionaire's tax" added a tax rate of 7.85 percent for taxpayers with income over \$200,000 (\$300,000 for married couples) and a rate of 8.97 percent for all taxpayers with income over \$500,000. Before introducing those rates, New York's top tax rate was 6.85 percent.

Rather than simply letting the millionaire’s tax expire at the end of 2011, New York enacted a new rate schedule starting in 2012. The new tax rates ranged from 6.45 percent to 6.85 percent for income between \$20,000 (\$40,000 for couples) and \$1 million (\$2 million for couples), and a rate of 8.82 percent on income over \$1 million (\$2 million for couples).

Some single-rate states also lowered their rate.

- Massachusetts lowered its rate from 5.25 percent to 5.15 percent, continuing a phased-in reduction that began in 2002; and
- Michigan lowered its tax rate from 4.35 percent to 4.25 percent.

**Changes in Federal and State Income Tax Progressivity between 2011 and 2014**

Federal individual income taxes became more progressive between 2011 and 2014, but state income taxes did not. In 2011, the average federal individual income tax rate ranged from -4.8 percent for households in the lowest income quintile to 13.1 percent in the highest income quintile; under the tax law in 2014 they ranged from -4.9 percent to 14.4 percent (table 5). The average tax rate for the top 1 percent went from 20.2 percent to 24.0 percent. In contrast, average state individual income tax rates hardly changed. In 2011 they ranged from zero for those in the lowest income quintile to 3.0 percent for the highest income quintile and were the same under 2014 tax law for all but the two highest income groups.

**TABLE 5**  
**Federal and State Average Income Tax Rates with 2011 and 2014 Law**  
 by Expanded Cash Income Percentile, 2011



	Average Income Tax Rate in 2011			Average Income Tax Rate in 2011 with 2014 Law			Change in Average Income Tax Rate (percentage points)		
	Federal	State	Combined	Federal	State	Combined	Federal	State	Combined
Bottom Quintile	-4.8	0.0	-4.9	-4.9	0.0	-4.9	0.0	0.0	0.0
Second Quintile	-1.9	0.7	-1.3	-1.7	0.7	-1.0	0.2	0.0	0.3
Middle Quintile	2.9	1.3	4.2	3.2	1.3	4.5	0.3	0.0	0.3
Fourth Quintile	6.1	1.8	7.9	6.3	1.8	8.1	0.3	0.0	0.3
Top Quintile	13.1	3.0	16.2	14.4	3.0	17.4	1.2	0.0	1.2
All	8.1	2.2	10.2	8.8	2.2	11.0	0.8	0.0	0.8
Addendum									
80–90	8.0	2.2	10.2	8.2	2.2	10.5	0.3	0.0	0.3
90–95	10.0	2.5	12.5	10.2	2.5	12.7	0.2	0.0	0.2
95–99	13.9	3.0	16.9	14.2	2.9	17.1	0.3	0.0	0.3
Top 1 Percent	20.2	4.3	24.5	24.0	4.4	28.4	3.8	0.1	3.9

Source: Urban-Brookings Tax Policy Center.

The summary measures of tax progressivity show an increase in the RS index at the federal level between 2011 and 2014 (table 6). Holding income constant at its 2011 level and distribution but applying 2014 tax law deflated to 2011 incomes increases the RS index for

federal income taxes: taxes under 2014 law had a slightly greater equalizing effect on after-tax income than taxes under 2011 law. The K index for federal income taxes was virtually unchanged. There was no change in the overall progressivity of state income taxes: both the RS index and the K index for state income taxes under 2014 law were unchanged from their 2011 values. Combined federal and state income taxes showed a small increase in progressivity for the RS index, but no change for the K index.

**TABLE 6**

## Tax Progressivity Indexes 2011 and 2014



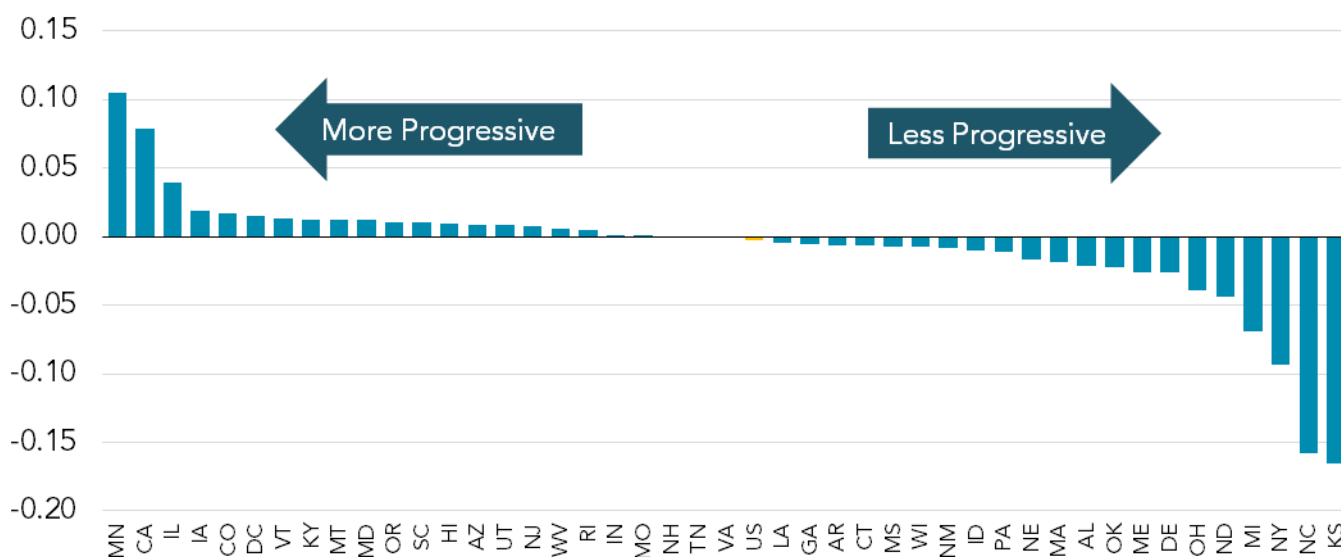
	2011		2014	
	Reynolds-Smolensky index (X 100)	Kakwani index	Reynolds-Smolensky index (X 100)	Kakwani index
Federal Income Taxes	2.86	0.34	3.12	0.33
State income Taxes	0.45	0.20	0.44	0.20
Federal and State Income Taxes Combined	3.39	0.31	3.67	0.31

**Source:** Urban-Brookings Tax Policy Center.

Income tax progressivity did change in some individual states, although none of those changes were comparable in magnitude to the change for federal income taxes. The RS index increased between 2011 and 2014 in Minnesota, California, and Illinois, as the income tax systems in those states became more redistributive; the index decreased in the most in Kansas, North Carolina, New York, and Michigan, indicating the opposite effect (figure 4). As noted, California and Minnesota increased their top income tax rates, while Illinois doubled its EITC. Kansas and North Carolina enacted significant income tax cuts, including a substantial reduction in the top tax rates, New York reduced its top marginal tax rate, and Michigan both reduced its top rate and cut the state EITC from 20 percent to 6 percent of the federal credit. The K index was virtually unchanged in most states between 2011 and 2014.

**FIGURE 4**

# Change in Reynolds-Smolensky Progressivity Index for State Income Taxes 2011 to 2014



Source: Urban-Brookings Tax Policy Center.

## CONCLUSION

Federal income taxes are more progressive than state income taxes overall. State income tax systems vary greatly in progressivity. Changes in federal tax law between 2011 and 2014 increased the progressivity of federal income taxes and reduced the effective progressivity of state income taxes by increasing the tax savings from the SALT deduction. States could have responded and restored the effective progressivity by raising top marginal rates, but few did. More states reduced their top rate rather than increasing it. On net, however, state income taxes were about as progressive under 2014 rules as they were in 2011.

The primary data source for the Tax Policy Center (TPC) federal and state income tax models is the 2006 public-use file produced by the Statistics of Income division of the Internal Revenue Service. The public-use file contains 145,858 records with detailed, anonymous information from federal individual income tax returns filed in the 2006 calendar year. Starting with the 2006 data, TPC uses published tabulations of tax data from 2011 to create a representative tax file for that year. TPC then adds additional information on demographic characteristics and sources of income not reported on tax returns through a constrained match of the tax file with data for 2011 from the March 2012 Current Population Survey of the US Census Bureau. The match also generates a sample of individuals who do not file tax returns. The final data file contains filers and nonfilers and provides a representative sample of the entire population.

To impute state weights to the database, TPC uses a constrained, parametric regression methodology proposed by Schirm and Zaslavsky (1997). The data file with the state weights is then run through detailed tax calculators that compute federal and state individual income tax liability for all filers in the sample. For more information on the weighting methodology see Khitatrakun, Mermin, and Francis (2015).

We calculated federal income taxes using the TPC tax model,<sup>18</sup> income taxes for the 43 states with an income tax and DC using the TPC version of state income tax calculators originally developed by John Bakija,<sup>19</sup> and Gini coefficients, the Reynolds-Smolensky index, and Kakwani index using the *sgini* routine developed for STATA by Phillippe Van Kerm.<sup>20</sup>

We use a broad measure of before-tax income, called “expanded cash income” or ECI, to rank tax units by income and to calculate average tax rates. ECI is measured as adjusted gross income (AGI) plus: above-the-line adjustments (e.g., IRA deductions, student loan interest, self-employed health insurance deduction, etc.), employer-paid health insurance and other nontaxable fringe benefits, employee and employer contributions to tax-deferred retirement savings plans, tax-exempt interest, nontaxable Social Security benefits, nontaxable pension and retirement income, accruals within defined benefit pension plans, inside buildup within defined contribution retirement accounts, cash and cash-like (such as SNAP benefits) transfer income, the employer’s share of payroll taxes, and imputed corporate income tax liability.<sup>21</sup>



<sup>1</sup> Each quintile represents 20 percent of the US population, including people who do not file federal income tax returns, ranked by income.

<sup>2</sup> The Congressional Budget Office (2013, 2014) analyzes the progressivity of federal individual and corporate income, payroll, and excise taxes. ITEP (2015) and Cooper, Lutz, and Palumbo (2015) analyze the progressivity of combined federal and state taxes.

<sup>3</sup> Although the tax saving from each dollar of an exemption or a deduction is higher for higher-income taxpayers (because their marginal tax rate is higher), the saving as a percentage of income is higher for lower-income taxpayers.

<sup>4</sup> The lower rates on dividend and capital gains reflect in part that income derived from corporations is taxed once at the entity level by the corporate income tax and again at the personal level by the individual income tax. A complete assessment of the effect on progressivity of the income tax treatment of capital gains and dividends would also account for the effects of the corporate income tax.

<sup>5</sup> Ranked in order, the sources of state general revenue in 2013 were: intergovernmental transfers (31 percent), sales taxes (19 percent), charges and miscellaneous fees (19 percent), individual income taxes (18 percent), and other taxes (9 percent). "Tax Policy Center Briefing Book: What are the sources of revenue for state governments?" Urban-Brookings Tax Policy Center, Washington D.C. Accessed May 20, 2016.

<sup>6</sup> Local jurisdictions in 14 states levy their own income taxes. We do not include local income taxes in this analysis.

<sup>7</sup> Households in states that do not have an individual income tax are included in the distribution.

<sup>8</sup> "State and Local Finance Data Query System," Urban-Brookings Tax Policy Center, Washington D.C. Accessed March 29, 2016.

<sup>9</sup> The Gini coefficient is a widely used measure of income inequality. See Congressional Budget Office (2013), pp. 8-9 and pp. 39-42 for a discussion of calculating and interpreting the Gini coefficient.

<sup>10</sup> See Kakwani (1977) and Reynolds and Smolensky (1977).

<sup>11</sup> The RS index and the K index are related. It is possible to derive the RS index from the K index by adjusting for the average tax rate and the reranking of households when ranking by before- and after-tax income. See Creedy (1999).

<sup>12</sup> See Mason (2013).

<sup>13</sup> See Sammartino and Rueben (2016) for a discussion of the federal tax deduction and various options for reform.

<sup>14</sup> The American Jobs Creation Act of 2004 partially reinstated the sales tax deduction, which the Tax Reform Act of 1986 had eliminated. Before the Tax Reform Act of 1986, taxpayers could deduct both income taxes and general sales taxes. The 2004 law allowed taxpayers to deduct either income taxes or sales taxes but not both. Subsequent legislation extended that provision through 2014 and made it permanent in 2015.

<sup>15</sup> Technically, the AMT is the difference between a taxpayer's regular income tax liability and tax liability calculated according to the rules for the AMT. If the difference is greater than zero, the taxpayer must pay the AMT in addition to his or her regular income tax.

<sup>16</sup> The tax price can be slightly lower than 60.4 percent in some cases because a portion of state and local taxes are deductible from investment income subject to the 3.8 percent net investment income tax.

<sup>17</sup> See NCSL 2011, 2012, and 2013 for details about the state income tax changes enacted over this period.

<sup>18</sup> See "Brief Description of the Tax Model," Urban-Brookings Tax Policy Center, Washington DC. Accessed March 29, 2016.

<sup>19</sup> See "Documentation for a Comprehensive Historical U.S. Federal and State Income Tax Calculator Program," Jon Bakija, Department of Economics, Williams College, Williamstown, MA. Accessed April 20, 2016.

<sup>20</sup> See "Generalized Gini and Concentration coefficients (with factor decomposition) in Stata," Philippe Van Kerm CEPS/INSTEAD, Luxembourg. Accessed April 20, 2016.

<sup>21</sup> See "Income Measure Used in Distributional Analyses by the Tax Policy Center," Urban-Brookings Tax Policy Center, Washington DC. Accessed June 16, 2016.

## REFERENCES

- Chernick, Howard. 1992. "A Model of the Distributional Incidence of State and Local Taxes." *Public Finance Review* 20 (4): 572–85.
- Congressional Budget Office. 2013. *Trends in the Distribution of Household Income between 1979 and 2007*. Washington DC: Congressional Budget Office.
- . 2014. *The Distribution of Household Income and Federal Taxes, 2011*. Washington DC: Congressional Budget Office.
- Cooper, Daniel H., Byron F. Lutz, and Michael G. Palumbo. 2015. "The Role of Taxes in Mitigating Income Inequality across the U. S. States." *National Tax Journal* 68: 943–74.
- Creedy, John. 1999. "Taxation, Redistribution and Progressivity: An Introduction." *Australian Economic Review* 32 (4): 410–22.
- ITEP (Institute on Taxation and Economic Policy). 2015. "Who Pays? A Distributional Analysis of the Tax Systems in All 50 States." Washington DC: Institute on Taxation and Economic Policy.
- Kakwani, Nanak C. 1977. "Measurement of Tax Progressivity: An International Comparison." *Economic Journal* 87 (345): 71–80.
- Khitatrakun, Surachai, Gordon B. T. Mermin, and Norton Francis. 2015. "Incorporating State Analysis into the Tax Policy Center's Microsimulation Model: Documentation and Methodology." Washington DC: Urban-Brookings Tax Policy Center.
- Mason, Ruth. 2013. "Delegating Up: State Conformity with the Federal Tax Base." *Duke Law Journal* 62 (7): 1267–1348.
- NCSL (National Conference of State Legislators). 2011. "State Tax Actions 2011." Washington DC: National Conference of State Legislators.
- . 2012. "State Tax Actions 2012." Washington DC: National Conference of State Legislators.
- . 2013. "State Tax Actions 2013." Washington DC: National Conference of State Legislators.
- Reynolds, Morgan, and Eugene Smolensky. 1977. *Public Expenditures, Taxes and the Distribution of Income: The United States 1950, 1961, 1970*. New York: Academic Press.
- Sammartino, Frank, and Kim Rueben. 2016. "Reforming the State and Local Tax Deduction." Washington DC: Tax Policy Center.

Schirm, Allen L., and Alan M. Zaslavsky. 1997. "Reweighting Households to Develop Microsimulation Estimates for State." *Proceedings of the Section on Survey Research Methods*. Alexandria VA: American Statistical Association.

Scott, Charles E., and Robert K. Triest. 1993. "The Relationship between Federal and State Individual Income Tax Progressivity." *National Tax Journal* 46 (2): 95–108.



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