Statutory, Average, and Effective Marginal Tax Rates in the Federal Individual Income Tax: Background and Analysis

Molly F. Sherlock
Specialist in Public Finance

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Summary

Tax reform is a stated priority of the 115th Congress. In June 2016, Ways and Means Committee Republicans released the "Better Way" tax reform blueprint. The proposal seeks to make the individual income tax system "simpler, flatter, and fairer" by consolidating the number of individual income tax brackets. Looking at statutory tax rates alone, however, provides limited information regarding the simplicity or fairness of the tax system. Average tax rates and effective marginal tax rates are frequently used by economists and policy analysts to evaluate the fairness of the tax system, as well as various economic incentives created by the system.

This report provides background information on alternative tax rate metrics, and discusses how these measures of the tax burden inform the tax reform debate.

- Under current law, there are seven ***statutory tax rate*** brackets in the federal individual income tax system. Very few taxpayers, less than 1% in 2014, face the top statutory rate.
- A taxpayer's ***average tax rate*** is the percentage of total income that is paid in taxes. This metric is useful when comparing tax burdens across taxpayers, as well as certain economic incentives created by the tax system. For nearly every taxpayer, average tax rates are less than the statutory rate.
- A taxpayer's ***effective marginal tax rate*** is the amount of income tax paid on the next dollar of earnings. Effective marginal tax rates are determined by statutory rates, as well as various other provisions. Effective marginal tax rates also provide information on the economic incentives created by the tax code for different taxpayers.

As illustrated in this report, under the current system, statutory, average, and effective marginal tax rates can differ substantially for any given taxpayer. Since statutory tax rates provide limited information about tax burdens, questions of equity are often better addressed by using average rates. Since effective marginal tax rates do not equal statutory tax rates for a large proportion of taxpayers, statutory rates provide limited information on the incentives created by the tax code.

One way to evaluate average tax rates is to examine them across the income distribution. This report uses the 2010 Internal Revenue Service (IRS) Statistics of Income (SOI) public use file, the most recent publicly available sample of individual taxpayer returns available when this report was written, to complete this analysis. When taxpayers are divided into income deciles (grouped such that there are 10 equal-sized groups of taxpayers, ranked by income), average tax rates are negative for the first four income deciles. Negative average tax rates are the result of refundable tax credits, generally provided to working families with children. For the top income decile, taxpayers with income above $123,210 in 2010, the average of the average tax rates was 13.6%.

In an uncomplicated tax system, marginal tax rates would generally equal the statutory tax rate. For 46% of taxpayers in 2010, effective marginal tax rates differed from the statutory rate. Twenty-nine percent of taxpayers had an effective marginal tax rate that exceeded their statutory rate, while 16% had an effective marginal tax rate that was less than the statutory rate.

Both average and effective marginal tax rates vary both across and within income groups. Average tax rates tend to rise with income, reflecting the overall progressivity of the tax system. However, the substantial variation of average tax rates within income groups illustrates that higher-income taxpayers do not necessarily face higher average tax rates. For lower- and middle-income taxpayers, family composition explains much of the difference in average tax rates for taxpayers with similar incomes.

Unlike average tax rates, effective marginal tax rates do not always rise with income. The phase-ins and phaseouts associated with tax benefits for families with children mean that for these family types, effective marginal tax rates in the lower and middle parts of the income distribution are similar to those faced by taxpayers near the top of the income distribution.

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Introduction

The 115th Congress states that tax reform is a priority. In recent years, the focus of individual income tax reform has been on reducing the number of statutory tax brackets as part of a base broadening, rate reducing tax reform. On June 24, 2016, Republicans released a tax reform blueprint, "A Better Way for Tax Reform."[1] This blueprint proposes to consolidate the seven individual income tax brackets under current law into three, and to eliminate the alternative minimum tax (AMT). Tax reform legislation introduced in the 113th Congress, the Tax Reform Act of 2014 (H.R. 1), also proposed to reduce the number of individual income tax brackets, and repeal the AMT.[2]

Tax reform debates often highlight statutory rates. As is illustrated in this report, however, under the current tax system, statutory rates provide limited information on tax burden. Statutory rates also provide limited information on the economic incentives created by the tax code. When evaluating the equity and economic efficiency (behavioral) effects of tax reform proposals, it is important to look beyond the statutory rate. This report highlights two other tax rate measures: average tax rates and effective marginal tax rates. A taxpayer's average tax rate is the share of total income that is paid in taxes. A taxpayer's effective marginal tax rate is the portion of an additional dollar in earnings that is paid in individual income tax.

The analysis in this report relies on the 2010 Internal Revenue Service (IRS) Statistics of Income (SOI) individual public use file.[3] The individual public use file is a microdata file designed to provide a representative sample of individual income tax filers in a given year. The 2010 file contains 159,791 records designed to provide statistical information for the 142.9 million individual income tax returns filed.[4] The report uses the National Bureau of Economic Research's TAXSIM model to compute tax liability, for the purposes of calculating average tax rates, and effective marginal tax rates.

The focus of this report is on the federal individual income tax. Thus, the tax rates reported here do not include payroll taxes, corporate income taxes, excise taxes, or estate taxes at the federal level. Nor do the tax rates in this report include any state tax liability. The report also does not include any analysis of the effect of transfer payments on effective marginal tax rates.[5]

Not all individuals or households file income tax returns. For example, in 2016, an estimated 83% of "tax units" are expected to file individual income tax returns.[6] The other 17% of tax units are

[1] More information on the blueprint, as well as the full text of the blueprint, can be found at https://waysandmeans.house.gov/taxreform/.

[2] For more information, see CRS In Focus IF00011, *The Tax Reform Act of 2014 (In Focus)*, by Molly F. Sherlock.

[3] **Appendix A** provides additional information. For a general description of the public use file, see Victoria Bryant, *General Description Booklet for the 2010 Public Use Tax File*, Internal Revenue Service, January 2016, available at http://users.nber.org/~Taxsim/gdb/gdb10.pdf. The 2010 public use file was the most recently available data at the time the analysis in this report was completed.

[4] The analysis in this report drops returns filed for tax years other than 2010 to focus on statutory, average, and effective marginal tax rates in a single year.

[5] For analysis of effective marginal tax rates that include taxes as well as transfer programs, see Elaine Maag, C. Eugene Steuerle, and Ritadhi Chakravarti, et al., "How Marginal Tax Rates Affect Families at Various Levels of Poverty," *National Tax Journal*, vol. 65, no. 4 (December 2012), pp. 759-782; Congressional Budget Office, *Effective Marginal Tax Rates for Low- and Moderate-Income Workers*, Washington, DC, November 2012; and Congressional Budget Office, *Effective Marginal Tax Rates for Low- and Moderate- Income Workers in 2016*, Washington, DC, November 2015.

[6] A "tax unit" is defined as an individual or married couple that files an individual income tax return, or would file such (continued...)

not expected to file returns and have no federal individual income tax liability. Overall, roughly 44% of tax units are expected to have zero or negative income tax liability in 2016.[7] But, many taxpayers that have zero or negative income tax liability have positive payroll tax liability. When both income and payroll taxes are considered, an estimated 18% of tax units are expected to have no income or payroll tax liability in 2016.[8] Since this report relies on data from the IRS SOI public use file, only individuals and households (or tax units) that filed individual income tax returns are included in the analysis.

This report provides an overview of the three types of tax rates commonly considered in tax reform debates: statutory, average, and effective marginal tax rates. The first part of the report defines these concepts, and discusses them in the context of the current federal individual income tax system. The report also includes an analysis of how these tax rates vary across the income distribution. The report also looks at variation in average and effective marginal tax rates across taxpayers with similar levels of income. The report concludes with a discussion of potential implications of the analysis for tax reform.

Statutory, Average, and Effective Marginal Tax Rates

Many tax policy debates focus on the statutory tax rates, or the tax rates applied to taxable income. However, in practice, statutory rates do not necessarily reflect a taxpayer's tax burden. Other measures of tax rates that provide more information on tax burdens include average tax rates and effective marginal tax rates. Average tax rates provide a good measure for comparing the burden of taxes across different taxpayers, while both average and effective marginal tax rates provide information on potential economic distortions caused by taxation.

Defining Tax Rates

The following sections define and describe three common tax rate metrics—statutory, average, and effective marginal rates. Statistics are provided to show how these rates vary for taxpayers at different income levels. A case study is also included to illustrate how statutory, average, and effective marginal tax rates differ for a hypothetical taxpayer.

Statutory Tax Rates

Statutory rates are the tax rates applied to taxable income that falls within a given range or tax bracket.[9] The federal income tax system is designed to be progressive, meaning that higher tax

(...continued)

a return if their income were high enough. The tax unit also includes all dependents of that individual or married couple. Tax units are not the same as households. For example, a household with a co-habiting non-married couple would include two tax units. In 2016, the Tax Policy Center estimated that there were 173.4 million tax units, and 144.0 million income tax filers. See Tax Policy Center, Table T16-0121, July 11, 2016, available at http://www.taxpolicycenter.org/model-estimates/tax-units-zero-or-negative-income-tax-july-2016/t16-0121-tax-units-zero-or-negative.

[7] Of this 44% with zero or negative federal income tax, an estimated 38% are non-filers. The other 62% are expected to file a federal income tax return, but have zero or negative federal income tax liability. In the analysis of individual income tax return data below, filers with zero or negative federal income tax liability are included in the sample, while non-filers are not.

[8] See Tax Policy Center, Table T16-0121, July 11, 2016, available at http://www.taxpolicycenter.org/model-estimates/tax-units-zero-or-negative-income-tax-july-2016/t16-0121-tax-units-zero-or-negative.

[9] For statutory individual income tax rates since 1988, see CRS Report RL34498, *Individual Income Tax Rates and*

(continued...)

rates are applied at higher income levels. By design, only income that falls within each tax bracket is taxed at that tax rate. For example, if a single filer has taxable income of $10,000 in 2016, that taxpayer would fall in the 15% statutory tax bracket (see **Table 1**). However, only $725 would be taxed at a rate of 15%. For all single filers, income up to $9,275 is taxed at 10%, regardless of the taxpayer's total taxable income.

Table 1. Statutory Tax Rates

2016

Statutory Tax Rate	Taxable Income Range, Single Filers	Taxable Income Range, Joint Filers
10%	Not over $9,275	Not Over $18,550
15%	$9,275-$37,650	$18,550-75,3000
25%	$37,650-$91,150	$15,300-$151,900
28%	$91,150-$190,150	$151,900-$231,450
33%	$195,150-$413,350	$231,450-$413,350
35%	$413,350-$415,050	$413,350-$466,950
39.6%	Over $415,050	Over $466,950

Source: Internal Revenue Service.

Most tax returns filed fall into one of the lower tax brackets.[11] **Figure 1** classifies returns according to the highest statutory tax rate applied to each return. In 2014, the most recent year for which these data are available, 43% of tax returns filed were either non-taxed or in the 10% tax bracket.[12] These returns contained 9% of all adjusted gross income (AGI) reported on 2014 tax

Measuring Income for Tax Policy Analysis[10]

There are multiple measures of income used in the analysis of tax policy and in administering the federal income tax system.

Cash income is a broad measure of income that is typically used in distributional analyses. Cash income includes sources of income that are not included in measures of income reported on federal income tax forms, and thus is a better measure of ability to pay than certain other measures of income.

Adjusted gross income (AGI) is equal to a taxpayers total income from all sources, less certain adjustments to income (or "above the line" deductions). AGI is the basic measure of income under the federal income tax. However, due to adjustments and exclusions, AGI is not the same as cash income.

Taxable income is the narrowest measure of income used on income tax returns. It is calculated as AGI less the standard or itemized deductions, less personal exemptions.

(...continued)

Other Key Elements of the Federal Individual Income Tax: 1988 to 2017, by Gary Guenther.

[10] CRS Report RL30110, *Federal Individual Income Tax Terms: An Explanation*, by Mark P. Keightley and Jeffrey M. Stupak.

[11] This report includes data from 2010 and 2014. The data from 2014 are the most recent data available from the IRS. However, the most recent public use file available is for 2010. Thus, when analysis of the public use file is required, 2010 data is used. For comparison, **Figure A-1** is the same as, using data from 2010 as opposed to 2014.

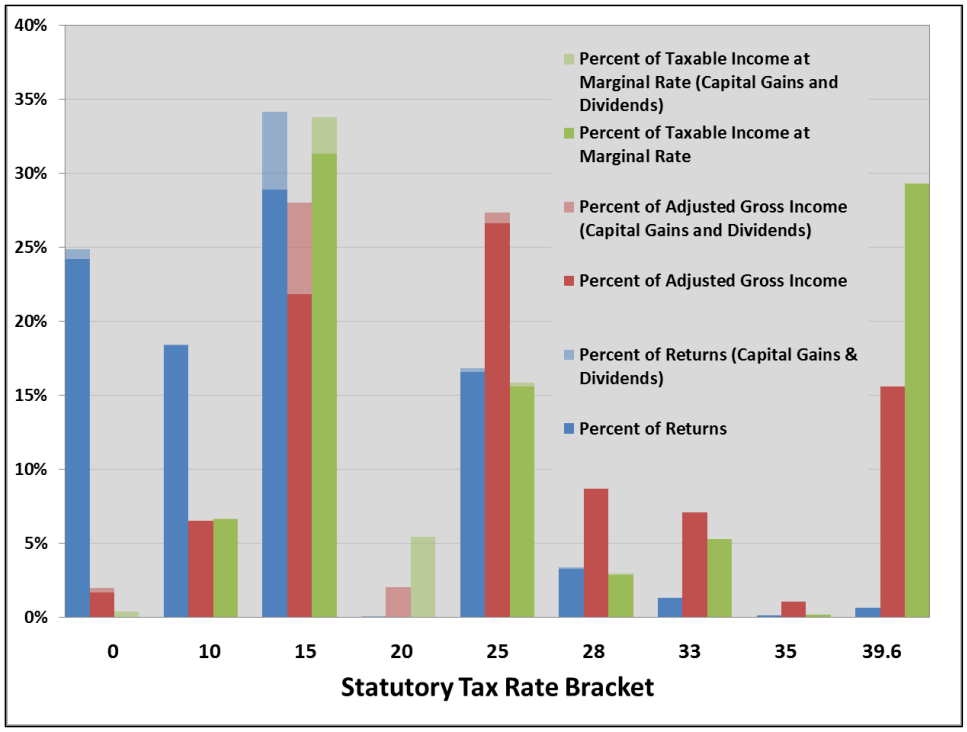
[12] The tax policy center has estimated the number of tax units by tax bracket for 2016. According to their estimates, 0.5% of tax units in 2016 will face the top marginal tax rate of 39.6%. In contrast, nearly half (49.8%) of tax units are non-filers, not taxed, or taxed at the 10% statutory rate. See Roberton C. Williams, "What Tax Bracket Are Americans In?," Tax Policy Center *TaxVox Blog*, July 18, 2016, available at http://www.taxpolicycenter.org/taxvox/what-tax-brackets-are-americans. See also Tax Policy Center, "T16-0085 - Number of Tax Units by Tax Bracket and Filing Status, 2016," available at http://www.taxpolicycenter.org/model-estimates/baseline-distribution-tax-units-tax-bracket-july-2016/t16-0085-number-tax-units-tax.

returns. Less than 1% of returns filed in 2014 were in the top tax bracket (39.6% in 2014). These returns, however, accounted for 16% of all AGI.

Another way to look at the distribution of income across statutory tax rates is to look at the amount of taxable income taxed at a particular rate.[13] In 2014, 29% of taxable income at the marginal rate was taxed at the 39.6% rate. However, less than half of the AGI reported on tax returns falling in the 39.6% bracket was taxed at that rate. The remaining income was taxed at lower rates, per the progressive tax structure.

Figure 1. Tax Returns and Income by Statutory Tax Rate

2014



Source: Internal Revenue Service (IRS) Statistics of Income (SOI) Individual Statistical Tables, Tax Classified by Marginal Tax Rate, Table 3.4, 2014. Available at https://www.irs.gov/uac/soi-tax-stats-individual-statistical-tables-by-tax-rate-and-income-percentile.

Notes: Returns are categorized according to the highest statutory rate applied to each return. Tax rate groups include tax rates applied to ordinary income as well as capital gains and dividends. Data on returns for which the top rate applied was for capital gains and dividends are the lighter portions of the bars. Separating out returns where the top rate applied was for capital gains and dividends makes the largest difference in the 15% bracket. While most returns filed where the top statutory rate was 15% contained primarily ordinary income, 5.3% of returns filed in 2014 had a top rate of 15%, and that 15% rate was applied to income from capital gains or dividends. In 2014, a rate of 20% would only have applied to capital gains and dividend income. Form 8615 returns (returns filed to report certain investment income of children) are excluded. Percentages may not sum to 100 due to rounding.

Much of the analysis below examines tax returns filed for 2010. In 2010, the top statutory tax rate was 35% (the 2010 statutory tax rates and brackets are shown in **Table A-3**). The top rate

[13] Because the tax system is progressive, a return in the 39.6% bracket does not have all income taxed at the 39.6% tax rate. In 2014, only taxable income above $406,751 for single returns ($457,601 for married filing jointly) was taxed at the 39.6% tax rate.

increased to 39.6% following the enactment of the American Taxpayer Relief Act (ATRA; P.L. 112-240).[14] As noted above, very few returns filed fell into the top statutory rate bracket (less than 1% in 2014). However, because the top statutory rate is higher now than it was in 2010, the very highest income taxpayers may face higher average and effective marginal tax rates than in 2010. This is important to keep in mind when considering the results of the analysis presented below.

Average Tax Rates

A taxpayer's average tax rate is the percentage of total income that is paid in taxes. For the purposes of this report, the average tax rate is calculated as income tax liability divided by cash income.[15] Since the analysis only looks at individual income taxes, payroll taxes, for example, are excluded.

The progressive nature of the tax system, coupled with a variety of tax preference items (credits, deductions, exclusions, exemptions, etc.), makes it so that for nearly all taxpayers, average tax rates are less than statutory tax rates. Further, many taxpayers, particularly lower-income taxpayers, have negative average tax rates. Refundable tax credits, such as the earned income tax credit (EITC), can lead to negative average tax rates.[16] Taxpayers that have average individual income tax rates that are negative often have positive payroll tax liability.[17]

In 2010, average tax rates were negative for taxpayers in the bottom four income deciles (or the bottom 40% of taxpayers, in terms of income) (see **Figure 2**).[18] The average of average tax rates (or mean average tax rate) for taxpayers in the second income decile is less than the mean average tax rate for taxpayers in the lowest 10% of the income distribution, reflecting the phase-in of certain refundable credits (e.g., the EITC).

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[14] For more information, including background on other tax policy changes in ATRA, see CRS Report R42894, *An Overview of the Tax Provisions in the American Taxpayer Relief Act of 2012*, by Margot L. Crandall-Hollick.

[15] Cash income is calculated as adjusted gross income, less state and local tax refunds, plus above-the-line adjustments to income, plus tax-exempt interest, plus non-taxable Social Security benefits and non-taxable pension and annuity distributions. Note that this measure of cash income does not include public assistance income, as such income is not reported on a taxpayer's tax return and thus not available in the IRS SOI public use file. Cash income, as opposed to adjusted gross income, is used in the distributional analysis presented later in this report as cash income better reflects a taxpayer's ability to consume and pay taxes. Similar measures of cash income are used in Nada Eissa and Hilary Hoynes, "Redistribution and Tax Expenditures: The Earned Income Tax Credit," *National Tax Journal*, vol. 64, no. 2 (Part 2) (2011), pp. 689-730, and Gilbert E. Metcalf, "Assessing the Federal Deduction for State and Local Tax Payments," *National Tax Journal*, vol. 64, no. 2 (Part 2) (2011), pp. 565-590.

[16] With a refundable tax credit, to the extent that the credit amount exceeds taxes owed by the taxpayer, the credit can be received as a payment. For more on the EITC, see CRS Report R43805, *The Earned Income Tax Credit (EITC): An Overview*, by Gene Falk and Margot L. Crandall-Hollick. Other common refundable tax credits include the child tax credit (CTC), American Opportunity Tax Credit (AOTC), and, in 2010, the first-time homebuyer tax credit. More on these provisions can be found in CRS Report R41873, *The Child Tax Credit: Current Law and Legislative History*, by Margot L. Crandall-Hollick; CRS Report R42561, *The American Opportunity Tax Credit: Overview, Analysis, and Policy Options*, by Margot L. Crandall-Hollick; and CRS Report RL34664, *The First-Time Homebuyer Tax Credit*, by Carol A. Pettit.

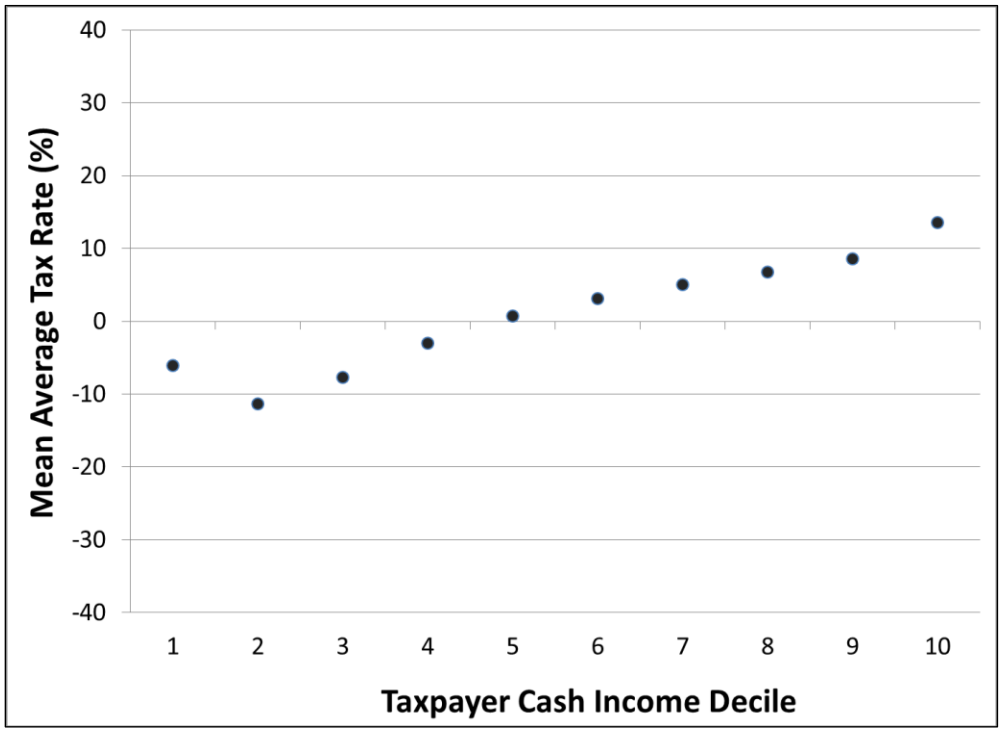
[17] The Tax Policy Center estimated that in 2016, 44% of tax units (including filers and non-filers) had a zero or negative individual income tax liability. However, once payroll taxes were included, the share of taxpayers with zero or negative individual income plus payroll tax liability fell, to 27% in 2016. The share of tax units that have a zero or negative individual income tax liability, and also have no payroll tax liability, was estimated to be 18% in 2016. See Tax Policy Center, "T16-0121 – Tax Units with Zero or Negative Tax Under Current Law, 2016-2026," available at http://www.taxpolicycenter.org/model-estimates/tax-units-zero-or-negative-income-tax-july-2016/t16-0121-tax-units-zero-or-negative.

[18] Income deciles contain an equal number of taxpayers. The bottom four deciles include taxpayers with up to $31,310 in cash income in 2010.

As illustrated in **Figure 2**, average tax rates tend to rise with income. For taxpayers in the top income decile, or those with incomes above $123,230 in 2010, the mean average tax rate was 13.6%. Average tax rates continue to rise towards the very top of the income distribution. For taxpayers in the top 1% in 2010, or those with incomes above $421,340, the mean average tax rate was 19.8% (see **Table B-1** in **Appendix A**).[19] While the top statutory rate in 2010 was 35%, average tax rates, even for the highest-income taxpayers, were less.

Figure 2. Mean Average Tax Rate, by Taxpayer Cash Income Decile

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: See **Table B-1** for income decile break points and data underlying figure. Average tax rates are calculated as income tax liability divided by cash income. Taxpayers with negative cash income are excluded. Mean average tax rates are taxpayer weighted. See text for discussion.

For the income tax system as a whole, average tax rates have fluctuated over time (see **Figure 3** and the related discussion). Between 1960 and 2016, the average tax rate for the U.S. income tax system generally fluctuated between 10% and 16%. Over this time period, the individual income tax system-wide average tax rate was highest in the period immediately preceding the 1986 tax reform, and before the tax cuts of the early 2000s. System-wide average individual income tax rates in the 2000s tended to be lower than the historical average. Beginning in 2009, the system-wide average tax rate began increasing. As of 2016, the system-wide average tax rate approached levels seen before the 1986 tax reform and tax cuts of the early 2000s.

[19] Others have shown that when payroll taxes are included, effective average tax rates tend to fall as taxable income rises. See CRS Report R42043, *An Analysis of the "Buffett Rule,"* by Thomas L. Hungerford (report is no longer available on crs.gov but can be provided by the author of this report upon request). In 2010, the payroll tax contribution base was $106,800. In 2016, the payroll tax contribution base was $118,500.

Average and Effective Marginal Tax Rates over Time

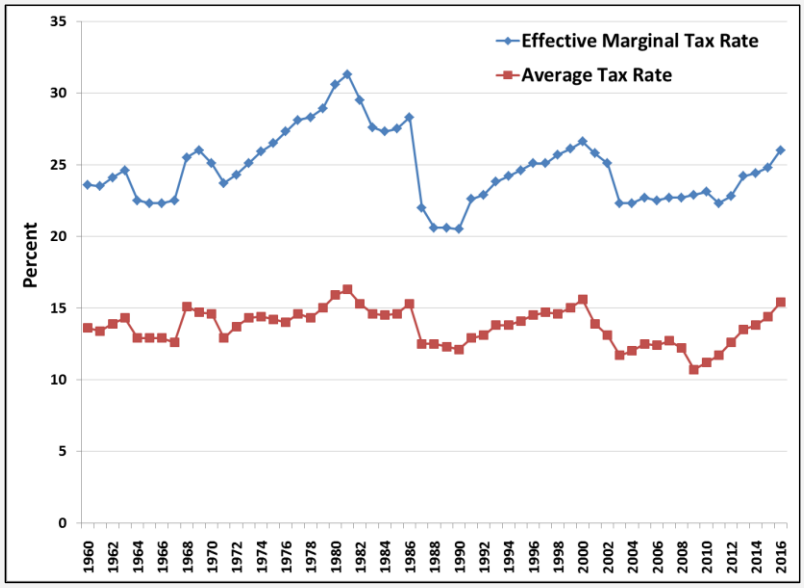
In the federal income tax system, effective marginal tax rates are higher than average tax rates. There are two main reasons why marginal tax rates are higher than average tax rates. First, effective marginal tax rates are higher than average tax rates in a progressive income tax system. Second, phase-outs of various credits, exemptions, and deductions can create effective marginal tax rates that exceed statutory rates.

From 1960 through 2016, the average effective marginal tax rate in the U.S. individual income tax system exceeded the overall average tax rate by approximately 11 percentage points (see **Figure 3**). From 1960 through 2016, overall average tax rates fluctuated between 10% and 16%. The average effective marginal tax rate fluctuated between 21% and 31% during that same time period. The sharpest decline in average tax rates occurred in the early 2000s, reflecting the 2001 and 2003 tax cuts. While average effective marginal tax rates also fell during that time, a sharper decrease occurred during the early and again in the mid-1980s, around the time of the 1981 and 1986 tax reforms. The changes in average and effective marginal tax rates depicted in **Figure 3** reflect both changes in the tax law, as well as changes in the distribution of income over time.

In recent years, both average and effective marginal tax rates have increased. Policy changes, including increased rates on high-income taxpayers, have contributed to this increase. Between 2012 and 2013, when increased tax rates on high income taxpayers under ATRA took effect, the average effective marginal tax rate increased by 1.4 percentage points (from 22.8% to 24.2%), while the overall average tax rate increased by 0.9 percentage points (from 12.6% to 13.5%).

Figure 3. Average and Average Effective Marginal Federal Income Tax Rates

1960 - 2016



Source: National Bureau of Economic Research, "Marginal and Average Tax Rates and Elasticities for the US 1960-2016," March, 2016. Available at: http://users.nber.org/~Taxsim/allyup/.

Notes: Average and marginal income tax rates are dollar weighted.

Effective Marginal Tax Rates

Effective marginal tax rates are the amount paid in tax on the next dollar of income. A taxpayer's effective marginal tax rate can affect work and savings decisions. Higher effective marginal tax rates make non-taxable forms of compensation, such as non-taxable fringe benefits, more attractive. When taxes distort taxpayer choices, society's economic resources may not be put to their most productive use.

Effective marginal tax rates are determined by (1) a taxpayer's statutory tax bracket; and (2) interactions with other credits, deductions, exemptions, and special provisions in the tax code. For the purposes of this report, effective marginal tax rates include only changes to individual income taxes paid from increased earnings. The effective marginal tax rates in this report do not include payroll taxes or reductions in benefits from other government programs.[20] Effective marginal tax rates are computed using the National Bureau of Economic Research's (NBER's) full TAXSIM program.[21] In an uncomplicated tax system, the effective marginal rate would equal the statutory rate.

Both phase-ins and phaseouts of various tax provisions affect a taxpayer's effective marginal tax rate. For example, the earned income tax credit (EITC) can increase or decrease a taxpayer's effective marginal tax rate depending on their level of earnings.[22] In 2016, an unmarried tax filer with one child claiming the EITC would get an EITC of $0.34 for each dollar in earnings, up to $9,920. In other words, in the phase-in range, the EITC reduced the effective marginal tax rate by 34%. The EITC is the primary reason why many lower-income taxpayers have negative average and effective marginal tax rates. The phaseout range for an unmarried taxpayer with one child started at $18,190 in 2016. For every dollar earned beyond $18,190, until earnings reached $39,296, the EITC was reduced by $0.1598. In other words, in the phaseout range, the EITC increased the effective marginal tax rate by 15.98%. The effect of the EITC phaseout on marginal tax rates is also illustrated in the shaded text box ("Case Study") below.

Case Study: Statutory, Average, and Effective Marginal Tax Rates at Different Income Levels

An example with a hypothetical family is used below to illustrate the differences between statutory, average, and marginal tax rates. The hypothetical family in this example consists of a married couple and one dependent child. All income is assumed to be wage income earned by the primary wage earner (if the only source of income is wage income, cash income is the same as AGI).

Statutory, average, and effective marginal tax rates are calculated at three different income levels for this hypothetical family in 2010.[23] As a starting point, wage income is assumed to be $60,000, roughly equal to the median family income for 2010.[24] After personal exemptions and the standard deduction, the taxpayer's taxable income is $37,650.[25] Applying the 2010 tax tables, pre-

[20] See footnote 5 for studies that have evaluated effective marginal tax rates when both taxes and transfer programs are considered.

[21] The NBER's full TAXSIM calculator is available in Stata as taxpuf9. The taxpuf9 command uses data available in the IRS SOI public use file, about 200 variables per taxpayer, to calculate tax liability and marginal tax rates. For more information, see http://www.nber.org/stata/taxpuf9.html. The federal effective marginal tax rate is computed as a weighted average of the rates on primary and secondary earners. Additional background on the TAXSIM model can be found in Daniel Feenberg and Elizabeth Coutts, "An Introduction to the TAXSIM Model," *Journal of Policy Analysis and Management*, vol. 12, no. 1 (Winter 1993), pp. 189-194.

[22] For more on the EITC, see CRS Report R43805, *The Earned Income Tax Credit (EITC): An Overview*, by Gene Falk and Margot L. Crandall-Hollick.

[23] The year 2010 is used in this example since the data on average and marginal tax rates used in the rest of the report is for the 2010 tax year. All income is assumed to be wage income.

[24] See U.S. Census Bureau, "Historical Income Tables: Families," Table F-8, available at http://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-families.html.

[25] The standard deduction for joint filers in 2010 was $11,400. The personal exemption was $3,650.

credit tax liability is $4,810.[26] In 2010, this taxpayer would have qualified for a $1,000 child tax credit and an $800 making work pay credit. Subtracting these credits results in a federal tax liability of $3,010. Thus, this taxpayer had an average tax rate of 5.0%.[27] Since the taxpayer is not in the phase-in or phaseout range for any tax credits claimed, the taxpayer's effective marginal tax rate is equal to the statutory rate, or 15% (see **Table 2**).

For a family with roughly half the median family income in 2010, or $30,000, who is otherwise identical, their statutory tax rate is 10%, while their average tax rate is -9.1%. Before credits, this taxpayer had a pre-credit tax liability of $765. After refundable credits (a $1,000 child tax credit; an $800 making work pay credit; and a $1,685.31 earned income tax credit (EITC)), the taxpayer received a federal tax refund of $2,720.31. Since this taxpayer falls in the phaseout range for the EITC, each extra dollar of earnings reduces their EITC by 16 cents. Their effective marginal tax rate is 26%—the 10% the statutory rate plus the 16% from the EITC phaseout.

The third income level used is $120,000, roughly twice the median family income in 2010. Assuming again the family is identical to those above in all aspects other than income, this family's statutory tax rate would be 25%, while their average tax rate would be 12.9%.[28] This taxpayer falls in the phase-out range for the child tax credit. Thus, for this family, an extra dollar of income would result in a 5% reduction in the child tax credit, in addition to a 25% statutory tax rate. Taken together, this taxpayer's effective marginal tax rate was 30%.

Table 2. Statutory, Average, and Effective Marginal Tax Rates for a Married Couple with One Child at Various Income Levels (2010)

	$30,000	$60,000	$120,000
Statutory Tax Rate	10.0	15.0	25.0
Average Tax Rate	-9.1	5.0	12.9
Effective Marginal Tax Rate	26.0	15.0	30.0

Source: CRS calculations based on 2010 tax law.

Notes: Assumes a married couple filing jointly with one dependent child. Average and marginal tax rates are rounded to one decimal place.

Table 3 contains tax rates in 2016 for the same hypothetical family discussed above, with income levels adjusted for inflation. Similar trends emerge, where the average tax rate is negative for the lowest income family, and average tax rates are overall less than statutory rates. Effective marginal tax rates did not change between 2010 and 2016 for the first two income levels. For the third income level, with a higher inflation-adjusted income in 2016, this taxpayer no longer qualifies for the child tax credit.[29] With the child tax credit fully phased out, this taxpayer no longer has their effective marginal tax rate increased by being in the phaseout range.

[26] In 2010, the 10% rate applied to income up to $16,750 on joint returns. For this taxpayer, income above $16,750 was taxed at a 15% rate.

[27] The average tax rate is the percentage of total income that is paid in taxes, or $3,010 divided by $60,000.

[28] Pre-credit federal income tax liability after applying statutory rates was $16,775 for this taxpayer. The taxpayer qualified for a $500 child tax credit and $800 making work pay credit, making federal income tax liability $15,475.

[29] The child tax credit phase-out begins at $110,000 for married couples filing jointly. This threshold is not adjusted for inflation. For more information, see CRS Report R41873, *The Child Tax Credit: Current Law and Legislative History*, by Margot L. Crandall-Hollick.

Table 3. Statutory, Average, and Effective Marginal Tax Rates for a Married Couple with One Child at Various Income Levels (2016)

	$32,819	$65,639	$131,278
Statutory Tax Rate	10.0	15.0	25.0
Average Tax Rate	-6.4	6.4	13.8
Effective Marginal Tax Rate	26.0	15.0	25.0

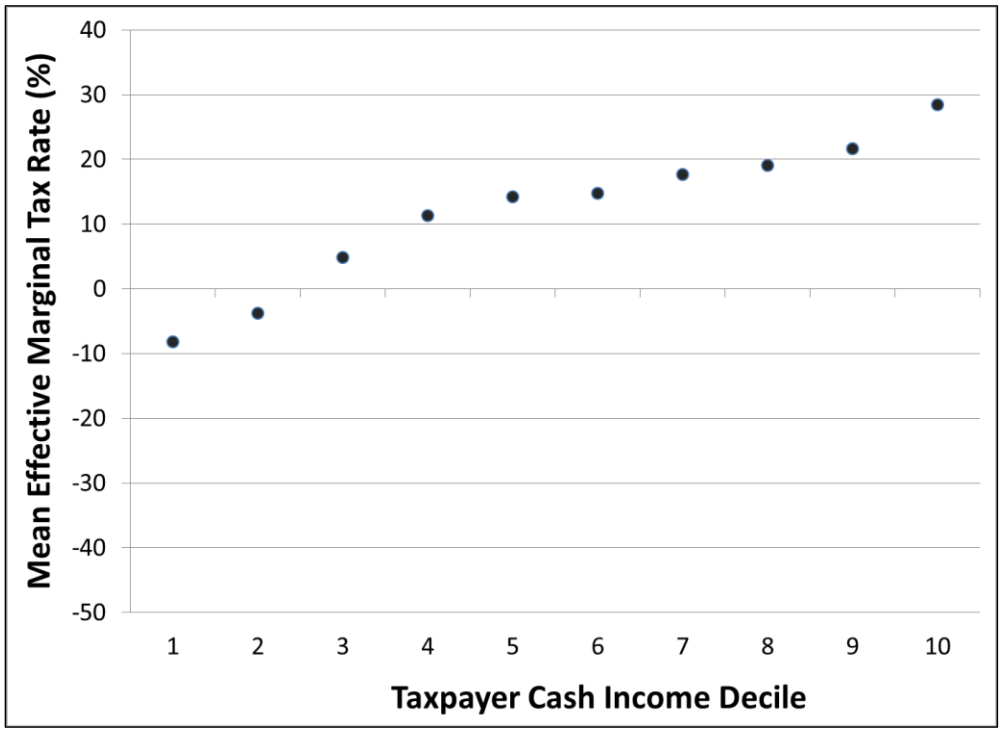
Source: CRS calculations based on 2016 tax law.

Notes: Assumes a married couple filing jointly with one dependent child. Average and marginal tax rates are rounded to one decimal place.

Effective marginal tax rates tend to rise with income (see **Figure 4**). On average, taxpayers in the first two income deciles face negative effective marginal tax rates. These taxpayers tend to be in the phase-in range of the EITC. On average, taxpayers in the top income decile faced an effective marginal tax rate of 28.5%. Marginal tax rates tend to be higher than average tax rates, reflecting the progressive nature of the income tax system. Further, phaseouts of tax benefits for higher-income taxpayers contribute to enhanced progressivity, making marginal tax rates higher for certain higher-income taxpayers.

Figure 4. Mean Effective Marginal Tax Rate, by Taxpayer Cash Income Decile

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: See **Table B-1** for income decile break points and data underlying figure. Taxpayers with negative cash income are excluded. Mean effective marginal tax rates are taxpayer weighted. See text for discussion.

While effective marginal tax rates tend to rise with income, there is substantial variation in the effective marginal tax rates faced by taxpayers within income groups. This observation is discussed further below (see "Tax Rates Vary Across and Within Income Groups").

The Importance of Weights: Taxpayer-Weighted versus Earnings-Weighted Tax Rate Statistics

When looking at average marginal tax rates for a group of taxpayers, or for the tax system as a whole, it is important to distinguish between averages that are taxpayer-weighted (or return-weighted) as opposed to earnings-weighted. Taxpayer-weighted (or return-weighted) summary statistics average the marginal tax rates paid by each taxpayer. Earnings-weighted summary statistics, by contrast, weight each return by the amount of earnings reported, or the earnings reported at the marginal rate. Recall that most taxpayers file returns in the lower statutory rate brackets, but that a larger share of income is reported in the higher statutory rate brackets. As a result, earnings-weighted measures of average effective marginal tax rates tend to be higher than taxpayer-weighted measures.[30]

Mean average tax rates and mean effective marginal tax rates reported in **Figure 2** and **Figure 4** above are taxpayer weighted. However, since the taxpayers are grouped according to income, means calculated on a taxpayer-weighted basis should be similar to earnings-weighted means. The mean average and effective marginal tax rates in **Figure 3** are earnings-weighted, such that the means better reflect tax rates applied to income in the economy. When considering how marginal tax rates might affect economic output, earnings-weighted marginal tax rates are more appropriate.

Observations Using Individual Taxpayer Data

The following sections take a closer look at average and effective marginal tax rates. Specifically, the analysis highlights the variation in tax rates within income groups, and how family composition affects tax burden. Findings are discussed in greater detail below and include the following:

- In 2010, 46% of taxpayers faced an effective marginal tax rate that was different than their statutory rate.
- Average tax rates tend to rise across income groups. Effective marginal tax rates, however, are higher for many low- and middle-income taxpayers, particularly those with children, than they are for higher-income taxpayers.
- For low- and middle-income taxpayers, family composition explains much of the variation in average tax rates within income groups. For higher-income taxpayers, controlling for family composition does less to reduce variation in average tax rates.

[30] The Congressional Budget Office (CBO) estimated that for 2016, the mean effective marginal income tax rate for low- and moderate-income taxpayers was 11.2% in 2016, on a taxpayer-weighted basis. On an earnings-weighted basis, this rate was estimated to be 15.3%. The earnings-weighted mean effective marginal tax rate is higher because (1) statutory rates rise with income; and (2) tax credits phaseouts, such as the EITC phase-out, have a greater effect on taxpayers as income increases. See Congressional Budget Office, *Effective Marginal Tax Rates for Low- and Moderate-Income Workers in 2016*, Washington, DC, November 2015, pp. 6-7. For additional discussion, see Congressional Budget Office, *Effective Marginal Tax Rates for Low- and Moderate-Income Workers*, Washington, DC, November 2012.

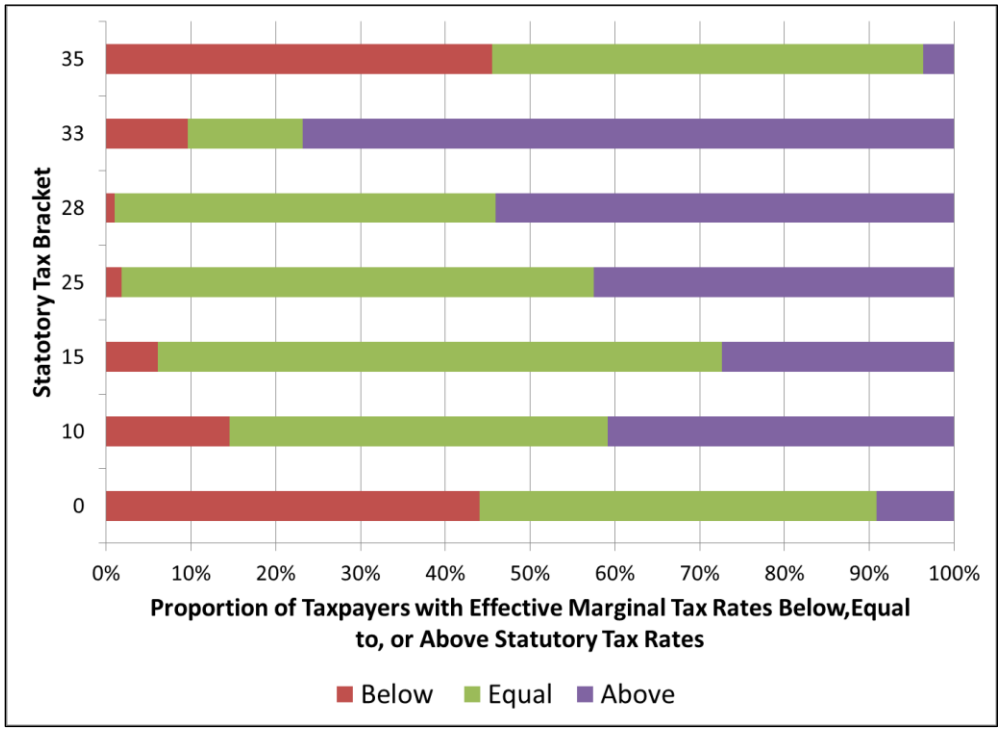
Statutory Tax Rates Do Not Necessarily Reflect Tax Burden

While statutory tax rates are often highlighted in tax reform debates, statutory tax rates are often not a good measure of either taxes paid on additional earnings or overall tax burden. In 2010, 54% of tax filers had an effective marginal tax rate that was the same as the statutory tax rate. For 29% of taxpayers, the effective marginal tax rate was higher than the statutory rate. For 16% of taxpayers, the effective marginal tax rate was less than the statutory rate. The reasons why effective marginal rates differ from statutory rates are discussed in more detail below.

In 2010, taxpayers in the 28% and 33% brackets were most likely to face effective marginal rates higher than their statutory rate (see **Figure 5**). Many taxpayers with little or no income face negative effective marginal tax rates. Thus, taxpayers in the zero statutory rate bracket are among those most likely to face effective marginal tax rates that are below their statutory rate. Taxpayers in the highest tax bracket, 35% in 2010, are also among the most likely to have an effective marginal rate that is less than the statutory rate.

Figure 5. Effective Marginal Tax Rates Relative to Statutory Tax Rates, by Statutory Bracket

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: Marginal tax rates computed using the National Bureau of Economic Research's TAXSIM. Data underlying **Figure 5** as well as additional information on the distribution of effective marginal tax rates within statutory brackets can be found in **Table B-3** in **Appendix B**.

How Much Do Effective Marginal Rates and Average Rates Differ from Statutory Rates?

For many taxpayers, not only do effective marginal and average tax rates differ from statutory rates, but they differ by a sizable amount. **Table 4** provides more information on the magnitude of differences between effective marginal and statutory rates, as well as average and statutory rates.

In the lower tax brackets, when taxpayers faced an effective marginal tax rate above their statutory rate, the difference in the two rates tended to be substantial. In 2010, approximately 41% of taxpayers in the 10% statutory rate bracket had an effective marginal tax rates that was higher than their statutory rate. Approximately 36% of taxpayers in the 10% bracket in 2010 faced effective marginal tax rates that were at least 5 percentage points higher than 10% (faced an effective marginal tax rate of at least 15%), while 20% of taxpayers in the 10% bracket faced effective marginal tax rates that were at least 10 percentage points higher than 10% (faced an effective marginal tax rate of at least 20%).

Taxpayers in higher tax brackets are also more likely to face an effective marginal tax rate that is above their statutory rate. However, the difference between the effective marginal rate and statutory rate tends to be smaller. In 2010, more than half of taxpayers in the 28% bracket, and more than three-quarters of taxpayers in the 33% bracket, faced effective marginal tax rates higher than their statutory rate. Looking at magnitude, nearly 10% of taxpayers in the 28% bracket faced an effective marginal tax rate that was at least 5 percentage points higher than their statutory rate. However, less than 1% of taxpayers in the 28% bracket faced an effective marginal tax rate that was at least 10 percentage points higher than their statutory rate. Very few taxpayers in the 33% bracket faced an effective marginal tax rate that was more than 5 percentage points above their statutory rate.

Table 4. Magnitude of Differences Between Effective Marginal and Statutory Rates and Average and Statutory Rates

2010

	Effective Marginal Tax Rate Above Statutory Rate		Effective Marginal Tax Rate Below Statutory Rate		Average Tax Rate Below Statutory Rate	
Statutory Tax Rate Bracket	At Least 5 Percentage Points	At Least 10 Percentage Points	At Least 5 Percentage Points	At Least 10 Percentage Points	At Least 5 Percentage Points	At Least 10 Percentage Points
0	8.7%	5.0%	44.0%	29.3%	47.4%	34.9%
10	35.9%	20.2%	13.3%	9.9%	99.8%	56.2%
15	13.8%	10.7%	5.9%	3.3%	99.7%	50.8%
25	14.6%	2.7%	1.5%	0.3%	100.0%	93.6%
28	9.8%	0.9%	0.3%	0.3%	99.9%	73.6%
33	0.7%	0.0%	7.3%	0.7%	99.8%	77.1%
35	0.0%	0.0%	44.6%	0.9%	94.3%	44.3%

Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: Marginal tax rates computed using the National Bureau of Economic Research's TAXSIM.

Average tax rates are at least 5 percentage points less than statutory tax rates for nearly all taxpayers. For many taxpayers, average tax rates are less than statutory rates by 10 percentage points. In the 25% bracket, an estimated 94% of taxpayers had an average tax rate of 15% or less

in 2010. In the 35% tax bracket, an estimated 44% of taxpayers had an average tax rate of 25% or less.

Why Do Effective Marginal Tax Rates Differ from Statutory Rates

The U.S. individual income tax system is complex. There are many provisions with phase-ins, phaseouts, floors, or other features that cause effective marginal tax rates to differ from statutory rates.[31] A survey of all provisions that cause effective marginal tax rates to differ from statutory rates is beyond the scope of this report. However, some of the provisions that cause effective marginal tax rates to differ from statutory rates are briefly discussed below.

For lower- and moderate-income families, the earned income tax credit (EITC) and child tax credit (CTC) cause effective marginal tax rates to differ from statutory rates. In 2010, the phase-in rate for the EITC was 40% for a married couple with two children.[32] Thus, for married couples with two children with up to $12,590 in income in 2010, the EITC reduced effective marginal tax rates by 40 percentage points. The EITC phased out at a rate of 21.06% for married couples with two children in 2010, causing effective tax rates to rise by this amount for taxpayers with incomes between $16,450 and $40,363. Thus, the EITC helps explain effective marginal tax rates that are less than statutory rates for many low-income families. The EITC also helps explain effective marginal tax rates that exceed statutory rates for some middle-income families (e.g., married couples with two children in the 15% statutory rate bracket in 2010).

In 2010, the child tax credit affected marginal tax rates for many families with children. Families with earnings of a least $3,000 could receive a refundable credit of up to $1,000 per qualifying child. The credit was phased in at a rate of 15%, therefore reducing effective marginal tax rates by 15 percentage points in the phase-in range. The child tax credit phases out at a rate of 5% for joint filers with incomes above $110,000 ($75,000 for head of household filers). Thus, the CTC decreases effective marginal tax rates for those in the very lowest tax bracket, but increases effective marginal tax rates for those in higher brackets, the 25% statutory bracket in particular. Phaseouts for the EITC and the CTC ensure that the benefits of these provisions are targeted towards the lower and middle portions of the income distribution.[33]

In 2010, the making work pay credit and its associated phaseout increased effective marginal tax rates for many taxpayers in the 25% and 28% tax brackets.[34] The making work pay credit provided a tax credit of up to $400 for single filers, or $800 for married couples filing jointly. The credit was designed to phase out at a rate of 2% of income. The phaseout range for single filers

[31] Complexity of the tax code leading to effective marginal tax rates that differ from statutory rates is not new. For 1998, 22 provisions were identified that caused effective marginal tax rates to exceed statutory rates. See Thomas A. Barthold, Thomas Koerner, and John F. Navratil, "Effective Marginal Tax Rates Under the Federal Individual Income Tax: Death by One Thousand Pin Pricks," *National Tax Journal*, vol. 51, no. 3 (September 1998), pp. 553-564. For a more recent, albeit partial, list of provisions with phase-ins and phase-outs, see Tax Policy Center, "How do Phaseouts of Tax Provisions Affect Taxpayers?" *Briefing Book*, available at http://www.taxpolicycenter.org/briefing-book/how-do-phase-outs-tax-benefits-affect-taxpayers.

[32] The Tax Policy Center has compiled a history of EITC parameters from 1975-2016, with details on phase-in and phase-out rates and ranges. This information can be found at http://www.taxpolicycenter.org/statistics/eitc-parameters.

[33] In 2010, approximately 90% of the benefits of the child tax credit went to tax units in the first four income quintiles (bottom 80% of the income distribution). For data on the distribution of child tax credit benefits in 2010, see Elaine Maag, Stephanie Renane, and C. Eugene Steuerle, *A Reference Manual for Child Tax Benefits*, The Urban Institute, Discussion Paper No. 32, Washington, DC, April 2011, p. 9.

[34] The making work pay tax credit was a refundable tax credit of up to $400 for individuals and $800 for married taxpayers filing joint returns available in 2009 and 2010. For general background on the making work pay tax credit, see CRS Report R40969, *Withholding of Income Taxes and the Making Work Pay Tax Credit*, by John J. Topoleski.

began at $75,000, such that those with income above $95,000 would not receive the credit. For married couples filing joint returns, the phaseout range began at $150,000, and the credit was fully phased out for couples with income above $190,000. The 2% of income phaseout increases effective marginal tax rates for taxpayers in the phaseout range by 2 percentage points.

The alternative minimum tax (AMT) affects effective marginal tax rates for many higher-income taxpayers. Broadly, the AMT has a two-tiered rate structure, with rates set at 26% and 28%.[35] In 2010, the AMT had exemption amounts of $72,450 for joint filers, and $47,450 for non-joint filers. These exemption amounts, however, are phased out above certain income thresholds (in 2010, the phaseout started at $150,000 for joint filers, and $112,500 for single or head of household filers). The exemption amount is phased out at a rate of 25%, making the effective AMT rates 32.5% and 35% in the exemption phaseout range.[36] In 2010, 85% of returns filed in the 33% bracket were returns with alternative minimum tax.[37] The AMT and the associated exemption phaseout explain why most returns filed in the 33% statutory bracket face an effective marginal tax rate of 35% (see **Table B-3**). Of returns filed in the top bracket, or the 35% bracket in 2010, 53% were returns with alternative minimum tax. Thus, for a large proportion of taxpayers in the top statutory tax brackets, the relevant marginal rate is not the statutory rate of the ordinary individual income tax, but instead the effective marginal rate under the AMT.

Most of the 16% of taxpayers with effective marginal tax rates below their statutory rate either do not pay income taxes (are in the 0% bracket) or were in the top tax bracket, the 35% bracket, in 2010. For tax filers with a 0% rate, effective marginal tax rates are the result of phased-in refundable tax credits (e.g., the EITC, child tax credit, or, in 2010, the making work pay tax credit). The AMT, with a top effective rate of 28%, explains why approximately 45% of tax filers in the top statutory tax bracket have a marginal effective tax rate that is less than the statutory rate. Of the less than 1% of taxpayers in 2010 that filed returns that placed them in the top statutory bracket (the 35% bracket), nearly half of those taxpayers face an effective marginal tax rate that is less than the statutory rate, and for most of those taxpayers, the effective marginal tax rate was 30% or less.

Effective marginal tax rates can fluctuate from year to year, as policy changes mean that phase-ins and phaseouts come in and out of the code. For example, in 2010, effective marginal tax rates were affected by the making work pay tax credit. This temporary policy was only available during 2009 and 2010.

Other provisions that increase effective marginal tax rates on higher-income taxpayers are the personal exemption phaseout (PEP) and limitation on itemized deductions (Pease).[38] Notably, these provisions were repealed for 2010, and thus did not affect the effective marginal tax rates summarized in this report.[39] PEP reduces personal exemptions by 2% for each $2,500 that income exceeds phaseout thresholds (in 2016, the phaseout begins at $259,400 for single filers, $311,300 for joint filers). The Pease limitation on itemized deductions is triggered by income, and is not a

[35] The AMT rates are applied to a base that is generally expanded. For details on the AMT, see CRS Report RL30149, *The Alternative Minimum Tax for Individuals*, by Steven Maguire.

[36] For dated but in-depth analysis, see Daniel Feenberg and James M. Poterba, "The Alternative Minimum Tax and Effective Marginal Tax Rates," *National Tax Journal*, vol. 57, no. 2 (June 2004), pp. 407-427.

[37] For data on the number of taxpayers with alternative minimum tax liability by statutory rate bracket, see Department of the Treasury, Internal Revenue Service, "Individual Income Tax Returns 2010," *Publication 1304 (Rev. 08-2012)*, p. 144, available at https://www.irs.gov/pub/irs-soi/10inalcr.pdf.

[38] PEP and Pease do not affect marginal tax rates of AMT taxpayers.

[39] PEP and Pease were reinstated for 2013 as part of the American Taxpayer Relief Act (P.L. 112-240).

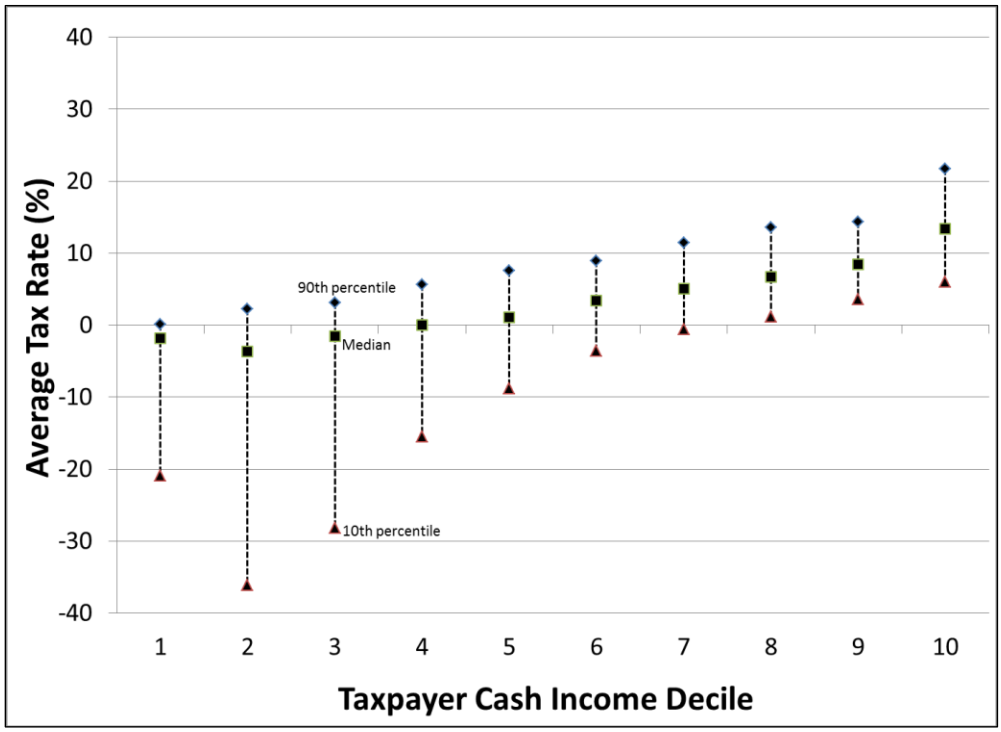
function of the amount of deductions claimed. For taxpayers above the Pease earnings threshold in a given tax year (same as the PEP threshold noted above for 2016), the Pease limitation increases tax liability by $0.03 for each dollar of earnings. Thus, for tax years when Pease is in effect, the Pease limitation serves to increase effective marginal tax rates by 3%.[40]

Tax Rates Vary Across and Within Income Groups

There is substantial variation in average tax rates within income groups. As a result, some higher-income taxpayers have average tax rates that are less than the average tax rate faced by lower-income taxpayers. For example, taxpayers in the 90th percentile of the 4th income decile (cash income between $24,160 and $31,310) had an average tax rate of 5.6% in 2010 (see **Figure 6**).[41] In contrast, taxpayers in the 10th percentile of the 9th income decile ($84,970 - $123,230) had an average tax rate of 3.6% in 2010. Various features of the U.S. tax system make it so that some taxpayers with higher income have average tax rates that are less than average rates paid by some lower-income taxpayers. While there is variation in tax rates within income groups, median average tax rates rise across income groups, reflecting the generally progressive nature of the individual income tax system.

Figure 6. Distribution of Average Tax Rates Within Taxpayer Income Deciles

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: See **Table B-1** for data underlying the figure as well as cash income decile break points.

[40] For a taxpayer in the 35% tax bracket, being subject to the Pease limitation would increase the effective marginal tax rate from 35% to 36.05%, or an increase of about 1 percentage point.

[41] Here, the 90th percentile means that the average tax rate for that taxpayer of 5.6% is higher than the average tax rate paid by 89% of other taxpayers with cash incomes falling in the taxpayer income decile.

The dispersion of tax rates within income groups tends to be widest for taxpayers in the lower-income deciles. Much of this dispersion is due to family composition (discussed more below). That is, lower-income taxpayers with children qualify for refundable credits that reduce average tax rates. As these credits phase-out, there is less dispersion in average tax rates within income groups. Dispersion of average tax rates rises towards the top of the income distribution, after declining in the middle of the income distribution.

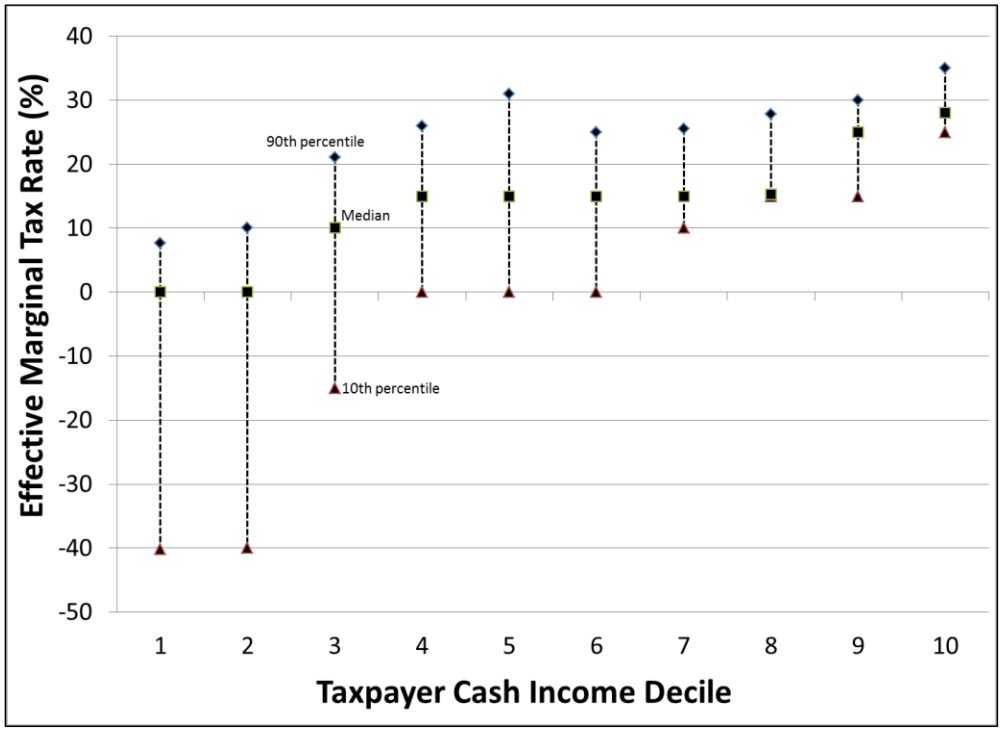
There is also a substantial amount of variation in effective marginal tax rates within income deciles (see **Figure 7**). Most taxpayers in the first two income deciles (those with incomes up to $17,610) face negative effective marginal tax rates. Thus, each dollar in earnings results in more than a dollar of after-tax income. Negative effective marginal tax rates are the result of phase-ins of refundable tax credits.

The median effective marginal tax rate holds steady at 15% through the middle of the income distribution (the 4th through 8th income deciles). This is consistent with the observations above that (1) approximately two-thirds of taxpayers in the 15% statutory tax bracket face an effective marginal tax rate of 15%; and (2) a plurality of tax returns filed fall in the 15% bracket (a plurality of taxable income is also taxed at the 15% rate).

Some taxpayers in the middle of the income distribution face higher effective marginal tax rates than most taxpayers with higher incomes. These relatively high effective marginal tax rates reflect phaseouts of tax credits.

Figure 7. Distribution of Effective Marginal Tax Rates Within Taxpayer Income Deciles

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: See **Table B-2** for data underlying the figure as well as cash income decile break points.

Family Composition and Tax Rates

Family composition is a key factor explaining much of the variation in average and effective marginal tax rates across the income distribution. **Figure 8** illustrates average tax rate by income group for six family types: (1) single, with no dependents; (2) head of household, with one child; (3) head of household, with two children; (4) married, with no dependents; (5) married, with one child; and (6) married, with two children. An estimated 80% of tax filers fell into one of these six family type categories in 2010.[42] In **Figure 8**, income deciles are calculated separately for each family type. For example, for single tax filers in 2010, the top income decile starts at $76,010 (see **Table B-4** for the income ranges associated with the decile break points for the six family types). For married filers, the top income decile starts at $176,160. Looking at **Figure 8**, the distribution of average tax rates for single filers in the top income decile appears roughly similar to the distribution of average tax rates for married filers without children that are in the top 10% of that family type group. The incomes of taxpayers in these two groups, however, are very different.[43]

For low- and moderate-income taxpayers, controlling for family type tends to reduce the variation in average tax rates within income groups. This is less true, however, at the top of the income distribution. In 2010, for the entire sample, tax filers in the 10th percentile of the top income decile faced an average tax rate of 3.8%. Tax filers in the 90th percentile of the top income decile faced an average tax rate of 23.3%. Similar differences between the 10th and 90th percentiles can be observed in **Figure 8** for tax filers in different family type groups in the top income decile. This suggests that for higher-income taxpayers, variation in average tax rates is generally driven by factors other than family composition.

There are several other trends that can be observed in **Figure 8**. For head of household taxpayers, average tax rates tend to decrease across the lowest income deciles, before increasing. This reflects the phase-in of family-related tax benefits, and that married taxpayers' incomes tend to be higher.[44] For head of household taxpayers with one child, the median average tax rate is negative across the first six income deciles (or the first eight income deciles for head of household filers with two children). For married tax filers with two children, the median average tax rate in the 10th decile is higher than the median average tax rate for other married filers. The 10th income decile also starts at a higher value for married filers with two dependents ($200,890) than for married filers with one dependent ($180,310) or married filers without children ($176,160). For head of household filers, in contrast, the 10th income decile starts at a lower level for head of household filers with two children ($63,410) as opposed to one child ($72,710) or single filers without children ($76,610).

Evaluating effective marginal tax rates by family type also reveals some broad trends (see **Figure 9**).[45] In the lowest income deciles, there is less variation in effective marginal tax rates for

[42] The remaining tax filers include those with more than two children, or those claiming exemptions for parent or other dependents.

[43] For comparison purposes, **Figure B-1** looks at average tax rates by family type, with income deciles as they apply to the entire sample. Thus, in this figure, the income break points are the same as those in **Figure 6**. For the full sample, the top income decile begins at $123,230 in 2010. About 3% of single filers without dependents in 2010 had incomes in excess of that amount, while nearly 21% of married filers without dependents had incomes above that threshold. Broad trends observed in **Figure 8** and **Figure B-1** are similar, despite the different method for determining tax filers' income groupings.

[44] Note that in **Figure B-1**, where income groups are determined using decile break points from the full sample, median average tax rates decline across income groups for both head of household and married filers with children before increasing for higher-income tax filers.

[45] **Figure B-2** illustrates effective marginal tax rates by income group and family composition for fixed income deciles, (continued...)

taxpayers without children (either single or married), than for taxpayers with children. For taxpayers with children, there is still substantial variation in effective marginal tax rates within income groups for lower-income deciles. The variation is driven by eligibility for child- and family-related tax benefits.

While average tax rates tend to rise across the income distribution, a different trend appears for effective marginal tax rates for taxpayers with children. Median effective marginal tax rates rise initially, but then tend to decline as incomes increase, before increasing again at the top of the income distribution. This trend is most pronounced for head of household taxpayers with children. Tax credit phaseouts for taxpayers with children cause effective marginal tax rates to be higher for some lower income taxpayers than for higher income counterparts.

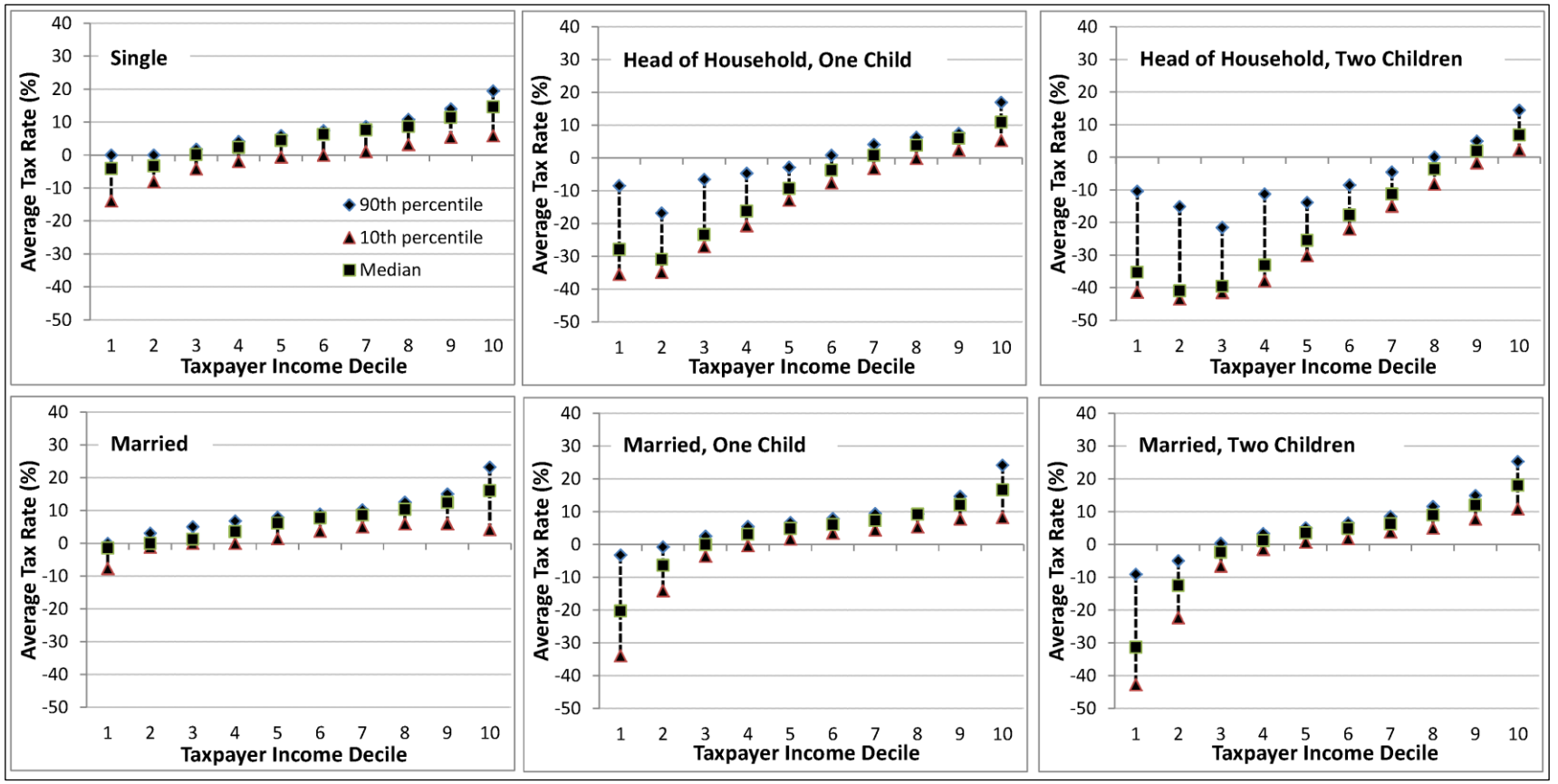
In the lower and middle parts of the income distribution, households with children tend to have average tax rates and effective marginal tax rates that differ from households without children. These differences, however, largely disappear at the top of the income distribution, as tax benefits for families with children phase out.

(...continued)

using the income deciles that were used in **Figure 7**.

Figure 8. Average Tax Rates by Income Group and Family Composition

2010

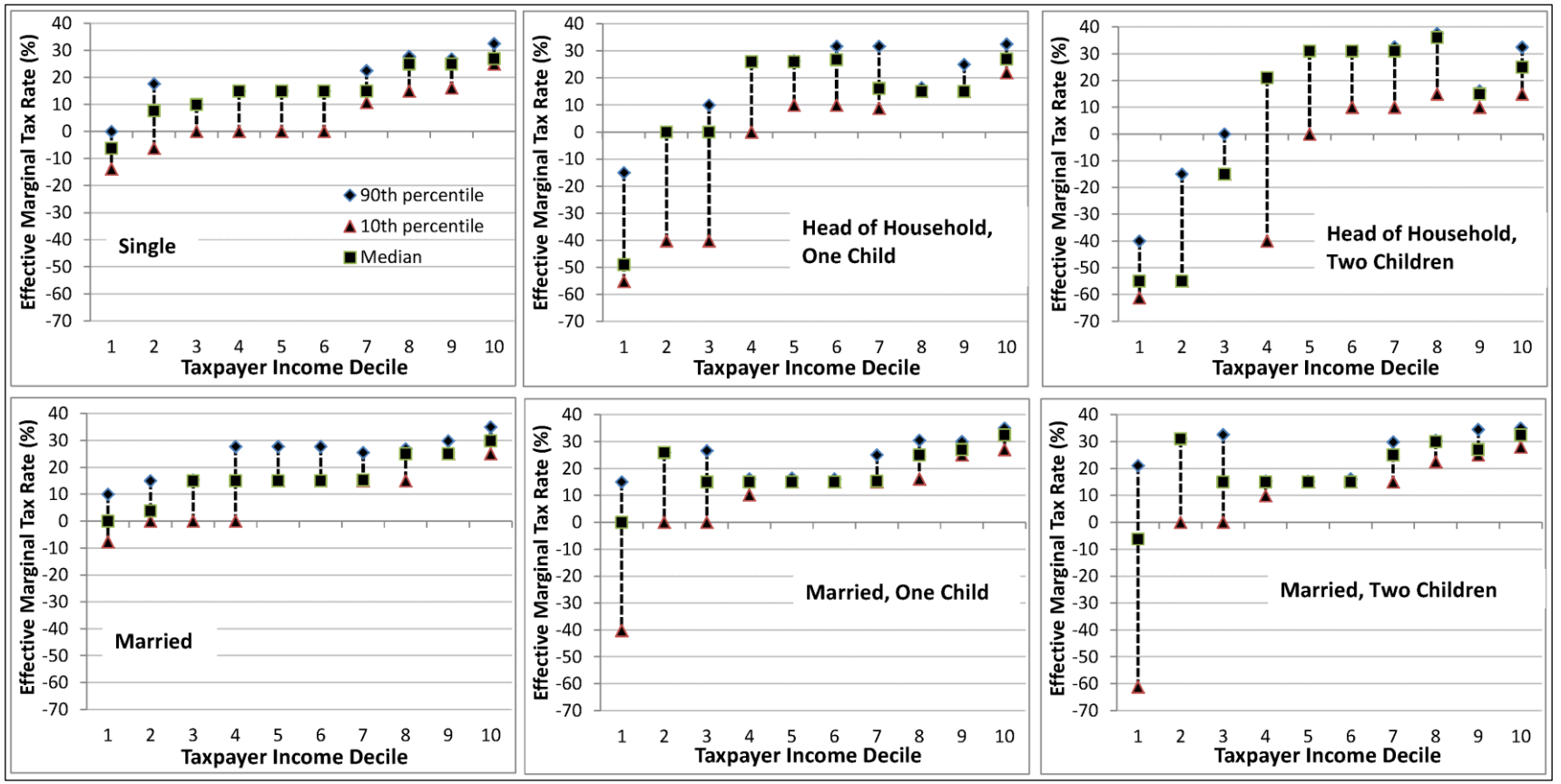


Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: Each chart shows tax rates at the 10th percentile, median, and 90th percentile for each income decile (similar to **Figure 4**). Taxpayer income deciles are cash income deciles. Cash income deciles are calculated independently for each family type. Decile break points for each family type can be found in **Table B-4**.

Figure 9. Effective Marginal Tax Rates by Income Group and Family Composition

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: Taxpayer income deciles are cash income deciles. Cash income deciles are calculated independently for each family type. Decile break points for each family type can be found in **Table B-4**. A "*" indicates that the median is equal to either the 10th percentile (if below the bar) or 90th percentile (if above the bar).

Discussion

The differences between statutory, average, and effective marginal tax rates are important when analyzing tax policy and considering matters of equity and efficiency. Since statutory tax rates provide limited information about tax burdens, questions of equity are often better addressed by using average rates. Since effective marginal tax rates do not equal statutory tax rates for a large proportion of taxpayers, statutory rates provide limited information on the incentives created by the tax code.

Measuring Tax Burden

In the current tax system, statutory tax rates do not provide much information about individual taxpayers' overall tax burden. Average tax rates provide better information about how much taxpayers are paying in income tax. For that reason, analysis of tax policy proposals tends to focus on average tax rates, rather than statutory rates.

In a progressive tax system, average tax rates rise with income. Taxpayers with a greater ability to pay contribute a larger share of their income to taxes, consistent with the notion of vertical equity.[46] A progressive tax system also means that average tax rates tend to be less than statutory tax rates. In 2010, taxpayers in the top 1% of the income distribution had an average tax rate of 19.8%, even though the top statutory rate was 35%.

Summarizing average tax rates for different income groups can also mask variation in average tax rates within income groups. Exemptions, deductions, exclusions, credits, and other features of the tax code mean that, even for taxpayers with similar incomes, average tax rates can vary substantially. Thus, there can be (and are) taxpayers in the 35% statutory rate bracket with average tax rates below taxpayers in the 10% or 15% statutory bracket.

Efforts to address horizontal equity may result in average tax rates that differ for taxpayers with similar levels of income. Horizontal equity suggests that taxpayers who are equal before paying taxes should face a similar tax burden. Horizontal equity also provides that some allowance could be made for family size or composition.[47] In the existing tax system, controlling for differences in family composition reduces, but does not eliminate, variations in tax burden across the income distribution.[48] Further, controlling for family composition tends to expose differences in average tax burdens and effective marginal tax rates between taxpayers with and without children in the lower and middle parts of the income distribution. However, towards the top of the income distribution, average and effective marginal tax rates tend to be more similar across family types. This suggests that how the tax system adjusts for horizontal equity depends where a taxpayer is on the income distribution.

[46] Economists use the concept of "vertical equity" in tax policy analysis, meaning those with greater ability to pay, pay proportionally more. To what extent the tax system should adhere to the concept of vertical equity, if at all, is a matter of debate.

[47] For further discussion of horizontal equity in the context of taxing families, see CRS Report RL33755, *Federal Income Tax Treatment of the Family*, by Jane G. Gravelle.

[48] Other research has used a simulations approach to illustrate horizontal inequities in the tax system across different family types. See Jane Gravelle and Jennifer Gravelle, "Horizontal Equity and Family Tax Treatment," *National Tax Journal*, vol. 59, no. 3 (September 2006), pp. 631-649.

The Tax Code and Taxpayer Behavior

Marginal tax rates can affect taxpayers' work and savings decisions.[49] Increases in marginal tax rates reduce the after-tax returns to work, and tend to cause taxpayers to work less (economists call this the "substitution effect"). With higher tax rates, however, taxpayers may work more to maintain their standard of living (economists call this the "income effect").[50] Theoretically, the income effect might offset some of the reduction in labor supply following tax increases, or increases in labor supply following tax cuts. Empirical evidence suggests that increases in marginal tax rates reduce labor supply, but that the effects are small. A 2012 survey of the literature found that a policy that reduced after-tax income by 1% would lead to a 0 to 0.2% decrease in hours worked (or a 0 to 0.2% decrease in labor force participation).[51]

There are also questions about the extent to which taxpayers know their marginal tax rate, or understand how and when it changes. Analysis of taxpayer behavior regarding effective marginal tax rates has shown that while some taxpayers do report income to maximize tax credits and avoid high effective marginal tax rates, these patterns are not observed consistently in response to various phase-ins and phaseouts in the tax code.[52]

Broadly, however, there is agreement that taxes distort behavior, and result in taxpayers making decisions that are different than they would have made in the absence of taxes. To the extent that effective marginal tax rates lead to taxpayers changing behavior—whether it be changes in labor supply, changes in the form of compensation received (un-taxed fringe benefits as opposed to wages), or non-reporting of income—effective marginal tax rates are the metric that can be used to measure the efficiency cost of taxation.

The notion that an economically efficient tax system is one with a broad base, allowing for low tax rates, is based on the belief that higher rates impose a larger efficiency cost. As illustrated above, for many taxpayers, effective marginal tax rates differ from statutory rates. A tax system with low statutory rates, but high effective marginal tax rates, could cause more distortions than a system with higher statutory rates, but lower effective marginal rates or effective marginal rates closer to statutory rates.

While marginal tax rates can distort taxpayer behavior, for these tax rates to drive changes in behavior, taxpayers need to understand what they are. In the current system, complexity and a lack of transparency regarding effective marginal tax rates makes it hard for taxpayers to understand the economic incentives created by the tax code.[53] In other words, if taxpayers are not

[49] Average tax rates may also influence work decisions. Specifically, if a taxpayer is deciding between working and not working, the average tax rate may affect the decision to work more than the marginal tax rate. Specifically, a taxpayer evaluating whether or not to enter the labor force is more concerned about the after-tax compensation on average, than the marginal rate should an additional hour be worked.

[50] As with labor, theoretically, higher tax rates on savings would lead taxpayers to save less, as after-tax returns are reduced. However, the reduction in savings could be offset by an income effect, as the reduced after-tax return to savings could lead taxpayers to save more to reach a fixed savings target. The cumulative effect of higher tax rates on savings depends on which effect dominates.

[51] Robert McClelland and Shannon Mok, *A Review of Recent Research on Labor Supply Elasticities*, Congressional Budget Office, Working Paper 2012-12, Washington, DC, October 2012, https://www.cbo.gov/sites/default/files/112th-congress-2011-2012/workingpaper/10-25-2012-Recent_Research_on_Labor_Supply_Elasticities_0.pdf.

[52] Jacob A. Mortenson and Andrew Whitten, "Bunching to Maximize Tax Credits: Evidence from Kinks in the U.S. Tax Schedule," November 2016, https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=2719859. A survey of the literature on tax saliency can also be found in Jane G. Gravelle and Sean Lowry, "The Affordable Care Act, Labor Supply, and Social Welfare," *National Tax Journal*, vol. 69, no. 4 (December 2016), pp. 863-882.

[53] Feldman, Katuscak, and Kawano (2016) present evidence suggesting that taxpayers do not understand the marginal (continued...)

aware that they face a high effective marginal tax rate, then they would not be expected to respond by reducing work hours or changing behavior in some other way.

Considerations for Tax Policy Design

Policymakers engaged in tax reform efforts may seek to make the tax system simpler, fairer, and more efficient. With respect to statutory, average, and effective marginal tax rates, there are several considerations for policymakers designing a tax reform plan that achieves these goals.

First, the number of statutory tax brackets has little impact on complexity.[54] Instead, complexity comes from defining the tax base, or what is treated as taxable income. For example, are employee-provided fringe benefits taxable? The rules created in response to this and similar questions make for a complex tax system. Other sources of complexity include various tax incentives designed to address social and economic issues, including but not limited to tax benefits for families, children, education, housing, and charitable giving.[55] Temporary tax provisions, as well as frequent changes in tax policy, also contribute to a complicated individual income tax system. While there is ample room for simplification in tax reform, consolidating and reducing the number of tax brackets alone does little to achieve this objective.

Second, evaluations of equity should consider differences in tax burdens both across and within income groups. The extent to which the tax system is proportional, progressive, or regressive can be evaluated by looking at the average tax burden across income groups. However, as illustrated in this report, under the current individual income tax system, there is substantial variation in tax burdens within income groups. Policymakers might consider whether this variation is desirable, perhaps because it makes adjustments for family size or other ability-to-pay considerations (in other words, makes adjustments to enhance horizontal equity).

Third, low effective marginal tax rates do more than low statutory rates to promote economic efficiency (that is, they introduce fewer distortions in real economic activity). In an uncomplicated tax system, effective marginal rates are equal to statutory rates. Under the current system, however, a taxpayer's effective marginal tax rate often differs from the statutory rate. Phaseouts of various tax benefits, limiting the benefits of certain provisions to low- and moderate-income taxpayers, results in marginal tax rates that exceed the statutory rate. Thus, there is a tradeoff between equity and efficiency objectives.[56] If a reformed tax system includes provisions to reduce the tax burden for low- and moderate-income taxpayers without extending those benefits to higher-income taxpayers, policymakers might consider the marginal tax rate effects of phaseouts associated with those policies.

(...continued)

tax rate effects associated with tax benefits, the child tax credit in their study. See Naomi E. Feldman, Peter Katuscak, and Laura Kawano, "Taxpayer Confusion: Evidence from the Child Tax Credit," *American Economic Review*, vol. 106, no. 3 (March 2016), pp. 807-835.

[54] U.S. Congress, Joint Committee on Taxation, *Overview of Present Law and Economic Analysis Relating to Marginal Tax Rates and the President's Individual Income Tax Rate Proposals*, Scheduled for Public Hearing Before the Senate Committee on Finance, 107th Cong., March 6, 2001, JCX-6-01, p. 45. This point was also made by multiple witnesses during U.S. Congress, Senate Committee on Finance, *Tax Complexity, Compliance, and Administration: The Merits of Simplification in Tax Reform*, 114th Cong., 1st sess., March 10, 2015, S. Hrg. 114-164.

[55] U.S. Congress, Joint Committee on Taxation, *Complexity in the Federal Tax System*, Scheduled for a Public Hearing Before the Senate Committee on Finance, 114th Cong., March 6, 2015, JCX-49-15.

[56] Phaseouts also make the tax code more complicated, creating a tradeoff between equity and simplicity objectives.

Finally, it is helpful to remember the primary goal of taxation: raising revenue. That said, the individual income tax can, and often is, used to achieve social, regulatory, and other policy objectives. Doing so, however, introduces complexity, and can involve trade-offs between other objectives. For example, refundable tax credits enhance the progressivity of the tax system, increasing after-tax income for those with little or no tax liability. With a fixed revenue target, refundable tax credits might be compensated for elsewhere in the system with higher rates. These higher rates could distort taxpayer behavior, possibly creating a disincentive to work. The need to raise revenues can constrain the extent to which the tax code can be used to achieve other policy objectives.

Appendix A. The 2010 Public Use File and the Individual Income Tax System in 2010

Much of the analysis in this report relies on data from the IRS SOI public use file. The most recent public use file available at the time this report was written was for tax year 2010. This appendix provides additional information on the IRS SOI public use file and the individual income tax system in 2010, highlighting differences between the system in 2010 and the current system.

The 2010 IRS SOI public use file contains 159,791 records designed to provide statistical information for the 142.9 million individual income tax returns filed in 2010.[57] The focus of this report is on the 2010 tax year. Thus, records pertaining to previous tax years (5,117 records in total) are dropped, leaving a file that represents 138.3 million returns. Information on the filing status of taxpayers filing 2010 returns in the IRS SOI public use file can be found in **Table A-1**. An estimated 45.1% of returns filed for 2010 were for single taxpayers. An estimated 38.0% were for married filers filing joint returns. The remainder of returns were filed using the married filing separately or head of household filing status.

Table A-1. Returns by Filing Status

2010

Filing Status	Number of Returns	Share of Returns
Single	62,365,807	45.1%
Married Filing Jointly	52,539,769	38.0%
Married Filing Separately	2,298,070	1.7%
Head of Household	21,147,081	15.3%
Total 2010 Returns	***138,352,106***	***100.0%***

Source: CRS analysis of the 2010 IRS SOI Public Use File.

Notes: Aggregated returns (returns with data combined to protect confidentiality) are not included in this table. Thus, the sum of the four filing status categories is not equal to the total number of 2010 returns.

Table A-2 provides information on returns filed, categorized according to adjusted gross income (AGI). In 2010, 57.6% of returns filed reported an AGI of less than $40,000, while 87.1% of returns filed reported an AGI for less than $100,000.

Table A-2. Returns by AGI Group

2010

Adjusted Gross Income (AGI) Range	Number of 2010 Returns	% of 2010 Returns
No AGI (includes deficit)	2,185,627	1.6%
$1 - $10,000	21,275,599	15.4%
$10,000 - $20,000	23,540,256	17.0%
$20,000 - $30,000	18,539,842	13.4%

[57] Victoria Bryant, *General Description Booklet for the 2010 Public Use Tax File*, Internal Revenue Service, January 2016, available at http://users.nber.org/~Taxsim/gdb/gdb10.pdf.

Adjusted Gross Income (AGI) Range	Number of 2010 Returns	% of 2010 Returns
$30,000 - $40,000	14,174,969	10.2%
$40,000 - $50,000	10,707,643	7.7%
$50,000 - $75,000	18,379,538	13.3%
$75,000 - $100,000	11,675,540	8.4%
$100,000 - $200,000	13,693,838	9.9%
$200,000 - $500,000	3,370,180	2.4%
$500,000 - $1 million	532,677	0.4%
More than $1 million	275,018	0.2%
Total 2010 Returns	***138,352,106***	***100.0%***

Source: CRS analysis of the 2010 IRS SOI Public Use File.

Notes: Aggregated returns (returns with data combined to protect confidentiality) are not included in this table. Thus, the sum of the four filing status categories is not equal to the total number of 2010 returns.

Statutory tax rates applied in 2010 appear in **Table 1**. In 2010, the top statutory tax rate was 35%. In 2010, less than 1% of tax returns filed had income taxed at the top marginal statutory rate (see **Figure A-1**). These returns accounted for 14% of AGI in 2010. Just over 27% of taxable income was taxes at the 35% rate in 2010. The proportion of taxpayers taxed at the top rate and the share of income taxed at the top rate were similar between 2010 and 2014. However, the top rate increased from 35% to 39.6% between these two years. Overall, given the current statutory rate bracket structure, changes in the top statutory rate would affect few taxpayers, but would affect a larger proportion of income.

Table A-3. Statutory Tax Rates, 2010

Statutory Tax Rate	Income Range, Single Filers	Income Range, Joint Filers
10%	Not over $8,375	Not over $16,750
15%	$8,375-$34,000	$16,750-$68,000
25%	$34,000-$82,400	$68,000-$137,300
28%	$82,400-$171,850	$137,300-$209,250
33%	$171,850-$373,650	$209,250-$373,650
35%	Over $373,650	Over $373,650

Source: Internal Revenue Service.

There are several features of the 2010 tax code that differ from the tax code in 2016 that affect effective marginal tax rates. For example, the making work pay tax credit was available in 2010, providing up to $800 for joint returns, or $400 for single returns. This credit phased out for higher-income taxpayers.[58] Some taxpayers may have claimed the first-time homebuyer tax credit for property purchased in 2010. Like the making work pay tax credit, this provision phased out

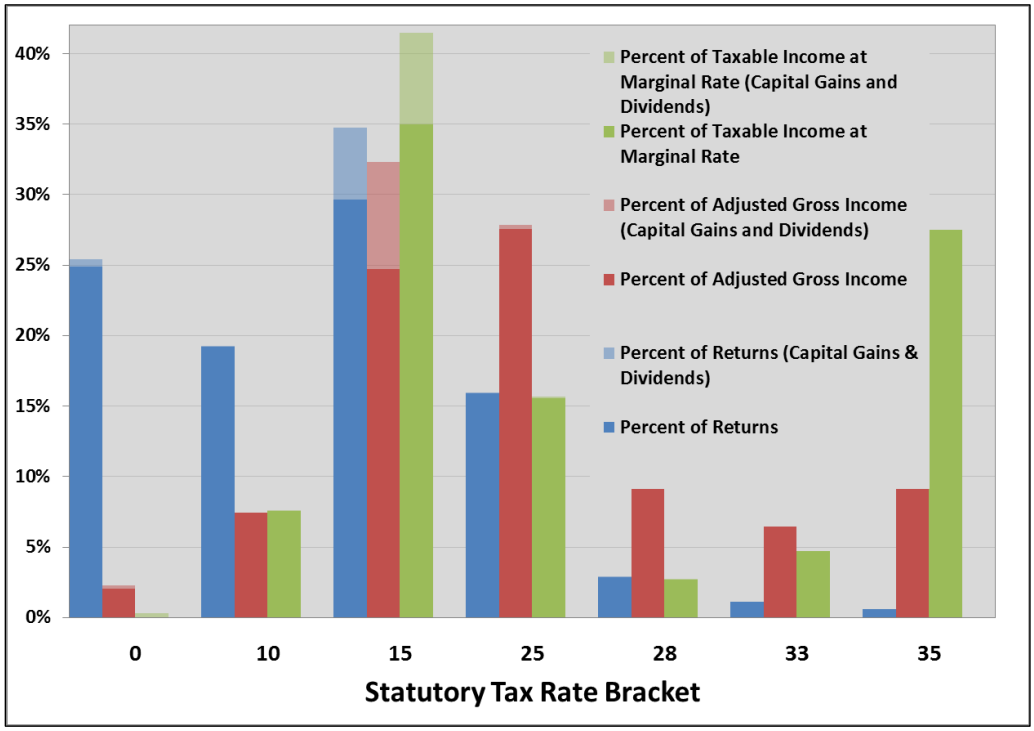
[58] For more information, see CRS Report R40969, *Withholding of Income Taxes and the Making Work Pay Tax Credit*, by John J. Topoleski.

for higher-income taxpayers.[59] Both of these provisions generated increased effective marginal tax rates for taxpayers in the phaseout range.

Under current law, the Pease itemized deduction limit and the personal exemption phaseout (PEP) raise effective marginal tax rates for higher-income taxpayers. These provisions were not in effect in 2010.

Figure A-1. Tax Returns and Income by Statutory Tax Rate

2010



Source: Internal Revenue Service (IRS) Statistics of Income (SOI) Individual Statistical Tables, Tax Classified by Marginal Tax Rate, Table 3.4, 2010. Available at https://www.irs.gov/uac/soi-tax-stats-individual-statistical-tables-by-tax-rate-and-income-percentile.

Notes: Returns are categorized according to the highest statutory rate applied to each return. Tax rate groups include tax rates applied to ordinary income as well as capital gains. Data on returns for which the top rate applied was for capital gains and dividends are the lighter portions of the bars. Form 8615 returns (returns filed to report certain investment income of children) are excluded. Percentages may not sum to 100 because of this exclusion and rounding.

[59] For more information, see CRS Report R40955, *An Economic Analysis of the Homebuyer Tax Credit*, by Mark P. Keightley.

Appendix B. Supplemental Tables and Data

This appendix contains charts and figures to supplement the analysis presented in the body of the report. **Table B-1** contains data underlying **Figure 2** and **Figure 6** in the body of the report. **Table B-2** contains data underlying **Figure 4** and **Figure 7** in the body of the report. **Table B-3** contains data underlying **Figure 5**, as well as additional information on the distribution of effective marginal tax rates within statutory tax brackets.

Table B-4 contains information on the income levels in the income deciles for each of the family types included in **Figure 8** and **Figure 9** in the body of the report. The final two figures presented in this appendix, **Figure B-1** and **Figure B-2**, reproduce **Figure 8** and **Figure 9** using the income decile break points for the entire sample of taxpayers (as opposed to break points determined for each individual family type).

Table B-1. Distribution of Average Tax Rates, by Taxpayer Cash Income Decile

2010

Income Decile	Cash Income Range	Mean Average Tax Rate (%)	Distribution of Average Tax Rates				
			10th	25th	Median	75th	90th
1	Up to $11,160	-6.1	-20.9	-8.1	-1.8	0.0	0.1
2	$11,160 - $17,610	-11.3	-36.1	-25.4	-3.7	-0.0	2.2
3	$17,610 - $24,170	-7.7	-28.2	-14.8	-1.5	1.6	3.1
4	$24,170 - $31,310	-3.0	-15.5	-8.9	0.0	4.2	5.6
5	$31,310 - $39,710	0.7	-8.8	-2.5	1.1	6.6	7.6
6	$39,710 - $50,160	3.1	-3.6	0.0	3.4	7.8	8.9
7	$50,160 - $64,160	5.0	-0.6	1.2	5.0	8.5	11.4
8	$64,160 - $84,970	6.8	1.2	3.7	6.7	9.2	13.6
9	$84,970 - $123,210	8.6	3.6	5.8	8.4	10.9	14.3
10	Above $123,210	13.6	6.0	10.1	13.4	17.1	21.7
Top 5%	$173,110 and Above	16.0	5.9	12.6	16.3	20.5	24.4
Top 1%	$421,340 and Above	19.8	4.4	15.4	23.1	25.8	27.7

Source: CRS analysis of the 2010 IRS SOI Public Use File.

Notes: All tax rates rounded to one decimal place. Taxpayers with negative cash income are excluded from the analysis.

Table B-2. Distribution of Effective Marginal Tax Rates, by Taxpayer Cash Income Decile

2010

Income Decile	Cash Income Range	Mean Effective Marginal Tax Rate (%)	Distribution of Effective Marginal Tax Rates				
			10th	25th	Median	75th	90th
1	Up to $11,160	-8.2	-40.2	-13.9	0.0	0.0	7.7
2	$11,160 - $17,610	-3.8	-40.0	-7.7	0.0	10.0	10.0
3	$17,610 - $24,170	4.9	-15.0	0.0	10.0	15.0	21.1
4	$24,170 - $31,310	11.3	0.0	3.8	15.0	15.0	26.0
5	$31,310 - $39,710	14.2	0.0	10.0	15.0	16.0	31.0
6	$39,710 - $50,160	14.8	0.0	15.0	15.0	16.1	25.0
7	$50,160 - $64,160	17.7	10.0	15.0	15.0	25.0	25.5
8	$64,160 - $84,970	19.1	15.0	15.0	15.3	25.0	27.8
9	$84,970 - $123,210	21.7	15.0	15.0	25.0	26.7	30.0
10	Above $123,210	28.5	25.0	25.5	28.0	32.5	35.0
Top 5%	$173,110 and Above	30.3	25.0	28.0	32.5	35.0	35.0
Top 1%	$421,340 and Above	30.8	26.0	28.0	33.0	35.0	35.0

Source: CRS analysis of the 2010 IRS SOI Public Use File.

Notes: All tax rates rounded to one decimal place. Taxpayers with negative cash income are excluded from the analysis.

Table B-3. Distribution of Effective Marginal Tax Rates, by Statutory Bracket

2010

Statutory Tax Rate	Number of Taxpayers	Distribution of Effective Marginal Tax Rates (percentile)					Share of Taxpayers with Effective Marginal Rates Below, Equal to, or Above Statutory Rates		
		10th	25th	Median	75th	90th	Below	Equal	Above
0%	34,449,843	-40	-13.85	0	0	0	44.0%	46.8%	9.2%
10%	26,936,878	2.35	10	10	17.65	25.98	14.6%	44.6%	40.9%
15%	48,355,503	15	15	15	15.3	27.75	6.1%	66.6%	27.4%
25%	22,318,597	25	25	25	27	30	1.8%	55.7%	42.5%
28%	3,920,548	28	28	28.56	32.5	32.5	1.0%	45.0%	54.0%
33%	1,537,577	33	35	35	35	35	9.6%	13.5%	76.8%
35%	833,160	28	28	35	35	35	45.5%	50.9%	3.6%
All	137,547,943	-6.2	0	15	25	28	16.5%	54.4%	29.2%

Source: CRS analysis of the 2010 IRS SOI Public Use File.

Notes: Proportions may not sum to 100% due to rounding. Taxpayers with negative cash income are excluded from the analysis.

Table B-4. Cash Income Deciles for Various Household Types

2010

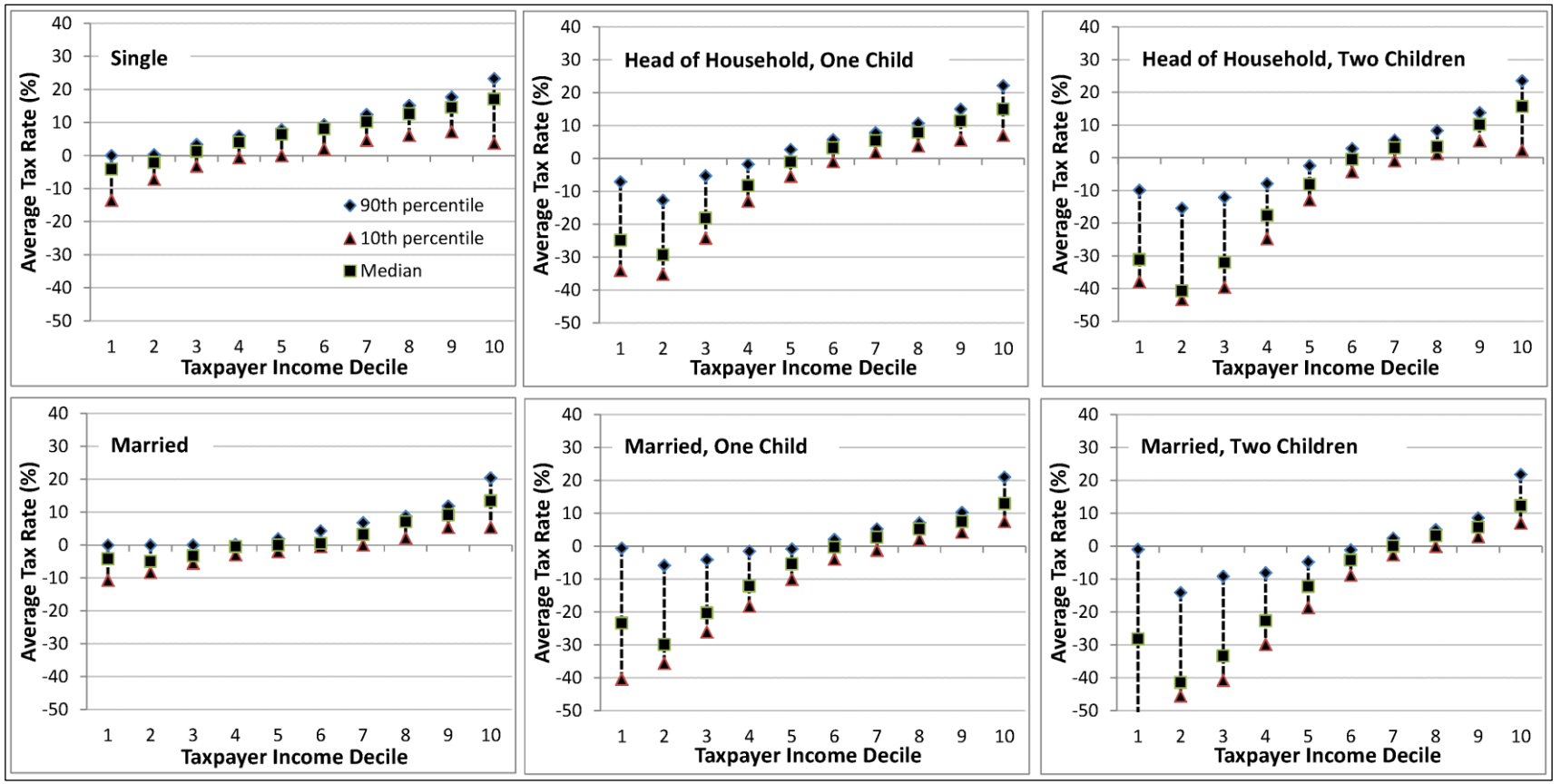
	Single, No Dependents	Head of Household, One Child	Head of Household, Two Children	Married, No Dependents	Married, One Child	Married, Two Children
Proportion of All Taxpayers	37.1%	6.5%	3.7%	18.1%	6.8%	7.5%
Income Decile						
1	Less than $10,510	Less than $12,520	Less than $13,710	Less than $32,660	Less than $26,710	Less than $28,010
2	$10,510 - $15,610	$12,520 - $16,180	$13,710 - $16,830	$32,660 - $44,410	$26,710 - $40,210	$28,010 - $41,710
3	$15,610 - $20,610	$16,180 - $20,010	$16,830 - $19,140	$44,410 - $53,570	$40,210- $52,560	$41,710 - $55,780
4	$20,610 - $25,610	$20,010 - $24,510	$19,140 - $22,110	$53,570 - $63,110	$52,560 - $64,330	$55,780 - $69,610
5	$25,610 - $30,940	$24,510 - $29,310	$22,110 - $25,710	$63,110 - $73,110	$64,330- $77,310	$69,610 - $83,780
6	$30,940 - $36,860	$29,310 - $34,760	$25,710 - $30,010	$73,110 - $85,810	$77,310 - $90,860	$83,780 - $97,960
7	$38,860 - $44,310	$34,760 - $42,010	$30,010 - $35,110	$85,810 - $101,210	$90,860- $107,010	$97,960 - $116,260
8	$44,310 - $55,160	$42,010 - $53,210	$35,110 - $44,310	$101,210 - $125,110	$107,010- $131,410	$116,260 - $144,310
9	$55,160 - $76,010	$53,210 - $72,710	$44,310 - $63,410	$125,110 - $176,160	$131,410 - $180,310	$144,310 - $200,890
10	$76,010 and Above	$72,710 and Above	$63,410 and Above	$176,160 and Above	$180,310 and Above	$200,890 and Above
Top 5%	$100,310 and Above	$98,690 and Above	$84,310 and Above	$255,970 and Above	$253,610 and Above	$291,550 and Above
Top 1%	$211,310 and Above	$204,180 and Above	$154,210 and Above	$651,920 and Above	$596,770 and Above	$759,070 and Above

Source: CRS analysis of the 2010 IRS SOI Public Use File.

Notes: Family types included in this table do not include all family types (families with more than two children, or families with non-child dependents, do not fit into the six family categories designated here, for example). Thus, the sum of the proportion of taxpayers falling into the family categories in this table is less than 100%. Taxpayers with negative cash income are excluded from the analysis.

Figure B-1. Average Tax Rates by Fixed Income Group and Family Composition

2010

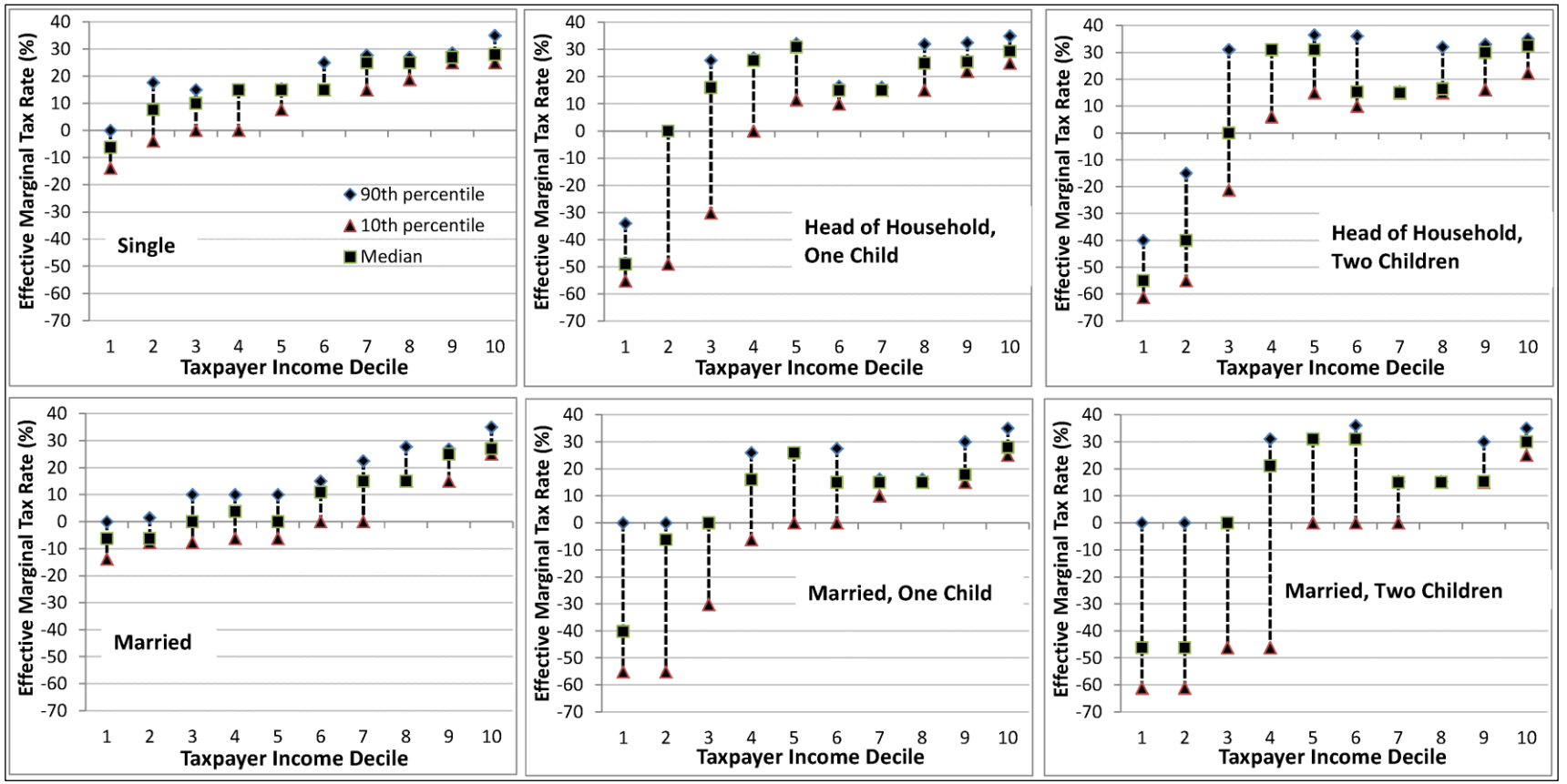


Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: The average tax rate for married taxpayers with two children in the 10th percentile of the lowest income decile was -85.4% in 2010. Thus, the y-axis for this graph does not capture the full range of tax rates for married filers with two children in the lowest income decile. Taxpayer income deciles are cash income deciles. Cash income decile break points can be found in **Table B-1**.

Figure B-2. Effective Marginal Tax Rates by Income Group and Family Composition

2010



Source: CRS analysis of 2010 IRS SOI Public Use File.

Notes: Taxpayer income deciles are cash income deciles. Cash income decile break points can be found in **Table B-2**.

Author Contact Information

Molly F. Sherlock
Specialist in Public Finance
msherlock@crs.loc.gov, 7-7797

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