Office of Tax Analysis

Treasury's Distribution Methodology and Results
July 2021

One of the principal tasks undertaken by the Treasury Department's Office of Tax Analysis (OTA) is the analysis of the distribution of tax burdens. OTA's distributional analyses show how federal taxes and proposed changes in tax law affect the distribution of after-tax income across families. Distributional analyses provide policy makers with guidance on the fairness of the current or proposed federal tax burden. Distributional analyses do not address economic efficiency, simplicity, or other important aspects of good tax policy.[1]

Distribution Methodology

Distributional analysis has several components, of which the major components are:

Taxes Included: All federal taxes are included in Treasury's analyses: individual and corporate income taxes, payroll taxes (Social Security tax, Medicare tax, and unemployment tax), excises and customs duties, and estate and gift taxes. Treasury analyses do not include state or local taxes.

Covered Population: The population reflected in Treasury distributional analyses includes all citizens and residents of the United States and any non-citizens abroad who file U.S. income tax returns. U.S. residents include lawful permanent residents and persons who are present in the U.S. for a substantial period of time. Thus, the U.S. tax population includes certain foreign citizens and undocumented persons. It also includes institutionalized persons. Residents of U.S. territories who do not file U.S. income tax returns are not included in Treasury's distributional analyses. The covered population includes persons who are part of this U.S. tax population but are not represented on a U.S. income tax return because, for example, their incomes are below the tax return filing requirement.

Unit of Analysis: The tax family is the unit of analysis. Tax families include all non-dependent tax returns and include non-filing tax units. Treasury uses families, as opposed to individuals, because families generally operate as an economic unit. The actions and resources of one family

[1] For a more detailed discussion, see Cronin (1999), "U.S. Treasury Distributional Analysis Methodology," *OTA Paper 85*, September 1999.

member affect the resources and welfare of the entire family unit. Treasury uses families as opposed to households because multiple families living in one household is viewed as a way to reduce the prices faced by each family, not a preference independent of income. Most multi-family households are low-income.

Income Measure: Treasury uses a cash income measure. Cash income is a pre-tax, post-transfer income measure. Cash income consists of wages and salaries (not including excludable employee and employer contributions to employer-sponsored retirement accounts and individual retirement arrangements), net income from a business or farm, taxable and tax-exempt interest, dividends, rental income, realized capital gains, unrealized capital gains at death, cash and near-cash transfers from the government, retirement benefits (when distributed), and employer-provided health insurance and other employer benefits. Employer contributions for payroll taxes and the federal corporate income tax are added to place cash income on a pre-tax basis. In other words, because we assume that employees bear the full burden of payroll taxes and that laborers and capital owners bear the burden of corporate income tax, we add to labor and capital income those taxes remitted by other entities on their behalf. Because it is a relatively broad measure of income, cash income more effectively captures a family's relative economic well-being than a measure that, for example, excludes some components of income such as nontaxable transfer income or employer-sponsored health benefits.

Equivalency Measure: For the purpose of ranking families by ability to pay, Treasury adjusts cash income for family size, by dividing income by the square root of family size. Larger families are assumed to require more resources to achieve the same level of welfare as smaller families. Without an adjustment for size, large families and single-person families with the same level of cash income would be ranked the same. Compared to dividing by family size (per capita income), the adjustment reflects the ability of larger families to economize on expenses, so that a family of four is considered half as well-off as a single person family with the same income, as opposed to a quarter as well off.[2]

Incidence Assumptions: The individual income tax is assumed to be borne by payers. Payroll taxes (employer and employee shares) are assumed to be borne by labor (wages and self-employment income). The share of the corporate income tax that represents a tax on supernormal returns is assumed to be borne by shareholders. The share of the corporate income tax that represents collections from a cash flow tax is assumed to have no burden in the long run, and the remainder of the corporate income tax, the share imposed on the normal return to investing, is assumed to be borne equally by labor and positive normal capital income.[3] Excise taxes are assumed to be borne by labor and capital income. In addition, excise taxes are assumed to raise the price of taxed goods relative to other goods, thereby increasing tax burdens for consumers of taxed goods and lowering tax burdens for consumers of untaxed good. The estate and gift taxes are assumed to borne by decedents.

[2] For further discussion, see Cronin, DeFilippes and Lin (2012), "Effects of Adjusting Distribution Tables for Family Size," *National Tax Journal*, December 2012, 65(4), 739-758.
[3] For definition of supernormal returns and further discussion, see Cronin, Lin, Power and Cooper (2013), "Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology," National Tax Journal, March 2013, 66(1), 239-262.

Time Period of Analysis: Treasury creates tables showing the distribution of the tax burden in two time periods – the short run and the long run. Both are single year snapshots of tax burdens, as opposed to lifetime measures of tax burdens. They are based on annual measures of income levels and on demographic characteristics present in the first year of the Budget period (also referred to as the "current" year), assuming the current tax law for that year. Short run tables measure tax burdens in the first year of the Budget period. Long-run tables measure tax burdens under "fully phased-in law" which is generally the law as it will apply in real (inflation indexed) terms at the end of the Budget period. While many tax provisions are constant over time, current and proposed changes in tax law often include provisions whose effects vary over time: some are explicitly temporary, some not indexed for inflation, while others are delayed or phased in. Using fully phased-in law provides a measure of tax burdens under the law as it will operate at the end of the Budget planning horizon, which should most fully reflect the long-run, permanent, distributional consequences of legislation.

Static Income: In general, Treasury assumes that income is unchanged or static. Treasury's distribution estimates are intended to measure the change in tax burden due to a tax proposal. The burden, or benefit, of a tax proposal may not be properly measured by the change in tax payments if income is allowed to change. Although Treasury generally assumes total family income is static, Treasury does allow income to shift between taxable and tax-free forms. For example, a proposal to allow more tax-free fringe benefits, might shift taxable wage income into tax-free fringe benefits.

Distribution Results

The Distribution of Cash Income and its Components

The components of cash income can be divided into labor, capital, and transfer income. At 2022 income levels, cash income totals $18.5 trillion, of which $13.3 trillion (72 percent) is labor earnings, $3.3 trillion (18 percent) is returns to capital, and $1.9 trillion (11 percent) is transfer payments.[4] Labor earnings include wages, the employer share of payroll taxes, employer-provided fringe benefits (primarily health insurance), the labor component of retirement distributions, the labor component of self-employment income (from sole proprietorships, partnerships, and subchapter S corporations), and the labor component of corporate income tax payments. Returns to capital include realized capital gains, unrealized capital gains at death, dividends, interest (taxable and tax-exempt); the capital component of retirement distributions; the capital component of passthrough income from partnerships and S corporations; and the capital component of corporate income tax payments. Transfer payments include Social Security benefits, Supplemental Security Income, Temporary Assistance for Needy Families, Low Income Home Energy Assistance, certain veterans' benefits, workers' compensation, unemployment compensation, other general cash assistance, Supplemental Nutrition Assistance, the insurance value of Medicaid and Medicare, and alimony.

[4] The corporate income tax has been split between capital income (81.5 percent) and labor income (18.5 percent). Without the corporate income tax, capital and labor income would have been higher. Cash income is a pre-tax concept.

Cash income is concentrated among high-income families. At 2022 levels, the lowest decile of families in the income distribution receives less than 1 percent of total cash income and the bottom 50 percent of families receives 14 percent of total cash income. In contrast, the highest decile of families receives 45 percent of total cash income and the top 1 percent of families receives 19 percent of total cash income.

Labor income is concentrated among upper middle- and high-income families, although it is the major source of income for all families. At 2022 income levels, the lowest decile of families receives less than 1 percent of total labor income even though more than half of their income is from labor. The sixth decile's share of total labor income is 7 percent and 77 percent of their income is from labor. The top decile's share of labor income is 40 percent and 63 percent of their cash income is from labor.

Capital income is highly concentrated among high-income families and is only a significant source of income for families in the top deciles. At 2022 income levels, families in the bottom half of the income distribution receive 2 percent of total positive capital income and on average only about 3 percent of their cash income is from positive capital income. In contrast, families in the top decile of the income distribution receive 79 percent of total positive capital income and 32 percent of their income is positive capital income. The top .1 percent is the only group to earn more income from capital than labor.

In contrast to labor and capital income, transfer income is more evenly distributed across income deciles. The largest transfers (Social Security benefits and the insurance value of Medicare) are not means tested. As expected, transfers are a significant source of income for low-income families. Families in the lowest income decile receive about 3 percent of all transfer income, which accounts for 49 percent of their total income.

The Distribution of Federal Taxes under Current Law

A progressive tax system is one in which average tax rates (tax divided by income) rise with income.

Total federal taxes are progressive, ranging from a combined average rate (total tax divided by total cash income, by income class) of less than 1 percent for the bottom decile of families to 26 percent for the top decile of families and 32 percent for the top .1 percent in 2022. The highest decile pays 61 percent of the total tax burden relative to its 45 percent share of total cash income. The second income decile, on net, pays negative taxes because it receives refundable credits (and hence has a negative tax rate), and has about 2 percent share of total cash income.

The individual income tax is progressive. The average individual income tax rates (individual income tax divided by total cash income) for the lowest 40 percent of the income distribution are negative because they benefit from tax credits that generate tax refunds in excess of individual income tax liability. Current law includes several refundable tax credits (the premium tax credit, the earned income tax credit, the additional child tax credit, and the American Opportunity Tax Credit) that can be used to reduce net tax liability below zero. The average individual income tax rate for the lowest income decile is -8.5 percent and for the second lowest income decile, it is

-13.9 percent. The average individual income tax rate for the top decile is 16.9 percent and for the top .1 percent it rises to 22.7 percent.

The corporate tax burden is also progressive. Because labor income bears a small fraction (18.5 percent) of the burden of the corporate income tax, the lower deciles do bear some of the burden of the corporate income tax. However, because capital income and in particular, supernormal capital income, bears the larger burden of the corporate income tax, high income families bear a large share of the burden of the corporate income tax. Average corporate income tax rates range from 1 percent or less for the bottom 90 percent of families to 3.0 percent for the highest decile, and 6 percent for the top .1 percent of families. The bottom 50 percent of families bear 4 percent of the burden of the corporate income tax and the top 10 percent of families bear 73 percent of the burden of the corporate income tax. The top .1 percent of families bears 31 percent of the corporate income tax.

The payroll tax burden is slightly progressive through most of the income distribution and regressive at the top end of the distribution. Average payroll tax rates (payroll tax divided by total cash income) rise as a share of income from the bottom decile through the ninth decile because of the flat payroll tax rate on earnings under the OASDI wage cap and because earnings as a share of income rises through the ninth decile. However, average payroll tax rates fall in the tenth decile because the OASDI wage cap lowers the statutory payroll tax rate on earnings over the cap from 15.3 percent to 2.9 percent (3.8 percent for taxpayers subject to the additional Medicare tax) and because labor income is a smaller share of total income among the highest-income families. The average payroll tax rate (tax as a percentage of cash income) is 7 percent for the lowest decile, 9 percent for the second highest decile, 5 percent for the top decile and only 1 percent for the top .1 percent.

The estate and gift tax is highly progressive. Ninety-three percent of the estate and gift tax burden falls on the top .1 percent of families.