Treasury's Distribution Methodology and Results

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 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 member affect the resources and welfare of the entire family unit.

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 (excluding 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, 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

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

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 only, 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.[2] The adjustment reflects to some degree 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, rather than one-quarter as well off.

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 goods. The estate and gift taxes are assumed to be borne by decedents.

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 snap-shots 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. This will more fully reflect the long-run, permanent, distributional consequences of legislation, than would the effect of the law in the first year of the Budget window.

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[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.

Static Income: In distributional analyses, Treasury assumes that each family's total income is unchanged by tax policy changes (i.e., income is static). In certain cases, Treasury's analysis also holds constant the level of particular types of income. Income is held constant because Treasury's distribution estimates are intended to measure the change in tax burden due to a tax proposal and that change may not be captured if income is allowed to change. A proposal that cuts the tax rate on wages, for example, might stimulate additional labor supply, but the induced increase in taxes would not represent an increase in tax burden; rather it would represent just the opposite. As another example, a proposal that cuts the capital gains tax rate might increase capital gains realizations and therefore increase income and tax payments even though the tax burden has fallen. In order to avoid such misleading effects, Treasury does not allow taxpayers to change labor supply or change capital gains realizations in response to changes in tax rates However, Treasury allows taxpayers to alter the form of their compensation in response to tax policy changes when the tax payment consequences of such shifts are consistent with changes in tax burden. For example, Treasury would allow taxpayers to respond to a proposal to expand tax-free fringe benefits by shifting taxable wage income into tax-free fringe benefits. Treasury distributional estimates also allow for certain other tax minimizing behavior, such as switching between itemized and standard deductions. But because the distributional analysis holds total income constant, the estimated tax burden of a proposal will often differ from the estimated revenue effect of the proposal.

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 2016 income levels, cash income totals $14.5 trillion, of which $10.2 trillion (70 percent) is labor earnings, $2.7 trillion (18 percent) is returns to capital, and $1.6 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, 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] For this purpose, the corporate income tax has been split between capital income (81.5 percent) and labor income (18.5 percent).

Cash income is concentrated among high-income families. At 2016 levels, the lowest decile of families in the income distribution receives only 1 percent of total cash income and the bottom 50 percent of families receives about 15 percent of total cash income. In contrast, the highest decile of families receives 44 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 a significant source of income for all families. At 2016 income levels, the lowest decile of families receives less than 1 percent of total labor income even though 49 percent of their cash income is from labor. The fifth decile's share of total labor income is 5 percent and 73 percent of their cash income is from labor. The top decile's share of labor income is 38 percent and 60 percent of their cash income is from labor.

Capital income is highly concentrated among high-income families, and is a significant source of income only for families in the top deciles. At 2016 income levels, families in the bottom half of the income distribution receive less than 3 percent of total positive capital income and 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 78 percent of total positive capital income and 32 percent of their income is positive capital income.

In contrast to labor and capital income, transfer income is more evenly distributed across income deciles and, as expected, is a significant source of income for low-income families. Families in the lowest income decile receive about 5 percent of transfer income, which accounts for more than half of total income in this decile.

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 -7.3 percent for the bottom decile of families to 29.6 for the top decile of families and 39.2 percent for the top .1 percent in 2016. The highest decile pays 61.9 percent of the total tax burden relative to its 44.5 percent share of total cash income. The lowest income decile, on net, pays negative taxes because it receives refundable credits (and hence has a negative tax rate), and has about 1 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 these families 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 -15.0 percent and for the second lowest income decile, it is -12.3 percent. The average rate for the top decile is 18.2 percent and for the

top .1 percent it rises to 26.0 percent.

The corporate tax burden is also progressive. Because labor income bears a small fraction (19 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 (corporate tax divided by total cash income) range from about 1 percent or less in the bottom 50 percent of the income distribution to 5.0 percent for the top 10 percent and 10 percent for the top .1 percent of families. The bottom 50 percent of tax families bears 4.3 percent of the burden of the corporate income tax and the top 10 percent of families bears 72.5 percent of the burden of the corporate income tax. The top .1 percent of families bears 32.0 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 5.7 percent for the lowest decile, 8.9 percent for the second highest decile, 5.1 percent for the top decile and only 1.2 percent for the top .1 percent.

The estate and gift tax is highly progressive. The average rate (estate tax divided by total cash income) is zero for 95 percent of families and 0.7 percent for the top .1 percent of families. Ninety-one percent of the estate and gift tax burden falls on the top 5 percent of families, with 43 percent on the top .1 percent of families.

The distribution of the federal tax system under fully phased-in current law is similar to that for 2016. This is because most current provisions are indexed for inflation and are permanent.[5]

The Distribution of Taxes under Fiscal Year 2016 Budget Proposals

Enacting FY16 Budget proposals would increase the progressivity of federal taxes in 2016. The policy would increase the average tax rate to 22.5 percent in 2016 from 21.3 percent under current law while widening the range of average federal tax rates across income classes. The lowest four deciles of families would see their average tax rates reduced whereas families with higher incomes would see their average tax rates increased, with the magnitude of tax rate increases rising with

[5] Key tax relief for low- and moderate-income families, the AOTC and certain parts of the EITC and ACTC are scheduled to expire after 2017. However, they are assumed to be permanent in the Administration's Budget baseline, and are thus included in both current law and fully phased-in current law for 2016.

income. Consequently, the overall decline in after-tax income due to the 2016 policy is 1.6 percent for all families, but the bottom three deciles are expected to have an increase in after-tax income of 0.7 percent, 0.6 percent, and 0.4 percent, respectively, compared to a decrease in after-tax income of 3.9 percent for the top 10 percent of families and a decrease in after-tax income of 10.1 percent for the top .1 percent.

Many Budget proposals contribute to this increase in progressivity of federal taxes. Individual income tax proposals as a group, including those that would expand refundable tax credits, reduce the value of tax expenditures, and reform the taxation of capital income, would make individual income taxes more progressive. Proposals that raise corporate income taxes, such as the proposed financial fee and one-time tax on previously untaxed foreign income, would impose tax burdens disproportionally on higher-income families due to the high concentration of capital income. Moreover, the 2016 policy to modify estate and gift tax provisions would predominately increase taxes for the top 10 percent of families. Details of these and other Budget proposals can be found at http://www.treasury.gov/resource-center/tax-policy/Documents/General-Explanations-FY2016.pdf.

These changes in tax law also make the federal tax system more progressive in the long run. However, the impact of the policy on each income class changes in magnitude as the law is fully phased-in, reflecting primarily the temporary nature or a delay in the effective date of some pieces of the policy. For example, the proposed 14-percent one-time tax on previously untaxed foreign income generates revenue in the short run but has no effect in the long run. In the long run, when the proposed Budget policy is fully phased-in, the first eight deciles of families will have a decrease in federal taxes relative to fully phased-in current law whereas the top two deciles of families will have an increase in federal taxes. Consequently, the bottom decile of families are expected to have an increase in after-tax income of 1.0 percent in the long run while the top 10 percent and top 0.1 percent of families are expected to have a decrease in after-tax income of 3.0 percent and 7.2 percent, respectively.