



# CBO's Use of the Income and Payroll Tax Offset in Its Budget Projections and Cost Estimates

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**T**he collection of some types of taxes can affect the revenues generated by other taxes. In particular, excise taxes and other types of “indirect” taxes reduce the revenues derived from individual and corporate income taxes and payroll taxes. When analyzing the effects of legislation, the Congressional Budget Office and the staff of the Joint Committee on Taxation (JCT) take those effects on revenues into account.

Indirect taxes are imposed on goods and services rather than directly on wages, profits, or other forms of income. In addition to excise taxes, they include customs duties and certain compulsory governmental fees. Indirect taxes, whether paid by firms or passed on to consumers, reduce the income of workers and firms. The reduction, in turn, decreases the government’s revenues from “direct” tax sources, such as individual and corporate income taxes and payroll taxes.

Therefore, when CBO and JCT estimate the budgetary effects of changes in indirect taxes, they generally reduce the estimated change in indirect tax revenues by applying an income and payroll tax offset. The offset represents the change in revenues from income and payroll taxes caused by the change in the indirect tax.

The value of the offset varies each year because of differences in tax law and economic factors but in recent years has generally ranged from 21 percent to 25 percent of estimated revenues from indirect taxes; therefore, the net revenues generated from an indirect tax are only about three-quarters of the gross amount of revenues collected from the tax.

CBO applies the offset to budgetary estimates after accounting for people’s behavioral responses to the change

in indirect taxes. The offset is not applied to estimates of spending proposals or to proposals that affect money collected by the government through a businesslike or market-oriented transaction with the public (such as fees collected from leasing federally controlled land).

This report explains how indirect taxes affect net tax revenues, how the rate of the income and payroll tax offset is determined, the cases in which CBO does and does not apply the offset in its cost estimates, and how it reflects the offset in its baseline projections of revenues under current law.

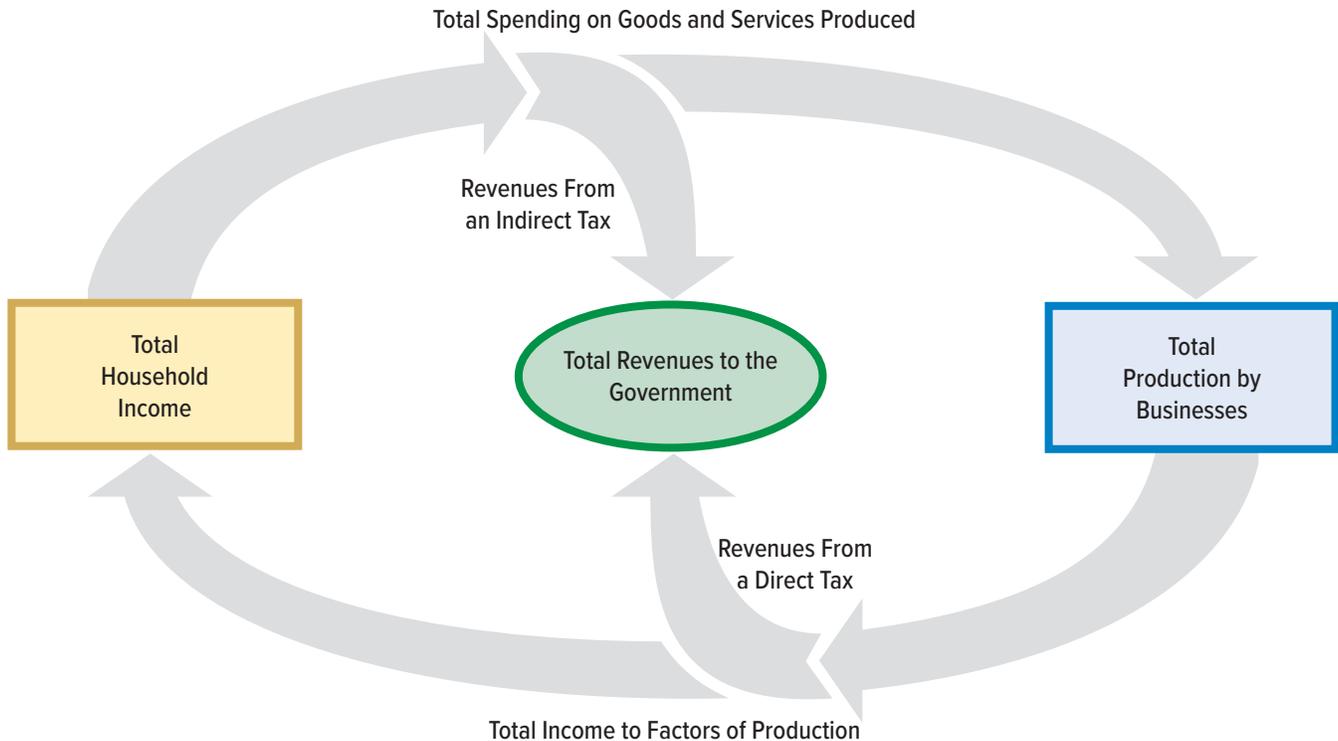
## How Do Indirect Taxes Affect Net Tax Revenues?

Indirect taxes place a wedge between the prices consumers pay for goods and services (spending) and the net income firms receive (compensation). For example, when a firm is required to pay a tariff on an imported good, it has less income to pay to factors of production (the inputs used to produce goods and services—that is, capital and labor), which, in turn, are subject to individual and corporate income taxes and payroll taxes. Consequently, imposing an indirect tax reduces the amount of funds available to pay to factors of production and therefore reduces the government’s revenues from existing individual and corporate income taxes and payroll taxes.

The circular flow of income and production in the U.S. economy illustrates how indirect taxes affect revenues from direct taxes (see Figure 1). Proceeds from total spending on goods and services are used to provide compensation—in the form of wages, profits, rents, and interest—to those who supply the labor, machines, buildings, and other inputs that are needed to produce those goods and services. Taxes imposed on that compensation are considered direct taxes. (Direct taxes typically account for more

Figure 1.

## Federal Revenues and the Circular Flow of Income and Production in the U.S. Economy, With an Indirect Tax



Data source: Congressional Budget Office.

than 90 percent of federal revenues.) Taxes imposed on goods and services at an intermediate stage of their production or at the point of their final sale are considered indirect taxes. Imposing an indirect tax diverts some of the proceeds from spending on those goods and services that otherwise would be available for compensation to the firms or workers that provide the productive inputs.

### An Example of Revenue Flows With and Without an Indirect Tax

The budgetary effect of an indirect tax can be illustrated by an example of revenue flows with and without such a tax (see Table 1). Without the indirect tax (as in Case 1), total income to factors of production equals total spending on goods and services by households, amounting to \$1,000 in the example. Because there is no indirect tax, total income in the economy (labor income, business income, and other income) equals total production (spending). A direct tax on income at a rate of 25 percent thus yields \$250 in revenues.

If the government levies a new indirect tax that equals 10 percent of total sales, for example, it collects \$100 in revenues from that tax (as in Case 2). The total income to factors of production is only \$900, having declined by the amount of the indirect tax. Compared with the first case, the taxable income base is thus lower by \$100, and the direct tax on income yields \$25 less—only \$225.<sup>1</sup> (The amount of the offset is 25 percent in this example because there is a single direct tax of 25 percent.) As a result, the net revenues generated by the indirect tax are only 75 percent of the gross amount of the tax (\$100 in revenues from the indirect tax minus the \$25 reduction in revenues from the direct tax).

1. CBO applies an income and payroll tax offset to its budget estimates after incorporating behavioral responses to the change from the indirect tax. Generally, the offset is applied to collections of excise taxes on a calendar year basis, and the results are adjusted to match the fiscal years used in the budget.

Table 1.

## An Example of Revenue Flows With and Without an Indirect Tax

Dollars

	Total Spending on Goods and Services	Revenues From an Indirect Tax of 10 Percent	Total Income to Factors of Production (Capital and labor)	Revenues From a Direct Tax of 25 Percent on Income	Total Revenues to the Government From Direct and Indirect Taxes
Case 1: Without an Indirect Tax	1,000	0	1,000	250	250
Case 2: With an Indirect Tax	1,000	100	900	225	325

Data source: Congressional Budget Office.

### Incidence of Indirect Taxes

An income and payroll tax offset applies regardless of whether the consumer or the producer ultimately bears the burden of the indirect tax (known as the incidence of the tax). If, at least initially, a firm cannot pass any portion of the tax along to consumers in the form of higher prices for its goods, then it might have to absorb the new indirect tax. In that case, the indirect tax would reduce the firm's payments to factors of production dollar for dollar, which would, in turn, reduce the government's revenues from directly taxing that income. Over time, however, the firm might shift the burden of indirect taxes to consumers in the form of higher prices.<sup>2</sup> But even if the firm could immediately pass along the entire burden of an indirect tax to consumers, a loss of revenues from direct taxes would still occur.

The way the cost is passed to consumers can vary, though, depending on how the indirect tax affects the overall levels of prices of goods and services. In one scenario, which CBO generally assumes to be the case

when developing its cost estimates, the overall price level of goods and services in the economy remains constant. That is, the prices of taxed goods rise, and the prices of untaxed goods fall. If the overall level of prices was unaffected by the tax's imposition (as it was in the case in which firms were unable to pass the burden of the tax to consumers), the tax would lead to reduced compensation to those who provide the inputs to produce all goods. As a result, payments to factors for inputs would be smaller than they would be without the tax. Consequently, revenues collected from direct taxes would likewise be lower.

A similar offset would arise under a different assumption about the overall price level. In another scenario, the aggregate price level changes, but the total real output of the economy (that is, the output adjusted to remove the effects of inflation) remains the same. The ratio of nominal capital income to labor income also remains the same because the price increase is caused entirely by increasing the difference between what consumers pay and the income that firms receive. (That difference is the amount of the indirect tax.) There are still budgetary implications in that case. Revenues would decrease as the higher overall price level boosted inflation-indexed tax parameters and a graduated tax rate structure caused collections of direct taxes to fall. Federal spending would rise because some spending is indexed for inflation—such as spending on Social Security—and the government would also pay more for goods and services for which prices had risen. In that case, a similar offset to the revenues from the indirect tax would still be necessary because of the effects the change in the price level would have on federal revenues and spending.

### Assumption of Fixed Macroeconomic Activity

Estimates of the budgetary effects of proposed changes in law are routinely developed under the assumption

2. The amount of an indirect tax that is shifted to consumers depends on market conditions in the given sector—namely, the number of firms in the sector and the ability of other firms to enter it—and the price sensitivity of demand for a product compared with that of supply. One comprehensive overview of the burden of excise taxation notes that “the standard assumption is that the burdens [of excise taxes] fall on consumers of taxed products (through higher prices)”: See Don Fullerton and Gilbert E. Metcalf, “Chapter 26: Tax Incidence,” in Alan J. Auerbach and Martin Feldstein, eds., *Handbook of Public Economics, Volume 4* (North Holland, 2002), p. 1822, <https://tinyurl.com/2tbx45yx>. However, empirical evidence of the tax's incidence has shown that the consumer's burden can vary from less than 100 percent to more than 100 percent (the latter case is referred to as “overshifting”): See James M. Poterba, “Retail Price Reactions to Changes in State and Local Sales Taxes,” *National Tax Journal*, vol. 49, no. 2 (June 1996), pp. 156–176, <https://tinyurl.com/jc2cj7ux>.

that aggregate macroeconomic activity (that is, the collective production of goods, services, and structures by people, firms, and governments in a given period) is unchanged—thus holding constant such factors as total output, inflation, interest rates, and nominal income.<sup>3</sup> But the income and payroll tax offset applies regardless of whether aggregate macroeconomic activity is assumed to remain constant; the need to incorporate an offset is not contingent on that assumption. (However, in their estimates, CBO and JCT account for legislation's effect on people's behavior, to the greatest extent possible, given that assumption.)

If, in developing a macroeconomic analysis, CBO or JCT did not assume that total output remained constant in the case of a new indirect tax, budget estimates would reflect reduced overall output, all else being equal, because taxes typically have negative effects on economic efficiency (lower tax rates are generally expected to have the opposite effect). That reduction in output would lead to a reduction in direct tax revenues.

### How Is the Offset Rate Determined?

JCT provides the rates of the income and payroll tax offset that CBO generally applies to its estimates of legislative changes in indirect taxes.<sup>4</sup> For 2022, JCT estimated the offset to be 24.3 percent. Applying that offset to a legislative proposal that was estimated to lower revenues from an indirect tax by \$1 billion in 2022 (after accounting for behavioral responses) would thus result in an estimated net decrease of \$757 million in revenues. The effect is symmetric, so a \$1 billion increase in revenues from an indirect tax would increase net revenues by an estimated \$757 million.

JCT estimates the rate of the income and payroll tax offset using factor income (the share of income attributable

to each factor of production in the economy), the percentage of factor income that is taxable, and the applicable marginal tax rate for factor income. JCT calculates the offset rate using CBO's baseline projections of factor income as measured in accordance with the definitions of income and economic concepts in the national income and product accounts (NIPAs).<sup>5</sup> JCT estimates the taxable portions of that income. The estimated offset rate also reflects changes in tax rates that will occur over the baseline projection period under current law. For example, the offset rate is projected to increase by more than 2 percentage points in 2026 because of scheduled changes in tax rules at the end of 2025.<sup>6</sup>

The rate of the income and payroll tax offset reflects the overall effect that changes in indirect taxes have on revenues from direct taxes. Conceptually, an offset rate can vary depending on the specific details of the proposal affecting an indirect tax, including the composition of the tax base, the tax rates affected, and whether a good is being taxed at the retail level or at an intermediate stage of its production. For example, although the federal government usually exempts itself from excise taxes on retail goods, when an excise tax is imposed on an intermediate good, such as energy, the government effectively pays the tax in the form of the increased prices it pays for the goods that it purchases. Therefore, an offset to revenues from a new excise tax on intermediate goods may be higher than an offset to a new excise tax on goods at the retail level because the tax base for the intermediate goods is larger than the base for the retail goods.<sup>7</sup>

3. The assumption that economic aggregates are unaffected by proposals is a widely held estimating convention, but it is not strictly required by statute or other rules. For more discussion of that assumption, see Congressional Budget Office, *How CBO Prepares Cost Estimates* (February 2018), [www.cbo.gov/publication/53519](http://www.cbo.gov/publication/53519); Joint Committee on Taxation, *Revenue Estimating Process* (February 2021), <https://tinyurl.com/kbbh4bhp>, and *Summary of Economic Models and Estimating Practices of the Staff of the Joint Committee on Taxation*, JCX-46-11 (September 19, 2011), <https://tinyurl.com/2p8jrxz>.

4. CBO estimates the costs of proposed legislation involving governmental fees and customs duties. In the case of a new tax, CBO uses estimates from the staff of the Joint Committee on Taxation—the official estimators for tax legislation considered by the Congress.

5. The NIPAs are produced by the Department of Commerce's Bureau of Economic Analysis. They are not intended to help the government plan or manage its activities; rather, they provide a general framework for describing the U.S. economy and show how the federal government fits into that framework.

6. See Joint Committee on Taxation, *Income and Payroll Tax Offsets to Changes in Excise Tax Revenues for 2022–2032*, JCX-6-22 (April 29, 2022), <https://tinyurl.com/npe53spb>. In 2012, JCT began estimating an offset value for each year, under the assumption that current law applied and to be consistent with taxable income amounts from CBO's current macroeconomic forecast. Before that, CBO and JCT generally used a constant 25 percent revenue offset in cost estimates. See Congressional Budget Office, *The Role of the 25 Percent Revenue Offset in Estimating the Budgetary Effects of Legislation* (January 2009), [www.cbo.gov/publication/20110](http://www.cbo.gov/publication/20110); and Joint Committee on Taxation, *The Income and Payroll Tax Offset to Changes in Excise Tax Revenues*, JCX-59-11 (December 23, 2011), <https://tinyurl.com/ynu7wkwz>.

7. Louise Sheiner, "Rationalizing the Tax Offset" (unpublished working paper, Federal Reserve Board of Governors, Washington, D.C., 1994).

**Box 1.****The Budgetary Treatment of Customs Duties**

The Congressional Budget Office typically applies an income tax offset to the estimated budgetary effects of customs duties.<sup>1</sup> Customs duties are tariffs—or taxes—collected on certain goods transported into the United States, and they are in addition to any federal excise taxes that are owed on the goods when they are sold. By statute, the importer or entity transporting the good into the United States is responsible for paying the duty; however, a portion of the duty may be borne by foreign producers in the form of lower export prices they receive. Depending on that outcome, a customs duty may or may not reduce tax revenues collected from direct taxes.

Who ultimately bears the burden of the customs duty has implications for its budgetary treatment because it can affect

1. Studies examining recently introduced tariffs have found that the burden of the tariffs has almost entirely been passed to U.S. importers and consumers. See, for example, Mary Amiti, Stephen J. Redding, and David E. Weinstein, “The Impact of the 2018 Tariffs on Prices and Welfare,” *Journal of Economic Perspectives*, vol. 33, no. 4 (Fall 2019), pp. 187–210, <https://tinyurl.com/2cx3hp8m>; Pablo D. Fajgelbaum and others, “The Return to Protectionism,” *Quarterly Journal of Economics*, vol. 135, no. 1 (February 2020), pp. 1–55, <https://tinyurl.com/4ym73h2k>; Alberto Cavallo and others, *Tariff Passthrough at the Border and at the Store: Evidence From U.S. Trade Policy*, Working Paper 26396 (National Bureau of Economic Research, October 2019), [www.nber.org/papers/w26396](http://www.nber.org/papers/w26396); and Aaron B. Flaaen, Ali Hortaçsu, and Felix Tintelnot, *The Production Relocation and Price Effects of U.S. Trade Policy: The Case of Washing Machines*, Working Paper 25767 (National Bureau of Economic Research, April 2019), [www.nber.org/papers/w25767](http://www.nber.org/papers/w25767).

payments to factors of production. In the case of an indirect tax levied on a domestically manufactured good, the calculation of the offset involves estimating the tax’s effect on payments to domestic factors of production. However, the budgetary treatment of customs duties is complicated because the goods involved are manufactured outside of the United States, and payments to foreign factors of production do not affect the tax base in the United States.<sup>2</sup> Therefore, the incidence of the duty is an important factor in the analysis: If the customs duty was fully passed forward to the importer or domestic consumer, the usual offset would apply. But if the duty was fully passed back to the foreign manufacturer, the U.S. consumer or importer would not bear the burden of the indirect tax. In that case, an offset should not be applied to the estimated budgetary effect of the customs duty, because domestic factors of production would not bear the burden of the duty.

Depending on the goods affected, market conditions, and the duty’s size, its incidence probably falls somewhere between the two cases, with U.S. consumers or importers sharing part of the burden of the duty with foreign manufacturers. CBO applies an offset to projected revenues from customs duties because evidence suggests a significant share of the duties is borne by domestic importers and consumers of the imported goods.

2. In some cases, U.S. citizens living abroad may have foreign earned income that is taxable by the United States.

**When Do CBO and JCT Apply the Offset?**

CBO and JCT apply the income and payroll tax offset when they estimate the net revenues arising from legislative changes to indirect taxes (that is, taxes imposed on goods and services at an intermediate stage of production or upon their final sale, as well as customs duties and certain governmental fees). Indirect taxes include the following:

- **Excise Taxes.** An offset is applied to the estimated budgetary effects of taxes paid on purchases of specific goods or services, such as gasoline and diesel fuel, tobacco products, and alcohol. Excise taxes are also collected on certain activities, such as sports wagering or highway use by trucks (through the heavy vehicle use tax). Such taxes are often included in the price of the product.
- **Customs Duties.** CBO applies an offset to the estimated budgetary effects of customs duties. Customs duties are tariffs—or taxes—collected on certain goods transported into the United States, and they are in addition to any federal excise taxes that are owed on the goods when they are sold. (See Box 1 for a discussion about how customs duties affect revenues collected from direct taxes.)
- **Compulsory Governmental Fees.** CBO applies an offset to the estimated budgetary effects of certain governmental fees, including the Transportation Security Administration fee, which helps finance the cost of securing the nation’s aviation transportation system, immigration fees, judicial fees, and regulatory fees. The offset is not applied to optional businesslike transactions, such as paying a fee to enter a national park.

An offset is not applied to certain compulsory fees collected by the federal government using its sovereign authority if the collection is triggered by an annual appropriation act or is required to be recorded as an offsetting receipt (that is, a negative outlay rather than a revenue).

An offset is applied to changes in an employer's share of payroll taxes, even though they are considered a direct tax source.<sup>8</sup> A proposal to change the tax rate charged on the employer's share of payroll taxes would affect earnings that are used to determine employees' income and payroll taxes. For example, faced with an increase in the employer's share of Social Security taxes or its payment of unemployment insurance premiums, employers would ultimately provide less in other forms of compensation to keep their total compensation costs unchanged. That response would reduce income that is counted to determine employees' income and payroll taxes. However, the offset rate applied to changes in the employer's share of payroll taxes is not the standard offset rate applied to changes in indirect taxes; rather, it generally varies on the basis of the specification of the proposal.

### Why Does CBO Not Apply the Offset to Offsetting Collections or Offsetting Receipts in Its Cost Estimates?

When the federal government collects money from a businesslike or market-oriented transaction, the collection is recorded as a reduction in spending rather than an increase in revenues.<sup>9</sup> Such collections are called offsetting collections or offsetting receipts. And while the concept is similar to indirect taxation, the estimates of the income arising from such collections or receipts are not subject to an offset, because offsetting collections and offsetting receipts do not affect income subject to direct taxation.

Offsetting collections and offsetting receipts are usually the results of payments made by firms or individuals

8. Those employer-paid payroll taxes are the taxes on earnings used to finance the Old-Age and Survivors Insurance Trust Fund, the Disability Insurance Trust Fund, the Hospital Insurance Trust Fund, and other social insurance programs. The amount of the offset applied to such payroll tax proposals would not be the usual one, because it is calculated using a slightly different tax base. See Joint Committee on Taxation, *The Income and Payroll Tax Offset to Changes in Payroll Tax Revenues*, JCX-89-16 (November 18, 2016), <https://tinyurl.com/2h5mac8z>.

9. Examples of fees collected by the government in a businesslike or market-oriented transaction are the fee collected from leases from a private company to develop oil or gas reserves on federally controlled land and entrance fees to national parks.

that choose to participate in the transaction (in other words, they are not compelled by a sovereign authority to participate).<sup>10</sup> For firms, payments made to the government on the basis of such transactions would either be a substitute for some other production cost the firms would otherwise incur or would be in exchange for a service that enabled firms to produce something they were not producing before (such as oil from a new drilling lease). Consequently, increasing such collections would not reduce taxable income, and the net revenues to the government would be the full amount collected; thus, no offset would need to be applied.

### Why Does CBO Not Apply the Offset to Changes in Federal Spending?

As a general rule, the income and payroll tax offset is not applied to estimates of spending proposals: Under the procedures followed in the Congressional budget process, related revenue changes are generally not considered for legislative proposals that would directly affect only outlays. Therefore, CBO does not generally apply an income and payroll tax offset to the estimated budgetary effects of outlays for transfer payments to individuals or for subsidies to businesses, or for the purchase of goods and services.

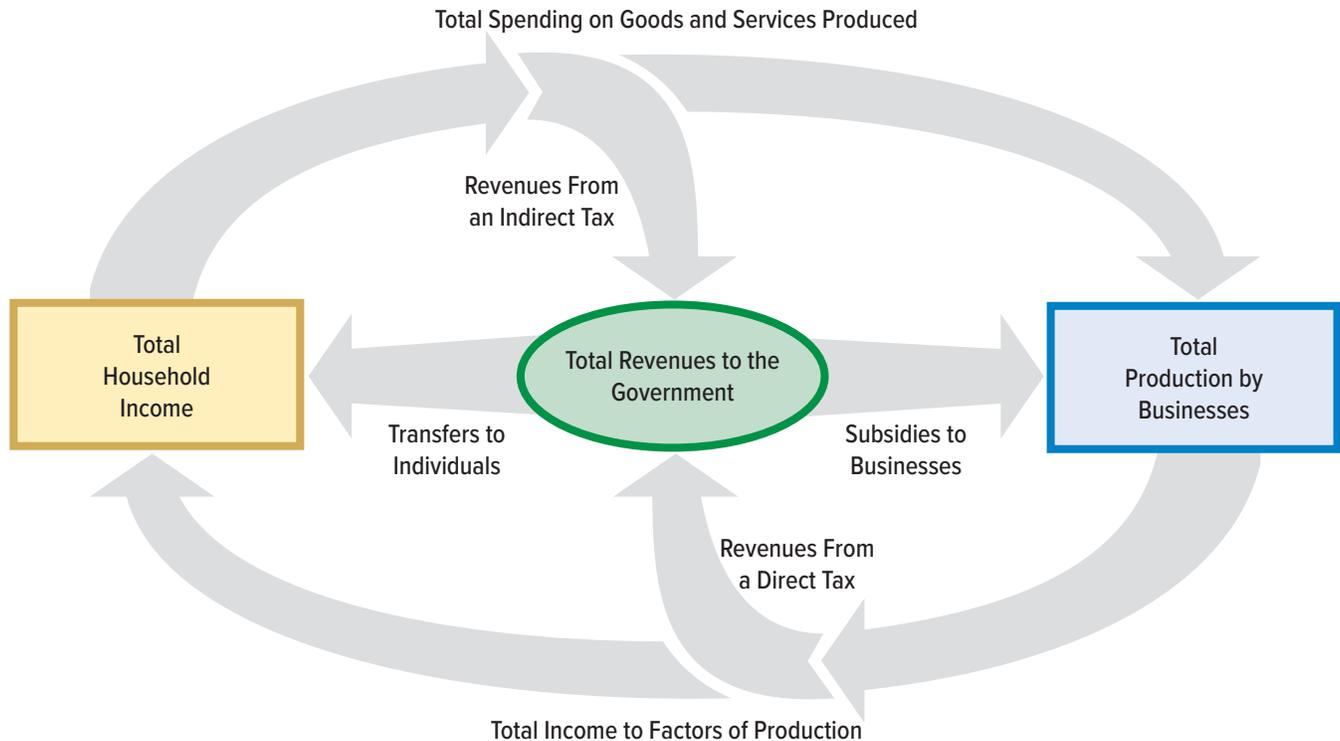
In general, the budget process has treated outlays and revenues differently: Budget resolutions have specified spending allocations among the various committees but assigned a single revenue allocation to the House and Senate as a whole. Furthermore, House and Senate rules have required that matters concerning revenues be referred to the House Committee on Ways and Means and the Senate Committee on Finance. Applying a revenue offset to proposals that otherwise would affect only outlays would raise procedural and jurisdictional issues. If an offset was applied to transfer payments, then proposals by one committee could affect whether another committee was within its allocation under a budget resolution and could conflict with the rules for referring matters concerning revenues.

Although revenue offsets are not applied to proposed subsidies and transfer payments in CBO's cost estimates, direct taxes would, in fact, be affected by such payments because transfers generally augment payments to factors of production and thus taxable income (a change that would be reflected in CBO's baseline budget projections

10. As specified in the legislation that authorized their collection, some indirect taxes are classified as offsetting collections or offsetting receipts and hence are not subject to an offset.

Figure 2.

## Federal Revenues, Transfer Payments, and the Circular Flow of Income and Production in the U.S. Economy, With an Indirect Tax



Data source: Congressional Budget Office.

if the proposal was enacted, as described below). In the context of the circular flow of income and production in the economy, subsidies and transfers are represented as revenue flows from the government directly to businesses and individuals, respectively (see Figure 2). As a result, such payments affect the government's revenues from direct taxes.

An offset would occur for both outlays for transfer payments to individuals and for subsidies to businesses:

- Outlays to individuals, in the form of cash transfers—for example, means-tested transfers, such as cash payments—become payments to factors of production (to workers, business owners, and others). The net cost of such transfers would be less than the gross expenditure because the taxable income base would increase.
- A business subsidy is the mirror image of an indirect tax in the context of the offset: Instead of reducing

payments to factors of production, a business subsidy increases them. As a result, the net cost of those subsidies is less than the gross expenditure.

Under the standard assumption that the macroeconomic conditions that determine total output and employment would not be affected by proposed legislation, additional spending by the government on goods and services would simply substitute for spending elsewhere in the economy. Therefore, such spending by the government on goods and services would generate no additional taxable income, nor would reduced spending diminish taxable income. Direct taxes would thus be unaffected.

### How Is the Offset Reflected in CBO's Baseline Projections of Revenues?

When CBO estimates the budgetary effects of a new indirect tax, it reports the amount of net revenues from the estimated change, including the applicable offset, in the cost estimate for the new legislation. If the legislation

is enacted, the amount of estimated gross revenues is reflected in the agency's baseline budget projections to attribute the full amount of revenues collected from the indirect tax; that is, the amount of indirect tax collected is reflected in the baseline regardless of the tax's effect on direct tax sources.<sup>11</sup>

The effect of the indirect tax on income and payroll taxes is reflected elsewhere in the baseline projections. CBO incorporates the effects of newly enacted legislation on the taxable income base when updating the agency's baseline economic projections because an indirect tax changes the amount of factor income available for direct taxation.<sup>12</sup> The agency adjusts the amount of factor income reflected in gross domestic income to account for the new level of indirect taxes (which are reported as taxes on production and imports in the NIPAs) under current law.<sup>13</sup> Once the offset for a particular piece of legislation has been accounted for in the baseline budget projections, that offsetting adjustment does not need to be applied to subsequent projections, because each set of baseline projections builds upon the previous one.

11. See Figure 2 on page 7 for an illustration of the gross amount of indirect tax revenues collected from total spending on goods and services produced.
12. By long-standing convention, the full offset is treated as being on-budget, which is the category of the budget that applies to all activities except revenues and outlays of the Social Security trust funds and transactions of the Postal Service (which are off-budget). However, once the offset becomes part of the baseline budget projections, there is an off-budget component associated with lower wages and self-employment income stemming from taxes for Social Security.
13. Gross domestic income is the sum of all income earned in the domestic production of goods and services.

This report, which is part of the Congressional Budget Office's continuing efforts to make its work transparent, supplies information about how the agency uses the income and payroll tax offset. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

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CBO seeks feedback to make its work as useful as possible. Please send comments to [communications@cbo.gov](mailto:communications@cbo.gov).



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