

## The Role of the 25 Percent Revenue Offset in Estimating the Budgetary Effects of Legislation

When excise taxes, customs duties, and other types of “indirect” taxes are imposed on goods and services, they tend to reduce income for workers or business owners in the taxed industry and for others throughout the economy. Consequently, revenue derived from existing “direct” tax sources—such as individual and corporate income taxes and payroll taxes—will also be reduced. To approximate that effect, the Congressional Budget Office (CBO), the Joint Committee on Taxation (JCT), and the Treasury Department’s Office of Tax Analysis (OTA) apply a 25 percent offset when estimating the net revenue that legislation imposing some form of indirect tax is expected to generate. In other words, the estimated proceeds from the indirect tax are reduced by 25 percent to account for the resulting reductions in income and payroll taxes. The offset is made in addition to accounting for behavioral responses to the new tax.

Although applying the 25 percent offset for budget estimates is a longstanding convention, proposals to address global climate change have created greater public awareness of that practice. Because tradable emission permits would have economic effects that are identical to those of a tax on emissions, which would be an indirect tax, CBO applies the offset when calculating the revenue that such policies might generate. For example, if the issuance of emission permits was estimated to generate \$100 billion in revenues in a given year, the estimate would also reflect an offsetting reduction of \$25 billion in income and payroll taxes, for a net revenue gain of \$75 billion. This brief explains that estimating convention—its rationale, application, and implications for policy decisions.

### Why an Offset Is Needed

More than 90 percent of federal revenue comes from income and payroll taxes—what economists generally refer to as direct taxes. Much of the remainder is generated by excise taxes, tariffs, and a variety of governmental fees and assessments that are all thought of as indirect forms of taxation.<sup>1</sup>

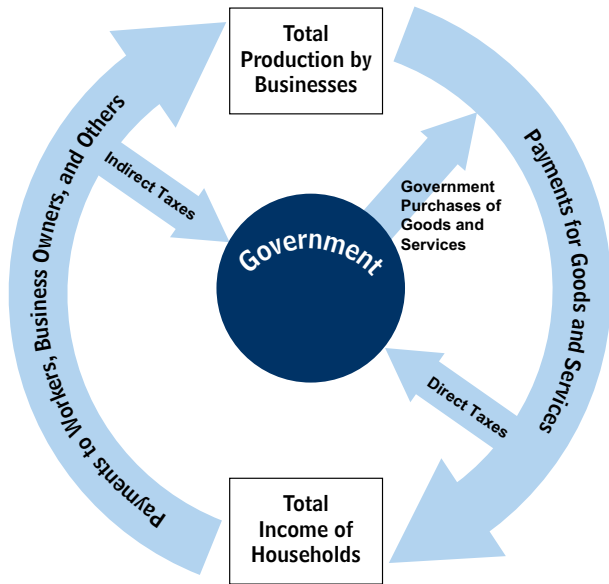
The distinction stems from the way in which total income and total production are measured in the economy. In the absence of taxes, all that is spent on goods and services in the economy becomes income for those who produce, or supply the means to produce, those goods and services. Proceeds from that spending are used to provide compensation—in the form of wages, profits, rent, 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 imposed at an intermediate stage of production and sale are indirect. Because the prices of goods and services must reflect all the costs of production, imposing an indirect tax would divert some of the proceeds from spending on those goods and services that otherwise would be available for compensation to those firms or individuals that provide the productive inputs.

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1. That classification is in contrast to the way that direct and indirect taxes are distinguished under law. Under the legal definition, indirect taxes are imposed on an action or event, such as importing, manufacturing, buying a good, paying for a service, or transferring an asset. Direct taxes are imposed on objects, such as property or wealth. Under that classification scheme, income and payroll taxes are also considered indirect taxes.

**Figure 1.**

## Federal Revenues and the Circular Flow of Income in the Economy



Source: Congressional Budget Office.

Thus, indirect taxes place a wedge between spending and compensation. Even ignoring the effects that taxes might have on total production in the economy, what the government extracts in the form of indirect taxes leaves less to be paid to those who provide the inputs to the production process. Out of what is then paid in compensation, the government extracts more by imposing income and payroll taxes—the direct taxes. Thus, every dollar taken by the government as an indirect tax has the potential to reduce the tax base remaining for direct taxes. That is why estimates of the revenue arising from indirect taxes need to include an offset of some type.

The easiest way to explain the principle behind the offset is to describe what would happen if indirect taxes were imposed that raised a firm's cost of production and the firm did not pass that additional cost forward to consumers in the form of higher prices for its goods. The effect of the tax then would be to reduce the firm's income, which, in turn, would reduce the revenue collected through direct taxes on that income.

Although firms might absorb an indirect tax immediately after its imposition, in most instances such additional costs would eventually be passed on to individuals. Even with such a pass-through of costs, a loss of revenue from

direct taxes would still occur. The nature of that pass-through might vary, depending on how the tax affected overall price levels. One possible outcome is that the overall price level of goods and services in the economy would not be affected by firms' attempts to pass the additional costs forward to consumers in the form of higher prices.<sup>2</sup> If, for instance, the Federal Reserve geared its monetary policy to adhere to a chosen inflation target, individual prices would change relative to one another, with the prices of more highly taxed goods rising relative to those of less-taxed goods. But the prices of goods least affected by the new tax would rise more slowly than they would have otherwise, so that the overall level of prices, on average, would be the same as without the tax.

With the overall level of prices unaffected by its imposition, the tax, instead of being borne by consumers, would be borne, in the form of reduced compensation, by all those who provide the inputs to produce goods. Wages, rents, and other payments for inputs would be smaller than they would have been without the tax. As a result, collections of direct taxes would be similarly lower. Essentially, whether a tax is absorbed in its entirety by firms' profits (as would probably be the case in the short run) or passed along in higher relative prices (as it probably would be in the longer run), the effect of an indirect tax on the amount of revenue collected from direct taxes would be about the same.

Put another way, income and production in the economy can be thought of as a circular flow: Total spending on the goods and services produced becomes total income for those producing them (see Figure 1). If an indirect tax is imposed, some of the value of the output is no longer available to workers and business owners as income. By imposing such a tax, the federal government removes some of the output from the circular flow for its use, so that what remains to become payrolls and profits—and the portion of those amounts that is destined to become receipts from income and payroll taxes—is lower as a result.

The effect of indirect taxes on direct tax receipts is illustrated in the two simple scenarios shown in Table 1. Before any indirect tax is adopted (as in Case 1), the value

2. That situation also corresponds to the standard estimating convention of holding macroeconomic aggregates—for instance, gross domestic product, employment, and the overall level of prices in the economy—unchanged.

**Table 1.****Revenue Flows With and Without an Indirect Tax**

(Dollars)

	Value of Production	Revenue from an Indirect Tax (10 Percent)	Income from Capital and Labor	Revenue from a Direct Tax on Income (25 Percent)	Toal Revenue 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

Source: Congressional Budget Office.

of production, or total output, is \$1,000. Because there are no indirect taxes, income (in the form of wages, interest, rent, and profits) is also \$1,000. An existing direct tax of 25 percent on income yields revenue of \$250 for the government. If an indirect tax is then levied that amounts to 10 percent of output (as in Case 2), the government realizes \$100 in revenue from the new tax and the income of individuals supplying the capital and labor falls to \$900. Consequently, the income tax now yields only \$225, so that total revenue realized by the government is \$325. Although the indirect tax raised \$100, the net effect on governmental revenue is an increase of only \$75.

The fiscal outcome would be much the same if the assumption about the overall price level of goods and services in the economy was dropped. If, instead of strictly adhering to a chosen inflation target, the Federal Reserve accommodated an overall increase in prices—thereby permitting the indirect tax to be “passed forward” to consumers, rather than backward to producers in the form of reduced income—the revenue collected through direct taxes would dip, but by far less than in Case 2, in which the price level is unaffected by the imposition of an indirect tax. Because so much of the income tax is indexed for inflation, the higher overall price level combined with the graduated nature of the individual income tax would cause it to garner proportionately less in receipts as real (inflation-adjusted) income fell. Direct tax collections would drop off somewhat as a result. However, in that situation, most of the effect of the higher prices caused by an indirect tax would be manifested as increased government spending—for example, spending would be higher for transfer programs, such as Social Security, that are indexed for inflation, and for the goods and services whose prices had increased. In this example, in which the impact of the indirect tax is passed forward to consumers,

its offset effect would register primarily on the spending side of the budget. Nevertheless, the net effect on the budget deficit or surplus would be about the same, again making the net change in the deficit smaller than the amount of the additional collections from the indirect tax itself.

Although the explanation is easiest to understand if it reflects the assumption that total output is the same whether or not a new indirect tax is imposed, the need to incorporate the offset reflects real-world budgetary effects and does not stem from that assumption. Estimates of the budgetary effect of proposed legislation routinely assume that macroeconomic activity—in the form of total output, employment, and prices—is unchanged. Relaxing that assumption would affect revenue estimates because higher tax rates can generally be expected to lower overall output as a result of their typically negative effects on economic efficiency (lower rates would generally be expected to have the opposite effect). But taking such macroeconomic changes into account would generate an *additional* effect on direct taxes. It would not eliminate or even reduce the offset effect. Indeed, those macroeconomic “dynamic” effects would go in the same direction as the offset.

**How the Offset Is Applied**

Ideally, the revenue generated by indirect taxes that is simultaneously lost by the government in the form of direct tax revenue could be calculated on the basis of the individual characteristics of the tax in question. Different taxes affect taxpayers in various income classes (and, therefore, in different income tax brackets) differently. Moreover, the effect of a proposed tax could vary depending on how long it would take for the burden of the

tax to shift from firms' profits to all forms of compensation, or whether the tax could be expected to be passed forward (in the form of higher prices) instead of backward (into reduced compensation). Handled in that way, each proposal to impose new indirect taxes or increase existing ones would be subject to an offset of a different percentage.

Over the years, CBO, JCT, and OTA adopted the convention of using a single offset of 25 percent when estimating the budgetary effects of proposed legislation involving indirect taxes. That practice is an approximation. How closely it adheres to reality depends on a number of features of the tax system, which are always in flux. On the basis of CBO's observation of how corporate tax liability responds to changes in taxable income, a one-dollar increase in the cost of production would reduce corporate tax receipts by about 25 cents. Consequently, if a newly implemented indirect tax was absorbed by producers, direct tax collections would be expected to decline by about 25 percent of the gross amount raised by that tax. Combined payroll and income tax rates for years after 2010 are such that receipts from those taxes together would be expected to fall by about 25 percent of any reduction in income (that decline would be smaller under current tax rates).<sup>3</sup> So, if an indirect tax is "passed backward" in the form of reductions in compensation throughout the economy, the decrease in direct tax receipts would again be about 25 percent of the gross proceeds of the indirect tax.<sup>4</sup>

Estimates of revenues arising from proposals to create or change an indirect tax thus are subject to an offset of 25 percent, which takes the form of counting only 75 percent of the gross change in revenues otherwise expected to be collected by the federal government from the levy. The effect is symmetric: Just as an increase in estimated revenues from indirect taxes would be reduced by 25 percent, a proposed decrease in indirect taxes

would result in estimated revenue losses amounting to only 75 percent of what the cut otherwise would be expected to cost.

That adjustment is made in addition to accounting for the behavioral effects that are typically incorporated in every revenue estimate. For example, an analyst would first determine how much an increase in gasoline tax rates would reduce gasoline consumption, to what degree compliance might decline, and any other responses relevant to determining what receipts the tax itself would raise. After incorporating all those effects and computing the expected increase in tax receipts, the offset of 25 percent would be applied to account for the impact of the gasoline tax on direct taxes. (As part of the same convention, the impact of the proposed tax is generally presented in the cost estimate simply as a single net flow of receipts, netting out the 25 percent offset from the estimated proceeds of the indirect tax.)

The offset can complicate a program's design when an indirect tax is to be imposed to fund a specific government service because, in general, a proposal that calls for spending the *gross* proceeds from an indirect tax or fee would increase the budget deficit. In such cases, the fee or tax must be sufficient to yield gross receipts in excess of the expected outlays if budget neutrality is to be maintained. Policymakers have sometimes dealt with the effect of the offset by allocating only 75 percent of the receipts of the tax to the program being funded, with the rest left unspent to offset the projected loss of income and payroll taxes.

### Limits of Application

In general, the 25 percent offset is applied only to proposals that call for changes in indirect taxes. The offset is not applied to proposals that involve changes in direct taxes. Nor is it applied when estimating the budgetary effects of proposed changes in outlays—even when those changes appear to affect incomes in ways similar to indirect taxes.

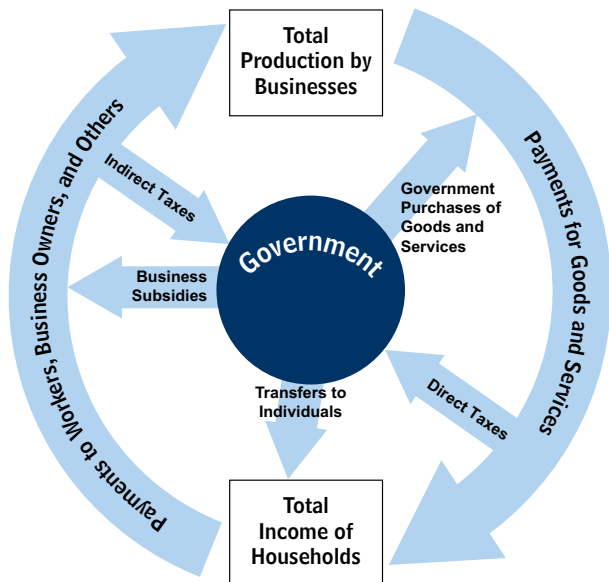
Estimates of proposals to change direct taxes do not generally require an offset. However, estimates of proposals related to employer-paid payroll taxes are a major exception. Such taxes are direct in the sense that they are based on an employee's compensation, but they do not appear in any measure of a worker's pay. Consequently, boosting the employer's share of Social Security taxes or its payment of unemployment insurance premiums would

3. Rates are scheduled to rise in 2011 with the expiration of tax changes enacted in the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Jobs and Growth Tax Relief Reconciliation Act of 2003.

4. The 25 percent offset is also a bit high if the tax is passed forward in the form of higher prices. The federal share of the economy is closer to 20 percent; the remaining effect on taxes is not quite enough to bring the total offset to 25 percent. Thus, on average, one would expect the offset to be a bit less than in the passed-backward scenario.

**Figure 2.**

## Federal Revenues and Transfer Payments in the Context of the Circular Flow of Income



Source: Congressional Budget Office.

ultimately reduce income that is counted for purposes of determining employees' income and payroll taxes. An offset would be required in that case, but estimators would not use 25 percent because the relevant offset would be based on a slightly different set of direct tax bases.<sup>5</sup>

The federal government also collects money that is recorded as an offset to—that is, a reduction in—spending, rather than as revenue. Such income is labeled “offsetting collections” or “offsetting receipts” and most often consists of businesslike or market-oriented transactions, representing collections from the public in exchange for goods or services. Although those collections resemble indirect business taxes and reduce the deficit in a similar way, estimates of the income from such payments are not subject to an offset because they do not reduce the income subject to direct taxes. If a firm chose to participate in such a transaction, the payment it made to the government either would substitute for some other

production cost the firm otherwise would incur or be in exchange for some service that enabled the firm to produce something it was not producing before (such as oil from a new lease). Consequently, an increase in such collections would not reduce taxable income, and the net proceeds to the government would be the full amount collected; no offset would occur.<sup>6</sup>

As a general rule, the 25 percent offset is not applied to estimates of spending proposals. Making the standard assumption that the macroeconomic conditions that determine total output and employment would not be affected, 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 be unaffected.

In contrast to spending on goods and services, outlays for transfer payments to individuals and subsidies to business entities could be expected to affect collections from income and payroll taxes. In terms of the circular flow of income and production in the economy, those payments are the mirror image of indirect taxes (see Figure 2). For example, a subsidy provided to a business could be expected to have a net cost of about 75 percent of the outlay because roughly 25 percent of the subsidy might be expected to be recouped by direct taxes on the business. Conversely, cutting a subsidy would produce savings, on net, of about 75 percent of the expenditure.

Nonetheless, under longstanding procedures governing the Congressional budget process, offsets generally are not applied to legislative proposals that otherwise would affect only outlays. That process treats outlays and revenues differently: The Congressional budget resolution specifies spending allocations among the various committees but assigns a single revenue allocation to the House and Senate as a whole. Furthermore, House and Senate rules require that revenue matters be referred to the

5. Other changes in direct taxes can affect other tax collections, but, again, those effects must be calculated rather than approximated by applying the 25 percent offset.

6. The logic behind that contrasting treatment of indirect taxes and offsetting receipts applies only if the offsetting receipt or collection truly results from a businesslike transaction. Sometimes proposed legislation designates a payment as an offsetting receipt when it is really an indirect tax. When that happens, the failure to apply a 25 percent offset results in a misestimation of the proposal's true net budgetary effect.

**Table 2.**

**Revenue Flows Under a Hypothetical Cap-and-Trade Program**

(Dollars)

	Value of Production	Revenue from Auctioned Allowances	Value of Allowances Given Away	Businesses' Allowance Expenditures (Explicit or implicit)	Taxable Income of Capital and Labor	Revenue from a Direct Tax on Income (25 Percent)	Change in Direct Tax Revenue	Net Increase in Resources Available to the Government
Base Case:								
No Policy	1,000	0	0	0	1,000	250	0	n.a.
Scenario 1:								
Allowances Auctioned	1,000	100	0	100	900	225	-25	75
Scenario 2:								
Allowances Given to a Taxable Entity	1,000	0	100	100	1,000	250	0	0
Scenario 3:								
Allowances Given to a Nontaxable Entity	1,000	0	100	100	900	225	-25	-25

Source: Congressional Budget Office.

Note: n.a. = not applicable.

House Committee on Ways and Means and to the Senate Committee on Finance, respectively. Hence, the application of a revenue offset to proposals that otherwise would affect only outlays could cause jurisdictional or procedural difficulties.

In a limited number of situations, a revenue offset to spending can be recognized, at least implicitly. In particular, when an indirect tax is proposed to finance an expenditure that, in turn, would function as a subsidy, the revenue estimate can ignore the offset altogether. In such a case, there is what can be thought of as an “offsetting offset”—namely, a *reduction* in direct taxes resulting from the imposition of an indirect tax and a corresponding *increase* in direct taxes as a consequence of the subsidy. The two effects on direct taxes would net out to zero; the ultimate effect on the deficit would be the same as if there were no offsets at all. For example, imposing a tax on gasoline that was earmarked to pay a subsidy to ethanol producers would be such an exception. The tax would reduce taxable income, but the subsidy would increase taxable income by the same amount. Because the

two effects would cancel each other out, no offset would be applied.

**The Offset and Carbon Policy**

Although they operate through different mechanisms, cap-and-trade programs and emission taxes have essentially the same economic effects. The former would limit the quantity of allowable emissions, which in turn would raise the prices of goods that are responsible for generating greenhouse gases, while emission taxes would add to the prices of such goods and reduce quantities emitted as the public bought fewer of the goods in response to the higher prices. Proceeds under either policy—emission taxes or the auction of emission allowances—would show up in the federal budget as revenues.

As a consequence, both an emission tax and auctions of emission allowances, for a given level of output, would reduce taxable income and payrolls and the direct taxes derived from them. The amount that firms would pay in such fees or taxes would be in addition to what they

would have to pay in compensation to those who provide the inputs needed to produce goods and services. At the same time, those fees or taxes would purchase nothing that firms were not already using before the policy change was implemented. The right to emit carbon dioxide—previously free—would become a cost of doing business. Ultimately, for a given level of output, income subject to direct taxes would fall, and the revenue collected through either the emission tax or the auction of emission allowances would be partially offset by revenue lost in payroll and income taxes. Because of that offset, the government, on net, would receive only about 75 percent of the revenue generated by issuing tradable emission allowances or imposing an emission tax.

Table 2 illustrates the effects that a hypothetical cap-and-trade program, implemented in one of three ways, would have on revenue. Just as in Table 1, the base case—in which no emission policy exists and, therefore, no indirect tax is assessed—is shown in the first row: Output and income are both \$1,000 and income taxes generate \$250. If a cap-and-trade system was created and allowances were auctioned, as shown in Scenario 1, \$100 from those auctions would be raised for the government. Firms would have to spend \$100 more to operate, leaving \$900 to be taxed. The income tax would then yield only \$225, so that all revenue totaled \$325—a net increase of \$75, not \$100.

Instead of being auctioned, emission allowances could be allocated to some parties at no cost. CBO has concluded that the value of emission allowances should be counted as governmental revenues whether they are auctioned or given away.<sup>7</sup> Even if the permits were given away (as grandfathered allowances, for example), their creation would generate value for the government equivalent to that which would have been realized if the permits were auctioned. If realized as auction proceeds, the additional value would be available for either increased government spending or deficit reduction. If the permits were given away, their economic value would be simultaneously

accrued and spent by the government as it transferred the permits to the grantees.

But the existence of the direct tax offset means that the free allocation of emission allowances under a cap-and-trade program could cause the federal deficit to increase. If allowances were given away to another entity, federal outlays would increase by the full value of the allowance. But revenues would increase by only 75 percent of the allowance value: the value that the allowance would bring at auction minus the reduction in direct tax receipts that would result from the added cost of production. Moreover, that net budgetary impact would occur even if the allowance giveaways were not recorded in the budget; it is enough that they have the effect of adding to business costs and reducing taxable income.

Many comprehensive proposals addressing global climate change involve either giving away allowances or spending the proceeds from emission taxes or tradable permits. Under some circumstances, such proposals can be deficit-neutral, but in other situations, because of the direct tax offset, they could cause the federal budget deficit to increase. Whether such proposals would increase the deficit would depend on who the recipients were and what they used the allowances or funds for. In some cases, the “offsetting offset” phenomenon could mean that no deficit effect would occur when allowances were given away: Federal outlays would increase by the full amount of the added spending or the value of the allowances given away; federal revenues would rise by the full amount of the proceeds or the value of the allowances issued because there would be no offsetting effect on the government’s income from direct taxes. For example, if certain energy-producing firms received the allowances with no strings attached, the result would be comparable to a business subsidy that was combined with an indirect tax. The effects of the subsidy on payroll and income taxes would cancel out the effects on payroll and income taxes of imposing the emissions cap. So, for estimating the budgetary impact, the net offset would be zero. The same logic would apply if allowances were auctioned and the proceeds given away. If auction proceeds were granted to firms without conditions being imposed on how those proceeds were spent, or if the proceeds were transferred to

7. See Congressional Budget Office, cost estimates for S. 3036, the Lieberman-Warner Climate Security Act of 2008 (June 2, 2008), and S. 2191, the America’s Climate Security Act of 2007 (April 10, 2008).

individuals in a way that showed up in their taxable income, no offset would be involved.<sup>8</sup>

However, if allowances were given to private foundations or to a public-private institute to be traded on the market to raise funds for programs (or if auction proceeds were given to such entities), the revenue offset would apply but there would be no comparable offset to spending. The allowances would still be regarded as raising, on net, only 75 percent of their gross market value. None of the funds would be expected to be recovered by the income tax.

The contrast between those two situations is shown in the remaining two rows of Table 2. When the government gives emission allowances to a (taxable) commercial entity (Scenario 2), the firm no longer must incur a cost to secure permission to generate emissions. Total income in the economy remains at \$1,000, and total governmental revenue is \$350—\$100 more than was collected before the allowances were created. That amount is just enough to finance the \$100 in allowances given away; giving them to that taxable entity at no charge leaves the government with the same net resources as before. But if the allowances are given to a nontaxable entity (Scenario 3), nothing makes up for the \$100 increase in production costs and the resulting \$100 decline in taxable income. Under that scenario, implied receipts rise by only \$75, a sum that is less than the implied outlay of \$100 for the free allowances. No explicit spending or revenue arises from the allowance program, but income tax receipts fall by \$25. The government actually has \$25 less available to finance other activities than it had before the program was implemented.

Spending by the government on its own activities has an effect similar to that of giving allowances to nontaxable entities. Because the total output of the economy in the

long run is determined by its capacity to produce, that spending would be expected to change only the kinds of goods and services produced, not their total amount; such spending does not, therefore, generate more direct tax revenue. Thus, if allowances are auctioned or emissions are taxed, and a deficit-neutral outcome is desired, only 75 percent of the proceeds would be available to finance government spending on various programs—whether those programs are also aimed at combating global climate change or otherwise. The same is true if the auction-financed spending is conducted through an intermediary, such as a state government, a research institute, or a private contractor. Using auction proceeds or receipts from a tax on emissions to subsidize business undertakings to conduct research or to place into service energy-saving equipment would be analogous to the government's paying for a private contractor; again, only 75 percent of the proceeds would be available to obtain a deficit-neutral result.<sup>9</sup> Any additional spending would add to budget deficits.

## Conclusion

The 25 percent offset reflects a real economic phenomenon: Increases in indirect taxes can always be expected to produce partially offsetting effects on direct tax sources, even if the effects of taxes on the overall economy are ignored. While inexact, the offset makes the picture of the net budgetary effects of emission taxes and tradable allowances more accurate. Without that adjustment to estimates of a proposal's gross proceeds, expected revenues would be substantially overstated. As a result, proposals to spend the gross proceeds from emission taxes or tradable allowances could, depending on the nature of the spending, lead to a significant increase in budget deficits.

8. The offset would also not apply if the proceeds were transferred to businesses or other entities in a way that guaranteed they would be passed forward in the form of lower prices. The reduction in prices of subsidized goods would mean less of a decrease in compensation to the factors of production (caused by the indirect tax in the first place) and thereby would eliminate the effect on direct tax receipts.

9. Once firms were told how to spend the money, they would incur deductible expenses that would reduce their taxable income.

This brief was prepared by G. Thomas Woodward of the Congressional Budget Office's Tax Analysis Division. It and other CBO publications are available at the agency's Web site ([www.cbo.gov](http://www.cbo.gov)).



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