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CARBON TAXES AND CORPORATE TAX REFORM

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ABSTRACT

This paper examines the pros and cons of using a carbon tax to help finance corporate tax reform. Revenues from a plausible carbon tax would be large relative to corporate tax revenues and could thus help finance lower corporate tax rates, extension of business tax preferences, or other corporate tax reforms. Done well, such a tax swap could reduce the environmental risks of carbon emissions and improve the efficiency of America's corporate tax system. But a carbon-for-corporate tax swap poses a significant distributional challenge. A carbon tax would fall disproportionately on low-income families, while a reduction in corporate taxes would disproportionately benefit those with high incomes. Policymakers can offset some of those impacts through other policy measures, such as paying lump-sum tax rebates. But doing so would reduce the swap's efficiency benefits. Policymakers may also want to use some carbon revenues for deficit reduction. One option would be to aim for revenue neutrality over an initial period, after which a widening spread between growing carbon revenues and relatively stable corporate tax cuts would reduce the deficit.

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CARBON TAXES AND CORPORATE TAX REFORM

Putting a price on carbon dioxide and other greenhouse gases would be the most cost-effective way to reduce future emissions and some of the potential risks of climate change. But pricing carbon has garnered little support from U.S. policymakers to date. At the same time, policymakers feel rising pressure to address America's inefficient and needlessly complex tax system and our long-term fiscal imbalances, but progress has been limited. One way forward might be to combine these policy challenges into a larger whole, with revenues from a new carbon tax being used to finance some combination of tax reform and deficit reduction.²

In this paper, we consider the pros and cons of one potential pairing: combining a carbon tax with reform of the U.S. corporate tax system. Such a pairing would make good sense from the perspective of economic efficiency. By internalizing some of the external costs of carbon emissions, a carbon tax would reduce future carbon emissions and reduce or delay potential harm from climate change. In addition, corporate tax reform could boost the economy, offsetting some or all of the negative impact of new carbon taxes. Dinan and Lim Rogers (2002), for example, found that using carbon revenues to reduce corporate income taxes could offset about 60 percent of the economic cost of limiting carbon emissions, while Rausch and Reilly (2012) find that such a swap could actually increase economic output.

A carbon-for-corporate tax swap may also be timely for political reasons. Policymakers from across the political spectrum have expressed interest in corporate reform to help improve U.S. competitiveness and encourage domestic investment. During the recent presidential campaign, for example, both former Governor Mitt Romney and President Barack Obama proposed large cuts in the corporate income tax rate which, at 35 percent, has become very high by international standards (see below). Obama proposed lowering the rate to 28 percent (25 percent for manufacturing companies), while Romney proposed going down to 25 percent. Many members of Congress—most notably Representative Dave Camp, Chairman of the House Ways and Means Committee—have also proposed steep reductions in the corporate tax rate.

Most of these policymakers have proposed paying for these rate reductions by reducing “loopholes” and other business tax preferences, but details about which preferences they would remove have generally been lacking. Indeed, there is growing recognition that paying for large corporate rate reductions by rolling back tax preferences is harder than it sounds (Joint Committee on Taxation 2011). That challenge is even larger when you consider the potential revenue cost of extending the research and experimentation credit and dozens of other popular business tax breaks, collectively known as the “extenders,” that have recently been extended only through the end of 2013 (Marron 2012).

² A cap-and-trade system could also raise revenues if the government sells the allowances rather than giving them away for free. For purposes of this paper, a carbon tax and a comparably-scaled cap-and-trade system with auctioned or sold allowances are essentially equivalent.

The difficulty of funding rate reduction by eliminating business tax breaks can be illustrated by examining the size of revenue losses from corporate tax expenditures in relation to projected corporate receipts. On the surface, these revenue losses seem large; the Office of Management and Budget (OMB 2012) estimates revenue losses from corporate tax breaks add up to \$880 billion between fiscal years 2013 and 2017 and amount to about 41 percent of projected corporate tax receipts of \$2.15 trillion.³

But the potential for getting money from tax breaks looks a lot smaller when one examines the specific provisions. Over two-thirds of the revenue loss comes from just two provisions—accelerated depreciation and deferral of income in controlled foreign corporations. For both these provisions, the revenue gain from repeal is uncertain (the Joint Committee on Taxation scores them as costing much less than OMB), political leaders have proposed making them more instead of less generous, and there are good policy grounds to oppose repeal. We estimate that repealing all tax expenditures except these two and the expensing of research costs would permit the corporate tax rate to fall only to 31.5 percent without losing revenue. And enacting all the changes in the corporate tax base that the President has recommended would finance a cut in the rate by only 1.5 points, to 33.5 percent.

Thus, for both economic and political reasons, policymakers are in the market for a way to finance corporate tax reform. That alone makes new revenue sources, including a carbon tax, worth a close look.

This paper thus proceeds as follows. Section 1 describes the rationale for corporate tax reform and notes that it involves more than just lowering the corporate tax rate. Section 2 considers how much revenue a carbon tax might generate and how that compares to the potential revenue loss in various corporate tax reforms. Section 3 documents a fundamental distributional mismatch in a carbon-for-corporate tax swap: introducing a carbon tax would particularly hit low-income households, while cutting corporate taxes would particularly benefit high-income ones. Policymakers may thus want to include additional policies, such as lump-sum rebates, to help low-income families, but doing so would reduce the economic benefits of the tax swap. Section 4 discusses how a carbon-for-corporate tax swap could leave room for deficit reduction, and section 5 concludes.

1. CORPORATE TAX REFORM

There are three main concerns about the current corporate tax system: its harmful economic effects, uncertainty about important tax preferences, and the treatment of multinationals. We address each in turn.

³ We define as corporate tax expenditures those provisions for which corporate revenue losses accounted for the majority of the revenue loss from both individual and corporate taxpayers and added up all the losses from the provisions that met this criterion. The \$880 billion figure thus includes about \$200 billion of revenue losses in the individual income tax from business tax expenditures that benefit owners of businesses taxed as “flow-through enterprises,” including sole proprietorships, partnerships, limited liability companies, and subchapter S corporations.

There is accumulating evidence that the corporate income tax can be particularly harmful to the economy. Surveying the experience of developed countries, for example, researchers at the Organization for Economic Cooperation and Development (OECD) concluded that “corporate income taxes appear to have a particularly negative impact on GDP per capita,” with much of that effect coming from negative impacts on “dynamic and innovative” firms (Johansson et al. 2008, p. 43).⁴

Such concerns have increasing traction in the United States, with many policymakers wondering whether our corporate tax system is contributing to a loss of international competitiveness (Toder 2012). Policy discussions about corporate tax reform usually begin with a simple and striking observation: the United States now has the highest statutory corporate tax rate in the developed world. With a federal rate of 35 percent and an average state rate of 6.3 percent, the combined U.S. rate is roughly 39.1 percent. That’s higher than Japan, which lowered its rate to 38 percent in 2012, and every other member of the OECD, many of whom have lowered their rates in recent years. As Hassett and Mathur (2011) document, the U.S. corporate tax rate was only slightly above the OECD median in 1981, but has become an extreme outlier as other nations have cut their rates. That high rate raises legitimate concerns about the ability of the U.S. to compete for mobile investment capital and the incentive for multinational corporations to engage in complex strategies to shift taxable profits abroad (Toder 2012).

But statutory rates are not the only measure that matters. The incentive to invest in the United States instead of overseas depends more on relative marginal effective tax rates (METRs), where the METR measures the percentage reduction in the after-tax rate of return on a new investment due to corporate taxes. The METR depends on both the statutory rates and on tax preferences, such as accelerated cost recovery provisions or tax credits, which reduce taxable income below economic income or provide direct rebates.

Based on World Bank and OECD data, Hassett and Mathur (2011) report that the United States has a relatively high METR of 23.6 percent. In comparison, the average METR for OECD countries other than the United States is more than 6 percentage points lower (17.2 percent). But part of the reason for the large difference is the relatively lower METRs in small countries, which have less market power and are less competitive with the United States for real investments than larger economies. Using the data reported in Hassett and Mathur, we estimate a GDP-weighted METR in OECD countries excluding the United States of 21.6 percent, only slightly lower than the U.S. rate. And for the rest

⁴ The researchers interpret this as strong efficiency grounds for reducing corporate taxes. However, they do note an important caveat: “Lowering the corporate tax rate substantially below the top personal income tax rate can jeopardize the integrity of the tax system as high-income individuals will attempt to shelter their savings within corporations” (Johansson et al. 2008, p. 8). That is one of several reasons why comprehensive tax reform—involving both the corporate and personal income tax systems—may ultimately be necessary. Halperin (2009) notes, however, that there are possible measures that could address a disparity between individual and corporate rates, such as limiting the corporate rate reduction to publicly-traded corporations or strengthening rules against converting individual to corporate income through the use of “personal service corporations.”

of the large developed nations that comprise the G7, the average METR in 2010 was 24.5 percent, slightly higher than the U.S. corporate METR. So while the high statutory rate certainly encourages shifting of reported profits outside the United States, the United States may not be at an extreme disadvantage in attracting corporate capital compared with its largest trading partners.

High corporate tax rates are not the only concern. Persistent uncertainty about the corporate tax code, which creates an uncertain climate for business investment, is a second motivation for corporate tax reform. Over the past dozen years, Congress has enacted an increasing number of temporary business tax provisions. In a few cases, these provisions appear to have been intended as temporary fiscal stimulus. This is true, for example, of bonus depreciation provisions that allow firms to immediately expense a portion of their investment costs. Many other incentives have been enacted on a temporary basis, however, simply because policymakers have not been able to find sufficient budget resources to pay for permanent extension, even for tax incentives as popular as the credit for research and experimentation and favorable depreciation rules for small business (Marron 2012). Finding a way to decide which of these provisions to remove and which ones to make permanent—or at least long-lived—is another important goal for tax reform. While a sensible tax reform would surely allow some of these tax benefits to lapse, others might be extended, which would reduce revenues compared to CBO and OMB projections.

A third set of concerns involves the way that the United States taxes the international income of multinationals that are headquartered here. Currently, U.S. multinationals may defer active profits earned overseas in foreign subsidiaries until the profits are repatriated in the form of dividends to the U.S. parent company. This hybrid treatment of foreign profits satisfies almost no one. Deferral can encourage U.S. multinationals to invest overseas instead of at home and enable tax avoidance by complex schemes that shift reported income to tax havens. But U.S. corporations complain that the repatriation tax keeps their cash locked up overseas and that they are placed at a competitive disadvantage versus multinationals based in other countries that have territorial systems (with full exemption of active income earned overseas). And everyone on both sides of the debate complains about the complexity of international tax rules. The challenging issues raised by international taxation provisions are beyond the scope of this short paper. But do keep in mind that international reform will almost certainly be part of any broad-reaching discussion of corporate tax reform and, depending on how it is structured, could require offsetting revenue.⁵

⁵ More fundamental reforms that change the basic structure of the corporate tax are also beyond the scope of this paper. Some experts have proposed, for example, that reform focus on moving more towards a consumption tax base, allowing immediate expensing of business investment while eliminating interest deductibility, rather than lowering corporate rates (Auerbach 2010). And a long-standing tradition argues for better integrating the corporate and personal income tax systems (U.S. Department of the Treasury 1992). Such fundamental reforms deserve attention, but for the purposes of this paper we focus on reforms policymakers are currently discussing. And policies that move towards expensing or towards integration of the corporate and personal income taxes are likely to reduce revenue from corporate investments, so they too would require offsetting revenue increases somewhere else in the system.

2. CARBON REVENUES AND CORPORATE REFORM

Potential carbon tax revenues

The Congressional Budget Office (2011) presented one carbon pricing option that has since become commonly used in carbon tax analyses. CBO considered a cap-and-trade system for limiting emissions of carbon dioxide and other greenhouse gases. The emissions cap would be set so that allowances would trade at \$20 per ton of carbon in the first year and then rise at a nominal rate of 5.6 percent annually (about 3.6 percent annually in real terms, given CBO's long run projected inflation rate of 2 percent). CBO considered the case where the government would auction all of these allowances, which would be effectively equivalent to a carbon tax of \$20 per ton, escalating at 5.6 percent annually.

CBO estimated that this policy would raise about \$1.2 trillion over the decade 2012 to 2021, the standard congressional budget window at the time; for simplicity, we assume that it would raise the same annual amounts, starting a year later, for a tax beginning in 2013 and continuing through 2022. That figure reflects the direct revenues from the carbon tax and a partially offsetting reduction in income and payroll taxes.⁶

Reducing the corporate tax rate

In late 2011, the Joint Committee on Taxation (JCT) estimated that reducing the corporate tax rate from 35 percent to 28 percent would lower federal revenues by about \$720 billion over ten years (JCT 2011). Since then, the official budget window shifted and CBO and JCT updated their baseline projections, which now show substantially higher corporate revenue. Adjusting for those changes through August 2012, we estimate that cutting the corporate tax rate from 35 percent to 28 percent would reduce revenues by about \$800 billion over the next ten years and that cutting the rate from 35 percent to 25 percent would reduce revenues by about \$1.15 trillion.⁷

Note that these revenue losses are smaller, in relative terms, than the corresponding rate cuts. Cutting the corporate tax rate from 35 percent to 28 percent would be a 20 percent rate reduction, for example, but JCT shows only an 18 percent reduction in revenues. Among other factors, that difference reflects JCT's recognition that lowering corporate

⁶ Under the standard revenue estimating assumptions used by the Joint Committee on Taxation and the Congressional Budget Office, changes in tax law are assumed to have no effect on gross domestic product (GDP). With GDP held fixed, any increase in excise taxes must necessarily reduce incomes earned by workers and investors. With lower incomes, revenues from individual income taxes, corporate income taxes, and payroll taxes decline, offsetting about 25 percent of the revenue from the new or increased sales or excise tax (Woodward 2009). This approach differs from that used by other modelers (for example, Rausch and Reilly 2012) who attempt to track how carbon taxes affect overall economic activity.

⁷ To get these estimates, we scaled up JCT's figures to reflect the increase in projected corporate revenues. At the time of their estimate, ten-year corporate revenues were projected at \$3.92 trillion, while in CBO's August 2012 baseline they are \$4.36 trillion (CBO 2012a). The specific calculations are: \$800 billion \approx \$718 billion \times \$4.36 trillion / \$3.92 trillion, and \$1.15 trillion \approx \$800 billion \times (35% - 25%) / (35% - 28%).

income taxes will increase after-tax corporate profits and thus increase the taxable income of individuals, who may receive higher taxable dividends or realize more capital gains.

Making expiring tax provisions permanent

A second goal for many reformers is to find a way to make permanent (or, at least, long-lived) many tax breaks that have recently expired or will do so in the next few years. Table 1 lists the ten largest expiring business provisions as of 2012 (before the passage of the American Taxpayer Relief Act in early 2013, which extended most of them for one year), excluding partial expensing, a stimulus program that we treat as being truly temporary. Two of these expiring provisions are complex rules about taxing the foreign income of domestic multinationals, two offer favorable depreciation allowances, four are incentives for alternative energy sources, one encourages work, and one encourages research and development.

Table 1. Revenue losses from permanent extension of expiring business tax provisions, 2013-2022

	Expiration	\$ Billions
Subpart F for Active Financing Income	12/31/11	88
Credit for Research and Experimentation	12/31/11	68
Liquefied Hydrogen Fuel Incentives	9/30/14	65
Alcohol Fuel Tax Credit	12/31/11	59
Section 179 Expensing	12/31/12	36
Depreciation of Leasehold and Restaurant Equipment	12/31/11	19
Payments Between Related Controlled Foreign Corps.	12/31/11	16
Electricity Production Credit for Wind Facilities	12/31/12	12
Biodiesel and Renewable Diesel Credits	12/31/11	12
Work Opportunity Tax Credit	12/31/11	11
Other Expiring Corporate Provisions	Varies	69
Total		446

Source: Congressional Budget Office (2012b).

Note: These figures reflect the total revenue impact of these provisions, including both corporate and non-corporate businesses, in current dollars summed over the budget window. These provisions (except the ethanol tax credit) were extended until the end of 2013 by the American Taxpayer Relief Act.

Making all of these business tax provisions permanent would reduce revenues by about \$450 billion over the next decade. Many tax reformers believe, however, that some of these provisions should expire. In practice, therefore, the overall price tag of making expiring provisions permanent would be less than this \$450 billion total.

The revenue loss from extending those provisions that allow corporations to defer or avoid tax on some of their income would also be lower if policymakers reduced the corporate tax rate. (Equivalently, the revenue loss of lowering rates would be smaller if Congress first extended all of these provisions).

Paying for corporate reform

These figures demonstrate that a carbon tax could finance substantial corporate reforms. A \$1.2 trillion carbon tax could pay for reducing the corporate tax rate from 35 percent to 25 percent, for example, or for reducing the rate to 28 percent and permanently extending most expiring business tax preferences.

Indeed, these simple comparisons actually understate the potential because there's no reason to believe a carbon tax should be the only tool for paying for corporate reform. Cutting back on "loopholes" and tax preferences is politically difficult, but that does not mean that policymakers could not do so as part of corporate tax reform. It would be unfortunate if new carbon revenues were used to preserve inefficient or unfair preferences that otherwise could have been eliminated in reform efforts.⁸

But these simple comparisons overstate the potential corporate rate reduction for a separate reason: demands to use the new carbon revenues for other purposes. As discussed in section 3, a pure carbon-for-corporate tax swap would redistribute income from low- and middle-income families towards high-income ones; policymakers may use some carbon tax revenue to offset that rather than to cut corporate taxes. As discussed in section 4, policymakers may also want to dedicate some carbon revenues to deficit reduction. And policymakers may also want to use the revenues to finance new spending, whether on climate change adaptation, green energy incentives, or unrelated programs. The net amount of revenue available for corporate tax reform will ultimately depend on all those factors.

3. A DISTRIBUTIONAL MISMATCH

Distributional issues understandably loom large in tax reform discussions. Citizens and policymakers want to understand who will win and lose from any proposed reforms.

To illustrate the potential distributional effects of carbon-for-corporate tax swap, we consider a stylized carbon tax that would raise revenue equal to 1 percent of Americans' pre-tax income. The resulting estimates can then be scaled up or down to match specific carbon tax proposals that, as noted earlier, often include tax rates that increase notably from year to year.

⁸ Of particular interest here are existing tax preferences for traditional and alternative energy sources (Marron 2011). By internalizing some external costs of fossil-fuel production and encouraging use of alternatives, a carbon tax would weaken the policy rationale for tax subsidies supporting alternative energy. Trimming those subsidies (or not extending expiring ones) would thus become more attractive. By the same reasoning, cutting back on subsidies for fossil energy sources would become somewhat less attractive, although the economic arguments against such subsidies would remain.

We model the distributional impacts of this stylized tax using the Tax Policy Center (TPC) microsimulation model of the U.S. tax system (see appendix). The model includes a detailed methodology for analyzing the burden of consumption taxes (Toder, Nunns, and Rosenberg 2011). That methodology distributes a consumption tax as a flat rate tax on income (returns to labor and capital plus wage-indexed transfer payments) less the normal return to saving (interest income and a portion of capital gains and dividends) and then reallocates the burden among income groups depending on their relative shares of consumption of those goods and services subject to the tax. That approach reveals that consumption taxes are generally regressive, meaning that the ratio of taxes to income declines as income rises. Consumption taxes are regressive because they exempt much of the income from capital, which is received disproportionately by higher income households, and because in the long run they reduce real Social Security benefits by lowering real wages.⁹

We model the distribution of a carbon tax the same way as a general consumption tax, except for a relative price effect. The carbon tax raises the relative prices of goods with direct carbon content (e.g., most electric power, gasoline, and home heating fuels) and those with indirect energy content (all goods and services that use carbon-based fuels as a direct or indirect input in production). In general, the consumption of carbon-based products is a larger share of income for low-income groups than consumption generally, so a carbon tax is more regressive than a general consumption tax.¹⁰

We summarize the model results by examining how the burden of a carbon tax would vary across income groups in 2015, ranging from the lowest fifth (cash incomes less than \$20,000 in 2012) to the highest (cash incomes above \$108,000).¹¹ As you might expect, the burden falls highest on low-income households. On average, the carbon tax would place a burden on them—in terms of higher prices for goods and services and lower wages—of about 1.8 percent of pre-tax income (Figure 1). Each of the three middle-

⁹ TPC’s analysis finds consumption taxes less regressive than would a method that distributed the burden in proportion to the ratios of consumption to income for different groups. The higher regressivity of analyses that rely on snapshot comparisons of annual income and annual consumption reflects in part the mismatch between when income is earned and when it is spent, with individuals with temporarily low (high) incomes consuming very high (low) shares of current income and retirees funding their current consumption for prior years’ instead of the current year’s income. To prevent this timing mismatch, TPC bases its distribution of a consumption tax on its effects on real incomes, adjusted for effects on the relative prices of goods consumed by households in different income groups.

¹⁰ TPC modeled the burden of a carbon tax as part of a previous exercise to design a deficit reduction plan. Kevin Hassett supplied TPC with the input-output matrix that was used to develop estimates of the indirect effects of a carbon tax on consumer prices.

¹¹ The Tax Policy Center model ranks households by cash income, a broader measure than adjusted gross income that includes other forms of income such as contributions to tax-deferred retirement savings plans, tax-exempt interest, and cash transfers. The income quintiles used in this paper are based on the estimated income distribution for the entire population in 2013 and contain an equal number of people, not households. The income breaks, in 2012 dollars, are: 20 percent \$20,113, 40 percent \$39,790, 60 percent \$64,484, and 80 percent \$108,266.

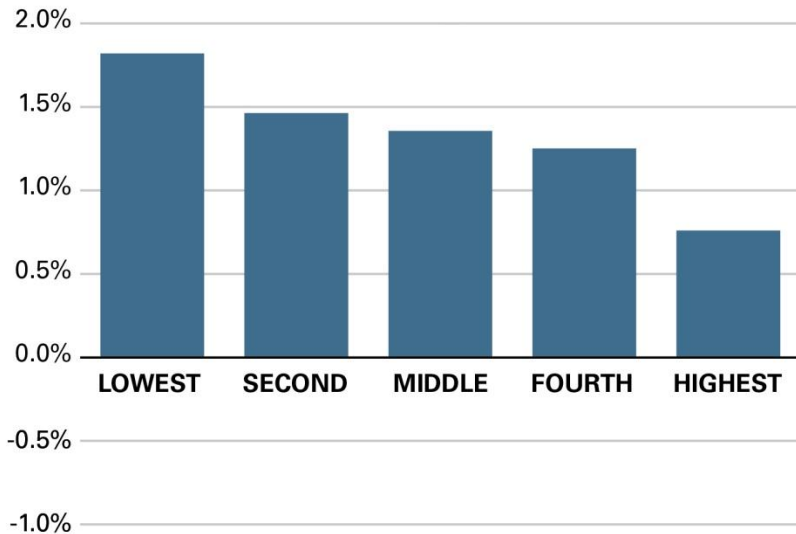
income quintiles—from the 20th percentile up to the 80th—similarly bears a burden greater than 1 percent of their pre-tax income, although at a declining rate. Folks with the highest incomes, however, bear a burden of less than 1 percent of their income.



FIGURE 1

The Burden of a Carbon Tax

Change in tax burden as a share of pre-tax income
By income quintile, 2015



Note: Carbon tax chosen so revenues equal 1% of average pre-tax income

Source: Urban-Brookings Tax Policy Center Microsimulation Model and authors' calculations

In short, a carbon tax is regressive. Although the exact degree of regressivity varies, that finding is consistent with many earlier studies, including Dinan and Lim Rogers (2002), Hassett, Mathur, and Metcalf (2009), Rausch and Reilly (2012), and Dinan (2012).

Now consider what happens if the carbon tax is paired with a reduction in corporate income taxes. We start with the extreme case in which all carbon revenues are used to reduce corporate taxes.

Corporations are legally liable for the corporate income tax, but economists understand that since a corporation cannot literally have a tax burden, the taxes must lower some peoples' real incomes. The question is which people bear that burden. The classical analysis by Arnold Harberger (1962) found that, under plausible assumptions, suppliers of capital bore about 100 percent of the corporate tax burden, but the burden was spread from corporate shareholders to all capital owners as investors responded to the tax by shifting to non-corporate assets.

More recently, this analysis has been modified in two ways. First, because the corporate income tax is imposed mostly on profits from investments in the United States, capital

owners can escape the tax by investing overseas (Harberger 2008, Randolph 2006, Gravelle 2011). Labor is less internationally mobile than capital, so the overseas migration of capital reduces capital per worker and real wages in the United States, shifting some of the corporate tax burden to labor. Second, and working in the opposite direction, a substantial portion of the corporate income tax represents a tax on supernormal profits or economic rents, and that portion falls on owners of corporate equity. The share going to supernormal returns can be approximated by estimates of the share of corporate revenue that would remain if the tax on normal returns were eliminated by allowing expensing of corporate investments (Gentry and Hubbard 1997, Toder and Rueben 2007, Cronin et. al 2012).

TPC has recently reviewed the economic literature on who pays the corporate tax and updated its assumption on who bears the burden of the tax (Nunns 2012). TPC now allocates the tax burden as 20 percent to all capital owners, 20 percent to labor, and 60 percent to corporate shareholders. Because a substantial part of the corporate tax burden falls on capital and high-income people receive a large share of capital income, the burden of the corporate tax is very progressive.

Figure 2 shows the net change in overall tax burden from a revenue-neutral carbon-for-corporate tax swap (dark blue bars). Households at all income levels benefit from the reduction in corporate income taxes. Households in the lowest income quintile, for example, see their net burden decline from 1.8 percent of their pre-tax income to about 1.4 percent. That reflects the portion of the corporate income tax that is borne by workers (and the relatively small portion on investors that fall in that quintile). The benefit of reducing corporate income tax rises as income rises. The bottom 80 percent, by income, all bear a net tax increase from the swap with the burden from the carbon tax more than offsetting the benefit of cutting corporate income taxes.

Households in the top quintile, however, come out ahead on average. For them, the benefit of lower corporate income taxes more than offsets the burden of the carbon tax. On average, they benefit by about 0.8 percent of pre-tax income.

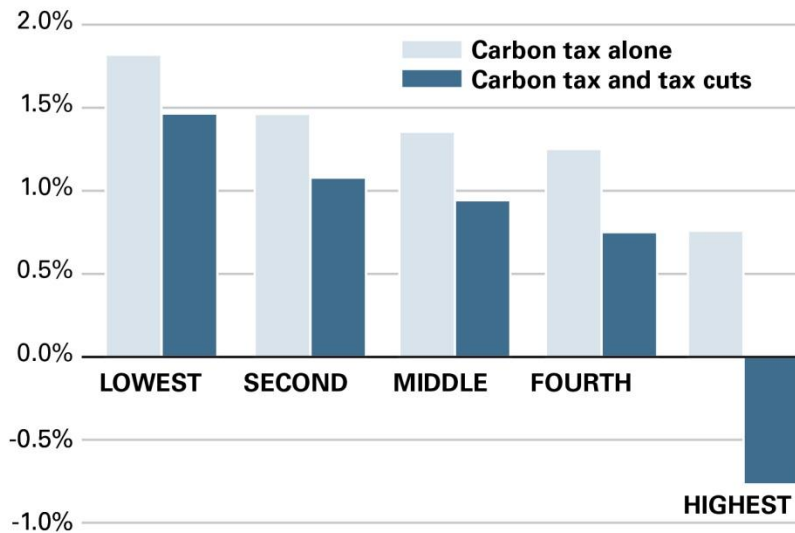
A revenue-neutral carbon-for-corporate tax swap is thus particularly regressive. It introduces a new, regressive tax while cutting an existing progressive one. Such a swap is efficiency enhancing, internalizing an externality while reducing a particularly distortionary tax, but the distributional implications are a concern.



FIGURE 2

The Net Burden of a Carbon Tax and a Cut in Corporate Income Taxes

Change in tax burden as a share of pre-tax income
By income quintile, 2015



Note: The cut in corporate income taxes offsets all carbon revenues

Source: Urban-Brookings Tax Policy Center Microsimulation Model and authors' calculations


One way to address those concerns would be to earmark a portion of the carbon revenues for lump-sum rebates. For example, one-quarter of the net carbon revenues might be used to pay a fixed rebate to each adult, and half as much for each child. The remaining three-quarters of the carbon revenue would then be used to lower corporate income taxes.

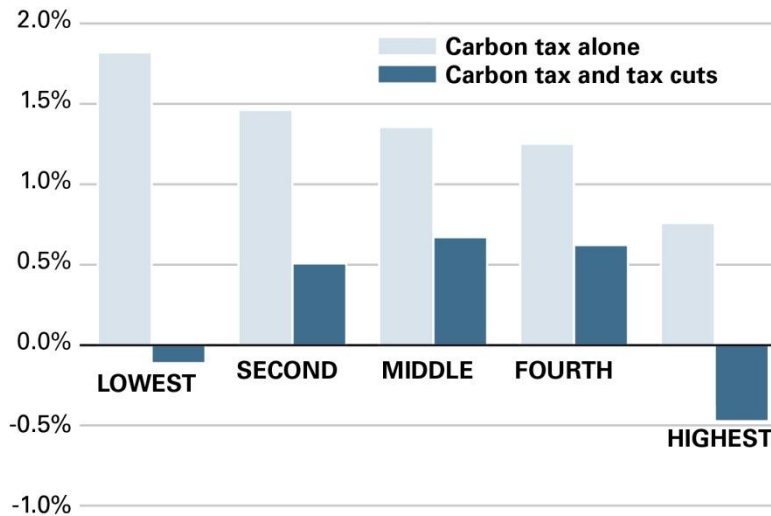
Figure 3 illustrates the net effect of this policy combination (dark blue bars). All income groups continue to benefit from the cut in corporate income taxes, but that benefit is three-quarters its previous size. In addition, all groups now benefit from the lump-sum rebates. Because they are fixed in dollar terms, those rebates are larger as a share of pre-tax income for households with lower incomes. Indeed, households in the lowest income quintile would come out slightly ahead, on average, as a result of this policy. Households in the top quintile would also come out ahead although less so than with a pure carbon-for-corporate swap; the benefit they get from the rebate is much less than they would have received from a larger corporate tax cut.

Middle-income households end up bearing the burden. The corporate tax reduction and the rebate are not enough to offset the additional burden of the carbon tax.

This simple example illustrates a more general conclusion. It is difficult to design a carbon-for-corporate tax swap that would be distributionally neutral (that would be even more true with finer gradations in the analysis). Doing so may require the use of more

than one additional rebate policy.¹² If distributional neutrality is an important policy goal or political constraint, policymakers may need to bring additional policy tools or issues into the mix in order to accommodate it. They should recognize, however, that using revenue for lump-sum or other rebates targeted at low-income households rather than corporate tax cuts will reduce the potential efficiency gains of the overall policy package.

 **FIGURE 3**
The Net Burden of a Carbon Tax, a Cut in Corporate Income Taxes, and a Credit
 Change in tax burden as a share of pre-tax income
 By income quintile, 2015



Note: The cut in corporate income taxes offsets 75% of carbon revenues and a per capita credit offsets 25%

Source: Urban-Brookings Tax Policy Center Microsimulation Model and authors' calculations

4. ROOM FOR DEFICIT REDUCTION

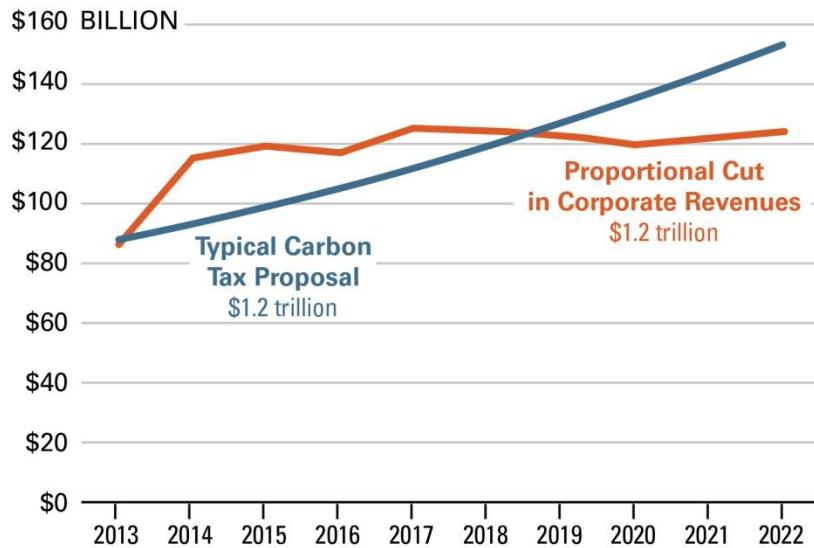
Our distributional analysis considered cases in which all net carbon tax revenues were used to reduce corporate income taxes or finance transfers to low-income families. Given America's daunting long-run fiscal outlook, however, we should also consider the possibility of using some carbon revenues for deficit reduction. Because of population aging and rising health care costs, federal spending will likely be larger in the future, relative to the size of the economy, than it has been in the past, even after some entitlement trimming. If so, the United States will need higher revenue (Brown, Gale, and Saltiel 2012).

¹² For example, using some of the revenues not allocated to corporate tax relief to provide cuts in the payroll tax rate instead of a lump sum rebate would allocate more of the remaining rebate to middle income households and less to the bottom quintile.



FIGURE 4

Carbon and Corporate Revenues over Time



Source: Congressional Budget Office and authors' calculations.

One way to combine corporate tax reform with eventual deficit reduction is to recognize that tax policy changes can have different revenue impacts over time. The congressional budget process focuses on ten-year budget windows, so a revenue-neutral tax swap would typically use ten years of carbon tax revenues to pay for ten years of corporate tax rate cuts.¹³ But that does not mean carbon tax revenues will match corporate tax rate cuts each year. Indeed, the two revenue streams can have quite divergent time paths.

CBO's example of a \$1.2 trillion carbon tax, for example, has revenues increasing rapidly over time (Figure 4). Revenues start around \$90 billion in 2013 and then rise to \$150 billion in 2022. That increase reflects the net effect of four forces: (1) the 5.6 percent annual increase in the tax per ton, (2) real economic growth, (3) declining emissions intensity of economic activity, and (4) emissions reductions in response to the tax. CBO projects that the first two factors more than offset the third and fourth, at least over the first decade, so annual revenues rise substantially.

A proportional \$1.2 trillion cut in corporate tax revenues over those ten years would have a much flatter trajectory. Such a cut could reflect a combination of rate cuts and preference extensions. After an early jump (reflecting the economic recovery and expiration of temporary tax cuts), the resulting path of revenues losses would fluctuate closely around \$120 billion annually. That path reflects the net effect of three forces: (1) nominal economic growth, (2) a reduction in the share of national income that accrues as

¹³ Budget rules sometimes include intermediate targets, for example not increasing the deficit over five years. Those targets can complicate policy design, but don't weaken our general point here.

corporate profits (which CBO projects will move back toward historical norms after recently expanding), and (3) a declining share of economic activity happening in corporations (as more businesses structure as partnerships, limited liability companies, and other non-corporate forms). CBO projects that the latter two factors roughly offset the first. As a result, corporate revenues remain roughly flat over the decade (and decline relative to the economy).

By the end of the budget window, the carbon tax would be raising about \$150 billion annually, while the corporate tax cut would be losing about \$120 billion. This “revenue-neutral” tax swap thus generates positive net revenues as we look beyond ten years. In the eleventh year, for example, it would increase revenues (and thus reduce the deficit) by about \$30 billion. That amount would likely grow in for a number of years beyond the budget window, although it will start turning around eventually as the carbon tax leads to a substantial cut in emissions.

A carbon-for-corporate tax swap could thus be revenue-neutral inside the official budget window and still contribute to long-term deficit reduction. Of course, the ultimate contribution to deficit reduction would depend on the long-run trajectory of carbon and corporate revenues and policymakers’ willingness to let them run their course. Also, if policymakers wanted to accomplish more deficit reduction sooner, they could target revenue neutrality over a shorter window, perhaps five years, with net revenue gains beyond it.

5. CONCLUSION

America’s tax system is broken. It’s needlessly complicated, economically harmful, and fails at its most basic task, collecting enough revenue to finance government services. Tax and fiscal reform thus deserves increased attention from policymakers. But current discussions often get bogged down in tired debates and progress has been slow.

Adding a carbon tax to the discussion could help facilitate needed reforms. The environmental argument for a carbon tax is strong, given growing evidence of a changing climate. And the resulting revenue could play a vital role in facilitating tax reform and deficit reduction.

Corporate tax reform could be particularly beneficial, given the potential for reducing economic distortions. But those potential efficiency gains must be balanced with distributional considerations. A carbon-for-corporate tax swap would be highly regressive, increasing tax burdens on low-income families while lowering them on high-income ones. Policymakers may therefore want to pair such a swap with other policies that ameliorate some of the distributional consequences. They may also want to capture some carbon revenues for future deficit reduction.

Taxing carbon, reforming our flawed corporate tax system, and addressing long-term deficits should all be priorities for American policymakers. Combining a carbon tax with corporate tax relief may open up possibilities for coalitions that could overcome the resistance that either policy considered in isolation would engender.

APPENDIX: TPC'S MODEL OF THE U.S. TAX SYSTEM

The Tax Policy Center has developed a large-scale microsimulation model to analyze the revenue and distributional consequences of the U.S. federal tax system. Based primarily on a public-use sample of information taken from tax returns, the model projects incomes and other tax-related variables for subsequent years and simulates actual and proposed tax laws to estimate and compare their effects on tax units. The model is similar to those used by the Congressional Budget Office, the Joint Committee on Taxation, and the Treasury's Office of Tax Analysis. A detailed description of the model is available online (Urban-Brookings Tax Policy Center 2012). Nunns (2012) explains how the model distributes the burden of corporate income taxes, and Toder, Nunns, and Rosenberg (2011) explain how it distributes the burden of consumption taxes.

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