Addressing Climate Change and Reforming the Tax Code with a Carbon Tax

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When Joe Biden ran for president of the United States, he campaigned on combatting climate change and raising revenue to finance new social spending policies. Yet given those two goals, a carbon tax was conspicuously absent from his policy platform and remains absent from the current policy debate. Although economists generally favor a carbon tax, it remains politically unpopular in America. Opponents raise concerns over its economic and distributional impact and its supposed insufficiency in addressing climate change. Lawmakers could address many of these concerns by using carbon tax revenue to reduce or reform other taxes, transfer cash to low-income households, and finance additional subsidies for green energy technologies.

A carbon tax is an excise tax levied on the carbon content of goods. It is a type of Pigouvian tax — a tax on a transaction that creates a negative externality. A negative externality is a cost associated with a market transaction that is not incorporated into the market price. The production and consumption of gasoline for motor vehicles, for example, produce carbon emissions that contribute to global warming. Global warming creates costs for members of society that do not participate in the gasoline market. The price of gasoline does not reflect this cost, and as a result, firms and consumers do not internalize the social cost of carbon emissions and carbon-intensive goods are underpriced and overproduced.

Although designs vary, an ideal carbon tax would be levied on the content of all greenhouse gases, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Carbon taxes are typically levied directly on producers and the tax rate is typically set at a dollar value per metric ton of carbon dioxide emissions. Carbon taxes are also often proposed with a border adjustment, which applies the tax to imports and rebates taxes paid on goods exported to foreign markets. The net effect of a border adjustment is that the carbon tax applies to the carbon content of domestic consumption (rather than domestic production).

As of 2021, 35 carbon taxes exist in more 27 countries and jurisdictions throughout the world. These existing carbon taxes vary in both their breadth and rate. According to the World Bank, rates range from $0.36 per metric ton in Ukraine to $137 per metric ton in Sweden. The United States does not have a carbon tax, but five proposals have been introduced according to the Citizens' Climate Lobby.

Carbon taxation has significant advantages over other policies that aim to reduce carbon emissions. A carbon tax placed on the production of carbon-intensive goods creates an incentive for producers to find and utilize the most effective carbon-efficient technologies that reduce emissions. In contrast, regulations that mandate or ban certain technologies are less flexible. Tax credits and subsidies that help consumers purchase green technology, like electric vehicles, may also be less effective than carbon taxes. While both policies encourage consumers to shift their preferences from a traditional internal combustion vehicle to an electric vehicle, only a carbon tax shifts preferences away from the dirty source of power used to charge the vehicle.

Another advantage of a carbon tax over regulations and subsidies is that it raises revenue. In the United States, carbon emissions totaled 5,769 million metric tons in 2019. Even at a modest rate, a tax on emissions would raise a significant amount of revenue. According to the official budget scorekeepers of the U.S. Congress, the Congressional Budget Office, a $25 per metric ton carbon tax would raise on

average $100 billion each year or $1 trillion over a decade. This is significantly greater than any single tax increase and larger than the entire corporate tax increase being considered by Democrats as part of the Build Back Better Act.

Despite its advantages, a carbon tax has yet to catch on in the United States. Opponents tend to focus on several challenges with the tax. First, as an excise tax, the tax is considered "regressive;" it places a larger burden on low-income households than high-income households. According to an analysis by the Urban-Brookings Tax Policy Center, a $45 per metric ton carbon tax would reduce after-tax incomes for the bottom 20 percent of U.S. households by 2.1 percent but reduce after-tax income by 1.1 percent for the top 20 percent of households.

Second, as a tax on production, it would negatively impact economic output. According to the Tax Foundation, a carbon tax of $50 per metric ton would reduce economic output by 0.4 percent in the long run.

Lastly, some advocates for climate action do not think a carbon tax would be enough. They argue that the market signals are insufficient given the scale and the stakes of the problem. These advocates would rather use significant subsidies and regulations to accelerate the transition to a "carbon-free" economy.

These political challenges, however, are not insurmountable and can be addressed with proper policy design. As mentioned above, a significant advantage of a carbon tax is that it can raise new revenue for the federal government. Lawmakers and policy analysts have suggested several potential "revenue recycling" methods—using carbon tax revenue to enact new climate change or tax policies that address its economic and distributional costs.

Perhaps the most well-known revenue recycling proposal is the "carbon tax and dividend." This proposal would return the additional revenue raised by a carbon tax to American citizens as a rebate. The Climate Leadership Council, which is a business-backed group of researchers and economists that support a carbon tax, advocate for this approach. A carbon dividend would easily address concerns about the regressive distribution of the tax. According to the Tax Foundation, a $50 per metric ton carbon tax could finance a $1,057 rebate per person (and half of that amount for each dependent). Such a rebate would increase the after-tax income of the bottom 20 percent of households by 6.8 percent.

A carbon dividend proposal, however, does little to offset potential harm to the economy resulting from higher taxes. Some analysts and lawmakers have suggested using carbon tax revenue to reform other taxes. No two taxes impact the economy in the same way. Cutting one tax and replacing the revenue with another could increase economic output and result in higher incomes. A carbon tax is a good candidate for these swaps. On top of its climate benefits, it has similar economic properties to a value-added tax (VAT). Like a VAT, and unlike the current U.S. individual and corporate income taxes, a carbon tax is less distortive of saving and investment decisions.

Several proposals have paired a carbon tax with reducing payroll taxes. Jason Fichtner of the Bipartisan Policy Center in Washington D.C. proposed a $40 per metric ton carbon tax and a 2-percentage point reduction in the OASDI payroll tax (from 12.4 percent to 10.4 percent). A payroll tax cut was also central to the "Stemming Warming and Augmenting Pay Act of 2019" (SWAP Act), a bill introduced by Representative Rooney (R-FL) in 2019. The SWAP Act would impose a $30 per metric ton carbon tax and

use 70 percent of the revenue to reduce payroll taxes, 10 percent for additional Social Security payments, and 20 percent for other policies.

The Tax Foundation suggested using carbon tax revenues to help, partially, pay for a permanent extension of the individual income tax cuts passed as part of the 2017 tax law. The 2017 Tax Cut reduced individual income taxes by reducing statutory tax rates, reforming family benefits, and scaling back the alternative minimum tax. However, these changes are scheduled to revert to pre-2017 rates and levels in 2026. The Tax Foundation found that a carbon tax of $60 per metric ton could pay for a modified extension of these income tax cuts.

Other analysts have suggested using carbon tax revenue to cut and reform the corporate income tax. This swap has the potential to be the most pro-growth of the tax reform options. A carbon tax does directly impact the incentive to save and invest. A corporate tax, however, is more distortive of this decision and can also encourage companies to shift certain types of production overseas—something a border adjusted carbon tax avoids. The Tax Foundation found that using carbon tax revenue to cut corporate income tax rates could boost long-run output (GDP) in the United States by 0.8 percent—about eight times the impact of using a carbon tax to cut the payroll tax.

Although each tax swap attempts to ease some of the tradeoffs with a carbon tax, all options have tradeoffs of their own. A payroll tax cut, for example, will provide a tax cut for some of the households most impacted by a carbon tax. However, retirees and other non-working households will still bear the additional carbon tax burden. Alternatively, pairing a carbon tax with a corporate tax cut would net a large positive impact on the economy and would offset the carbon tax's burden on retirees, but would raise the tax burden on low-income working households by nearly as much as a carbon tax in isolation.

These tradeoffs need not be discouraging. Lawmakers could use a combination of these recycling methods to create a distributionally neutral, pro-growth carbon tax. Estimates from my work at the Tax Foundation suggest that lawmakers need not refund all of the carbon tax revenue to households to hold low-income households harmless. Lawmakers can pair a carbon dividend with tax reforms that would be pro-growth and deficit neutral.

Carbon tax revenue could also be used to finance more targeted subsidies to help address concerns that a carbon tax, in isolation, is insufficient.

Groups such as the Climate Leadership Council have also suggested including regulatory reform as part of a carbon tax proposal. According to modeling by EY's Quantitative Economics and Statistics group, replacing duplicative climate regulations with a carbon tax would increase economic output by 0.7 percent.

A carbon tax is considered one of the most efficient ways to address global climate change. That said, it faces political challenges. The revenue it raises can address many concerns about the tradeoffs that keep it politically unpopular in the United States.