Can a Carbon Tax Be Designed to Benefit Low-Income Households?

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Pricing carbon through a tax would raise the costs of fossil fuels in order to promote energy efficiency and renewable technologies, thus reducing emissions of heat-trapping gases. Senator Bernie Sanders (I-VT) introduced a carbon tax bill in 2015, and in 2017 a group of officials from past Republican administrations proposed such a tax. Earlier this year, a bipartisan group of members introduced a carbon tax bill in the House of Representatives. And in the spirit of full disclosure, I too have published carbon tax proposals over the years, starting in 2007.

A common criticism of a carbon tax focuses on the claim that it would disproportionately harm low-income households. Indeed, energy prices would increase under such a tax and, given that spending on transportation fuels and climate control represents a larger fraction of spending for low-income households than for high-income households, the direct impact of the tax on energy prices could be regressive. But such an assessment is incomplete — a critical examination of the evidence suggests that a carbon tax can easily be progressive.

Any claim about the progressivity or regressivity of a carbon tax should account for the use of the money raised. To illustrate the importance of considering the raising and disbursing of tax revenues, consider the Social Security program. The payroll tax that finances Social Security is highly regressive. Workers pay the same payroll tax rate on their labor income up to $132,900 (in 2019), above which the tax no longer applies. Thus, workers with high labor incomes pay a smaller fraction of their wages in Social Security taxes than workers with incomes below this limit.

The use of revenues collected through this tax, however, is quite progressive. The Social Security Administration employs a benefits formula that pays out more in monthly checks to low-income retirees relative to their lifetime payroll tax contributions than to high-income retirees. The net effect is that the Social Security program — considered from the point of collecting the payroll tax to that of paying out the benefits — is in sum progressive.

A carbon tax could generate substantial revenues — depending on its design, perhaps several hundred billion dollars annually. These monies could be used to subsidize clean energy investments — similarly to how California and Northeast states use allowance auction revenues under their carbon dioxide cap-and-trade programs. Such monies can be used to finance reductions in existing tax rates on payrolls, personal income, or corporate income, or they can be returned as "dividend" checks to the American public through equal per capita payments every month or quarter.

You need to pay attention to how the revenues are ultimately used

The Department of the Treasury evaluated several of these options under a carbon tax of about $50 per ton and found that the dividend option was very progressive. Not only did it impose lower relative costs on lower-income households than higher-income households, the combination of a carbon tax and dividend payouts would increase after-tax income for households in the bottom 70 percent of the income distribution. Using carbon tax revenues to reduce the payroll tax would have much smaller impacts on after-tax income across the income distribution, and would only reduce after-tax income for households in the highest income decile. In contrast, reducing corporate income taxes tends to favor the highest-income households.

Assessing the distributional impacts of a carbon tax should also account for the alternatives. One alternative could be a continuation of past regulatory mandates and clean energy subsidies. Recent economic research has shown that mandates such as fuel economy standards impose disproportionate costs on low-income households, while subsidies for electric vehicles and residential clean energy investments disproportionately benefit high-income households. Unlike a carbon tax, these approaches either generate no revenue or require the expenditure of revenue, and thus do not provide resources that could facilitate better distributional outcomes.

Another alternative could be paying inadequate attention to the risks posed by climate change. As a warming planet results in more heat waves, more frequent and intense tropical storms, more forest fires, and other adverse impacts, low-income households are likely to be more vulnerable and possess fewer resources to adapt to these risks. Past natural disasters in the United States — from Hurricane Katrina in 2005 to Superstorm Sandy in 2012 to increasingly common killer heat waves — provide evidence of how low-income households live in more low-lying areas vulnerable to storm surge and may be less likely to have air conditioning to cope with extended periods of high temperatures.

Since the ultimate benefit from a carbon tax will be to reduce exposure of the most vulnerable, fighting climate change through this economic instrument is likely to be quite progressive.