

# Is a Carbon Tax *the Only Good* Climate Policy?

## Options to Cut CO<sub>2</sub> Emissions

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Congress's failure to pass comprehensive climate legislation provides an opportune time to reconsider the main options for initiating a major program to cut domestic carbon dioxide (CO<sub>2</sub>) emissions. Cap and trade is still on the table. So too is a carbon tax, especially as policymakers grapple with how to address large federal budget deficits. A third possibility is a regulatory approach, such as a CO<sub>2</sub> per kilowatt-hour standard for the power sector. This last option has a weaker effect on energy prices and in this regard might be politically attractive because, unlike a carbon tax or cap and trade, it does not involve the pass-through of tax revenue or allowance value into fuel and electricity prices.

Economywide, market-based approaches have a cost advantage because placing a price on CO<sub>2</sub> exploits all emissions reduction opportunities across the economy.

In contrast, an emissions standard would promote fuel switching in the power sector (replacing coal plants with natural gas, renewables, and nuclear) but have little or no effect on electricity conservation or reductions in other sectors.

However, economic analysis (much of it done at RFF) demonstrates that the costs of new climate policies also depend on their interactions with preexisting sources of distortion in the economy that are created by the broader fiscal system. Once these interactions are accounted for, the only sound policy on economic grounds seems to be a carbon tax with revenues substituting for tax increases that would otherwise be needed to finance the government's budget. In fact, cap-and-trade systems, of the sort envisioned in recent climate bills, appear to perform especially poorly on cost-effectiveness grounds. Why is this?



### **Tax Distortions: Three Key Lessons for Instrument Choice**

The U.S. tax system distorts economic behavior in a variety of ways. To explain why, we turn to some basic economic theory. Taxes on labor income (such as income and payroll taxes) reduce the rewards to working and thereby reduce labor force participation, effort on the job, investment in human capital, and so on below levels that would maximize economic efficiency. Taxes on business income and household savings reduce incentives for capital accumulation. And a variety of tax exemptions and deductions distort the composition of goods produced by encouraging too much spending on, for example, medical insurance and owner-occupied housing.

These sources of distortions have three important implications for the choice of climate policy instruments.

**A carbon tax, with revenues used to substitute for other distortionary taxes in the fiscal system, has a substantial cost advantage over cap-and-trade systems.**

This is because cutting other taxes can produce gains in economic efficiency that are relatively large in magnitude, by (slightly) increasing employment, investment, and the bias toward tax-favored spending.

According to our estimates, a carbon tax of about \$30 per ton of CO<sub>2</sub> in 2020 (in current dollars) would cut domestic, energy-related CO<sub>2</sub> emissions in that year by about 8.5 percent and raise revenue of about \$150 billion, or 30 percent of the projected federal budget deficit for that year. If this revenue is used to substitute for income taxes, we estimate the annual cost saving would be about \$50 billion, compared with an equivalently scaled cap-and-trade program. In fact, with revenue

“recycling,” the overall costs of carbon taxes are modest, and perhaps even slightly negative.

Of course, cap-and-trade systems could also generate the same benefit if all the allowances were auctioned and the proceeds transferred to the U.S. Treasury, but this seems unlikely in practice. (In existing proposals, allowance proceeds are largely used for compensation programs.) Moreover, there seems little point in designing an elaborate cap-and-trade program if its only purpose is to mimic the effect of a simpler carbon tax.

be \$15 billion a year in 2020, about a third of the cost of an economy-wide cap-and-trade system, although still substantially higher than the cost of a carbon tax with revenue recycling.

#### **Proposed cap-and-trade systems may not pass a standard cost-benefit analysis.**

A large interagency task force has recently come up with recommended values to be used in cost-benefit analysis for the social cost of carbon—that is, the global benefits from reduced future climate change associated with one less ton of CO<sub>2</sub> emissions.

**For CO<sub>2</sub> emissions in 2020, an interagency task force recommends using a range of about \$7 to \$42 per ton, or perhaps about \$80 if Earth warms faster than expected.**

#### **The costs of market-based policies without the revenue-recycling benefit may actually exceed those of traditional regulatory approaches like emissions standards, at least in the short run.**

The increase in energy prices caused by market-based climate policies causes higher production costs throughout the economy, which in turn leads to a slight contraction in the overall level of economic activity, employment, and investment. As a result, distortions in labor and capital markets due to preexisting taxes are increased, producing an economic cost. This cost is larger for market-based instruments because they tend to have a much greater impact on energy prices than emissions standards, for envisioned CO<sub>2</sub> reductions over the medium term.

Again, according to our rough estimates, the cost of achieving the above CO<sub>2</sub> reduction under an emissions standard would

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For the scale of CO<sub>2</sub> reductions discussed here for 2020, our estimates suggest the average cost per ton reduced is \$91 under cap and trade, which exceeds even the highest recommended value for the social cost of carbon.

#### **Reasons to Be Cautious**

Naturally, there are many reasons to suspect these provocative findings, which suggest that federal policymakers may have been focused on the wrong climate policy instrument from an economic perspective.

For one thing, we should always be cautious in taking the policy implications from economic models too literally—our judgment about reasonable model assumptions can change with new evidence, and

there is always the possibility that models miss something important. Moreover, meaningful action by the United States on CO<sub>2</sub> emissions would likely promote similar efforts in other countries. This would produce further global benefits in terms of slowing climate change, though at the cost of mitigation burdens borne by other countries.

Market-based approaches are also more effective than traditional regulatory approaches at promoting the development of cleaner production technologies over time. However, the net economic benefits from additional innovation under market-based approaches are probably not large enough to affect our ranking of policy instruments. On the other hand, the relative differences in policy costs due to interactions with the tax system are less pronounced at considerably higher levels of abatement, and the relative efficiency gain from emissions pricing is larger. For a sufficiently stringent policy, cap and trade will be more cost-effective than traditional regulation. However, that level of emissions reductions is not envisioned in recent climate bills for at least the next 20 years.

One of the main objections to carbon taxes is that they are regressive, meaning that they impose a larger burden on lower-income families, as a portion of their income, compared with higher-income households. These adverse distributional impacts could be neutralized through adjustments to the tax-benefit system, such as tax cuts and/or benefit increases targeted at lower-income households, though such changes produce smaller efficiency benefits from the revenue-recycling effect than do broad-based tax cuts.

Alternatively, it might be argued that the design of policies to reduce pollution should be kept separate from policies to promote a more equitable society, as the latter encompasses so many diverse issues related to poverty; education; and low-income assistance for health, housing, and food.

### **Use Tax Revenues or Allowance Value Wisely**

One of the practical arguments made in favor of cap and trade is that opposition from adversely affected parties can be ameliorated through allocation of the allowance value. But from an economic perspective, the revenue or allowance value created by market-based climate policies is potentially problematic. Ideally, it should be used to substitute for distortionary taxes (or otherwise increase economic efficiency) for us to be confident that these instruments perform well on economic grounds. The best way to do this is to design a carbon tax that is well integrated into the broader fiscal system so that revenues, combined with those from other taxes, meet a sequence of total government revenue targets over time. ●



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