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# Is an Optimal Carbon Tax Relevant?

Political forces threaten to push carbon taxes too high.

BY DANIEL SUTTER

**B**ob Litterman discusses the factors determining an optimal price or tax for carbon emissions (p. 38). The exercise illustrates that from an economic perspective climate change is not catastrophic, but is likely to be of minimal importance in the ultimate determination of such a tax. However, a carbon tax, once adopted, could easily be raised to a level that chokes off economic growth—which would be catastrophic. Attempting to calculate the optimal tax might have an unintended consequence of making a terrible policy accident more likely.

A carbon tax rate would not be set at a permanent level when first implemented. As Litterman notes, the optimal tax would likely increase over time and new information about climate change or its consequences could update the optimal rate. Adoption of a tax would have to include a mechanism for future adjustments. Yet the optimal tax cannot be precisely calculated; uncertainties about both the magnitude of losses and the probability distribution of losses preclude precision in this calculation. Congress could not commit, even if it wanted to, to setting the tax based on the solution to the economic optimization problem. This should not come as a surprise because efficiency is logically coherent but difficult to operationalize.

**Excessive tax** | Adoption of a carbon tax commits us to the chosen mechanism for adjusting tax rates. The case for a tax in the range implied by many economic models (\$5 to \$25 per ton) is strong because, even if one is highly skeptical about climate change and its potential adverse effects on society, the probability of substantial costs must be closer to 0.2 than zero. On the other hand, a carbon tax could be an economic catastrophe if the tax ends up well above the range implied by economic models.

An excessive tax is likely for three reasons. First, even within the economic models, assumptions can be made that increase the present value of the cost of carbon substantially. If truly catastrophic effects are possible or if the catastrophic losses are sufficiently likely, an optimal tax will be much larger. Climate change poses uncertainty and not risk, as Litterman notes, and

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we have no evidence to rule out a fat-tailed distribution of truly catastrophic outcomes. Consequently, the adjustment process could readily be freed from any tight anchoring.

Second, many people reject setting a carbon tax based on economic efficiency. Some scientists and engineers believe that carbon emissions must be reduced to zero over the next 50 years to avert a catastrophe. Other proponents see the threat of climate change as a means to achieve fundamental societal changes. A carbon tax of even \$100 a ton translates to about \$1 per gallon of gas, insufficient to stop Americans from driving their cars. Many constituents would demand a tax well in excess of any calculated economic optimal, and would lobby for steep increases. Thus even if the establishment of a carbon tax is cast in the framework of efficiency, once a tax and adjustment mechanism are in place, the tax could be increased on other grounds.

Third, political equilibrium suggests a balancing of these lobbying interests. Those advocating a carbon tax based on efficiency would oppose any increase above the efficient level, but the strength of their opposition would depend on their loss relative to the efficient price, which is small for a price just above the efficient level. Efficiency advocates would only really raise a fuss as the price rises beyond the range of possible efficient values. Meanwhile, advocates of phasing out fossil fuel use would engage in a full-court press to raise the tax from the efficient level. Political balancing of these two lobbying groups would lead inevitably to a price higher than the efficient level, even if each group has similar overall political influence. As a result, the economically efficient price is implausible as a political equilibrium.

While a small carbon tax might have net benefits, politically our choices are likely between an excessive and perhaps prohibitive tax and no tax at all. Once an apparatus for carbon taxation is in place, discretion would lead to an excessive price. Citizens' only recourse, if government discretion cannot be checked, is not allowing government action at all. The zeal of climate change proponents ironically might make adoption of an efficient tax less likely. The argument here is of a second-best nature: it is not that a carbon tax of any magnitude is harmful, but that the equilibrium tax will be worse than no tax.

Projected economic growth provides perspective on the case for a carbon tax. As Indur Goklany has argued, future generations in 2100 or 2200 will be significantly better off than people today without mitigation under all climate change scenarios. This suggests that the gains from an optimal carbon tax would be small. But future growth is not guaranteed, especially if aggressive policies against climate change are adopted. A carbon tax to reduce emissions to zero would likely devolve into carbon rationing. Modest taxes will not reduce the use of fossil fuels to zero, while a tax large enough to do so would result in evasion. Consequently, command-and-control policies would be required to ration fossil fuel usage toward zero. Given that energy use drives the economy, carbon rationing would effectively amount to energy central planning.

Calculating an optimal tax might have the unintended consequence of making such a catastrophe more likely. Who could be against an optimal carbon tax if it raises the price of gasoline

by a quarter a gallon or less? Economists offer a disarming case for taxing carbon. But promises regarding taxes are notoriously unreliable; the 16<sup>th</sup> Amendment was adopted in part because Americans were promised that only the rich would ever pay an income tax. Once established, politicians will set tax rates based on predictable political forces.

Economic growth has been the exceptional condition in human history, not the normal, and growth only began with the establishment of the institutions of the market economy. Energy central planning would force abandonment of market allocation of factors of production. Given the potential for capture by interests looking to eliminate carbon emissions, a carbon tax could spell the end of growth, courtesy of government planning. Although catastrophe scenarios are usually invoked to motivate action on climate change, the true catastrophe would be to allow an excessive carbon tax to undermine prosperity. **R**

#### READINGS

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# Politics and Climate Change

## What impedes a carbon tax?

BY SHI-LING HSU

**B**ob Litterman makes an important contribution to the discussion of the economics of climate change (p. 38). He cuts through much of the debate over climate policy and manages to leave the lay reader with a basic understanding of Capital Asset Pricing Model (CAPM) theory and how it could apply to climate policy. In my view, this essay should be required reading for climate policy wonks. The debate over climate change and climate policy is ossified, with very little insightful material being added. Litterman’s essay is truly different and useful.

I say this despite my disagreement with a number of his assertions about the state of the literature on climate science and

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climate policy; they seem to me to be based on a literature that is slightly outdated. But that only reinforces his tentative conclusion that carbon should be priced, and should be priced higher than the level that most economists believe to be optimal.

**Two camps** | Litterman’s thesis is that the risks of climate change are usefully analyzed as a hedge fund manager might. In the interests of making climate policy more palatable to those who doubt the science behind climate change, a climate policy like a carbon tax is sometimes described as a measure of “insurance” against the risk of climate change. But this is wrong; the risks of climate change are non-diversifiable. The damages from climate change are such that many interdependent claims could be filed in a short period of time. Private insurers did not and mostly could not diversify against the risks of a \$50 billion event like Hurricane Sandy, let alone the increased number of strong hurricanes that climate change is expected to bring about. If climate change were to bring about both stronger hurricanes and drought at the same time, then private insurance would be even less available. Litterman’s insight is that climate change thus becomes a pure question of risk aversion.

If you cannot diversify away risks, the question becomes, “how willing are you to assume risk? How much would you demand to assume risk?” It should surprise no one that respondents to this question fall roughly into two camps: the risk-averse climate policy advocates and the risk-taking climate skeptics. The two share little in common.

But Litterman’s essay delves into this further. Why, fundamentally, are some people risk-averse and some risk-taking when it comes to climate change? Part of the answer, clearly, depends on one’s view of the science of climate change. Skeptics of climate policy tend to doubt the robustness of climate science. But a more nuanced view is that climate skeptics are more risk-taking because they do not believe that the risk of climate change is high enough to justify the dampening of economic growth.

Some members of the risk-taking camp may also view climate change as a hedge, not a risk, because the harms from climate change would themselves reduce economic growth, thereby reducing emissions. In other words, climate change, because of the strong correlation between economic growth and greenhouse gas emissions, provides its own negative feedback mechanism. Litterman gives this view more credence than it deserves because the economic damages caused by climate change lag emissions by very long time frames. A lagged negative feedback mechanism would lead to a dynamic path of temporary but suboptimally high emissions, leading to later suboptimally high damages. The hedge view of climate change is flawed in this respect. Be that as it may, Litterman’s description is accurate. Some combination of these two beliefs leads this camp to believe that whatever economists say, the price of carbon should be lower. As Litterman points out, this view is predicated on the belief that the damages of climate change, while non-diversifiable, are not catastrophic.