

5 The Case for Pricing Greenhouse Gas Emissions*

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Introduction

This chapter argues for imposing a globally uniform charge on all emissions of greenhouse gases (GHGs), insofar as practicable. It will focus for concreteness on carbon dioxide, the most prevalent and long-lasting greenhouse gas. It argues that such a charge would be superior to a system based on quantitative international targets with provisions for trading emission rights, global cap-and-trade for short.

Climate change is a global problem, not a localized one; to be effective, it requires a global approach to the reduction of GHG emissions. “Global” does not necessarily mean universal, although that would be desirable. It would be sufficient to engage the 30 to 40 largest emitting countries, at least for the next decade or two. These countries account for the overwhelming majority of fossil fuel consumption and also include countries covering the bulk of changes in land use that result in CO₂ emissions.

But several economies, most notably the European Union (EU), have embarked on a cap-and-trade system. It is worth asking, therefore, whether the two systems can coexist and comply with a uniform international charge on carbon. The answer is affirmative, provided several conditions are met. These conditions would assure that the combined charges from fossil fuel taxes and carbon permits issued under cap-and-trade equaled the requirements of the uniform international charge (for further discussion, see Cooper, 2008).

The case for a charge on carbon as opposed to a global cap-and-trade scheme is based partly on the negatives associated with cap-and-trade and

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partly on the positives associated with the carbon charge. Let us take up the negative component first.

International Cap-and-Trade

How well would a cap-and-trade system work at the global level? It would require allocating emission targets, covering many years, to states. To be effective, the total targets would have to be tight enough to cut emissions significantly from what they would otherwise be. In my view, it will be impossible to negotiate meaningful national targets. The reason is straightforward. Developing countries understandably place a higher priority on economic development than they do on mitigation of climate change, and they will not agree to binding emission targets that they believe will compromise their development objectives (Stiglitz, 2006b; chapter 6, this volume). Moreover, we now have several examples of countries that have grown 8% to 10% for two decades or more, and most developing countries will aspire to achieve such growth rates, even though most countries will fail to achieve them. But aspirations, not *ex post* realities, will shape their positions in international negotiations. With generous targets allotted to the leading developing countries, the rich countries, especially the United States, will not agree to compensate with targets so stiff that they seriously threaten standards of living in those countries. In short, meaningful binding global targets are not feasible.

Even if this (decisive) argument is put to one side, there is another acute problem with a global system based on cap-and-trade. To work, the national targets (i.e., emission rights) must be allocated to the entities that actually make decisions about what kinds and how much fossil fuels to consume, that is, to electricity-generating firms and energy-intensive industrial firms. The idea of cap-and-trade is that each covered firm would be given an emission target for the coming year, perhaps declining from year to year, and each firm would either have to meet its target or purchase emission rights from other firms that had reduced emissions below their targets. This would require a market in emission permits, of which one has functioned in Europe since 2005. Although there were a number of glitches, Europeans have demonstrated that such a market can work. But the European system covers less than one half of European CO₂ emissions. For compelling practical reasons, Europeans have not yet extended the system to all or even most emissions, particularly those in the transport and heating sectors, and in much of industry.

Unless the permits are auctioned, raising the separate question of how a fair auction is ensured, the permits are allocated to the covered firms free of charge. In countries with loose governance (i.e., most countries), this is an invitation to favoritism: the government is allocating permits that have significant financial value, and most governments are likely to do that in a biased way. Put more bluntly, it is an open invitation to corruption. This is a fatal flaw in a global cap-and-trade system because well-governed democratic countries will be unwilling, and they should be unwilling, to impose burdens on their own citizens to enrich political favorites in less well-governed countries through international trade in emission permits. Concretely, no US senator who understood the process would vote in favor of a treaty with this implication. In other words, the United States would not participate in such a global scheme even if it had adopted a cap-and-trade system domestically.

Viewed from a slightly different perspective, what senator, once he or she understands the full implications of a trading regime, can vote for a procedure that could result in the unconditional transfer of billions of dollars, even tens of billions, to the government of communist China, to Castro's Cuba, or to Putin's Russia? That would be politically unacceptable, at least in the United States and probably elsewhere.

This implication of unwholesome international transfers could be avoided if each participating country had its own national cap-and-trade system (EU-wide in the case of the EU). But that would vitiate much of the "trade" part of a cap-and-trade system because we have reason to believe that emission reductions will be much less costly in many developing countries than they would be in many rich countries. Denying international trade in permits would reduce greatly the efficiency of the cap-and-trade system. High-cost emission reductions would yield to lower-cost reductions only on a national basis, not internationally.

That is the negative case for carbon charges: the main alternative, cap-and-trade, cannot be made to work effectively and efficiently at the global level. Yet a global solution is required.

Carbon Charges

The affirmative case for carbon charges contains a number of elements. First, it uses the price system, which is the only way to reach the billion-plus decision makers around the world who decide what and how much

energy to consume. They will be encouraged to either consume less or switch to less carbon-intensive sources of energy.

Second, the charge can be applied to all fossil fuels at choke points—oil refineries, main gas pipelines, and principal coal transit points—with high confidence that the charge would affect downstream prices, that is, those faced by businesses and households. Separate provision could be made for the relatively few exceptions (e.g., a power plant located at a coal mine).

Third, the charge can and should (by negotiation) be made uniform (with perhaps a time lag of a few years for some developing countries), thus neutralizing the important issue of competitiveness of national energy-using industries in international markets. For example, the steel industry in all important steel-making countries would pay the same carbon charge, so none could complain that they were being put at a competitive disadvantage by a different GHG regime in other countries. It is noteworthy that many European countries levy much lower electricity charges to business than they do to households, using “competitiveness” as the rationale; and they were disproportionately generous to some industries in the allocation of emission permits to some industries on similar grounds.

Fourth, a carbon charge would generate revenues for many years, badly needed by most governments these days (Norway and Qatar may be exceptions). These revenues could be used as each government saw fit, provided the use did not undermine the purposes of the agreement (*viz.* to reduce GHG emissions). Some would reduce deficits, some would finance needed expenditures, some (probably including the United States) would reduce other taxes, and many would perhaps help adaptation to climate change in poor countries. Properly used, the revenue from the charges could enhance growth. Auctioning permits in a cap-and-trade system would also produce revenues, but if the legislative process in Europe and the United States provides any guidance, auctions will be resisted strongly in favor of free allocation. The EU has agreed that in principle all permits will be auctioned by 2027—22 years after the first introduction of its cap-and-trade system—and it remains to be seen whether this agreement will actually be carried out. The carbon charge can be phased in gradually, on a certain timetable, to limit any unwanted macroeconomic effects of a significant new tax.

The impact of a carbon charge on economic growth would be low and could even be positive if the revenues are used in growth-enhancing ways (e.g., to reduce distortionary taxation or finance research, development, and dissemination of new knowledge).

It will not be easy to negotiate a uniform charge among the major emitting countries. But “difficult” is much easier than “impossible,” which I believe to be the case for a meaningful global cap-and-trade system. The current international negotiations through the conferences of parties to the Framework Convention on Climate Change cannot, in my view, lead to a meaningful mitigation of climate change (Gollier and Tirole, chapter 10, this volume). There are too many (193) participants, with too diverse interests and objectives, operating under a parliamentary rule of “consensus,” which permits a small number of countries, even countries that are not relevant to GHG mitigation, to block action. The focus has been agreeing on binding quantitative restrictions on emissions for only a subset of relevant countries, although the last restriction seems to be easing. To get somewhere, the negotiators need to shift away from quantitative emission targets to meaningful actions (such as a common charge on CO₂ emissions, although others are imaginable) by the relevant emitters, and initially only those emitters need to participate in the negotiations. It is much easier to focus on one quantitative target than on national targets of all members (see Cramton et al., chapter 4, this volume, and Weitzman, chapter 8, this volume).

Some will object that a charge on carbon will leave the resulting reduction in emissions uncertain because we do not know ahead of time how responsive businesses and households will be to the charge. That is entirely true. If the response is judged to be too slight, then the charge can be raised in future years after an initial trial period of 5 to 10 years. But the cap-and-trade system also has its uncertainties. As we learned from European experience, the permit price can decline to such a low level that conservation and fuel-switching is not encouraged at all, a result produced in part by two recessions that were not anticipated when decisions were announced on the permits to be allocated.

Moreover, from basic principles, it is preferable to have a stable emissions price than one that varies with macroeconomic conditions or other disturbances to supply or demand for energy (Weitzman, chapter 8, this volume). The stock of greenhouse gases in the atmosphere, not the current inflow, influences the climate. The “externality” of emissions pertains to stock, not to flows, and is the same per ton of CO₂ whether the flow is low or high. Thus, the price on that externality should be relatively stable, not variable. Moreover, although European experience has been with unexpectedly low prices, it is a reasonable presumption that if the price had instead risen sharply to great heights, the political processes in Europe would have

taken steps to limit the high price rather than see it generate an overall economic slowdown.

Compliance

What about compliance? This issue is for any international agreement that imposes unwelcome costs on the participants. The temptation to “free-ride”—to shirk while others are (presumably) carrying out their obligations—is ever-present. That is as true of a global cap-and-trade agreement as an agreement involving carbon charges. In either case, monitoring would be required, made easier by constant improvements in long-distance sensors, but on-the-ground sensors and international inspections should also be introduced. In the case of carbon charges, the national legislation introducing such charges would be relatively easy to track. Harder would be the actual collection of emission charges. But the Fiscal Department of the International Monetary Fund is already familiar with the tax systems of all member countries (only Cuba, North Korea, Taiwan, and the smallest economies are not members, all except Taiwan being low emitters). It could be charged with monitoring the collection of carbon charges by each participant in the agreement, which could then be compared with the information from the sensors and inspections.

If a country were found to be out of compliance, then it could be asked in informal consultations, and ultimately in formal international panel reviews, to explain its position. Systematic cheating could of course be possible on a small scale. It would be more difficult on a large scale and would have to involve the complicity of many officials, something that is increasingly difficult in the age of the Internet and whistle-blowers.

If a country were significantly and persistently out of compliance, then its exports could be subject to countervailing duties in importing countries. The conceptual and legal basis for such duties—to offset government subsidies to exports—has existed for many years and is embodied in the World Trade Organization (WTO) (Stiglitz, 2006a) as well as in national legislation. The new element is that, under the international agreement, the agreed charge on carbon emissions would be considered a cost of doing business, such that failure to pay the charge with government complicity would be considered a subsidy, subject to countervailing duty under existing procedures. Nonsignatory countries could also be subject to countervailing

duties. WTO panels have found that imports can be restricted on a discriminatory basis if the originating country is in violation of an international environmental agreement (Stiglitz, chapter 6, this volume). This possibility would provide a potent incentive for most countries to comply with the agreement regardless of whether they were formal signatories. Of course, the sanction would apply only to exports, not to domestic sales, by the offending country.

Summary

In summary, I conclude that a uniform carbon charge in all major emitting countries, revenues to be kept at home, is far superior to cap-and-trade as a global arrangement for mitigating climate change. This is partly because agreement on an effective and efficient global cap-and-trade regime is hard to imagine, both because the global “caps” would be too high and because the allocation of permits to domestic agents would invite corruption in many countries, leading other countries to decline to trade permits with them—for similar views, see Nordhaus (2013), Weitzman (chapter 8, this volume), and Cramton et al. (chapter 12, this volume). Agreement on harmonized national carbon charges would not be easy, but at least agreement on common actions would have some chance to succeed if the relevant international community decided there needed to be a serious attempt to mitigate climate change. It would have several advantages: providing an appropriate universal price signal to reduce consumption of fossil fuels, generating needed revenue, and dealing directly with widespread concerns about international competitiveness and even stimulating growth—an important point for developing countries.

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