

Why cap-and-auction is answer to world climate – and economy

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The outlook beyond Copenhagen has brightened on word¹ that US Sen. Lisa Murkowski (R-Alaska) is working on a proposal for a net-zero carbon tax. That would likely garner more bipartisan support than for the climate bill passed in the House last June.

The “net-zero” feature is a winner. It means to charge a “carbon price”, but then return every penny collected to consumers, thus causing almost (see below) no drag on the overall economy². In contrast, under the European Union’s cap-and-trade system, emission permits were allocated freely to power companies, which nevertheless raised electricity tariffs by the amount of the traded permit price³. The House bill avoids that mistake, but not outright: only by 2031 would 70 per cent of emission permits be auctioned instead of given away⁴, with the bulk of the auction proceeds distributed back to consumers⁵.

The issue is whether the carbon price or “tax” should be levied as a tax *per se*, or as the auction price in the “cap-and-auction” of all emission permits. Both mechanisms are simpler to administer than EU’s cap-and-trade. But auction is best of the three. It sets a clear cap on emissions, but without cap-and-trade’s defects⁶. When applied globally, it

¹ Juliet Eilperin, [Could Murkowski save the climate bill?](#) in Post Carbon, Washington Post, Feb. 7, 2010.

² A carbon price on goods and services would induce switching to greener energy sources and production processes. Mission accomplished, tax proceeds, or auction proceeds, as the case may be, can be rebated back to consumers.

³ See, for instance, [The European Union’s Emissions Trading System in perspective](#), A. Denny Ellerman and Paul L. Joskow, Massachusetts Institute of Technology, May 2008, p. 24.

⁴ H.R. 2454, a bill that passed the House in June 2009, seeks to establish a scheme of allowances, or permits for emissions. The percentage of total allowances that are auctioned off – as opposed to given away – would gradually increase to about 70 percent in 2031 (Congressional Budget Office, [Cost Estimate, H.R. 2454, American Clean Energy and Security Act of 2009](#), June 5, 2009, page 6).

⁵ H.R. 2454 calls for most of the government revenue from allowances to be distributed back to the public by a variety of means. See, for instance, Congressional Budget Office, [The Estimated Costs to Households From the Cap-and-Trade Provisions of H.R. 2454](#), June 19, 2009, under the heading The Disposition of Allowance Value in Table 1.

⁶ Cap-and-trade has been implemented under the Kyoto Protocol, mainly in the EU. Its defects include: (1) power companies made the windfall profits mentioned above at the expense of the rest of the economy; (2) cap-and-trade is big business and too much of the cost goes to paying the industry; (3) permit prices, generated by minute-to-minute trading, are volatile, making it difficult for producers to plan ahead; and (4) developing countries refuse to adopt cap-and-trade (see below).

Regarding (2), cap-and-auction is simple to operate by comparison: bidding can be done on the

yields huge savings.

Start with the following back-of-the-envelope calculations, which draw from Congressional Budget Office studies. The US emits about 7 billion metric tons of carbon dioxide equivalent a year⁷. To cut that by 3 per cent⁸ or 210 million tons, say, emission permits for the remaining 6.79 billion tons are auctioned off. This fetches \$122 billion at a permit price of \$18 – the cost of cutting, or abating, emissions by one more ton using greener, but costlier processes and energy sources⁹.

Power companies and other suppliers thus spend not only \$122bn on buying permits, but also \$3.8bn on abating 210 million tons at up to \$18 a ton. They would pass on both costs to consumers by raising prices like electricity tariffs. To offset that, all \$122bn of auction proceeds are distributed back to consumers, via rebates on electricity tariffs etc.¹⁰ The actual burden on consumers and the economy is therefore \$3.8bn¹¹, less than 0.03 per cent of US gross domestic product.

Now assume all countries agree to join a worldwide auction of permits. Huge savings

internet in a standard “ascending-clock” auction in which price is gradually raised until there is no excess demand (see [Tradeable Carbon Permit Auctions](#), Peter Cramton and Suzi Kerr, *Energy Policy*, 30, 333-345, 2002). Regarding (3), under cap-and-auction, permit price is generated basically, say, once a year by auction; this offers a similar planning horizon as in a carbon tax *per se* environment with tax rate adjustments, say, annually, in order to achieve targeted quantities of abatement.

Such are the defects of cap-and-trade that the EU is reported to be considering switching to auctioning most of its emission permits instead of allocating them freely.

⁷ Environmental Protection Agency, [2009 U.S. Greenhouse Gas Inventory Report](#), April 2009, Para. 2.1.

⁸ A 3 per cent per annum reduction of emissions is in line with H.R. 2454, which requires a 17-percent reduction on 84% of US emissions by 2020 and an 83-percent reduction by 2050, both relative to a 2005 baseline (Energy Information Administration, [Energy Market and Economic Impacts of H.R. 2454, the American Clean Energy and Security Act of 2009](#), Executive Summary, Para. 2).

⁹ That is, all the abatement would be done by those producers with abatement cost of \$18 or less a ton. The \$18 figure is by reference to Congressional Budget Office’s estimate of the price of greenhouse gas allowances (i.e. permits) at \$15 per metric ton of carbon-dioxide equivalent in 2011 (CBO, [Cost Estimate](#), op.cit., p.13, Table 3).

¹⁰ For the sake of simplicity, this article represents the return of auction proceeds as a rebate, so that there is no implication of a re-distribution of income. i.e. the impact on different levels of income is neither “progressive” nor “regressive”.

¹¹ The figure of \$3.8bn is in line with Congressional Budget Office’s estimate of \$5bn (CBO, [The Estimated Costs to Households](#), op.cit., p.7, where the term used is “resource costs”). The CBO figure includes costs induced by higher energy prices, such as costs to make buildings more energy-efficient and the cost of extra time spent on carpooling. Those induced costs would be very low if the auction proceeds are fully rebated so that electricity tariffs etc. are little changed, as proposed in this article.

would be achieved. Experts such as those at the Organization for Economic Co-operation and Development concluded that it could cost the world up to one third less under a global permits scheme, than when each country separately abates by the same proportion¹². This is because all the abatement would then be done by those countries with the lowest abatement costs, which, generally, are the developing countries.

The other side of the coin is that producers in developed countries like the US, finding the permit price now lower than their abatement costs, would not do any abatement, but instead buy permits for all their emissions. Those permit costs, remember, would be fully rebated to consumers.

However, developed countries have to compensate developing countries for the costs of taking on their share of abatement. And more is needed to bring developing nations on board. Not only do these countries value development over environment by comparison. More cogently, they seek reckoning with the fact that most of the greenhouse gases already in the atmosphere were emitted by the developed economies.

How to settle both accounts? A developed country, in this case the US, transfers to developing countries the \$3.8bn that it otherwise would spend on abatement. That's just \$34 per household per year. The transfer would slightly reduce the rebates to the US public, and increase the rebates payable in developing countries.

Global auction thus efficiently exploits the differences in abatement costs among countries. Clean Development Mechanisms, the Kyoto Protocol's attempt to exploit those differentials, have had limited impact, being costly to set up and operate. Also, the \$3.8bn is cheap compared with the \$8bn the House bill allowed for "international offset credits"¹³, or with the billions the US offered in Copenhagen to developing nations in return for their efforts.

Copenhagen failed because it lacked a mechanism to replace cap-and-trade, which developing countries like China and India rejected as a constraint on the growth potential of their economies and living standards¹⁴. Global cap-and-auction imposes no such

¹² [VII. THE ECONOMICS OF CLIMATE CHANGE](#), a special chapter in *OECD Economic Outlook No. 63*, June 1998, p.199. See also [Stern Review: The Economics of Climate Change](#), October 2006, p.470, for a discussion on "equalizing marginal abatement costs", i.e. letting all countries be guided by a global carbon price, and thereby exploiting "opportunities to abate an extra tonne of GHG more cheaply in one country compared with another" given that "there are currently significant differences in marginal abatement costs around the world". OECD op.cit. notes that countries with the lowest abatement costs include "many developing countries and, in particular, China" (p.193) whereas OECD countries have high abatement costs (p.200).

¹³ The House Bill allowed about \$8bn for the purchase of international offset credits (CBO, [The Estimated Costs to Households](#). cp.cit., p.7).

¹⁴ Average emissions per head in China and India are about 6 and 1.7 tons a year respectively, compared with 24 tons for the US (Nicholas Stern, [Our Low-Carbon Future](#), Oct. 2009, Project

constraint¹⁵.

Lastly, greenhouse gases are like no other pollutant. Their pollution is firstly global rather than local, and secondly not so much current as forever. These two traits warrant the adoption of an unprecedented financing approach: “printing” money internationally. This would take the burden off financially strapped governments – like in many Western countries – while providing relief for coal-dependent regions – like those in the US or China – which are the real victims of abatement initiatives. These regions would otherwise be even harder hit over time as cheaper methods of abatement run out and expensive methods such as carbon capture and transformation have to be widely used¹⁶.

As a further incentive for countries to join global cap-and-auction, a global climate authority should provide subsidies for the use of these expensive technologies. It will also help pay for “carbon projects” in the important sectors of forestry and agriculture from Iowa cornfields to Amazon rainforests. The agency would be acquiring assets for mankind that will generate benefits ever after. To pay for these assets, it would issue its own money – which central banks would agree to accept – backed by those assets. Global climate reconstruction could then fill the demand gap left by collapsed bad lending.

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Syndicate).

¹⁵ It should also be possible to exploit differentials in abatement costs by applying a single rate of carbon tax in all countries and then making compensating transfers as outlined above for global cap-and-auction. However, it would be more broadly acceptable for the global carbon price to be determined by market forces through auction, than by a body of officials setting the rate of carbon tax at a certain level. Given the large number of countries with varying economic factors at play, it would be difficult for officials to set the right global carbon tax rate that achieves the target quantity of total global emissions. Missing the mark would mean that the rate was set too high or too low, and would be perceived as leading to undesirable economic consequences in individual countries and/or globally.

¹⁶ See, for instance, McKinsey & Company, [Pathways to a Low-Carbon Economy, Version 2 of the Global Greenhouse Gas Abatement Cost Curve](#), January 2009.