

first contracts between Enron and Koch Industries. Recently, weekly contracts were offered for U.S. cities in addition to the monthly contracts. This is an indication that real markets can readily adjust to changing conditions.

A recommended feature of the carbon tax is that the reductions ought to be ratcheted up two to five percent per year. A corresponding reduction in emission targets ought to be established for cap-and-trade, even though the difficulty is greater.

This presumes that the science confirms that global warming is an imminent crisis. A more detailed look at Parry and Pizer's Figure 1 is instructive about the doubt inherent in the data. Carbon dioxide levels have been steadily increasing since 1800, yet average temperature fell between 1940 and 1980 — so much so that there was a warning about the “coming ice age” in the late 1970s. The figure also shows a sharp increase in the rate of change in carbon dioxide after 1950, but the rate of change in temperature remains unchanged and even falls between 1950 and 1960. The graph peaks in 1945 and bottoms in 1977. It peaks again in 1998 and has been falling ever since. Until the science is clear, it would seem prudent to permit a less dramatic change in the carbon tax rate or even a reversal if conditions warrant.

Under what regime could constraints vary with conditions? It is clear, to me at least, that both emissions trading and a carbon tax are too flawed to be operated by government. A simpler system is the old command-and-control regime where investment in required abatement is tax deductible. Command-and-control may also be more easily adjusted should the global warming threat turn out to be less than an immediate crisis. It could be more responsive to energy shocks when combined with existing market institutions. It is also the most common form of environmental regulation.

We now have crude oil prices hovering around \$100 per barrel. That has probably caused a substantial reduction in greenhouse gases. We could now declare victory and go about our business after nominating OPEC for the Nobel Peace Prize.

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Cap this Discussion

Resources for the Future scholars Ian Perry and William Pizer ask whether a carbon tax or a cap-and-trade program would be the better strategy for reducing greenhouse emissions. (Their implicit assumption, of course, is that greenhouse gases present a problem.) Environmental economists and others have hashed over this for the past 40 years. It is now well established that taxation would fix the price of emitting the pollutant but not the amount, while a cap-and-trade regime would determine the quantity emitted, but would not set the price.

The two approaches are equivalent to some extent, except that economists generally prefer a tax and politicians prefer cap-and-trade. One reason is that a cap would allow for mischief — if the price of emission rights rises too far, the cap could be relaxed and the price would moderate. You can see why politicians would like that. Congress could then do what it does best, namely grant political favors. Lawmakers would be able to interfere in the market by changing the cap according to the wishes of their major supporters. They ignore the fact that such shenanigans destroy the property values of those who hold emission rights and those who invest in emissions reductions.

Now, I may be a curmudgeon, a troglodyte, or a dinosaur, but I'm certainly not a Scrooge. I don't begrudge the analysts who want to carry out these kinds of arcane discussions. But I should point out three facts for them to keep in mind:

■ Carbon dioxide is quite ineffective in influencing climate change, contrary to Perry and Pizer's graph that indicates the (very imperfect) correlation with surface temperature. The correlation with *atmospheric* temperatures is even worse. And the fact that atmospheric temperatures in recent decades do not show the trends expected from greenhouse-gas models is a final argument against any significant carbon dioxide influence on climate. Evidently, current climate models cannot represent adequately what is happening in the real atmosphere, including strong negative feedbacks from clouds and water

vapor that diminish the effects of carbon dioxide. Given this, how can any rational cap or tax be established?

■ Many competent economists argue that a modest warming would be beneficial, would raise GNP and average income, and thus is to be preferred to a cooling. Logically, a warming and a cooling cannot both be bad; otherwise the present climate would have to be optimum — an unlikely occurrence.

■ Finally, there is the fact that emissions from developing countries, especially China, now dominate the annual growth rates of carbon dioxide. Imposing controls on U.S. emissions will do nothing to change those other nations' emissions.

Perhaps economists caught up in these tax-or-cap discussions should heed the advice of Bjørn Lomborg and “cool it.” We need to focus on spending scarce resources on more important problems than alleged anthropogenic global warming.

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Markets and Global Warming

The idea that the world, and in particular the United States, must do something to reduce the threat of global warming is now a major source of discussion in the seats of political power. It is generally accepted that some governmental action must be taken. We believe that it is vital that this governmental action must encourage us all to act in an efficient manner, or we are likely to spend far more than needed to achieve the desired end — or, worse still, we might spend a lot and accomplish almost nothing. We therefore welcome the fact that two articles on the subject appear in the Fall 2007 issue of *Regulation* (“Combating Global Warming” and “Neither Renewable or Reliable”). But, in our view, both pairs of authors fail to understand the science of the carbon cycle and the simplicities that can be achieved by that understanding. Alas, this is also true of all the major proposals being considered in Washington, Brussels, and Whitehall in 2007 as exem-

plified by the Stern report of 2006.

James and Stephen Eaves, authors of “Neither Renewable nor Reliable,” point out that some of the popular proposals barely address global warming and at best can be considered “tokens.” In particular, they emphasize that making ethanol from corn in the United States uses almost as much carbon fuel as the gasoline that it is supposed to replace, and that ethanol has many other undesirable effects such as a food prices increase. It would be useful to have a complete list of the “tokens” to be modified or completely avoided.

Ian Parry and William Pizer, authors of “Combating Global Warming,” begin a serious discussion of the best way to regulate carbon. But in our view they do not go far enough. While they suggest that a carbon “tax be imposed upstream in the fossil fuel supply chain,” they fail to recognize that it is simpler, easier, and more effective if they go further upstream and regulate or tax carbon as it is taken out of the ground in a coal mine, oil well, gas field, or (if the fossil fuel is imported) at the port of entry. The simplification arises from the fact that almost all carbon brought from below into the surface pool is burnt to carbon dioxide within a year, and that the time scale of global climate change is much larger, measured in decades. It would be easier to control carbon as it comes out of the ground than to monitor the myriad of carbon dioxide emitters

This simplification can apply whether the regulation or control is by cap-and-trade of carbon supply with grandfathering, by a carbon tax, or (as we would prefer) by auctioning off emissions permits without grandfathering by a National (ultimately International) Carbon Board. Such a board would have powers to set the overall number of permits, and that would be the only government intervention. The board would also be empowered, after detailed study in each case, to issue what is close to the opposite of a permit: a certificate of sequestration. This was proposed by us some years ago in 1999, and again presented to the World Federation of Scientists at their August 2007 meeting on “Planetary Emergencies” in Erice, Sicily. The 2007 meeting passed a resolution asking that control of carbon upstream, at the mine, well, or port of

entry be seriously considered by regulators and governments, particularly the European Union and the U.S. Congress.

By controlling all carbon equally, our proposed system would enable the private sector to do what it does best: allocate carbon in the most economic way and stimulate the invention and deployment of devices and procedures that reduce carbon consumption independent of sector.

It would take a detailed study to understand the economic savings that could be achieved by this simplification. But a rough estimate can be gleaned from a comparison of the economies of the

United States and the Soviet Union in the 1970s. The energy intensity in the Soviet Union (energy use per unit of GDP) was more than twice that of the United States. This suggests that a “command-and-control” approach inherent in most of the current proposals may cost more than twice as much as the more limited control function we propose, with the free market (with all its various incentives) working out the details.

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**The proposals
before Congress
have long-term
effects on
our nation's
budget — and
potentially
yours.**



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