# PROTECTING THE CLIMATE WHILE SAFEGUARDING THE ECONOMY

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One of the most pressing challenges facing the United States is how to protect the atmosphere that sustains human life and safeguard the economy that ensures human livelihood. To meet this challenge, policymakers and others rightly advocate for using market-based mechanisms, such as tradable emissions permits, to combat climate change. However, not all market mechanisms are created equal. Some involve giving away "rights" to emit greenhouse gases, which would unnecessarily raise the costs of climate protection. In fact, 2,500 economists, including eight Nobel laureates, state that market mechanisms, such as auctioned tradable emission permits or carbon taxes minimizes the costs of climate protection.[1] To obtain the full economic benefits of market mechanisms, policymakers must charge emitters for their greenhouse gas emissions and return the revenue to the U.S. economy.

This paper expands on one of three arguments summarized in "Fair and Low-Cost Climate Protection" (Redefining Progress 1999).[2] It explains why charging polluters and returning the revenue to citizens and investors improves economic well-being—by giving firms flexibility to meet their environmental obligations, reducing the impact of higher fossil fuel prices on the economy, and avoiding costly battles among firms to obtain free permits.

## MARKET MECHANISMS OFFER INCENTIVES AND FLEXIBILITY

Many economists, some environmental organizations, and some business people have touted the benefits of market-based instruments over governmental command-and-control regulations that stipulate how to reduce emissions as well as how much. Market-based policies can capture the positive qualities of a market system: competition and flexibility. The combination of competition and flexibility spurs innovation, as companies seek to reduce their emissions at the lowest cost, thereby reducing the overall costs to the economy of meeting environmental obligations. We all benefit when firms compete to reduce emissions at the least cost, because we get a cleaner environment, with smaller price increases for the products these firms make.

The development of the sulfur dioxide ($SO_2$) trading system under the Clean Air Act offers an example of the economic gains that can be realized from market-based mechanisms.[3] Early efforts to control $SO_2$ involved command-and-control regulations: government told utilities how to reduce $SO_2$ by mandating tall stacks and scrubbers. This regulatory approach did not count reductions resulting from other actions, such as switching to cleaner coal, even when they reduced emissions by a greater amount and at a lower cost (Joskow and Schmalensee 1997). Because of these and other problems, Congress created the Sulfur Dioxide Allowance trading program in 1990. Reducing $SO_2$ emissions though trading, rather than command-and-control regulations, was estimated to save approximately $250 million per year during the first phase of the five-year program, totaling $1.25 billion (Carlson et al. 1998).

Market mechanisms afford firms the flexibility to invent new methods of abatement that government regulators may not have considered, which can result in improved environmental and financial performance. For example, the United States capped the use of chemicals that deplete the ozone layer, then allowed trading among regulated companies under this limit. From 1989 to 1994, consumption of these chemicals was below government ceilings (Lee 1996). Furthermore, between 1986 and 1994,

the costs to government and industry of reducing ozone-depleting CFCs was at least 30 percent less than anticipated (Lee 1996). This cost-reduction is thought to have occurred in part because of the flexibility that the market-based policy allowed businesses.

By 1986, hydrocarbons, one alternative to ozone-depleting CFCs, cost one-third less than CFCs. Between 1974 and 1983, the switch to hydrocarbons saved American businesses and consumers more than $1.25 billion (in 1996 dollars) without sacrificing product quality, consumer safety, or worker protection (Malakoff and Phillips 1996).

Such examples remind us that no one understands an industry better than the firms who comprise it. If given adequate incentives to adjust, they will do so efficiently, and may realize unexpected gains.

## REVENUE RECYCLING REDUCES COSTS AND COULD IMPROVE ECONOMIC PERFORMANCE

Many studies have focused on the potential economic gains generated by moving from command-and-control regulations to flexible market-based policies. However, the economic preferability of market mechanisms appears to depend on policymakers' charging polluters and returning the revenue to citizens and investors, rather than either giving away emissions allowances or charging polluters but failing to return the revenue to people. Returning the revenue to citizens and investors is referred to here as "revenue recycling." If policymakers gave emitters free greenhouse gas emissions permits or fail to recycle the revenue, then the costs of avoiding climate change could increase, and an opportunity to improve the U.S. economy could be lost.

With few exceptions, restricting greenhouse gas emissions will cause fossil fuel prices to rise in the short term.[4] Fossil fuel price increases will slow down investment and consumer spending because the prices of many goods and production inputs will increase, thus raising the cost of living and of producing goods. When it costs more to produce the same goods, prices will rise, and, if people's incomes do not rise, they must reduce their purchases. As a result, consumer spending and investment will decrease. Because consumer spending and investment will decrease, economic studies predict that the economy, as measured by the gross domestic product (GDP), will experience a lower level of growth than it otherwise would (Energy Information Administration [EIA] 1998). Recycling pollution revenue mitigates the impact of greenhouse gas reductions on the economy, because putting money back into the economy, particularly through tax reductions, would reduce the dampening effect of increased fossil fuel prices on economic activity.

Also, adding these increased fossil fuel prices to existing income and gas taxes may significantly increase the overall costs of slowing global warming. A 5 percent reduction in carbon emissions could cost from five to fifteen times more under a freely distributed permit system than when polluters pay for their emissions and the revenue reduces labor taxes (Parry and Williams 1999). In the sulfur dioxide trading program, this additive or interaction effect between existing taxes and pollution charges may increase costs by about $907 million per year (Goulder et al. 1997). Auctioning the $SO_2$ allowances and using the revenue to reduce existing taxes could have avoided approximately $533 million per year in these increased costs, totaling $2.66 billion in the first five-year phase of the program (Goulder et al. 1997). Policymakers took two steps forward in moving from command and control to trading, but then one step backward in freely allocating the emissions permits. Using the revenue from greenhouse gas charges to lower investment or labor taxes could avoid part of these increased costs.

While avoiding the added costs associated with freely distributing emissions permits, replacing existing taxes with pollution charges could also improve the economy. Even lacking clear evidence that carbon emissions should be reduced, the U.S. economy could be better off swapping some existing labor taxes for pollution charges set at a modest level (Parry and Bento 1999). Other studies have found that replacing corporate income tax or providing investment tax credits using revenue from pollution charges could increase GDP growth (Shackleton et al. 1992).

## CHARGING POLLUTERS AVOIDS COSTLY LEGAL BATTLES

Auctioning allowances or taxing polluters would cost less than undertaking a contentious political process to decide who should receive how many free allowances. If the government distributed free permits, then industries would lobby furiously and wage public relations campaigns to fight for the maximum number of valuable

emissions allowances. These battles would increase implementation costs, slow down pollution reduction programs, and unfairly distribute free permits to politically connected firms that don't necessarily need them. Auctioning the right to use the limited quantity of emissions permits, however, would eliminate the opportunity for interest groups to lobby for extra vouchers.

For example, despite its success, the acid rain program cost more to implement because of special-interest lobbying for free emissions permits. Agencies initially developed a few formulas to allocate the permits, which took into account different fuels and historic pollution reduction efforts. However, as special interests fought to obtain the greatest number of these valuable permits, these few rules multiplied into twenty-nine formulas, which increased costs, delayed implementation, and resulted in lawsuits (McLean 1997). The complicated formulas added an estimated $1.4 million to costs of developing and supporting the trading program (McLean 1997).

Interestingly, the high-cost jockeying and unfair distribution that plague the free distribution of common assets led to industry support for auctioning licenses to use the telecommunication spectrum for portable phones, pagers, and other wireless communication devices (Cramton 1995). In the past, licenses were distributed by "comparative hearings," in which a judge decided which companies could best use the licenses. These took years. The Federal Communications Commission (FCC) then used lotteries to award the licenses, thus squandering between $500 million and $1 billion in potential revenues (Hazlett and Michaels 1993). Because the lotteries were random and cumbersome, industry lobbied for, and won, an auction system, which has raised millions in revenue.

Also, before the FCC instituted auctions, they received large numbers of applications from companies that didn't need the licenses, but knew they could resell them. After the lottery, it took an estimated ten years for companies that did need the licenses to acquire them (Cramton 1995). Similarly, under action to slow climate change, freely distributing the permits could give some firms permits they don't need, which could delay getting permits to the companies that could best use them. Also, if the government gives Firm A a generous distribution allowance and Firm B an inadequate one, then Firm B would need to buy Firm A's excess, thus enriching Firm A at the expense of Firm B. If instead, policymakers auction permits, those firms who value the emissions allocations the most would purchase the most.

## CONCLUSION

The acid rain trading program illustrates how much it could cost the economy if we fail to take advantage of all the opportunities for improved economic efficiency that market mechanisms offer. Moving from command and control to a market-based system saved an estimated $1.25 billion during the first phase of the program, yet the permit giveaway scuttled an opportunity to save approximately $2.66 billion in costs from interactions with existing taxes and $1.4 million in implementation costs. Therefore, freely distributing permits whittled down a potential $3.92 billion cost savings to $1.25 billion. The economic stakes multiply under policies to slow global warming, with revenue possibly reaching $134 billion per year by mid-range estimates.

Policymakers should not unnecessarily raise costs to the economy of protecting the climate by giving away emissions permits. If policymakers charge polluters and return the revenue to citizens and investors they can safeguard, and maybe even improve, the economy in three ways. First, a market-based mechanism would lower costs of protecting the climate by creating incentives and giving flexibility to find innovative means to reduce greenhouse gas emissions. Second, returning the revenue raised from pollution charges to citizens and investors would reduce the impact of higher fossil fuel prices on the economy and potentially encourage even greater economic growth. Finally, charging polluters would avoid the delays and expensive political battles that would result from firms' fighting to receive the maximum amount of free emissions permits.

## NOTES

1. See the 1997 Economists' Statement on Climate Change at <http://www.rprogress.org/pubs/ecstat.html>.

2. This is the third paper in a series highlighting why it is imperative that the United States require polluters to pay for their greenhouse gas emissions by auctioning emissions permits or taxing pollution. The first paper in this series, "Fair and Low-Cost Climate Protection," summarized why charging polluters and returning the revenue to citizens and investors improves economic well-being, social equity, and environmental protection. All three backgrounders can be downloaded as PDF files from our website at: <http://www.rprogress.org/pubs/pubtable.html>. Please direct comments,

queries, or requests for additional information to Redefining Progress, One Kearny Street, Fourth Floor, San Francisco, CA 94108. Phone: 800-896-2100.

3. The $SO_2$ program was designed to reduce $SO_2$ emissions, which contribute to acid precipitation, popularly known as acid rain. The program targeted emissions from electrical utilities and is the first nationally mandated, market-based approach to an environmental problem (McLean 1997).

4. Freely distributing emissions permits creates windfall profits for firms that receive them (Cramton and Kerr 1999). Some have proposed alternate free distribution schemes that reduce windfall profits. One alternative distributes permits based on a firm's projected output of the good it produces. The permit allocation is then regularly updated. While the details can not be fully discussed here, this distribution system lowers price effects and decreases windfall profits (Lashof et al. 1997; Burtraw et al. 1999). However, because this approach bases distribution on a firm's output, it would become incredibly unwieldy for the private sector in general, which produces thousands of different products. It is likely feasible only for some large sectors with predominantly homogenous outputs, such as the electric utility sector. Also, output-based allocation fails to create revenue for transition assistance and loses economic efficiency compared with taxes or auctioned permits.

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