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**THE POLITICAL ECONOMY OF U.S. GREENHOUSE GAS
CONTROLS**

By

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“You can ride a wave, but not make it”
(Translation of Latin tag often quoted by Bismarck).

THE ARGUMENT IN BRIEF

This paper assesses the prospects for implementing greenhouse gas controls in the United States. One basic fact frames the analysis. Namely, controls stringent enough to actually stop global climate change would as yet still cost more than the damage expected from climate change.

Although a modest level of emission control could yield more benefits than costs, even modest controls face formidable political challenges. The opponents of emission controls hold great organizational advantages over the proponents. To be sure, a strong surge of public sentiment might politically overwhelm all these objections and barriers. But public support for emission controls is too tepid for that to be likely any time soon. Moreover, overcoming these domestic problems, could it be done, would be only the first step toward a viable international control regime, without which national controls would be futile. And the anarchic nature of the international system makes global environmental agreements notoriously difficult to reach, to sustain, and to enforce.

Forces operating beyond the narrow arena of national and international environmental policy will also heavily influence the prospects for emission controls. Several likely trends suggest that these prospects are ebbing rather than rising. Predictable national security and fiscal policy challenges may well out-compete the climate issue for both public attention and economic resources. At the same time, the emerging globalization of the natural gas market will spark new conflicts between the goal of reducing greenhouse gas emissions and that of decreasing America’s dependence on foreign energy.

Other factors, though, have been cited as reasons for hoping that this unfavorable tide could be stemmed and even reversed. One of these, a possible disruption of Persian Gulf energy supplies would—on closer investigation—have quite unfavorable implications for the prospects of U.S. emission controls. Other factors could indeed enhance the prospects for emission controls, *e.g.*, a large, favorable partisan shift, important scientific breakthroughs, or diplomatic pressure from Europe. Although these possibilities cannot be ruled out, they are too speculative to form the basis for an adequate strategy for managing climate policy.

The realistic political response is simply to admit that the current and likely future political constellation of forces is unfavorable to the implementation of all but modest emission controls and to adjust the goals of climate policy to match the political realities. An explicitly Fabian strategy would eliminate the benefit-cost problem because gradually slowing the growth of emissions would cost far less than Kyoto-like rapid emission reductions. And such a policy could also be shaped to achieve non-climate benefits. Concretely, linking mandatory emission controls to a plan for “tax shift” promises political and economic advantages. And emission controls may actually confer useful diplomatic benefits on the United States.

DOMESTIC DIFFICULTIES OF EMISSION CONTROLS

Politically, climate change is the great white whale of environmental policy problems, a huge challenge for which definitive “solutions” seem infinitely elusive. In the United States that

difficulty can be seen in the delay in formulating an effective policy response. The Clean Air Act and Clean Water Acts were already enacted by the early 1970s although air and water pollution problems had gained widespread public attention only in the late 1960s. In contrast, climate change first received wide publicity in the late 1980s; yet at this writing in 2004, no mandatory U.S. greenhouse gas emission controls are yet in place, and none seem likely in the near future. The continuing failure to enact emission controls is not accidental.

THE BENEFIT-COST PROBLEM

Technology

In climate policy, the benefit-cost problem acts like a powerful gravitational field, relentlessly pulling down lofty aspirations to eliminate greenhouse gas emissions. The high cost and limited supply of non-emitting energy supplies is the essential cause of this cost side of the problem. And it is unlikely to disappear anytime soon.

Recent expert assessments suggest that the task of finding plentiful and cheap non-greenhouse gas emitting energy sources is likely to be slow and difficult. There are no technological “magic bullets” in evidence. (Hoffert *et al.*, 981-982; Ansolabehere and Deutsch, 1)

Without such a cost breakthrough, for the world as a whole, the prospective but uncertain benefits of eliminating anthropogenic greenhouse gas emissions are insufficient to justify the energy and capital replacement costs that would be entailed. (Stopping anthropogenic climate change is impossible without virtually eliminating emissions.) There are, of course, benefits from reducing greenhouse gas emissions. But the test is how they compare with the costs.

The problem is that the benefits appear to be relatively small for aggressive mitigation programs. Aggressive programs involve large mitigation costs that begin immediately but the benefits may be delayed by several decades or even a century. The present value of the benefits are [sic.] small compared to the present value of the costs. The economic assessments of climate change thus suggest modest low-cost control programs that only slow warming slightly. (Chang, Mendelsohn, and Shaw, 5-6)

As the quotation suggests the excessive costliness of aggressive emission reductions does not necessarily argue for inaction. And we will later return to this point. Moreover, some scientists suggest that climate change may produce unpleasant surprises in a shorter time frame than that envisioned in the above quotation, and this possibility will also be addressed later. But for now, the pattern of current costs and future benefits merits further discussion.

Current costs, future benefits

The lag between costs and benefits is a key political problem in its own right. Although it is difficult to predict when continued anthropogenic greenhouse gas emissions may become economically harmful, “human-induced greenhouse warming will probably develop over many decades and may not have truly serious implications for humankind for a half century or more after the signal is first detected.” (Homer-Dixon 498) In contrast, in order to stabilize atmospheric concentrations at fairly low levels, the initial costs of mitigation must be incurred

soon. Technological development takes time. And replacing massive quantities of existing private and public infrastructure requires still more time.

The likely temporal pattern of costs and benefits implies that climate change mitigation is an exercise in transferring wealth from current generations to future ones. Americans, in their private affairs, often sacrifice current consumption to bequeath legacies to their children. But this kind of challenge is not one that democratic political institutions handle especially well.

Taking the long-term into account requires that political decision makers be willing to ask generations living today, whether working or retired, to sacrifice a portion of their own interests for those of later generations, including those yet unborn. ... Even if the merits of such action appear sensible in strict economic benefit-cost terms, the political costs may seem to today's politicians to be better spent addressing current needs. Yet inaction on long-term issues is itself a policy act, and one that may force more drastic action in the future, either because time has been lost in which productive investments in the future could have been made, or because the losses due to today's inaction – for example the failure to limit greenhouse gas emissions – are by their nature irreversible. (Heller, 142)

INTEREST GROUP POLITICS

Powerful opposition

Beyond the handicap implied by intergenerational wealth transfers, emission control legislation is further impeded by the resistance of strong and well-organized energy industries and labor unions. Government policies that boost energy producers' costs would increase energy prices and reduce the demand for energy. Lower demand would degrade the values of specialized assets owned by energy suppliers and also diminish the value of their employees' specialized human capital. The managements of such firms have a fiduciary responsibility to resist the imposition of controls. Economic self-interest dictates the opposition of employees and their unions. Thus, greenhouse gas emission control policies will encounter influential and well-funded opponents.

Emission control proposals have, in fact, elicited very strong energy sector opposition. Although energy producing industries would incur only about 10 to 15 percent of the total costs of greenhouse gas abatement, the absolute size of those costs exceeds those of previous pollution control initiatives. Some emission control proponents have speculated that granting high-emission industries a large percentage of all emission allowances might neutralize this opposition. But energy industry firms, with relatively few exceptions, have so far resisted these blandishments with apparently adamant resolve.*

* For industry, advocating emission controls in hopes of winning a favorable allocation of emission allowances would be a high risk, high stakes gamble. *Ex ante*, no firm could know that it would receive enough allowances to offset the losses from emission controls. In the legislative deal-making, a firm might simply be outmaneuvered by its rivals. Conversely too much success might result in political scandal—a troubling risk for highly regulated, high public profile firms in the energy sector. Finally, grandfathered allowances provide firms with only modest protection against future escalation of government demands for tighter emission controls. Moreover, advocating emission controls would alienate some of industry's best friends in Congress, never a step to be taken lightly.

Producer interests not only have the motive and means for opposing emission controls, they enjoy a large organizational advantage in doing so. Economist Mancur Olson explained that coalitions composed of small numbers of entities with large per unit stakes in the outcome can devote relatively low percentages of their resources to the task of establishing and maintaining a political organization. (Olson, 34-36) Hence, such coalitions have high percentages of their total resources available for achieving and using political influence.

Ironically, it is precisely because consumers would absorb the preponderance of the costs of carbon emission controls that producer interests have been able to appeal successfully to larger coalitions. Douglas Arnold has noted that legislators have a well-founded fear of taking actions that *visibly* impose costs on their constituents. Legislators anticipate the electoral problems that might result from such policy choices and seek to avoid them. (Arnold, 9) And government policies that increase energy prices, especially gasoline prices, are highly visible and hence politically dangerous. (Nivola and Crandall, 110-111) Elected officials who consider supporting policies that boost energy prices must assume that energy producers will inform the electorate of their actions and that this information will resonate ominously with many voters.

The proponents' handicaps

Proponents of emission controls are in a far weaker position. At best they can organize only coalitions of numerous citizens none of whom is impelled by the prospect of personal economic gain. Such coalitions are harder and more expensive to create and maintain. At the extreme, the costs of organizing broad, shallow coalitions may so far outweigh the expected benefits to the members that the coalition may not form at all. Unfortunately for the proponents of greenhouse gas abatement, coalitions of energy producer interests are of the inherently efficient narrow and deep pattern. Coalitions of environmentally motivated individual citizens are unavoidably of the less efficient broad and shallow pattern.

U.S. public opinion

Sometimes, of course, the American public demands action on issues, heedless of the strictures of the dismal science and the cautions of political analysts. As yet, however, that has not happened with climate. U.S. public opinion on climate is muddled. Majorities of the electorate know that greenhouse warming is a scientifically established reality. They believe that anthropogenic emissions are contributing to it. They claim to believe that the problem is serious and say that they support mandatory government actions to mitigate climate change. (Kempton *et al.*, 141-143)

On climate, though, the *vox populi* speaks in a low, somewhat incoherent mumble. Despite the findings claiming intense concern, the public gives the issue a low priority even in comparison with other environmental issues. (Saad pp.1-3; Simmons pp. 4, 5) In-depth interviews show that the public is largely ignorant of the science of climate change and often confuses the climate change issue with the problem of the ozone hole. Majorities believe that banning hair spray would be the most important thing that could be done to alleviate the problem of global warming. (Kempton *et al.*, 85) That being so, how meaningful is the apparent endorsement of government action to prevent climate change?

INTERNATIONAL DIFFICULTIES OF EMISSION CONTROLS

THE INTERNATIONAL FREE-RIDER PROBLEM

Nature of the free-rider problem

Were some environmentally-inclined sorcerer to cast a magic spell that suddenly overthrew all these political barriers, the resulting domestic controls would represent no more than a preliminary step toward the real goal of establishing an international emissions control regime. The so-called international free-rider problem makes the construction of international burden-sharing arrangements a nettlesome process. The “free-rider” problem is rooted in the fact that countries that reduce greenhouse gas emissions incur costs. But the benefits of slower climate change accrue even to countries that do not reduce emissions. Thus, all countries have an incentive to free-ride, *i.e.*, do nothing in hopes that other countries will sacrifice for the common good.

Disparate national interests

The international free-rider problem is compounded because climate change affects countries differently. In the short-run, some countries may even benefit from longer growing seasons and other favorable effects. Thus a recent study concluded that for the United States, the next century of climate change seems likely to produce a net benefit equal to about .2 percent of GDP. (Mendelsohn and Neumann 321) The same study concluded that as climate change continues, it becomes increasingly harmful. (Mendelsohn and Neumann 323) Global impact studies have concluded that, excluding the risk of catastrophic change, the U.S., Russia, and China are likely to experience little if any net damage from climate change during this century but that India and Europe may be much more vulnerable. (Nordhaus and Boyer 96-98)

For international emission controls to work, those countries with the most reason to fear climate change must somehow induce those who expect to incur few early costs or even short-run benefits to bear the costs of mitigation policies. In the international arena, no supra national power exists to coerce nation states to defer to the common good. The only alternative is agreements among states to create an international emission control regime. The record of reaching and enforcing such agreements is distinctly mixed. (Barrett, 2-3)

International power rivalries

Both emission controls and actual climate change could have large enough and disparate enough impacts to influence the relative wealth of nations. An agreement that affects states relative wealth will indirectly affect their relative power. (Mearsheimer, 1994, 20) If so, states would be compelled to evaluate climate proposals in light of the impact on their power positions *relative to those of other states*.

The focus on relative gains instead of on the more permissive test of whether the state gains in absolute terms considerably complicates the task of reaching international agreement. “For sure, each state tries to maximize its absolute gains; still, it is more important for a state to make sure that it does no worse, and perhaps better, than the other state in any agreement. Cooperation is more difficult to achieve, however, when states are attuned to relative gains rather than absolute gains.” (Mearsheimer, 2001, 52) With the focus on relative gains, states may reject proposals in

which they would score absolute gains if those proposals were more favorable to a global or regional power rival.

States seemingly differ in the degree to which their international relationships are dominated by power rivalries. The United States, Russia, and China (with India striving to join the club) are necessarily wary of relative power relationships. Interestingly, no great power has undertaken domestic emission controls. And Europe, where the U.S. security umbrella has hitherto muted the importance of power rivalries, has gone farthest in adopting controls. The passage of time may eventually reveal that the intensity of a nation's international rivalries may influence its receptivity to emission control agreements as much as its state of economic development.

Kyoto in disarray

The disarray into which the Kyoto process has fallen illustrates the intractability of implementing international greenhouse gas emission controls. Russia's decision to try to extract further concessions as a price for ratifying Kyoto leaves no doubt that the Russian government has no intention of incurring costs in the interest of restraining global climate change. Japan and Canada will probably use Russia's uncertain status as political cover for announcing their own failures to meet their Kyoto goals. As one knowledgeable European observer recently noted, whatever Russia decides, it is now impossible to envision the implementation of Kyoto in its initial sense, and the task of developing an alternative approach has become pressing. (Müller 2003[b], 3)

It remains possible that the EU may still reach its Kyoto goals, but Germany and the UK, where factors other than climate policy have had a large impact on emissions, account for almost 98 percent of the emission reductions achieved so far. And ten of fifteen EU members are not on course to meet their national targets under Kyoto. (Busby and Ochs 41) Moreover, although EU majority opinion apparently supports government action on climate, European publics may be almost as ill-informed about the issue's scientific and economic realities as are their American counterparts. (Kempton *et al.*, 216) If so, even in much of Europe, public support for paying the costs of emission controls may prove shallow.

LESS DEVELOPED COUNTRIES AND CLIMATE CHANGE MITIGATION

The critical importance of LDCs

It is particularly revealing that Kyoto seems to be foundering without even seriously confronting the hardest task of international emission controls. That task is to win the cooperation of the large fast growing less developed countries (LDCs). In order to hold atmospheric greenhouse gas concentrations below 550 PPM without constraining LDC emissions, the industrialized countries must, within thirty-five years, somehow achieve negative net emission. (Yang and Jacoby, 4) Thus, halting the rise of greenhouse gas concentrations is impossible without participation by the major LDCs.

Moreover, the greatest opportunities to reduce the growth in greenhouse gas emissions at relatively low cost are concentrated in the larger developing countries like China and India. In the next half-century, these countries will greatly expand their economic infrastructure. Choosing relatively low-emission technology for that expansion could significantly slow the growth rate of emissions. In contrast, the developed world has lower rates of new infrastructure investment and

thus no comparable opportunities to reduce business-as-usual emission growth rates without prematurely abandoning economically productive infrastructure.

Reasons for LDC non-participation

In a real sense, LDCs would benefit if they made these comparatively low-cost emission reductions. Although there are important differences among LDCs, many of them should be concerned about the long-term implications of climate change.

The bulk of the developing world has higher current temperatures, larger fractions of their economy in vulnerable sectors, more primitive technologies, and lower incomes or resources for adaptation. All of these factors would suggest that that the economies of developing countries will be more vulnerable to climate change than the U.S. economy. In addition these countries could experience a suite of nonmarket effects that would not be represented in analyses of developed countries, for example disease epidemics, local famines and desertification. (Mendelsohn and Neumann 329)

The LDCs, however, do not have much latitude for responding to long-term considerations. Their urgent priority is economic development. LDCs may quite properly regard climate change mitigation, with its pattern of near-term costs to achieve long-term benefits, as an unaffordable luxury. And given the high rates of per capita economic growth occurring in some of the LDCs, the transgenerational wealth transfer of emission controls would have an unappealingly regressive effect on the distribution of wealth over time.

Furthermore, as Thomas Schelling has pointed out, for an LDC capable of rapid economic advance, development may in fact be the best strategy for coping with climate change. Development reduces such a country's relative economic dependence on the threatened agriculture and forestry sectors. It increases the stock of resources available for investments in successful adaptation to climate change. And it does not entail placing a highly uncertain bet on the prospects that international cooperation will somehow overcome the challenge of the free-rider problem. (Schelling 3)

Domestic U.S. ramifications of LDC resistance to emission controls

The American opponents of emission controls have successfully used the LDCs' reluctance to adopt emission controls as an objection to domestic U.S. controls. This argument was a focal point of the original U.S. Senate debate on the Kyoto Protocol. It also surfaced in more recent climate policy debates. The opponents' argument is powerful. Domestic emission controls will accomplish little unless other nations also control emissions.

In fact without LDC participation, stringent emission controls among the industrialized countries would result in the "leakage" of emissions to the LDCs. "Leakage" refers to the process in which energy-intensive industries choose to migrate rather than to incur high abatement costs. It is not likely to be a significant factor with low levels of abatement but would become worrisome with more aggressive controls.

Interaction of international free-riding and the benefit-cost problem

In principle, developed countries could stop the “leakage” by paying LDCs to institute emission controls. In practice this option merely concentrates the incentives for free-riding among the developed countries. Each developed country hopes that the others will undertake the financial burden of paying the LDCs to reduce emissions. And each industrialized country seeks to minimize its own share of the total burden.

Paying LDCs to reduce emissions would improve the cost effectiveness of emission controls. It was possible to work out such an agreement in the case of ozone depletion. But with climate change, the improvement in cost effectiveness, although large, has so far still been insufficient to overcome the nemesis of aggressive emission control proposals, the excess of costs over benefits. (Barrett, 378-380)

EMERGING TRENDS AND U.S. CLIMATE POLITICS

The world now seems farther from solving these problems than it did in 1997, when the Kyoto protocol was agreed to. And the future trends are inauspicious.

TRENDS

National security concerns

First, the coming decades are likely to thrust important and persistent national security challenges on to the United States, as is all too obvious from the brutal realities of the global terrorist Jihad. More generally, in the mid-1990s Huntington wrote: “Islam and China embody great cultural traditions very different from and in their eyes infinitely superior to that of the West. The power and assertiveness of both in relation to the West are increasing, and the conflicts between their values and interests and those of the West are multiplying and becoming more intense.” (Huntington, 185)

Today the part of Huntington’s threat analysis that pertains to China remains more speculative than that apposite to Islam. But other analysts, using frameworks entirely different from Huntington’s, come to similar conclusions about the likelihood of escalating Sino-American tensions. For example, John J. Mearsheimer has recently argued that China and Russia remain great powers. Mearsheimer predicts that in both Europe and Northeast Asia the existing highly favorable power structure are unlikely to survive for long. (Mearsheimer 385-386) He is particularly concerned that the dynamics of the international state system seem likely to push China toward security competition with the United States:

A wealthy China would not be a status quo power but an aggressive state determined to achieve regional hegemony. This is not because a rich China would have wicked motives, but because the best way for any state to maximize its prospects for survival is to be the hegemon of its region of the world. Although it is certainly in China’s interest to be the hegemon of Northeast Asia, it is clearly not in America’s interest to have that happen. (Mearsheimer 2001 402)

Mearsheimer and Huntington are not alone in their assessments of rising tensions ahead. Yet a third international relations theory, “power transition” theory, also points to possible rising international tensions. Power transition theory focuses on changes in the relative power and status of nations as a source of conflict.

Should Russia recover and begin to develop rapidly again, it might well reemerge as a potential challenger. More likely the current and near-future challenger to American dominance is the Peoples Republic of China. With nearly one billion people and some of the fastest economic growth on record, China looks certain to achieve parity with the United States early in ... [the 21st Century]. Should China evaluate the status quo negatively (a strong possibility given the differences between China’s and America’s domestic political and economic systems) power transition [theory] anticipates war between them. (Kugler and Lemke 146)

Even these theories, which seem well corroborated by historical experience, do not prove that future armed conflict is inevitable. But they show that several sets of forces, each of which has been associated with past international conflict, all militate for Sino-American conflict. The future seems noticeably more ominous than in the 1990s, America’s “holiday from history.” Hence, from the standpoint of contemporary climate policy, the 1990s may appear in retrospect as a now-vanished golden age just because they were also, from a broader national perspective, an era of illusions.

Fiscal problems

Domestically, fiscal problems may occasion a somewhat similar darkening of the political scene. Fiscal problems may complicate the security challenge as well as pose a serious political dilemma in their own right. (Ferguson and Kotlikoff, 22) The U.S. population is aging. Thus, a relatively slowly growing work force will have to economically support a rapidly growing elderly population. At the same time, each retiree is becoming ever more costly to support because of the long-running increase in the cost of medical care. These economic facts portend fiscal consequences. A recent estimate found that the combination of these factors implied that the current commitments of the U.S. Social Security and Medicare programs exceeded the federal government’s projected revenue by a present discounted value of \$44.2 trillion. (Gokale and Smetters, 2)

Fiscal problems imply the obvious “solution” of increasing taxes on the working population. But tax increases imply a sacrifice in economic growth as the higher tax rates discourage labor and investment. (Heller, 8-9) Indeed, many economists believe that as a tax rate rises, the deadweight loss that it imposes on the economy rises by a larger percentage than will the tax revenue. Thus the fiscal “solution” of higher taxes is itself an economic problem. At the same time continuing fiscal imbalances imply the risk of higher interest rates, depreciation of the dollar, and inflation—none of which is good for the economy.

A global LNG market

The third important trend is occurring within the energy sector and is of direct relevance to the climate issue: The market for natural gas is probably evolving from the continental scale to a global scale. Yergin has referred to this transformation as the “next prize” in the evolution of

energy markets. (Yergin and Stoppard, 103-114) Hitherto, most natural gas markets have been dominated by pipeline and therefore have been continental in scale.

Now, the rising global demand for natural gas, combined with the lower costs of LNG tanker operations, is fostering the growth of international maritime transportation of large volumes of natural gas.

This “liquefied natural gas” (LNG) will be carried in tankers that can change direction on the high seas to respond to sudden shifts in demand or prices. Thanks to this emerging global commodity market, lights, air conditioning, and factories in the United States will run on electricity that is sometimes generated with natural gas from Indonesia, the Algerian desert, the seas of Trinidad or Nigeria, the island of Sakhalin in the easternmost part of Russia, the frigid northern waters of Norway, or the foothills of the Andes. (Yergin and Stoppard, 103)

This development will transform the debate about energy security. Some years ago David Montgomery wrote, “Energy security is largely an oil issue, although if there were substantial world trade in natural gas, similar concerns would pertain to it as well.” (Montgomery 621) Today, Montgomery’s hypothetical seems poised to become fact.

IMPLICATIONS FOR CLIMATE POLITICS

The combination of these trends may have profound implications for the climate issue.

Diminished credibility of proposals requiring international cooperation

If U.S./Chinese relations become highly competitive, the task of forging a cooperative international system of emission controls will become considerably harder. The absence of Chinese commitments to emission controls is already an important source of strength for U.S. emission control opponents. A more contentious relationship between the two countries would certainly redouble the political salience of ensuring that China undertakes emission reductions in parallel with those of the United States while simultaneously diminishing the credibility of solutions entailing U.S. side payments to China.

Intensified competition for public attention and economic resources

Heightened security concerns could also harm the climate issue by simply crowding it off the domestic and international agendas. Human beings are “attention misers.” (Jones, 101) Political science research has long noted that only a comparatively few issues can be prominent at any one time:

There is a limit on the capacity of the system to process a multitude of agenda items. ... A real perceived problem has a solution available, and there is no political barrier to action. But these subjects queue up for the available decision-making time, and pressing items crowd the less pressing ones down in the queue. (Kingdon, 184)

Security threats are likely to trump climate in any direct competition for the limited supply of public and governmental attention. This effect was demonstrated by the abrupt disappearance of the controversy over the U.S. withdrawal from Kyoto in the aftermath of the 9/11 attacks.

Similarly, the economic stakes of the issues associated with the aging of the U.S. population are larger than those of climate change and at this time far more tangible. The industries and interest groups involved in those issues are larger and better funded than are the proponents of greenhouse gas emission controls. And the institutions of government budget cycles and the bond markets will force the age wave issues onto the public agenda in ways for which there is no climate policy analogue. In sum, if climate competes with the entitlement problem, climate will lose.

That prediction extends easily from the competition for attention to that for dollars. In the next several decades, the nation's unfunded liabilities will apparently require government to impose economic sacrifices on the electorate. Experience suggests that the process of exacting sacrifices often engenders tax fatigue and political backlash. As demands on public sector economic resources rise, the competition for scarce dollars is likely to become increasingly Darwinian. Such conditions would seem unpropitious for demanding additional sacrifices in the name of climate change mitigation.

Impending conflict between climate and energy security

The rise of a global LNG market will change the relationship between climate policy and the often proclaimed goal of national energy independence. What had been a basically synergistic relationship between these goals will become an ambiguous one at best. Hitherto, reducing petroleum imports from abroad seemed to serve both the goal of restoring U.S. energy autarky and the goal of reducing greenhouse gas emissions.

The appearance of a global LNG market seems likely to end this approximate congruence of policy goals. From the standpoint of reducing carbon emissions, natural gas is almost the only available large-scale substitute for coal. This substitution caused no real energy security concerns so long as Canada was the major source of additional gas supplies for the U.S. market. However, as the U.S. finds itself increasingly in a global market in which suppliers are the Persian Gulf, the Caspian Basin, and West Africa, the process of substituting gas for coal becomes more problematic.

One of the more haunting aspects of this new global gas business is its reminder of the transformational years of the late 1960s and early 1970s, when the United States became integrated with the world oil market. In a few short years, the United States went from being a minor petroleum importer to a major one. The surge in demand from the world markets, pulled by the engine of the American economy, helped set the scene for the oil crises of the 1970s and created dependencies with which the world still wrestles. (Yergin and Stoppard, 103-104)

The question here is, what will be the implications for the future politics of greenhouse gas emission controls? It is a question that deserves further exploration.

CLIMATE POLICY AND ENERGY SECURITY

Thinking of the past in which oil was America's "problem" energy import, one might be tempted to conclude that a new energy supply crisis would boost the cause of domestic greenhouse gas controls. One would be wrong.

PETROLEUM DEPENDENCY AND CLIMATE POLICY

The two oil price shocks of the 1970s illustrated the world economy's vulnerability to oil supply disruption. Recently, documents became public suggesting that the United States seriously considered militarily seizing Persian Gulf oil fields during the 1973-1974 oil embargo. (Frankel, A1, A22) This revelation highlights the great geo-strategic importance of Persian Gulf oil, an importance further reconfirmed by more recent events.

Justification for market intervention

Much of the national discourse on energy policy assumes that energy independence is desirable and possible. Perhaps because the goal is so widely accepted, the actual objective is seldom spelled out. In fact three quite different ideas are involved.

First, the economy's vulnerability to macroeconomic disruption from oil price shocks constitutes an external cost of petroleum use. "A number of analysts have called attention to the significant and apparently negative relation between oil price volatility and macroeconomic performance..." (Portney *et al* 206) Incorporating this external cost of additional macroeconomic risk into the price of petroleum products could correct the economy's tendency to consume more oil than is appropriate.

Second, government intervention in the market for petroleum products might diminish the monopoly rents being captured by the OPEC cartel of oil producers. While no individual oil user can affect OPEC prices, the U.S. government has some capacity to do so. It can influence the behavior of enough purchasers of petroleum to have what economists call "monopsony power." "Some observers have suggested that this power could be used to neutralize or minimize the anti competitive behavior of OPEC and reduce the world price of oil." (Portney *et al* 207) (One might consider, in passing, that the goal of a lower world oil price is not entirely consistent with the goals of climate policy.)

Third, some commentators have asserted that there is a national security or defense externality associated with oil consumption. (Portney *et al* 207 note 2) If oil dependence can require U.S. military expeditions to the Gulf, so the speculation goes, perhaps the United States should discourage oil consumption in order to reduce its defense costs. Considered from the viewpoint of climate policy, this conventional wisdom would suggest that at least part of the policy to lower greenhouse gas emission could then be "sold" as enhancing national security.

Quantifying the macroeconomic externality and monopsony pricing arguments

At the current time the combined effects of the first two justifications for market intervention are of quite modest significance. A 2002 National Research Council investigation found that the combined market shock and monopsony power considerations justified an increase of about \$5 per barrel of oil. This amount would translate into about 12 cents per gallon of gasoline.

Thus the combined effects of oil-related macroeconomic risk and the opportunity for monopsony pricing imply that United States should be consuming only slightly less oil than it currently is. For example a recent study of the Congressional Budget Office (CBO) found that achieving an eventual 10 percent reduction in U.S. gasoline consumption would require a 46-cent-per-gallon fuel tax increase. (Congressional Budget Office, *iii*) Hence, the price increase needed to decrease consumption by ten percent would be nearly four times higher than that indicated by the actual (non-climate) under-pricing of oil. It seems likely that, at least in the case of gasoline, adjusting prices by the mere twelve cents a gallon that is actually justified would diminish consumption by only a small fraction of the 10 percent benchmark target assumed by CBO.

The trends that affect the importance of these factors are mixed. On the one hand, OPEC has discovered that oil price stability confers significant advantages for cartel management and national budgeting. (Bohi and Quandt 18) This development certainly has seemed to dampen the Gulf states' temptation to intentionally produce price shocks and may indicate that future price shocks are less likely than the experience of the 1970s would suggest.

On the other hand, Gulf market share is destined to rise. World demand for oil, propelled largely by the Asian LDCs, is rising rapidly. According to the National Intelligence Council assessment of global trends to 2015, "Total oil demand will increase from roughly 75 million barrels per day in 2000 to more than 100 million barrels in 2015, an increase almost as large as OPEC's current production." (National Intelligence Council, 28) In the long-run, the fact that the Gulf states have a larger share of reserves than of production implies an inevitable rise in Gulf market share (barring a competitive breakthrough for non-conventional oil). (Müller, 2003 [a], 5)

OIL CONSERVATION, NATIONAL SECURITY, AND POLITICAL OPPORTUNITY

No identifiable national security cost externality

Based on these facts and trends, U.S. oil prices may currently be about \$5 per barrel too low, even before consideration of climate change. But, perhaps noting that the implied oil price adjustments are really quite modest, some proponents of domestic emission controls assert that a third factor, national security costs, justifies additional restrictions on domestic U.S. oil consumption. Presumably they do so in hopes of arguing that green house gas controls applied to oil would produce added co-benefits.

For the asserted link between domestic oil consumption and national security costs to be valid, two conditions would have to be met. First, it would have to be possible to identify military forces and costs that could be avoided were it not for the need to protect oil flows from the Persian Gulf and elsewhere. Second, it would be necessary to show that reduction of domestic oil consumption would materially diminish the U.S. need to protect world oil flows. Neither condition is true.

First, it is not possible to convincingly identify military expenditures that could be avoided were U.S. interest in securing world oil flows to dissipate. A recent panel of the National Academy of Science reached this conclusion after having investigated the matter. They found no credible

evidence linking levels of domestic petroleum consumption to the national security expenditure of the United States. (National Research Council, 86, note 6)

The lack of a connection is unsurprising. It is the very nature of the United States military's expeditionary capabilities that they assist in coping with multiple threats. Forces protecting Persian Gulf oil flows simultaneously offer capabilities to suppress terrorism, project power into the Levant, supply coercive force to regional non-proliferation objectives, and implicitly threaten the oil supplies of America's potential great power rivals. With forces deterring and dissuading such a multiplicity of threats, the search for the marginal costs of the oil flow protection mission becomes an exercise of nearly metaphysical insubstantiality.

Second, the connection between domestic consumption and the need to protect and control oil flows is itself extremely weak. Regardless of domestic consumption levels, the United States is and will remain inexorably dependent on oil flows from the Persian Gulf:

...[The] simple fact is that the United States is vitally dependent on the health of an integrated world economy. Instability in oil supplies has a rapid impact on the world economy and thus on that of the United States. In addition it is an established interest of the United States to prevent weapons of mass destruction by regimes that may threaten that oil supply. (Rathmell *et al* 4)

The quotation suggests that a substantial part of the macroeconomic costs of an oil price shock may strike the U.S. indirectly through the impact on the economies of U.S. trading partners. To this degree, the damage cannot be deflected by domestic energy conservation.

Indeed, viewed at all realistically, the potential impact of domestic oil conservation on world markets is too small and too ambiguous to produce significant benefits:

The largest conceivable reduction in petroleum imports would still leave the United States linked to world oil markets and exposed to risks of volatile oil prices. Policies to reduce petroleum imports might even increase the instability of world oil markets. With significant reductions in demand the high-cost suppliers (who also tend to be secure sources of supply) would be shut in first, and the Middle Eastern OPEC countries with low production cost could end up with a larger rather than a smaller market share. In this situation, petroleum conservation might lead to less, rather than more energy security. (Montgomery 625)

It follows that domestic oil conservation cannot affect America's need for the capacity to project military force into the Gulf region.

OIL SUPPLY DISRUPTION AND CLIMATE POLICY?

Possible policy responses to supply disruption

Although the prospect of a new supply disruption does not seem to justify nearly enough petroleum conservation to suit the advocates of strong greenhouse gas emission controls, there is

no disputing that were a disruption to occur, it would have consequences for the politics of greenhouse gas controls. Despite their scant national security merits, conservation policies might result from a supply disruption. But domestic conservation is only one possible political response. Others include renewed emphasis on domestic hydrocarbon production and intensification of efforts to bring non-OPEC and non-Persian Gulf supply sources into the market. Like domestic conservation measures, these efforts will not fundamentally alter the world's dependence on Persian Gulf oil, although they are certainly no less reasonable as responses to a supply disruption.

The point is that a supply disruption would offer an opportunity for both proponents of supply oriented policies and advocates of energy conservation. If the disruption were severe and long enough, the likely outcome would be a jumbled collection of self-contradictory supply and conservation policies. The net implications of the contest between supply and conservation policies would largely depend on which side more successfully framed the issue. In this contest, the supply proponents would enjoy a major advantage. Namely, the public associates conservation with the actual sacrifice of energy services and, therefore, intuitively rejects it. (Kempton 136-141)

Opportunity for opponents of emission control policies

A second, still more powerful reason for doubting that a supply disruption would redound to the net advantage of the greenhouse gas emission control proponents is its already discussed potential political impact on future LNG imports. The Gulf states account for about 35 percent of the world's reserves of natural gas. (Energy Information administration, 45, Table 14) If oil supply disruption produces a knee-jerk public demand for energy autarky, greenhouse gas emission control strategy in the all-important utility market could be crippled. Coal and railroad interests should seize on an oil supply disruption as a pretext for restraint of LNG imports.

WILL OTHER EVENTS RESCUE EMISSION CONTROLS?

Even though an oil price shock does not seem likely to benefit the cause of greenhouse gas emission controls, more generally it remains true that events can often suddenly and discontinuously divert the course of politics. The proponents of controls have long hoped that fortuitous developments might suddenly allow them to overrun or to evade political defenses that currently seem impregnable. Political science confirms that such transforming events do sometimes occur.

PUNCTUATED EQUILIBRIUM

Two prominent political scientists, Baumgartner and Jones, have recently described a framework for issue image management that they refer to as a theory of "punctuated equilibrium." Issues, they note, remain dormant or subject to only incremental change for long periods and, then, rather quickly become fluid. (Baumgartner and Jones, 25-30) (The discussion in the previous section suggests that an oil price shock is an example of the kind of event that would indeed "unfreeze" the politics of emission controls, albeit probably to the advantage of opponents of controls rather than their advocates.)

Baumgartner and Jones believe that issues can suddenly become fluid when a number of positive feedback loops within the political system are activated by the course of events. In some instances the resulting periods of intense activity may lead to institutional changes that persist and influence political outcomes after the focus of activity has moved on to other issues.

The Baumgartner and Jones theory is similar to and reinforces an earlier discussion of what political economist John Kingdon referred to as “policy windows.” In Kingdon’s discussion, too, policy windows might open quite suddenly. (Kingdon 166-168) He suggested that the opening occurs when the political circumstances, the definition and perception of a problem, and a policy solution all exist at the same moment.

Both theories would suggest that the previous lack of political success for emission control proposals does not necessarily imply future failure. It might be that a period of fluidity or a policy window is just about to open. Hence assessing the future prospects of emission controls requires exploring possible events that might align the climate problem with solutions and politics or to unleash the various positive feedbacks described by Baumgartner and Jones.

Political scientist Anthony Downs has explained that attention to problems is often cyclical. For a while, a problem gathers a great deal of attention; then attention wanes. Downs argues that attention may dissipate when the difficulty of a solution finally becomes apparent. Baumgartner and Jones agree that this pattern does sometimes occur but point out that a key question is whether important institutional change occurs before the waning of attention. In that case, they argue, the cyclical pattern of attention is not necessarily a sign of futility. (Baumgartner and Jones 86-88)

Climate policy, though, has so far corresponded quite well to the pattern described by Downs. The issue has gone through surges of media coverage. (Michaels) Such surges occurred around the times of the Rio Conference, the Kyoto agreement, and President George W. Bush’s rejection of Kyoto. Presumably each of these surges in attention has been associated with the positive feedback loops described by Baumgartner and Jones. The spate of media coverage following the recent release of a DOD study of a worst case climate change scenario was a mini-version of the same phenomenon. None of these attention surges, however, resulted in institutional change in the form of mandatory emission controls.

The pattern indicates that, in the United States, the correlation of political forces has precluded enactment of mandatory emission controls. Future events will certainly again stimulate surges in media coverage. But the future surges in public attention are likely to be as sterile as those that have preceded them unless the future events change the membership of the opposing coalitions or change the relative power of the groups in those coalitions.

POSSIBLE POLICY WINDOWS FOR CLIMATE

The future partisan balance

A large pro-Democratic shift in the partisan balance of political power would improve the political prospects of emission controls. To matter, though, the power shift may have to be fairly big. The normal fluctuations in the partisan power balance would have a marginal impact. But

the Constitutionally built-in institutional “friction” of the U.S. government discourages radical policy shifts unless they are backed by the kind of broad and enthusiastic public support that has not hitherto rallied to the cause of greenhouse gas controls.

Speculatively one might ask how the likely security and fiscal problems discussed earlier would affect the partisan balance of power. But no very clear picture emerges from this question. In the past, heightened national security concerns have typically been a source of Republican political strength. The defense of entitlement programs has been a Democratic issue, although the degree that either relationship will survive in the coming decades may be questionable.

Furthermore, although environmentalists are a core constituency of the Democratic Party, they are far from the most important one. And the higher energy prices entailed by greenhouse gas emission controls mean that this issue could cause serious disaffection among other larger and more politically contestable constituencies. The politics of coal and coal labor are also important to the Democratic Party. The Clinton administration’s tentative handling of domestic emission control proposals is entirely consistent with the ambiguous implications of climate for Democratic office holders.

The Bush administration

Conversely, the Bush administration would greatly enhance the prospects for emission controls by dropping its opposition to them. But hitherto, Mr. Bush has steadfastly opposed mandatory controls. The initial public and media controversy over the administration’s stance evaporated after the terrorist attack in 2001.

No Republican administration is likely to come under strong domestic political pressure to reverse course on climate. Typically less than 5 percent of voters choose candidates primarily on environmental issues. And the vast majority of voters highly motivated by environmental issues are partisan Democrats, unlikely to support President Bush or any other Republican candidate. And in some Western states there may even be a small anti-environmental vote. (Ladd and Bowman 44-45)

From the standpoint of the President’s image, emission controls are a somewhat ambiguous proposition. Changing position on any issue risks creating an appearance of weakness. But supporting emission controls would also have some positive image potential. Endorsing emission controls might attenuate the common impression that President Bush has been too close to politically unpopular oil interests. And such action might also help counter charges that Mr. Bush has needlessly damaged U.S. relations with traditional allies in Western and Central Europe. The pertinent political question would be how heavily to weigh these advantages against the political costs of higher energy prices and diminution of political support from the energy sector.

UK entreaties

That fact may also represent a limit on what European leaders may do to change the U.S. climate policy. At least the UK government has been reputed in the media to be encouraging the Bush administration to adopt more ambitious climate policies. Prime Minister Blair has suffered from acerbic criticism for being excessively deferential to American interests. He would presumably benefit domestically were he able to claim political credit for moving the Bush administration on

climate. And he would seem to be politically uniquely well situated to do so, should he choose to use his political credits with Mr. Bush on the climate issue.

Impacts of a scientific or engineering breakthrough

A scientific breakthrough that proves there is a threat of near-term catastrophic climate change damage in the United States could of course transform the political dynamic without producing a realigning election. Many issue realignments take place without electoral realignments. (Baumgartner and Jones, 22) New, highly credible scientific evidence implying near-term catastrophic harm to American society would certainly almost guarantee the implementation of emission controls.

Proof of large irreversible changes, even if only modestly threatening to America, would at least noticeably heighten the prospects for mandatory controls. Regardless of the immediate implications for the United States, conclusive proof that anthropogenic emissions were causing the shutdown of the thermohaline circulation or disruption of important hydrological patterns like the monsoon would also transform the domestic politics of emission controls. Once it were clear that large anthropogenic climate change was occurring, fear of future unknown consequences would weigh more heavily. The expected benefits of controls would rise.

A breakthrough on emission free energy might have an almost equally dramatic impact by shrinking the expected costs of emission controls. The proponents of emission controls have typically assumed that controls would be necessary to induce private sector technological innovations that would then allow for lower emission levels. An alternative model proposed by the Bush administration, among others, is that lower-cost emission-free energy sources may be a political prerequisite of stringent emission controls. In this case the success of government-funded energy R&D might be viewed as a prerequisite for emission controls rather than a product of the controls.

Limitations of *deus ex machina* strategy

The fact that these various political, scientific, and technological shifts are possible does not make them a good basis for political strategy. In contrast to the regularities of classical drama, in politics the appearance of the *deus ex machina* is uncertain. The timing is unknown. And it is unclear in whose favor the divine intervention will occur. Republicans could win a realigning election. Climate science could discover that feedback loops will delay and dampen the harmful effects of climate change. Technological progress could extend the cost advantages of fossil fuels rather than curtail them.

Shifting focus to the states

Some emission control proponents are not however waiting for divine intervention in the form of political events, scientific discoveries or technological breakthroughs. On the contrary, in a strategy discussed by Baumgartner and Jones they are seeking to move the locus of political action to the state level. As a result there are now a number of new state-level emission control proposals, especially in the electric power sector.

The economic disadvantages of a state level approach are manifest. State-level controls could easily lead to costly leakage of energy production from states with controls to those without

them. Indeed with a unified electricity grid, imposing controls only in states supplied by power generators with below average emission rates, could produce perverse results. If the cap and trade system is designed to block this option, energy intensive businesses may simply move to states without carbon controls. (Keeler 2, 6)

The proponents of state level emission controls realize that the global problem of greenhouse gas emissions is ill-suited to state-by-state action. But their meager Federal prospects have, they feel, foreclosed the more direct route. Moreover, from a political standpoint, they hope that state level action may break the Federal political impasse. Because some regions are more environmentally conscious than others, measures that are politically unacceptable in the country as a whole may be acceptable in a few states. If so, state legislation might spark a new competitive dynamic within the electric power sector. Some power generators may seek nationwide controls to escape the competitive disadvantage created by unequal and burdensome controls imposed by the states in which they operate.

The incentives created by state level controls are, however, a distinctly and double-edged sword. The fact that state controls place some power producers at a competitive disadvantage implies that the controls create an equal and opposite competitive advantage for other power producers. State level action will strengthen the incentives to resist controls for all those power producers located in the less environmentally sensitive regions. Such producers would gain competitively from the more environmentally conscious regions' adoption of emission controls.

Moreover, with time, power producers will make investments necessary to serve markets in the environmentally constrained states. Once these investments are made, substituting national for state-by-state controls risks transforming these investments into devalued stranded assets, a development likely to redouble their owners' political resistance to nationwide controls. (Keeler 6)

The political net effect on industry politics is uncertain. The prospect of state controls does encourage some power producers to support a national system. Others will find new and stronger reasons to oppose federal controls. And in the end, if state emission controls are perceived as competitively harming local industries, the results would seem as likely to discredit the concept of emission controls as to encourage their extension to the remainder of the country.

Moreover, state level controls would be likely to pose hard problems for the design of later nationwide emission control proposals. For one thing, state cap-and-trade programs will create property rights in the form of emission allowances. They will also call forth capital investments that will be at considerable risk of becoming stranded assets as the result of the imposition of a national program. The more states enact disparate programs and the longer these programs persist, the harder the task of fashioning a Federal system is likely to become.

INNOVATIVE POLICY MANAGEMENT: A FABIAN ALTERNATIVE

The future will reveal whether the shift of activity to the states was a brilliant example of political indirect strategy or a costly blunder. But in the long-run the issue of emission controls must return to the federal level. And when it does, the need to define a politically and

economically realistic policy objective will also return. Whatever happens in the states, barring political realignment or transforming new discoveries, political and economic conditions are generally unfavorable to aggressive emission control proposals. The best course for climate policy would be to accept this reality and aim for a more “Fabian” goal of modestly slowing the OECD countries’ rate of emission growth.

SUCCESS REDEFINED

Why bother?

The analysis so far has taken pains to dispel what the author believes to be hype and over-optimism about emission controls. This section argues, however, that a more modest Fabian emission control strategy is worth the costs. There are five reasons for favoring a Fabian emission limitation plan while eschewing more draconian alternatives:

- If the emission reduction targets are kept low, their costs are likely to fall below the expected benefits from slowing the rate of climate change.
- Modest emission controls are very unlikely to increase self-defeating emission leakage and the resulting political complication for the problem of future LDC emission controls.
- The imposition of OECD emission controls is probably a political prerequisite for encouraging LDCs to implement emission reduction strategies, which may be a more fruitful approach to slowing the rate of emissions growth than anything that can be accomplished within OECD.
- Even modest emission controls would increase incentives for private sector technological development, thus possibly enhancing the cost effectiveness of future emission controls.
- Greenhouse gas emission controls produce co-benefits in the form of reducing local air pollution problems, especially in the cases of methane and black carbon but also in the case of carbon dioxide emissions resulting from the combustion of coal. (Hansen 18)

Would proponents accept moderate goals?

Slowly emission control proponents have seemed to be lowering their political aspirations. Some progress in that direction has already been made in the recent decision to scale back the emission reduction targets contained in the legislation introduced by Senators John McCain and Joseph Lieberman. Observed political behavior suggests that, while success leads to escalating demands, “Unambiguous failure of a group to achieve a political objective is followed by a lowering of the aspiration level.” (Edelman, 157)

Although the failure of the strategies of the 1990s is for some proponents not yet “unambiguous,” it seems likely to become so over time. For a few more years, proponents may continue to hope that harder work or a craftier strategy will finally produce success. At some point, however, even the most intransigent proponent of the Kyoto strategy will be compelled to reexamine the realism of that approach.

Hitherto, emission control proponents have disparaged the application of benefit-cost analysis to climate. They feared that it would impose a ceiling on abatement costs. That ceiling would be incompatible with the goal of stabilizing atmospheric concentration of greenhouse gases at some relatively low level.

But although benefit cost analysis appears to impose an unwelcome lid on costs, it could also establish a floor for defining prudent emission control policy. From this viewpoint, many economists have concluded that a moderate carbon tax would be justified, given the risks of climate change. Although these prescriptions fall far short of the goals of the more enthusiastic emission control proponents, they provide, nevertheless, a rationale for moving beyond the status quo. The unfavorable political constellation of forces that dominates climate policy and the likelihood of further unfavorable changes suggest that the floor offered by benefit-cost analysis would be politically more relevant than the ceiling that it might someday impose.

Would moderate goals be politically viable?

Moderating emission control objectives would reduce the present discounted cost of abatement. Presumably, at least some of the interests threatened by controls would moderate their opposition. More moderate goals do not, however, solve the more basic problem of the weakness of the political demand for action on climate.

Harnessing emission controls to other national policy objectives might address this more fundamental difficulty. The higher the linked-to objectives rank on the national policy agenda, the better. The national security issue, as discussed previously, does not provide a profitable link-up. However, it would be worthwhile to try to create a linkage between emission controls and the very fiscal and foreign policy challenges that would otherwise be likely to outcompete climate for public concern and attention. At best, climate would ride in the slipstream of these issues rather than be supplanted by them.

For such a link-up strategy to work, proponents of climate change would have to move beyond the narrow world of environmental policy and see their issue in a larger context of national priorities. The next section will discuss some of the considerations that could emerge from such innovative management approaches.

CLIMATE AS A FISCAL FIX

The German model

Despite the differences in political systems, the German experience may suggest an opportunity that could arise in the United States. When Chancellor Helmut Kohl was first considering adopting an aggressive greenhouse gas emission reduction target for Germany, the Ministry of Finance reportedly enthusiastically supported the idea. Climate policy seemed to offer the prospect of increasing government revenue. Eventually, the promise of increased revenue was fulfilled with the German Ecological Tax. Although the tax is quite unpopular with the electorate, it has survived and been repeatedly increased. (Interwies *et al.*, 22-23) It has survived and grown partly because it is a source of revenue for an increasingly cash-short German government.

The initial enactment of the Ecological Tax was especially interesting to American observers because it was an example of what economists sometimes call “tax shift.” In tax shift, pollution is subject to a tax, and the tax revenues are used to reduce the taxes on economically productive activities like saving and compensated labor. (An emission rights limitation plan can also be used as a revenue source, as long as the government auctions at least part of the emission allowances rather than giving them away *gratis*.)

Advantages of tax shift

For proponents of climate change mitigation, tax shift offers clear advantages. The most obvious is the prospect of an extra source of economic benefits from emission controls. Lower taxes on saving and labor would increase those activities. And the added economic output would boost society’s total economic well-being. “...Revenues from an auction of allowances or externality tax could be used to offset distortionary taxes and achieve some mitigation of the overall cost of the regulation at a macroeconomic level.” (Smith, Ross, and Montgomery, 4) The increased growth from lowering taxes on productive activity is an additional macroeconomic benefit over and above the initial gains from reducing harmful emissions.

What could tax shift accomplish?

Although estimates vary, the gains per dollar of tax avoided can be large. For example, a recent analysis found that using allowance revenues to reduce personal income tax rates could reduce the total cost of an emission control program by more than 40 percent, compared with simply grandfathering the allowances. (Smith and Ross, Table 3, p. 22) MIT’s EPPA model indicates that using carbon emission allowance revenues to reduce the personal income tax rate could cut program costs by about 25 percent. (Babiker *et al.*, Table 11, p. 13) Other studies find that each dollar reduction in income taxes yields an economic benefit of \$.20 to \$.50. (Parry 2002b, 5)*

At \$10 to \$30 per metric ton, a tradable emission allowance system would generate an annual revenue stream of approximately \$15 billion to \$45 billion. (For comparison, the federal gasoline tax raises about \$25 billion annually.) However, there are many competing demands on the revenue stream that would flow from emission limitations. Perhaps 9 to 21 percent of total carbon tax revenue (or emission rights auction revenues) would be needed to compensate the energy sector and related businesses for the asset value losses implied by emission controls. (Smith, Ross, and Montgomery, 6) Approximately another 30 percent would be needed to offset the loss of government revenue that would result from the slower economic growth occasioned by the emission controls. (Smith, Ross, and Montgomery, Figure 1, p. 16) Thus only about half of the revenue would actually be available to reduce other taxes.

Assuming that only about half of the total revenue were available for tax shift would produce a net revenue estimate of approximately \$7.5 to \$22.5 billion. Given the uncertainty about the per dollar benefits of tax reduction, a tax shift of this magnitude would generate an initial annual

* Some economists speculate that the macroeconomic benefits of tax shift might even exceed the costs independently of environmental gains. (Parry 2002a, 33-34) This view, though, is now much less widely held than it once was. (Smith, Ross, and Montgomery, 3).

benefit of \$1.5 to \$11.3 billion. This figure would of course grow as annual emission levels increased.

By boosting the apparent economic net benefits of emission controls, a tax shift approach would presumably also confer a political advantage on the concept of emission controls. There are other potential political benefits. For instance, in terms of the competition for public and governmental attention, making climate a source of revenue would transform it into a partial solution to fiscal concerns. In the process, it would also inject emission controls into a political arena where future legislative activity will be much greater than in environmental policy. And positioning emission controls as an alternative to otherwise unavoidable conventional tax increases might cause some Republicans to reconsider their stance on climate.

It may be possible to improve the odds of achieving a tax shift by steering emission control revenue into privately held savings accounts of some type. Such proposals are a common feature of many entitlement reform plans. Plans based on substituting private savings for future entitlement benefits usually entail explicit recognition of fairly substantial transition costs. And revenue is needed—especially early on—to avoid the problem of creating many privately held accounts that are too small to be managed efficiently. In sum, entitlement reform is likely to absorb a significant amount of government revenue. And there is no particular reason that some of that revenue could not come from charges on greenhouse gas emissions.

Using emission controls as a revenue source would be consistent with the goal of modestly slowing emission growth. If the tax per ton is moderate, revenue can continue to grow, albeit at a rate slower than that of the economy as a whole. While proponents of steeper emission reductions might find this outcome disappointing, it is more appealing than no emission controls whatsoever.

Is tax shift feasible?

A tax shift emission control plan is, therefore, attractive for several reasons. But is it feasible? The answer is unclear.

Even when future fiscal troubles do become more clear and pressing—as they will—there will still be important barriers to tax shift. The institutional structure of Congress militates against mixing issues in a way that crosscuts committee jurisdictions, as tax shift clearly would do. Also, unlike committees with traditional environment jurisdiction, the tax committees are less likely to contain members with high degrees of environmental interests. Emission control proponents might therefore resist mixing taxes and emission controls. Indeed, the strategy of tax shift requires a strange-bedfellow ideological coalition that would be uncomfortable for both sides.

Most importantly, tax shift is only attractive if the resulting tax reductions are permanent. To put the issue in context, the need to cover unfunded liabilities offers an opportunity to practice tax shift by substituting emission controls for part of tax increases that would otherwise have occurred. But what assures that the emission controls are not merely additional increases used to avoid benefit reductions and other spending cuts? In that case, carbon emission charges are merely a net tax increase, not the substitution of one revenue source for another.

An alternative revenue-based strategy

It is clear that tax shift is a strategy for the future rather than for the present. It is likely to become more appealing as the need for revenue becomes more acute. Ferguson and Kotlikoff argue that government's large unfunded liabilities are likely to affect financial markets suddenly rather than gradually. (Ferguson and Kotlikoff, 26) But Heller suggests that the impact may not occur until those liabilities begin to affect the security of the specific bonds being offered. (Heller, 116) Because most government bonds are short term, the markets may anticipate future fiscal troubles by quite short lead times.

Short-term political benefits

In the interim, emission control proponents could still find political benefits by focusing on revenue issues. Using carbon taxes or tradable emission allowance revenues for R&D may be the most politically attractive option with a claim to enhance the cost-effectiveness of controls. After all, there is already some government-funded R&D on emission-free technologies. There can therefore be no doubt that government support for such work is a politically viable concept, at least under current fiscal conditions.

The connection between the problem of emissions and the solution of increased R&D spending on non-emitting energy sources is relatively transparent. Indeed, the logic of increased R&D spending may be more understandable than that of emission control incentives. However, some political scientists have speculated that the public has difficulty understanding the linkage between emissions and R&D spending. (Arnold, 24-25) Some German opinion research seems to suggest a similar conclusion. (Interwies *et al.*, 28-29)

The economics of government research and development

In theory, such government-funded research could also enhance the cost effectiveness of the emission control program as a whole. Economic theory suggests that markets typically under-invest in R&D. "The economics literature makes a convincing case that increasing R&D beyond the amount that the private sector is willing to support has large potential benefits." (Cohen and Noll, 22)

Carbon taxes or tradable emission allowance schemes would not address this market failure. Such policies would create incentives to reduce emissions. And they would create some incentive for R&D aimed at this goal. But they cannot more than modestly remedy the tendency of for-profit enterprises to under-invest in R&D as a strategy for reducing emissions. Hence, even with an economically efficient greenhouse gas emission allowance price, the market would produce less than optimal amounts of R&D on climate solutions.

The challenge of government-funded energy R&D

Despite its theoretical strengths, the concept of using emission control revenues for energy R&D has problems in practice. Two concerns merit consideration.

First, the theoretical justification cited in the previous section applies only to increases in R&D not to spending that merely substitutes government climate-related R&D spending for private spending that would occur with an emission control regime or for non-climate related R&D. So

the question of the alternative employment of climate R&D dollars is of considerable significance in assessing this use of resources.

In general, “The extent to which federal R&D substitutes for, or actually encourages, privately sponsored R&D is a matter of considerable dispute, but the most recent work indicates a reasonably high level of substitution.” (Cohen and Noll, 48-49) If government climate-related R&D does substitute for other R&D, it could fail a cost-benefit test even while producing benefits in excess of the government expenditures. Currently, an additional dollar in R&D expenditure produces \$4 in benefits (measured in present value). To be cost-beneficial, therefore, each dollar spent on climate research instead of other research would also have to produce \$4 in benefits. (Nordhaus 2002, 267)

Second, the political incentives affecting government-funded R&D may make high returns hard to achieve. For example, government R&D has sometimes proven to be shortsighted because “... legislators are prone to pay too much attention to distributive benefits from near-commercial pork barrel projects relative to more fundamental R&D activities.” (Cohen and Noll, 382) At other times, government R&D can be captured by organized interests, as happened, for example, when government R&D was committed to making synthetic fuel from high-sulfur eastern coal, even though it was clear that the prospects for success were better in the case of western coal. (Cohen and Noll, 368)

It may of course be possible to devise novel institutional arrangements that could ensure that government’s climate R&D expenditures were reasonably cost-effective. The investment process could be insulated in various ways from congressional temptations toward pork barrel spending. But the prospects of success are uncertain. And in the long-run, a program that is too well insulated from pork barrel tendencies may be poorly positioned to survive fiscal hard times.

In conclusion, in the period before the fiscal stringency becomes more visible and salient, the use of emission controls to generate R&D revenue would probably enhance the controls’ political appeal. It could enhance their cost effectiveness. It will, however, only produce additional net benefits if government succeeds in advancing the development of valuable new energy sources, a possibility but by no means a certainty.

If and when entitlement funding problems become manifest and begin to dominate the political landscape, tax shift will become a more appealing destination for emission control revenue. In any case, the ability to apply revenue to a popular cause would offer a political fillip to an emission control regime. Emission control proponents would probably be prudent to begin with an emphasis on the R&D option but be prepared to shift focus as fiscal problems emerge.

CLIMATE POLICY AND INTERNATIONAL DIPLOMACY

Even if one dismissed the climate policy and fiscal reasons for adopting a moderate U.S. emission control policy, controls would have a strong justification from the standpoint of international alliance policy.

Transatlantic problems, a permanent condition

That task will not be easy. In a widely discussed analysis, Robert Kagan has pointed out that widespread European attitudes toward multilateralism and the international use of force will engender periodic outbursts of hostility to the United States. (Kagan, 6, 9-10) With the Russian threat in long-term remission and as the United States responds forcefully to threats from beyond European, European opponents of U.S. policy are likely to grow stronger and more vocal. Yet America cannot however afford to simply write off the European alliance:

“...there is no doubt that the United States and Europe have different attitudes toward power, military force, and sovereignty or even that the divide is growing. The question, however, is whether these differences are now so fundamental that the United States can or should dismiss its alliance with Europe as irrelevant, concluding either that it does not need allies or that it might find better ones elsewhere. And the answer is no. (Gordon, 74)

Accepting the transatlantic alliance’s importance to the U.S. does not entail the embrace of some international relations theory of neo-liberal institutionalism or constructivism. On the contrary it is perfectly consistent with a fully realistic response to the manifest reality of the threat posed by violent Islamic fundamentalism and the possibility of a new Chinese *Machtpolitik*. The alliance remains worth the considerable trouble that is likely to be needed to maintain it, just because the current and future security threats to the United States are real and serious. And although U.S. and European interests are not perfectly congruent on these problems, they appear to be more consistent than they are conflicting.

Realistically, though, maintaining the transatlantic alliance is likely to remain a trying exercise. France, in particular, seems likely to persist in seeking to build a French-led power block designed to constrain U.S. freedom of action. (Davis, 193-215) Hostility to the United States is deeply ingrained in French culture and shared across the political spectrum. (Mead, 140-142) In acting as they have, “the French are doing precisely what the Americans are doing; namely, developing policies that accord with their interests, based on a *realpolitik* assessment of emerging power trends, global challenges, threats, and alignments in the international system.” (Davis, 193) The very fact that French motives are interest-based indicates that they are unlikely to change no matter how the U.S. responds to them or no matter what it does on climate policy.

The role of U.S. climate policy

Nevertheless, a more forthcoming U.S. climate policy could help in coping with the difficulties of alliance maintenance. Specifically, a U.S. emission control policy would narrow rifts in U.S./German and U.S./U.K. relations, rifts from which unfavorable diplomatic combinations might otherwise emerge. The keystone of the French strategy is the French/German alliance without which France would have no prospect of dominating the EU. (Dale 5-6) And in Germany, the United Kingdom, and in some of the smaller northern European nations, the climate issue is politically of some importance; so U.S. refusal to implement emission controls may contribute non-trivially to anti-U.S. sentiments.

The problem is likely to worsen with time. Some claimed that the German floods of 2002 were caused by climate change. Similar charges are likely to be repeated about other weather-related natural disasters. And the international relations damage may escalate sharply with particularly

unfavorable circumstances: “If the United States is perceived abroad as the lone outlaw causing global warming, then intense storms, coastal flooding, and crop losses in desperately poor countries—whether or not actually caused by global warming—may become flashpoints for anti-American backlashes.” (Stewart and Wiener 45)

Conversely, a more affirmative U.S. climate policy may well contribute to achieving U.S. objectives in policy areas judged by some to be much more important than that of climate:

Indeed, the United States may find benefit in pursuing a negotiating strategy of issue linkage that trades sensible U.S. cooperation of climate policy for others’ cooperation on issues of greater interest to the United States. In effect the United States could receive in-kind side payments on other strategic issues in return for agreeing to act on climate. (Stewart and Wiener 51)

In this manner, the earlier U.S. decision to withdraw from Kyoto could be vindicated and perhaps turned to national advantage.

FINAL THOUGHTS

Structurally flawed international and domestic emission control proposals have made it difficult to focus debate on more attractive policy options. Currently, future political trends, so far as we can descry them, seem likely to reduce the attention accorded to the climate issue. One of the tasks of this paper has been to explore whether, in light of the best available theories of political science, it might still be possible to enact a domestic emissions controls despite these unfavorable factors. And the best answer would seem to be that—absent compelling evidence of dire, imminent threat from climate change—the success of even modest emissions controls is uncertain. Aggressive controls are most likely unachievable.

Shifting from political feasibility to a wider national-interest point of view raises a more acute question: why should the United States enact emission controls at all—even modest ones? The paper has also addressed this question and found that some of the putative answers are clearly invalid. U.S. domestic emission controls would have only the most marginal direct impact on global emissions, which will continue to rise regardless of what the U.S. does or does not do. A change in U.S. domestic policy seems unlikely to rescue the Kyoto process from the shambles into which it has fallen. Nor are there significant energy security co-benefits from a U.S. domestic climate policy.

Nonetheless, there are three valid grounds for implementing modest domestic emission controls. First, domestic controls would eliminate one barrier to adoption of emission reduction policies in China, India, and other LDCs where, in principle, policy changes could noticeably lower the global emissions growth trajectory. Second, emission controls could raise revenue for energy R&D or eventually for dampening the size of the tax increases otherwise required to cover the nation’s unfunded entitlement liabilities. Third, domestic U.S. controls would ameliorate U.S. image problems and enhance important international relationships in Europe and potentially, in the global South.

Opponents of emission controls will correctly object that these benefits are modest. But modest benefits are acceptable when the costs are also modest. Meanwhile, emission control enthusiasts will doubtless protest that achieving such modest goals would not stop climate change. Yet a policy exceeding the public's willingness to pay and the value of the apparent benefits is neither politically viable nor economically desirable. Perhaps, instead of viewing climate policy in isolation, emission control proponents should shape their proposals to more affirmatively contribute to the larger security and economic imperatives of the nation.

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