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The Evolution of a Global Climate Change Agreement

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Abstract

Simple economic theory applied to the threat of climate change posits an efficient solution involving either international emissions trading or a global carbon tax. Recent experience has demonstrated that neither the parameters of such a global policy nor even its form will be easy to agree upon, even as a varied mix of domestic policies forges ahead. This begs the question of what a global agreement ought to do, at least in the near term. In addition to supporting, coordinating, and perhaps compelling the variety of domestic actions we are already beginning to see, this paper argues an international agreement could usefully coordinate efforts to support developing country activities and create institutions for credibly reviewing national actions. Additional efforts to harmonize policies across countries, however, may not be a useful near-term goal.

Key Words: climate, change, international, treaty, Kyoto, emissions, trading

JEL Classification Numbers: H87, Q54, D62, D63

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1. Introduction

There is a tendency in economics to focus on the big picture and key messages. In the arena of climate change, these might be: A global externality requires global cooperation, international emissions trading lowers costs for all nations, and emission pricing is the key to the development of new climate-friendly technologies. Such thinking clearly shaped the design of the Kyoto Protocol, a climate change treaty negotiated by more than 140 nations that establishes a global emissions trading system for greenhouse gases. And even among those who might quibble with the particular targets, timetables, or mechanisms, many would embrace the overall architecture of global cooperation and international emissions trading.

Yet despite reports of success following the most recent negotiations on the Kyoto Protocol and Framework Convention on Climate Change (Harvey 2005), there are some clear indications that this architecture is not working so well. Most obviously, the United States is out of the system, and developing countries have successfully avoided any discussion of future commitments under the Protocol (Aguilar et al. 2005). Below the surface, there is the reality that most Kyoto participants are well above their targets, with the exception of transition countries, like Russia and Poland, and countries that underwent unrelated structural changes, like the UK and Germany (EIA 2005). While government action to trade allowances or purchase project-based credits from developing countries may succeed in achieving overall compliance, such a

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result seems to hinge more on political agendas and less on economic incentives. Finally, there is the reality that among countries that have implemented or are on the way to implementing mandatory programs, only the EU Emissions Trading Scheme is designed to parallel Kyoto's cap-and-trade architecture. The Canadian Large Final Emitter Program (LFE) is a tradable performance standard with a C\$15 safety valve. New Zealand has implemented a carbon tax, initially at NZ\$15 but possibly as high as NZ\$25, with full or partial exemptions for industries that participate in a negotiated agreement. Other countries are pursuing a combination of standards, voluntary programs, and technology incentives.

While these three mandatory domestic programs march along, there has been considerable financial interest in project-based crediting in developing countries. Natsource, a brokerage firm, recently capitalized more than \$500 million in private funds to purchase credits and is rumored to be well on its way to another \$250 million. The World Bank is now managing nearly \$1 billion in various project funds. A similar fund in Japan recently collected \$150 million in private funds. On the supply side, the CDM Executive Board has approved roughly 50 projects totaling slightly more than 100 million tons over 2008-2012 (assuming projects are executed as planned). It is worth noting that virtually all of these projects involve non-CO2 gases.

Based on this experience, there seem to be three lessons for the design of a global agreement. First, the Protocol's targets and timetables approach seems both ill suited for the current suite of domestic policies and increasingly unmanageable in negotiations; a more flexible architecture is needed that can accommodate price, quantity, sectoral, and technology policies. Second, there is an unusual alliance of support for project-based crediting in developing countries: Environmental advocates see this as maintaining environmental integrity, businesses see this as a cheaper alternative to domestic compliance, brokers and dealmakers see profit opportunities, developing countries see foreign aid, and industrialized country governments see opportunities to complement (substitute?) domestic mitigation. Given the inevitable need to

channel mitigation resources from industrialized to developing countries, more thought should be given to how these mechanisms can be expanded and improved. The recent Montreal meetings, for example, pushed the idea of providing credits for sector-level policies, not just individual facility-level projects. Finally, given the need to embrace a wider range of domestic policy responses, including investments in technology and developing countries, a global agreement needs to contemplate how such actions will be measured and valued.

The purpose of this paper is to take these three practical lessons and argue that, in fact, a more subtle application of economic thinking supports the same lessons. First, the absence of institutions, experience, and trust, make it difficult if not impossible to jump to an efficient solution; instead there needs to be an evolution from domestic initiatives—in whatever form domestic interests support—toward international cooperation. A corollary is that seeking to harmonize marginal costs across countries, while lowering the global cost of any aggregate near-term emission target, may not be a particularly important goal at this time. Second, the key direction of CO₂ emissions trading will always be with developing countries—financial flows to those countries in exchange for mitigation activities. It is the institutions surrounding this trade that need to be prioritized (versus capacity to trade among industrialized countries). Finally, as countries seek to ratchet up theirs and their allies' commitments, a key ingredient is objective information about what each nation is doing to combat climate change and the success or failure of those actions.

2. The need for domestic policy development

Most countries are struggling to determine their domestic response to the threat of climate change and/or the Kyoto Protocol. So far, there has been a wide range of responses including price (New Zealand), quantity (European Union), hybrid price-quantity (Canada), and primarily voluntary and/or technology policies (Japan). Exactly how the Kyoto Protocol is linked—directly or indirectly—to these efforts is unclear. On the one hand, key countries will

miss their Kyoto targets without substantial inflows of allowances. The European Union is forecast to be 3.6% above their target (EEA 2005); Japan is projected to be 8% above their target—assuming a 3.9% sink credit but not counting additional measures (Mizuno 2005); Canada is currently 30% above its target (GC 2005). Among these countries, that amounts to a 500 million ton annual deficit. While those inflows are not impossible—Russia is estimated to have perhaps a 20% or 600 million tons annual surplus (Russian Federation 2002)—the question of whether or not a deal is struck for countries to remain in compliance seems more political than economic.

Perhaps more importantly, the market-based schemes in the European Union, Canada, and New Zealand do not allow direct trading of AAUs, the currency of the Kyoto Protocol, rather the European Union and Canada admit project-based CDM credits from developing countries.¹ Also, while the modeling done on the heels of the Kyoto Protocol (Weyant and Hill 1999) demonstrated significant gains to trade even among industrialized countries, this was based on large discrepancies in autarkic prices. Interestingly, the schemes (so far) are all targeting modest reductions and a \$15-25/ton CO₂ price window, making the potential gains to trade relatively modest.²

Despite the seeming disconnect between the Protocol and domestic policies, the impetus to adopt these programs is arguably tied to the Kyoto Protocol qualitatively if not quantitatively. There seems to be a need for an international agreement to help prod domestic actions. But given this noticeable misalignment between the Kyoto cap-and-trade structure and domestic policies, it seems reasonable to ask whether the global structure or domestic action ought to

¹ The Canadian system will allow “greened” AAUs, but the meaning of that is unclear. The EU system only allows trading with other mandatory *domestic* programs in countries that have ratified the Kyoto Protocol.

² Assuming linear marginal costs, autarkic prices of \$15 and \$25, and maximum opportunities for trade, the gain is trade less than 6%. Recent proposals in the United States have been in the \$5-10 range (RGGI Staff Working Group 2005; U.S. Senate 2005).

come first. When we think about most cooperative efforts—on ozone-depleting substances, trade, human rights, etc.—there has generally been a much clearer set of domestic responses upon which the global structure could be built, versus climate change where the Kyoto Protocol pre-dated any significant domestic responses. A natural alternative could be a “bottom up” or “pledge and review” approach as discussed by Bodansky et al (2004).

A more controversial question is whether countries really want trading if they are in a situation where one has high prices and the other low prices. Standard economics says yes—everyone gains from trade.³ But that ignores distribution and other issues *within* countries. The United States, for example, is increasingly sensitive about shifting from coal to natural gas and may not want to trade with a region facing higher allowance prices. Even if the country as a whole benefits financially from international emissions trading, key stakeholders or security concerns may not. This is particularly salient because the underlying goal of near-term climate policies is not so much to achieve significant emission reductions, but to spur technological change, a crucial determinant of future control costs (Weyant 2004).

While fully pricing the emissions externality would create the right incentives for technological change, it is not the only approach. Countries could choose lower emission prices and larger technology incentives (Jaffe et al. 2004; Fischer 2004; Fischer and Newell 2005), or even the current U.S. approach of only technology incentives (Montgomery and Smith 2005). Seeking to equalize marginal costs across countries may thwart domestic efforts to find the appropriate balance within countries between emissions pricing and technology incentives.⁴ Finally, some economists have pointed to concerns over trade flows as a potential negative side effect of international emissions trading (McKibbin and Wilcoxon 1997; McKibbin et al. 1999).

³ This ignores pre-existing distortions, which can create a divergence between market prices and welfare costs.

⁴ Non-uniform trading ratios among systems could be used to preserve price differentials and provide greater resiliency to domestic cost shocks—but this is not the typical argument for trading.

Even to non-economists, there may be some concern if we end up with large net trade flows among industrialized countries, perhaps because such flows suggest the initial allocation was unfair.

None of this is to say that a global market-based approach should not be the end goal, but rather to recognize that there are good reasons why countries may need to evolve, rather than jump, toward that goal. These reasons start with the simple notion that countries should figure out the policies that meet their own internal constraints before they begin ratcheting up those policies in a cooperative framework. And, as countries begin establishing domestic policies, they may prefer idiosyncratic price levels to global efficiency, as a means to preserve domestic tranquility, to properly incentivize technology in conjunction with other policies, and to avoid large trade flows.

3. Credits in developing countries

Even as countries have been understandably reluctant to embrace international emissions trading in the currency of the Kyoto Protocol, they have moved ahead much more rapidly on the idea of buying credits for projects in developing countries. Private and public funds have come up with billions of dollars to finance such projects. In some ways, this is analogous to how domestic trading started in the United States—first embracing offsets under the 1977 Clean Air Act Amendments, before full-fledged trading under the 1990 amendments. It is also far more important: The very cheapest emission reductions exist in developing countries, and these reductions will likely not occur through domestic action because the countries are deservedly focused on economic development over climate change. The same studies that found gains from trading among industrialized countries found much larger gains to trade with developing countries (Weyant and Hill 1999).

Economists have tended to argue in favor using generous caps to bring in developing countries, or even non-binding targets (Bradford 2002; Philibert 2005). Yet the sense of many

developing countries, emphasized by their position in the most recent Montreal meetings, is that any notion of an emission cap could eventually be used to limit development and growth (Kopp 2005). Such concerns exist in addition to those over the institutional capacity for monitoring and enforcement in developing countries. This means that some form of project-based—or perhaps policy-based—crediting is likely to be the only vehicle for broadly incentivizing inexpensive opportunities in developing countries for the foreseeable future.⁵

The major handicap for project-based crediting is the question of baselines—what would have happened absent the crediting scheme and, therefore, what is the basis for generating credits? From a cost-effectiveness perspective, individual baselines are not so important as long as the credit price is fully applied at the margin for each project.⁶ There is a valid concern that overly generous baselines will tend to weaken the overall target and transfer (perhaps large) inframarginal payments to project developers. Against this, one must weigh the priority of motivating action in developing countries and incentivizing inexpensive opportunities.

4. Evaluating action

At a superficial level, evaluating national action under a Kyoto-like target and timetable approach is easy—did a country achieve its target on schedule, or not? Yet the real work is up front—defining the appropriate target. Indeed, one of the real criticisms of the Kyoto Protocol has been different perceptions about the fairness of the initial targets. And, we are already closer to the start of the second commitment period (2013) now than we were to the start of the first

⁵ One possible alternative is government-to-government cooperation, such as the U.S. Asia-Pacific Partnership (US Department of State 2005), though the capacity of such agreements is unclear.

⁶ This ignores the fact that credits subsidize output (Baumol and Oates 1988). Interestingly, the traditional problem with an output based allocation—that it subsidizes output—vanishes if there is, overall, a subsidy for output.

commitment period (2008) when the Kyoto Protocol was signed—with no clear sign of agreement on future targets.⁷

Further, while the elegance of international emissions trading is the separation of equity from efficiency, reluctance or institutional inability to take full advantage of international trading in the short term—and perhaps the longer term—blurs that separation. Ironically, what we have seen among those Kyoto participants implementing market-based policies is primarily adherence to some notion of comparable effort—modest reductions from business-as-usual and acceptable costs—with incentives ranging from \$15 to \$25 per ton CO₂ across countries, and seeming disregard for (or secondary interest in) the negotiated cap. Whether this similarity in price is driven by thoughts of efficiency or political feasibility is unclear.

This brings us to the dilemma of evaluating national actions that might involve emission caps, taxes, standards, technology and developing country investments. Evaluation of actions across countries is important as nations contemplate both continuation and acceleration of domestic programs. An explicit reference to such evaluation was part of a recent proposal in the U.S. Senate (2005). While emissions are the most obvious metric for measuring progress on an environmental problem, the hazards of agreeing on national emission targets have already been noted. In each of the other policy dimensions there are natural metrics with, in many ways, no more hazards than emissions themselves: the relative prices of fossil energy and electricity (taxes), emission rates per unit of output by sector (standards), and spending or incentives in particularly technology or foreign aid categories.

⁷ At the Montreal meetings, parties to the Kyoto Protocol adopted a decision to form an ad hoc group to consider future commitments aiming “to ensure there is no gap between commitment periods.”

5. Conclusions

Global cooperation is challenging. Given the difficulties coordinating an international response on issues such as security and trade, a certain amount of humility is necessary when confronting climate change—an issue that ranks considerably lower in public opinion (Krosnick et al. 2000). Cost-effectiveness is a valuable long-term goal, but should not obstruct short-term progress. There are valid reasons why countries might resist unrestrained international trades and efforts to pursue a single global price, despite the gains to trade. Under these conditions, the value in an international agreement appears to be in prodding action rather than elaborating mechanisms for global trading and enforcement.

Two areas where more elaborate mechanisms may be valuable in the near term, however, is in crediting programs from developing country activities and evaluation tools for national policies. There is wide-ranging stakeholder support for credit programs in developing countries at the same time common sense economics argues that this is where the action ought to be. That is, this is where the cheap mitigation options lie and improved institutions are needed to funnel resources in that direction. Meanwhile, the continuation and acceleration of the initial spate of mandatory policies hinges on appropriate responses in other countries. Compliance with the Kyoto Protocol is unlikely to be the sole metric—both because compliance will reflect politics more than economic incentives and because nations are pursuing a broad range of policies that do not fit easily into the Kyoto box.

Neither project-based crediting nor a plurality of policy approaches is likely to be as tidy—or as efficient—as a standard emissions trading regime (or harmonized taxes). Such a regime should still be viewed as a longer-term goal, and efficiency should be regularly held up as criteria to be reviewed and evaluated. Recognizing the evolutionary nature of a global climate policy, however, useful near-term steps should be the priority and should be viewed in the context of ongoing negotiations to refine the international framework.

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