Report of a Workshop on

Carbon Taxes - A Tool for Managing Climate Change or a Threat to the World's Poor?

Tuesday, June 17, 2008, 3.00 p.m. - 6.00 p.m.

Conference Room 9, United Nations, New York

The challenge of financing climate change adaptation and mitigation will need to be addressed by the international community in the period culminating in the UN climate change conference scheduled for the end of 2009, in Copenhagen. In the meantime, the preparatory process for the Follow-up International Conference on Financing for Development and the Doha Review Conference itself provide an important opportunity to discuss additional financing mechanisms that would allow countries to cope with climate change. Against this background, the Friedrich Ebert Foundation, in cooperation with the Financing for Development Office of UN-DESA, organized a workshop on June 17, 2008 on the topic: "Carbon Taxes- A tool for Managing Climate Change or a Threat to the World's Poor?"

While the motivation for the event was the role that carbon taxes could play in mobilizing global resources for climate action especially in developing countries, it also addressed two key attributes of such taxes: first, carbon taxes are favored by economists because of their potential to provide incentives to reduce greenhouse emissions by internalizing climate externalities; and second, such measures have received criticism because of their adverse distributional, in particular on low-income households in developing countries. The discussion focused on the evidence regarding the effectiveness of carbon taxes in reducing emissions as well as the effectiveness of measures that could mitigate the regressive. Finally, the event sought to place the tax proposal in the institutional and capacity context of developing countries in order to assess their overall development implications. There was a consensus in the workshop that unless marked achievements are made by the international community in tackling the economic development challenges and meeting of the internationally agreed development goals, it was unlikely that the required levels of mitigation and adaptation will be met.

The workshop benefited from the rich intellectual blend and points of view of the speakers, UN government representatives, policy makers and experts from civil society. The panel was chaired by Ambassador Byron Blake from the Permanent

Mission of Antigua and Barbuda to the United Nations.[1] The speakers were: Michael Keen, Division Chief, Fiscal Affairs Department, IMF; Gilbert E. Metcalf, Professor of Economics, Tufts University; and Tariq Banuri, Senior Fellow and Director of the Future Sustainability Program, Stockholm Environment Institute.

The speakers in the workshop emphasized the global nature of the climate challenge as well as the need for equity. Developing countries are responsible for only a relatively small part of the current stock of greenhouse gases (GHGs); they are also confronted with equally urgent priorities of poverty eradication and sustainable development, and have limited capacity to take remedial action on their own. In contrast, high-income economies generated about 80 percent of past fossil fuel-based emissions, and hence account for most of the damage; they enjoy high levels of human wellbeing, and have the technological and financial capacity to initiate action. These differences have been incorporated into global agreements in the form of the principle of 'common but differentiated responsibilities and respective capabilities', which imply that regardless of where the emission cuts would take place, the primary responsibility for action lies with the rich countries. Indeed, from a long-term perspective, limiting the threat of climate damage requires that the energy production patterns in developing countries do not imitate those of the rich countries but shift towards low carbon pathways. Imitation of rich country patterns will contribute substantively to the growth of future emissions.

Finally, the speakers emphasized that the impact of global warming has already become manifest in several areas that are relevant to human development, and that the worst impacts will fall on the poorest developing countries, because of their geographical location, weak coping capacities, large concentration of poverty, and more vulnerable social, institutional and physical infrastructures.

The case for carbon taxes

In recent years, several economists have begun to advocate a carbon tax as the preferred method of addressing climate change. The conventional argument for such measures dates back to the economist Arthur Pigou (1877-1959), who argued that a tax on a particular pollutant constitutes a market-based incentive to reduce the production and consumption of products that require high amounts of that pollutant. Given that carbon-based fossil fuels contribute the predominant share of greenhouse gases, a carbon tax would, in theory, make it more expensive for companies as well as consumers to use them.

The technical economic argument for such a "Pigovian tax", in preference to direct regulation or performance standards, is that it is the most economically efficient way for managing the level of pollution. The idea is that instead of trying to reduce pollution to zero or to find the correct level of acceptable pollution, the policy maker

[1] Antigua and Barbuda holds currently the Chairmanship of the Group of 77 in New York for the year 2008.

should try to ensure that the social cost of an extra unit of pollution is less than the social benefits from the activities that generate such pollution. This sidesteps the need to specify the desired level of reduction: with the tax internalizing the correct valuation of damages, the market achieves the correct level of reduction. Seeking a target level of reduction has no meaning in this theoretical framework; instead, it relies on the market to tell us how much reduction we all, collectively, desire, given our knowledge of the damages as well as the benefits.

A second advantage of carbon taxes derives from the first one. They reduce the policy-induced risk for the private sector. A carbon tax increases prices by a predictable percentage, which makes it easier for the private sector to plan investment decisions. In contrast, if policy makers set quantity targets (desired emission cuts), it would require investors to estimate the behavior of future carbon prices, which could add another layer of uncertainty to their calculations.

Finally, a carbon tax provides a potential double dividend through its contribution to government revenues—which could be used to ease the pressure on public finances, offset the adverse distributional effect of the tax through direct subsidies for consumption of low-income groups, or eliminate more distortionary taxes. In this sense, the carbon tax could well be characterized as a search for a silver bullet to address more than one problem simultaneously. In the 1990s, equal per capita emission rights were similarly espoused as a measure that could simultaneously encourage low carbon options in the North as well as the South in addition to transferring resources to the latter. The emissions rights approach did influence the cap and trade structure that emerged from the Kyoto Protocol. However, the transfer of resources remains rather small.

Questions and critiques

The idea of a Pigovian tax has not been uncontroversial. At least four types of questions have been raised regarding its operation. The first is whether the tax can do in practice what in promises in theory; for example, whether the world has sufficient knowledge to calibrate the tax at the "correct" level—namely at the level where the tax would equal the social cost of the damage caused by the pollutant. Second, and even more importantly, whether it is possible to ameliorate the adverse distributional impacts of the tax through ancillary measures. Third, given its lukewarm reception in most policy circles, whether it is a credible policy instrument. Finally, whether alternative instruments are better suited to address the complex challenges of climate change and development.

The session Chair, the invited speakers, and participants weighed in on all four issues in order to bring out the key points of agreement and disagreement. The speakers cited recent empirical analyses that shed light on one or more aspects of the proposal.

Practical Difficulties

The speakers acknowledged that while carbon taxes could be a feasible instrument to penalize greenhouse gas emitters, it is not straightforward to determine the correct level of the tax to reflect the damage they cause and to achieve the desired change in consumer behavior.

This may appear to be a technical issue but it hits at the core economic argument for preferring carbon taxes to other instruments. A Pigovian tax is efficient only if it is set to be equal to the monetary value of damages caused by emissions. But the knowledge required to do so is generally not available. The different estimates of damages caused by carbon emissions (also referred to as the social cost of carbon) vary hugely, because of the different assumptions they make to value inter-temporal trade-offs or non-monetary damages, or to account for incomplete information and uncertainty. This means that the tax is only as efficient as this imperfect estimate of the damages that it is intended to internalize.

Stepping back from the theoretical abstraction, the range of estimates of the appropriate carbon tax is equally large—from a low of $2 per ton of carbon dioxide in one estimate to a high of $240 per ton in another (scheduled to kick in by 2020) in another. Even the higher tax of $240 translates to an increase of only $2.40 per gallon of petrol; this is close to the increase that has already occurred at the pump over the last two years, but there is no confidence that it will suffice to reduce the expected damages from climate change to below the benefits

Of course, as the speakers pointed out, the carbon tax could be imposed not as an economically sophisticated instrument to reconcile marginal social costs and benefits of carbon, but as a crude instrument to reduce carbon consumption and generate government revenues. In this case, if the ultimate goal is to reduce emissions by a given percentage, it will require a complicated, ad hoc iterative process to muddle towards the appropriate tax level. In that event, however, the resulting tax rate would not be justified by any simple story about valuation of damages. Nor would it produce the promised predictability in price behavior for investors.

Distributional impacts and their amelioration

The most serious questioning of carbon taxes is because of their adverse distributional impacts. In general, if lower income groups spend a higher proportion of their income on a taxed good, the impact of the tax will be economically regressive. This appears to be the case with carbon taxes. Although some recent studies in developing countries have found otherwise (often because of different treatment regarding prices of biomass), the broad consensus in the literature is that the lowest income groups spend a larger share of their income on energy services. This means that a price increase in energy services because of a carbon tax will hurt the poorest groups disproportionably.

Furthermore, regardless of the share of spending, a high tax on an essential good (e.g., energy, but also food or water) could render it unaffordable by lower income groups; this would not only be regressive, it would also be socially unacceptable and environmentally unpredictable. For example, if fossil fuels are priced too high as a result of the tax, and if there is a lack of low-carbon options in the economy for transportation and energy, the result will not be a shift by consumers to more environmentally friendly alternatives. Instead, poor rural and peri-urban households, in particular in developing countries, may have no option except to turn to traditional fuels, such as firewood or biomass, with adverse environmental effects.

The distributional burden of carbon taxes could be compounded by the indirect impact through the prices of other essential commodities, especially food. While a fraction of the price impact of a carbon tax would fall on the suppliers, thus softening the distributional burden of the tax, it is widely acknowledged that, at least in the short run, the consumer will carry most of the burden.

Because of the above concerns, a key issue in the policy literature is whether the revenue generated from the carbon tax could be used in such a way as to mitigate the burden on poor households and poor countries. Studies cited by one panel member show that this could be achieved within an industrialized country by providing a tax credit equal to a percentage of the wage income of poor families or an explicit grant to non-workers (e.g. the elderly). However, the effectiveness of such a program in most developing countries is not likely to be high, given the relatively small base of their income tax systems.

Questions were also raised whether such a compensation scheme could be implemented between countries, given the inability to achieve the long-standing target of 0.7 per cent ODA. There would be a need for an alternative credible policy measure to ensure that the adverse distributional impact between countries and within countries, especially developing countries, of a carbon tax is offset fully.

One option for accommodating distributional and adjustment-related concerns is to introduce the carbon taxes gradually, first at a low level to allow the economy to adjust and to institute necessary ameliorative measures for poor households, and then raise the tax over time towards substantial real increases in the future.

The distributional issues is linked directly to the potential revenue impact of a carbon tax. The need for tax revenues arises in part because of the equity issue. Poor countries (and poor communities in rich countries) will require assistance in accordance with the principle of common but differentiated responsibilities and respective capabilities. As such, additional resources will have to be mobilized for the purpose, and the carbon tax is one conceivable mechanism for such mobilization. However, some participants noted that the obstacle to the transfer of resources to poor countries (for development or the MDGs) was not a generalized lack of resources in industrialized countries, it is not clear whether the mobilization of additional resources through a carbon tax will suffice.

Policy credibility

Several participants raised the argument that while economists are now advocating a carbon tax as a superior policy alternative to an emissions-trading regime, the taxation option is considered highly unpopular by policymakers. The European Union considered for many years the implementation of a harmonized carbon tax covering its member states, but decided instead in 2005 on a cap-and-trade approach, due to the lack of agreement on the appropriate tax rate.

One reason why the carbon tax proposal has not gained traction in policy circles is that it bypasses the issue of emission targets or trajectories, which are the focus of the bulk of the climate literature; these have often been summarized in the form of threshold temperature increases above pre-industrial levels (2 degrees) or carbon dioxide concentrations (350 to 450 ppm). The focus on emission targets has been consistent with another policy instrument, the cap and trade system, which has been far more visible in policy discussions. Whatever its other problems, a cap and trade system if properly applied will deliver a specified level of reduction (i.e., whatever the cap is set at), although the resulting price of carbon will be uncertain. A Pigovian tax seeks to identify the optimal price of carbon, which makes the price somewhat more predictable, but leaves uncertain the ultimate reduction in carbon emissions; in fact, it is premised on the notion that there is no such thing as a desired level of emission reduction.

Another factor that may weaken the credibility of a carbon tax is the possibility of political lobbying by potentially affected groups to delay or dilute its provisions.

Because of these reasons, the carbon tax will not lead to intended predictability in policy-induced influences on resource prices.

Alternatives to price mechanisms

Several participants in the workshop noted that pure market-based mechanisms such as carbon taxes, cap-and-trade, or a hybrid of the two have gained prominence in the recent debate on climate change. This has blocked serious discussion of other alternatives that could have allowed for a greater degree of government ownership and greater sensitivity to local and national environmental conditions, institutional contexts, and developmental priorities, including the most appropriate means of addressing or offsetting distributional impacts.

It was also noted that while price mechanisms could be effective for introducing changes on the margin, there is little evidence that they can induce a fundamental transformation in the economy. Moreover, market-based instruments might bear the risk that the rights of already powerful stakeholders (such as energy producers) will enable some of them to persist with current practices. For those who see the climate challenge as one requiring substantive and fundamental changes in behavior as well as economic conditions (including the prospects of currently most profitable industrial sectors), the role of price mechanisms in bringing about change will be marginal at best.

Against this background, the workshop considered an alternative approach to climate change, namely a globally funded public investment program for the deployment of renewable energy technologies in developing countries. Such an approach would confront directly the major need of developing countries to provide modern energy services to their populations. Since on average the consumption of modern energy services in developing countries is less than one-fifth of that in developed countries, the former will have to expand their energy infrastructure by a huge amount simply to meet the energy shortfall. Under business as usual, this will increase carbon emissions proportionately. Channeling new energy investment in developing countries into a climate friendly path will be essential for addressing the climate challenge in a manner that does not shortchange the development agenda. Developing countries need to be enabled to make up for their enormous shortfalls in energy supply, without endangering either the climate or their aspirations for economic growth and poverty reduction.

In comparison to induced changes on the margin by market-based mechanisms, a globally funded public investment program would follow the primary goal of equity by enabling the Global South to sustain its developmental momentum while making massive cuts in emissions. The purpose would be to bring about a change in trajectory where it is most cost-effective, namely where the investments have yet to be made. This could result in a rapid decline in the emission profile of the South leading towards de-carbonization and at the same time the facilitation of technological learning that would reduce the costs of renewable technologies for the North. Such a program would include substantial new investments in technology transfer, including by upgrading existing institutions of research, education, credit and policy. In order to induce action, a global program for renewable technologies would have to be created on a scale that is commensurate with the projected scale of investment in energy and infrastructure in the South.

Such an investment program would be market friendly (insofar as government policy would provide clear and unequivocal signals to private enterprises) without being based on a single price-based intervention. It would require the allocation of global public funds to jump-start the investment effort, and these funds would have to be mobilized either from within existing revenue resources or new ones. The carbon tax could be viewed as one possible way of mobilizing the extra resources, but by no means the only one or the least controversial one.

Conclusion

Several participants noted that there is currently little faith in the promise of new and additional finance to assist developing countries in climate change adaptation and mitigation and that additional funding mechanisms need to be discussed by the Doha Review Conference. It was noted that existing resources under the Global Environment Facility (GEF), which currently operates the financial mechanism of the UNFCC, are nowhere near sufficient to cover the estimated needs for addressing climate change externalities. Likewise, additional sources by bilateral and multilateral donors provide only a small fraction of the financial support needed and

require more cooperation between the different stakeholders. Notwithstanding the strong global consensus behind the internationally agreed development goals, reaffirmed targets have only been achieved by a handful of countries. Therefore, the workshop came to the conclusion that unless marked achievements are made by the international community in tackling the economic development challenges and in acting more cooperatively towards the provision of additional resources for tackling climate change, it is unlikely that the required levels of mitigation and adaptation will be met.