Climate Change Policies and the World Trading System: Introductory Remarks

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Up until the launch of the Doha Round, the Climate Change and Trade Regimes progressed separately through stand-alone negotiations. Unlike the Montreal Protocol aiming to curb the emissions of cholorfluorocarbons (CFCs), the climate negotiations that took place under the comprehensive Kyoto Protocol (KP1) did not include trade measures. Nor were the linkages between climate and trade recognized explicitly in negotiations under the auspices of the UNFCC until COP 13 when 'trade and finance' was one of the four pillars of the Bali road map. As recognized by Whalley in his contribution to this meeting, in the evolution of the architecture on global economic policy, trade and finance came first, establishing sub-regime precedence as economies were only linked through trade and finance under the Bretton Woods institutions. Yet, it is clear that the amount of social engineering implied by the immensity of the climate change challenge, as well as the looming world-wide water scarcity, call for them to be addressed from a multiple of perspectives using a multiple of approaches. Currently, the interests and beliefs diverge across countries and the perceptions about the scientific evidence are not congruent, and as pointed out by Messerlin in his contribution for this meeting, water is not even yet on the radar screen of international discussions.

As a result, so far, the 'narrow but deep' architecture under the comprehensive Kyoto Protocol (KP1) has delivered little with Green House Gas (GHG) emissions growing as much as they were predicted to rise in the absence of the Treaty. Progress has also been slow at the recent ministerial conferences in Copenhagen (December 2009) and in Cancùn (December 2010) where countries agreed to pledge unilateral emission cuts (G-20 participants at the Pittsburgh meeting also agreed to deal unilaterally with subsidies on energy). These developments all confirm that we are switching from a 'top-down' to a 'bottom-up' approach to deal with the climate change challenge. As a result, the negotiations are now drifting towards what Keohane and Victor (2010) call a 'Regime Complex' (as opposed to the comprehensive regime envisaged under KP1). [1]

This new architecture will have to address many issues, most of which involve international trade directly or indirectly, the focus of our meeting. This conference is about the role of trade and the present international trading system as enshrined in the WTO in helping meet the climate challenge. Borrowing an expression coined by Jagdish Bhagwati when discussing the relation between regionalism and multilateralism in the international trading system, can a suitably modified trading

[1] For Keohane and Victor, the weakness of KP1 came from seeking a Comprehensive Regime rather than a 'Regime Complex'. Integrated regimes being institutional monopolies, they distract attention from considering rival institutions such as negotiations in small groups. Interestingly, so far the outcome of the negotiations have followed the predictions from the large game-theoretic literature on the subject which comes to the conclusion that global agreements with all participants would neither emerge nor be stable (see Carraro (2007)). This implies that any global agreement is likely to simply ratify a de facto architecture established by smaller clusters of countries which is in effect what happened under KP1. Indeed, the huge success of the GATT, perhaps the greatest success in the provision of a global public good largely came to an end when the 'live and let live' philosophy came to an end with advent of the WTO which took away that flexibility imposing a straightjacket with the 'single undertaking' and a more effective dispute settlement process.

system, take on the climate challenge, i.e. how can it be a building block rather than a stumbling block in our quest to control global warming?

Four key issues to be addressed involving trade directly or indirectly are dealt with here. First, how can one bring expanded participation in the effort to curb GHG emissions. Second, because global change is a long-term problem and GHG emissions stay in the atmosphere for over a century, how can one design emission targets and a time-path for the price of carbon for a long-enough time period with enough certainty. This issue has to be dealt with, if only because many investment decisions to reduce GHG emission last for periods of over fifty years. Third, one way or another, the new architecture will have to rely on some form of carbon-credit-trading system which has already proved useful under KP1 as a way of tackling the joint objectives of efficiency and equity in the sharing of efforts to curb emissions. Fourth, is the question of how the current International Organizations (the UNFCC and Kyoto Protocol, the Bretton Woods institutions and the WTO) can meet the climate-change challenge and in what direction they should be changed. In this meeting, we only deal with the institutions covering international trade and of the potential conflict between them and the policies needed to mitigate climate change (and/or worldwide growing water scarcity). [2]

1. Expanded Participation.

Greater participation in curbing emissions has to extend beyond industrialized countries. First, this will increase the efficiency of emission cuts as the greatest gains are to come from cuts in low-income countries that will also account for the bulk of emissions. Extended participation will also lead either to greater cuts by developed countries or, in the increasingly unlikely event of a Treaty with binding caps, to greater pledges. Last but not least, expanded participation will limit leakage. However, inducing participation in the context of climate change is extremely difficult because a clean atmosphere with a limited rise in temperature is a Common Pool Resource (CPR). It is thus near-impossible to exclude non-participants from enjoying the atmosphere which is degraded by use. As is well-understood, actions to cope with a CPR face a very serious collective action problem because a CPR is not self-managing even if one has credible information about costs, benefits and options. Currently with the continued uncertainty and differing interests, to tackle the collective action problem, incentives need to be re-aligned. [3]

[2] Many observers are warning that the objectives of reducing GHG emissions will collide with the non-discrimination principles enshrined in the GATT (Brainard and Sorkin (2009), Messerlin (2010), Hufbauer and Kim (2010), Horn and Mavroidis (2011)).

[3] Fortunately, seemingly intractable CPR situations have been successfully solved by altering incentives. One possibility, mentioned below is the provision of sufficient incentives for the development of green technologies which might lead to a first-mover situation. Other approaches including exclusion of access to rich-country carbon markets, small-group reciprocity situation, and sufficient co-benefits (e.g. reducing black carbon) are unlikely to get much traction for climate change

Focusing on trade, would a move towards greater autarky induce extended participation? Moving to autarky would reduce growth, which would reduce emissions. However, in the longer term, other direct effects of trade on global warming like international transport and differences in emission intensities across traded activities are secondary. Beyond growth effects, even though emissions are embodied in international trade and there are differences in emission intensities across sectors that give room for trade policy measures,[4] there are much larger differences in emission intensities across countries than across sectors and many heavy-emitter activities, such as construction and national transportation are non-traded.[5]

On the other hand, high trade volumes under an open trading system do improve the odds of voluntary participation in a climate deal as countries that abate will benefit indirectly because of the positive terms-of-trade effect of their emission reductions. This is because as a country reduces its consumption of a traded good, it will improve its terms of trade. However, even with strong terms-of-trade effects, the illustrative simulations by Cai et al.(2009) show that unless the estimated costs of temperature increases are close to 10 times those used in the Stern (2006) report, no country (not even large emitters) would unilaterally participate in a global deal.

In sum, it is difficult to escape the conclusion that under the present estimates of damages associated with a business as usual (BAU) growth scenario, countries will lack incentives to participate in a cooperative agreement to protect the atmosphere. Even for large countries that can internalize a larger share of their mitigation costs, the benefits from the resulting improvements in global climate largely accrue elsewhere. Side-payments to induce participation and/or realignment of incentives are thus needed.[6]

Since countries will continue to trade, can trade measures exert leverage? For example, would the threats of bans or of border adjustments induce countries to participate in emission-curbing climate negotiations be credible (this argument is different from the level-playing-field argument which calls for border adjustments as a control rather than a sanction)? Here it is tempting to draw a parallel with the relative success of trade sanctions under the WTO when there is non-compliance and countries try to improve their terms-of-trade. However, this terms-of-trade

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mitigation. This leaves few options (see e.g. the examples and the discussion of possibilities mentioned by Keohane and Victor).

[4] Atkison et. al. (2010) estimated for 2004 net imports of carbon of $290x.10^9$ ($260x.10^9$) for the EU (US) from China, the largest exporter of virtual carbon. Taxing virtual carbon at $50 per ton would imply effective tariffs on exports from developing of about 10% of the value of their exports.

[5] If transport-related emissions account for close to 15% of total CO_2 emissions, most is for internal rather than international transport. The preferred approach to curb transport-related emissions would be a sectoral agreement on transport as suggested by Barrett (2008,2011)). De Melo and Mathys (2011) review the evidence.

[6] This need of side-payments to participate is distinct from the equity issue on splitting the costs of abatement between rich and poor countries to take into account that, so far at least, the stock of GHGs accumulated since the 1980s when global warming became an issue comes from industrialized countries.

externality is an easier challenge to solve than the one posed by GHG-related externalities. In the case of international trade treaties, enforcement by a strategy of reciprocity is likely to be effective as the harmed country can choose the punishment to get maximum effect precisely because trade is bilateral. By contrast in the externality due to GHGs, there is very little reciprocity to be targeted to countries that violate the rules as the punishers harm themselves in the process. Moreover, punishment works only for non-compliance, not for non-participation. If only for getting traction on trade sanctions against non-compliance, a portfolio system of Climate Treaties would be preferable to a global approach dealing with all GHGs as sanctions could be better designed to remain targeted to the sector in the treaty.[7]

In his contribution, Whalley (2011) argues that trade can only contribute marginally in advancing the UNFCC process. He notes, however, that the linkage between trade and climate policies is growing and that this expands the bargaining set to reach an agreement. He cites the example of China, still heavily dependent on export growth. China may be willing to undertake mitigation policies in return for security of access to OECD markets (now the bargaining is separate being carried out under the UNFCC for mitigation policies and under the WTO for market access).

2. A Time-path for the Price of Carbon

Establishing a credible time-path for carbon is tricky, yet necessary to tackle the climate change challenge. Even if targets were to start from business as usual (BAU) levels and to become increasingly stringent while being sufficiently flexible, one is still faced with the possibility of dynamic inconsistency as current political leaders cannot credibly bind future political leaders. A credible time-path for carbon will also be a prerequisite for the R&D necessary to develop green technologies. While the R&D may yield private benefits if the international trading system provides sufficiently strong IPRs, the development of green technologies is likely to diffuse widely so incentives to free ride will be important.

Because of the uncertainties about the benefits and costs of abatement over time, agreements will have to be renegotiated in the future giving rise to strategic behavior that will reduce the efficiency of the agreements. Countries are likely to invest less than optimally in R&D to improve their future bargaining power. To mitigate this tendency to under-invest in R&D, investment in R&D could then be subsidized directly. However, subsidies would have to be applied at the international level since each national government does not perceive its own chosen investment level as being too low. Subsidies, however, would raise the problem of verification. If the international trading system functions smoothly, this verification problem could be alleviated as countries receiving subsidies would export their abatement technology

[7] Many have argued that KP1 failed because of a lack of enforcement. Barrrett (2008, 2011) argues that trade sanctions would only work for sectoral agreements where reciprocity leads to credibility to the sanctions.

to other countries which would be easier to verify. As put by Harstad (2008), countries would all benefit by collectively removing tariffs and adding subsidies on solar panels while at the same time enforcing property rights for these technologies. Finally, as we are shifting away from a 'top-down' approach with binding targets towards a looser form of agreement where the goal becomes price-harmonization among major emitting nations, the time-path of the price of carbon is likely to move to center-stage.

3. Market-based Mechanisms

Joint Implementation (JI) and the Clean Development Mechanism (CDM), but also the EU Emission Trading Scheme (ETS) were used under KP1. These market-based instruments have been criticized but will subsist under a yet to be determined form under the new architecture when KP1 expires in 2012. [8] The issue now is how to improve on the current possibilities for linkage of what will be a diverse set of national policies (Olmstead and Stavins (2010), Metcalf and Weisbach (2010)).[9] Equally, if not more importantly, these carbon-credit-trading systems (CCTS) provide a way to transfer funds from industrialized to developing countries.

Despite much criticism, these instruments probably helped reaching the mitigation targets while providing some direct compensation to developing countries, even though it is unlikely that costs were reduced by allowing trading (see the evidence on other CATs in Hahn and Stavins (2010). Some form of a CCTS to dissociate where emission reductions take place from who pays will have to be adopted under the assumption that progress from the much-preferred alternative of a carbon tax will not be adopted. This is because will be difficult to find a politically acceptable way for rich countries to transfer funds for mitigation and adaptation to poor countries (viewed as compensation by recipients for past emissions rather than aid).

4. Border Adjustments and the International Trading System

The current international trade and finance framework is centered around the Bretton Woods institutions and the WTO. These institutions were not designed to take into account any possible physical linkages between countries. Trade specialists

[8] The Tirole report (2009) is doubtful of the efficiency of the CDM (high transaction costs, difficulty in measuring 'additionality' and perverse incentives in beneficiary countries) preferring the JI as a means to achieve a single price of carbon. A cap and trade (CAT)system such as the EU ETS has the great advantage of dissociating the implementation from a control system (by the market) from the decision about the level of the cap if the "independence property" of the level of the cap holds (which includes 'non-cost minimizing behavior typical of governments who will be implementing the CAT--- see Hahn and Stavins (2010)). The problem is that the conditions for the allocation to be the efficient one are often not met, particularly when the implementation is by governments that are not cost-minimizers, ending in allowances traded at a low price as was the case in the ETS. Hahn and Stavins (2010) review the performance of several cap-and-trade systems concluding that some, like the CAP on SO2 emissions in the US, were relatively efficient.

[9] As put by Jacoby (2007, p.274) "… An ultimate comprehensive architecture, if ever reached, will be some integration of the favela approaches developed in this period. In short, domestic actions will not follow international agreement but the other way around." The Tirole (2009) report to the Conseil d'Analyse Economique insists on the importance of moving towards a unique carbon price over the long term while recognizing the difficulties for States to do so.

are alarmed that climate negotiators seek to impose limits on trade entirely outside the WTO process in order to control the flow of carbon and price products with a high carbon content accordingly.[10] Climate change specialists on the other hand, fear that international trade will undercut policies to reduce GHGs. Both are appealing to the WTO for rescue.

It is instructive to ponder on the lack of progress in the negotiations on the Committee on Trade and the Environment on the Doha which has been dubbed the Round for the "Developing Countries and for the protection of the environment".[11] So far this attempt to fold environmental objectives into the Doha negotiations has proven to be elusive. Countries have yet to agree on the approach to be followed, and were the alternative of a list approach to be adopted, there is little agreement on which goods would qualify as environmental goods for reduction in trade barriers.[12] Among the glaring difficulties is the inappropriateness of the HS product classification system used for trade negotiations that, among others, does not allow for the distinctions according to the environmental production processes used in the production processes of imports.

As pointed out in the contributions to this meeting, pressures for border tax adjustments to deal with the leakage/competitiveness effect of differential carbon prices as countries mitigate have and will continue to figure prominently in the legislative proposals in OECD countries. It is difficult to imagine that pressures for border tax adjustments will disappear if the negotiations move away from the top-down global binding global agreement to small-group agreements because emission intensities vary greatly across countries. Trade policy should then discriminate more by country than by product with higher barriers against countries which are the source of high emissions. Thus country discrimination should quantitatively dominate product discrimination which is in sharp conflict with non-discrimination in the WTO. As pointed out by Horn and Mavroidis (2011) in their contribution,

[10] Generally, two types of trade measures could be imposed on imports to complement mitigation policies. Restrictions could be with respect to "locally emitted" greenhouse gases or with respect to "foreign emitted" gases. In the first category, emissions take place when the imported goods are "consumed". Emission standards on cars would for instance fall in this group and are acceptable under WTO law. If, however trade restrictions address greenhouse gases of imports that are emitted in the trading partner country (embodied emissions in imported products during their production in the foreign country), compliance with WTO law is more controversial (see Horn and Mavroidis (2010) and de Melo and Mathys (2011)). Using the case of steel, Moore (2010) shows that none among the border measures meet the criteria of acceptance (enough support from firms, WTO compatibility, administrative tractability, moderate informational needs).

[11] The 2001 Doha Ministerial Declaration requests WTO members to negotiate on the reduction, or, as appropriate, elimination of tariff and non-tariff barriers (NTBs) on environmental goods and services (EGS)

[12] Three approaches have been debated: (i) a *list approach* at the HS-6 level for which trade barriers would be reduced ; (ii) a *define-by-doing approach* by which national authorities would select projects that would temporarily benefit from enhanced market access; (iii) the more traditional *request-offer approach* whereby bilaterally negotiated reductions are extended to others on an MFN basis. There is very little overlap in the lists of goods submitted for negotiation.

under the current rules, there is likely to be much leeway to impose border tax adjustments.

If the perception that the scientific evidence becomes alarming (e.g. the disappearance of the Artic glaciers in the next few years), it is possible that the two regimes would be integrated perhaps into a new Comprehensive Regime what Antholis (2009) has called a General Agreement to Reduce Emissions (GARE) or a World Environmental Organization (WEO) (Stern (2009), Whalley and Walsh (2009)), not to mention a third institution to deal with water, as suggested by Messerlin (2011). Ultimately such a merger would require a great deal of complex negotiations on international investment, border tax adjustments and embedded carbon. In the meantime, it is likely that the current complex of regimes will continue to subsist because the patterns of interests will not converge enough for a single institution to develop with no rivals as was the case with the GATT where the private benefits from the regime were large and easily extended via the norms of MFN and reciprocity.

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