CLIMATE CHANGE AND TRADE:

TAXING CARBON AT THE BORDER?

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EXECUTIVE SUMMARY AND KEY MESSAGES

The EU has been a pioneer in global efforts to combat climate change through its decision to use a cap-and-trade system, with the aim of contributing to reducing emissions by 20% by 2020. This target could reach as high as 30% depending on other countries' commitments. The EU emissions trading system (EU ETS) in its current form is already imposing costs on industry in the EU and these costs can be expected to increase under the post-2012 regime that the EU has in principle already decided upon. The US is widely expected to introduce a cap-and-trade system as well, but most emerging economies have no intention to follow any time soon.

The UN Framework Convention on Climate Change (UNFCCC) states that developed and developing countries have "common but differentiated responsibilities and respective capabilities". There is a consensus that developed countries must reduce their emissions first – reflecting both the principles of historical responsibilities and capabilities – while at the same time developing countries need to put into place measures to curb their emissions, yet falling short of introducing economy-wide, legally binding commitments, such as an emissions cap. Developing countries are wary that an economy-wide cap would undermine economic growth, for example, by restricting the use of coal, which in many cases is domestically available. The recent offer from the Chinese government to reduce the emissions intensity of its economy by 40%,[1] but rejecting any

[1] The official communiqué says that the government has "decided that by 2020 China's carbon dioxide emissions per unit of GDP will be dropped by between 40-45% compared with 2005".

overall ceiling, suggests the limits of what is acceptable to major developing countries.

A global cap-and-trade system encompassing all major emitters is thus at this stage not possible. Large differences in the price of carbon, both explicitly and implicitly, are thus likely to persist.

From a purely economic perspective, a straightforward way to move towards a global, 'level' pricing of carbon would be for the EU to impose an import tax on the content of CO_2 of all goods imported into the EU from countries that do not have their own cap-and-trade system or equivalent measures. The main argument for such a move is that such a 'carbon' import tax would establish a 'shadow' carbon price even in the rest of the world.

This study analyses the economic consequences of such a tax and whether it would be compatible with WTO rules. The major findings are:

1. A CO_2 border tax or import tariff would increase global welfare.
2. Such a carbon import tariff can be made to be WTO-compatible.
3. There are no insurmountable practical obstacles to introducing such a tariff.
4. The equity concerns of the UNFCCC could be taken into account by rebating the proceeds of the tariff to those countries manifestly unable to shoulder the burden themselves.

These four points are linked and require some background, which is presented below.

1) Justification for a carbon import tariff

This is the fundamental point in many respects. Simple modelling shows that a carbon import tariff is a useful complement to a domestic ceiling on emissions, as provided for in the EU ETS. The intuition behind this general result is clear: an import tariff improves global welfare because it transfers, at least partially, via trade flows, carbon pricing even to those parts of the world where governments have so far refrained from imposing domestic measures of any magnitude. In other words it creates a mechanism that enforces the pass-through of carbon costs across the globe, therefore making domestic consumers pay the full cost of carbon. A key effect of such a tariff is that it would *always* lower global emissions. This is a very general result, which does not depend on what specific model one has in mind since a carbon import tariff would reduce EU imports of energy-

intensive goods, thus reducing emissions abroad. Since the ETS provides a ceiling on emissions in Europe, it follows immediately that a carbon import tariff will lead to a fall in global emissions.

By contrast, a 'stand alone' ETS risks being *ineffectual* because the ETS will lead to higher production of energy-intensive goods and thus higher emissions in countries without a carbon price (resulting in so-called 'carbon leakage'). The available evidence on the importance of carbon leakage is sketchy. Studies focusing on the limited number of energy-intensive industries have generally found a low potential for carbon leakage, but this is generally due to the importance of sectors whose output is not traded intensively, such as electricity and cement. However, the potential for carbon leakage increases considerably if one takes into account the fact that all products from the sectors covered by the ETS are important inputs throughout the economy (i.e. counting the embedded carbon). Studies taking these indirect channels for carbon leakage into account arrive at much higher estimates. The EU has classified almost 80% of the sub-sectors affected by the ETS as being at "significant risk of carbon leakage" as defined in the ETS Directive.

The potential for carbon leakage is a key unresolved empirical issue because, as shown below, it is possible that a 'stand alone' ETS is not only ineffectual, but actually leads to higher global emissions if production abroad is more carbon-intensive than in the EU.

Another way to transfer the price signal on carbon to the rest of the world would be via the generalised use of the so-called 'Clean Development Mechanism' (CDM) under which credits valid under the domestic 'cap-and-trade' system can be earned from projects in developing countries which reduce emissions below baselines. However, as developed below, the CDM, while useful in many instances, cannot on its own establish a global shadow price for carbon given the lack of scale and problems with host-country control.

2) WTO-compatibility

The preceding result is a key condition to make border measures compatible with WTO rules. In general the WTO rules are very restrictive on any border measure, but Article XX (g) provides for a general exemption for measures "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production". In the specific case of a border tax on the CO_2

content, the EU can argue that this benefits the atmosphere and that the EU already has domestic restrictions on domestic production. This double requirement cannot of course be invoked by other countries that do not have a domestic carbon price and hence there should be no danger of a generalised trade war.

Other conditions for WTO-compatibility are:

- The tariff rate on any product should not be higher than its carbon content times the difference between the carbon price in the EU and abroad. Products from the US would thus not be taxed if the US introduces, as expected, its own cap-and-trade system with a similar target – leading to a similar carbon price – to that adopted in Europe.
- The carbon tax should be revenue-neutral: revenues collected from the carbon tax should be used to create a fund to finance the transition of energy-intensive industries and to invest in new technologies for climate change not only in the EU but globally and distributed according to the UNFCCC criteria of 'responsibility' and 'capability'.

3) Practical implementation

Imposing an import tariff on the CO_2 content of imports is widely considered unrealistic because it would be difficult in practice to measure the CO_2, or carbon footprint of all products. However, the exercise of calculating a product's carbon footprint is becoming more and more common, and an objective norm is already developing in the form of ISO 14067, which can serve as the 'external' benchmark required by WTO rules.

Pressure from the market where consumers want to be informed about the carbon footprint of the products they buy has already led to initiatives by major multinational retailers to provide this information. Since a large part of consumption goods are imported from major emerging markets, this implies that producers in China, for example, will in many cases have to publish the carbon footprint of their products in order to get them on the shelves in supermarkets in the EU. As this trend will continue, the practical problems of implementing a carbon-based border measure should diminish over time and should not be considered an insurmountable obstacle.

4) Differentiated responsibilities and comparability of efforts remain important issues

The UNFCCC lays down the principle of "common but differentiated responsibilities and respective capabilities". This means that developed countries ('Annex 1' under the Kyoto Protocol) have more responsibility than developing countries ('Non-Annex 1' under the Kyoto Protocol) and should take the lead in climate action. That much is generally agreed. However, with China overtaking both the US and the EU as a source of CO_2 emissions and with developing countries projected to be responsible for some three-quarters of primary energy demand growth by 2030, global climate change targets can only be met if developing countries start implementing strong climate policies now.

So far developing countries have been willing only to consider bottom-up approaches based on domestic policies and measures reflecting their own national circumstances and priorities. As long as these countries are not willing to discuss common indicators for comparability of efforts with developed countries, or among themselves, it is doubtful that the bottom-up approach will lead to meeting global climate change targets. A second-best tool could be found in a shadow carbon price set through border measures.

However, the equity concerns implicit in the 'differentiated responsibilities' should be addressed. The most straightforward way to do so would be to rebate the proceeds of the import tariff according to the UNFCCC criteria of "responsibility' and 'capability'. Both legal considerations under the WTO (World Trade Organisation) and the equity concerns expressed by the UNFCCC would thus point in the same direction. The equity argument is simply that for the poorest countries a domestic cap-and-trade system (or carbon tax) would have unacceptably negative consequences for growth. In this case the proceeds collected by the EU at the border could be spent in these countries on further mitigation efforts. These rebates should be additional to any funding to be agreed anyway in the global negotiations.

More in general, the UNFCCC also raises the issue of the comparability of efforts. This has a number of dimensions. It is widely estimated that developed countries will need to spend about 1% of their GDP on energy savings and other mitigation efforts. What level of effort as a share of GDP should be considered 'equivalent' for a developing country? Moreover, how can one compare a cap-and-trade system to a commitment

to invest huge sums in renewable energy? Should one compare the expenditure or the impact in terms of emissions avoided?

These four key issues, inter alia, are discussed in much more detail in this report. It is organised along the following lines:

- Chapter 1 provides a general introduction to the overall issue.
- Chapter 2 provides an overview of EU strategy for climate policy beyond 2012.
- Chapter 3 contains a detailed discussion of the impact of border measures on global welfare on the basis of a general theoretical model.
- Chapter 4 then discusses, on the basis of the results of chapter 2, under what conditions a border tax on the CO_2 content of imports would be compatible with WTO norms.
- Chapter 5 attempts to find out the extent to which commitments already taken or about to be adopted elsewhere might be comparable to what is planned for the EU.
- Chapter 6 describes the weaknesses of the enforcement mechanism of the Kyoto Protocol.
- Chapter 7 concludes with some general considerations.

The Annex contains a series of country studies summarising the actions taken by the major world economies to address climate change.