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CAN BORDER CARBON TAXES FIT INTO THE GLOBAL TRADE REGIME?

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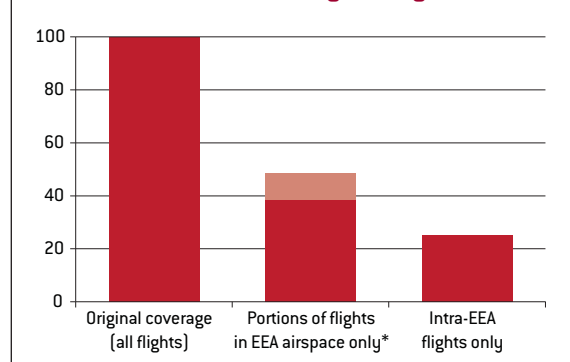
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THE ISSUE One complement to domestic climate policies could be the regulation of carbon dioxide emissions arising during the production of imported products. Such 'border carbon adjustments' (BCAs) are said to have several benefits, but are also severely criticised. This Policy Brief highlights some weaknesses in the standard argumentation for BCAs. But there is an alternative argument for border carbon measures, based on the fact that countries expose each other to climate externalities. The reformulated argument is economically more convincing, and provides a more convincing justification for the extraterritorial feature of border carbon measures. However, there are also several important factors mitigating against the implementation of such measures, including the risk that these measures will be used for protectionism.

POLICY CHALLENGE

If BCAs are to gain international acceptance, they must be motivated by clear, economically-sound arguments, but the reasons normally put forward do not seem to persuade critics. For instance, the European Union still needs to convince the world about the appropriateness of the extraterritorial features of the extension of its emissions trading system to aviation. To gain international acceptance, an understanding is needed of the use and design of border carbon measures, perhaps under the auspices of the World Trade Organisation. It might also be preferable to renegotiate tariffs in the WTO for the most polluting goods, rather than to allow countries to impose unilateral border measures.

Aviation in the ETS: diminishing coverage of emissions



Source: Bruegel based on European Commission. Columns show % of emissions of flights through European Economic Area airports (all flights option as in Directive 2008/101/EC = 100%).

* Depending on geographical limit.



SEVERAL COUNTRIES AND REGIONS have implemented unilateral climate regulations, or are considering the introduction of such schemes. A highly contentious issue is whether these climate policies should apply also to imported products, that is, whether measures to regulate emissions from domestic production should – or even can legally – be complemented with ‘border carbon adjustments’ (BCAs). This question arises regardless of whether the climate measure comes in the form of carbon taxation, a requirement to purchase emissions allowances, or direct regulation of production processes. The European Union took a step in the direction of introducing a BCA through Directive 2008/101/EC, which extended the EU emissions trading system (ETS) to aviation. The directive was similar to a BCA in that it required airlines, when taking off from or landing at an EU airport, to deliver ETS allowances based on the emissions during the *whole* flight, and hence also for emissions in non-EU airspace. And there have been suggestions that BCAs could be introduced not just in aviation. For instance, Commissioner Algirdas Šemeta said in 2011 that the Commission “*will... continue... to examine the potential inclusion of imports in the EU ETS*”¹. BCAs have also been discussed in Australia and in the United States, where the possibility of introducing BCAs is generally viewed as a political *sine qua non* condition for the imposition of carbon caps on domestic production.

Several arguments in favour of BCAs have been advanced. Yet

proposals for BCAs have often met with fierce resistance. Particularly contentious is their extraterritorial feature, which, it is claimed, violates fundamental principles for the international allocation of jurisdiction. The sensitivity of the issue is vividly illustrated by the international outcry over the extension of the ETS to aviation. The 2008 directive was strongly criticised by many countries. Several, including China, India and the US, even took measures that could prevent their airline operators from complying with the directive. As a consequence of the fierce international opposition, the EU has delayed its implementation, and has also recently made its design less extra-territorial (see the figure on the front page). Proposals for BCAs have also raised serious concerns in the trade policy community, which is alarmed by the idea of letting countries unilaterally decide on the design and implementation of what would inevitably amount to complex regimes of trade barriers².

In our view, a convincing argument for a BCA would need to fulfill at least three requirements. First, it should be grounded in basic economic principles and show how the BCA may be beneficial from an *international* perspective. Factoring the interests of both the importing and exporting countries into the analysis is natural in light of the international tensions that BCAs are likely to create – if BCAs do not create global gains, they will not win international acceptance.

‘The sensitivity of BCAs is vividly illustrated by the outcry over the extension of the ETS to international aviation.’

It is also natural to take an international perspective since much of the rhetoric in favour of BCAs is based on the notion that they improve global welfare.

The second requirement for a convincing argument is that it should explain how the BCA would be compatible with fundamental principles of international allocation of jurisdiction. This is far from a foregone conclusion in light of the fact that the purpose of BCAs is often to regulate activities that occur in foreign countries, and additionally are often undertaken by foreign nationals. BCAs therefore seem antithetical to two basic jurisdictional rules: the *territoriality* principle, according to which a country has the right to regulate activities that are undertaken in its territory; and the *nationality* principle, which ensures the country’s jurisdiction over its nationals. These principles are immensely important for the working of the global economy, since without such

rules, countries would in principle be free to regulate any transaction anywhere in the world (enforcement is a different matter). The claim that BCAs violate basic jurisdictional rules is therefore a serious matter not only from a legal perspective, but also from an economic point of view.

The first legal challenge against a BCA-like measure occurred when the 2008 EU directive on aviation was challenged before the European Union Court of Justice (ECJ) by three US airlines, and a US air-

1. SPEECH/11/5, 10 January 2011 (http://europa.eu/rapid/press-release_SPEECH-11-5_en.htm).

2. A *Financial Times* editorial with the headline ‘One easy way to start a trade war’ states that, “*if the threat of [BCAs] emanating from parts of Europe and the US are implemented, the world could enter into the biggest trade war since the Great Depression*” [10 December 2009, p10.]



line association. The ECJ dismissed the complaint entirely. The essence of the ECJ finding concerning territoriality is the notion that since the aeroplanes are in EU territory when they are at an EU airport, the EU has unlimited jurisdiction. This argument is not persuasive from an economic perspective, at least, since it sidesteps entirely the fact that the purpose of the regulation is to affect activities not only in the EU, but also in non-EU territory³. Indeed, were it not for the latter, the directive would have much smaller impact on emissions. Hence, from an economic perspective, the BCA-like feature of the directive needs a more convincing justification.

The third requirement for a plausible argument in favour of a BCA is that it should show how this import regulation can be implemented to achieve the suggested benefits, without risking degenerating into protectionist abuse.

In what follows, we discuss the arguments normally advanced to support BCAs. These arguments are problematic, or at least incomplete, from an economic point of view, and also do not seem to justify the extraterritorial feature of BCAs. We then present a simple reformulation of the standard arguments, based on the existence of international climate externalities, which explains why BCAs may as a matter of principle be desirable from an international efficiency point of view, and also be compatible with jurisdictional principles. We then highlight a number of serious caveats against the implementation of BCAs in practice, before drawing conclusions.

THE MAIN ARGUMENTS IN FAVOUR OF BCAS

BCAs are typically proposed as a complement to domestic carbon measures in order to achieve one of three aims⁴. The first is to *preserve the competitiveness* of domestic import-competing industries burdened by the costs of the domestic policy. A fundamental problem with the competitiveness notion from an international efficiency point of view is that one country's gain in competitiveness is another country's loss. A change in the pattern of competitiveness therefore does not create any gains *per se* from an international perspective, and when achieved through trade restrictions, is outright costly. Such a policy would smell of protectionism, and would be hard to reconcile with fundamental World Trade Organisation principles, to which the EU, the US, and most other countries adhere. Some additional motive would thus be required to make a concern with competitiveness legitimate from an international efficiency, as well as a legal, perspective⁵.

According to a second line of reasoning, BCAs could be used to *prevent 'carbon leakage'*, which is typically defined as the ratio between the increase in emissions abroad and the decrease in domestic emissions caused by the introduction of the domestic climate policy. Such leakage would counteract the reduction in global carbon emissions generated by the domestic measures, and may in principle even cause emissions to become higher than in the case of no domestic climate policy. The leakage argument

hence effectively suggests employing BCAs to prevent *foreign* producers and consumers from reacting to the change in world prices caused by the importing country's domestic climate policy.

The leakage argument is not fully satisfactory since it does not explain why the benefit of a BCA in terms of a better climate will plausibly dominate the costs of the measure. Also, the argument seems to conflict sharply with basic jurisdictional principles, since the purpose is to regulate foreign consumers and producers. The prevention of leakage is nevertheless an often cited concern, and it affects the design of, eg EU rules on state aid, and the allocation of free carbon allowances in the ETS.

According to the third argument, BCAs could be used to *leverage other countries* into accepting an international climate agreement or introducing their own unilateral climate policies. This 'leverage argument' is incomplete in the same sense as the leakage argument, as long as no further argument is provided as to *why* it is desirable from an international efficiency point of view to coerce other governments to adopt policies they would not otherwise adopt. We also need an explanation of why such coercion would not flout jurisdictional principles⁶.

To reinforce these points, note that almost *every* domestic policy reduces the competitiveness of some domestic industry, and is often also associated with some form of policy leakage. For instance, when a country levies a general payroll tax to collect tax

3. For a critical discussion of the economic reasonableness of the ECJ decision, see Horn, Henrik (2013) 'The ECJ Judgment on the Extensions of the ETS to Aviation: An Economist's Discontent,' Entwined Report (www.entwined.se).

4. A good source for references to both the policy debate and the academic literature is *Tackling Leakage in a World of Unequal Carbon Prices*, Climate Strategies, 2009, edited by Susanne Dröge. As an indication of the magnitude of the literature, of the approximately 150 references therein, most address BCAs. There are very few academic studies of the leverage argument, but two recent exceptions are Böhringer, Christoph, Jared C. Carbone and Thomas F. Rutherford (2011) 'The Strategic Value of Embodied Carbon Tariffs', unpublished manuscript, and Helm, Dieter, Cameron Hepburn and Giovanni Ruta (2012) 'Trade, Climate Change, and the Political Game Theory of Border Carbon Adjustments', *Oxford Review of Economic Policy* 28, 2: 368-394.

5. One such argument holds that it is desirable to preserve the competitiveness of the



domestic industry to prevent a distortion in the international production pattern: if the importing country only taxes domestic products, production would shift towards imported products. Note that the alleged benefit of a BCA here is concerned with the commercial effects of BCAs, and not climate effects. This argument has a certain appeal from an economic point of view, although the argument only focuses on one relevant aspect. For a discussion of allocational effects, see Keen, Michael and Christos Kotsogiannis (2012) 'Coordinating Climate and Trade Policies: Pareto Efficiency and the Role of Border Tax Adjustments', IMF Working Paper 12/289.

6. As an example of the leverage motive, recital 17 of Directive 2008/101/EC hints at modifying the EU aviation measure for countries that adopt regulations that are as ambitious as those of the EU.

7. An overview of the literature on the role of international climate agreements for combatting international environmental externalities is provided in Scott Barrett (2005) 'The Theory of International

revenue, the increased production costs will reduce the competitiveness of some import-competing industries. Furthermore, the resulting loss of market share for these industries will reduce the domestic tax base, ie there is a 'leakage'. But this would not create any presumption that it would enhance international economic efficiency if the importing country were to impose trade barriers to affect the behaviour of firms and consumers in exporting countries, or if other countries were to be coerced to introduce policies to prevent these reactions. Nor would it be compatible with the WTO Agreement to unilaterally impose trade barriers to prevent such 'leakage'. For an argument in favour of BCAs to be convincing, we thus need a justification of why domestic climate policy differs from other domestic policies.

The implicit argument: BCAs help the 'common good'

Behind the three conventional arguments there seems to be the idea that BCAs benefit the 'common good' since they foster the adoption of climate policies, even if only unilaterally. For instance, it is often argued that BCAs are justified to preserve the competitiveness of domestic industry, since the industry should not have to bear the costs of a domestic climate policy that is introduced for the common good. Or, that BCAs are justified to reduce leakage or to coerce other governments to sign on to a climate agreement since this will reduce emissions to everyone's benefit.

We are not persuaded by such arguments. Clearly, it cannot be

argued that anything that reduces the climate problem is justified, since the logical solution would then be to completely shut down all human activities. Even if the goal is to reduce the climate problem to everyone's benefit, there is still a question about the choice of means to achieve this. For a satisfactory argument in favour of BCAs, it must be shown that its benefits outweigh the costs from an international perspective.

Also, there are strong reasons to be skeptical when countries claim to act altruistically. This is particularly obvious with regard to trade policies, where beggar-thy-neighbour protectionist policies are endemic, and where there are numerous examples of countries using seemingly innocuous regulatory regimes for protectionist purposes. Indeed, the *raison d'être* of the WTO is exactly that countries are *not* altruistic when acting unilaterally. In fact, countries often explicitly state that their climate policies are partly motivated by commercial interests, for instance to get a head start in future green growth industries. Rather than altruism, such arguments suggest the pursuit of national interests. This could have important ramifications for whether a BCA might be viewed as compatible with jurisdictional principles and with WTO law.

IS THERE A BETTER FORMULATION OF THE (POTENTIAL) CASE FOR BCAS?

As we have argued, the standard motives for imposing BCAs do not explain why BCAs are desirable from an international efficiency point of view, or why they are

compatible with jurisdictional principles. We believe, however, that a simple reformulation of the case for border carbon measures can be made in a way that is both economically sound and that justifies why such measures might be compatible with accepted jurisdictional norms, including (perhaps) WTO law.

The basic economic dimension of the climate problem is of course that when countries combat emissions, they face the full costs of their own abatement efforts, but only receive a small fraction of the benefits that these emissions reductions create, since the benefits are spread across the globe. As a result, countries acting unilaterally will typically choose too-lax climate policies from an international point of view. They therefore expose each other to more climate damage than would be efficient from an international point of view; that is, there are *international climate externalities*⁷. Consequently, without an international climate agreement that would induce countries to prevent the externalities, unilateral import restrictions *might* be justified from an international efficiency perspective as a second-best policy to combat the externalities that stem from the production of exported goods; we will return to the important caveat 'might' below. Of course, such import restrictions will also stimulate production in domestic import-competing industries – there will be a form of 'reverse carbon leakage'. But provided it can be shown that the net effect is to reduce emissions – and this will be more likely the more ambitious the domestic climate policy –



there can be an argument for imposing trade barriers as a defense against foreign emissions. Straightforward as this argument is from an economic point of view, it is not how BCAs normally are argued in the policy debate, as we saw above.

This reformulation of the BCA question is not just a matter of semantics. One reason is that the externality argument points to a fundamental economic reason why BCAs may enhance international efficiency. It thus has a more *straightforward basis in conventional economic principles* than arguments concerning, eg competitiveness. Another reason is that the argument *does not rely on unpersuasive claims concerning altruism*.

The externality argument also suggests a reason why the extraterritoriality of border carbon measures may be compatible with standard jurisdictional principles. Indeed, according to the ‘effects doctrine’ countries have jurisdiction over transactions that they are *affected* by⁸. This jurisdictional principle is relied upon, for example, by the EU and the US in their extraterritorial applications of competition policy/anti-trust. For instance, a price cartel that is formed in a foreign territory would typically still be illegal in both the EU and the US, and their competition authorities would seek to block mergers taking place in other countries if there are sufficiently strong adverse effects for their respective markets. It appears straightforward to apply the effects doctrine in the case of international climate externali-

ties, since there are clear transboundary adverse effects of emissions.

Another reason why the focus on externalities is not merely a semantic issue is that it suggests a rather different role for border carbon measures than in the conventional arguments. In order for a border restriction to improve economic efficiency, the policy does not need to be an ‘adjustment’, that is, it does not have to compensate for the lack (or inadequacy) of a foreign climate policy relative to the domestic policy. Indeed, even if the exporting country pursued the same climate policy as the importing country, or if the importing country pursued no policy, there could still be an externality argument for a trade restriction, as long as the exporting country policies do not fully mitigate climate externalities. Hence, from an externality point of view, the legitimacy of border carbon measures does not hinge on the policy being an ‘adjustment’ that makes the treatment of imported products symmetric to the treatment of domestically produced products. The domestic climate policy will still be important from an efficiency point of view, however, since the more ambitious this policy is, the more likely is it that there will only be small ‘reverse carbon leakage’ from the increase in domestic production that the border measure induces. An ambitious domestic climate policy may also be important for the sake of WTO legality and political acceptability of BCAs.

Yet another reason why the international externalities motivation

is not just a semantic reformulation of the traditional arguments is that it seems to allow for a much broader scope for using border carbon measures: even the countries with the most ambitious climate policies are likely to expose the rest of the world to climate externalities. Consequently, almost any country would be a potential target for border carbon measures.

Finally, without purporting to undertake a legal analysis, it seems clear that it would be incompatible with WTO law to impose a duty on imported products solely to preserve the competitiveness of a domestic industry that is being burdened with the cost of some domestic policy. Nor could a duty be imposed simply in order to prevent foreign consumers and producers from adjusting to the changes in international prices that stem from the imposition of some domestic policy in the importing country, or in order to induce exporting countries to change their domestic policies to the benefit of the importing country. Central to the possibility that WTO judges will accept border carbon measures is instead that they serve to reduce *international climate externalities*.

CAVEATS

As already argued, basic economic principles suggest a potential justification for why border carbon measures may be desirable from an economic efficiency viewpoint. But the argument rests on a number of strong implicit assumptions that may not be fulfilled in practice:

Environmental Agreements’, in Mäler, Karl-Göran and Jeffrey R. Vincent (eds) *Handbook of Environmental Economics*, Vol. 3, Elsevier.

8. The effects doctrine is sometimes seen as a special case of the territoriality principle.



Climate externalities may already be internalised through the WTO Agreement

A basic objection against the externalities argument is that it is oblivious to the fact that there is already an international agreement on trade barriers — the WTO. There is a rather strong presumption, also based on economic principles, that when an agreement is negotiated, the parties do not leave anything obvious ‘on the table’. This suggests that the parties have not left unexploited any global welfare gains that could be had from unilateral tariff increases. Oddly, the economic literature on BCAs almost uniformly ignores the existence of trade agreements such as the WTO.

There are, however, several plausible reasons why the tariffs that have been agreed and bound in the WTO do not fully reflect climate externalities. An important reason is obviously that the climate problem was not appreciated in policy circles in the late 1980s and early 1990s when current tariff schedules were negotiated. The current tariff levels are therefore unlikely to reflect climate effects. Also, trade negotiations are unlikely to take full account of environmental aspects due to the compartmentalisation of most government bureaucracies into different policy areas. Furthermore, the goods classification system that is used for negotiating and binding tariffs does not distinguish between products according to the emissions that are released in their production, and moreover tariff negotiations typically use

broadly applicable formulas for tariff cuts, thus making it hard to target goods with large emissions.

It thus seems plausible that current tariff levels do not appropriately reflect climate effects. But it does not follow that it would be desirable to increase the tariff on any imported carbon-intensive good, since each tariff increase would lead to ‘reverse carbon leakage’, and it is an open question whether the net effect will be to reduce total emissions.

BCAs could turn into protectionism

There are strong reasons to believe that even if introduced with the best of intentions, border carbon measures will be misused for protectionist reasons, just like other trade-affecting policy instruments⁹. This seems a well-founded fear in particular in light of the close parallel in terms of regulatory aspects between border carbon measures and two provisions of the GATT/WTO that have turned into protectionist instruments.

The first provision is the antidumping regime, which allows governments to unilaterally impose duties on imported products when they are priced below ‘normal value’ by exporting firms. Although dumping may be ‘unfair’ and antidumping duties may be appropriate in some instances, most economists consider that actual antidumping regimes have degenerated into protectionist instruments. An important reason is that such regimes give countries significant discretion in evaluating whether

the conditions for the imposition of antidumping duties are fulfilled and in calculating the magnitude of such duties. The second provision is the rules-of-origin system that accompanies preferential tariff agreements, which is meant to prevent exporters from non-preferential origins taking advantage of trade concessions granted to exporters from preferential countries. These rules have become extremely complex, and are occasionally administratively so onerous to comply with that preference-eligible exporting firms deliberately choose to ship their products under less-advantageous, but administratively simpler, tariff regimes.

These two examples should sound an alarm regarding the potential misuse of border carbon measures. It is highly likely that BCA regimes will be at least as complicated as antidumping and rules-of-origin regimes and therefore that they might be designed or implemented in protectionist fashion as is often the case of dumping and rules-of-origin systems¹⁰. Box 1 on the next page provides a glimpse into the potential complexity of BCAs by pointing to some of the aspects that would need to be addressed¹¹. The highly incomplete list in Box 1 already shows the significant freedom that importing countries would have in designing and implementing BCAs.

A small caveat, though: even if BCAs were applied in protectionist fashion in the relatively few emissions-intensive industries that are normally mentioned as targets for BCAs (petrochemicals,

9. One of the few studies of the risk for protectionist use of BCAs is Holmes, Peter, Jim Rollo and Tom Reilly (2009) *Border Carbon Adjustments: The Protectionist Risk*, CARIS, University of Sussex.

10. Also, if these schemes do not keep track of emissions during the whole production chain, there will be strong incentives for exporting firms to avoid the border carbon measure by letting the polluting part of the production process be undertaken by independent firms. Border carbon measures will thus require something akin to rules-of-origin regimes. Alternatively, if importing countries instead keeping track of actual emissions in the production chain use more-or-less arbitrary benchmarks for the carbon content of imported products, as is sometimes suggested, these benchmarks may be manipulated for protectionist purposes.

11. The list is partly inspired by the ambitious work by Cosbey, Aaron (2012) ‘It Ain’t Easy: The Complexities of Creating a Regime for Border Carbon Adjust-



BOX 1: DESIGN CONSIDERATIONS FOR BCAs

- What is the exact purpose of the BCA? For instance, is it to affect consumers and producers in exporting countries, or climate policies?
- How should any revenue it raises be used, should it be retained by the importing country, or transferred to the exporting country?
- Which products should be included in the scheme?
- How far back into the production chain should emissions be calculated?
- Should actual emissions and/or benchmarks for emissions be used?
- If benchmarks, should they be based on emissions data from exporting country or importing country, from best or worst practice?
- How to treat emissions from transportation? If to be included, could carbon taxes on eg fuel inputs be deducted?
- How to adjust if the exporting country is much poorer, and if they are also heavy polluters?
- How to adjust when the importing country has more historic guilt for the climate problem?
- If exemptions are made on the basis of, eg exporting country income or lack of historical contribution to the problem, how to ensure that imported products have sufficient origin in the exporting country?
- How to adjust if an exporting country also has a cap-and-trade system, perhaps one that is less stringent?
- How to adjust if importing country has cap-and-trade system, and exporting country has some other form of regulation, carbon taxation say?
- How to adjust if exporting country has ambitious climate policy for its exports, but not for production for domestic consumption?
- How to adjust if exporting country pursues other climate-friendly policies, say carbon capture and sequestration?
- How to adjust if exporting country's emissions are allowed under an international climate agreement to which the importing country is, or is not, a party?
- What data should exporters submit?
- What kind of verification process will be required for emissions data?
- What procedures will exist for exporting firms to appeal assessed emissions?
- How to treat exporters that do not deliver information concerning direct or indirect emissions?
- How to ensure exporting firms have access to allowances at the same administrative costs as domestic firms?
- Can exporters eg purchase international carbon offsets, rather than allowances issued by the importing country?

glass, ceramics, aluminum, steel, pulp and paper, etc), this may cause limited distortions. Protectionism would of course increase prices and thus reduce aggregate consumption and production in these industries, but this could be

desirable as long as there are remaining externalities.

But protectionism might become considerably more costly if BCAs were introduced more broadly than in a few carbon-intensive

sectors. If protectionism creeps into the application of the BCAs in large swathes of import-competing industries, and thus in industries with only modest emissions, this could become seriously damaging. It is therefore very important that BCAs be designed to reduce this risk as much as possible. The 'adjustment' aspect of a BCA – the notion that the burden on imported products should not exceed that on domestic products – could be seen as a means to prevent protectionism, similar to how the WTO's national treatment provision is meant to work.

BCAs may be perceived as unfair

In our view, for a border carbon measure to be warranted, it does not suffice to show that it can be justified on economic efficiency and jurisdictional grounds, and that the caveats raised above are addressed. It is equally important that the measure be perceived as fair in terms of the international distribution of costs and benefits that it entails. This will in turn largely depend on the *reason* why targeted exporting countries maintain lower environmental standards than the importing country. For instance, is this because exporting countries are much poorer, because they have not contributed to the problem to the same extent as the importing country in the past, or because they are trying to free ride? The likelihood that border carbon measures will be considered unfair by target countries is enhanced by the fact that the countries that contemplate introducing border carbon measures were often the main culprits for



the historic build-up of greenhouse gases in the atmosphere, and are also typically richer than the likely targets of their contemplated border carbon measures.

CONCLUSION

To gain international acceptance, the rationale for border carbon measures must be spelled out clearly and persuasively. In our view, the policy debate has largely failed to do so with its focus on competitiveness, leakage and leverage. But an economically sound argument for border carbon measures can be advanced, which sees such measures as a second-best response to international climate externalities, in the absence of an international climate agreement. The focus on externalities also provides a motivation as to why BCAs respect established jurisdictional principles despite their extraterritorial features.

Nonetheless, a number of caveats need to be addressed before actual implementation of border carbon measures can be recommended. First, because existing tariffs have been set through extensive multilateral negotiations, there must be a presumption that tariffs are reasonably efficient from an international viewpoint, leaving little room for unilateral measures to improve on such outcomes. An efficiency-based argument for a border carbon measure must therefore explain why existing tar-

iffs are systematically and significantly inefficient. Second, one must also address the possibility that although introduced in principle for the purpose of environmental protection, border carbon measures risk becoming in fact protectionist instruments. Third, arguments in favour of implementing border carbon measures need to explain why and how they would be fair from an international perspective.

The case for border carbon measures thus sits between a rock and a hard place: the importance and urgency of the climate problem speaks in favour of swift action to limit emissions, but border carbon measures are likely to suffer from major drawbacks that could be extremely damaging to the world economy. Purely unilateral measures are also likely to draw such intense international opposition that many countries contemplating border carbon measures are likely to refrain from implementing them. The recent experience of the EU's attempt to extend its ETS to international aviation, illustrates the point.

As a partial resolution of this dilemma it would be desirable to achieve some form of multilateral agreement on how border carbon measures could be implemented, similarly (though hopefully more strictly) to how the WTO Agreement puts some discipline on the use of antidumping duties¹². In light of the fact that any such agreement would have to be WTO compatible,

the WTO could be an appropriate forum to cobble it together.

Another partial resolution would be to use the WTO to address the climate problem more directly. Climate efforts in the WTO have so far focused on reducing trade barriers for 'green' products. As a complement, one might also renegotiate tariffs for the most polluting products. As argued above, there are reasons to believe that these tariffs are too low when taking the climate impacts of these products into account. This approach would thus use an existing, and reasonably well-functioning, multilateral framework to address the multilateral climate problem. It would also avoid some of the problems with BCAs discussed above – jurisdictional issues, the possibility of protectionist abuse, etc. But it would of course not be the most efficient way to address the climate problem, since it could only affect international externalities from the production of traded products. A comprehensive global climate deal would be far better.

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12. A similar proposal was already made Steve Charnovitz, Gary Hufbauer and Jisun Kim (2009) *Global Warming and the World Trading System*, Peterson Institute for International Economics, Washington DC.

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