Levelling the Playing Field: Border Carbon Adjustments and Emissions Leakage

Callum Winstock

Callum Winstock is an MSc student in Energy and Environment at Lancaster University. He completed an undergraduate degree in Chemistry at Durham University. He works alongside his studies as an analyst at CaliforniaCarbon.info, a US climate finance analysis company specialising in North American carbon markets. He is excited to contribute to the new energy transition and will begin working in a graduate role at EDF Energy in September 2021.

Introduction

The 2015 Paris Agreement was a pivotal moment in the struggle against climate change. While previous climate agreements had failed to unify the nations of the world in effecting concerted emissions reductions policies, Paris marked a new era of optimism. An unprecedented 196 nations signed a legally binding treaty with the goal of preventing an average global temperature rise of more than 2°C.[1] Of particular significance was Article 6.2, which detailed the use of 'internationally transferred mitigation outcomes towards nationally determined contributions'.[2] In other words, this referred to the implementation of international market-based carbon pricing mechanisms to deliver emissions reductions.

The modus operandi behind carbon pricing is to account for the external cost to society of producing emissions (externalities) by internalising it into the price of conducting the polluting activity.[3] The price of goods in an economy experiencing a carbon pricing policy will therefore partially mirror the overall greenhouse gas emissions embedded within the goods.[4] There is a wealth of literature concerning different carbon pricing strategies, but carbon taxes and emissions trading schemes (ETSs) are by far the most prevalent.[5] In both of these market-based systems, a price is imposed for each tonne of carbon dioxide (CO_2) emitted by polluters, to incentivise emissions abatement at the lowest cost. More than 90 countries have declared an intention to develop carbon pricing policies, and the World Bank states that there are 64 existing pricing initiatives, covering 22.3% of global emissions.[6] However, the vast majority of emissions remain unpriced, which can result in a phenomenon known as carbon leakage.

Carbon (or emissions) leakage is the relocation of emissions from one jurisdiction enforcing a carbon price to another in which there is a lesser or no carbon price.[7] Emissions leakage can occur via two primary routes. a) A reduction in demand for fossil fuels in emissions-abating countries may provoke an increased demand for them in non-abating countries following a drop in fuel prices. b) Energy-intensive and trade-exposed (EITE) industries may relocate to non-abating jurisdictions because of competition from overseas industries that face lower or no carbon prices.[8] A border carbon

1 UNFCCC, *The Paris Agreement* (2021) <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> accessed 20 May 2021.

2 United Nations, *Paris Agreement* (2015) <https://unfccc.int/sites/default/files/english_paris_agreement.pdf> accessed 20 May 2021.

3 James K Boyce, 'Carbon Pricing: Effectiveness and Equity' (2018) 150 Ecological Economics 52.

4 Andrea Baranzini, Jeroen CJM van den Bergh, Stefano Carattini, Richard B. Howarth, Emilio Padilla, and Jordi Roca, 'Carbon pricing in climate policy: seven reasons, complementary instruments, and political economy considerations' (2017) 8(4) Wiley Interdisciplinary Reviews: Climate Change e462.

5 Joseph E Aldy and Robert Stavins, 'The Promise and Problems of Pricing Carbon: Theory and Experience' (2012) 21(2) The Journal of Environment & Development 26.

6 Kshama Harpankar, 'Internal carbon pricing: rationale, promise and limitations' (2019) 10(2) Carbon Management 219; World Bank, 'Carbon Pricing Dashboard | Up-to-date overview of carbon pricing initiatives' <https://carbonpricingdashboard.worldbank.org/map_data> accessed 19 April 2021.

7 Christoph Böhringer, Edward J Balistreri, and Thomas F Rutherford, 'The role of border carbon adjustment in unilateral climate policy: Overview of an Energy Modeling Forum study (EMF 29)' (2012) 34 Energy Economics S97.

8 Stefano F Verde, 'The Impact of the EU Emissions Trading System on Competitiveness and Carbon Leakage: The Econometric Evidence' (2020) 34(2) Journal of Economic Surveys 320; Böhringer, Balistreri, and Rutherford (n 7).

adjustment (BCA) can be implemented to combat the latter, and more indirectly, the former. A BCA taxes imports from non-abating countries, offers rebates for exports to these countries based on the emissions intensity of the products, or does both.[9] A BCA strives to level the international playing field by transferring the onus of emissions abatement to non-abating countries while establishing trade neutrality between taxed domestic and untaxed foreign goods.[10] While BCAs may be well-intentioned, the process of implementing them on the global stage is fraught with legal and political challenges which may inhibit their development, or even undo the international progress on climate that was achieved in Paris.

Border carbon adjustments

Besides BCAs, there are many other mechanisms with which to counter emissions leakage. These include output-based rebates (OBRs), free allocations of emissions credits, and specific industry exemptions from carbon pricing. Modelling by Christoph Böhringer, Jared C Carbone, and Thomas F Rutherford found that although all of these instruments go some way to reduce leakage, BCAs were the most effective.[11] In the 2012 Stanford Energy Modelling Forum, a consortium of a dozen models showed that BCAs could reduce leakage by 2–12%, with an average value of 8%, by levying a fee on the carbon content of imports.[12] These results indicate that, although effective, the fuel leakage channel and other economic drivers may be more influential in steering emissions leakage.[13]

The efficacy of BCAs, therefore, must be balanced against the complex and varied impacts that imposing them have. The key areas to be considered are competitiveness, international trade relations, and distributive impacts, although there are strong linkages between these areas.

Competitiveness

The driving force behind the implementation of a BCA is to ensure that domestic firms are not disadvantaged when competing against international organisations that are not subject to equivalent emissions regulations. As such, a BCA is considered by many to be a form of protectionism, of disputed legality.

The WTO General Agreement on Tariffs and Trade (GATT) Article I ('most favoured nation clause') concerning national treatment prohibits discrimination against 'like' products of different origins.[14] Article III concerns whether process and production methods (PPMs) affect the 'like-ness' of products created by processes of different carbon emissions intensity, and whether different product origins should be subject to this rule.[15] It has subsequently been argued that general discrimination based on PPMs would not be valid without a GATT exception, although this is contested.[16] GATT Article XX permits exceptions to Article I to protect human, animal, and plant life or to conserve finite natural resources.[17] The validity of this statement is likewise subject to heated debate, although many feel that this is a legitimate exception.

Furthermore, GATT Article II(a) permits members to impose a charge equivalent to an existing internal tax via an *indirect* tax.[18] Only indirect taxes are permitted to be adjusted on the border. It must therefore be established whether a BCA qualifies as direct or indirect, as direct taxes would be viewed as a subsidy and not an adjustment under the Agreement on Subsidies and Countervailing Measures (SCM).[19] The major distinction between the two is that indirect taxes are generally mirrored in the price of the product, while direct taxes are not.[20] The majority of scholars, then, do accept that a BCA qualifies as an indirect tax, and that it would therefore be allowed, in theory, under these regulations.[21]

Ultimately, these exceptions are not clear-cut, and the nuances surrounding them are debated at length. It is uncertain exactly what constitutes unfair treatment of international exporters, and whether putting a higher fee on more emissions-intensive imported goods than on cleaner domestic goods, contravenes these trade rules.[22] WTO case law suggests that setting assumed emissions intensity levels for specific countries would qualify as discrimination, but that setting levels for the carbon content of specific foreign products might be permissible.[23] Here, though, there is a difficulty in determining the embedded carbon content of foreign goods, as this information is not always readily accessible. This adds another layer of administrative complexity and cost to proceedings.[24]

It is also worth investigating whether climate policy adds a significant burden to domestic producers which could result in relocation to other jurisdictions. Currently almost half of carbon pricing initiatives hold a value of carbon of below $10 per tonne, which is often of lesser significance when compared with labour, transportation, and energy costs of business.[25] It is likely that these

9 Justin Caron, 'Estimating carbon leakage and the efficiency of border adjustments in general equilibrium — Does sectoral aggregation matter?' (2012) 34 Energy Economics S111.

10 Ludivine Tamiotti, 'The legal interface between carbon border measures and trade rules' (2011) 11(5) Climate Policy 1202.

11 Christoph Böhringer, Jared C Carbone, and Thomas F Rutherford, 'Unilateral climate policy design: Efficiency and equity implications of alternative instruments to reduce carbon leakage' (2012) 34 Energy Economics S208.

12 Böhringer, Balistreri, and Rutherford (n 7).

13 Joseph E Aldy, 'Frameworks for Evaluating Policy Approaches to Address the Competitiveness Concerns of Mitigating Greenhouse Gas Emissions' (2017) 70(2) National Tax Journal 395.

14 WTO, 'WTO | legal texts - Marrakesh Agreement' (1947) <https://www.wto.org/english/docs_e/legal_e/gatt47_01_e.htm#art3> accessed 26 May 2021.

15 Jason Potts and International Institute for Sustainable Development, *The legality of PPMs under the GATT* (International Institute for Sustainable Development 2008).

16 Christine Kaufmann and Rolf H Weber, 'Carbon-related border tax adjustment: mitigating climate change or restricting international trade?' (2011) 10(4) World Trade Review 497.

17 Tamiotti (n 10); WTO (n 14).

18 WTO (n 14).

19 Kaufmann and Weber (n 16); Tamiotti (n 10); Aaron Cosbey, Susanne Droege, Carolyn Fischer, and Clayton Munnings, 'Developing Guidance for Implementing Border Carbon Adjustments: Lessons, Cautions, and Research Needs from the Literature' (2019) 13(1) Review of Environmental Economics and Policy 3; WTO Working Party, 'Border Tax Adjustments' (1970) <https://www.worldtradelaw.net/reports/gattpanels/bordertax.pdf.download> accessed 26 May 2021.

20 Paul Demaret and Raoul Stewardson, 'Border Tax Adjustments under GATT and EC Law and General Implications for Environmental Taxes' (1994) 28(4) Journal of World Trade; Kaufmann and Weber (n 16).

21 Joost Pauwelyn, 'Carbon leakage measures and border tax adjustments under WTO law' in Geert Van Calster and Denise Prévost (eds), *Research Handbook on Environment, Health and the WTO* (Edward Elgar Publishing 2013).

22 Cosbey, Droege, Fischer, and Munnings (n 19).

23 Pauwelyn (n 21).

24 Cosbey, Droege, Fischer, and Munnings (n 19).

25 World Bank, 'State and Trends of Carbon Pricing 2020' (2020) <https://openknowledge.worldbank.org/handle/10986/33809>.

other factors contribute more meaningfully in decisions for more energy-intensive companies to relocate. However, some schemes surging in price—the EU ETS and UK ETS have surpassed €50 and £50 per tonne respectively—this factor may become more significant in the coming decade.[26]

By contrast, Henrik Horn and Petros C Mavroidis argue that promoting competitiveness of domestic firms is not a legitimate rationale for BCAs.[27] They state that the goals of competitiveness stand in stark contrast to the objectives of climate mitigation, for which a BCA would be implemented. Additionally, they argue that the literature naively assumes that BCAs will not serve protectionist purposes, whereas in the trade community it is accepted that the majority of BCA policies are in some way protectionistic. The fact that competitiveness and climate mitigation are so closely intertwined in a BCA means that a poorly designed policy may result in nothing more than a greenwashed protectionist policy.[28] Similarly, it may be challenging to extricate the different motives behind this policy, which may hinder its political and public acceptance. It is equally possible that a BCA that could be seen as overly protective of domestic industry may provoke an international political backlash that may impact trade relations and climate agreements.

International relations

Inevitably, the implementation of a BCA in one jurisdiction or bloc may cause tensions with other exporting nations depending on their exposure to the effects of the policy. The share of fossil fuels in the energy mix, the quantity of exports to the BCA-imposing region, and the emissions intensity of the exports will all determine the susceptibility of a nation's trade.[29] For instance, India, China and OPEC nations—as large fossil fuel and manufacturing exporters—would likely oppose any such policy and perhaps impose retaliatory tariffs which could result in a trade war.[30] The Paris Agreement has always rested on unstable foundations, as demonstrated by the USA's withdrawal in 2017, so it is plausible that a BCA seen as targeting a group of nations may result in a splintering, or even a reversal, of the work Paris has achieved.

Moreover, in the absence of a global emissions pricing scheme, different BCAs at different borders could result in a labyrinth of complex border adjustments that would frustrate international trade. North America illustrates the difficulties that this would entail should BCAs be established in the US or Canada. Because the US failed to ratify the Kyoto Protocol and rejected the 2009 Waxman-Markey Bill, it has introduced no economy-wide carbon price or emissions trading scheme.[31] Instead, individual states have pushed for specific mitigation options, such as the emissions trading scheme established in California, in what has been described as a wave of 'new federalism' by Dan Lashof, US President of the World Resources Institute.[32] By contrast, Canada has laid the plans for a progressive carbon tax set to reach CA $170 by 2030, and has numerous extant provincial sectoral policies. This does raise the question of how these two nations could navigate new BCAs or equivalent emissions abatement measures. With a myriad of different carbon pricing structures, it seems likely that trade channels may develop that avoid a BCA in states or provinces imposing such a high carbon price. Indeed, the economic and political complexity of trade adjustments that would arise between these two historically strong trading partners could outweigh any environmental benefits that could be had. Moreover, in no national jurisdiction is there one sole carbon price in place. Instead there are rich tapestries of regulations and climate policies. Should BCAs be implemented on a global scale, questions of how to evaluate and compare other nations' climate policies will be asked and will undoubtedly lead to international disputes over trade.[33]

On the other hand, there is a school of thought that BCAs, rather than provoking division, might encourage non-abating countries to impose similar carbon pricing structures, or even to join a climate coalition of nations.[34] Indeed, by transferring the burden of emissions abatement to non-acting countries via a BCA, reductions can be achieved at the lowest global cost through 'where-flexibility', by increasing the global efficiency of abatement.[35] Yet this might also promote regional disparities.[36]

Distributive impacts

On shifting the onus of emissions reduction responsibility onto the shoulders of non-abating nations, it is argued that this may defy the 'common but differentiated responsibility' statement enshrined into law.[37] This UN declaration dictates that although all nations share similar climate aims, historically less economically developed countries should not bear equal responsibility for emissions abatement to polluting nations. It is suggested that less economically developed nations could be exempted from BCAs, although some argue that this would violate the aforementioned 'Most Favoured Nation' GATT principle.[38] Although the WTO 'Enabling Clause'

26 Aldy (n 13); Camilla Hodgson and David Sheppard, 'Cost of polluting in EU soars as carbon price hits record €50' *Financial Times* (4 May 2021) <https://www.ft.com/content/2b965427-4fbc-4f2a-a14f-3be6019f0a7c> accessed 21 May 2021; Camilla Hodgson and David Sheppard, 'UK carbon price trades at £50 as market opens for first time' (19 May 2021) <https://www.ft.com/content/56e02d3d-8c31-4937-be50-60d4bf9342f7> accessed 21 May 2021.

27 Henrik Horn and Petros C Mavroidis, 'To B(TA) or Not to B(TA)? On the Legality and Desirability of Border Tax Adjustments from a Trade Perspective' (2011) 34(11) The World Economy 1911.

28 Kaufmann and Weber (n 16).

29 Randolph Bell, *Carbon border adjustment: a powerful tool if paired with a just energy transition* (2012) <https://oecd-development-matters.org/2020/10/27/carbon-border-adjustment-a-powerful-tool-if-paired-with-a-just-energy-transition/> accessed 17 May 2021.

30 Aldy (n 13); Matthias Weitzel, Michael Hübler, and Sonja Peterson, 'Fair, optimal or detrimental? Environmental vs. strategic use of border carbon adjustment' (2012) 34 Energy Economics S198.

31 Noah Kaufman, John Larsen, Ben King, and Peter Marsters, *OUTPUT-BASED REBATES: AN ALTERNATIVE TO BORDER CARBON ADJUSTMENTS FOR PRESERVING US COMPETITIVENESS* (2020) 18.

32 Callum Winstock, 'Exclusive Interview: Kevin Poloncarz (Part 2) on State & Federal Regulatory Interplay, Cross-Border Carbon Equivalence, and Voluntary Offsets' (*CaliforniaCarbon.info*, 14 April 2021) <https://www.californiacarbon.info/exclusive-interview-kevin-poloncarz-part-2-on-state-federal-regulatory-interplay-cross-border-carbon-equivalence-and-voluntary-offsets/> accessed 13 May 2021.

33 Kaufman, Larsen, King, and Marsters (n 31); Aldy (n 13).

34 Christoph Böhringer, 'Alternative designs for tariffs on embodied carbon: A global cost-effectiveness analysis' (2012) 34 Energy Economics S143.

35 John P Weyant, 'The costs of the Kyoto Protocol: a multi-model evaluation' (1999) 26 The Energy Journal 131.

36 Elisa Lanzi, Jean Chateau, and Rob Dellink, 'Alternative approaches for levelling carbon prices in a world with fragmented carbon markets' (2012) 34 Energy Economics S240.

37 Christopher D Stone, 'Common but Differentiated Responsibilities in International Law' (2004) 98(2) The American Journal of International Law 276.

38 Bell (n 29).

permits some favourable treatment to these nations through policies aimed at advancing development, this is unlikely to fall within the remit of a BCA.[39]

The design and structure of a BCA would determine which industries and emissions were included within the policy's bounds. Whether all greenhouse gas emissions contribute to the embedded emissions of goods, or only carbon dioxide, will disproportionately affect some nations. Madanmohan Ghosh, Deming Luo, Muhammad Shahid Siddiqui, and Yunfa Zhu demonstrated, using a general equilibrium model taking into account both CO_2 and non-CO_2 emissions sources, that nations with a strong agricultural contribution to GDP, such as Brazil, are more acutely affected by BCAs—two thirds of Brazil's emissions stem from non-CO^2 sources.[40] Despite global gains in cost efficiency, and reduced leakage rates, broad-based greenhouse gas BCAs are perhaps unlikely given their tendency to increase welfare disparity in large agricultural nations.

Given that a BCA's raison d'être is to protect EITE industries, for reasons of pragmatism it is likely that BCA policies will focus solely on these sectors.[41] Because these industries have strong lobbying power, it is improbable that further manufacturing industries and sectors would be included. As a BCA is expanded, the benefits gained by a specific industry become smaller, because the export rebates offered are reduced. This would therefore erode the power base driving for the BCA.[42] However, a strong incentive for implementing carbon pricing policies such as ETSs or carbon taxes must be remembered: the revenue stream, which can be used to alleviate other distortionary taxes or in further low-carbon investments.[43] Indeed, there is a growing desire for this income to benefit low-income communities that disproportionately experience the effects of pollution.[44] However, rebates would ensure that a proportion of the finance generated by a BCA would support EITE industries instead. This could be seen as politically divisive, and could exacerbate welfare disparity in low-income communities.[45]

The EU Border Carbon Adjustment Mechanism (CBAM)

Despite many scholars having expressed doubt that BCAs will be established, we are now seeing the concept taking its first steps. Ursula von der Leyen, President of the European Commission, announced that the EU would set up a carbon border adjustment mechanism (CBAM), which is now expected to commence in 2023.[46] Initially, it will cover only EITE industries, but it will have inbuilt flexibility to expand in the future should there be an appetite for this.[47] Ahead of the COP26 (Conference of Parties) summit, and with many countries increasing their climate ambition and drive towards net zero, the establishment of the CBAM sends a clear signal to non-abating nations. There is a wealth of discussion and research on the topics covered in this article, on how to implement a BCA while maximising the environmental benefit and minimising the geopolitical, legal, and welfare-related backlash, and on how to fine-tune policy to ensure this.[48] Nevertheless, as might be expected, the BRICS countries have condemned the EU's move to implement the CBAM. China, India, South Africa, and Brazil labelled the policy as 'discriminatory' in a joint statement, while Russia has cast doubt over the legality of the policy with respect to WTO rules.[49]

Additionally, for the CBAM to be permitted under WTO rules, a restructuring of the EU ETS may be required. Currently, a certain number of allowances is granted to EITE and other industries, free of charge, to prevent leakage. This is known as 'grandfathering'.[50] It may need to be re-evaluated in light of a new border carbon policy, because of the preferential treatment EITE industries may receive should both policies be present.

Despite its detractors, the implementation and performance of the CBAM will be highly influential in guiding carbon pricing over the coming decades. Time will tell whether it will be accepted under WTO rules and whether this would bring a significant international backlash. Whether the CBAM has the power to unite or divide the nations of the world in fighting climate remains to be seen.

Conclusions

A BCA would be a novel weapon in the arsenal against climate change. Its promises in reducing leakage, bringing in revenue, and aligning global ambitions on climate make it an attractive proposition.. However, its basis in WTO law, international relations, and welfare distribution must be evaluated and resolved lest it work against the very climate goals it is intended to achieve. The recently developed EU CBAM is the first real test the BCA has to endure. Its robustness and resolve will be scrutinised carefully on the world stage.

Ultimately, however, a BCA is only a second-best instrument that lies far from the potential that a global emissions trading scheme

39 Cosbey, Droege, Fischer, and Munnings (n 19).

40 Madanmohan Ghosh, Deming Luo, Muhammad Shahid Siddiqui, and Yunfa Zhu, 'Border tax adjustments in the climate policy context: CO_2 versus broad-based GHG emission targeting' (2012) 34 Energy Economics S154.

41 Lanzi, Chateau, and Dellink (n 36).

42 Aldy (n 13).

43 David Pearce, 'The Role of Carbon Taxes in Adjusting to Global Warming' (1991) 101(407) The Economic Journal 938; David Klenert, Linus Mattauch, Emmanuel Combet, Ottmar Edenhofer, Cameron Hepburn, Ryan Rafaty, and Nicholas Stern, 'Making carbon pricing work for citizens' (2018) 8(8) Nature Climate Change 669.

44 James B Bushnell, '(Overly) Great Expectations: Carbon Pricing and Revenue Uncertainty in California' (2017) 70(4) National Tax Journal 837.

45 Aldy (n 13).

46 Susanne Dröge, *The EU's CO2 Border Adjustment: Climate or Fiscal Policy?* (2020) <https://www.swp-berlin.org/en/publication/the-eus-co2-border-adjustment-climate-or-fiscal-policy/> accessed 26 May 2021.

47 Ewa Krukowska, 'The World's First Carbon Border Tariff, Explained' (*Bloomberg*, 9 Apr 2021) <https://www.bloomberg.com/news/articles/2021-04-09/how-to-understand-the-eu-s-carbon-import-levy> accessed 25 May 2021.

48 European Parliament, 'Trade related aspects of a carbon border adjustment mechanism: A legal assessment' (2020); European Commission, 'Inception Impact Assessment' (2020) <https://www.euractiv.com/wp-content/uploads/sites/2/2020/07/CBAM.pdf> accessed 26 May 2021.

49 South African Government, 'Joint Statement issued at the conclusion of the 30th BASIC Ministerial Meeting on Climate Change hosted by India on 8th April 2021' (8 April 2021) <https://www.gov.za/nr/speeches/joint-statement-issued-conclusion-30th-basic-ministerial-meeting-climate-change-hosted> accessed 26 May 2021; Sam Morgan, 'Moscow cries foul over EU's planned carbon border tax' (*EURACTIV.com*, 27 July 2020) <https://www.euractiv.com/section/economy-jobs/news/moscow-cries-foul-over-eus-planned-carbon-border-tax/> accessed 26 May 2021.

50 European University Institute, 'A WAY FORWARD FOR A CARBON BORDER ADJUSTMENT MECHANISM BY THE EU' (2020) <https://cadmus.eui.eu/bitstream/handle/1814/69155/PB_2020_06_STG.pdf> accessed 17 May 2021; Aldy and Stavins (n 5).

might achieve.[51] Given that this looks very unlikely, the EU CBAM may set a precedent in emissions pricing. However, rather than using a BCA to strong-arm international emissions reductions, many believe that linkages between pricing mechanisms in 'carbon clubs' could be employed instead to encourage international abatement.[52] Support is building for these clubs, but the variegated mosaic of unique market structures that exists may make it challenging to facilitate linkages in the coming years. The direction major economies take on this road will be instrumental in determining how the world addresses the climate crisis. The COP26 summit set to be held in Glasgow in November 2021, therefore, will be pivotal in outlining the roadmap for this target. It may be the most important conference since Paris in guiding effective climate policy towards a zero-emission global economy.

51 Böhringer, Balistreri, and Rutherford (n 7).

52 William D Nordhaus, 'Climate Clubs: Overcoming Free-riding in International Climate Policy' (2015) 105(4) The American Economic Review 1339; Nathaniel Keohane, Annie Petsonk, and Alex Hanafi, 'Toward a club of carbon markets' (2017) 144(1) Climatic Change 81.