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Carbon Taxes, Trade, and Border Tax Adjustments

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Key Points

- Supporters believe that an economy-wide, revenue-neutral carbon tax might gain bipartisan support as an efficient way to limit greenhouse gas emissions if revenue were used in large measure to reduce the corporate income tax.
- While trade-related effects are likely to be small, legislation must also address concerns from labor and business in specific sectors and regions where manufacturing, jobs, and emissions will shift to nations with less-stringent controls.
- Border tax adjustments appear to be the solution for domestic concerns, and, if carefully crafted, may satisfy WTO rules.
- However, even consideration of border adjustments may spark a backlash from developing nations that could jeopardize already fraught international cooperation on both trade and climate change.
- Longer-term solutions appear to require the WTO to design approaches that reconcile international trade and climate regimes but, for now, adequate support seems lacking.

Introduction

Economists and others have argued that an upstream, economy-wide carbon tax could be an efficient way to control greenhouse gas (GHG) emissions. Building on this prospect, supporters have proposed that a revenue-neutral carbon tax (RNCT) could

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This work was funded by a grant from the Samuel Freeman Charitable Trust. It provided me an opportunity to reflect on discussions and papers from a recent workshop at RFF (Addressing Competitiveness Concerns in a Carbon Tax: What Are the Options? October 27, 2015) and other previous work for their implications for political compromise based on a revenue-neutral, upstream carbon tax in the United States.

provide a basis to legislate an economically efficient US domestic climate policy. As well, to gain bipartisan support, they propose that revenues should be used in large measure to reduce corporate income taxes and, in part, to compensate those most adversely affected. However, establishing the detailed foundation for such bipartisan cooperation and building confidence that an agreement could be implemented (without losing its attractiveness to supporters during the political give-and-take necessary to conclude the bargain) raise significant challenges. One among many concerns is the contentious issue of whether and, if so, how to address border tax adjustments (BTAs) to compensate for impacts on trade and emissions leakage arising from an RNCT.

Over the past several years, Resources for the Future (RFF) has convened a number of workshops and invited papers to discuss these issues. The most recent event¹ included discussion papers by Aldy (2016), Kortum and Weisbach (2016), Trachtman (2016), and Gray and Metcalf (2015). These papers discuss many aspects associated with the design and implementation of BTAs in several forms—though the discussion here will focus on BTAs applied to an upstream RNCT. As the papers describe, BTAs seek to mitigate both domestic economic loss of competitiveness and decreased environmental effectiveness that results if manufacturing and associated emissions shift to nations with less stringent controls. However, BTA proposals face a major challenge to avoid constraints posed by WTO obligations. Nonetheless, policies framed to mitigate competitiveness a priori would not be WTO-compliant (Trachtman 2016). BTA policies also pose major administrative challenges and come with their own risks from intended and unintended consequences.

Analyses presented at the October 2015 RFF workshop find that macroeconomic impacts on the United States (but perhaps not on all nations, especially developing nations) and emissions leakage are likely to be small, and that implementation of an effective BTA poses significant challenges for apparently only small gains. Moreover, as if domestic climate policy were not complicated enough, including BTAs raises major concerns for international cooperation on both trade and climate change. Because responding to climate risks will require development and global deployment of advanced technology systems over decades, many businesses prefer to see trade used as a carrot rather than a stick in responding to climate change. The long-anticipated and feared confrontation between international climate and trade regimes looms ever closer, especially because the Paris Agreement last year did little to alleviate concerns over the wide range of differing efforts embodied in intended nationally determined contributions (INDCs; Flannery and de Melo 2015).

Despite these cautions from economists and trade experts, BTA discussions have great political traction in the United States, because stakes can be great for particular sectors and their employees, especially the energy-intensive, trade-exposed (EITE)

¹Addressing Competitiveness Concerns in a Carbon Tax: What Are the Options? (October 27, 2015). <http://www.rff.org/events/event/2015-10/addressing-competitiveness-concerns-carbon-tax-what-are-options>

industries. Furthermore, these industries are often concentrated in specific regions and districts of influential officials, and they can be appealing to those who wish to exacerbate the already tense US domestic debate over trade in any form. Consequently, framing a view on BTA appears to be an essential component in the design of an RNCT framework (or any GHG control policy). In any event, it appears that approaches based on domestic taxes with BTAs offer a better chance to survive WTO challenges (Maruyama 2011, Hillman 2013) than policies based on cap and trade that provide free allowances to domestic EITE industries—which seem likely to be interpreted as WTO-illegal subsidies (Maruyama 2011).

Trade and Climate Policies in the Context of Stabilizing GHG Concentrations

Negotiators, economists, and policy analysts have long recognized that climate and trade policies appear to be on a collision course, without the means to reconcile differences. Such concerns, especially by developing nations, led negotiators to include provisions in the United Nations Framework Convention on Climate Change (UNFCCC; UNFCCC 1992) that were intended to limit, or at least highlight, adverse consequences. Section 3.5 states: *Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade*; and section 4.10 asks Parties *to take into consideration...developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change*. Section 4.10 particularly highlights the situation in developing nations that produce, export, or consume fossil fuels and associated energy-intensive products. However, it remains unclear what operational consequence UNFCCC provisions will ultimately have. The WTO provides for a dispute resolution settlement process; the UNFCCC does not. Trade disputes regarding climate measures would be resolved through WTO procedures.

Economists argue that a uniform, global carbon tax would limit some potential trade conflicts by equalizing the marginal abatement cost to control emissions. While the ideal, harmonized, global carbon tax might limit competitiveness concerns for investments in and trade in products from EITE industries, the overall impact of such a policy on terms of trade could be unfavorable for many nations. For example, even with an ideal global policy, Jacoby et al. (2010) found that achieving the G8 goal to halve emissions by 2050 could require wealth transfers from developed to developing nations of over \$400 billion per year by 2020, rising to \$3,000 billion per year by 2050. Transfers would be required both to meet additional investment needs in developing nations and to offset changes in terms of trade brought about by reduced demand for imports from developed nations and higher costs for many exports to developed nations.

Flannery (2014, 2015) describes the current international architecture for climate policy as a mosaic world, one in which nations voluntarily pursue climate policies according to their national circumstances and priorities. Proposed actions under the Paris Agreement result in vastly different levels of national effort. Akimoto (2015) estimates that marginal abatement costs (per metric ton CO₂ in 2030) range from essentially \$0 (in major developing nations) to over \$200 in several developed nations. Not surprisingly, nations

that enact GHG control policies that are stronger than those of their trading partners feel concern regarding impacts of those policies on both exports and imports. Besides their direct consequences on EITE activities, carbon controls reduce overall global energy demand and prices in nations with less strict controls, shifting emissions (leakage) to developing nations with weaker or no control policies (Winchester et al. 2011).

Consequently, BTAs inevitably enter political discussions of GHG control policy even at the relatively modest costs associated with controls over the next 10 to 15 years. Over the longer term, efforts to limit climate risks by stabilizing GHG concentrations will require global transformational change, involving literally tens of thousands of individually multibillion-dollar investments in new technology systems and associated public and private infrastructure. Investment in energy supply and distribution alone appears to require doubling from approximately \$1 to \$2 trillion per year. Flannery and de Melo (2015) argue that a well-functioning trade regime will be essential to support the massive increase in investments and the associated flow of new products and services.

Issues in the Design and Implementation of BTAs and Compliance with the WTO

Aldy (2016) discusses economic and environmental challenges from domestic climate policies and from BTAs intended to mitigate them. Restrictions on GHGs raise relative production costs and decrease incentives for domestic investment and employment in firms that face higher emissions costs than are faced by their foreign competitors. Whereas such economic impacts are typically described as concerns by firms, consequences for their employees, especially organized labor, may have even greater political weight. Also note that although analysts often refer to “relocation” of factories and other EITE activities, a more likely outcome would be to limit expansion or reduce domestic production and investment while expanding them abroad. These shifts give rise to reduced environmental efficiency through emissions “leakage” to nations with weaker GHG controls. In addition to economic and environmental risks, Aldy points out that policies that result in both job loss and reduced environmental benefits could weaken public and political support for domestic GHG controls; and, internationally, BTA may create a backlash by alienating developing nations in climate and trade negotiations and actions.

Aldy cites a range of assessments and empirical data that suggests that overall macro impacts on competitiveness (with modest carbon prices) would be quite small, indeed statistically insignificant compared with impacts from other factors and year-to-year variability. Only EITE industries appear to be significantly affected. However, even in EITE sectors the increase in net imports is far smaller than the decline in domestic production under a modest carbon price—that is, most of the decline occurs from decreased domestic demand. Nonetheless, the political significance of economic and job losses that will be concentrated in particular locations can be significant. Similarly, direct emissions leakage from production shifts appears to be dominated by changes in EITE sectors that account for only about 15 percent of US emissions. Aldy cites assessments from the Energy Modeling

Forum 29 (Böhringer et al. 2012) that evaluate the emissions leakage rates (defined as the ratio of the change in foreign emissions to the change in domestic emissions) for a unilateral, domestic carbon policy. In the models, they range from 5–19 percent without BTA, to 2–12 percent with BTA. As noted above, other factors, especially changes in energy price and demand across the globe, appear to be as (or even more) important for leakage than changes from direct economic competitiveness in EITE sectors.

Aldy also points out that approaches to limit competitive impacts and emissions leakage inevitably have consequences that decrease the impact of carbon pricing on domestic EITE industries, increase costs in other areas, and reduce overall environmental efficiency of carbon pricing. As well, supporters are most likely to argue for BTA approaches that offset all direct effects of competitiveness on their sector, rather than the smaller net effects to the economy as a whole. Finally, the design of BTA policies will inevitably encourage domestic and foreign firms to manage operations and reporting to maximize benefits under the rents available from the regulations, and these may be complex and uncertain.

Aldy notes that social welfare and political economy frameworks would be of interest to assess BTA policies. The former concentrates on the concept of changes to net domestic welfare across the entire economy; the latter on considerations that influence development of legislative policies that can be enacted—where those most affected are likely to play the largest role. Because neither economy-wide economic nor environmental impacts appear to be large (in the context of domestic GHG controls at the modest levels of carbon pricing described in Aldy), more narrow and focused political aspects are likely to dominate the debate over BTA.

Kortum and Weisbach (2015) describe economic and administrative aspects of BTAs motivated to reduce emissions leakage associated with a domestic climate policy based on a carbon (GHG) tax. Their discussion highlights three critical design choices—to which goods, which emissions, and from and to which nations BTA would apply. They address how BTA might apply both to imports and exports. They consider design and outcomes for a domestic tax as applied in any of three ways: to extraction of fossil resources, to production of fuels, or to end-use consumption. Each presents different challenges. In a single, self-contained economy, without exports or imports, covered emissions, as they define them, would be identical for all cases, but administration becomes far simpler, as in an RNCT, when the tax moves upstream. However, in an international economy with exports and imports, and where intermediate supply and value chains may cross borders multiple times before final goods are bought or consumed, administrative issues can become hopelessly complex. Kortum and Weisbach illustrate this with many examples, including attempts to account for both direct and indirect emissions (notably those from use of electricity). They also suggest that supply chains and value chains will shift in response to the portfolio of differing policies adopted by trading partners. Consider, for example, a firm exporting from a nation with a variety of energy sources: its response to BTA might be simply to claim that the firm used low carbon energy sources to produce export goods to avoid BTA in a country with stricter policies.

The upstream RNCT under discussion in this paper falls under the category of what Kortum and Weisbach characterize as an “extractive” tax (i.e., one that applies to production of fossil resources before they become commercial fuels). Emissions to be taxed include not only the carbon content of the raw material (e.g., crude oil, coal, and natural gas) ultimately converted to commercial fuels, but also process emissions that occur during extraction and transport. Process emissions can arise during extraction from consumption of the raw material for heat or energy, from venting and flaring of co-produced gas, and from leakage (e.g., of methane, during extraction and transport). For many fossil resources, including crude oil, oil sands, coal, and production and transport of natural gas and LNG, process emissions (as well as associated emissions from power and commercial fuels used during production and transport) can differ significantly. Indeed, dissimilar taxation of process emissions could be significant for competitiveness when internationally traded commodities with small profit margins are subject to differing carbon policies.

Kortum and Weisbach conclude that BTAs will entail high administrative costs, are likely to be complex and inaccurate, and will almost certainly depend on political choices to decide which goods, emissions, and nations will be covered. They recommend that BTA only be applied to activities and products associated with EITE sectors. In nations that adopt them, RNCTs and BTAs raise the cost both of imports and domestically produced goods, and they shift extraction to nations with less restrictive policies. Kortum and Weisbach point out that whereas a BTA may reduce leakage, its impacts on national welfare are difficult to assess and could well be negative. Indeed, a BTA may increase welfare in foreign nations that are its target.

In light of the recent Paris Agreement, Kortum and Weisbach also suggest that the need for BTAs may have decreased because “all countries will have some implicit carbon price” (unlike the Kyoto Protocol, where developing nations had no emissions obligations). However, this raises two issues: first, the wide range of policies and pledges associated with proposed INDCs makes it challenging to infer the carbon price (and therefore the level of BTA) that may be associated with particular activities or products; second, INDCs exhibit a wide range of ambition and effort, with estimates for implied marginal abatement costs in 2030 ranging from \$0 to over \$300 per metric ton of CO₂ (Akimoto 2015). The Paris Agreement appears to reinforce, rather than alleviate, worries that foster support for BTA.

Trachtman (2016) provides a detailed discussion of WTO rules that should be considered in designing BTAs. He notes that many aspects remain speculative, because existing case law provides little clarity on how WTO rules might be interpreted regarding BTAs. Approaches that would limit risks of noncompliance need to avoid features that constitute direct violations, and (or) they would need to include features that qualify for exceptions and avoid those that rule against exceptions. Features that would qualify for exceptions from applicable rules include measures necessary to protect human, animal, or plant life; or health and measures relating to conservation of exhaustible natural resources. These exceptions appear well suited to address GHG concerns. However, Trachtman notes that BTA provisions designed to exempt exports from domestic taxes would seem to undermine any claim to apply BTAs to imports.

Although application of BTAs to emissions inherent in a product and its use seems to comply with WTO, a key objective of BTA legislation would be also to cover emissions associated with production of the product (for example those from electricity use and process emissions). Here the jury seems still to be out. Trachtman refers to a “divergence of views” concerning consideration of differing energy taxes. As well, he discusses the possibility that an import BTA that applied differently to WTO member states (e.g., to reflect differing carbon intensities), could violate the Most Favored Nation obligation.

Trachtman also notes that to qualify for an exemption, it would be necessary to demonstrate that there were no alternatives available that would be less restrictive for trade. Meeting that test would require lengthy attempts to negotiate a cooperative international arrangement and to remain open to replacing the BTA with an alternative regime. Procedural aspects of resolving WTO issues can take many years. This could allow sufficient time to establish compliance or to move to an alternative regime before any retaliation could occur, even if the BTA was found to be noncompliant. Trachtman concludes that because of the reality of long delays, and the potential for broad international support for BTAs in spite of WTO rules, current uncertainty and risk of noncompliance with WTO law “may not be a significant deterrent to implementation of these measures.” Many have suggested that the best way forward would be for nations to meet within the WTO to address and resolve these issues directly by agreeing to new rules appropriate to dealing with trade and climate change. However, it is unclear precisely what type of proposed new rules could motivate consideration and achieve the necessary support.

Summary and Conclusions

BTA policies aim to reduce both economic concerns and emissions leakages that result when production shifts to nations with less restrictive control policies. Even ideal climate policies have major implications for trade and investment. In the non-ideal, mosaic world, evident in the Paris Agreement, concerns over economic and environmental effects from differences in climate policy have powerful political appeal, especially in the United States where trade discussions are increasingly fraught.

For many, it is surprising to learn that economic analyses suggest that net macroeconomic effects (e.g., on employment, investment, and overall competitiveness) are actually quite small—at least for large diverse economies such as in the United States. Still, actual impacts may be large and concentrated in particular sectors, regions, or districts where they generate intense political concern. Whereas concerns are often attributed to firms, labor issues (especially those involving organized labor) may have even stronger political impact. It seems unlikely that US GHG legislation could proceed without consideration of BTAs.

Just as GHG policies come with risks for competitiveness and emissions leakage, BTA policies involve their own risks. Decisions concerning which products, which emissions, and which countries should be subject to BTAs present challenges. Procedures are likely to be administratively complex, inaccurate, and based on political rather than objective

criteria. It may even be the case that BTAs enhance the welfare of nations subject to BTAs rather than those that impose the adjustments. To capture most of the likely impacts and to avoid needless complexity, it appears that BTA should be limited to EITE industries and products. However, doing so raises questions concerning the distributional impact of, in effect, providing a subsidy to EITE industries at the expense of other options. Perhaps the greatest risk concerns the danger of alienating other nations, especially developing countries, in international efforts to address climate change and improve trade.

BTAs lie at the heart of the challenge of reconciling international trade and climate policies. Language in the UNFCCC and its protocols and agreements reference trade and limiting adverse consequences of policies to address climate change, but they provide no procedures to resolve differences. Disputes over trade implications of climate measures can be addressed in the WTO. Assuring compliance a priori, or resolving disputes later, present complex challenges, with little guidance from existing case law on how they will be settled. However, policies aimed directly to redress competitiveness will not comply. Perhaps the best way forward would be for nations to modify or evolve the WTO to provide more clear guidance, but this appears to be a difficult task with insufficient near-term support.

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