

**“Economic and Legal Analysis of Climate Policy and Border Tax Adjustments:
Federal vs. State Regulation”**

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Abstract

In this paper an economic and legal analysis of border measures for climate policy is presented. While the economics of such border measures is well-established, there is no clear presumption either for or against them in light of current interpretation in both U.S. and WTO law. However, the current U.S. political climate suggests that retaliatory use of border measures by other signatories to the Paris Climate Agreement might actually play into President Trump’s protectionist rhetoric.

Keywords: climate policy, carbon leakage, border measures, federal and state regulation

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1. Introduction

It is widely accepted that climate change is occurring, a connection exists between human activity and emissions of carbon dioxide (CO₂) and other greenhouse gases (GHGs), and climate change is largely irreversible (National Research Council, 2010; Solomon *et al.*, 2009). Concentrations of CO₂ have increased from pre-industrial levels of 280 parts per million (ppm) to the current levels of 400 ppm, with other GHGs increasing CO₂-equivalent concentrations to 440 ppm (IPCC, 2014). At the same time, since 1900, average global surface temperatures have risen by 0.8^o C, and in the absence of mitigation, mean projected global warming will reach 3 to 4^o C by 2100. (IPCC, 2014). The risks associated with climate change include, *inter alia*, changes in precipitation patterns, sea-level rises, more intense and frequent weather, and changes in ocean circulation (Farid *et al.*, 2016).

The Stern Report (2006) described climate change as the “...greatest and widest-ranging market failure ever seen...” (p.i) Climate change generates an externality whereby the social cost of carbon is not embodied in the price of goods, the standard solution being a carbon tax. However, because GHG emissions have negative consequences irrespective of where they occur, climate change is a collective action problem, i.e., first-best policy is for all governments to mitigate climate change. Of course either individual countries or some coalition of countries may unilaterally implement climate policy, but necessarily this is a second-best outcome as non-activist countries are able to free ride.

In the past two decades, it has become increasingly obvious that even though negotiation of the Kyoto Protocol on Global Climate Change in 1997 was a useful first step, further efforts to develop a comprehensive multilateral agreement for reducing carbon emissions will be necessary if climate change is to be properly addressed (Frankel, 2009). Although the Kyoto Protocol set

emission reduction targets for individual countries, the agreement was largely ineffective: developing countries were not included, the U.S. failed to ratify the protocol, and there was no enforcement mechanism (Farid *et al.*, 2016). More recently, the December 2015 United Nations Climate Change Conference (UNFCCC) meeting held in Paris, resulted in 186 countries, making commitments to reducing carbon emissions, covering 96 per cent of global emissions. For example, the U.S. pledged that by 2025 it would reduce its GHG emissions to 26-28 percent below their 2005 levels (UNFCCC, 2015).

Irrespective of the logic supporting a multilateral approach to dealing with a global public bad, there has been a shift in many countries from pursuing a legally binding international agreement to one where individual countries decide on their own carbon emission reduction targets and the policy instrument for reaching that target. Much of the recent discussion as well as actual application of climate policy has focused on the use of market-based instruments such as carbon taxes and emissions trading systems (ETS), the latter commonly being referred to as cap-and-trade. As of mid-2015, 40 national governments, and more than 20 sub-national governments have either implemented or are implementing policies designed to generate a market price for carbon (WBG, 2014, 2015). The majority of these schemes are based on ETSS, e.g., the European Union (EU), California, and the nine member states of the Regional Greenhouse Gas Initiative (RGGI) (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont); while 15 other national governments or sub-national provinces now employ carbon taxes. However, these instruments only cover 12 percent of global emissions and, when carbon taxes have been employed, they have generally been set well below levels consistent with the social cost of emissions (WBG, 2014, 2015).

Whether a carbon tax or cap-and-trade system is used, the expectation is that certain industries that either directly or indirectly account for a large proportion of emissions will face increased costs of production. As a consequence, much of the unilateral climate legislation that has been proposed at the national and state level in the U.S. and elsewhere, also includes some type of border measure to be targeted at carbon-intensive imports. The inclusion of border measures in climate change legislation is predicated on two concerns: first, there will be *carbon leakage*, i.e., production by carbon-intensive industries will be shifted to countries with less restrictive climate policies; second, there will be a reduction in *competitiveness* of producers in industries most affected by domestic climate policies (WTO/UNEP, 2009; Condon and Ignaciuk, 2013).

At the U.S. federal level, a bill sponsored by Representatives Waxman and Markey was passed by the U.S. House of Representatives in June 2009. The bill contained provisions relating to border adjustments for U.S. climate policy. Under Title IX of the bill, “Promoting International Reductions in Industrial Emissions”, the following text appeared with regard to the objectives of any multilateral environmental negotiations:

... [to] include in such international agreement provisions by which countries signatory to the agreement agree to apply, with respect to imports from countries not signatory to the agreement, border measures designed to minimize any carbon leakage from the signatory to the non-signatory countries, including border measures [H.R. 2454, Section 903, (a) (3)]

However, absent any multilateral agreement on GHG emissions, the bill contained very clear language about unilateral implementation of border adjustments for U.S. climate policy. Specifically, if no multilateral agreement existed by 2018 [H.R. 2454, Section 904, (b) (1)], the president was mandated to implement an international emissions allowance program, requirements being imposed on importers no earlier than January 2020 [H.R. 2454, Section 905, (c) (1)].

The key political reason for the inclusion of border adjustments in the Waxman-Markey bill was the need to “secure the votes of Rust Belt lawmakers who were wavering on the bill because of fears of job losses in heavy industry” (Broder, *New York Times*, June 29, 2009). Specifically, the provisions were designed to provide some protection to those parts of the U.S. manufacturing sector that would face competition from countries with less stringent GHG emissions regulation. In the words of Representative Sander Levin, “As we act, we can and must ensure that the U.S. energy-intensive industries are not placed at a competitive disadvantage by nations that have not made a similar commitment to reduce greenhouse gases” (Broder, *New York Times*, June 29, 2009); Representative Levin also argued that “this legislation ensures that the United States will avoid carbon leakage in its energy intensive and trade sensitive industries” (*International Centre for Trade and Sustainable Development*, July 1, 2009).

Although the U.S. has not yet enacted any federal climate policy, and the current administration also signaled recently that it will retreat from its GHG reduction commitments under the Paris Agreement, states in the U.S. explicitly recognize that their unilateral implementation of climate policy has the potential for carbon leakage (Ferrey, 2008), and loss of competitiveness by firms located in those states (Gamage and Shanske, 2017a; 2017b). For example, in May 2017, bill SB 775 was introduced into the California senate containing a proposed border measure (Fowlie, 2017). This bill, designed to repeal and replace California’s existing cap-and-trade program (AB 32), would require importers of carbon-intensive products to purchase permits for GHG emissions embodied in those products, while exporters of similar products would be exempt from purchasing permits.

The use of border measures has received a considerable amount of attention from both environmental and trade economists, e.g., McAusland and Najjar (2015a) and Babiker (2005), as

well as trade lawyers, e.g., Pauwelyn (2013) and other policy analysts, e.g., Hufbauer, Charnowitz and Kim (2009). The objective of this paper is to provide background to some of the economic issues associated with border adjustments, how such adjustments might be viewed by the World Trade Organization (WTO), and examines the potential for U.S. legal issues to arise as they relate to federal versus state regulation of climate policy.

2. Economics of Border Measures

(i) Carbon Havens and Competitiveness

Analysis of carbon leakage and international competitiveness is not new, and is no more than a restatement of the so-called “pollution haven” hypothesis (Copeland and Taylor, 2004). The analysis can be adapted to show that the existence of a carbon haven depends on the stringency of domestic climate policies relative to traditional comparative advantage. Assume two countries in the world, the U.S. and China, each manufacturing two types of good using capital and human capital, where type-one goods are capital-intensive in production, and type-two goods are human capital-intensive. In addition, production of type-one goods generates GHG emissions, production of type-2 goods being non-carbon intensive in production. GHG emissions are regulated through a carbon tax.

Suppose that the US is relatively more human capital-abundant than China, neither country having implemented climate policy. With trade, the U.S. will import carbon-intensive goods, and China will import non-carbon intensive goods from the U.S. This result captures the stylized facts - China is shifting to producing and exporting carbon-intensive goods such as steel and aluminum (Houser *et al.* 2008).

Alternatively, if the U.S. introduces stringent climate policy compared to no policy in China, production of carbon-intensive goods contracts in the U.S. and expands in China (the competitiveness effect), with a concomitant increase in U.S. imports and Chinese exports of carbon-intensive goods, carbon emissions increasing in China (carbon leakage) and declining in the U.S. Consequently, there is likely to be lobbying in the U.S. for less stringent climate policy, unless action is taken to maintain the competitiveness of U.S. production of carbon-intensive goods, and thereby prevent carbon leakage.

(ii) Policy Options for Leakage and Competitiveness

While the problems of carbon leakage and competitiveness are necessarily interdependent, the emphasis of policy analysis in the literature has tended to be driven by whether it is environmental-economic or international trade related in focus. In the former, the focus is on the use of trade policy instruments as a means of solving the collective action problem, while in the latter the focus is on how international competitiveness can be restored and at the same time ensure that a country does not violate its WTO commitments.

There has been considerable analysis of how trade policy instruments might be used to prevent carbon leakage when one group of countries commits to cooperation over climate policy, while a second group free-rides by not implementing climate policy. For example, Hoel (1996) shows that a social optimum can be obtained if countries in a coalition set common carbon taxes, and at the same time use import tariffs (export subsidies) on all carbon-intensive traded goods, the objective being to shift the international terms of trade against free-riding countries, thereby reducing carbon leakage. In principle, the same effect can be achieved if import tariffs and export subsidies are replaced with differential carbon taxes (Böhringer, Lange and Rutherford, 2014). Essentially,

carbon taxes are lowered on exports (equivalent to a subsidy) and raised on imports (equivalent to a tariff) in order to influence the terms of trade of unregulated countries.

Empirical analysis of trade policy instruments has shown that they do have the potential to shift the burden of climate policy to those countries affected by them (Böhringer, Balistreri, and Rutherford, 2012). As a consequence, the threat of implementing such border measures by a coalition could result in free-riding countries choosing to adopt their own emissions policies rather than suffer a terms of trade loss. For example, Böhringer, Carbone, and Rutherford (2016) find in that major polluters such as China and Russia could be motivated to join the coalition because they want to avoid the negative effects of border measures, as well as their being highly dependent on the economic performance of the coalition countries.

In terms of international competitiveness and a country's WTO obligations, Bagwell and Staiger (2001) offer an interesting solution to this problem. Suppose the WTO consists of a two-stage tariff negotiation game between the U.S. and China, where, before negotiations begin, existing climate policies of each country are noted. At the first stage of the game, bound tariffs are negotiated, implying a set of market access commitments by the two countries. At the second stage of the game, the two countries make unilateral changes to their mix of policies, providing that tariffs do not exceed their bound level, implied market access commitments being maintained.

What happens if the preferred choice of climate policy in the U.S. affects its competitiveness, resulting in an increase in China's market access in energy-intensive goods? In order to maintain its negotiated market access commitments, it would need to raise tariffs on these products above their bound level, which it is unable to do under WTO rules. Bagwell and Staiger (2001) argue that resolution of this problem lies in providing more flexibility to the current rules by allowing

countries to renegotiate their bound tariffs if unilateral changes in their climate policies increase market access.

There is an interesting question as to whether the existing WTO rules allow for the flexibility suggested by Bagwell and Staiger (2001), or whether they could be changed in this regard. Roessler (1996; 1998) argues that under GATT Article XXVIII, a unilateral increase in the bound tariff by one country can be met by the other country withdrawing an equivalent amount of market access. Such renegotiation would leave the terms of trade unchanged, and would also satisfy the principle of reciprocity. Alternatively, Bagwell and Staiger (2001) argue that the renegotiation provisions of Article XXVIII could be changed such that any change in say a country's domestic climate policies would be offered to the other country in compensation for raising the bound tariff. In other words, even though the terms of trade have changed, market access is maintained at the negotiated level due to the impact of the climate policies on domestic firms.

3. WTO Consistency of Border Measures

(i) Legal Issues

While the argument that using trade policy instruments to resolve a market failure is compelling theoretically, it has raised practical concerns that border measures such as taxes could be used for protectionist ends and would therefore be constrained by current WTO rules (Holmes, Reilly and Rollo, 2012) and, more generally, there is uncertainty about the compatibility of border taxes and WTO rules and the associated design of these policies; for example, determining the carbon content of imported goods from countries where environmental policies are either non-existent or are more lax than those applied in the importing country. In this context, however, there is a different justification for dealing with border measures: according to WTO/UNEP (2009), a *border*

tax (or tariff) is imposed on imported goods while a *border tax adjustment* (BTA) is the imposition of a domestically imposed tax on “like” imported goods. Essentially GATT Article II: 2(a) allows members of the WTO to place on the imports of any product, a tax equivalent to an internal tax.

The basic idea of adjusting taxes at the border in the presence of domestic taxes is not new (Biermann and Brohm, 2005). Such taxes have been applied at borders since the late-18th century, and the underlying principle for them has long been recognized, David Ricardo noting, “...In the degree then in which (domestic) taxes raise the price of corn, a duty should be imposed on its importation...By means of this duty...trade would be placed on the same footing as if it had never been taxed...” (Sraffa, 1953). The key phrase here is that any BTA should result in imports remaining at the same level as before implementation of the domestic tax.

Even though BTAs have a long history, it was formation of the European Economic Community (EEC) in the mid-1950s and its subsequent implementation of a destination-based system of value added tax (VAT), that stimulated discussion of adjustment at the border for such an internal tax system (Biermann and Brohm, 2005). Lockwood and Whalley (2008) note that there were contributions by economists at the time showing that movement between an origin and a destination base for VAT (or any other sales tax) would have no real effects on trade, production and consumption.

The basic argument was as follows: assuming application of VAT is broadly based with a single rate, it does not matter which way it is implemented, as there are no changes in the relative prices faced by consumers or firms. In other words BTAs for VAT would have no effects on trade, consumption and production, because their effects would be fully offset by adjustments in price levels, wages and/or exchange rates across countries. Subsequent work by Lockwood, de Meza and Myles (1994) extended this analysis to show that with either endogenous exchange rates,

flexible prices across countries, or flexible wage rates within countries, changes in the tax basis would be offset by changes in real wages, or changes in the price level.

The key point of the analysis is the idea that a BTA may be neutral in its effects on trade, and this of course lies at the heart of the legal discussion of such taxes. In its 1970 report, the GATT Working Party defined BTAs as:

“...any fiscal measure which put into effect, in whole or part, the destination principle (i.e., which enable...imported products sold to consumers to be charged with some or all of the tax charged in the importing country in respect of similar domestic products)...” [WTO, 1997, para: 28]

The objectives of such taxes are:

“...to ensure trade neutrality of domestic taxation...and thus to preserve the competitive equality between domestic and imported products...” [WTO, 1997, para: 24]

The key language in these two paragraphs of course concern whether BTAs are imposed on imported products that are similar to the domestic product, and that they are neutral in terms of their impact on trade, and thereby maintain the competitiveness of domestic producers.

Goh (2004) and others note that BTAs are normally implemented with respect to taxes on final goods, e.g., domestic excise taxes are levied on goods such as alcohol and cigarettes, and equivalent taxes are then levied at the border on imports of such goods. In principle, however, there is nothing to prevent a country from also applying a BTA for taxes on inputs such as energy used in production of a final good such as aluminum. The U.S. already has such a tax regime in place applied to ozone depleting chemicals (ODCs) (Barthold, 1994). An environmental excise tax was imposed in 1989/90 on the domestic production of a range of chlorofluorocarbons (CFCs), a BTA also being applied to the import of such chemicals, as well as the import of manufactured products that either contain CFCs or use them in their production process.

The implementation of BTAs raises the important distinction between, application to final goods, versus their application to final goods produced using carbon-intensive inputs. This is of course the highly controversial issue of trade measures applied on the basis of process and production methods (PPMs). Importantly, while no WTO ruling has ever been rendered on the application by the U.S of BTAs to final goods containing CFCs, which is clearly process related, BTAs on final goods that embody carbon emissions are likely to be highly contentious – notwithstanding the WTO Appellate Body’s findings in the Shrimp-Turtle case (WTO, 1998).

Goh (2004) notes that potential challenges to countries seeking to implement BTAs will come under GATT Article III, and if found inconsistent with WTO obligations, may be still justifiable under GATT Article XX. Nevertheless, he suggests that, “...the legal issues are, however, less than clear-cut, with longstanding divergence in views among WTO members...” (Goh, 2004, p.401).

As there are now several detailed legal commentaries in the literature on this issue, including, *inter alia*, Pauwelyn (2013) and McAusland and Najjar (2015b), only a brief outline is presented here drawing on Goh (2004) and Sheldon (2010). GATT Article III: 1 and III. 2 (National Treatment) are the rules that oblige WTO members not to discriminate against imports from other members when applying internal laws and regulations. The key language in Article III: 2 states that imported products,

“...shall not be subject directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products...” [GATT Article III: 2]

Consequently, a 20 percent BTA on imported diesel fuel to adjust for a 20 percent domestic excise tax on diesel fuel would clearly be consistent with Article III: 2. The 1970 GATT Working Party on Border Tax Adjustments also made it clear that indirect taxes levied on products such as

diesel fuel were eligible for border tax adjustment, while direct taxes such as payroll taxes were not.

While the WTO position on BTAs on final goods seems quite clear, it is much less clear that Article III: 2 will allow BTAs on final goods that embody carbon, given imposition of domestic taxes on GHG emissions. The GATT Working Party was actually unable to agree on the legality of such measures, also noting a “scarcity of complaints” about such measures, and it was not until the 1987 Superfund case (GATT, 1987) that this issue was re-examined by the GATT. This case was a challenge by Canada, the EEC and Mexico against US taxes being levied on certain imported chemicals as well as substances that were end-products of chemicals being taxed in the United States under the US Superfund Act. Essentially, the GATT Panel ruled that the rate of tax on the imported substances was equivalent to the tax borne by the like domestic substances, given the tax on chemicals, and, therefore was consistent with Article III: 2. As Goh (2004) points out, the ruling focused on the notion that the US Superfund Act imposed the same “fiscal burden” on imported and like domestic substances, and not on whether the substances subject to the BTA were similar to the chemicals subject to the domestic tax. Irrespective of the GATT ruling in the Superfund case, it is likely that the key issue still remains as to whether a BTA for domestic climate policy will fall under the aegis of Article III: 2, i.e., what goods are being compared for “likeness”, and can imported and domestic goods be compared given differences in the amount of carbon embodied in the final product?

As noted earlier, even if a BTA for domestic climate policy is deemed inconsistent with GATT Article III: 2, it may still be possible to justify it under GATT Article XX (General Exceptions). Both GATT/WTO panels and the Appellate Body have adopted a two-tier test to determine whether any border measure is justified under Article XX: (i) does the measure fall within the

scope of Article XX – specifically is such a measure, “...necessary to protect human, animal or plant life or health...” [Article XX (b)], or “...relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption...” [Article XX (g)]; and (ii) that the measure is “...not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade...,” (Article XX Chapeau).

Whether or not BTAs are covered by Article XX (g) will depend on their being shown to be a reasonable means of achieving the ends, i.e., conservation of exhaustible natural resources. In addition, interpretation of how the Chapeau of Article XX might be applied to such border adjustments will depend on: (i) the requirement, as indicated by the Appellate Body in the Shrimp-Turtle case (WTO, 1998), that members of the WTO pursue multilateral agreements on environmental issues; (ii) whether, special and differential treatment can be expected in the application of border adjustments, based on whether the imported good comes from a developed or developing country; and (iii) when application of the border measure fails to take proper account of the comparative effectiveness of measures and policies applied in the exporting country.

The conclusion to be drawn here is that there continues to be significant debate about the outcome of any WTO Dispute Settlement Panel on the issue of BTAs, and that this will only be settled via an actual ruling. However, based on Goh’s (2004) discussion, and others, e.g., Pauwelyn (2013), it seems reasonable to assume that any final legal interpretation could go one of two ways: on the one hand, BTAs are found inconsistent with GATT Article III: 2, but the door is left open for countries to justify the measure under GATT Article XX; on the other hand, they are found to be consistent with GATT Article III: 2.

(ii) *Unintended Consequences of BTAs*

While carbon leakage and competitiveness are closely connected in the climate policy debate, the latter is a rather more difficult concept to define and one which has been largely side-stepped in the climate literature, but is particularly pertinent if industries that face domestic environmental taxes are imperfectly competitive, as is likely to be the case with the energy-intensive industries such as steel, aluminum and cement production. In this context, competitiveness could be thought of in terms of market share and/or the profit of producers, which in turn are a function of the specific characteristics of an industry subject to domestic climate policy, including factors such as market structure, industry technology and the nature of competition between producers. This suggests that climate policy and BTAs are perhaps best analyzed in the context of the literature on trade and environmental policy pioneered by, *inter alia*, Conrad (1993). The key point of this previous literature is that if producers earn positive economic profits, implementation of climate policy may have the effect of shifting profits between domestic and foreign producers, thereby affecting the former's competitiveness.

Sheldon and McCorriston (2016) have examined this in the context of U.S. aluminum production which is characterized by a small number of dominant firms: the industry has repeatedly been investigated by the antitrust authorities for anti-competitive behavior, and there is empirical evidence that firms in the sector behave less than competitively (Yang, 2005). The industry has also been identified as one that might be vulnerable to the issue of competitiveness, due to the fact that it is both energy-intensive and also highly exposed to international competition, most notably from Canadian imports (Houser *et al.*, 2009). Interestingly, Canadian aluminum production is less carbon-intensive compared to that in the U.S., energy being supplied by hydro-electric power plants.

Sheldon and McCorrison (2016) find that even though border measures can break the link between competitiveness and carbon leakage, U.S. users of aluminum may suffer a deadweight loss due to aggregate output of aluminum being reduced in an imperfectly competitive setting. Specifically, the impact of BTAs is sensitive to how competitive equality is defined: if a BTA is set to restore the previous volume of imports, carbon leakage is prevented, but U.S. firms suffer a loss of market share and profits are shifted to their Canadian competitors; in contrast, if a BTA is set to restore the previous market share of imports, there is negative carbon leakage as both U.S. and Canadian firms reduce output, i.e., the BTA “facilitates” collusion. While it is appropriate that aluminum prices increase in order to reflect the social cost of carbon emissions, there is a risk that anti-competitive behavior may be exacerbated. This highlights an important practical tension between targeting an environmental market failure in the presence of a second market failure, market power, and at the same time ensuring that border measures are not protectionist. Of course, policymakers may consider the tradeoff between the benefits of lower emissions and no leakage and the costs of increased market power to be worthwhile, but it is nonetheless a second-best outcome, and one that could result in costly anti-trust investigations.

4. Federal vs. State Regulation of Border Measures

(i) Legal Challenges

As yet, there has been no in-depth economic analysis of state border measures, such as those proposed in California’s SB 775. However, both legal and economic observers have suggested that any border measures will likely be subject to legal challenge from within the state, under the dormant Commerce Clause, and potentially from the WTO (Fowlie, 2017).

In terms of federal versus state regulation, the dormant Commerce Clause and associated dormant Foreign Commerce Clause are the two potential constitutional constraints to state-level border measures. The dormant Commerce Clause can be used to invalidate a measure such as a BTA as being unconstitutional in three ways (Wilson, 2007). First, it would be considered *per se* invalid if it facially discriminates against out-of-state commerce, unless it can be shown that there is no other means of accomplishing a legitimate state objective. Second, if it is not found to be facially discriminatory, the law would still be considered invalid if its purpose or effect is still discriminatory. Third, even if it is facially neutral, it would be invalid if it creates an undue burden on state commerce. The legal logic of the dormant Commerce Clause is very straightforward: it is designed to invalidate any protectionist state laws, represent the interests of out-of-staters, and promote national unity.

The dormant Foreign Commerce Clause is the logical requirement that state laws must be held constitutional when applied to foreign trade – essentially, such laws should neither increase the risk of multiple taxation nor should they undermine the ability of the U.S. to speak with “...with one voice in foreign affairs...” (Wilson, 2007, p.753) In the case of multiple taxation, the argument is that in imposing a tax at the state level that affects foreign trade, there is the risk of double taxation because of taxes already being imposed abroad. The second argument focuses on the idea that there should be uniformity in the Federal Government’s dealings with other countries, and that state-level taxation could frustrate the goal of federal uniformity with the potential for foreign retaliation (Wilson, 2007).

On the face of it, it would seem likely that border measures would be struck down by the U.S. Supreme Court. For example, Ferrey (2008) argues that because state level climate policy such as the RGGI, necessarily requires a border measure in order to solve the problem of leakage, it would

be considered facially discriminatory under the dormant Commerce Clause. Ferrey (2008) also doubts whether the so-called complementary tax doctrine would be a legitimate defense of any border measures. The complementary tax doctrine allows a state to apply a discriminatory tax if it is designed to achieve a legitimate state objective that cannot be achieved in a way that is non-discriminatory. To satisfy this doctrine, the tax on interstate commerce would have to be “substantially equivalent” to that imposed on intrastate trade. In Ferrey’s (2008) opinion, it would be challenging to establish a uniform way of measuring emissions from in-state electricity generation as compared to out-of-state generation in order to satisfy the “equivalent burden” dimension of the complementary tax doctrine.

Gamage and Shanske (2017a; 2017b), drawing on Shanske (2014) take a different view, arguing that BTAs might be legally defensible under the dormant Commerce Clause. They suggest there are three questions of legal doctrine that have to be answered: first is it possible to apply a BTA on all state imports, even if it is non-discriminatory; second, is it possible for a state to have a BTA that discriminates between imported goods based on approximations of their carbon intensity, where approximations take geography into account, i.e., the source of the imported good(s); and third, if the answer to the first and second questions is yes, how much approximation of the carbon-intensity of imports would be allowed in calculation of a BTA?

As Gamage and Shanske (2017a) note, if a state tax discriminates between in-state and out-of-state taxpayers, then the possibility of applying different BTAs based on the carbon footprint of imports seems unlikely to satisfy the Court, in which case the two other questions are moot. Notwithstanding this initial conclusion, Gamage and Shanske (2007a) do provide a counterargument that no facial discrimination exists in the case of a BTA. In their argument, they cite a case concerning California’s existing cap-and-trade program AB 32, where the California

Air Resources Board (CARB) adopted a low carbon fuel standard, the standard differentiating fuels by region on the basis of their carbon intensity. Initially the standard was struck down in federal district court on the grounds that applying the standard based on regional source was a facial discrimination (*Rocky Mountain Farmers Union v. Goldstone*, E.D.Cal. Dec 29, 2011). A Ninth Circuit Panel then overturned the district court, arguing that there was no facial discrimination due to the California standard targeting imports not because they were from out-of-state, but because of their carbon intensity (*Rocky Mountain Farmers Union v. Goldstone*, 9th Cir. 2013). Gamage and Shanske (2017a) conclude that because a carbon tax is necessary to resolve a market failure, and one that cannot succeed without BTAs, it should not be struck down by the courts as *per se* discrimination under the dormant Commerce Clause.

In a follow-up article, Gamage and Shanske (2017b) address whether a court might accept an argument that a BTA is justified under the complementary tax doctrine. They argue that if a uniform BTA were charged on all imports, it would satisfy the doctrine, citing *Henneford v. Silas Mason Co.* (300 U.S.577, 1937) as precedent, where the U.S. Supreme Court ruled in favor of the state of Washington's imposition of a use tax on out-of-state purchases. The key issue then becomes what if the BTA is based on the carbon intensity of imports? Gamage and Shanske (2017b) state that a BTA would have to pass the three-pronged test applied in *Oregon Waste Systems* (511 U.S. 93, 1994). First, a BTA would have to be based on an identified event (carbon emissions); second, the effect of carbon emissions would need to be shown to be substantially equivalent wherever they occur; and third, the BTA must approximate but not exceed the level charged in-state.

Gamage and Shanske (2017b) argue that a BTA would satisfy the first and second prongs of the test, but might fail the third based on the ruling in *Associated Industries of Missouri vs. Lohman*

(511 U.S. 641, 1994). In the latter case, Missouri imposed an average 1.5 percent use tax at the state level in order to compensate for different tax rates applied by 1000 localities, the Court finding that the average use tax did not eliminate discrimination in transactions where imported goods were charged more than local goods. Gamage and Shanske (2017b) argue though that in the case of a BTA, carbon intensity can only be calculated approximately, and hence would not necessarily meet the third prong of the test. Here they appeal to the concept of fair apportionment, drawing on *Trinova Corp. v. Michigan Department of Treasury* (498, US. 358, 1991). In this case the plaintiffs argued that in applying its VAT, Michigan's method for locating value-added of firms who operated both within and out-of-state was unreasonable, an argument the Court dismissed, Michigan being permitted to use an approximate formula. Gamage and Shanske (2017b) argue that a BTA should be treated by the same logic: if Michigan can use a formula to track down value added, something similar would apply to BTAs and carbon intensity.

Although Gamage and Shanske (2017a; 2017b) argue that BTAs applied by U.S. states could pass legal challenge through the dormant Commerce Clause, they also recognize that BTAs may raise issues concerning international trade, with the potential to cause problems for the U.S. government, and could, therefore "...run afoul of the foreign dormant commerce clause..." (Gamage and Shanske, 2017a, p. 584). Unfortunately, these authors choose not to address this issue, instead pointing to previous analyses of BTAs and their consistency or otherwise with WTO law.

As noted earlier, there is considerable debate as to how the WTO would actually rule in this instance, and so it is not clear whether the U.S. government would seek a court ruling that border measures are unconstitutional under the dormant Foreign Commerce Clause. Of course that does not mean that the courts would not seek to apply the Clause if there were a challenge to a state-level BTA through the WTO dispute settlement system. Precedent for this can be seen with respect

to the Massachusetts Burma Law (MBL) of 1996 which prevented agencies and branches of the State's government from contracting with businesses that were on a "restricted purchasing list", because they were doing business with Burma (now Myanmar) (Wilson, 2007).

In 1997, both the EU and Japan lodged complaints with the WTO asserting that the MBL was in violation of the WTO Government Procurement Agreement (Batchelder, 2000). Subsequently, the WTO dispute settlement panel was suspended following a ruling by the First Circuit in *National Foreign Trade Council v. Natsios* (181 F.3d 38, 1st Cir. 1999). The ruling by the Court was that MBL was invalid on three grounds: first, it interfered with the dormant foreign affairs power; second, it was a violation of the dormant Foreign Commerce Clause; and third, it was preempted by sanctions that the U.S. had already enacted against Burma (Wilson, 2007). However, following Supreme Court decisions in *American Insurance Ass'n v. Garamendi* (539 U.S. 396, 2003), and *Crosby v. National Foreign Trade Council* (530 U.S. 363, 2000), the Court would seem most likely to rule against BTAs on the grounds of executive preemption by the Federal Government as opposed to the dormant Foreign Commerce Clause (Wilson, 2007).

(ii) *Current Status of U.S. Federal Climate Policy*

In light of the previous discussion, it is interesting to evaluate the current administration's position on climate policy. During the 2016 presidential election campaign Hillary Clinton reminded voters that her opponent Donald Trump had once tweeted, "...The concept of climate change was created by and for the Chinese in order to make U.S. manufacturing non-competitive..." (November 6, 2012). In June 2017, President Trump followed up his rhetoric by announcing that the U.S. would withdraw from the Paris Agreement.

The clear inference to be drawn from this is that federal climate policy will not be enacted anytime soon, and the administration is also backing away from its international commitments to

reduce carbon emissions. Therefore, it seems unlikely that the Federal Government will seek a ruling against state-level BTAs on the grounds of executive preemption. Ironically, recent economic analysis of the Paris Agreement after President's Trump's action suggests other countries' reaction to the choice of the U.S., might actually provoke a protectionist response that has nothing to do with climate change and everything to do with the administration's overtly protectionist stance and desire to maintain employment in the U.S. manufacturing sector.

Withdrawal of the U.S. from the Paris Agreement has resulted in calls for other countries to implement sanctions against U.S. exports of carbon-intensive goods through using BTAs or "carbon tariffs", the objective being to punish the U.S. for free-riding and force them back into the global coalition (Böhringer and Rutherford, 2017). The latter authors, however, have established "...an inconvenient insight..." relating to this possibility, drawing on the idea that a country such as the U.S. can exercise its international market power through tariffs. Böhringer and Rutherford (2017) establish that any BTAs levied against the U.S. will actually be counter-productive if the U.S. chooses to retaliate causing a trade war. The results of their analysis show that China would lose most from a tariff war due to the fact that U.S. use of retaliatory tariffs, will result in significant deterioration in China's international terms of trade which will hurt it as a trade-intensive economy. Even if the U.S. is worse off in a tariff war than it would be under the Paris Agreement, the ability of the U.S. to retaliate and punish China fits well with President Trump's view of China as competing unfairly with the U.S. manufacturing sector and hurting U.S. workers.

5. Conclusions

Absent a binding international agreement to reduce carbon emissions, many countries, regions, and individual states that unilaterally implement climate policy are seeking to resolve the problems

of carbon leakage and reduced competitiveness through the use of border measures. In the case of the U.S., there is the potential for implementation by states of border measures such as BTAs to be found unconstitutional under both the dormant Commerce and Foreign Commerce Clauses, i.e., they would be found both *per se* discriminatory and also have the potential for foreign retaliation if in violation WTO law. The discussion in this paper shows that the latter outcome is not necessarily guaranteed in light of current interpretation of both U.S. and WTO law. However, the current U.S. political climate suggests that use of carbon tariffs by other signatories to the Paris Agreement might actually play into President Trump's protectionist rhetoric.

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