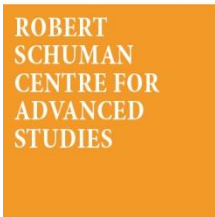




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## The Role of Economic Theory in WTO Arbitrations

Michele Ruta



European University Institute  
**Robert Schuman Centre for Advanced Studies**  
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RSCAS Policy Paper 2013/02

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## **Abstract**

How can economic theory be useful in WTO arbitrations? Motivated by this question, this paper reviews the approach that is often used to determine the level of permissible retaliation in international trade disputes (the, so called, "trade effect" approach), and its implementation under specific policy scenarios (tariffs, quotas, subsidies). Through these examples, the paper argues that economic theory, in addition to quantitative economics, can play a useful role in assisting WTO arbitrators in understanding the pros and cons of the trade effect approach and in implementing this approach under different policy scenarios.

## **Keywords**

WTO Arbitrations, Economic Theory, Permissible Retaliation





## **The Role of Economic Theory in WTO Arbitrations\***

Arbitration is the last stage of an international trade dispute at the World Trade Organization (WTO). This is the stage in which the respondent member's failure to comply with WTO obligations compels the institution to authorize the complaining member to retaliate and apply countermeasures. Specifically, the role of WTO arbitrators consists in establishing the permissible retaliation limits allowed by the Dispute Settlement Understanding (DSU).

This paper addresses a simple question: how can economics be useful in WTO arbitrations? Few would doubt that the measurement of an *appropriate* permissible retaliation requires the use of quantitative economic tools. The role of economics, however, goes well beyond measurement. In fact, what is the *appropriate* level of WTO retaliation? An answer to this question is likely to depend on the overarching objective that DSU countermeasures intend to achieve and on the details of the trade dispute under analysis. On both issues, economic theory (the set of tools developed by economists to understand and interpret economic phenomena and guide economic policy) can play a useful role in assisting the work of WTO arbitrators.

We organize the analysis in two parts. First, we discuss the various theories of what a permissible retaliation should be, focusing in particular on a specific principle that we refer to as the *trade effect* approach. Second, we review how the level of permissible retaliation can be calculated under the trade effect approach in a number of specific policy cases. Concluding remarks follow.

### **(i) What should a permissible retaliation be?**

Knowing the actual objective that countermeasures are intended to achieve is essential to understanding the appropriate level of retaliation in trade disputes. This subsection briefly reviews the debate surrounding this important question.

#### ***The theory: compliance versus efficient breach***

There is no general accepted theory of the purpose of WTO retaliation. In simple terms, one could argue that there are two main legal theories: the compliance view and efficient breach view. The first presuppose that the DSM aims to punish violators, so as to bring them to compliance. The second posits that the objective of the DSM is "efficient" compliance rather than just compliance, so as to allow beneficial violations. Importantly, each goal would yield a different level of optimal retaliation.

To begin, the compliance view focuses on the violators of the agreement (the "respondent" in a trade dispute). Alternatively, the efficient breach view focuses on the affected parties in a dispute (the "complainant"). Legal scholars have noted that the compliance and efficient breach views are analogous to the contract law theory of property and liability rules, respectively. Under property rule a violator faces harsh penalties so as to make a perspective violation an unattractive option. What matters is that the rights of the parties remain intact and that violators do not benefit from non-compliance. On the other hand, under liability rule, a party can violate the agreement in question and infringe upon the other party's rights without permission so long as it pays the price set by an adjudicator later on. This gives a potential violator the option to either comply or pay the damages of their non-compliance.

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The academic debate among legal scholars revolves around two main issues. A first question is whether a certain goal of the DSM is more efficient than the other. Some scholars have argued that efficient breach is desirable because violators bear a cost equal to the harm suffered by injured counterparties, hence non-compliance will occur only when violators gain more than the counterparty loses. In this sense, any violation is efficient, provided that the losing party obtains appropriate compensation.<sup>1</sup> This view, however, has sparked a large number of legal and economic objections. For instance, from a legal perspective, it has been argued that mechanisms other than non-compliance, such as the exceptions contained in Article XX of the GATT, are more adequate to deal with the need for adjusting the bargain. Similarly, from an economic perspective, it has been pointed out that small countries cannot use trade sanctions effectively and, hence, can hardly seek compensation. Many of these arguments have counter-arguments, suggesting that the debate on this important issue is not settled.<sup>2</sup>

The second question surrounding the DSM is whether the actual WTO system of resolution aims at compliance or efficient breach. Article 22.4 of the WTO DSU provides that the level of a member's suspended concessions as a permitted retaliation to non-compliance to trade agreements "shall be equivalent to the level of the nullification or impairment" caused by the non-compliance. Article 22 also includes an arbitration system to review proposed countermeasures to ensure their "equivalence". The central issue that generates debate among trade scholars is what the WTO DSU implies by using the phrase "equivalent to the level of the nullification or impairment". Unfortunately, the WTO DSU text itself does not provide any guidance. This ambiguity leaves essentially open to different interpretations the question of the objective of the resolution mechanism in the multilateral trading system.

### ***The practice: the "trade effect" approach***

While the debate on the legal theories of retaliation is open, the legal practice has been quite consistent. Historically, under the Article 22.4 equivalence standard, WTO arbitrators have employed an *equality-of-harm* approach, which was first developed in the *EC-Bananas III (US)* case. Equality-of-harm is an approach that compares the detrimental effects under the violation and under retaliatory response. The arbitrators first calculate the level of nullification or impairment arising under the violation. The calculated amount then is the upper bound for the permitted retaliation. The calculation is made by comparing the current WTO-inconsistent situation with the counterfactual situation in which there is no violation. The difference between the two is the value of permitted retaliation.

The unit or metric used to measure the difference in detrimental effects can take many forms, including lost profits, a decrease in market share, increased unemployment, overall welfare loss, and so on. With only few exceptions, the metric used in actual arbitrations has been the *trade effect*, or the gross value of trade foregone as a result of the WTO-inconsistent measure.<sup>3</sup> In other words, in most disputes that reached the arbitration stage, the detrimental effects on trade from a WTO violation provided the cap on countermeasures allowed to an aggrieved member. We refer to this special case of the equality-of-harm approach as the *trade effect* approach.

From an economic perspective, the WTO practice of adopting a trade effect approach can be shown to approximate an efficient breach system. Perhaps more importantly, allowing the complainant to

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<sup>1</sup> More precisely, under the efficient breach approach, violations only occur when they confer an aggregate gain on the parties to the bargain (Kaldor-Hicks efficiency). If the party injured by the breach actually receives compensation, then efficient breach leads to an improvement in Pareto efficiency (i.e. no party involved is worse off under the breach and at least one is better off). Below, we provide a simple graphical approach to illustrate this point.

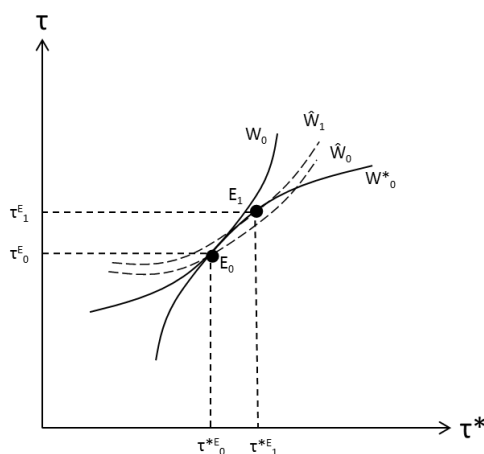
<sup>2</sup> For a detailed account of the legal debate on optimal WTO retaliation, see Pauwelyn (2010).

<sup>3</sup> The exceptions have been cases involving prohibited subsidies such as the *United States - FSC* case, where the metric used was the size of the subsidy payment.

retaliate at a level equal to trade effects also serves the purpose of preserving the stability of the trading system.<sup>4</sup> Both propositions are true only under some restrictive conditions that we discuss below, but they are important as they provide some theoretical foundation for the trade effect approach adopted in actual WTO arbitrations. Below, we use a graphical analysis based on the work of Howse and Staiger (2006) to convey the essential intuition of these results.

First, we show that a breach could be more efficient than strict compliance in some cases. This is precisely the argument made by proponents of the efficient breach view discussed above. This idea is illustrated in Figure 1. The vertical and horizontal axes represent the level of tariff protection imposed by domestic and foreign countries, respectively. The curves represent each country's welfare level as a function of the pair of domestic and foreign tariffs ( $W_0$  for home government and  $W_0^*$  for foreign government). At the initial state, the two governments agree to bind themselves to the internationally efficient level of tariff protection, represented by point  $E_0$  where tariffs amount to  $(\tau_0, \tau_0^*)$ .<sup>5</sup> Note that, at the efficient level, the two indifference curves are tangent to one another exactly at point  $E_0$ .

FIGURE 1



Now, suppose there is a shock to the home country's preferences (one could think of a political shock that changes the weights in the government objective function), so that the new indifference curve for the home country shifts from  $W_0$  to  $\hat{W}_0$ . After the shock, the initial policy pair  $(\tau_0, \tau_0^*)$  is no longer efficient, as the two indifference curves are no longer tangent to each other and there exists an area that can give higher level of welfare for the domestic country without altering the welfare of the foreign economy (i.e. the area between the curves  $W_0^*$  and  $\hat{W}_0$  above the point  $E_0$ ). By increasing tariff protection in both countries (i.e. foreign country increases the tariff to  $\tau_1$  and home country subsequently increases its retaliatory tariff to  $\tau_1^*$ ) to the point where the two curves are tangent ( $E_1$ ), the result is more efficient than complying to the trade agreement at  $E_0$ . This example illustrates that, in certain cases, it is possible for breach to be more efficient than strict compliance.

The problem with the model in Figure 1, however, is that it does not take into account the (spillover) effect that a change in the tariff pair has on third parties in the trade agreement. Howse and Staiger (2006) termed this as the issue of *multilateral instability*. That is, an efficient breach between two countries (home and foreign) could potentially lead to more breaches by other signatories of the

<sup>4</sup> These two propositions are established in Howse and Staiger (2006). Grossman and Sykes (2011) extend this analysis and clarify some of the assumptions needed for these results to hold.

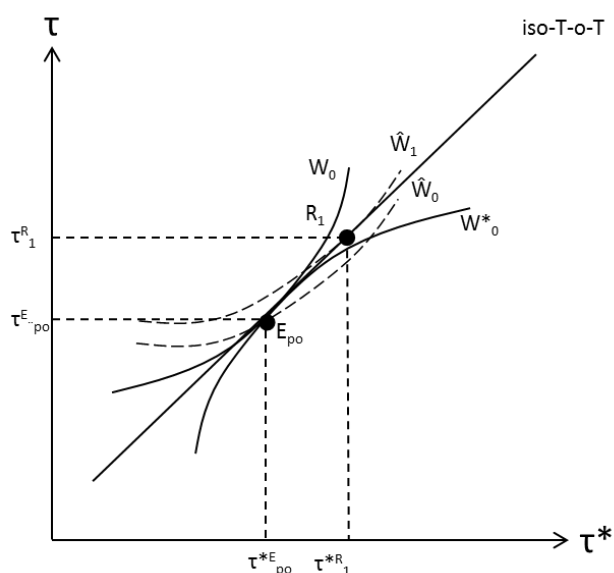
<sup>5</sup> An internationally efficient level of tariff protection is the one that sets trade policies such that the effects from terms-of-trade are ignored. In conditions of perfect competition, this is zero (i.e. free trade) if governments maximize social welfare. For more detailed explanation, see Bagwell and Staiger (2002).

agreement. Specifically, the changes in tariff rates in the home and foreign countries could render the original tariff levels of third parties no longer efficient, implying that third parties would also have to adjust their tariffs to compensate. This introduces instability into the WTO system. We show below that the trade effect approach to calculating the optimal retaliation prevents this problem (if deviations are not too large).

Multilateral instability is a result of the changes in trade flows to or from third countries induced by the breach of the violator and the retaliation of the complainant. The key, then, is to allow a retaliation level such that it does not affect trade flows to third parties. This is what the trade effect approach achieves. Specifically, to maintain the same trade flows to and from third countries, the retaliation needs to be such that the volume lost in the complaining country as a result of the original breach matches the volume lost in the violating country as a result of the permitted retaliation, calculated at original international prices. If this is the case, then the terms of trade (i.e. the price of exports relative to imports) between the respondent and the complainant is preserved, thus stabilizing trade flows with third countries.

Figure 2 illustrates this point and provides an intuition of the two conditions that must hold. First, before the preference shock occurs, both governments must begin at the internationally efficient tariff pair. Second, the shock to the status quo must be sufficiently small. Recall that efficiency means the two indifference curves are tangent to each other. Now, the internationally efficient tariff level also means that both indifference curves are tangent to an iso-term-of-trade (T-o-T) line shown in the figure. An iso-term-of-trade line is the line on which any pair of tariffs ( $\tau$ ,  $\tau^*$ ) would preserve the terms of trade between the two countries. Point  $R_1$  in Figure 2 is the point towards which the two governments would move under the trade effect approach to permissible retaliation. As the figure shows, this rule provides an approximation to the efficient retaliation in Figure 1 only for sufficiently small shocks (i.e. roughly, if point  $R_1$  is not too far from the initial equilibrium).

FIGURE 2



While economic theory provides support to the trade effect approach under some conditions, one should bear in mind that these conditions may not always hold in practice. What kind of problems would such a rule face in these cases? First, if the breach is "large", retaliation that conforms to the trade effect approach will leave the aggrieved party worse off due to the sizeable decline in the volume of trade. Second, if trade policies are not set at internationally efficient levels in the trade agreement, then there is no guarantee that the trade effect approach will compensate for the welfare loss of the

complainant. Specifically, this retaliation level may be too low or too high depending on how policy instruments are set initially. Third, the results discussed above hold in a model with only two goods. Beyond this simple framework, the trade effects approach can restore lost welfare if trade in other goods is not affected significantly by the violation and the retaliatory measure.<sup>6</sup>

## **(ii) Retaliation under the trade effect approach**

The previous subsection dealt with the issue of optimal WTO retaliation. We argued that the question of the optimality of countermeasures cannot be disjoint from the question of what retaliation is supposed to achieve (i.e. compliance or efficient breach). Putting this issue aside, we noted that the legal framework of Article 22 of the DSU of ensuring equivalence between violation and retaliation and the practice of most WTO arbitrations to use trade effects as a metric for such equivalence has a theoretical basis in economics (under some conditions).

In this subsection, rather than the rationale of the trade effects approach, we are interested in its practical implementation. We present a simple theoretical framework to infer the level of permissible retaliation under the trade effects approach for both import-restricting and export-promoting policies. Specifically, we first provide an illustrative example based on the breach of a tariff commitment and then focus on certain WTO-inconsistent measures that have been disputed in practice (import quotas, domestic subsidies, export subsidies). This analysis provides a theoretical foundation for the quantitative approach to the calculation of permissible retaliation used in most WTO arbitrations.

We consider a model based on Bown and Ruta (2010). The broad objective of the analysis is to determine the formula for evaluating appropriate countermeasures under the trade effects approach. We assume that there are two large countries called the respondent (R) and the complainant (C) and we denote the complainant's variables with \*. We assume that there are two goods that are traded internationally in perfectly competitive markets. Good  $x$  is the natural import (export) good of the respondent (complainant) country and good  $y$  is the natural export (import) good of the respondent (complainant) country. While we will describe other details of the trade environment below, we highlight here the common aspects of the different cases. First, the trade agreement binds the policies at their internationally efficient levels. Second, a shock leads the respondent to breach the agreement and alter its trade policy. Third, the complainant files a dispute and the WTO adjudicating bodies ascertain the inconsistency of the respondent's measure with the agreement. Finally, the arbitrators have to establish the appropriate level of retaliation to be granted to the complainant.

Below, we review policy deviations in the case of a tariff, a quota, a domestic subsidy and an export subsidy. For each case we ask: what should the permissible retaliation be on the basis of the trade effects approach?

### ***Import tariffs***

To begin we assume that governments have only one policy instrument and, initially, both countries impose internationally efficient tariff rates ( $\tau^E$  and  $\tau^{*E}$ ) that are committed in a binding trade agreement. Figure 3 below illustrates the complainant, the world, and the respondent markets for good  $x$  in panels (a), (b), and (c), respectively.

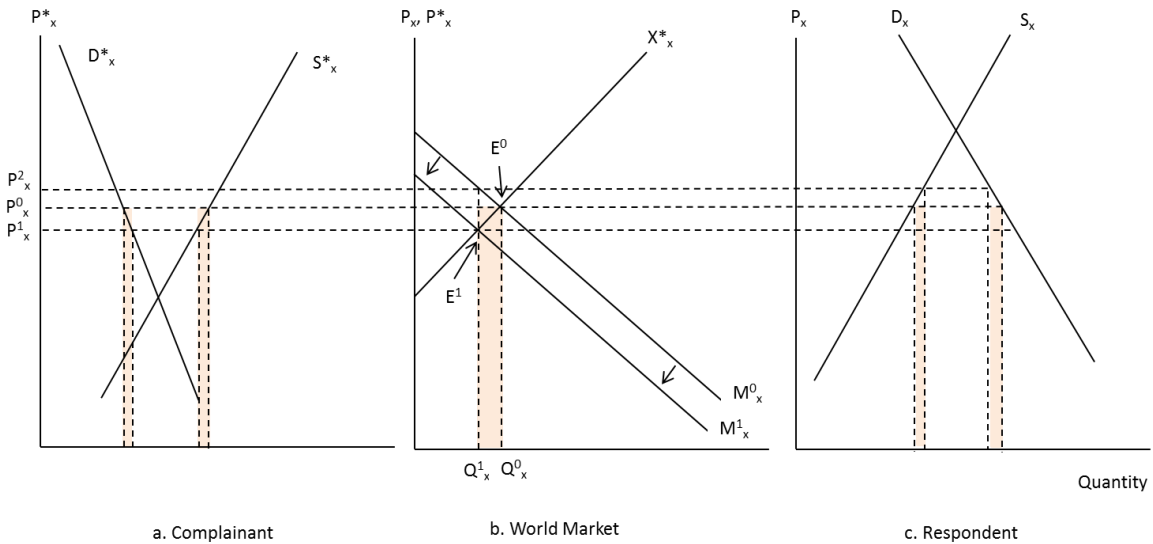
Suppose that country R experiences a shock that renders the current tariff rate inefficient. Therefore, the government unilaterally imposes a higher tariff rate ( $\tau^1$ ) on imports of good  $x$ . An import tariff raises the domestic price in the respondent's market from  $P_x^0$  to  $P_x^2$  and lowers the world

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<sup>6</sup> These findings are formally established in Grossman and Sykes (2011). We refer the interested readers to this article for further details on the validity of the trade effects approach in a more general trade model and the required additional restrictive assumptions.

price from  $P_x^0$  to  $P_x^1$ . Because of these price changes, producers in country R supply more and consumers demand less, while the opposite is true in country C. This reflects in the downward shift of the import demand curve in the world market in Panel (b) from  $M_x^0$  to  $M_x^1$  with a new equilibrium ( $E^1$ ). At this point, imports and exports of good  $x$  are lower than at the original equilibrium ( $E^0$ ).

FIGURE 3



We next calculate the appropriate level of retaliation that country C can impose on imports of good  $y$  from country R applying the trade effect approach, as we have defined it in the previous subsection - i.e. such that the value of export and import trade volumes between the two countries is stabilized. Specifically, maximum retaliation allowed to the complainant equals the lost volume of trade ( $Q_x^0 - Q_x^1$ ) measured at the original world price ( $P_x^0$ ) (shaded area in Panel (b)). This is exactly equal to the shaded area in Panels (a) and (c) in Figure 3 (representing the value of lost imports, Panel (c), and the value of lost exports, Panel (a)).

While an import tariff case provides a useful benchmark for our theoretical setup, to date there has never been a WTO arbitration addressing violation of tariff commitments. The following examples, instead, are more closely related to trade disputes on WTO-inconsistent measures that have reached the arbitration stage.

**Import quotas**

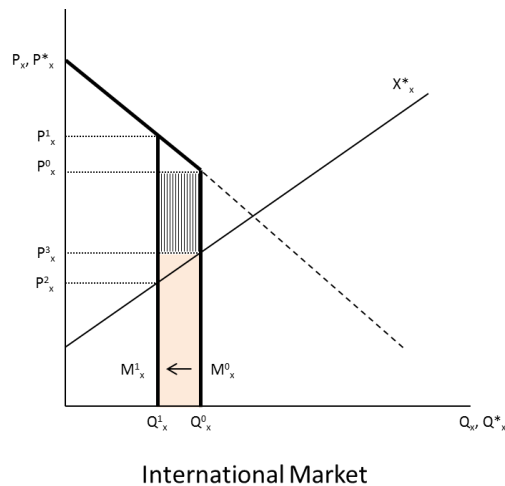
Several arbitrations in the recent past have dealt with import quotas, including *EC – Bananas*, *EC – Hormones*, and *U.S. – Gambling*. This subsection looks at the calculation of the appropriate retaliation under the trade effects approach in the case of a WTO-inconsistent quota.<sup>7</sup>

Consider the model presented in the previous subsection, but assume that the respondent government has only an import quota at its disposal. Figure 4 shows the world market (i.e. only Panel (b) in Figure 3) for this policy environment. The WTO-consistent quota ( $Q_x^0$ ) is depicted in the kinked import demand curve (the bolded and kinked curve with the x-intercept at  $Q_x^0$ ). While consumers in country R are willing to buy more than the quota limit (the dotted line), the quota makes it so that imports are limited to  $Q_x^0$ .

<sup>7</sup> For a comparison of the decisions of WTO arbitrators in actual trade disputes between 1995 and 2007 with the predictions of the trade effects approach, see Bown and Ruta (2010).

As before, suppose that there is a political shock altering the preferences of country R's government so that it imposes a more restrictive and WTO-inconsistent quota at  $Q^1_x$ . The effect of the quota restriction is to shift in the import demand curve. This leads to an increase in the consumer price in country R from  $P^0_x$  to  $P^1_x$  and, at the same time, a decline in the price received by the producers in country C from  $P^3_x$  to  $P^2_x$  (because of the falling demand from the respondent country).

FIGURE 4



In the case of a quota, the appropriate retaliation under the trade effects approach depends on how import quota licences are allocated. This is essential information that arbitrators need to acquire. The change in the volume of trade is simply determined by the change in the quota level ( $Q^0_x - Q^1_x$ ), but the relevant international price depends on who receives the rent from owning quota licences (the striped area in Figure 4). Consider two extreme cases. If quota licences are allocated to a party (e.g. exporting firms, the government) in the complaining country, then the relevant original international price is  $P^0_x$ . To the other extreme, when quota licences are allocated to importers in country R, the relevant price is given by  $P^3_x$ . In between these two cases there are a number of intermediate possibilities. This is because it is well possible that the government of the respondent country allocates the quota licences between domestic and foreign parties. The range of appropriate retaliation in the case of a WTO-inconsistent quota restriction are, therefore, captured by the shaded area plus a share of the striped area in Figure 4 which depends on the actual allocation of quota licences.

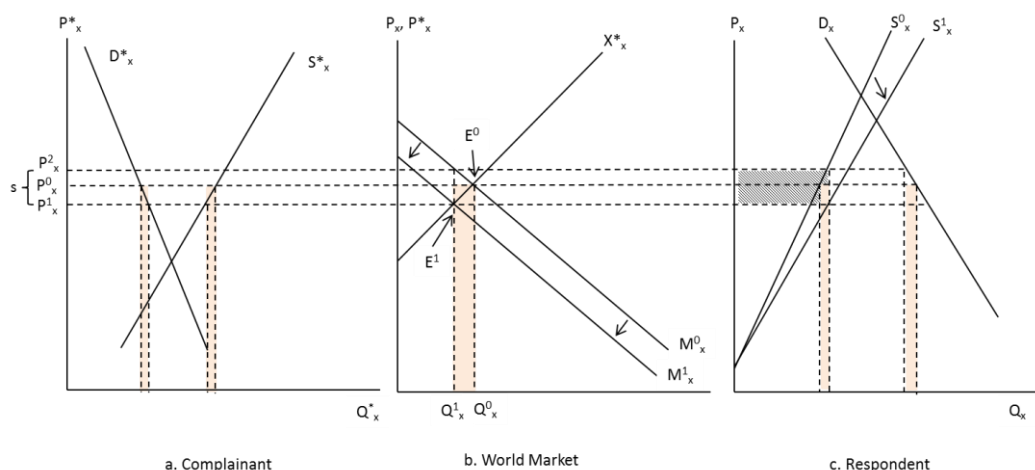
### *Domestic subsidies*

This and the following case deal with subsidies. We focus first on domestic subsidies, such as a production subsidy, which are payments per unit of production, offered to the import-competing sector. Although domestic subsidies are, strictly speaking, not trade-policy measures, their effect on trade can still be significant and countries may at times use these measures as a protectionist device. Several cases were brought to the WTO in past years that dealt with domestic subsidies such as the *US- Continuing Dumping and Subsidy Offset Act (Byrd Amendment)*. The question we address is: What is the level of appropriate retaliation to a WTO-inconsistent domestic subsidy under the trade effect approach?

We modify the model that we presented earlier to assume that the respondent country has at its disposal only a domestic subsidy  $s$ . Policies are initially set at the internationally efficient level and the initial equilibrium in the international market is at point  $E^0$  in Panel (b) of Figure 5. However, following a shock, the government of country R introduces a WTO-inconsistent production subsidy to its import-competing sector. As a result of this domestic subsidy, there is an outward shift of country

R's domestic supply curve (from  $S_x^0$  to  $S_x^1$ ) and a decrease in the quantity imported, as depicted in Panel (c) of Figure 5. The fall in the import demand for good  $x$  results in a decline in the world price from  $P_x^0$  to  $P_x^1$ , a terms-of-trade deterioration for country C, and a fall of import volume from  $Q_x^0$  to  $Q_x^1$ .

FIGURE 5



Notice that the effect of domestic subsidies is qualitatively analogous to the previous import-restricting measures and, as a result, the calculation of the maximum retaliation under the trade effect approach follows the same methodology. Specifically, the amount of distorted quantity ( $Q_x^0 - Q_x^1$ ) measured at the original world price ( $P_x^0$ ), the shaded areas in Panel (b) of Figure 5, represents the value of trade foregone as a result of a domestic subsidy. This area is the maximum amount to which the complainant is entitled to retaliate (by imposing restrictive tariffs on its imports of good  $y$  from the respondent) under the trade effect approach. Note that this amount differs from the grey shaded area in Panel (c), which captures the total size of the subsidy payment provided by the government of country R.

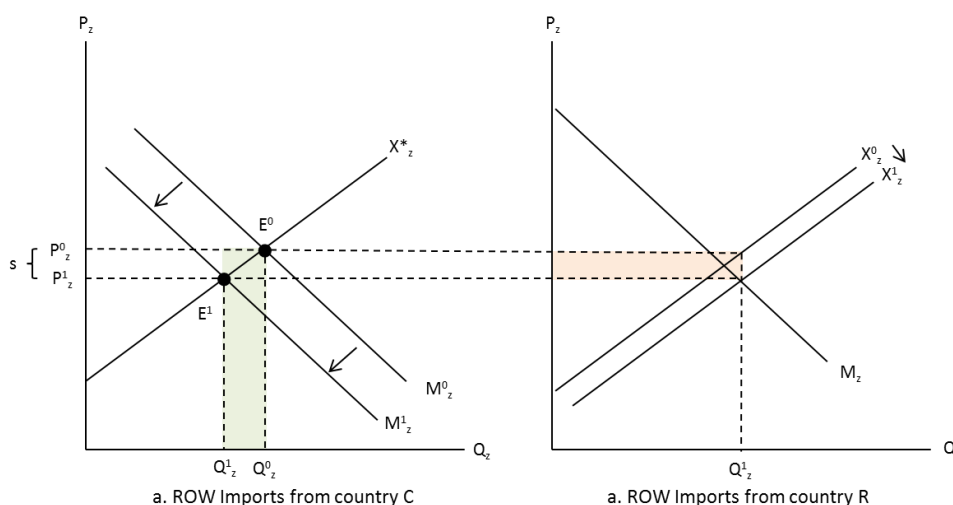
### Export Subsidies

We now turn to the analysis of permissible retaliation when the WTO-inconsistent measure promotes exports. A number of WTO disputes that reached the arbitration stage had export, rather than import, policies as their object, including the *Canada–Aircraft Subsidies*, the *Brazil–Aircraft Subsidies* and the *US-Upland Cotton* cases. We show that also in this set of cases the trade effect approach may provide a useful benchmark to calculate the maximum retaliatory amount for a complainant. In order to achieve this goal, we need to extend the model that we have utilized so far. Assume that there are three countries in the world, R (respondent), C (complainant), and ROW (rest of the world). And suppose that there is a third good,  $z$ , which both R and C export to ROW. Also, both the respondent and the complainant have at their disposal export subsidies that they can offer to their export-competing sector. In the initial period, however, R and C are bound by the WTO-consistent agreement to provide limited subsidies.

Now, suppose there is a political shock in country R that leads the government to increase its subsidy to the export sector to a point where the policy is now inconsistent with WTO rules. Figure 6 illustrates the impact of export subsidies from country R in the ROW importing market. Panel (a) shows the ROW imports from country C before and after the subsidies from country R, while panel (b) shows the imports from country R over the same time period. What we want to calculate is the amount of retaliation that country C would be allowed under the trade effect approach for the breach of export subsidy rules by country R.



FIGURE 6



Panel (a) portrays the ROW's net import demand curve ( $M_z^0$ ), as well as the export supply from C ( $X_z^*$ ) of good  $z$ . Before any subsidy is imposed, the import quantity demanded in the ROW from C is  $Q_z^0$  and the price is  $P_z^0$ . After R imposes the WTO-inconsistent export subsidy, however, the ROW demand curve for good  $z$  from C falls to  $M_z^1$  and, thus, at the new equilibrium ( $E^1$ ), the price decreases to  $P_z^1$  and imports from the complainant country fall to  $Q_z^1$ . This is simply because subsidized exporters from R are able to supply the world market of good  $z$  at a lower price. Under the trade effects approach, the level of retaliation should be equal to the shaded area in Panel (a) of Figure 6, which represents the volume of trade lost by the complainant country ( $Q_z^0 - Q_z^1$ ) measured at the original world price ( $P_z^0$ ). Note, as a comparison, that this amount is different from the shaded area in Panel (b), which captures the size of the subsidy provided by the government of R to its exporters.

### (iii) Conclusion

Economics can add new dimensions to the analysis of WTO disputes. At the conceptual level, economic theory can provide another lens for interpreting or clarifying WTO provisions and to frame a dispute. At the quantitative level, economic analysis offers tools for the measurement of economic effects. While the use of economic analysis to quantify and calculate economic relations is generally accepted (at least from an intellectual point of view) within the trade community, the role of economic theory often appears underappreciated. In this respect, trade policy is no exception, and economists are partly to blame for their inability to convince others of the policy usefulness of theoretical work.<sup>8</sup>

This paper is an attempt to explain through selected examples the role that economic theory can play in WTO arbitrations. Essentially, two roles have been emphasized. First, the use of economic theory permits a better understanding of the pros and cons of the trade effect approach that is generally adopted in WTO arbitrations. Differently put, economic theory is an instrument to recognize under what circumstances the use of the trade effect approach is efficient. Second, economic theory offers a framework that allows arbitrators to identify the level of permissible retaliation that is appropriate under different trade policy scenarios. Both these roles of economic theory are important preliminary steps in guiding the measurement of permissible retaliations in WTO trade dispute.

<sup>8</sup> An exception is the short paper by Hal Varian on the role of economic theory in economic policy (Varian, 1993).

## References

- Bagwell, Kyle and Robert W. Staiger (2002) *The Economics of the World Trading System*. Cambridge, MA: MIT Press.
- Bown, Chad P. and Michele Ruta (2010), "The Economics of Permissible WTO Retaliation," in Chad P. Bown and Joost Pauwelyn (eds.), *The Law, Economics and Politics of Retaliation in WTO Dispute Settlement*, Cambridge, UK: Cambridge University Press (Chapter 6).
- Grossman, Genen M. and Alan O. Sykes (2011) "'Optimal' Retaliation in the WTO – a commentary on the Upland Cotton Arbitration," *World Trade Review*, 10, 133-164.
- Howse, Robert and Robert W. Staiger (2005) "United States – Antidumping Act of 1916 (Original Complaint by the European Communities) – Recourse to Arbitration by the United States under Article 22.6 of the DSU," *World Trade Review* 4(2): 295-316.
- Pauwelyn, Joost (2010) "Damage Calculation in Context: What is the Goal of WTO Remedies?," in Chad P. Bown and Joost Pauwelyn (eds.), *The Law, Economics and Politics of Retaliation in WTO Dispute Settlement*, Cambridge, UK: Cambridge University Press (Chapter 2).
- Varian, Hal Ronald, (1993), "What Use is Economic Theory?", Working Papers, Michigan - Center for Research on Economic & Social Theory.

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