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Post-Doha Trade Policy Options for a Small Country

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ABSTRACT

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This paper uses a partial equilibrium model of two small countries, within a large world economy, implementing reciprocal tariff cuts on each other's exports in a regional trade agreement (RTA) and compares the effects with unilateral most-favored-nation (MFN) tariff cuts. The reciprocal cuts are shown to be more likely beneficial to a country the larger is the partner country's trade. The welfare effects of a country's own tariff cut on imports are also compared to the effects on its welfare of the partner-country's tariff cut on its exports. If tariff levels are low, the latter is seen to be larger than the former. Implications of the analysis are that, if multilateral trade liberalization is unlikely, then small countries should seek to form RTAs with countries larger than themselves. In addition, to assure that they have something to offer in such arrangements, they should not go too far in unilaterally reducing their MFN tariffs.

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I. Introduction

With the likely failure of the Doha Round of multilateral trade negotiations under the WTO, the most promising path for small countries to gain trade liberalization by other countries may have been closed off. The options that remain are two: unilateral liberalization or engagement in preferential arrangements with like minded other countries. This paper will examine these two options and look especially at the characteristics of countries and markets that might make other countries more or less attractive as partners in a regional trade agreement (RTA).[1]

Using simple partial equilibrium analysis of tariff cuts by countries that are too small to affect world prices, I will compare the effect of a single country's most-favored-nation (MFN) tariff cut with the reciprocal tariff cuts that it and an RTA partner might negotiate on each others exports. The model will have only these two goods, but because

* This paper elaborates on an idea that I have included in presentations to a number of audiences, and I thank them for their feedback. I also thank Rajesh Chadha for giving me the opportunity to formalize these thoughts.

[1] I do not much like the term "regional trade agreement," even though it seems to be the standard name for these arrangements in the WTO. My objection is that these arrangements are increasingly negotiated between countries that are geographically far apart, and thus are not at all regional. I prefer the term "free trade agreement," or FTA, even though many would object correctly that FTAs are not the same as simple free trade. They do, nonetheless, at least in their ideal form, involve zero trade restrictions and thus free trade among the members.

In spite of all of this, I will call them RTAs rather than FTAs, for purely notational convenience: I will be using a superscript "F" for free trade, and this allows me to use "R" for these preferential arrangements.

Why not call them preferential trade agreements? Because preferential arrangements may include preferential tariffs that are not necessarily zero. My analysis will deal only with zero tariffs within the RTA.

the countries are small (or more accurately in the case of the partner country, its potential trade with the home country is small), the fixity of world prices justifies both the partial equilibrium analysis and would facilitate extension of the analysis to multiple goods at little cost other than notation.

The messages of the paper are the following: A unilateral nondiscriminatory (MFN) tariff cut by the small country is necessarily beneficial, as we already knew. A preferential tariff cut can be harmful, as we also already knew but had not perhaps seen in a model quite like this. By itself it is necessarily worse than an MFN cut of the same size. However, when accompanied by a preferential tariff cut by the partner country, the benefit through exports can overcome this deficit and make the FTA not only beneficial but also better than the one-sided MFN cut. Naturally, if MFN cuts could be met by MFN cuts abroad as well, this would be even better. But without a successful conclusion to the Doha Round, multilateral MFN cuts are unlikely.

To say that an RTA *may* be better than a unilateral MFN tariff reduction does not say when it will be. I will argue, also in the context of this model, that when tariffs are high, then the unilateral cut is likely to be superior, but when tariffs are low, the opposite is true. Therefore, a country with high tariffs should not hesitate to lower them, but only to moderate levels, not to zero. From there on, the country's best interest is served by negotiating RTAs with countries whose markets it wishes to access. This conclusion is only strengthened, outside of the model here, by the need to have something to offer such countries in the form of market access.

In short, if tariffs at home and abroad are low, then countries have more to gain by expanding exports through foreign tariff reductions than by expanding imports through

tariff reductions of their own. If multilateral tariff reductions are unlikely to happen, due to the failure of multilateral negotiations in the Doha Round, then bilateral tariff reductions within RTAs are likely to be the best that can be achieved. For that to happen, countries need to have nonzero tariffs that they can offer to remove bilaterally.

II. The Model

The model has two small countries, A and B, each producing, consuming, and trading many goods, of which we consider only two, Y and Z (I'm reserving "X" to denote exports). The two countries potentially trade these goods with each other, and they certainly, before any RTA, trade with a large world market where the prices of all goods are fixed. Because there are many goods, there is no reason for trade in Y and Z to be balanced, either multilaterally or bilaterally. In the initial equilibrium, country A imports good Y subject to a tariff, t_Y^A, and exports good Z. At the same time, country B imports good Z subject to a tariff, t_Z^B, and exports good Y. Countries in the rest of the world presumably have various tariffs as well, on these and other goods, and these foreign tariffs matter for world prices. But neither those tariffs nor those prices will change in our analysis.

Domestic supplies and demands for the two goods in the two countries are linear, and one configuration of the initial equilibrium is illustrated in Figure 1. The top panel shows good Y, in which Country A, of the left, has excess demand even at its tariff-distorted domestic price $P_Y^W + t_Y^A$. Country B, on the right, exports good Y at the world price, P_Y^W, perhaps partly to Country A. The bottom panel shows the opposite trade

pattern for good Z, which Country A exports and Country B imports subject to its own tariff.

Suppose now that Country A moves unilaterally to free trade with all countries, reducing its tariff on good Y to zero. The effect in the market for good Y in Country A is the usual one: demand expands, supply contracts, and imports therefore rise from the world. However, there is no effect at all in Country B, which continues to sell the same amount as before at the unchanged world price. It may sell more to Country A, perhaps, but since it gets the same price that it was getting before from the world market, its supply and demand do not change. Similarly, since it was only Country A that moved to free trade, and it was an exporter not an importer of good Z, the market for good Z in the bottom panel is unaffected. In particular, Country A's suppliers in the market for good Z get no benefit from the tariff cut in good Y.[2]

Now suppose instead that Country A enters into a regional free trade agreement with Country B, so that each country eliminates its tariff only on imports from the other country. In the market for good Y, Country B's suppliers can now sell in Country A, and they will do so up to the point that prices in the two countries become equal and the market clears. As drawn in Figure 1, under the RTA price settles at P_Y^R, which is higher than the world price but below the previous domestic price, $P_Y^W + t_Y^A$, in Country A. The market clears because, at that price, Country A's excess demand equals Country B's excess supply, both shown by the identical horizontal two-headed arrows between quantities supplied and demanded in the two countries. This is not the only possibility, since if B cannot supply all of A's excess demand at $P_Y^W + t_Y^A$, price will remain there,

[2] This cannot be quite right, since the move to free trade by Country A in all markets will expand its demand for foreign exchange, causing its currency to depreciate and raising the domestic-currency price for all goods, including for its exporters. I ignore this complication in this partial equilibrium model.

while if A does not demand all of B's excess supply at P_Y^W, price will remain there. I will consider such corner-solution cases later.

With an RTA, the same sort of thing happens in the other market, as shown similarly in the bottom panel of Figure 1. Thus, with interior solutions in both markets, the two countries' trade with the rest of the world in these markets ceases entirely, and they move to an equilibrium in which they trade only with each other. There is no need for this bilateral trade to be balanced, since both countries may be trading other goods with the outside world. But otherwise the result looks similar to what we normally see in models of a world with only two countries and two goods.

In such a world, we would expect free trade to cause changes in the terms of trade, tending to favor the smaller country, and that is the case here as well. We will look later at what determines the price changes, but since both P_Y and P_Z -- exclusive of tariff in the importing country – both rise in Figure 1 by amounts that need not be related, it is clear that the terms of trade will normally improve for one country and worsen for the other.

On the other hand, it is not necessarily the case that the country with an improved terms of trade is made better off, as it would be in a two-country world. The reason is the lost tariff revenue, which here is not entirely just a transfer to demanders, as it would be in the two-country case. Instead, because each country is buying more costly imports from the partner country than it got before from the world market, a portion of the tariff revenue is lost to that country. It is therefore possible here (although I have not yet shown it, and it does not appear to be the case in Figure 1) for both countries to lose from the RTA.

All of this requires additional analysis to, first, solve for the equilibrium prices in the two markets, and then to examine how the solutions depend on the parameters of the model.

III. Analysis

Figure 1 shows far more than is needed to do further analysis on the model. The markets for goods Y and Z are qualitatively symmetric, so it will be enough to look at a single market. In addition, we don't really need to know how suppliers and demanders are affected separately, and the equilibrium prices depend in any case only on excess demand and supply. Figure 2 therefore shows only the excess supply, denoted X for exports, and excess demand, denoted M for imports, of an unnamed good with world price P^W subject initially to a tariff, *t*, in the importing country. As was the case implicitly in Figure 1, these are shown as intersecting between P^W and $P^W + t$, so that the solution with an RTA is interior, with price P^R between these two.

For the remainder of the analysis, I will speak of the "exporting country" or "exporter," and the "importing country" or "importer," as though this were all that each country does. Of course that is the case only in the market for this one good,[3] and both countries in fact both export and import in other markets. Thus, for example, when I say that "the exporting country experiences" a certain change, what I mean is that any country experiences such a change within the markets where it exports.

Now if the importing country goes to multilateral free trade, removing its tariff on all sources of imports, then imports rise to M^F, at the intersection of the *M*-curve with

[3] Which is assumed throughout to be homogeneous, so that there is no possibility of intra-industry trade.

P^W, and the country experiences the usual loss of tariff revenue but larger gain by net demanders,[4] so that it gains from trade. The exporting country in this market, on the other hand, gains nothing, since it continues to export what it did before at the same price.

If instead the importing and exporting countries form an RTA, they then trade with each other at the equilibrium price P^R, and they both trade not at all with the world. Net demanders in the importing country gain from the fall in price from $P^W + t$ to P^R, while net suppliers in the exporting country also gain from the rise in price from P^W to P^R. However, the government of the importing country loses the entire tariff revenue.

All of this can be quantified using the areas labeled a, b, c, … in Figure 2. Let ΔW_I^J be the change in welfare from the initial situation to situation *J=F,R* for country *I=X,M*. Then we have

$$\Delta W_M^F = \text{b+d+g+h} \tag{1}$$

$$\Delta W_X^F = 0 \tag{2}$$

$$\Delta W_M^R = \text{b}-(\text{c+e+f}) \tag{3}$$

$$\Delta W_X^R = \text{c+d+e} \tag{4}$$

The first of these, ΔW_M^F, is the usual gain in consumer surplus (net of loss in producer surplus) measured by the entire area to the left of the *M*-curve between P^W and $P^W + t$, minus the lost rectangle of tariff revenue, tM^0. In (3) for ΔW_M^R, area b is the same thing for the smaller drop in price to P^R, but from that must be deducted the portion of the lost tariff revenue that does not accrue to demanders as a drop in price, area (c+e+f). Finally,

[4] By which I mean the gain to domestic demanders minus the loss to domestic suppliers.

ΔW_X^R is the gain in producer surplus (net of loss in consumer surplus) in the exporting country, measured by the area to the left of the *X*-curve between P^W and P^R.

From these it is clear that the RTA causes the exporting country unambiguously to gain in this market, given an internal equilibrium so that price rises. The importing country may gain or lose from the RTA, although it necessarily gains less than it would have from moving to free trade in this market alone.

Likewise, adding ΔW_M^R and ΔW_X^R, the two countries together are affected as follows:

$$\Delta W_{X+M}^R = \text{b+d−f} \tag{5}$$

This can be either positive or negative, but again it is necessarily smaller than the importing country alone could have gained from free trade in this market alone. It also has a very familiar interpretation. The positive area, b+d, reflects Viner's (1950) trade creation, since it is an amount of trade that did not take place previously. The negative area, f, reflects trade diversion, since it represents an amount of imports that the importing country previously bought from the world market at price P^W and which is now supplied at higher cost (since the *X*-curve is a supply curve) from its partner in the RTA.[5]

The fact that $\Delta W_{X+M}^R < \Delta W_M^F$ is significant. Suppose that all countries face the same parameters in their import markets as are faced by the importing country in Figure 2, and that all countries face the same parameters in their export markets as are faced by the exporting country in Figure 2. Then ΔW_{X+M}^R is not just the gain of these two

[5] One might object that the quantity X^0 is also diverted, since it may have been bought from third countries and must now be bought from the partner. But it could just as well have been bought from the partner to start with.

countries forming an RTA in a single market, but it is also the gain of any single country forming an RTA in both one of its import markets and one of its export markets. If countries also have these markets in equal number, then it would follow that any country would be better off moving unilaterally to free trade, even though that fails to garner the benefits of market access for its exports, than entering into a regional trade agreement so as to achieve those benefits.

Of course, the assumption that all countries are alike is absurd. But the result does suggest that if a country faces conditions in its export markets similar to what others face exporting to it, then again it will be better off with free trade than with an RTA.

Corner Solutions

So far we have looked only at an interior solution. This will occur if both of the countries are able to meet their needs – export supply or import demand – within the capacity of the other country to demand or supply. If instead – if the exporting country's initial exports are more than the importing country would demand at P^W, or if the importing country's initial imports are more than the exporting country would supply at $P^W + t$ – then price will be driven within the RTA to one of those extremes. These two outcomes are both shown in Figure 3, where a single import demand curve, *M*, is confronted with two different export supply curves, $(X)^L$ with low exports and $(X)^H$ with high exports.

What happens is much simpler than in the interior solution of Figure 2. In the case of low exports $(X)^L$, formation of the RTA causes the exporter to expand exports up to the price $P^W + t$, and since import demand is still larger than that, price does not fall at

all in the importing country. The importing country therefore gains no consumer surplus, but it loses the tariff revenue – area (a+b+c) – on all that it now imports from the partner country (pure trade diversion), and it necessarily loses. Meanwhile the exporting country gains the maximum possible – area (a+b) – and so the two together necessarily lose, area (c).

In the other case of high exports, $(X)^H$, the importing country now buys all that it wants from the exporter at price P^W, and price there does not rise at all, since supply is still greater and must be sold on the world market. Imports therefore rise to the free-trade level, and in fact the outcome is exactly the same in this market as if the importing country had moved unilaterally to free trade.

Of course, this is just one market, and the FTA could well have had other effects in other markets. But in this model, if initial exports and imports of two countries are sufficiently different, then only the side of the market that is trading less will experience any gain. And if that is the exporting country, then the importing country will necessarily lose, due to lost tariff revenue.

Other patterns

There are a number of other possibilities not addressed in Figures 2 and 3, and I will not try to examine them in detail. One is that a country starts with a prohibitive tariff, therefore not importing a good at all even though its domestic price is higher than in the world. Price would then fall from its autarky price to either P^W or P^R, and while the gain in consumer surplus would be somewhat smaller, there would be no loss of tariff revenue.

Other possibilities would have the two countries either both exporting or both importing the good in the initial situation. The former is uninteresting, since both would be selling at the world price and there would be no scope for either to change policy in that market.

The other possibility, that both countries initially import the good, is more interesting, however, especially if their tariffs are not the same. With an RTA, there is incentive for imports to the high-tariff country to enter instead through the low tariff country and then cross between them tariff-free. Presumably such "trade deflection" will be prevented by a rule of origin.

However, a rule of origin will not prevent "indirect trade deflection":[6] Domestic producers in the low-tariff country selling in the high-tariff country once that tariff facing them is removed by the RTA. Presumably they will do so until either their entire expanded output is sold in the partner at a higher price, or until the domestic price in the partner is pushed down to that in the low-tariff country, which then continues to sell some of its output at home. In either case, the domestic sales that are redirected from the low-tariff country to the high-tariff country will be replaced by increased imports from outside the RTA into the low-tariff country, while its exports to the high-tariff country will displace part or all of what that country previously imported from outside. The effect is much the same as that of direct trade deflection, even though what crosses the border are not the same units of the good that were imported from outside.

Indirect trade deflection has additional welfare effects on the two countries. Producers in the low-tariff country gain increased surplus selling at the higher price in the

[6] See Richardson (1995) who first identified the phenomenon and called it "internal trade deflection." He went on to argue that it would induce member countries of an RTA to compete for imports and tariff revenue by each trying to lower its tariffs below those of the other.

partner, and their government also gains increased tariff revenue on the increased imports. The high-tariff country likewise must lose if the deflected trade is not enough to replace its imports entirely, since its consumers and producers will still face the same price as before, but the government loses tariff revenue. Only if the deflection ends imports from the world and pushes down the price might consumers gain potentially more than the loss in tariff revenue, though this does not seem likely.

Having raised this possibility, I will from here on ignore it in my formal analysis. I will concentrate instead on markets in which one of the two countries imports and the other exports. What I want to determine is how the quantities of initial trade of the two countries, as well as their tariff levels, influence the likelihood and extent to which they gain from the RTA.

Algebraic Solution

To explore more carefully how parameters and initial conditions affect these results, let the supply and demand functions in Figure 2 take the following linear forms:

$$X = \overline{X} + \varepsilon P \tag{6}$$

$$M = \overline{M} - \eta P \tag{7}$$

The slope parameters ε and η measure the responsiveness of export supply and import demand to price changes, and with appropriate normalizations they can be roughly interpreted as price elasticities of these functions.[7] The intercept parameters, $\overline{X}$ and $\overline{M}$ will play no role in the analysis, since we will anchor the curves instead with $X^0 = \overline{X} + \varepsilon P^W$ and $M^0 = \overline{M} - \eta(P^W + t)$:

$$X = X^0 + \varepsilon\left(P - P^W\right) \tag{6'}$$

$$M = M^0 + \eta\left(P^W + t - P\right) \tag{7'}$$

With this notation, the benefit of MFN free trade in (3) is found immediately:

$$\Delta W_M^F = \eta t^2/2 \tag{8}$$

To solve for the RTA equilibrium, solve first for P^R in an interior equilibrium:

$$X^0 + \varepsilon\left(P^R - P^W\right) = M^0 + \eta\left(P^W + t - P^R\right) \tag{9}$$

From this it follows that:

$$P^R = \begin{cases} P^W + t & \text{if} \quad X^0 - M^0 \le -\varepsilon t \\ P^W + \dfrac{M^0 - X^0 + \eta t}{\varepsilon + \eta} & \text{if} \quad -\varepsilon t \le X^0 - M^0 \le \eta t \\ P^W & \text{if} \quad \eta t \le X^0 - M^0 \end{cases} \tag{10}$$

[7] Thus, for example, $\varepsilon = \mathrm{d}X/\mathrm{d}P = (\mathrm{d}X/\mathrm{d}P)/(P_0/X_0)$ if P_0 and X_0 are both normalized to one by choice of units of the good and of the currency. That can at best be inexact, however, given that initial prices differ due to the tariff and initial quantities would be the same only coincidentally.

Welfare changes due to RTA

It is now straightforward to evaluate the welfare changes (3) and (4) due to the RTA:

$$\Delta W_M^R = \begin{cases} -t\left(X^0 + \varepsilon t\right) & \text{if} \quad X^0 - M^0 \le -\varepsilon t \\ -\dfrac{M^0 - X^0 + \eta t}{\varepsilon + \eta} M^0 + \left[\dfrac{X^0 - M^0 + \varepsilon t}{\varepsilon + \eta}\right]^2 \dfrac{\eta}{2} & \text{if} \quad -\varepsilon t \le X^0 - M^0 \le \eta t \\ \eta t^2/2 & \text{if} \quad \eta t \le X^0 - M^0 \end{cases} \tag{11}$$

$$\Delta W_X^R = \begin{cases} t\left(X^0 + \varepsilon t/2\right) & \text{if} \quad X^0 - M^0 \le -\varepsilon t \\ \dfrac{M^0 - X^0 + \eta t}{\varepsilon + \eta} X^0 + \left[\dfrac{M^0 - X^0 + \eta t}{\varepsilon + \eta}\right]^2 \dfrac{\varepsilon}{2} & \text{if} \quad -\varepsilon t \le X^0 - M^0 \le \eta t \\ 0 & \text{if} \quad \eta t \le X^0 - M^0 \end{cases} \tag{12}$$

To see how these welfare changes vary with the parameters, and especially with the initial quantities of trade, it is helpful to graph them as functions of the latter. This is done in Figure 4 as a function of M^0 and in Figure 5 as a function of X^0.

Figure 4 is drawn for a given level of initial exports X^0. If initial imports M^0 are low compared to X^0, then the importing country gains the same from the RTA as from free trade, since it buys at the world price from the partner country, which is in turn unaffected. For larger initial imports – large enough when expanded by ηt to exceed X^0 – the importing-country welfare gain declines as M^0 rises further, while the exporting country begins to gain. This gain grows larger as M^0 rises, while at some point the importing-country gain turns into a loss. Finally, when M^0 exceeds initial exports plus εt, the two levels of welfare cease to depend on M^0, the importing country losing and the

exporting country gaining. The dashed curve in the top panel shows the total gain from the RTA to the exporting and importing countries combined.[8]

Figure 5 shows these same welfare changes but as functions of X^0 (for given M^0) rather than M^0. Here we see that the importing country loss first grows, as X^0 rises from zero, since the partner country gains more and more of the market for imports, eliminating an increasing amount of the importing country's tariff revenue. Only once those exports (augmented by the higher tariff-protected prices they receive in the importing country) exceed initial imports does the RTA price start to fall and the importing country consumers begin to gain, first partially and then more than wholly offsetting this loss of tariff revenue. Meanwhile, the exporting country gains in proportion to its initial exports, until the price starts to fall, at which point those gains are eroded. Therefore, the welfare changes in both countries are non-monotonic in the initial exports.

Adding (11) and (12) yields:[9]

$$\Delta W_{M+X}^R = \begin{cases} -\varepsilon t^2/2 & \text{if} \quad X^0 - M^0 \le -\varepsilon t \\ \eta t^2/2 - \dfrac{\left(X^0 - M^0 - \eta t\right)^2}{2(\varepsilon+\eta)} & \text{if} \quad -\varepsilon t \le X^0 - M^0 \le \eta t \\ \eta t^2/2 & \text{if} \quad \eta t \le X^0 - M^0 \end{cases} \tag{13}$$

This, as we saw from the geometry, is less than or equal to $\Delta W_M^F = \eta t^2/2$.

Note also in (11) and (12) that

$$\Delta W_M^R \le \eta t^2/2 = \Delta W_M^F = \Delta \overline{W}_M^R \tag{11'}$$

$$\Delta W_X^R \le t\left(X^0 + \varepsilon t/2\right) = \Delta \overline{W}_X^R \tag{12'}$$

[8] Further properties of the curves as drawn in Figures 4 and 5 are shown in the Appendix.
[9] See Appendix.

where the two countries only reach these upper limits if their initial trade flows are relatively small. Figure 6 graphs these upper limits as functions of the tariff, *t*. Since the upper limit for an importing country varies with the square of the tariff, while the upper limit for the exporting country varies in part with its level, we see that countries tend to have more to gain in their export markets than in their import markets if tariffs are low.

IV. Implications

Now suppose you are a small country seeking guidance for trade policy from these results. Since you are too small to affect world prices by your policy choice, it is well known that moving unilaterally to MFN free trade will be beneficial. In all the sectors where you import, you will gain $\eta t^2/2$,[10] while in all the sectors where you export you will lose (and gain) nothing. If the rest of world had free trade, then this would be the best you could do. However, to say that world prices are given is not to say that they are the result of free trade. If other countries have tariffs themselves, then moving to MFN free trade has not improved your access to foreign tariff-protected markets.[11]

The best way to get such access would be for all countries together to negotiate removal of all tariffs, which presumably has been the ultimate objective of the rounds of multilateral trade negotiations under the GATT. But that approach has stalled during the Doha Round, the only round of multilateral negotiations to be conducted under the World Trade Organization. Instead, many countries have reasonably opted to consider RTAs instead. These secure market access for a country's exports into the partner country

[10] With many sectors, clearly both η and *t* should carry sector subscripts, since they will differ.
[11] Again, in general equilibrium, a cut in all of a country's tariffs will require an exchange depreciation that will in fact stimulate exports. But those exports will still be subject to whatever tariffs exist abroad.

market, where they can potentially obtain a price above the world price due to that country's tariff. This is the exporter gain that we've seen in equation (12).

Choosing an RTA Partner

So an alternative to unilateral MFN tariff reduction is to enter into an RTA with a willing partner, thus securing both some of the benefits of one's own tariff reductions on imports as well as benefits of the partner's tariff reductions on exports. Unfortunately, as we have seen, the first of these may be negative – due essentially to trade diversion – while the second may be zero. How do you select a partner country so as to assure that an RTA will be beneficial? Figures 4 and 5 give a simple answer: In markets where you import, you want your current imports to be not so large as to exhaust the partner country's exports and thus push up the price that you will have to pay for them. And in markets where you export, your want your current exports to be not so large as to exhaust the partner country's demand, pushing down the price that they will pay. In short, you want your own trade to be relatively small compared to the trade of a potential partner country.

Why? Because an RTA with a country smaller than yourself will primarily cause their suppliers to capture a part of your market, depriving you of tariff revenue, without pushing down price for your demanders; while at the same time demanders buy only part of your exports, leaving your suppliers still dependent on the world market. In contrast, if your country is smaller than your partner's, then you can buy all you want from them at the world price, gaining from trade exactly as if you had removed tariffs on all imports, while at the same time allowing your exporters to sell in the partner country at the higher tariff-protected price.

What matters in each market is the sizes of initial exports and imports relative to the partner country, and these relationships will no doubt differ across markets. To choose a partner, presumably one would want to calculate equations (11) and (12) for all markets, using appropriate values for initial trade and elasticities, then add these up across all markets. The result might not be quite as simple as to favor partnering with the largest country that you can, but it is clear that large partner countries will normally be preferable to small ones.

However, there is an important qualification. The country you choose must be willing to partner with you. For the same reasons that you should have eschewed an RTA with a smaller country, a larger country should eschew the RTA with you. Thus, in order to find a willing partner, you will likely need to have markets that are more closely matched in size, so that both countries can share in gains without too much in the way of losses.[12]

The Role of Tariffs

Just as important as country size are the levels of a country's tariffs that are levied initially against all imports and that, after the formation of the RTA, continue to be levied against countries outside the RTA. For standard reasons these tariffs are costly to the importing country, causing losses of demander welfare that exceed the gains to suppliers through producer surplus and to government through tariff revenue. However, the tariffs also contribute positively to exporters from the partner country in the RTA. This means

[12] In practice actual trade agreements include much more than just the tariff preferences included in the model here. Thus the US negotiates RTAs with a number of very small countries, even though this analysis suggests that it must lose from doing so. The motivation seems to be the other provisions that these agreements contain, such as those favoring investors, labor standards, intellectual property protection, and so forth.

that the choice of partner country must also take account of the tariff levels in potential partners. In particular, if a particular country only has tariffs of zero, then there is nothing to be gained for other countries by including that country in an RTA, since those countries exporters would gain no preferential access to its markets; they would simply continue to export at the world price. In general, the higher are a country's tariffs, the more attractive it should be as an RTA partner, conditional on its markets being large enough to absorb other country's exports without too much drop in price.

This might suggest, in a world where multilateral trade liberalization is unlikely, that countries should keep their tariffs high in order to be attractive as RTA partners. However, that would be going too far. First, not all of the products that a country imports will be of interest to particular partner countries, and tariffs that remain high on products that the partner does not export are simply lowering welfare without providing any offsetting benefit. Second, even where tariffs do provide an attraction for foreign exporters in an RTA, the benefit to foreign exporters is never enough to yield a combined benefit to exporter and importer that exceeds the gain from unilateral MFN free trade. Thus there remains a strong case for unilateral MFN trade liberalization up to a point.

The message here, though, is that while countries should lower their tariffs, they should not eliminate them. Keeping tariffs at low but positive levels on products that might be of interest to exporters in potential RTA partners can provide the incentive for such RTAs, and these in turn allow a country to generate gains to its exporters as well as to its importers.

Can we be sure that the gains to exporters, when tariffs are low, are nonetheless large enough to be attractive to such partners? In general no, because of the possibility

shown in Figures 4 and 5 that exporters might not gain at all. One would need to calculate all of the various welfare changes for a particular case, using data on initial trade and elasticities, in order to know.

But Figure 6 suggests that, when tariffs are low, there is a good chance that the benefits to exporters within an RTA can be large enough to tip the balance. The reason is that, while the benefit from unilateral tariff elimination is quadratic in the tariff level, and therefore is negligibly small when the initial tariff is low, the potential gain to exporters from preferential market access is linear in the tariff and thus larger than the gain from tariff elimination when the tariff is low.

Put another way, the benefits of a unilateral MFN tariff cut against all imports are high when tariffs are high, because they are proportional to the square of the tariff, but they become negligibly small when tariffs are small, for the same reason. In contrast, a preferential cut in a tariff on exports of an RTA partner country provides benefits to that country that vary in part with the level of the tariff, not its square, and therefore do not become negligible when tariffs are low.

V. Conclusion

This paper has employed a simple analytical framework for examining the welfare effects of preferential tariff cuts in regional trade agreements. The purpose is in part to allow countries to evaluate alternative benefits and costs that would flow from forming RTAs with different potential partner countries. The model is partial equilibrium, and it therefore misses the general equilibrium effects that would need to be taken into account for a fully correct analysis. But one might hope that, especially for the small countries to

which the model can most appropriately be applied, these general equilibrium effects would not alter most of the conclusions reached here. These conclusions emerge quite starkly, largely because of the tractability of the partial equilibrium framework.

The model shows how countries can gain, both as importers and as exporters, by forming an RTA. But both of these gains can be undermined, and in the case of importers reversed, if the partner country's trade is too small cause changes in domestic prices. This suggests that, considering only the benefits and costs of tariff reductions, countries that enter into RTAs will want to be of more or less comparable size.

This analysis was motivated by the apparent failure of the Doha Round of Multilateral Trade Negotiations and by the implication that countries may no longer be able to achieve market access into other countries through the multilateral route. In that case, they have the choice of either reducing tariff unilaterally against all countries, or of instead (or in addition) entering into preferential arrangements as RTAs. The argument here is that, if countries generally continue to have positive tariffs, then improved access to their markets in a post-Doha world will be achievable only through RTAs. And to be an attractive partner in an RTA, a country needs to keep at least some of its own tariffs above zero.

The recommendation, then, is that countries with high tariffs lower them unilaterally, in order to achieve much of the conventional gains from trade, but not lower them to zero. Instead, a country should hold tariffs at positive levels, at least in those sectors where it might use them as an inducement to another country to engage in an RTA. And it should, in turn, attempt to negotiate such an RTA with countries that are not

too much smaller than itself and that have tariffs in sectors that it would like to penetrate as an exporter.

Appendix

The following properties are derived for the interior solutions of the second line in each of equations (11) and (12) and thus make frequent use of the following restrictions on initial quantities of trade:

$$X^0 + \varepsilon t \geq M^0$$
$$X^0 \leq M^0 + \eta t \tag{A0}$$

Properties of Figure 4

Slope and curvature of ΔW_M^R with respect to M^0

From (11)

$$\frac{d\Delta W_M^R}{dM^0} = -\frac{M^0 - X^0 + \eta t}{\varepsilon + \eta} - \frac{M^0}{\varepsilon + \eta} - \frac{X^0 - M^0 + \varepsilon t}{(\varepsilon + \eta)^2}\eta < 0 \tag{A1}$$

$$\frac{d^2\Delta W_M^R}{dM^{0^2}} = -\frac{2}{\varepsilon + \eta} + \frac{\eta}{(\varepsilon + \eta)^2} = -\frac{2\varepsilon + \eta}{(\varepsilon + \eta)^2} < 0 \tag{A2}$$

As M^0 rises from $X^0 - \eta t$ to $X^0 + \varepsilon t$, the slope in (A1) falls (i.e., rises in absolute value) from $-\frac{X^0}{\varepsilon + \eta}$ to $-\frac{X^0 + 2\varepsilon t + \eta t}{\varepsilon + \eta}$.

Slope and curvature of ΔW_X^R with respect to M^0

From (12)

$$\frac{d\Delta W_X^R}{dM^0} = \frac{X^0}{\varepsilon + \eta} + \frac{M^0 - X^0 + \eta t}{(\varepsilon + \eta)^2}\varepsilon > 0 \tag{A3}$$

$$\frac{d^2\Delta W_X^R}{dM^{0^2}} = \frac{\varepsilon}{(\varepsilon + \eta)^2} > 0 \tag{A4}$$

As M^0 rises from $X^0 - \eta t$ to $X^0 + \varepsilon t$, the slope in (A3) rises from $\frac{X^0}{\varepsilon + \eta}$ to $\frac{X^0 + t\varepsilon}{\varepsilon + \eta}$.

Properties of Figure 5

Slope and curvature of ΔW_M^R with respect to X^0

From (11)

$$\frac{d\Delta W_M^R}{dX^0} = \frac{M^0}{\varepsilon + \eta} + \frac{X^0 - M^0 + \varepsilon t}{(\varepsilon + \eta)^2}\eta > 0 \tag{A5}$$

$$\frac{d^2\Delta W_M^R}{dX^{0^2}} = \frac{\eta}{(\varepsilon + \eta)^2} > 0 \tag{A6}$$

As X^0 rises from $M^0 - \varepsilon t$ to $M^0 + \eta t$, the slope in (A5) rises from $\frac{M^0}{\varepsilon + \eta}$ to $\frac{M^0 + \eta t}{\varepsilon + \eta}$.

Slope and curvature of ΔW_X^R with respect to X^0

From (12)

$$\frac{d\Delta W_X^R}{dX^0} = \frac{M^0 - X^0 + \eta t}{\varepsilon + \eta} - \frac{X^0}{\varepsilon + \eta} - \frac{M^0 - X^0 + \eta t}{(\varepsilon + \eta)^2}\varepsilon \tag{A7}$$

$$\frac{d^2\Delta W_X^R}{dX^{0^2}} = -\frac{\varepsilon+2\eta}{(\varepsilon+\eta)^2} < 0 \tag{A8}$$

As X^0 rises from $M^0 - \varepsilon t$ to $M^0 + \eta t$, the slope in (A7) falls from $t - \frac{M^0}{\varepsilon+\eta}$ (which may be positive or negative) to $-\frac{X^0}{\varepsilon+\eta}$.

Derivation of (13):

The top and bottom lines of (13) are straightforward from (11) and (12). From the middle lines of (11) and (12) we have, letting $S^0 = X^0 - M^0$,

$$\begin{aligned}
\Delta W_{M+X}^R &= -\frac{\eta t - S^0}{\varepsilon+\eta} M^0 + \left[\frac{\varepsilon t + S^0}{\varepsilon+\eta}\right]^2 \frac{\eta}{2} + \frac{\eta t - S^0}{\varepsilon+\eta} X^0 + \left[\frac{\eta t - S^0}{\varepsilon+\eta}\right]^2 \frac{\varepsilon}{2} \\
&= \frac{\eta t - S^0}{\varepsilon+\eta} S^0 + \frac{\varepsilon^2\eta t^2 + 2\varepsilon\eta t S^0 + \eta S^{0^2} + \varepsilon\eta^2 t^2 - 2\varepsilon\eta t S^0 + \varepsilon S^{0^2}}{2(\varepsilon+\eta)^2} \\
&= \frac{\eta t - S^0}{\varepsilon+\eta} S^0 + \frac{\varepsilon^2\eta t^2 + \eta S^{0^2} + \varepsilon\eta^2 t^2 + \varepsilon S^{0^2}}{2(\varepsilon+\eta)^2} \\
&= \frac{\eta t - S^0}{\varepsilon+\eta} S^0 + \frac{(\varepsilon+\eta)\left(S^{0^2} + \varepsilon\eta t^2\right)}{2(\varepsilon+\eta)^2} \\
&= \frac{2\eta t S^0 - 2S^{0^2} + S^{0^2} + \varepsilon\eta t^2}{2(\varepsilon+\eta)} \\
&= \frac{2\eta t S^0 - S^{0^2} + \varepsilon\eta t^2 + \eta\eta t^2 - \eta^2 t^2}{2(\varepsilon+\eta)} \\
&= \frac{(\varepsilon+\eta)\eta t^2}{2(\varepsilon+\eta)} - \frac{S^{0^2} - 2\eta t S^0 + \eta^2 t^2}{2(\varepsilon+\eta)} \\
&= \frac{\eta t^2}{2} - \frac{\left(S^0 - \eta t\right)^2}{2(\varepsilon+\eta)} \le \Delta W_M^F
\end{aligned} \tag{A9}$$

Note also that

$$\frac{d\Delta W_{M+X}^R}{dX^0} = -\frac{d\Delta W_{M+X}^R}{dM^0} = \frac{\eta t - S^0}{\varepsilon+\eta} = \frac{\eta t - X^0 + M^0}{\varepsilon+\eta} \ge 0 \quad \text{if} \quad X^0 \le M^0 + \eta t \tag{A10}$$

$$\frac{d^2\Delta W_{M+X}^R}{dX^{0^2}} = \frac{d^2\Delta W_{M+X}^R}{dM^{0^2}} = \frac{-1}{\varepsilon+\eta} \le 0 \quad \text{if} \quad X^0 \le M^0 + \eta t \tag{A11}$$

As X^0 rises from $M^0 - \varepsilon t$ to $M^0 + \eta t$, the slope in (A10) falls from *t* to 0.

References

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Viner, Jacob. 1950 *The Customs Union Issue*, New York: Carnegie Endowment for International Peace.

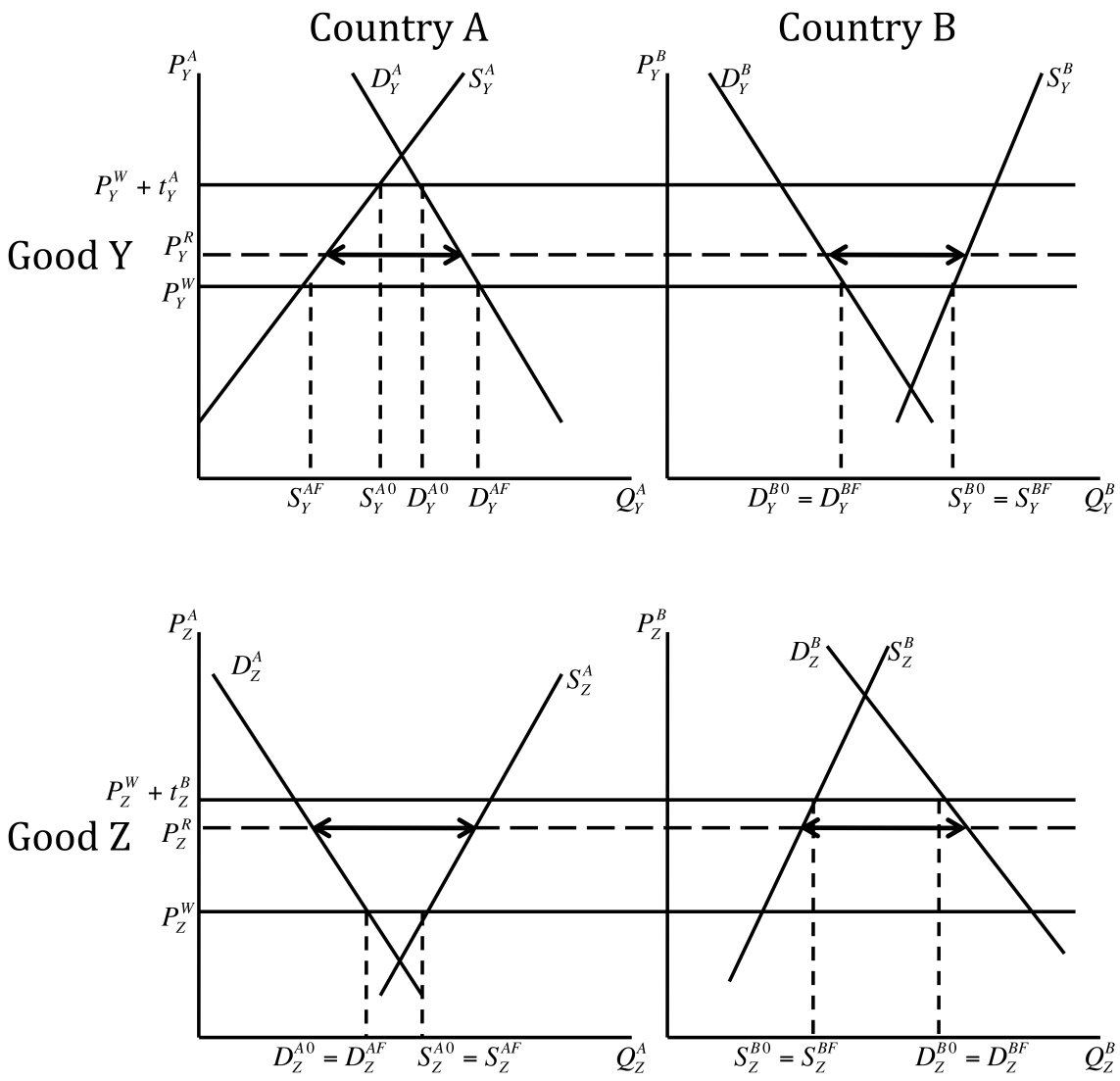

Figure 1

Markets for Goods Y and Z in Countries A and B: with initial import tariffs ("0"); with free trade by Country A only ("F"); and with a regional trade agreement ("R")

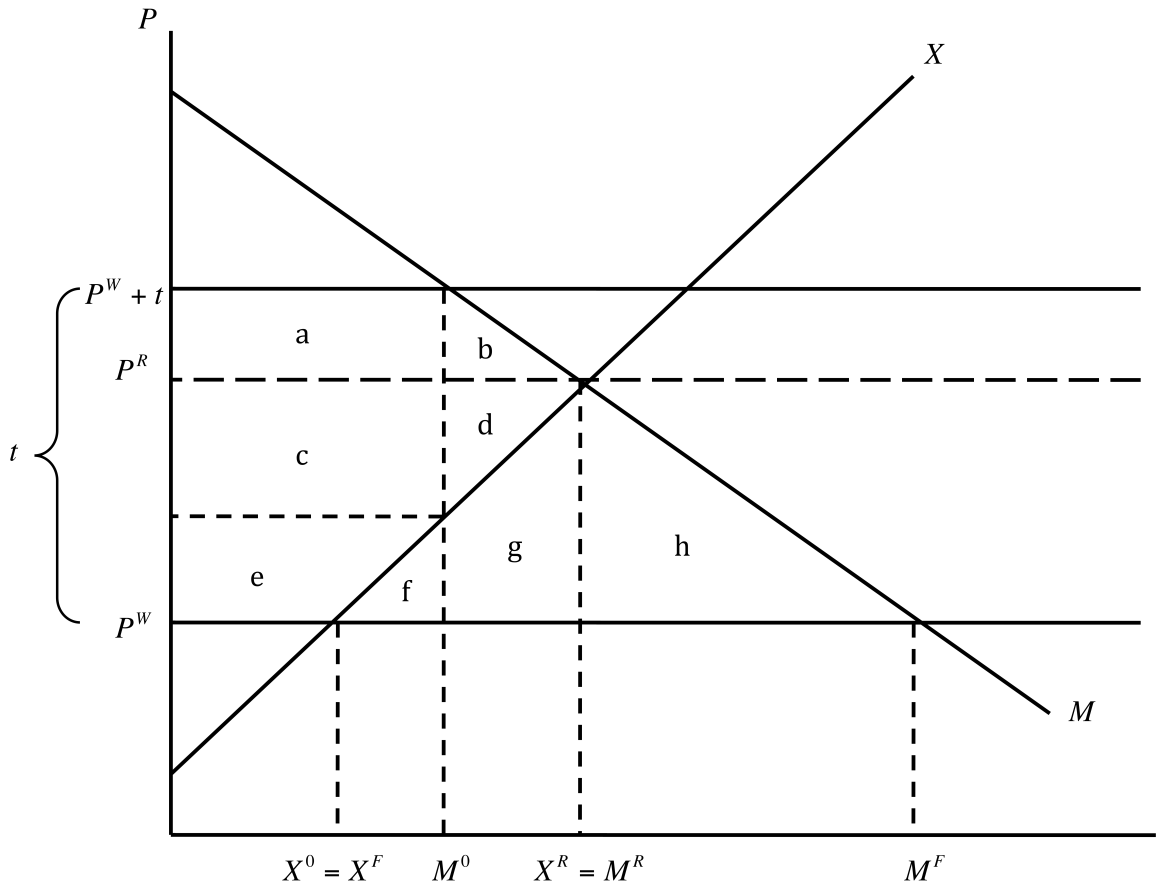

Figure 2

Interactions of export supply from one country, import demand from another, and the world price: RTA price P^R and trade between them in internal equilibrium

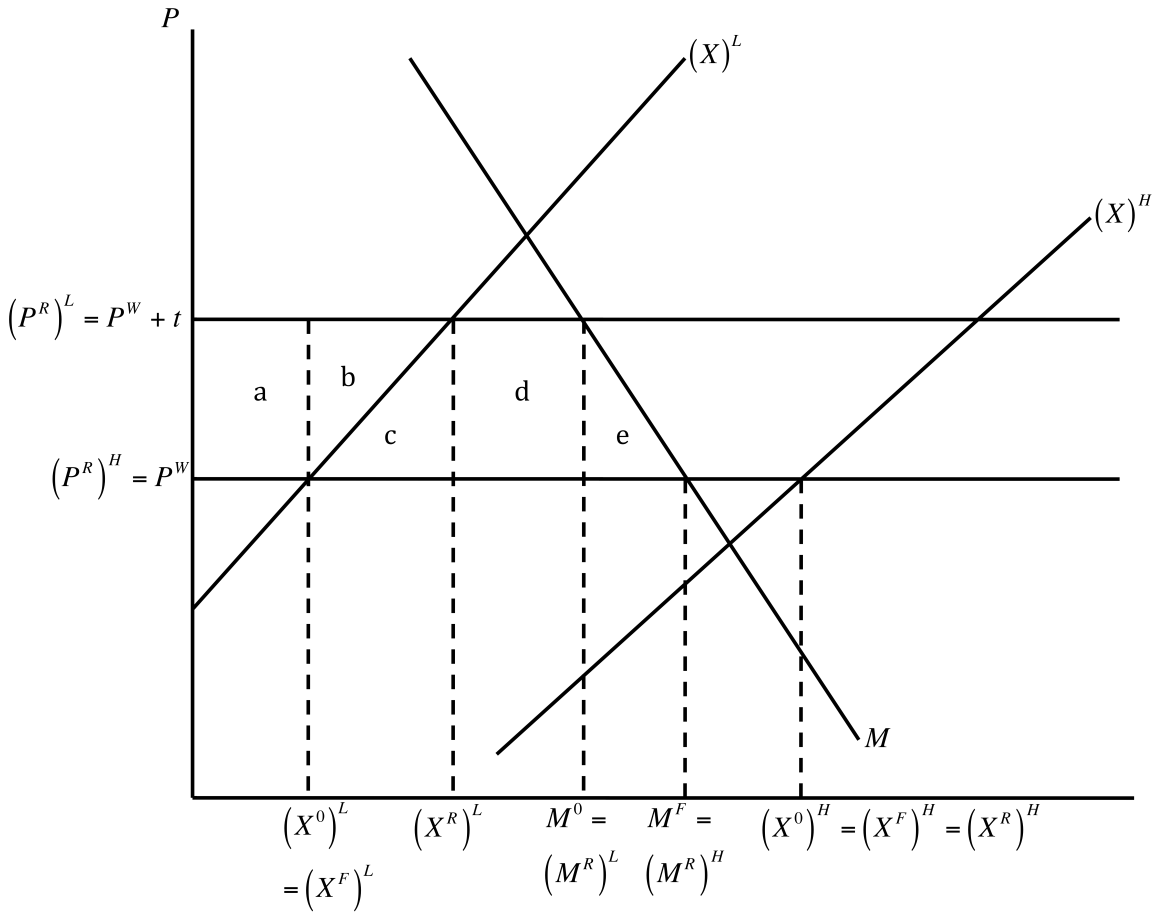

Figure 3

Interactions of low (L) and high (H) export supply with import demand and the world price: RTA prices P^R and trade between them in corner-solution equilibria

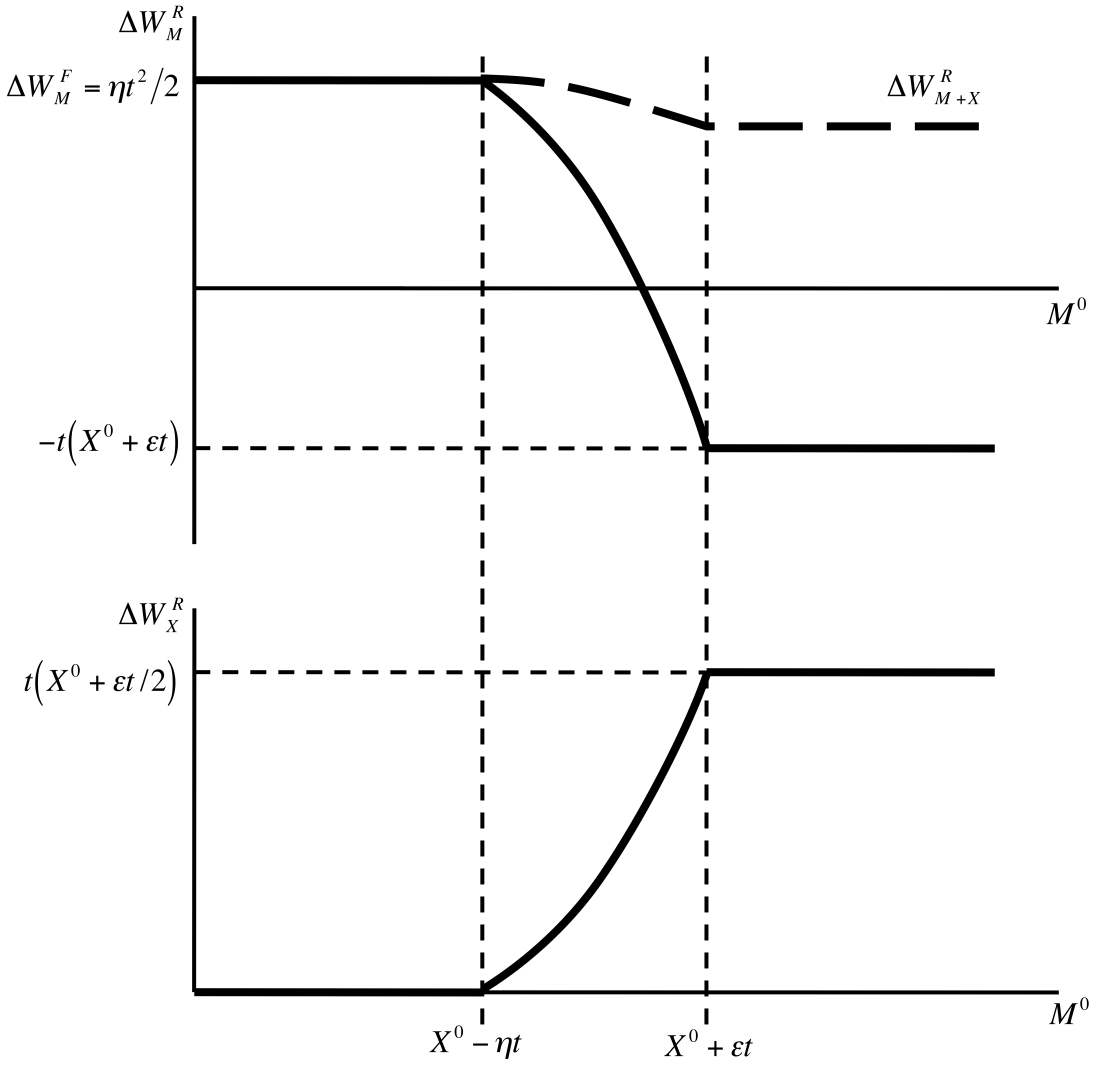

Figure 4

Changes in welfare in importing and exporting countries due to RTA, as functions of initial import M^0 for given initial export X^0

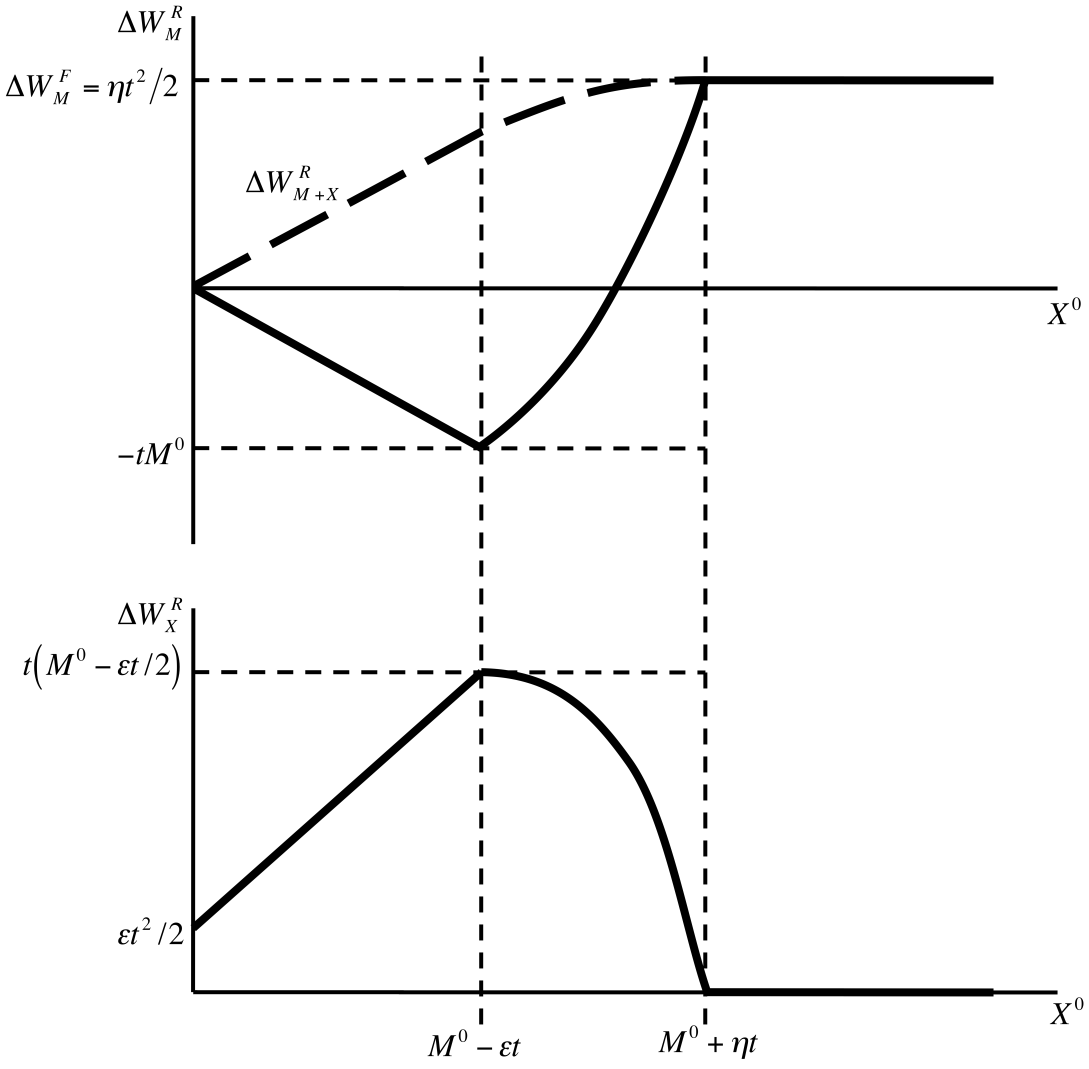

Figure 5

Changes in welfare in importing and exporting countries due to RTA, as functions of initial import X^0 for given initial export M^0

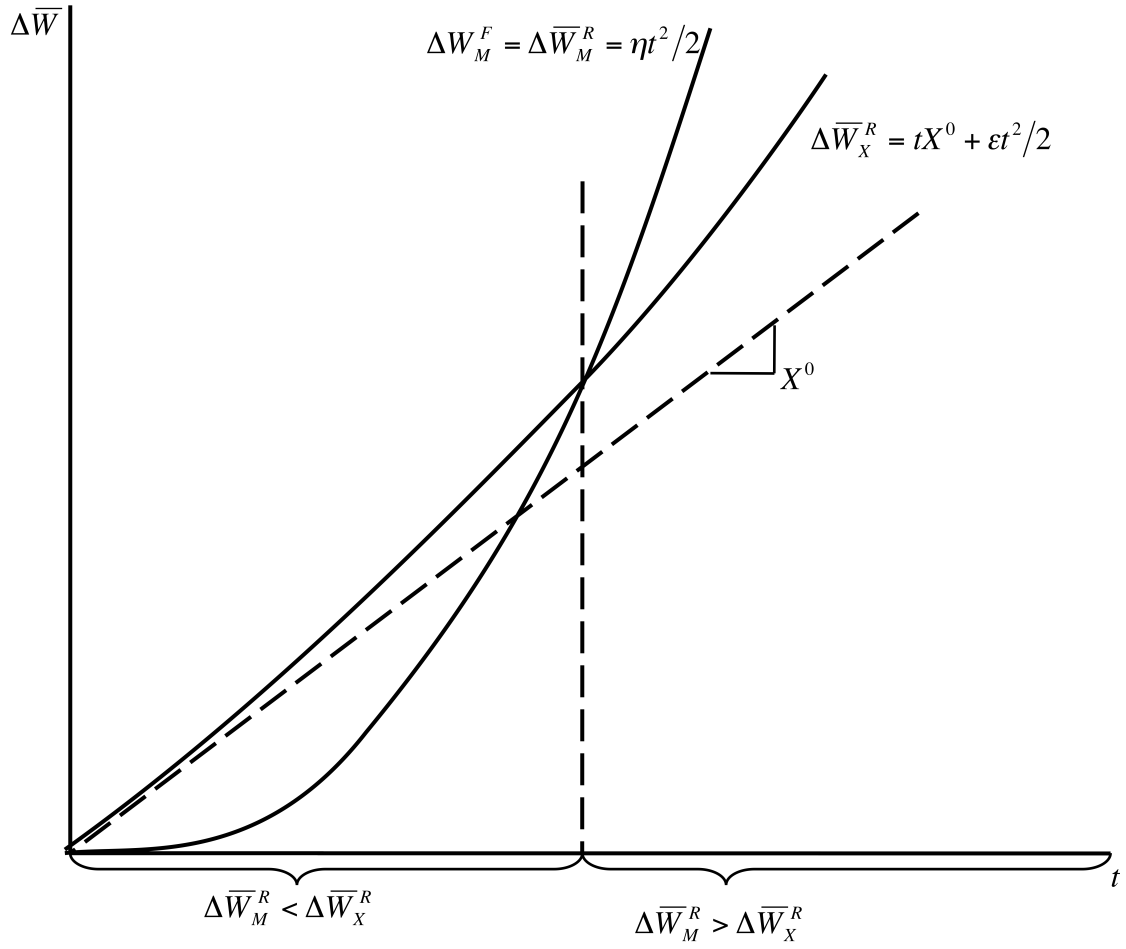

Figure 6

Upper bounds on changes in welfare in importing and exporting countries due to RTA, as functions of tariff, t (drawn assuming $\varepsilon<\eta$)