Economic Issues in Tariffication: An Overview

Giancarlo Moschini

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Center for Agricultural and Rural Development
Iowa State University
Ames, Iowa 50011

G. Moschini is an associate professor, Department of Economics, Iowa State University.

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ABSTRACT

Tariffication is an effort to convert all existing agricultural nontariff barriers (NTBs) to trade into bound tariffs and to reduce these tariffs over time. The main economic issues that arise with tariffication stem from the nonequivalence of tariffs and NTBs in a number of scenarios. This paper analyzes nonequivalence arising from the existence of imperfect competition in importing countries, price instability in importing and exporting countries, and inefficient allocation of quantitative restrictions. It is shown that in all these cases the definition of an appropriate "equivalent tariff" to be used in tariffication is not straightforward, and that in general this equivalent tariff cannot be computed on the basis of only observed price differences between countries.

Tariff-rate quotas, which are meant to be the main tool to implement tariffication according to the existing proposal, are analyzed in some detail. Concerning the relationship between tariffication and the other elements of the trade liberalization package, it is shown that tariffication would limit the scope of export subsidy policies, and that the existence of production and export subsidies makes observed price gaps between countries of questionable value in setting equivalent tariff levels. Finally, it is argued that the main focus of tariffication should be the conversion of NTBs to acceptable long-run (bound) tariff rates, and considerable flexibility in this conversion process could be exercised during the transition period.

ECONOMIC ISSUES IN TARIFFICATION: AN OVERVIEW

A fundamental principle underlying the General Agreement on Tariffs and Trade (GATT) is that commercial policies should be achieved through bound tariffs (Dam 1970). The intent is to make the extent of protection "transparent." Reductions in this type of protection are obviously easier to negotiate, and indeed the previous rounds of GATT negotiations have been most successful in liberalizing tariff protection. Parallel to the specification of a bound tariff as the preferred protective instrument, GATT contains a general prohibition on the use of quantitative restrictions such as import quotas. There are, however, three exceptions to this rule that relate to agriculture: (1) temporary export restrictions may be used to deal with food shortages; (2) import restrictions may be used to implement domestic agricultural programs entailing marketing and production restrictions (such as supply management schemes); and (3) import and export restrictions may be used if necessary to apply standards for classifying, grading, and marketing.

The distinctive status of agriculture in GATT, as it relates to the use of nontariff barriers (NTBs), was further amplified in 1955 with the granting of a waiver to the United States to permit application of quantitative restrictions on a wide range of agricultural products under price support programs (Hanrahan, Cate, and Vogt 1984). Also relevant is the widespread adoption by the Economic Community (EC) of variable levies as border restrictions. Because variable levies are best understood as unbounded tariffs, they can be considered a type of NTB. This situation has led, in recent years, to a system of international agricultural trade characterized by the pervasive effects of NTBs.

Finding a solution to NTBs in agricultural products has been perceived from the beginning as one of the crucial aspects for a successful conclusion to the current round of negotiations. The most

ambitious approach to solving this problem is contained in the U.S. tariffication proposal. The main feature of this proposal is the conversion of all NTBs into bound tariffs that would then be reduced over time. This paper reviews and discusses some conceptual issues that arise in the context of tariffication. The emphasis is on the analysis of the (non)equivalence of tariffs and NTBs in terms of price and trade volume effects. However, because of the broad range of cases considered, no effort is made to analyze the welfare implications of specific tariffication situations.

The paper is organized as follows. First, a brief description of the U.S. tariffication proposal is given, followed by a consideration of the issues associated with the conversion of NTBs into tariffs. Particular attention is paid to problems arising from imperfect competition, price uncertainty, and inefficient allocation of quantitative restrictions. Trade liberalization under tariffication, with emphasis on the analysis of the tariff-rate quota system, is followed by an analysis of the relationship of tariffication to other elements of the tariffication package, especially the proposal to phase out export subsidies and production subsidies. The main conclusions are summarized in the final section.

The Tariffication Proposal

The concept of tariffication represents a relatively new addition to the growing body of proposals that has been offered to deal with agricultural NTBs in the ongoing multilateral trade negotiations (MTN) under the GATT. The idea of tariffication was first introduced by the United States in November 1988 as a way to improve market access (USTR 1988), and a role for this concept in the current MTN is explicitly recognized in the midterm review of the Uruguay Round. The final agreement reached in Geneva in April 1989 outlines the long-term elements and guidelines for reform of agricultural trade. For the important chapter of import access, this document calls for

> . . . strengthened and more operationally effective GATT rules and disciplines . . . [able to deal with] . . . quantitative and other non-tariff access restrictions, whether maintained under waivers, protocols of accession or other derogations and exceptions, and all measures not explicitly provided for in the General Agreement, and the matter of conversion the measures listed above into tariffs (GATT 1989).

Also, the work program to help achieve these long-term objectives calls for specific detailed proposals, to be prepared by December 1989, in six broad areas, one of which is "tariffication, decoupled income support, and other ways to adapt support and protection" (GATT 1989).

As a result, the United States tabled a tariffication proposal in July 1989 (USTR 1989a). This proposal attempted to improve market access by converting NTBs to trade into bound tariffs and establishing a schedule for the phased reduction, and eventual elimination, of all tariffs. This tariffication program was further elaborated in the U.S. submission on comprehensive agricultural trade reform (USTR 1989b). In this document, four interrelated areas of trade reform were identified as import access, export competition, internal support, and sanitary and phytosanitary measures. Tariffication is suggested as the main tool to deal with import access, but it is meant to be only part of a comprehensive package that must include fundamental reform in all other policy areas.

Specifically, the U.S. proposal calls for a replacement of NTBs, including EC variable levies, with tariff-rate quotas, along with the elimination of all waivers, protocols of accessions, and grandfather clauses that restrict imports of agricultural products. The proposal also suggested eliminating GATT article XI:2(c), which allows import restrictions of agricultural products to implement domestic marketing and production restrictions (GATT 1984). Quotas will be set to 1990 import levels or some recent period, or a negotiated minimum level of imports; the tariff levied on imports within this quota would be bound at agreed upon rates. Imports above the quota level will be permitted, subject only to a bound tariff. This over-quota tariff is to be calculated based on the price gap between the domestic and world price for some recent period.

According to the U.S. proposal, liberalization is to be achieved over a ten-year transition period by progressive annual reduction of the over-quota tariff to a final bound rate and expansion of the initial quota by agreed minimum amounts during the transition period. At the end of the transition period, the residual quota would be eliminated, so the only protection would be from bound tariffs.

To analyze the tariffication proposal, it is useful to distinguish between its two essential features: conversion of NTBs into tariffs and reduction of trade barriers. The first of these two features is usually associated with the tariffication idea, and was given more prominence in earlier U.S. documents. The second, however, could become the dominant feature if the long-run tariff protection level is chosen close to the free trade solution.

Conversion of NTBs into Tariffs

The rationale for converting NTBs to tariffs has a solid base in both the economic theory of trade distortions and the working of international institutions dealing with trade liberalization. From an economic point of view, quantitative restrictions are, in many instances, a source of avoidable inefficiencies because they limit the operation of markets more than tariffs and adversely affect the efficiency of a competitive price system (Anderson 1988). Whereas NTBs tend to insulate markets, tariffs provide an explicit link between trading countries that allows the transmission of market signals. Thus, using tariffs instead of NTBs should result in more efficient and stable world markets.

At the institutional level, we have mentioned GATT's predilection for tariff use because it provides a transparent mode of protection whose level is easy to assess and to negotiate. Early GATT negotiations focused on the conversion of trade barriers into bound tariffs, so this same procedure could bring agriculture more fully under GATT rules. Eliminating existing waivers, protocols of accession, and other derogations that underlie the existing pattern of NTBs would make it easier to deal with agricultural trade restrictions within existing GATT rules.

On the other hand, it must be realized that NTBs are usually in place for very specific reasons, and are very closely related to the working of domestic agricultural policies. U.S. quotas on sugar, Canadian quotas on dairy products, and the EC variable levy on grains are all examples of such relationships. Doing away with NTBs means doing away with the set of existing policies. While

countries may be willing to reduce the extent of protection offered to domestic producers by NTBs, it is debatable whether a dramatic change in the protection system is as likely to be acceptable.

The crucial issue here is the nonequivalence of tariffs and NTBs under a number of scenarios. It is this nonequivalence that makes tariffication appealing to those who are advocating this solution to trade liberalization. On the other hand, it can be argued that it is this nonequivalence that explains why NTBs have come into existence in the first place, which suggests that some countries or groups may find tariffication undesirable.

The issue of (non)equivalence of tariffs and NTBs can be cast in terms of the (non)existence of an "equivalent" tariff; that is, a tariff that would leave all relevant economic variables unchanged. The U.S. tariffication proposal contains a specific suggestion of how to determine equivalent tariffs, at least as a component of the temporary tariff-rate quota system. The proposed method is based on the price gap between the domestic market (with price P_d) and the world market (with price P_w, presumably adjusted for transfer costs). Specifically, the ad valorem equivalent tariff t is then defined as $t = (P_d - P_w)/P_w$.

This method, which basically defines the equivalent tariff in terms of the nominal rate of protection (Schwartz and Parker 1988), has the obvious attraction of simplicity, a quality not to be discounted in the intricate framework of multilateral trade negotiations. On the other hand, this method will work properly only when the price gap reflects all the effects (and only those effects) of the NTB under examination. Limitations of the price gap method arise in all cases where NTBs and tariffs are not equivalent.

Under perfectly competitive conditions, tariffs and import quotas (the most obvious NTB) are equivalent if import quota licenses are auctioned. Actually, even when the perfectly competitive assumptions are satisfied, quotas and tariffs may not be fully equivalent in a general equilibrium framework (Melvin 1986). Cases in which the two instruments are not equivalent include:

(1) economic growth; (2) imperfect competition; (3) price uncertainty/instability; and (4) inefficient allocation of quotas, such as may arise from the use of voluntary export restraints (VERs). The case of nonequivalence arising when domestic demand and supply have different growth rates over time is reviewed in Zietz and Valdes (1988). The other three main cases of nonequivalence between tariff and quantitative restrictions are discussed here.

Imperfect Competition

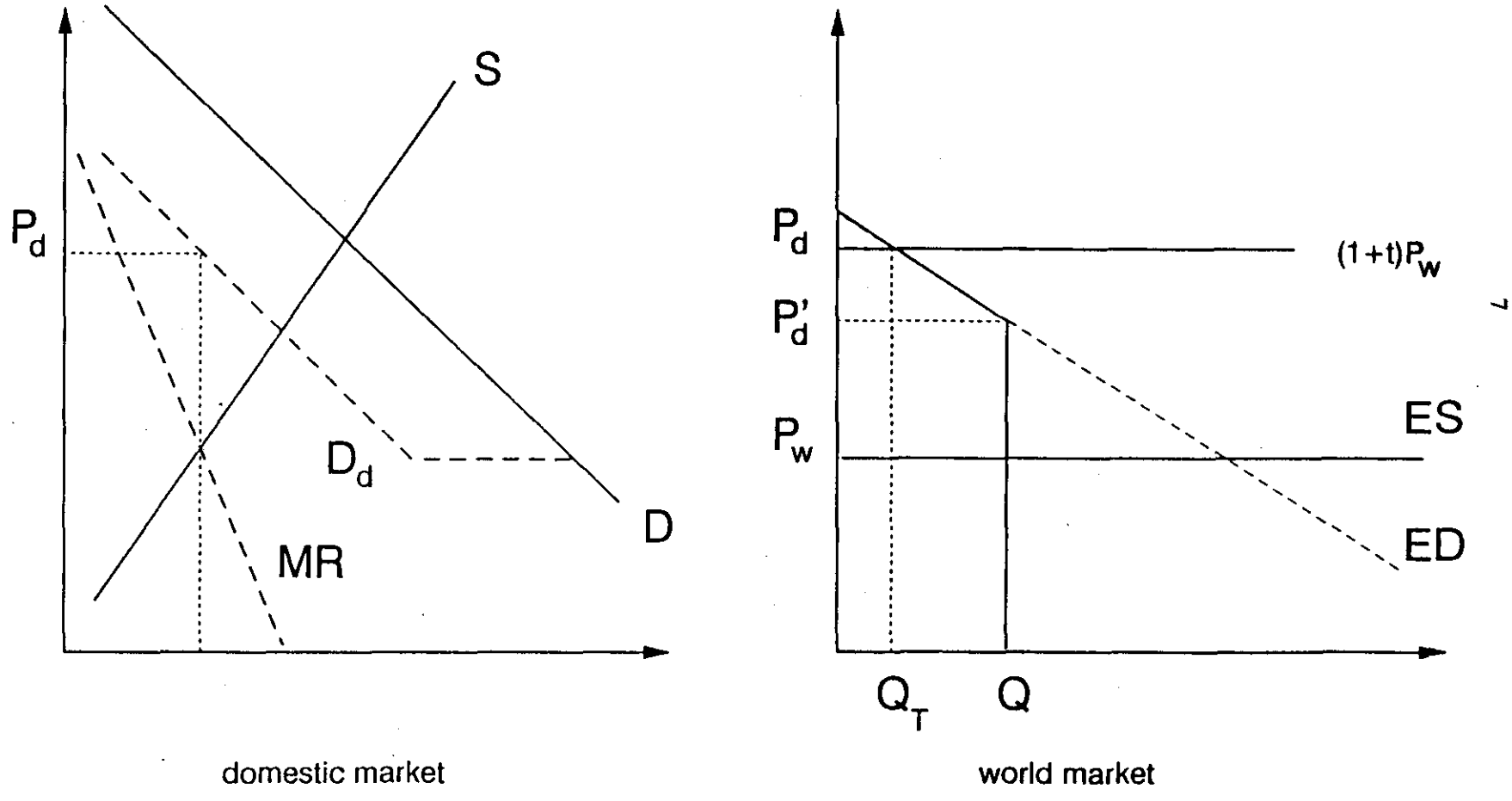
When domestic producers have market power, trade restrictions allow noncompetitive pricing behavior. In this situation, import quotas have generally a different effect than tariffs, a situation originally analyzed by Bhagwati (1965). A typical example is offered by the case of monopolistic structure in the importing country production sector. Figure 1 is a partial equilibrium illustration of this case. D represents the demand curve of the importing country, and S its supply curve. ED is the importing country excess demand, ES is the excess supply of the rest of the world, and Q represents the level of the import quota. For simplicity, we assume the small-country case; for a large country all relevant qualitative results are unchanged, although their illustration is less precise. Taking this restriction into account, the residual domestic demand facing the monopolist is the broken line D_d.

Under perfect competition, the market equilibrium solution is found at the intersection of S and D_d, or alternatively of ED and Q, with a domestic price of P_d'. The relative difference $(P_d' - P_w)/P_w$ would be the ad valorem equivalent tariff of the import quota. In other words, replacing the quota by an ad valorem tariff of $(P_d' - P_w)/P_w$ would result in an import volume equal to Q and a domestic price of P_d'.

If the monopolist can exercise its market power, on the other hand, market equilibrium will be found at the intersection of the marginal revenue MR and the marginal cost S, resulting in a domestic price of P_d. The observed relative price gap $(P_d - P_w)/P_w$, however, is the equivalent tariff of quotas

Figure 1 - Tariffication and Imperfect Competition

Small country with domestic monopoly



only from the point of view of preserving the domestic price at the level P_d. If a tariff replaced the existing quota, monopolistic pricing behavior would be rendered impossible by foreign competition because of the small-country assumption [as long as $(1 + t)P_w$ is less than the competitive autarkic price, as in Figure 1]. Hence, the domestic price P_d would in this case be sustainable only if imports declined to Q_T, below the original quota level. Indeed, the equivalent tariff that preserves imports at the quota level is $(P_d' - P_w)/P_w$. If the observed price gap $(P_d - P_w)$ were used to compute the equivalent tariff, the importing country would be provided with more protection than is needed to preserve import volumes at the quota level. In the large country case, the analysis requires some changes because market power can be exercised even under tariff protection. The solution, however, will be different than under a quota system that would result in the same level of imports. The general result is that the implicit tariff rate under the quota exceeds the explicit tariff rate of the tariff case (Bhagwati 1965).

An example that fits this case is that of the Canadian industries under supply management (dairy, poultry, and eggs). Import quotas are used to insulate domestic demand, and marketing boards charge prices above the competitive level by restricting domestic production through supply management schemes. Whether or not these industries are achieving a monopolistic pricing solution is perhaps a debatable point. What seems certain is that domestic prices are set above competitive levels, as farmers actively bid for the right to produce, and production quotas have a high market value (Schmitz 1983; Moschini and Meilke 1988). Moschini and Meilke (1990) analyze the case of the Canadian chicken market in some detail, and show that the equivalent tariff implied by the observed price gap is roughly three times the equivalent tariff that preserves imports at the current import quota level.

The imperfect competition case of the (non)equivalence of tariffs and quotas can be extended to include monopolistic elements in the holding of import quotas and/or in foreign production (see also

Shibata 1968; and Bhagwati 1968b). The general conclusion is that, with imperfect competition, the observed price gap will always overstate the truly equivalent tariff, a conclusion that offers useful qualitative guidance for tariffication negotiations.

Price Uncertainty

It is known that under uncertainty quotas and tariffs are not equivalent. The main point to note is that under uncertainty a tariff results in a distribution of import volumes, while a quota results in a distribution of implicit tariffs. Fishelson and Flatters (1975) have compared quotas and tariffs as welfare maximizing policy instruments from a large-country point of view, and show that which instrument is better depends on the precise source of uncertainty and on the properties of the relevant demand and supply functions. Pelcovits (1976) examines the nonequivalence of tariffs and quotas when the objective is to achieve a prespecified level of expected imports. Dasgupta and Stiglitz (1977) and Young (1980) contrast tariffs and quotas when they have to raise a fixed expected tariff revenue. Young and Anderson (1980) emphasize the interpretation of a tariff as a set of state-contingent quotas arbitraged across states of nature, and argue for the general superiority of tariffs over quotas. Young and Anderson (1982) also analyze the role of risk aversion in ranking quotas and tariffs. They draw attention to the similarity with the problem of price versus quantity instruments for planners (Weitzman 1974), and discuss the critical role of the sources of uncertainty.

The role of the source of uncertainty has been studied in the related field of commodity price stabilization (Turnovsky 1978), and has for a long time been a motive of interest in agricultural economics. Of specific concern has been the effect of trade restrictions on the transmission of instability that normally arises from natural random factors, such as weather, disease, and income shocks. Bale and Lutz (1979) and Zwart and Blandford (1989) have shown that different policies can have a markedly different impact. In particular, instability is shared among trading countries when tariffs are used, very much like the free-trade scenario, whereas NTBs tend to insulate importing

countries' markets so that instability is, in general, not transmitted. Hence, one of the main issues of converting NTBs into tariffs under instability concerns the changes in adjustments to demand and supply shocks.

This issue is crucial to the assessment of variable import levies (VILs), which represent the cornerstone of the EC common agricultural policy. VILs not only insulate the domestic market from external instability, but can also transfer the burden of adjustment of domestic instability to the world market. Consider first the case of instability in the world market but not in the domestic market as illustrated in Figure 2. Instability in the world market is represented by the excess supply curve fluctuating between ES′ and ES″. The (stable) excess demand of the importing country is represented by ED. Because a VIL sets a threshold price for imports, the domestic price P_d cannot fall below this level. This means that the effective excess demand for import prices below P_d is perfectly rigid, and this is indicated by the solid line that is kinked at P_d. In other words, given a stable domestic market with perfect competition, a VIL is equivalent to an import quota system where the rent associated with the trade restriction is fully captured by the government of the domestic country. If the threshold price is set high enough, the domestic price will not be affected by world market instability, while the world price will fluctuate between P'_w and P''_w. If the import quota or VIL is replaced by an ad valorem tariff equal to $(P_d - \overline{P}_w)/\overline{P}_w$, where $\overline{P}_w$ is the average of P'_w and P''_w, then the domestic price will fluctuate from P'_d and P''_d while the world price will now fluctuate between P'_T and P''_T. Correspondingly, whereas the import quantity is constant at Q, with the VIL or the import quota the import quantity will fluctuate between Q'_T and Q''_T after tariffication.

A VIL will differ from an import quota when the instability arises in the domestic market. Tariffication of a VIL for this case is represented in Figure 3 where ED′ and ED″ represent the fluctuating excess demand of the domestic country (due to either domestic supply or demand shocks). Again, these effective excess demands are perfectly rigid for prices below the threshold price P_d.

Figure 2 - Tariffication of an Import Quota

External instability case

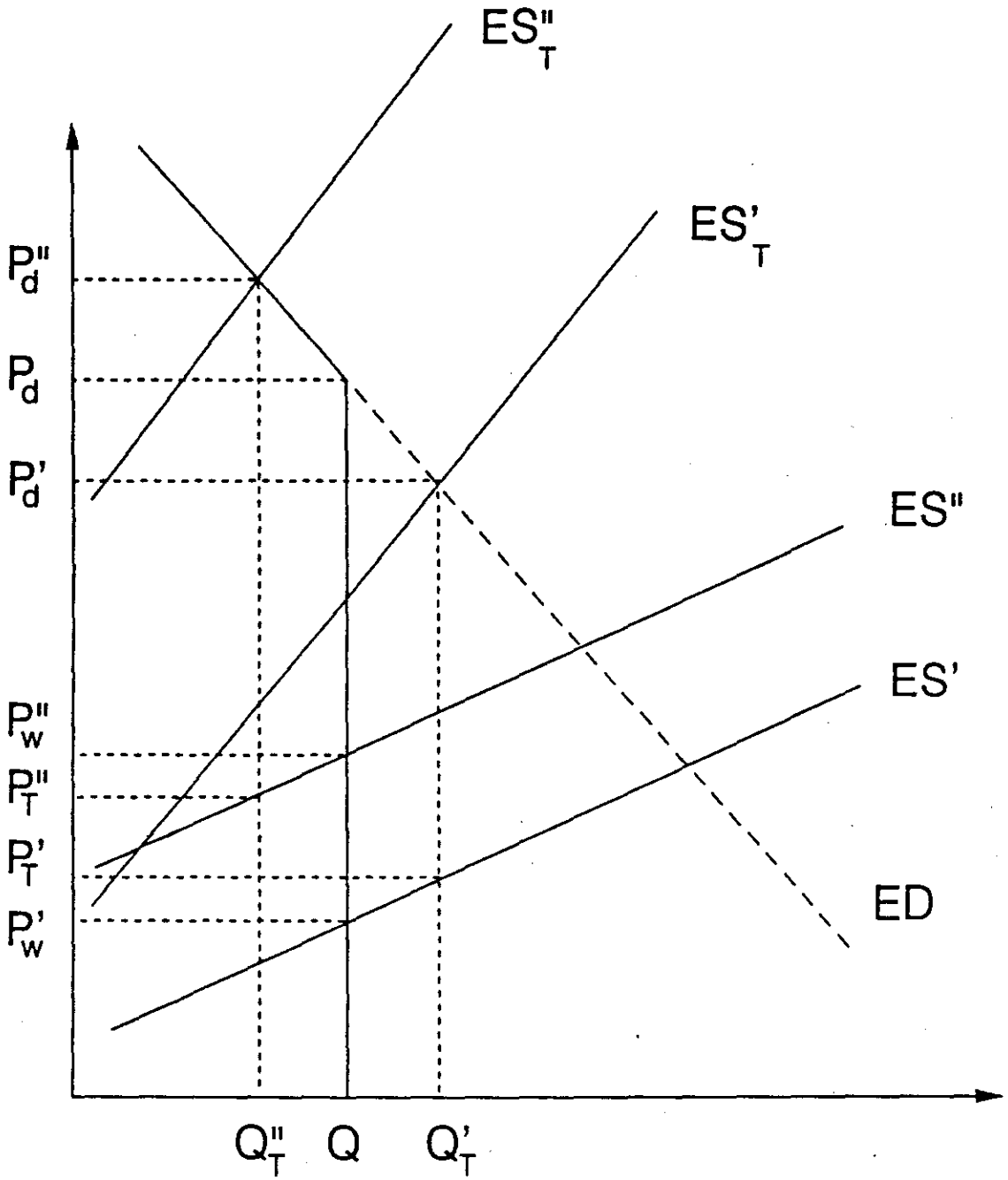
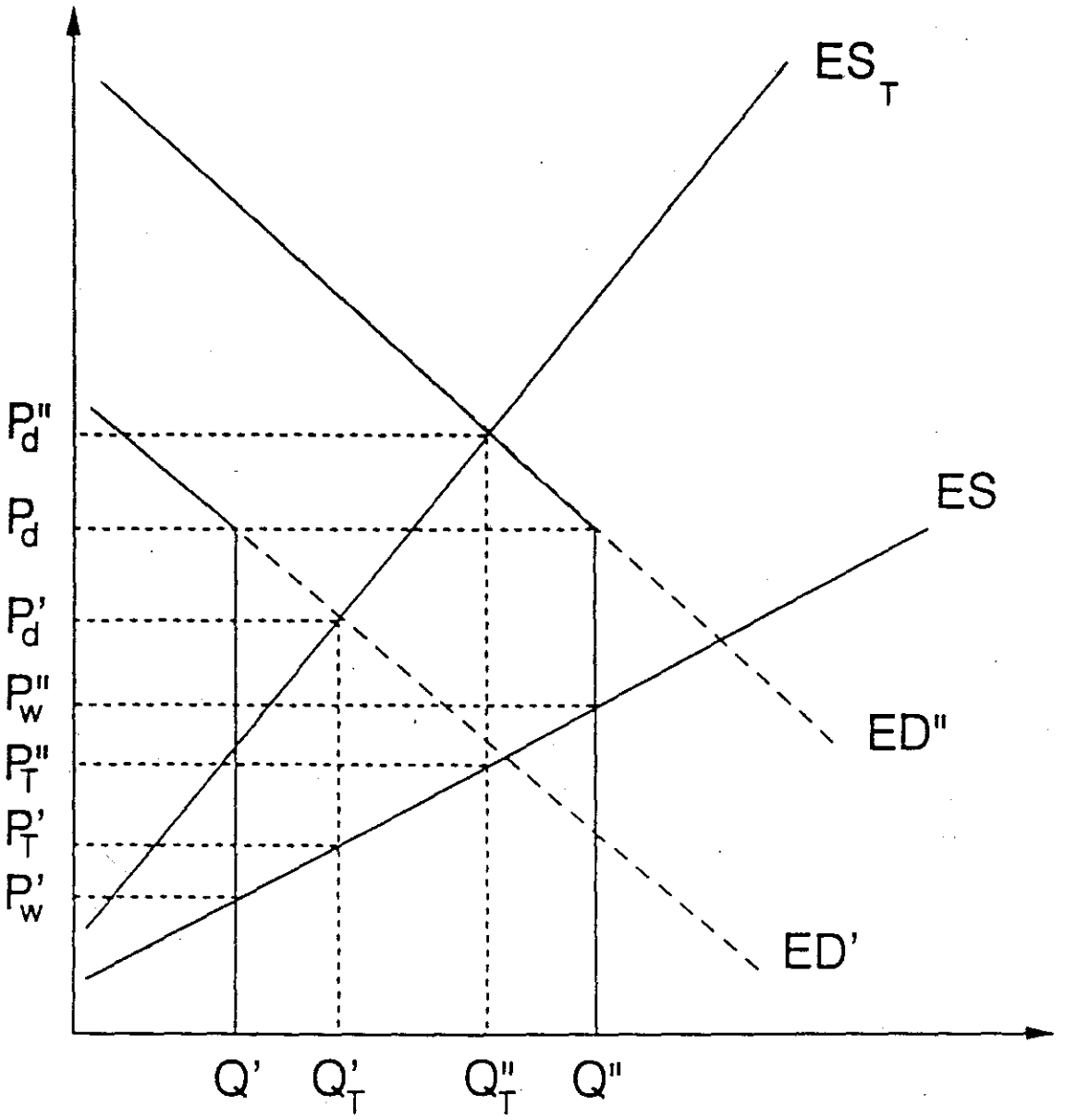


Figure 3 - Tariffication of a Variable Import Levy

Domestic instability case



Given a stable world excess supply ES, the world price will fluctuate between P'_w and P''_w, while the domestic price is stable at P_d despite the fact that the source of instability is domestic. If the variable levy is replaced by an ad valorem tariff defined again as $(P_d - \overline{P}_w)/\overline{P}_w$, then the domestic market will absorb some of the adjustment and the domestic price will fluctuate between P'_d and P''_d, while the world price will not fluctuate between P'_T and P''_T. Also, while with a VIL the import quantities are Q' and Q'', after tariffication the import quantity will fluctuate between Q'_T and Q''_T.

From these illustrations it is clear that a change from NTBs to tariffs is likely to cause an increased price variability for importing countries and a decrease in price variability for exporting countries and supports one of the stated justifications for the U.S. tariffication proposal:

> Most nontariff measures are designed to stabilize internal prices by shifting to external markets the burden of adjusting to changes in supply or demand. Exclusive reliance on tariffs would ensure that the burden of adjustment is spread over all markets, thereby making world market prices more stable and predictable (USTR 1989a).

If we allow for supply response to this changing risk level under the assumption that farmers are characterized by risk-averse behavior, then the reduced risk in exporting countries will tend to stimulate production, whereas the increased risk in importing countries will tend to decrease production. Hence, relying on the (average) price differences between domestic and world markets observed under the NTB system may understate the level of protection required to ensure the same level of imports under the new stochastic conditions. Generally, using an equivalent tariff based on observed (average) price gaps will also not preserve the expected price in the importing country and/or in the exporting country if risk aversion is allowed (note that risk neutrality and linearity preserve expected prices in Figures 2 and 3). This raises the issue of whether tariffication should be coupled with price stabilization measures, a concern emphasized in the EC position (EC 1989), and the extent to which the possible trade-distorting effects of these measures may affect the overall desirability of tariffication.

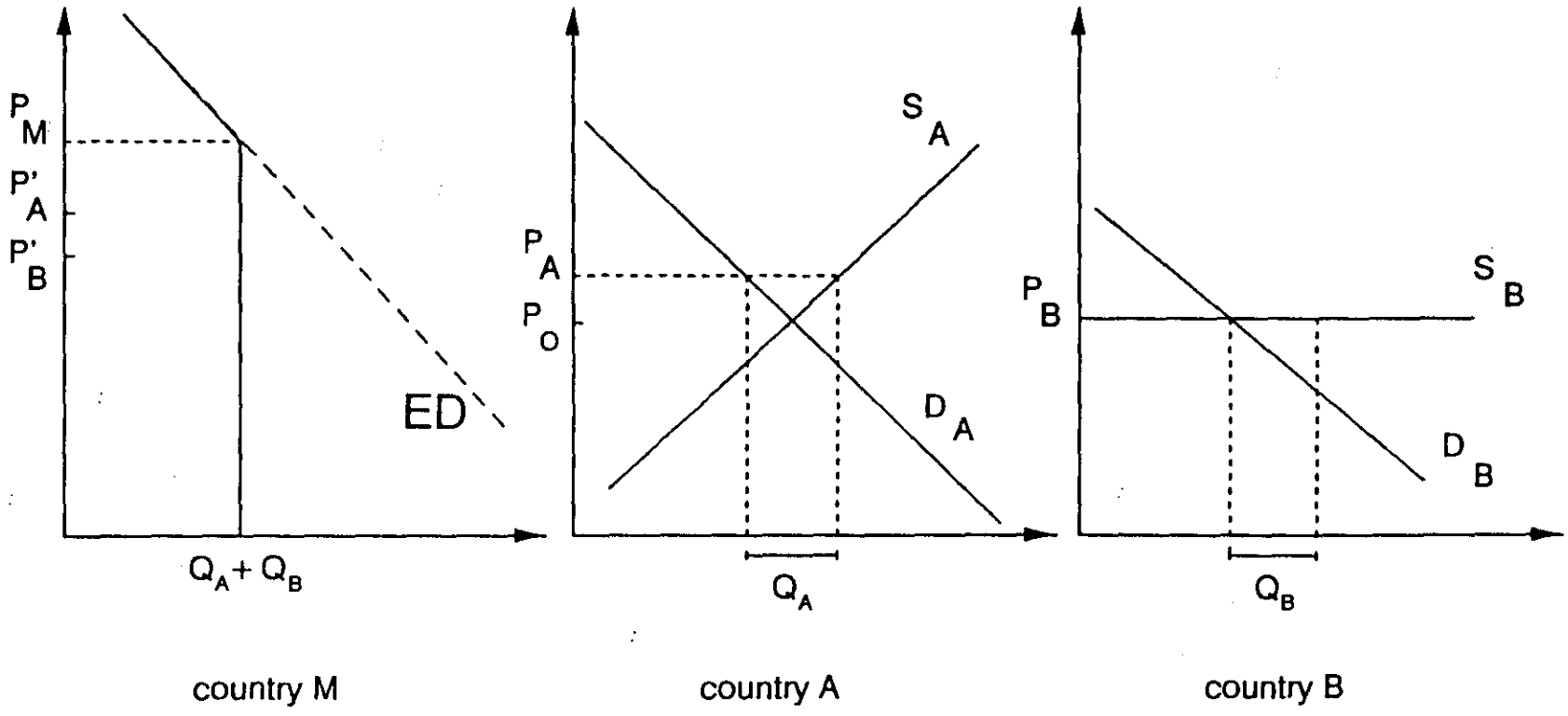
Inefficient Allocation of Quantitative Restrictions

The administration of NTBs can introduce inefficiencies in the international trading market that, if eliminated in the process of tariffication, could affect the equilibrium of volume traded and prices in a way that needs to be taken into account when designing equivalent tariffs. For example, VERs are typically negotiated bilaterally between countries, so the resulting trade flows may not reflect the comparative advantages of countries. Import quotas may also be subject to the same problem, because they are often allocated to specific countries. This is the case, for example, of U.S. import quotas on sugar and cheese. U.S. sugar import quotas have been used as a tool of foreign policy, with political considerations overriding the notion of competitiveness of the receiving country (Bergsten et al. 1987). When these quantitative restrictions are substituted by a nondiscriminatory tariff, the ensuing competitive pressure may modify bilateral trade flows, and prices as well.

As emphasized by Dinopoulos and Kreinin (1989), because VERs are inherently discriminatory their analysis requires a multicountry framework. This case is illustrated in Figure 4 where three countries are assumed: an importing country (country M) and two exporting countries (countries A and B). Through VER or country-specific quotas, countries A and B are both allocated the same share of country M's import quota ($Q_A = Q_B$). However, countries A and B have different production and demand conditions. In particular, country A displays an increasing cost supply, while country B displays a constant cost supply. Also, assume that the three countries face a unit transport cost of T for their bilateral trade flows.

Under these types of quantitative restrictions, the importing country market clears where the demand for import ED intersects the total import quota constraint $Q_A + Q_B$, and the equilibrium price in the importing country is P_M. Because countries A and B have the same transport cost but different production conditions, we would now observe two landed prices, P_A' and P_B', in the importing market, where $P_A' = P_A + T$ and $P_B' = P_B + T$. What price gap should be used to

Figure 4 - Tariffication and VERs



compute the implicit tariff of quotas? A possible solution would be to use the difference between the price in the importing country P_M and the average of the landed prices P_A' and P_B'. However, this would understate the protection necessary to preserve prices and import level in the importing country because country B, by virtue of its relatively low constant marginal costs, will be the sole supplier to market M under a tariff scheme. Thus, the ad valorem tariff level that will preserve import volumes and prices in the country M is given by $(P_M - P_B')/P_B'$.

The tariff level $(P_M - P_B')/P_B'$, however, is equivalent only from the point of view of country M. Because a relatively inefficient supplier under the quota system (country A) has been displaced by a more efficient supplier under the tariff system (country B), the efficiency of the system is increased, so the domestic price in country A now declines to the autarkic price P_O. Indeed, this case admits a fully equivalent tariff system only if the importing country were allowed to levy two different tariffs, one for country A and one for country B. Essentially the same framework can be used to analyze the general inefficiency of allocation of quotas to specific (heterogeneous) components within a product class (Anderson 1985).

It is apparent that replacing a discriminatory quota or VER with a nondiscriminatory tariff affects exporting countries in different ways, and this should be considered when assessing the desirability of tariffication. For example, the suggestion has been made that in the past Japan has managed beef import quotas to favor U.S. exports. If this is true, the tariffication of Japanese beef import quotas, agreed to in 1988 and to take effect in 1991, may produce net benefits to Australia and not to the United States (Alston, Carter, and Jarvis 1989).

Trade Liberalization with Tariff-Rate Quotas

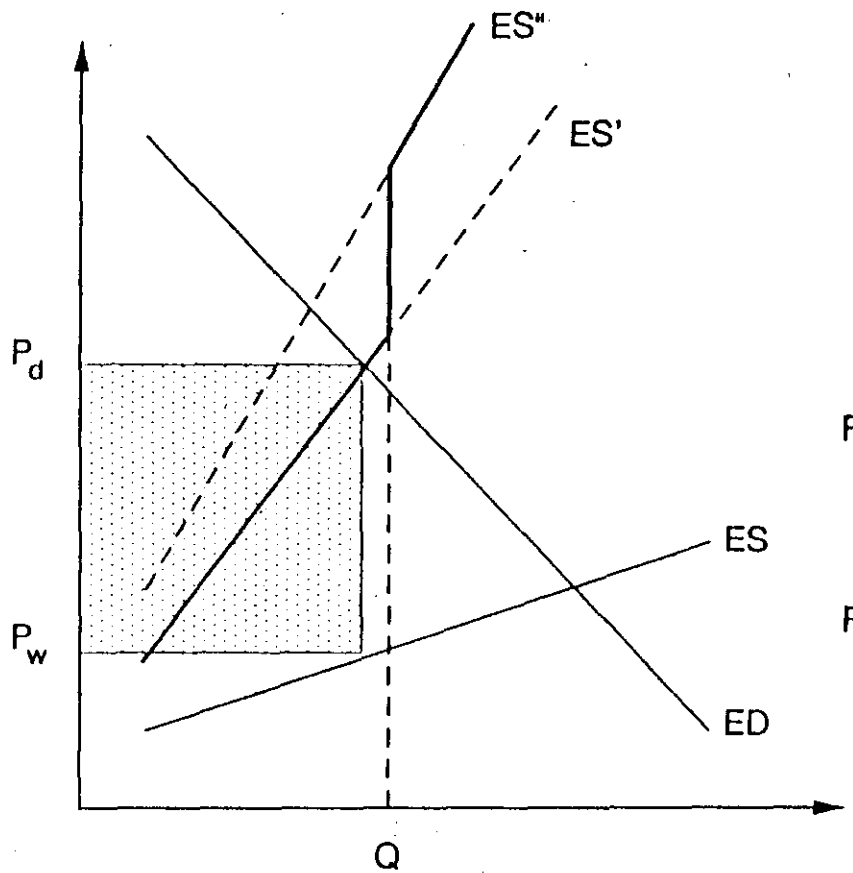
The U.S. proposal calls for trade liberalization in two steps: first, a conversion of existing NTBs into tariff-rate quotas; and second, a gradual relaxation of the constraints of tariffs and quotas in this system over a ten-year transition period. Tariff-rate quotas are not a very common tool of

commercial policy, possibly due to the increased administrative burden of having to enforce both the quota monitoring and tariff payments. Adoption of the Generalized System of Preference, however, amounted to a tariff-rate quota system for many countries (Rom 1979).

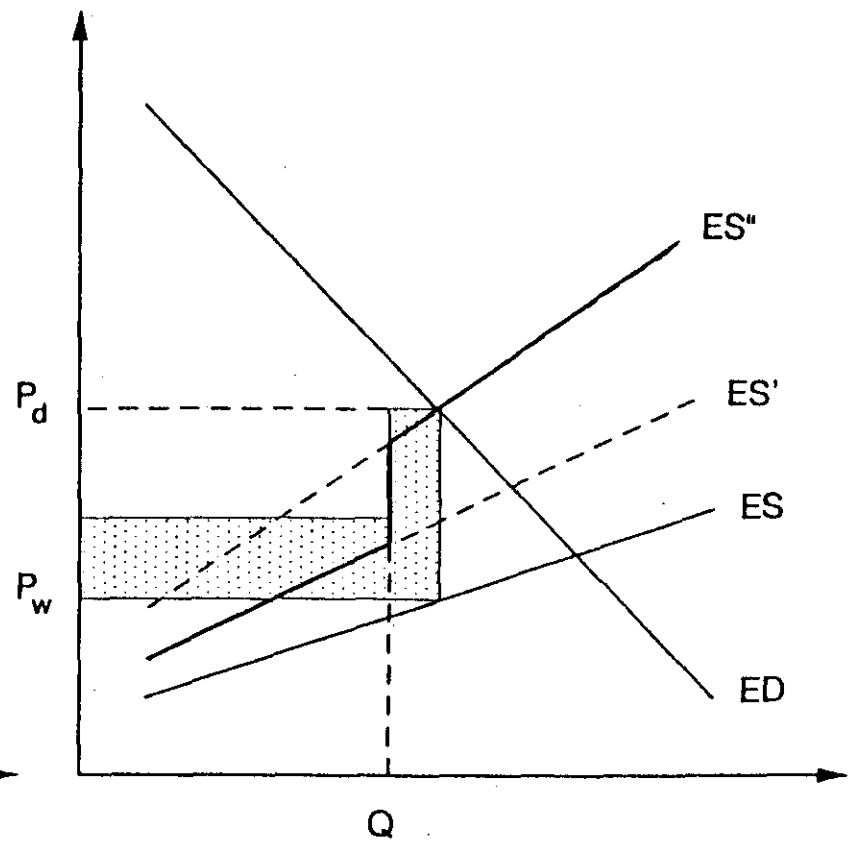
A useful way of looking at a tariff-rate quota is to consider it as a variable tariff, where the tariff varies in discrete amounts triggered by specific import (quota) levels, thus making the tariff schedule a step function. The tariff-rate system being suggested by the United States involves only a quota level and two tariff levels: an in-quota tariff and an over-quota tariff. This system is illustrated in a partial equilibrium framework in Figure 5, where ES is the excess supply facing the importing country, ES′ is the excess supply with the in-quota tariff, and ES" is the excess supply with the over-quota tariff (both tariffs are ad valorem). The effective excess supply schedule is therefore given by the portion of ES′ for import volumes below the quota level Q, and by the portion of ES" for import volumes above Q. How the tariff-rate quota works will depend on where the excess demand ED of the importing country intersects this effective excess supply curve.

A first possibility is described in the first panel of Figure 5. Here the in-quota tariff is binding, so the quantity imported is below the quota level Q. The shaded area represents tariff revenue. Thus, this case is equivalent to an ad valorem tariff. A second possibility is illustrated in the second panel of Figure 5 where it is the over-quota tariff that is binding. In this case the imported quantity exceeds the quota level, emphasizing that with a tariff-rate quota there is no absolute ceiling on import volumes. Although at the margin the difference (P_d - P_w) is the shadow value of the import restriction, this rent is levied only on quantities in excess of the quota level Q so some of the rent may be captured by domestic importers/foreign exporters. A third possibility, not explicitly illustrated here, arises when the excess demand intersects the effective excess supply in the vertical portion between ES′ and ES", so the quota level is effectively binding. This case is equivalent to a quota system, except that the economic rent of trade distortion is captured in part by the government

Figure 5 - Tariff-Rate Quotas



in-quota tariff is binding



over-quota tariff is binding

of the importing country. This is more or less than the case of a pure quota, depending on whether or not the quota is auctioned; auctioning quotas is not a common practice (Bergsten et al. 1987).

The first step in the U.S. trade liberalization proposal is the conversion of NTBs into tariff-rate quotas. Which of these three cases is relevant will depend on how the quota and the tariff rate are set. The United States suggests fixing the quota at the observed level of imports for some recent time period, and computing the over-quota tariff based on the observed price gap for a recent period. If the price gap overstates the protection of the quantitative restrictions, as in the discussion of the imperfect competitive case, then the quota or the in-quota tariff will be binding. If the price gap understates the protection given by the NTB, as in the case of price uncertainty and of inefficient allocation of VERs, then the over-quota tariff is likely to be binding.

The second step of the U.S. trade liberalization proposal is the gradual reduction of the over-quota tariff to a final bound rate (possibly zero), and the enlargement of the quota level, over the ten-year transition period. At the end of the period the only remaining protection will be a tariff, perhaps the (possibly reduced) in-quota tariff, as the remaining quota is eliminated. Assuming that the in-quota tariff is below the over-quota tariff at any time period, any of the three scenarios discussed may hold at the beginning of the transition period, and the (remaining) tariff restriction must hold at the end of this period. A relevant question is one of when the tariff becomes the binding constraint. This could be at any point during the transition period, and may actually happen more than once, depending on the paths of tariff reduction and quota enlargement. It is apparent that the tariff-rate quota system for trade liberalization may introduce a considerable degree of uncertainty about the level of protection during the transition period; specifically, it may be unclear which constraint will be the binding one at any time, and this in turn affects the amount and distribution of rents associated with the trade restrictions.

On the other hand, the tariff-rate quota system may be viewed as an improvement over a previous version of the tariffication proposal, which called for tariffication as the first logical step towards trade liberalization. This approach was very sensitive to the choice of an appropriate equivalent tariff for a given NTB, a difficult task as already noted. Because an equivalent quota is more easily defined for most NTBs (and trivially so when the NTB in question is a quota), the quota part of the tariff-rate quota may be viewed as a short-term insurance policy against the possibility of getting the equivalent tariff wrong. A relatively large over-quota tariff could protect importers from a rapid surge in imports, and a relatively low in-quota tariff would ensure market access to exporters up to the quota level. At the same time, gradually enlarging the quota, together with gradually reducing the over-quota tariff to the long-run rate to be bound, will ensure some degree of smoothness in adjusting towards freer trade.

Relationship with Other Aspects of Trade Liberalization

Tariffication is only one of four main areas of reform covered by the U.S. agricultural trade liberalization proposal. The EC position also suggests linking the implementation of tariffication to the rebalancing of protection rates (EC 1989). (For a discussion of rebalancing and its relationship to the tariffication idea see IATRC 1989.) In particular, two sets of important trade-distorting measures not explicitly dealt with by tariffication are export subsidies and domestic subsidies. It must be recognized that the working of these distortions not only warrants a serious attempt to reduce them, but it also affects the potential implementation of tariffication. To clarify this, it is useful to analyze in some detail the relationship between tariffication and production and export subsidies.

Export Subsidies

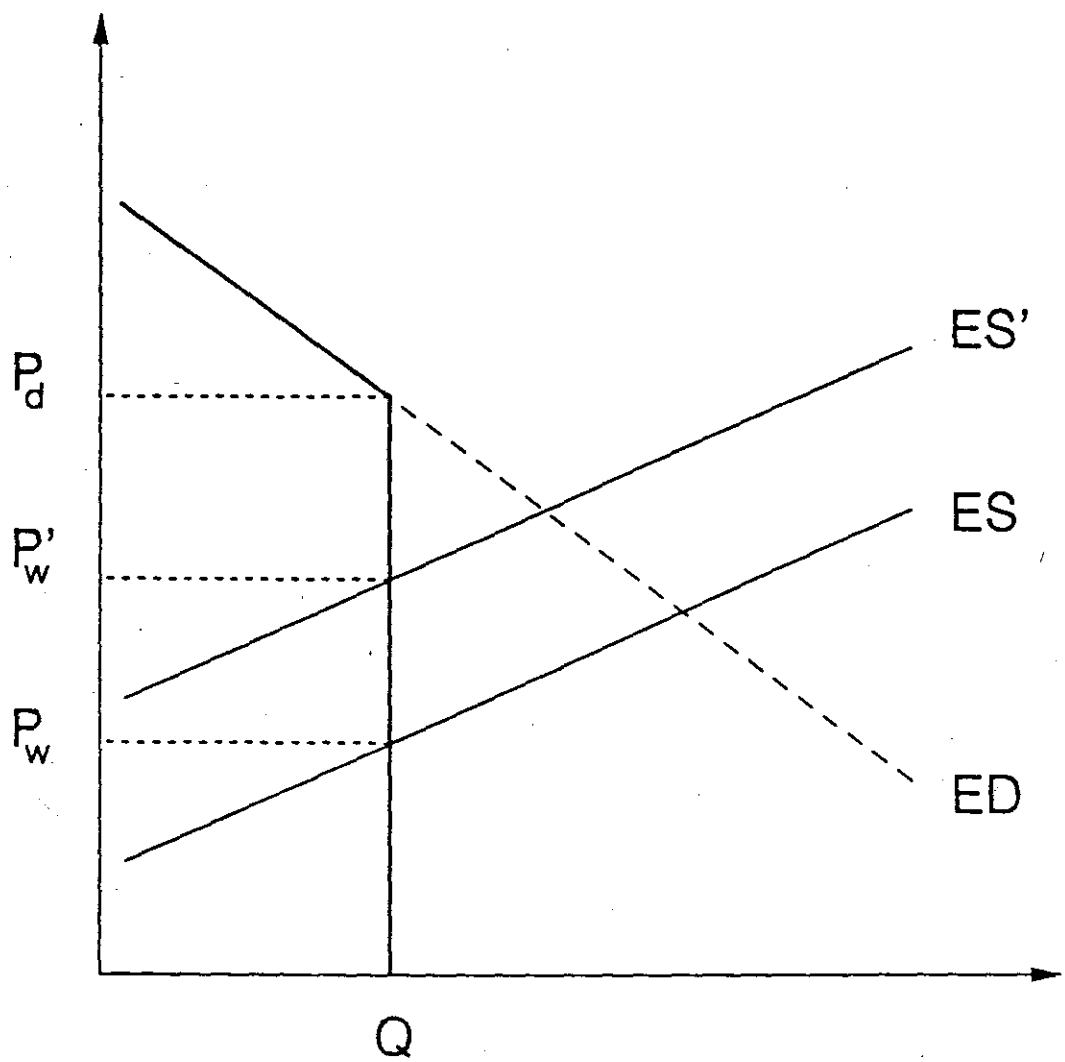
Tariffication has a direct impact on the use of export subsidies because it limits the scope of these policies. When the only import restriction is provided by tariffs, arbitrage implies that export

subsidies cannot be set above the tariff level (ignoring transportation and other transaction costs). As tariffs are bound and reduced according to the tariffication proposal, the implied ceiling on export subsidies would also be reduced. Thus, tariffication provides an indirect and appealing way of limiting export subsidies.

In turn, the existence of export subsidies has some relevance to the implementation of tariffication. Consider first the case of tariffication of an import quota for an importer when exporters are subsidizing their exports. The essence of the argument is captured in the two-country case in Figure 6. Here ED represents the excess demand of the importing country, and ES represents the excess supply of the exporting country. Given a quota Q, the price gap that would be observed is $(P_d - P_w)$, and the equivalent tariff of this quota would be $(P_d - P_w)/P_w$. This equivalence is conditional on the continuing existence of export subsidies in exporting countries. However, if export subsidies were to be reduced, the price gap $(P_d - P_w)$ would overstate the amount of protection needed to preserve prices and import volumes in the importing country. With total elimination of export subsidies, as called for in the U.S. proposal, the relevant supply of exports of the exporting countries could be ES′, which would imply an equivalent tariff of the quota of $(P_d - P_w')/P_w'$.

The relevance of export subsidies to the tariffication concept is further emphasized when they are directly linked to measures limiting imports in a complex system of commercial policy. This is the case of the EC, where internal price support is achieved by the joint application of a variable levy defined by a threshold price, and of an export subsidy (restitution) if domestic production exceeds domestic demand at the price support level. If the country is a net exporter of the commodity, as the EC is for most cereals, there would seem to be no need for tariffication because the apparent policy would be the export subsidy. Yet, if the export subsidy were to be reduced or removed, the threshold price would work as a prohibitive tariff, insulating the domestic market from the international market. This emphasizes the need for tariffication even for some countries that are net exporters. This is

Figure 6 - Tariffication and Export Subsidies



consistent with the U.S. proposal, which calls for a negotiated initial minimum quota when the NTB in question has provided absolute protection to the domestic industry.

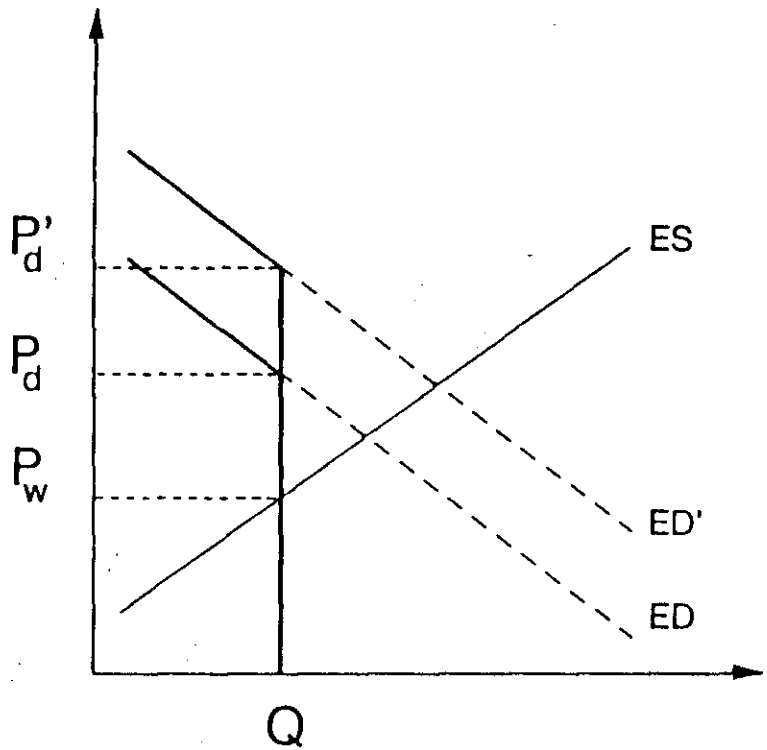
Production Subsidies

Developed countries engage in a variety of support policies for their agricultural sectors that have an indirect, albeit not trivial, trade effect. These include output subsidies, input subsidies, credit subsidies, and free provision of extension and marketing help. For example, in recent years the EC has used an output subsidy to boost soybean production. Also, the U.S. grain policy has long relied on acreage reduction, set aside, and land diversion programs that have a production reduction effect. Clearly, this is a ceteris paribus effect, because these restrictions are associated with price support and deficiency payments programs that may still boost production.

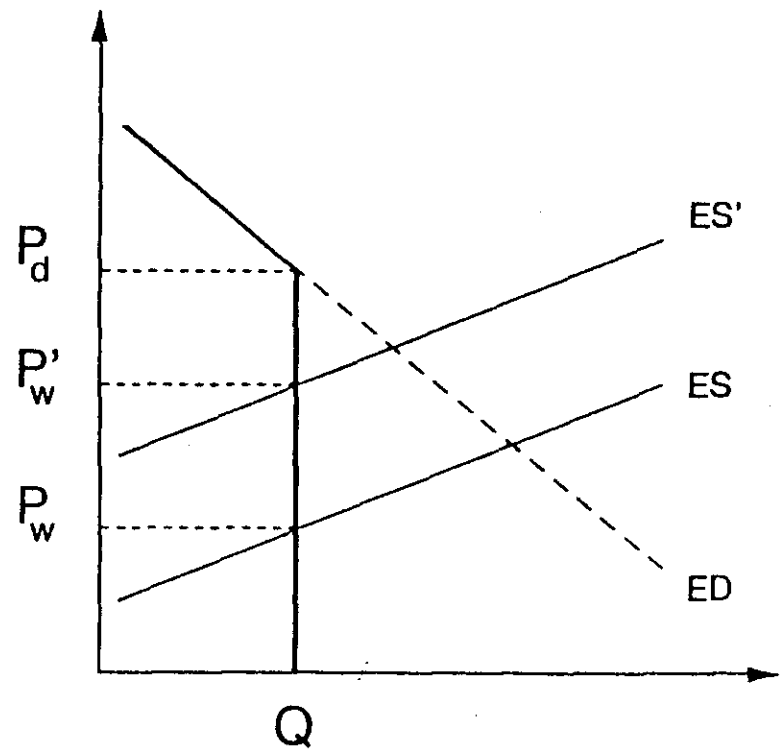
Because of the growing recognition of the trade-distorting effects of these measures, efforts are being made to account for them in the GATT framework. For example, the EC has long championed the use of an aggregate measure of support whose calculation would also include, at least partly, measures other than border measures. In particular, the U.S. proposal calls for phasing out a number of domestic subsidies in a three-tiered approach that would permit only a small set of measures (USTR 1989b).

Two cases of tariffication under nonborder trade-distorting policies are illustrated in Figure 7. Production subsidies increase domestic supply for any given level of market price. If the importing country uses production or input subsidies, such as the case in the first panel of Figure 7, the excess demand curve is shifted downward from ED′ to ED. Given a quantitative restriction of Q, the domestic price is P_d and the world price is P_w. The ad valorem equivalent tariff of this quota is $(P_d - P_w)/P_w$ if the domestic subsidies are continued at the preliberalization level. On the other hand, if domestic subsidies were to be discontinued, this level of equivalent tariff would not generate the same level of domestic prices and import volumes. If the exporting country uses the production

Figure 7 - Tariffication and Production Subsidies



importing country with import quota
and production subsidy



importing country with import quota
exporting country with production subsidy

subsidies, as depicted in the second panel of Figure 7, this results in a downward shift of the excess supply curve. Given an import quota of Q by the importing country, equilibrium requires a price P_d for the importing country, and a price P_w for the exporting country. However, if production subsidies were to be discontinued, the price gap generated by the quota would be (P_d - P_w'). Thus, the outcome here is opposite of the one generated by importing country production subsidies.

The U.S. proposal suggests phasing out all export subsidies over a five-year transition period, and phasing out all domestic subsidies directly tied to production and prices over a ten-year transition period. On the other hand, NTBs are to be converted to (reduced) tariffs. The proposed asymmetric treatment of these trade-distorting measures has some important implications. As has been illustrated, domestic subsidies and export subsidies affect the observed price wedge between domestic and world markets. Insofar as these price differences are used to compute the long-run (bound) tariff, the distortions caused by these measures could become a permanent feature of the international trading environment. This will happen, for example, if the long-run bound tariff rates are based on a fixed proportion of the equivalent tariff of NTBs, and these equivalent tariffs are based on the observed price gap for some recent period, as the proposal suggests.

In a sense, therefore, tariffication could become a tariffication not only of NTBs, but also of other trade-distorting measures. While one could find reasons to prefer tariffs as the only permitted trade-distorting measure, especially if the eventual goal is the reduction of these tariffs to zero, in a second-best world with large bound tariff rates the economic rationale for tariffication may be diminished. Having convinced the contracting parties to rely on tariffs exclusively, the danger would be in seeking tariff rates that allow the achievement of some noneconomic goal, such as income transfer to the agricultural sector. These tariffs could create a more distorted economic environment than that resulting from the use of production subsidies, because tariffs would (needlessly) distort price at the consumption level in addition to prices at the production level (Bhagwati 1968a).

Conclusions

Tariffication is an important part of a comprehensive proposal for long-term agricultural trade liberalization. Its main features are the conversion of NTBs into bound tariffs and the reduction of these tariffs over a transition period. Thus, there are two essential and distinct features of this proposal: converting NTBs into tariffs and reducing trade barriers. Each of these is justifiable based on economic considerations.

Tariffs are generally more efficient than other trade restrictions, and converting NTBs into tariffs may improve efficiency and be a desirable goal in its own right. Crucial to this, however, is the notion of an equivalent tariff for a specific NTB. Under a number of conditions, some of which have been reviewed here, the definition of an equivalent tariff is problematic, and may bear little resemblance to the price gaps observed under existing quantitative restrictions. The existence of export subsidies and production subsidies may also affect the appropriateness of using observed price gaps to determine the equivalent tariff of specific NTBs.

If tariffication were successful in reducing tariff rates to long-run low values like those of many industrial products, then the issue of the equivalent tariff of NTBs may lose importance because gains from reduced protection are likely to dominate the efficiency gains of changing the protection instrument. In this case, attention should be focused on achieving acceptable long-run tariff rates. In any event, it may be undesirable to base long-run bound tariff rates on the price gaps observed under the present configuration of NTBs.

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