

Minimum Market Access Under the GATT

Ferdaus Hossain and Helen H. Jensen

*GATT Research Paper 94-GATT 1
January 1994*

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

F. Hossain is graduate research assistant and Helen H. Jensen is associate professor, Department of Economics, Iowa State University.

This material is based upon work supported by the Cooperative State Research Service, U.S. Department of Agriculture, under Agreement No. 92-38812-7261. Any opinion, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture.

Contents

Introduction	1
Alternative Quota Allocation Schemes	4
Quota Allocation and Efficiency	9
Some Relevant Issues	15
Summary and Conclusions	17

Figures

Figure 1.	Alternative Quota Allocation Rule: Importer Extracts Rent	6
Figure 2.	Quota Allocation and Efficiency	10
Figure 3.	Intermarket Linkage and Efficiency	12
Figure 4.	Trade in Quota Licenses and Efficiency	14

1. Introduction

A major objective of the Uruguay Round negotiation of the General Agreement on Tariffs and Trade (GATT) is to bring agricultural commodities under general GATT rules and disciplines. The United States and the Cairns Group countries (with the exception of Canada) are insisting on tariffication of all nontariff barriers (NTBs) to trade without exception. On the other hand, the European Community (EC) and Japan are reluctant to open their respective domestic markets for certain agricultural commodities. To break the negotiation deadlock, Arthur Dunkel, the Director General of the GATT, put forward a compromise proposal (the Dunkel proposal) which has become the basis for the final round of talks currently in progress. Among other things, the Dunkel proposal (1991) calls for countries to replace all existing nontariff barriers to trade by tariffs and to ensure minimum access to their domestic markets if imports have been less than 5 percent of domestic consumption. Specifically, the Dunkel proposal calls for importing countries in the 1993 starting period to provide a minimum access of 3 percent of the domestic consumption in the base period (average of 1986 through 1988 consumption). They will gradually increase the minimum access level to 5 percent of the base period domestic consumption by 1999, if base period imports are below these thresholds.

However, the Dunkel proposal (1991) is not specific about the mechanism through which this minimum access will be achieved. In order to provide minimum market access, the government of an importing country may resort to many different policies. An importing country may:

1. assign the right to import to domestic traders (importers).
2. assign an exclusive right to import to a state trading agency.
3. directly issue licenses to foreign exporters that would allow them to sell in the importing country.
4. assign foreign (exporting) governments the right to issue export licenses.

Within each of these categories, there are alternative ways to allocate import or export rights among individual importers and exporters.

These mechanisms (in various combinations) are actually being used by many countries in managing their imports of certain commodities. For example, the EC allocates 85 percent of its import quota for beef and veal to existing importers while the remaining 15 percent is kept available for potential new importers. Applications in excess of the quota amount are allocated on a *pro rata* basis. Import quotas are not auctioned by the government and, therefore, the government does not extract the potential economic rents. Further, there is no state control to allow the quota rents to be allocated according to some government priorities.

In other cases, government agencies have effectively extracted some of the economic rents. For example, quotas of certain categories of beef are allocated to certain specific countries through bilateral agreements (that are in effect country-specific quotas). For countries like Argentina and Australia, where the export of beef is managed by a single state agency, the exporter is the effective administrator of the quota and, therefore, is able to obtain the economic rents associated with the quota. The EC cheese quotas are handled by means of certificates issued by recognized agencies in the exporting countries; country-specific quotas are determined through a series of bilateral agreements. After Spain joined the EC, quotas for imported corn were allocated through a tendering system. It is evident that, with the exception of imported corn, the economic rents of these quotas accrue to the exporting countries.

Japanese grain import quotas are managed by the Japanese Food Agency. Once the import quotas are set for various grain categories, this agency allocates the import quotas to the National Federation of Agricultural Cooperative Associations and to other general trading companies. The quota holders import the allocated quantities and sell them to the Food Agency. The agency then decides on a selling price. The surplus generated through the sales is used to cover the Food Agency's expenses for other programs. The Japanese government obtains the quota rents and uses them primarily for producer support programs.

The United States allocates its peanut import quotas on a first come, first served basis. Imports are allowed until the quota has been filled. Any further import then waits in bond until the beginning of the next year. U.S. cheese and sugar quotas are issued bilaterally on the basis of historical records and on a first come, first served basis within each country's quota. Some quotas are allocated to nonhistorical traders. Thus, the United States allows the exporting countries to extract the quota rents.

While these are some of the more commonly used methods of quota allocation, there are many other mechanisms used by other countries. As has been mentioned, the Dunkel proposal (1991) calls for replacing all nontariff barriers to trade with equivalent tariffs. The policy coverage of tariffication would include all border measures other than ordinary customs duties, such as quantitative import restrictions, variable import levies, discriminatory import licensing, nontariff measures maintained through state trading enterprises, voluntary export restraints, and any other schemes similar to those listed above. Participant countries would not resort to, or revert to, any measures which have been converted into ordinary customs duties pursuant to the agreement to convert all NTBs into equivalent tariffs. However, the importing countries shall ensure that the exporters have a minimum access to their markets if such access has been below the threshold level mentioned earlier.

Our interest is in the analysis of the efficiency and welfare implications of alternative ways of distributing the rights to import. Such an analysis of the allocation mechanism of the import quotas is important for at least two reasons. First, the allocation mechanism distributes the economic rents associated with the import quotas and hence affects welfare. Second, different allocation mechanisms may have different implications for efficiency. The specific questions addressed are:

1. What are the differences (in terms of their implications for welfare and efficiency) in assigning the rights to import to:
 - a. domestic traders?
 - b. foreign exporters?
2. How should the import quotas be allocated?

The discussion is organized as follows: In section 2, alternative mechanisms of allocating import quota rights are discussed. Here, two alternative quota allocation rules are discussed, namely, the tariff equivalent rule, and the free trade market share rule. The discussion of the two import quota allocation mechanisms highlights their differential impacts on the welfare of importing and exporting countries. In section 3, the issue of efficiency in quota allocation schemes is discussed, including considerations of potential sources of inefficiency and the means to achieve efficiency. Other relevant issues are examined in section 4. The final section summarizes the main points of the discussion.

2. Alternative Quota Allocation Schemes

The main focus of the current discussion is that of allocating limited import quotas among the potential exporting countries. Economic discussion of import quotas under a competitive market environment has focused primarily on the comparison of tariffs, quotas, and voluntary export restraints. Examples of such discussion are Bhagwati (1965, 1968), Brecher and Bhagwati (1987), and Takacs (1978), to mention a few. The issue of quota allocation among potential exporters has received little attention. The main reason is that most discussion of commercial policy has been cast in the standard two-country framework of analysis. In a two-country framework, the problem of allocation of import quotas among exporting countries does not arise since there is only one potential exporter. However if there is more than one potential exporter, the importing country can resort to alternative ways of allocating its sales rights.

2.1. First Come, First Served Principle

One possible allocation rule would be the first come, first served principle. According to this guideline, imports would be allowed to enter freely until the quota limit is exhausted. Under quantitative restrictions, once the limit is reached, any further import would have to wait in the customs area until the next period. Under tariffication, imports above the quota limit would be subjected to higher tariff rate. Such a principle is simple, nondiscriminatory, and apparently fair to all potential exporters. However, there may be efficiency costs involved as a result of the need to devote extra resources to the nonproductive end of getting the goods in before the quota is filled or having to wait in line if licenses are issued. If there are substantial rents to be extracted by the importer or the exporter (in the form of a large difference between the domestic price of the importing country and the world price of the good), then it is likely that the importer or the exporter would try to bring as much of the good into the importing country as quickly as possible. The quota limit is likely to be exhausted and there would be an import surge at the beginning of the period for which quotas are defined. And if the good is perishable or cost of storage is high, domestic market disruption may occur in the importing country. In the real world, whenever this principle has been applied, this situation has occurred. For example, France tried this method of import control in the 1930s, but had to abandon it almost immediately when a stampede to the borders overwhelmed the customs officials (Bergsten et al. 1987). The U.S. experience with peanut quotas has been similar.

2.2. Administrative Allocation

Quota allocation via administrative decision making is a more commonly used quota allocation mechanism. Since under the Dunkel proposal (1991) the quota allocation rules have to be confined within border measures administered by the importing country, it follows that under competitive market conditions and no uncertainty, the importing country would extract the quota rents. The importing country can extract the quota rent either by assigning import licenses to domestic residents or by auctioning these licenses and distributing the proceeds to domestic residents in a lump sum fashion. In the absence of distributional considerations, these two alternatives are equivalent. The important issue is that of deciding how much to import from each country. To illustrate we use a three-country framework. The domestic country, D, is the importer and it may import from two countries, A and B. The question is: how much to import from country A and how much from country B? Two alternative allocation schemes may be used by the importing country. One is the tariff equivalent scheme, and the other is the free trade market share scheme. These two schemes are analyzed with the help of Figure 1. The discussion here follows Dinopoulos and Kreinin (1989), and Kreinin and Dinopoulos (1992).

2.2.1. Tariff Equivalent Scheme

In Figure 1, the home country imports good M from countries A and B and exports good X. The free trade offer curve of the home country is OD, while those of countries A and B are OA and OB respectively. The curve OC is drawn by adding the quantities of M offered by countries A and B at each one's terms of trade (given by rays from origin). Therefore, OC is the aggregate foreign offer curve facing the home country. Overall free trade equilibrium is attained at point E; the free trade equilibria for countries A and B are attained at points F and G respectively. The home (domestic) country's import of the good M is Om^* where country A supplies Of amount and country B supplies Og ($Of + Og = Om^*$) amount of the import good (M).

Now consider the case where the domestic country has a quota on imports equal to Oh . The tariff equivalent quota allocation scheme may be obtained through the following hypothetical experiment. The importing country can impose a tariff such that total imports under that tariff equal the quota amount, Oh . Such a tariff would shift the domestic offer curve, OD, to the right so that it intersects the aggregate foreign offer curve, OC, at point J. The result would be

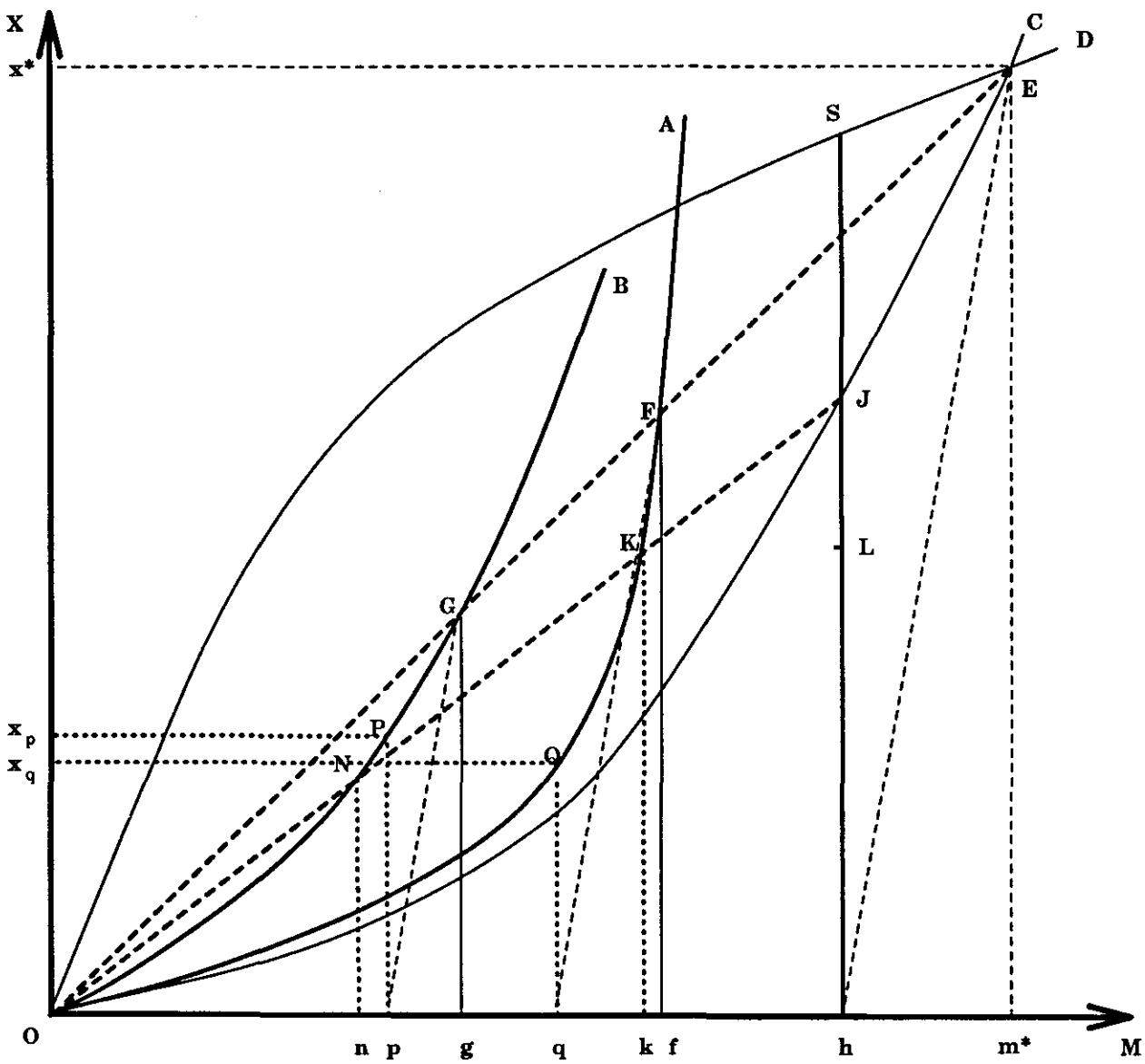


Figure 1. Alternative Quota Allocation Rule: Importer Extracts Rent

The domestic country could attain this outcome by auctioning import quotas equal to Ok to exporters of country A and On to exporters of country B and distributing the proceeds to its (the importer's) residents in a lump sum fashion. Alternatively, it may give its domestic residents the licenses to import Ok amount from country A and On amount from country B. Under this scheme, the welfare of the domestic country would be given by its trade indifference curve (not shown) passing through the point J, but not necessarily tangent to the aggregate foreign offer curve, OC. Welfare levels of countries A and B are given by respective trade indifference curves through points K and N.

2.2.2. Free Trade Market Share Scheme

Now we consider the other alternative quota allocation scheme, namely, the free trade market share scheme. Under free trade, country A exports Of amount and country B exports Og amount of the good M, and the total import by the domestic country is Om^* . The problem is to assign quotas to countries A and B such that the total import of M by the domestic country equals Oh and, at the same time, the share of each country in total imports of the home country remains the same as under free trade. Let s_i denote the share of country i ($i = A, B$) in the total imports of the domestic country. Under free trade, $s_A = Of/Om^*$ and $s_B = Og/Om^*$. Since, $Of/Om^* = OF/OE$ and $Og/Om^* = OG/OE$, $s_A = OF/OE$ and $s_B = OG/OE$. Further, $OF + OG = OE$. Under the quota, the total import has to be Oh . The same import volume, Oh , has to be distributed between countries A and B such that the above market shares are maintained.

Such an allocation is given by the following scheme: connect points E and h (the dashed line). This line maps the free trade import level to the quota-ridden import level. To maintain market shares of both countries, lines are drawn from points G and F to the horizontal axes that are parallel to line Eh. These parallel lines are Fq and Gp. By properties of similar triangles, $Op/Oh = OG/OE$ and $Oq/Oh = OF/OE$. Thus, the free trade market share allocation rule is given by Oq amount of import from country A and Op amount of import from country B.

The domestic country can attain this allocation by issuing to exporters of country A licenses to export Oq amount and to exporters of country B licenses to export Op amount of good M. The licenses are issued through auction in both cases and then the proceeds are distributed among domestic residents in lump sum fashion. Alternatively, the domestic country may give to its domestic residents licenses to import Oq amount from country A and Op amount from coun-

try B. Under this scheme, trade equilibrium points are Q for country A and P for country B. These points are obtained vertically above the points representing the export level of each country on the respective offer curve (Q for country A and P for country B). The domestic country's equilibrium is at point L which is obtained in the following manner: domestic country exports Ox_q and Ox_p quantities of X to countries A and B respectively. Point L is obtained vertically above h at a height equal to $Ox_q + Ox_p$.

2.2.3. Comparison of Allocation Schemes

Comparing the two alternative allocation schemes, we can see that under the free trade market share scheme, country B's export volume increases while that of country A decreases compared with the respective export volumes under the tariff equivalent allocation scheme. Country B is better off and country A is worse off under the free trade market share allocation scheme. In general, the country with the higher export price elasticity (country B in our case) is better off, while the country with the lower export price elasticity (country A in our diagram) is worse off under the free trade market share scheme compared with the outcomes under the tariff equivalent allocation scheme.

The intuition behind this result is that the tariff equivalent allocation scheme deteriorates the terms of trade for both countries, and in response both countries reduce their exports. But the country with the higher export price elasticity reduces its exports more and ends up with a smaller share of the total imports of the home country than under the free trade market share allocation scheme. The free trade market share scheme by definition restores the market share that each country obtains under free trade. Therefore, the export share of the high export price elasticity country must increase and that of the low export price elasticity country must decrease under the free trade market share scheme. Thus, the high elasticity country is better off under the free trade market share scheme than under the tariff equivalent allocation scheme. The opposite is true for the low elasticity country. However, if the export price elasticity is the same for both countries, these two alternative quota allocation schemes are identical in terms of their outcomes.

If the export price elasticities of the exporting countries are not identical, then the importing country is better off under the free trade market share allocation scheme. The free trade market share scheme causes proportional reduction in the exports of both countries. That implies

a larger decline in the price of exports of the low elasticity country (country A in this case). The move from the tariff equivalent scheme to the free trade market share scheme improves the terms of trade of country B while it deteriorates those of country A. Since imports from country A are larger than those from country B, the lower price of imports from A outweighs the loss from the higher price of imports from country B. Hence, the importing country is better off under the free trade market share arrangement when the export price elasticities of the exporting countries are not identical. Thus, for the case where the importing country extracts the rent, information about the export price elasticities from the exporting countries determines the relative effects on importing and exporting countries.

3. Quota Allocation and Efficiency

The quota allocation schemes discussed so far do not say anything about the efficiency implications of alternative schemes. In this section, we ignore the issue of rent distribution and discuss the efficiency aspects of different quota allocation rules.

3.1. Efficiency Condition for Quota Allocation

In order to ensure efficiency, the importing country should allocate quotas between (among) exporters in such a way that the marginal cost of importing from each source is the same. The marginal cost of import at any point is given by the slope of the offer curve at that point. In Figure 1, it would be a coincidence if the trade equilibrium points of countries A and B had the same slope of their offer curves. Figure 2 helps to describe an efficient way to allocate quotas between countries A and B.

In Figure 2, the axes are the same as in Figure 1. Offer curves of countries A and B are OA and OB respectively. The aggregate foreign offer curve is obtained by adding the quantities offered by each country such that the slopes of their offer curves at their respective points of offer are the same. For example, the slope of OA at point G is equal to that of OB at F. Now adding OF and OG through vector addition, we get a point H. This is one point on the aggregate foreign offer curve. The process may be repeated to get the entire aggregate foreign offer curve, OF.

Given any quota, $\overline{Om}$, we can find the point H vertically above $\overline{Om}$ on the aggregate foreign offer curve and find the slope of OF at H. This slope will be equal to the slope at one

point each on OA and OB (G and F respectively) in the diagram such that import levels given by points F and G add up to $O\bar{m}$. Since the slopes of OA and OB are the same at F and G, the marginal costs of imports are equalized across countries and the efficiency condition is satisfied. Thus, with an import quota equal to $O\bar{m}$, an efficient distribution of the import quotas between countries A and B is to import $O\hat{m}_a$ from country A and $O\hat{m}_b$ from country B.

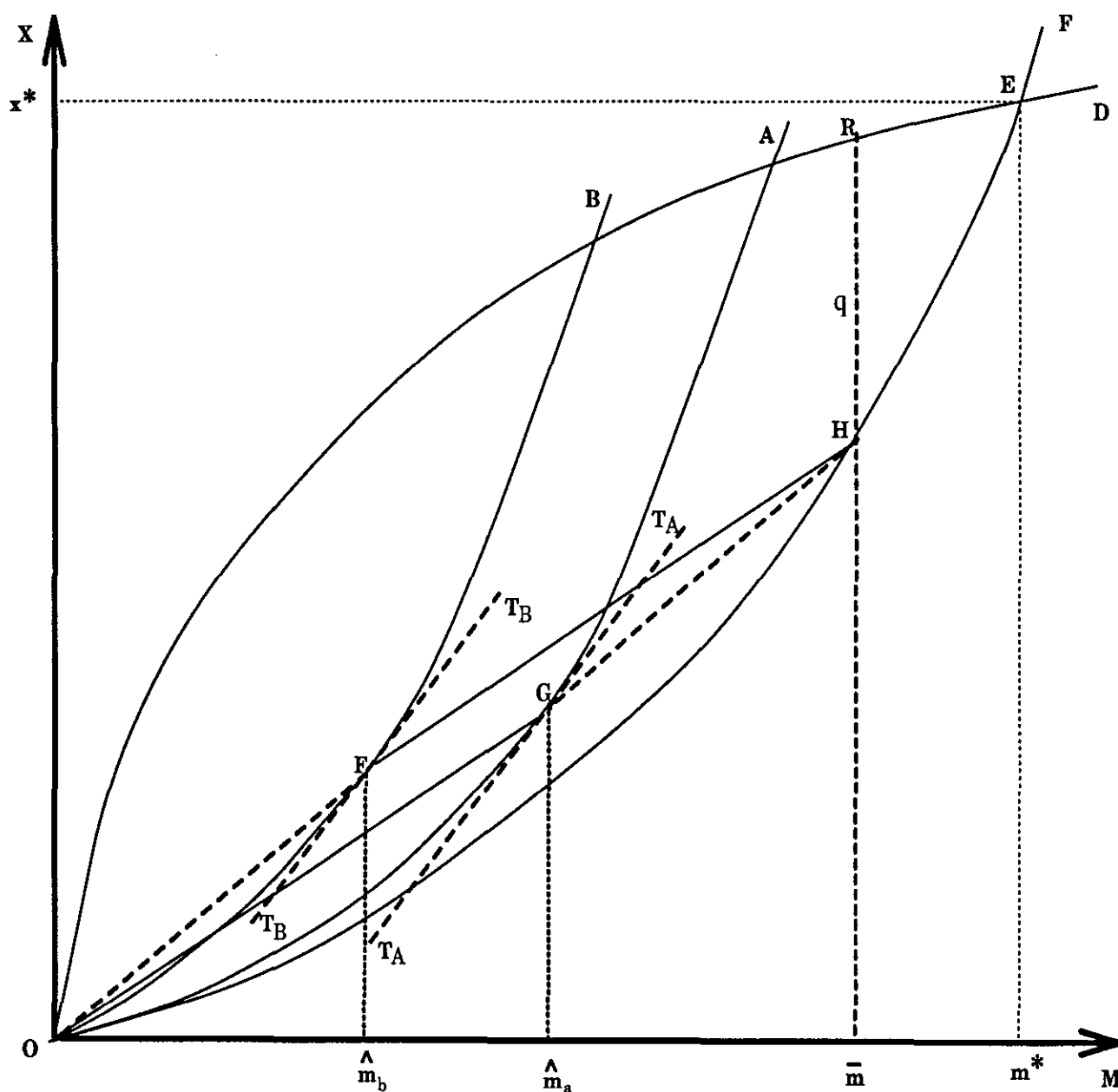


Figure 2. Quota Allocation and Efficiency

3.2. Intermarket Linkage and Efficiency

The ongoing GATT negotiations are attempting to open markets for certain agricultural commodities of some countries that are currently inaccessible to exporters. In these cases, the tariff equivalent and the free trade market share allocation schemes, as defined above, may not be easy to determine and implement. One alternative in such a situation would be to allocate quotas on the basis of market shares of the exporting countries in the world market. That is, an exporting country would get a license to export an amount of the good in question to the market of the import restricting country that is proportional to its (the exporting country's) share in the world market. Similar export license allocation schemes have been used by the governments of many countries facing quotas on their exports for distributing the export licenses among their exporting firms (for example, in textiles). Bark and de Melo (1988) analyze this type of quota distribution scheme used by an exporting country's government among its firms. Although their discussion focuses on quota allocation among domestic exporting firms and export market diversification, that discussion is relevant and useful for analyzing the problem under consideration.

To illustrate, consider Figure 3. Suppose that there are two exporting countries, country I and the rest of the world denoted by II, and two potential importers, country A and all other importers combined and denoted by B. For simplicity, constant and identical marginal and average cost are assumed for the export good.

In Figure 3, the horizontal axis represents import and export quantities, and the vertical axis represents price. We assume that historically country A's market has been closed to foreign countries. The import demand curve of B is represented by curve $D_B D_b$. The horizontal line denoted MC represents the constant marginal cost. World equilibrium price is determined at point H (that is, world price is OF). Now suppose that country A opens its market partially by allowing an import quantity $O\bar{m}_a$. Country A's import demand curve is $D_A D_a$. Import licenses are allocated to countries I and II according to their shares in market B. Specifically, in order for the entire import quota to be filled, one unit of sales in market B should entitle the exporting country the right to sell FG/FH amount of the good in country A.

With an import demand function $D_A D_a$ and import level $O\bar{m}_a$, the domestic price in country A is $\bar{P}_a$. So, a license to export one unit of the good to country A commands a premium of $\bar{P}_a F$ (which is equal to the difference between the price that an exporter can get in

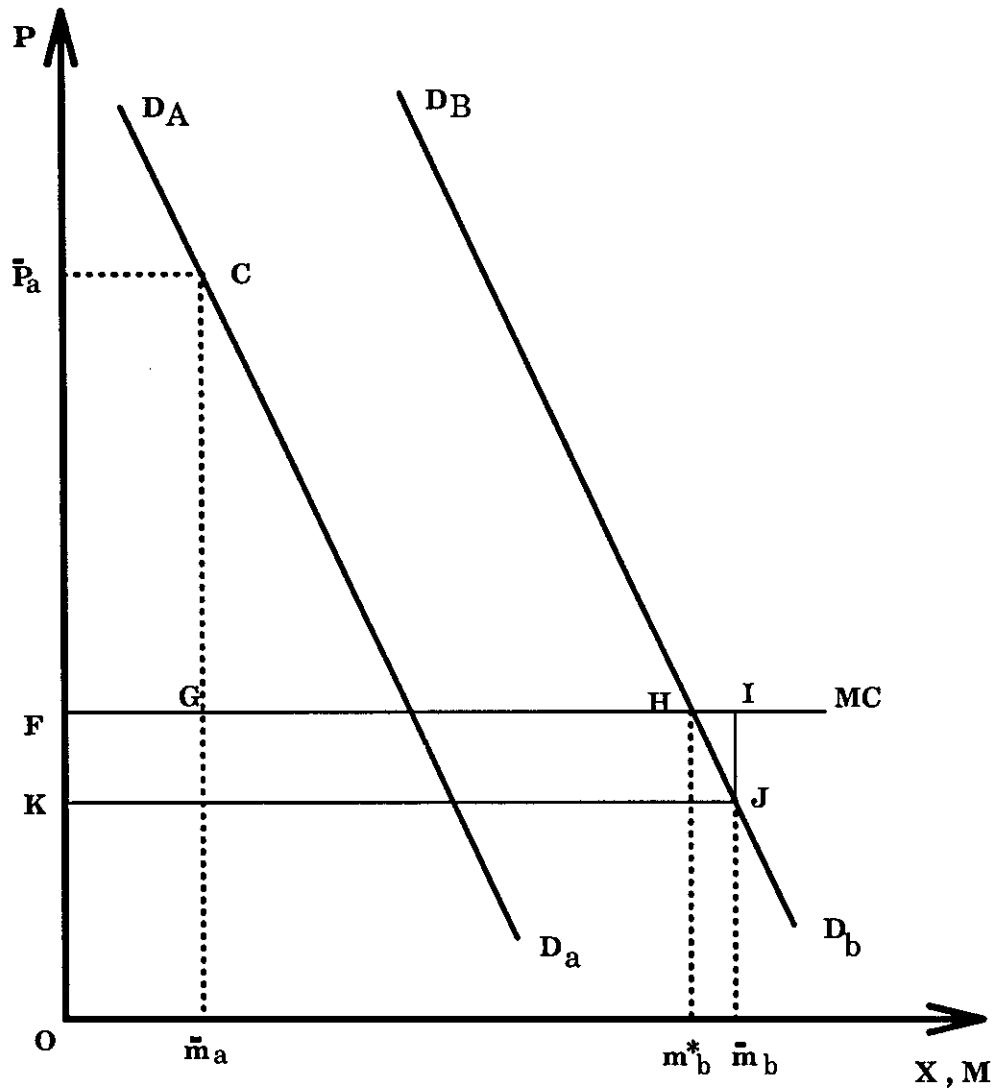


Figure 3. Intermarket Linkage and Efficiency

country A and the world equilibrium price) per unit of export. We assume that the exporting countries take prices as given. Individual countries will actively seek to earn rights to sell in market A. They will be ready to spend real resources to earn the profit available in market A. Under competitive conditions, equilibrium requires that the profit from sales in market A at a premium price be equal to the cost of acquiring the license to export. Exporters would incur losses in market B in order to obtain profits from sales in market A (to an amount equal to the

loss from sales in market B). Thus, the quota allocation scheme by country A forces the world equilibrium price below marginal cost and hence leads to inefficient resource allocation.

The above arguments apply equally to the case where import/export quotas for one period may be linked to market shares in earlier periods. Such intertemporal linkage would create distortionary incentives and lead to inefficiency.

This result has at least two implications. First, in the real world, there are more than two exporters and not all potential exporters get the opportunity to sell in a quota restricted market like the one in country A. If an importer, like the EC, uses the described quota allocation scheme that forces the world price to a level lower than what would have occurred under another quota allocation scheme, then countries exporting to other markets will suffer a real loss.

Second, in many cases, once country-specific quotas are negotiated, the exporting country has the right to issue (distribute) export licenses among its exporting firms. As Bark and de Melo (1988) demonstrate, if the allocation rule used by the governments of the exporting countries is like the one discussed earlier (that is, that the government allocates quotas that are linked to market shares), the allocation rule may create distortionary forces that will affect price and supply in other markets. This indirect effect of the country-to-country quota agreements suggests the need for additional agreements on how the government of an exporting country may allocate its quota licenses among its exporting firms.

3.3. Trade in Quota Licenses and Efficiency

In the previous subsection, it is argued that if the quota allocation in one market is tied to export performance in another market, inefficiencies may result. To avoid such inefficiency, there should be no intermarket or intertemporal linkage in quota allocation. Any arbitrary quota allocation rule that follows this principle can attain efficiency if there is a market where quota licenses are traded. To illustrate, consider the following quota allocation rule: the importing country gives away the entire quota to one exporting country, but trade in quota licenses is allowed. To simplify the discussion, assume that there are two potential exporters; country I and country II. These two exporting countries, I and II, have identical export supply curves. Country A is the importing country. Assume that country A has been closed until now. Country A gives away the entire quota to country I, but trade in export licenses is allowed. Figure 4 illustrates this situation.

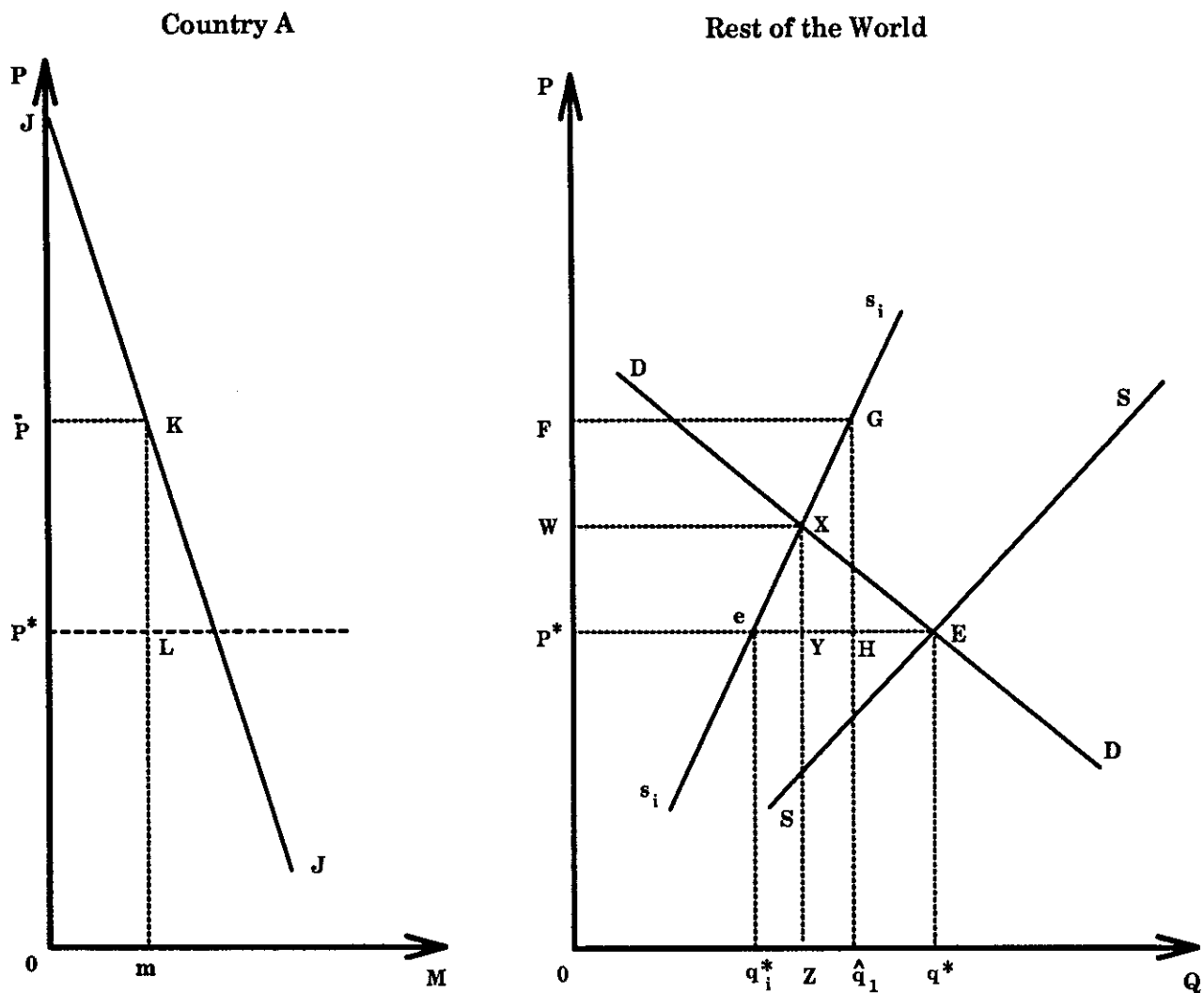


Figure 4. Trade in Quota Licenses and Efficiency

The individual exporting country's export supply curve is given by $s_i s_i$ and world export supply curve curve is SS . Suppose that world import demand is given by DD . So long as country A remains closed to foreign suppliers, equilibrium in the world market is attained at point E with world price OP^* and total volume of trade is Oq^* . The world export market is shared equally by both exporters so that quantity exported by each country is Oq_i^* and $Oq^* = 2Oq_i^*$.

With the (partial) opening of country A, now country I can increase its export to and export $q_i^* \hat{q}_1$ to country A and Oq_i^* to the rest of the world. In Figure 4, $OF = O\bar{P}$. So,

the marginal cost of exports just equals the price it receives in country A. However, it can sell export licenses to the other exporting country and this will increase its profit. The value to country II of a license to export one unit of the good to country A is GH. So, country II will be willing to buy a license to export one unit of the good at any price less than or equal to GH. Therefore, it is mutually beneficial to both countries (I and II) to trade export licenses. In fact, trade in export licenses will continue until country I finds the price of the marginal unit of the export license equals the premium that it can earn by exporting to country A, and country II finds that the value of an additional unit of the export license $\bar{P} - MC$ equals the price it has to pay for the last unit of the license. Equilibrium is attained at point X; country I sells eY amount of export license to country II at a price XY. Both countries export the same quantity, q_i^* Z to country A and the remaining quantity to the rest of the world. The world equilibrium price becomes OW. Since both countries export the same quantity of the good, marginal costs are equalized and therefore, the efficiency condition is attained. Here, we have revenue redistribution, but no overproduction.

4. Some Relevant Issues

Allocation of import quotas among potential importers and exporters may be done through many institutional settings. However, some are more efficient than others. One possible solution to the quota allocation problem is to auction the licenses through competitive bidding. This avoids the arbitrariness involved in administrative allocation. It does not require any concern on the part of the importing country as to whether the most efficient supplier has been given the quota. Competitive bidding would ensure that the lowest cost supplier would get the quota. In contrast, administrative quota allocation mechanisms may be subject to influences of lobbying and other rent-seeking activities and these activities may lead to inefficient resource allocation. Also, potential exporting countries may have the incentive to spend real resources to obtain the quotas since these quotas are likely to command a substantial premium. Auctioning of the import licenses would avoid any such inefficiency.

Another argument in favor of auctioning is that it helps keep the level of protection transparent. The prices offered for the import licenses will be an indicator of the extent of protection received by the domestic producers. However, whether or not the licenses are auctioned, the licenses themselves should be freely transferable. If licenses are not allocated through some

price mechanism, the secondary market for these licenses would render transparent the extent of protection given to the domestic producers.

Whether under an administrative allocation that is not permanently fixed or auctioning of the licenses, an individual exporter may face uncertainty as to whether it will be able to get any quota license in the following period. Such uncertainty may be disruptive for trading relationships, especially for commodities such as fruits and vegetables. A secondary market for the quota licenses would reduce such uncertainty. Unsuccessful contenders for licenses would be able to purchase quota licenses from the secondary market.

There are other issues which are relevant for the type of quota institutions that prevail. One is that if the government of the importing country decides to issue the quota licenses to domestic residents, then these licenses should be global in the sense that the importer should be free to import from any country without any restriction. In this case, the importer will be able to import from the lowest cost source and, thus, attain efficiency. Another is that if the importing country decides to allocate country-specific quotas, then provision should be made so that new suppliers also have an opportunity to export. Without this special provision, new, emerging, and potentially low cost exporting countries would find it difficult to export their products. The result would be a slower adjustment of the world market to changing comparative cost advantage. One way to ensure relatively lower transaction costs to new entrants into the world market would be to set aside a portion of the quota amount from which the new suppliers would get preferential treatment in quota allocation.

5. Summary and Conclusions

The previous discussion demonstrates that the issue of quota allocation among potential exporting countries is not a trivial one. Rather, allocation of quotas has efficiency and welfare implications. The main conclusions of the discussion are summarized as follows:

1. If there are two or more potential exporting countries, then an importing country's welfare level is higher under a free trade market share scheme than under a tariff equivalent quota allocation scheme if the importing country extracts the quota rent and the (export) price elasticity of export supply differs across countries. On the other hand, if the elasticity of export supply is the same for all exporters, then the two quota allocation rules result in the same level of welfare for the importing country.
2. Exporting countries with relatively high (export) price elasticity are better off under the free trade market share allocation rule than under the tariff equivalent quota allocation rule. Exporting countries with a relatively low (export) price elasticity of export supply are better off under the tariff equivalent allocation rule than under the free trade share rule.
3. Efficiency requires that the marginal cost of exports be equalized across exporting countries. Any arbitrary quota allocation may not satisfy this efficiency criterion. Quota allocation rules that link quota rights in one market or in one period to export performance in another market or to past export performance create distortionary incentives and lead to inefficiency. However, if there is a market where export licenses are traded freely, then any arbitrary quota allocation that avoids linkages of the nature discussed in section 3 will, through trade in these licenses, ensure that marginal costs are equalized across exporting countries. Efficiency will be attained under such an institutional framework. Trade in quota licenses has positive efficiency implications and hence should be allowed.

References

- Bark, T., and de Melo, J. 1988. "Export Quota Allocations, Export Earnings, and Market Diversification." *The World Bank Economic Review*, 2, 3: 341-8.
- Bergsten, C. F., Elliot, K. A., Schott, J. J., and Takacs, W. E. 1987. *Auction Quotas and United States Trade Policy*. Washington D C: Institute of International Economics.
- Bhagwati, J. N. 1965. "On the Equivalence of Tariffs and Quotas." *Trade, Growth and the Balance of Payments: Essays in Honor of Gottfried Haberler*. Robert E. Baldwin et al., eds. Chicago: Rand McNally.
- Bhagwati, J. N. 1968. "More on the Equivalence of Tariffs and Quotas." *American Economic Review*, 58: 142-7.
- Brecher, R. A., and Bhagwati, J. N. 1987. "Voluntary Export Restrictions versus Import Restriction: A Welfare-theoretic Comparison.", *Protection and Competition in International Trade: Essays in Honor of W. M. Corden*. Henryk Kierzkowski, ed., London: Basil Blackwell, pp. 41-8.
- Dinopoulos, E., and Kreinin, M. E. 1989. "Import Quotas and VERs: A Comparative Analysis in Three-Country Framework." *Journal of International Economics*, 26: 169-78.
- Dunkel, A. 1991. Draft Final Act. Uruguay Round Gatt Negotiation.
- Kreinin, M. E., and Dinopoulos, E. 1992. "Alternative Quota Allocation Schemes: A Welfare Comparison." *Economica*, 59, 235: 337-49.
- Takacs, W. E. 1978. "The Nonequivalence of Tariffs, Import Quotas, and Voluntary Export Restraints." *Journal of International Economics*, 8: 565-73.