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The Impact on Exporters of Import Restrictions*

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I. Introduction

Most theoretical analyses of alternative trade restrictions have looked at the effects on the country imposing the restrictions. Thus it is argued, for example, that if the objective of policy is to increase domestic production, production subsidies tend to impose a smaller efficiency cost on the importing country than do import tariffs or import quotas. Alternatively, if the objective is a specified reduction in imports, import tariffs or quotas will achieve the objective at lower cost than production subsidies.

Here the emphasis is on the effects on exporting countries of trade restrictions imposed by importing countries. These effects are much in the minds of trade negotiators. Such negotiators must often take as given the domestic objectives of their trading partners and will be concerned to ensure that these objectives are pursued at least cost to themselves. This is the real world in which cuts in trade restrictions are more often regarded as 'concessions to foreigners' rather than as corrections of policy errors.

One reason why little academic attention has been given to the effects of alternative trade restrictions on foreigners is the common assumption that the terms of trade are given. Occam's razor provides provides the usual justification for this assumption when the focus is the effect of trade restrictions on the country imposing them. The optimal policies to secure gains from improved terms of trade are well known and it is often useful to assume constant terms of trade so as to isolate other effects of policy. But the implication of this assumption is that foreign exporters will be indifferent as to whether trade is restricted by one or by 100 per cent by the country in question. They will also be indifferent between various instruments of policy used by importing countries. In short, unless the rest of the world's terms of trade can be affected by the country in question, the rest of the world is indifferent to trade with that country.

In this paper we rank the losses caused to exporters by the imposition of various types of trade restrictions in the importing countries. A basic proposition for the analysis is that the greater the restriction of import demand, the worse it is for trading partners. Krueger and Sonnenschein (1967) consider various welfare propositions concerning the gains from greater or less price divergence, as compared with autarchy, and from greater or less improvement in the terms of trade (using fixed weights for calculation of terms of trade). When one considers a world of more than two commodities, quite limited conclusions can, in general, be reached. Here it is assumed that (at any vector of prices) greater demand for one export commodity will not be accompanied by lesser demand for another. With this assumption it appears clear that, on the usual Samuelsonian potential welfare

criterion, the greater the export demand (and terms of trade improvement), the better.

It is possible that distortions within exporting countries may be such that economic welfare may be reduced by an improvement in the terms of trade. Such an immiserizing effect could occur if a production subsidy on an exportable had increased exports of this commodity beyond a free trade level. An increase in the price of this commodity would benefit the country if production of this good did not change; however an improved price would tend to lead to even more production of the subsidized commodity. The loss coming from this latter effect could outweigh the aforementioned benefit.¹ But as we are concerned with 'potential' welfare in exporting countries, this line of enquiry is not pursued further.

To simplify the analysis we assume that the country imposing the trade restriction does it in pursuit of some objective other than an improvement in the terms of trade. The analysis could be in terms of the pursuit of two objectives - the terms of trade gain plus some other objective - but this would complicate things unnecessarily. Thus we are assuming that the terms of trade effect is ignored by the importing country but that it is the relevant consideration for exporters. We also assume that the products under consideration are relatively small in the economy of the importing country, so that we can ignore the income effect of alternative restrictions on the demand for imports.

In considering the effects of alternative trade restricting policies on exporters, the objective of the importing country must be clearly specified. Much of the analysis below has a good deal in common with the literature on the equivalence of tariffs and quotas (e.g.

Bhagwati, 1965 and 1968, and Shibata, 1968). Rachel McCulloch (1973) has emphasized the importance of specifying the policy objective in this context. The various objectives considered here are:

- a) encouraging a desired level of domestic production of the commodity in question;
- b) securing a target internal price for producers of the product;
- c) securing a desired degree of protection for domestic producers (i.e. a desired proportionate excess of the price for producers over the international price of the product);
- d) obtaining a desired reduction in the level of imports; and
- e) reserving a specified proportion of the domestic market for domestic producers.

Many - if not all - of these targets are pursued by some governments. Thus, for example, the European Common Agricultural Policy uses variable import levies to secure target internal prices for producers, many governments use import quotas to maintain production and employment in the clothing, textile and footwear industries, and the Australian government uses import quotas to reserve eighty per cent of the Australian motor car market for Australian-produced cars.

A number of weapons could be used to pursue each of these targets. We consider ad valorem production subsidies, ad valorem and specific tariffs, and quantitative restrictions on imports as weapons. In some circumstances it is possible for exporting countries to take action that would meet the importing country's objective, and such a policy weapon is also considered. The policies are examined first in a

comparative static framework, and then some dynamic considerations are introduced. Standard profit-maximizing assumptions are used throughout, for the usual methodological reasons.

We examine the impact of the various instruments under the alternative market structures of competition and of monopoly in both production (in the country imposing the restrictions) and in international trade. With regard to international trade there may be monopoly or competition in both importing and in exporting. Trade monopoly in the importing country is likely to arise from the imposition of import quotas or from the granting by the government of exclusive importing rights to a private trader or to a state trading enterprise. With respect to exporting countries, monopoly elements may arise from there being a small number of private exporters. Alternatively it may be due to government influence on exports where there is a small number of exporting countries. Thus we have a large number of alternative combinations of targets, instruments and market structures: fortunately it is not necessary to consider all in detail. In Part II we analyse various possibilities under the section headings:

- (i) Competitive Production and Trade
- (ii) Monopolistic Production with Competitive Trade
- (iii) Competitive Production with Monopolistic Importing
- (iv) Monopolistic Production and Importing
- (v) Monopolistic Exporting.

In Part III some dynamic considerations are briefly addressed.

II. Comparative Static Analysis

(i) Competitive Production and Trade

Consider first the pursuit of the objective of a desired level of domestic production, assuming competitive production and trade. Import restrictions, whether by quota or by ad valorem or specific tariff, encourage production but simultaneously discourage consumption. Production subsidies, on the other hand, achieve the production-expansion effect but without the by-product of reduced consumption. Imports would therefore be greater with the production subsidy and thus would be preferred by the exporting country or countries.² This preference by the exporters for a production subsidy rather than any form of trade restriction would also exist if the objective of the importing country were for a particular price for producers, or for a desired degree of protection (i.e. proportionate excess of the price for the producer over the international price), or for reservation of a particular share of the domestic market for domestic producers. In all cases the objective can be met by a production subsidy without restricting demand.

If the objective of the importer's policy were the reduction of imports to a particular level, the exporter would of course be indifferent between production subsidies and the various forms of restrictions on international trade. This indifference as to the weapon used to meet an import target applies throughout Part II, except when there is monopolistic exporting. Thus this objective is not mentioned again until section (v).

So far we have not distinguished between import tariffs and quantitative restrictions on imports. Import quotas can be designed to have effects identical to import tariffs, as is well known. (Bhagwati, 1965.) In the absence of retaliation and uncertainty, and assuming that both quotas and tariffs are imposed to secure the same level of imports, competition in production and trade will ensure that the restrictive impacts of tariffs and quotas are identical. Competitive auctioning of the quotas can ensure that the distribution of income will be the same as with tariffs, with the economic rent from the imported good passing to the government. Under these conditions the effects on both the importers and exporters will be identical, irrespective of the objective of the trade restrictions.³

Relaxing the assumptions of competition in production, trade and in quota-holding, a number of differences may occur between tariffs and quotas and care needs to be given to the concept of 'equivalent'. (e.g. Shibata, 1968; Bhagwati, 1968).⁴

(ii) Monopolistic Production with Competitive Trade⁵

Some of the analysis used in this rather lengthy section is elaborated geometrically in the Appendix: in the text the main argument is presented verbally with the support of summary diagrams. For simplicity, linear relationships are assumed, but the results generalize to a wide range of non-linearities. (It is, however, important that the various marginal revenues decline as sales increase.) We need not enquire why there is monopolistic domestic production, but it could be due to economies of scale, for decreasing average (and marginal) costs are compatible with the analysis of this section.

Production Target

Consider first that the objective of the importing country is to expand domestic production to a desired level, and that an ad valorem tariff is used to this end. This tariff reduces imports and expands production. Now assume that the tariff is replaced by an import quota that yields the same quantity of imports. As is well known (Bhagwati, 1965, p. 59) the monopolist will reduce his output when the tariff is replaced by a quota, for the quota makes the demand for the domestically-produced product less elastic. In order to induce him to expand output back to the target level, a smaller import quota (i.e. larger demand for the domestic product) will be necessary. Thus to achieve a target level of output, an ad valorem import tariff will yield a higher level of imports than will quantitative restrictions on imports, and therefore will be preferred by exporters.

A similar argument can show that a specific tariff will be preferred by foreigners to an ad valorem tariff. Again assume that an ad valorem tariff is used to secure a desired level of production. Now replace the ad valorem tariff with a specific tariff that achieves the same production level. The monopolist's ability to raise the domestic price is, of course, constrained by demand for his product; the higher the domestic price, the lower is total demand and the greater the supply of imports. A specific tariff yields a more elastic (tariff-inclusive) supply of imports than does an ad valorem tariff and thus gives a more elastic demand for the domestically-produced output than an ad valorem tariff.⁶ The specific tariff thus provides less monopoly power so that, at a given level of production, the domestic price would be lower with

the specific tariff. With the same level of production under both tariff systems, imports will be higher with the specific tariff than with the ad valorem tariff.

Finally, it is clear that a production subsidy will be the most preferred policy for, just as when there is competitive production, the production subsidy increases output but does not reduce demand.

Figure 1 summarizes the results outlined above. P_f is foreign price, which varies directly with imports by the country imposing the policies; Y_D is domestic output of the commodity in question. \dot{P}_f and \dot{Y}_D are the values of P_f and Y_D existing in a free trade situation: thus point A indicates the free trade position. The lower is P_f (and therefore imports), the worse it is for foreign exporters. \bar{P}_f is the international price that would exist if the country imposing restrictions ceased to import. We may note the following:

(a) In Figure 1 it is assumed that an import quota can achieve a level of production greater than that obtained with free trade. However as the elasticity of demand for the domestic product is reduced by the imposition of import quotas, it is possible that no level of import quotas will expand production beyond the free trade level. If this were the case the line labelled 'quota' would be further to the left and point D would lie to the left of \dot{Y}_D . The import quota would be of no use in securing a production target.

(b) Imports can be greater in the presence of import quotas than under free trade. Assume there is free trade and then impose an import quota for the same level of imports as that achieved with free trade. With a less elastic demand for the domestic product, the producer can now raise price (and lower production) unconstrained by additional

imports. A larger import quota would remove some, but not all, of this monopoly power, and imports would rise to fill the larger quota. Thus imports with an import quota can be greater than with free trade. (As a quota larger than free trade imports could not result in a level of production greater than that existing in free trade, such a quota could not be used to achieve a production objective. However it could be used to secure a domestic price objective - see below.)

(c) Points C and D are points at which a specific and an ad valorem tariff, respectively, just exclude imports. With the tariffs increased further, additional monopoly power would be given to the producer, and production would be reduced. There is further consideration of these points in the Appendix.

In Figure 1 we see clearly the ranking from a foreigner's viewpoint of the various instruments in achieving a production target. At any point on the Y_D axis - and assuming that each instrument can be used to achieve the target output - the ranking in order of preference is production subsidy, specific tariff, ad valorem tariff and import quota. That is for any level of production, a higher P_f (and level of imports) is given by a production subsidy than by a specific tariff, and so on.

Market Share Target

The ranking is the same if the objective is a desired ratio of imports to domestic production - that is, the reservation of a desired share of the domestic market for domestic production. With the vertical axis representing imports, we can draw rays (such as EF) from point E .

which show various ratios of domestic production to imports - the flatter the ray, the higher the ratio. We see the ranking of policies is the same as before.

Price Target

Now consider the use of the alternative weapons to achieve a domestic price target. We must first specify the way in which the instruments are applied to obtain the target price. If this price is achieved by means of a continually variable weapon (tariff, quota or production subsidy) such that a given internal price will exist irrespective of the international price or the reaction of producers, then the ability of the domestic monopolist to influence price is removed, and his marginal revenue will be equal to this target price. The result is the same as with competitive production, analyzed in section (i) above. Foreigners will be indifferent between quotas and tariffs but will prefer production subsidies for they will allow greater imports, as they do not raise prices to consumers.

If, on the other hand, the internal price objective is pursued by means of a policy instrument that is fixed rather than continually variable then we can proceed by using the analysis presented under the "production target" heading. Consider a particular domestic price that is achieved by an (non-variable) ad valorem import tariff. With the domestic price given, domestic demand is determined. With an import quota that allows the same quantity of imports as would the tariff, domestic production will fall and the internal price will increase. In order to reduce the domestic price back to the target price, the import quota will have to be increased, the effect of which will be to reduce

the monopoly power of the domestic producer. Thus an import quota would be preferred, by exporters, to an ad valorem import tariff.⁷

By a similar argument one can show that the specific tariff is worse, from a foreigner's point of view, than the ad valorem tariff. Consider a certain internal price that is achieved, alternatively, by an ad valorem tariff and by a specific tariff. The demand for domestic product, at this price, will be more elastic with the specific than with the ad valorem tariff. Thus at this price marginal revenue facing the domestic producer will be greater with the specific tariff, as will be the domestic production level at which the producer equates marginal revenue and marginal cost. Hence imports will be lower with the specific tariff.

Consider now the pursuit of the internal price objective (for producers) with a production subsidy. If a production subsidy were to be used to achieve the same price objective as an ad valorem tariff, it would yield the same marginal revenue as the tariff (at least in the linear case) and thus the same level of production. Demand and imports would be greater with the production subsidy and production subsidy relative to an import quota. Obviously as there are some price objectives at which imports are greater with a quota than with free trade, the quota would be preferred (by the foreigner) to the production subsidy for these prices. There are other, higher, prices at which the production subsidy could be preferred.

In Figure 2 a summary is provided. The vertical axis is the same as in Figure 1 but the horizontal axis, P_D , now represents the domestic price received by producers (which is equal to the price paid by consumers, except in the case of a production subsidy). The points A',

B', C' and D' may be compared to points indicated by similar unprimed letters in Figure 1. \hat{P}_D is the free trade domestic price and is equal to \hat{P}_F . Point A', the free trade situation, is on a 45° line from the origin. We can see that, for pursuit of any domestic price target (P_D) which is achievable by each weapon, foreign exporters would prefer an import quota to an ad valorem tariff, and the latter to a specific tariff. A production subsidy would rank above a quota for some high price targets but a quota would be preferred for some lower targets.

We might note that there are some price targets - relatively small increases above the free trade level - that cannot be achieved by an import quota. Price P_{D1} is the price that would be charged if an import quota were imposed equal to free trade imports. Increases in this quota would raise imports and the foreign price and would lower the domestic price. At point G the internal and external prices are equal - further increases in the quota would not be utilized.

The horizontal sections of the curves in Figure 2 are explained in the Appendix.

Degree of Protection Target

With the aid of Figure 2 we can also analyze the pursuit of a policy designed to give a desired degree of protection - i.e. a desired ratio between the internal and external price. Consider a ray from the origin in Figure 2. The flatter this ray, the higher the ratio of P_D to P_f , and the higher the degree of protection. Thus the ranking for this objective is the same as for the domestic price target. Surprisingly an import quota is preferred - by foreigners - to both types of tariffs and even, for relatively small degrees of protection (such as represented by

OF'), to a production subsidy. Of course the ranking may be different from the point of view of the country imposing the restriction, but here we are concerned only with the ranking from the foreigner's point of view.

(iii) Competitive Production with Monopolistic Importing

The existence of a domestic monopoly in importing could be attributable to government action either by the granting of a legal monopoly to a private trader, as often occurred under the mercantilist 'system', or by granting similar rights to a state trading enterprise. A monopolistic importer that seeks to maximize profits will restrict imports until the marginal cost of imports is equal to the marginal revenue obtained from selling the imports on the home market (i.e. after allowing for the response of domestic producers as well as consumers). This restriction of imports will of course raise the domestic price to both producers and consumers and will encourage domestic production. (Creating such a monopoly thus might be a way of achieving a desired internal price, or level of production, or other objective, though it would be fortuitous if an unregulated monopoly succeeded in precisely attaining one of these objectives. If such an objective were achieved then the creation of such a trade monopoly could then be regarded as a trade policy similar to those considered above in section (i).) If the domestic target is for a higher price than is obtained with an import monopoly or for a higher level of production or higher degree of protection; then an import tariff (ad valorem or specific), an import quota, or a production subsidy could be imposed and these would be

ranked by foreigners in the same way as in section (i) - that is all trade weapons would be ranked equally by foreigners, and would be ranked as inferior to a production subsidy.

It is possible that a monopoly in importing may be created by the allocation of import quotas - that is, the quotas may all be issued to, or may be acquired by, one trader. In such a circumstance there will be a range of price (and production) objectives that will not be attainable with import quotas as the weapon - objectives that could have been achieved if the quotas had been held competitively. This is because of the monopoly power given by the quotas. If the import quotas allow for more imports than a monopolist importer would choose to undertake, then the quotas will not be fully used (Bhagwati, 1965, pp. 60-2) and thus quotas could not achieve an internal price lower than that which the trading monopolist would choose if he had full control over imports. A smaller import quota would raise price (and domestic production) above this level, but a larger quota would not lead to a lower price and level of domestic production, unless the monopolist importer were to be regulated.

(iv) Monopoly in Both Production and Importing

We now join together the assumptions of the last two sections and consider the case in which one monopolist is both producer and importer. (The case in which a monopolist importer is not also the monopolistic producer is not considered, as this would imply duopoly, with the outcome dependent on particular strategies.)

We first consider the case of rising (or constant) marginal cost, and then that of decreasing costs. In Figure 3 we illustrate the profit-maximizing behaviour of a monopolist producer who also has a monopoly in importing. Total demand is D , MR the marginal revenue, S_M the supply of imports, MC_M the marginal cost of imports, and MC the marginal cost of domestic production. $MC+MC_M$ is the horizontal sum of the two marginal costs. The profit-maximising configuration is total sales of OA (at a price of OE), OB being imports (obtained at a price of OC) and domestic supply being $BA(=OF)$. If the monopoly is created by an import quota, and if the import quota is greater than OB , then the quota will not be fully used as only OB will be imported. If the import quota is less than OB , the quota will be fully used and the monopolist will not have effective control over imports - control lies with those who determine the size of the quota. In this latter case the analysis of the effects of the pursuit of various objectives is the same as when there is monopoly production and competitive holding of quotas, considered above in section (ii).

But now assume that the quotas are not fully used, or that the trading monopoly exists independently of the quotas, so that the producer is able to secure the full profit-maximising outcome by equating the two marginal costs with marginal revenue (as in Figure 3). Import quotas on their own could not be used as a weapon to achieve objectives other than the price/output configuration shown in Figure 3. But tariffs or production subsidies could be, for they could alter the marginal cost of imports, on the one hand, and the marginal cost of domestic production on the other. Consider a production target. A tariff would raise the marginal cost of imports MC_M in Figure 3, and

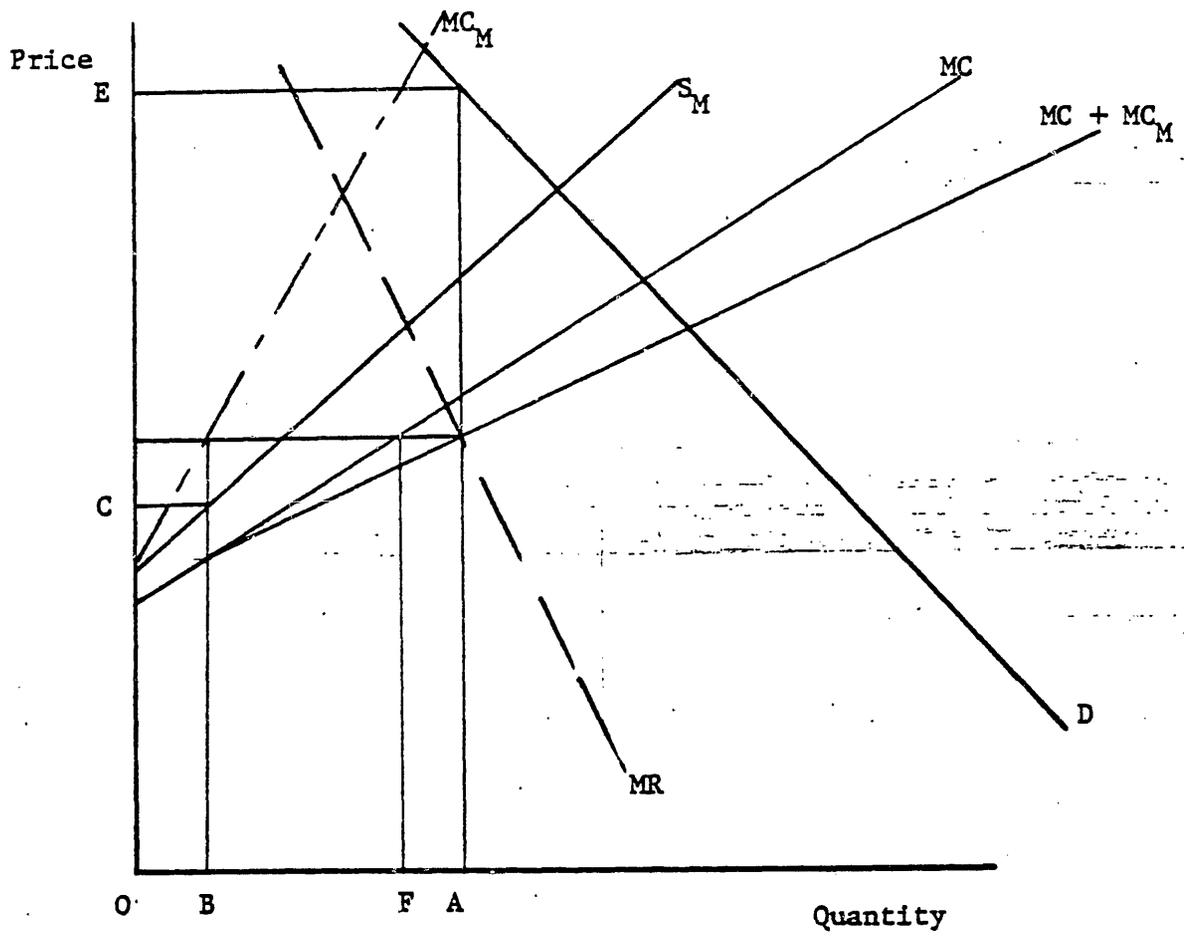


Figure 3

Monopolistic Production and Importing

shift the $MC+MC_M$ line upwards. Production would increase and imports would decline. A production subsidy, on the other hand, would lower MC and shift $MC+MC_M$ downwards. Both production and imports would therefore increase and thus the production subsidy would be preferred by foreigners. Would an ad valorem or specific tariff be preferred as a tariff weapon? We assume the same level of production is to be achieved with both - i.e. a given point of intersection of shifting $MC+MC_M$ curve with the MR curve in Figure 3. The specific tariff would shift the $MC+MC_M$ curve in a parallel manner, while the ad valorem tariff would shift it such that the slope increases. But for a production target, there is no difference in impact on imports.

A similar argument applies to production subsidies versus tariffs for a target price for producers, for a desired degree of protection, and for a desired share of the market for the domestic producer. A production subsidy does not restrict imports as do tariffs, and hence will be preferred. Similarly there does not appear to be any distinction between specific and ad valorem tariffs in pursuing these objectives.

Now consider declining marginal production costs. In section (ii) above we allowed decreasing costs as a possible factor responsible for a production monopoly. With competitive importing, decreasing costs were consistent with the co-existence of domestic production and imports. However when the same monopolist controls both production and imports, imports and domestic production will not co-exist when there are declining production costs: the monopolist will use only one source, depending on which has the lower average cost for the level of sales required.

If there is a switch from imports to domestic production as domestic production is encouraged, the switch will occur at a higher level of imports when a production subsidy is the weapon than when the weapon is a tariff. This is simply because as a tariff is increased from zero, imports will decline until, at some tariff level, production will commence and will fully replace the imports. On the other hand, as a production subsidy is increased from zero, there is no effect on imports until the switch-over point is reached, at which point the free-trade level of imports is replaced by domestic production. But this is little comfort to foreign exporters; if the switch-over point is reached, imports are zero with any of the policies.

(v) Monopoly in Foreign Supply

We have assumed so far that competitive pressures among or within exporting countries prevent them from capturing the economic rents associated with the policies under discussion. However, if foreign exporters are able to restrict their exports below a competitive level to the country in question, such restriction may secure some of this rent while, at the same time, furthering the importer's objective. We now assume competitive conditions in the importing country so as to sidestep questions of bilateral monopoly.

First consider a restriction of trade designed to achieve a particular level of imports. Given that trade is to be restricted in this way, it is clearly to the advantage of the exporters to impose the restriction - by export taxes, export quotas, or by cartelisation of

exporters - so that they collect the rent from the quotas or control (or the revenue from the export tax) that would otherwise pass to the importing country.

Consider now the objective of a particular level of production or price for producers, a target degree of protection or share of the market. Again if these targets are to be achieved by trade restriction it is, from the exporters' point of view, preferable that they impose the restriction themselves. Such a ranking is not clear if the alternative is a production subsidy in the importing country - to achieve a given level of production, trade is reduced less by a production subsidy than by a trade restriction. If the trade restriction required is not greater than that required by an optimal export tax, then an export tax or other restriction will be the preferred policy of the exporter. However to the extent that the required restriction is greater than this, the production subsidy in the importing country will be the better policy from the exporters' point of view - more trade is to be preferred to less, once the point of optimal trade restriction is passed.

It is well known that exporting countries are prepared - given of course that some restriction is to occur - to countenance, and indeed encourage, trade restrictions by importing countries that facilitate the development of monopoly power by exporters. (See Shibata, 1968, p. 141, Caves and Jones, 1977, p. 227.) Export taxes or export quotas are effective if all exporters apply them, but there is an incentive for each exporter to undercut the others' taxes, or to expand its own export quota. The effective formation of cartels by exporters is secured more readily by country-specific quotas or country-specific 'voluntary'

export restraint, or brand-specific quotas, as in the case of differentiated goods such as motor vehicles.⁸ These are common devices in the contemporary trading world. In international commodity agreements, minimum import quotas are often supplemented by maximum export quotas for individual countries - again a device that facilitates the transfer of the rent to existing exporters.

III. Dynamic Considerations

Leaving aside uncertainty, the two additional considerations brought by time are (i) changing comparative advantage, and (ii) price instability.

(i) Changing Comparative Advantage

It is often argued that import tariffs (or production subsidies) are preferable to import quotas because they allow additional access to markets if comparative advantage moves in favour of exporters.⁹ In considering access over time, care again needs to be given to the objective of those imposing the restrictions. If the objective is specified only for the beginning of the time under consideration, weapons that permit additional trade as conditions change will be preferred by foreigners (unless the expected gain in trade is small relative to the rent-transfer that is possible with quotas). Tariff restrictions and production subsidies are indeed to be preferred to import quotas from this point of view. The preference will be particularly strong for new exporters whose ability to compete with old exporters may be limited by quotas, particularly by quotas allocated to

countries according to exports in a base period. However, additional access over time will not necessarily be achieved if policies are adjusted so as to achieve, despite changing comparative advantage, a fixed domestic or trade objective.¹⁰

When the economic rent arising from trade restrictions which are designed to achieve a fixed domestic or trade objective, any improvement in productivity by exporting countries will yield a pure transfer to the importing countries. Resources devoted to securing increased productivity (or export subsidies) will, from the point of view of exporters as a whole, yield a negative rate of return, as far as international trade is concerned. This does not mean that the return to particular exporting countries, or to particular exporters within those countries, will be negative, for they may be able to displace other exporters. But for the exporters as a whole the benefits pass wholly to the importing country. (See Sampson and Snape, 1980.) Both sets of countries, it appears, would be happier if the export prices could be raised to the level to give the desired result in the importing country - the importers would not have to impose restrictions and the exporters could take life easy (or cease subsidizing exports).

(ii) Price Instability

There is a considerable literature relating to the destabilizing effects on other countries of insulating one country from instability. There is also a large literature on whether greater or less stability is good or bad for exporting countries. This latter subject is ignored here.

In looking at instability there is an important distinction between those policies that attempt to achieve an objective at all times so that the weapon is adjusted continually, and those that attempt to achieve an objective in an 'average' sense - say over several years. Examples of the latter are constant ad valorem or specific production subsidies, constant ad valorem or specific tariffs and constant import quotas. In the former category are deficiency payments that make up the difference between the price received on a market and a target price, and variable import levies, variable import quotas, and state trading that achieve fixed domestic objectives.

The general point is that adjustable weapons export instability, whether the instability arises within the importing country imposing the policy, or in the rest of the world, while fixed weapons permit some absorption of instability within the policy-imposing country. An exception is a variable policy weapon that maintains constant imports in the face of domestic supply variation in the importing country, for the constancy of imports prevents the export of instability.

IV. Conclusion

With the specified assumptions, and in the absence of monopoly power, production subsidies will be preferred by exporters to trade restrictions as the means by which importers pursue objectives relating to domestic production, share of market, domestic price, or degree of protection, and exporters will be indifferent between various types of trade restriction.

When there are monopolistic forces present, the picture is more complicated. If the only element of monopoly is in domestic production and if the objective is to achieve a particular level of production (or share of the market) for the domestic producer, then the ranking of the policies considered from the exporters' point of view is: 1. production subsidy, 2. specific tariff, 3. ad valorem tariff, 4. import quota. On the other hand, if the domestic objective is a particular price for the producer (or a desired degree of protection) the ranking changes. There is no general ranking of production subsidies and import quotas as the preferred policy; the other two policies can be ranked 3. ad valorem tariff, 4. specific tariff.

When there is a monopoly in importing with or without a production monopoly, there would be a general preference by exporters for production subsidies over other forms of intervention.

Except when there are elements of monopoly among exporters, exporters will be indifferent between the various policies if the objective of the policy is to reduce imports to a target level. When there is such monopoly power, exporters will tend to favour those policies that facilitate the exercise of this power. Such policies are quota restrictions and the negotiation of 'voluntary' export restraints. Objectives of the importing countries may be met by action by exporters; if trade is to be restricted, it is better from the exporters' point of view if they impose the restrictions themselves.

The dynamic considerations touched on are market access over time as comparative advantage changes, and price stability. To evaluate various policies in relation to access, one must consider whether importers' weapons are fixed or variable. If they are fixed then those

policies that allow additional access over time (i.e. production subsidies and tariffs) will tend to be favoured over those that do not (i.e. quotas). If policies are adjusted frequently so as to achieve targets then the comparative static analysis, summarized above, is applicable.

In looking at price stability on international markets, the crucial distinction is between those policies that allow absorption of some of the world's instability, and those that insulate from it.

Appendix 1

The Geometry of a Production Monopoly with Competitive Trade

In Figure 4(a) let D be the demand curve and MR the marginal revenue drawn to this demand curve, MC the marginal costs (which could be rising, constant, or falling), and S_M the supply curve of imports under free trade (drawn with positive values to the left of the vertical axis). $D-S_M$ is the demand for the home produced product under free trade; that is, the demand net of free trade import supply. MR_{FT} (the subscript of FT indicating free trade) is the marginal revenue derived from the $D-S_M$ demand curve. The profit maximising output is OA (where $MC = MR_{FT}$), with price P_1 and imports of $AB(=OC)$.

As drawn we may note that production with free trade is less than production with an import quota of zero. If an import quota of zero were imposed the demand curve facing the producer would be D , with marginal revenue of MR . Production would be OL where MR and MC are equal, and this level of output is greater than OA . If the S_M curve were higher, this point 'L' could be to the left of 'A' - that is, free trade output would exceed the output with a zero import quota. Apart

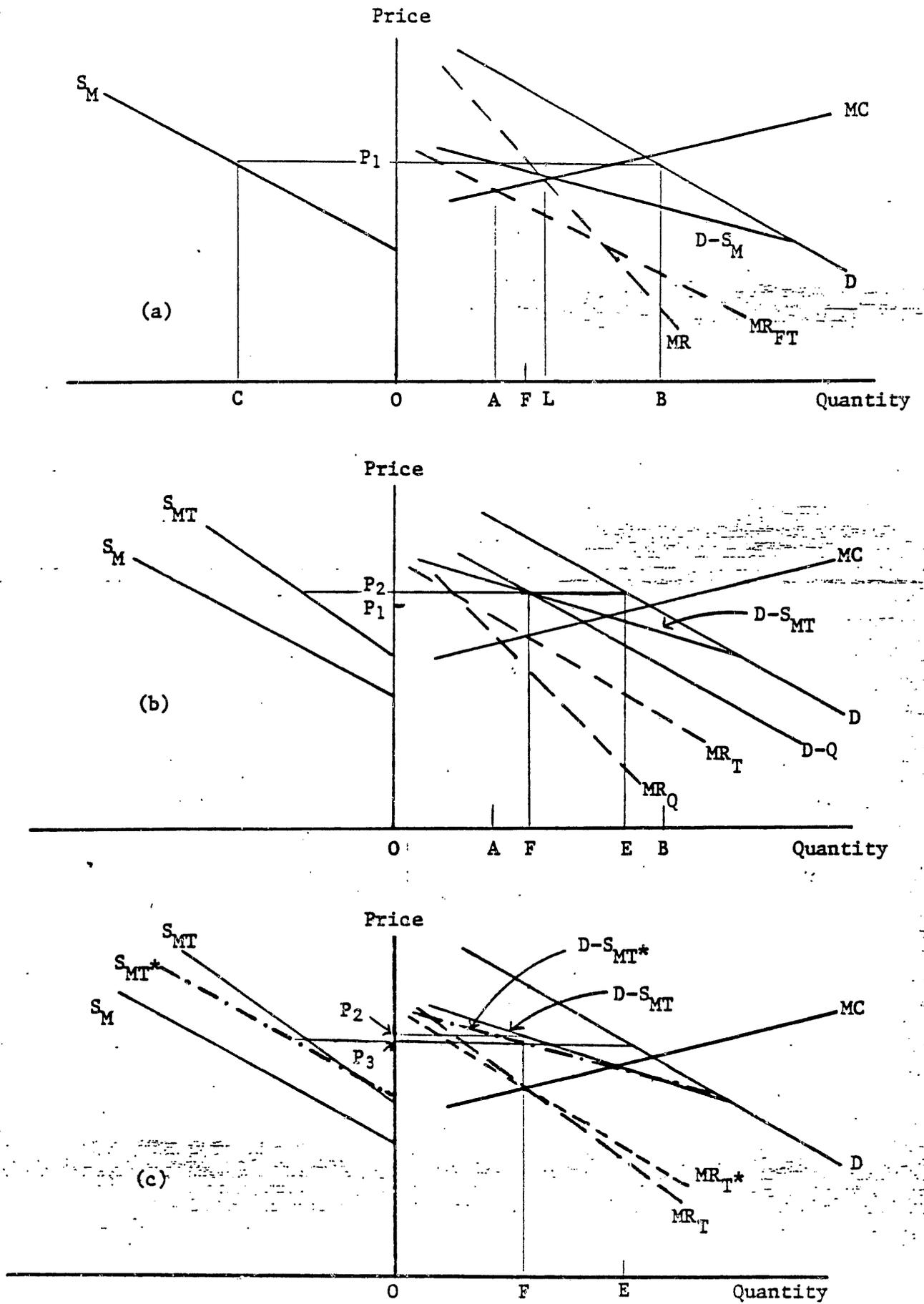


Figure 4

from implying that an import quota could not be used to achieve a production objective, this possibility does not affect the analysis.

(a) Production Target

Referring to Figure 4(a), assume that there is a target domestic output of OF. This could be achieved by a tariff such that marginal revenue with the tariff equals marginal cost at the output OF. This is shown in Figure 4(b). S_{MT} is the supply curve of imports with an ad valorem tariff and $D-S_{MT}$ is the demand curve for the domestic product. MR_T (T indicating tariff) is marginal revenue related to the demand curve $D-S_{MT}$. Output and imports are OF and FE respectively.

Now assume that the tariff is replaced by an import quota that yields the same quantity of imports, FE. As mentioned in the text above, the monopolist will reduce his output when the tariff is replaced by a quota. In Figure 4(b), $D-Q$ is the demand curve net of the import quota and MR_Q the marginal revenue curve related to this demand curve. The profit maximising monopolist will reduce output to that at which $MR_Q = MC$. In order to induce him to expand output back to OF (which, it will be recalled, is the target output) a smaller import quota is necessary. Thus to achieve a target level of output, an ad valorem import tariff will yield a higher level of imports than will quantitative restrictions on imports.

If a specific rather than an ad valorem tariff had been used to achieve the production target OF, the tariff-inclusive import supply curve would be S_{MT*} (Figure 4(c)), which is parallel to S_M . The demand for the home-produced product is $D-S_{MT*}$ and the associated marginal revenue curve is MR_{T*} , which cuts the MC curve at the target output of

OF (as does the MR_T curve). With the more elastic demand for home production ($D-S_{MT*}$), the profit maximising price (P_3) is lower than with the ad valorem tariff (P_2), and imports are greater.

A production subsidy would, of course, achieve the target production level OF, without raising the price to consumers above P_1 .

(b) Price Target

In Figure 4(b), assume that P_2 is the target price, achieved by an ad valorem tariff. Imports are FE. Now, as before, impose an import quota of FE to replace the tariff, so that the demand curve for the domestic product is $D-Q$. With this quota, production will decline and the domestic price will be increased. In order to reduce the domestic price to P_2 , the quota will have to be increased. It is not clear in general whether a production subsidy would lead to more or less imports than the quota - it would yield both a higher level of domestic production and a higher total demand.

Looking now at a specific tariff, recall Figure 4(c) in which the production level OF was achieved alternatively with an ad valorem and a specific tariff. The former also yielded what we are specifying as the target price P_2 , while a specific tariff gave the lower price P_3 . To give the price P_2 the specific tariff would have to be increased, yielding a higher level of domestic production. With the same total demand (i.e. at price P_2), imports would be lower with the specific tariff than with the ad valorem tariff.

(c) Increasing Tariffs above the "Just-Prohibitive" Level

Consider the points B, C, D, and B', C' and D' in Figures 1 and 2, respectively. Assume that a specific tariff is being increased until imports are just eliminated - the home production just satisfies total demand. The ability of the producer to raise prices further (and reduce production) is limited by the threat of imports. A higher specific tariff would remove the immediate threat of imports and give some latitude to the producer to raise price and reduce production. Thus we have the horizontal section in Figures 1 and 2 from points C and C'.

A similar argument applies to an ad valorem tariff when it just reaches the level that excludes imports - hence the horizontal sections from points B and B'. The argument does not apply to an import quota - when it is zero potential imports do not constrain behaviour and the quota cannot be reduced further. Thus there are no horizontal sections applicable to a quota from points D and D'.

Why does C lie to the right of B and C' to the left of B'? Consider again the just-prohibitive specific tariff. At the internal price given by this tariff, the demand for the domestic product is less elastic (for price increases) with an ad valorem tariff than with a specific tariff. Thus at this price but with an ad valorem tariff, production would be lower and imports would not be excluded. A higher ad valorem tariff - and a higher internal price - would be necessary to exclude imports completely. Hence B' lies to the right of C'. As the domestic price at which imports are just excluded with the ad valorem tariff is higher than with the specific tariff, so the level of production at which autarchy occurs must be lower. (That is, price is higher and demand, which will equal production, will be lower.) Hence

point B lies to the left of C in Figure 1. Raising ad valorem or specific tariffs above the 'just-prohibitive' levels will raise price and lower production until the price/production combination of a zero quota is reached (D and D'); further increases in the tariffs will have no effects.

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Footnotes

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1. I am grateful to Ted Sieper for this point, and also for developing a rigorous proof. This specific case is not considered in Bhagwati (1971) but is consistent with the propositions developed in Bhagwati's paper. This immiserizing effect will not arise if the only distortion is failure to impose the optimum export tax, for with free trade the utility possibility frontier with greater export demand will lie wholly outside the frontier with the lower demand.
2. Thus the ranking of these policies is the same for exporting countries as for the importing (ignoring the terms of trade gain for the importing country from the trade restriction).
3. Throughout this paper we have not considered objectives the pursuit of which would turn the importer into an exporter.
4. Sections (i)-(iv) have a clear relation to Bhagwati's paper (1965) on the equivalence of tariffs and quotas. Rachel McCulloch (1973) has results similar to some of those presented below - e.g. 'that a quota will allow more imports from abroad than a price-equivalent tariff' (p. 508).
5. I am much indebted to Ted Sieper for assistance with this section and the associated Appendix - for suggesting the manner in which the basic point could be presented, for uncovering errors (those that remain are my responsibility) and for many of the twists and turns of the analysis.
6. The two alternative tariffs are assumed to yield the same level of domestic production, and elasticities are being compared over the range of prices under contemplation by the monopolist.

7. McCulloch (1973, p. 508) shows that when there are (i) constant terms of trade and (ii) a domestic monopoly in production, an import duty will be preferred by the importing country to a tariff to achieve a domestic price target.
8. The Far Eastern Economic Reveiw of 8 August 1975 (p. 35) reported that licences to export knitted shifts from Hong Kong to Australia were being traded for HK\$80 per dozen shirts. Export licences were required because voluntary export restraints had been negotiated between the Australian and Hong Kong Governments. The Australian Industries Assistance Commission estimated that restraining trade in knitted shifts by voluntary restraints rather than by additional Australian import tariffs resulted in a transfer to Hong Kong of about one and a quarter million Australian dollars over a nine month period. (Industries Assistance Commission, Annual Report, 1974-75, p. 101.)
9. Of course comparative advantage in the goods under consideration may move in favour of the importing country over time. But the more common expectation in the world of trade barriers is for the opposite to occur, and attention is directed to these cases.
10. Pursuit of a target degree of protection target will, of course, allow additional access if the competitive position of exporters improves.