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THE INEFFICACY OF TRADE POLICY

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INTERNATIONAL FINANCE SECTION

DEPARTMENT OF ECONOMICS

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CONTENTS

The Inefficacy of Trade Policy

1 Introduction

Economists typically evaluate alternative trade or domestic policies on the basis of their effects on social welfare. For example, in their pioneering analysis of government intervention to achieve noneconomic objectives, Bhagwati and Srinivasan (1969) rank different policies that can be used to attain a particular noneconomic objective in terms of their welfare costs.[1] The optimal policy is the one that achieves the desired objective, say a minimum output level in an industry, in the least-cost manner.

It is invariably assumed in such analyses (as well as in those dealing with the optimal manner of offsetting market distortions) that trade policy is an effective means of achieving the desired objective. On this assumption, the criticism of trade policy in situations where the objective relates to a domestic rather than a trade matter is not that it will not work but that it will create a new welfare-reducing distortion in the process of achieving the desired objective.

There is, however, a considerable body of analysis scattered throughout the trade literature demonstrating that trade policy often does not achieve the objective for which it is introduced. For example, the well-known Metzler paradox points out that, under some conditions, the imposition of a tariff on an imported good may lower rather than raise the domestic price of that good and thus decrease rather than increase domestic production of the protected item. Similarly, the analysis of smuggling by Bhagwati and Hansen (1973) shows not only that smuggling in response to a tariff may increase a country's welfare compared with the tariff situation by itself but that smuggling can prevent the attainment of the desired minimum level of domestic production for the import-competing good. Frank Graham also appreciated the limitations of commercial policy, as is indicated by the statement in his excellent little volume on *Protective Tariffs* that "the importance of a sound foreign commercial policy, though by no means insignificant, has been greatly exaggerated by

[1] Bhagwati (1968) elaborated upon this analysis in his 1967 Graham Memorial Lecture.

partisans of both the *laissez-faire* and the restrictionist schools" (1934, p. 6). In evaluating protection as a means of improving a country's terms of trade, he specifically notes (p. 83) that retaliation by foreign partners can negate a country's monopolistic objectives.

It makes sense for writers on the subject of distortions to assume that trade policy is effective in achieving its stated objective, because they are concerned with the costs of an effective policy, but a more complete welfare analysis of policy alternatives would involve an integration of the literature on distortions with the literature on the effectiveness of both trade policies and various domestic policies.

Pulling together and elaborating upon the reasons why trade policy may not operate as intended is also a desirable objective in itself. An increasing variety of nontariff trade measures are being utilized to favor particular industries and income groups. Although the specific measures selected are the result of complex political compromises involving various domestic and foreign pressures, each is invariably presented as being adequate to achieve its stated purpose. Yet experience shows that frequently the measures do not accomplish their objectives, and the aided sectors press for more help. However, standard economic analysis suggests that such outcomes should not be at all unexpected. As a contribution to more rational policy-making and a fuller analysis of the welfare implications of various trade policies, this Essay surveys the conditions under which those policies may be ineffective in carrying out their purpose. Most have already been noted by various authors, but they have not been pulled together within a common framework.

Trade policies operate directly upon the relative prices and quantities of imported or exported goods and, by affecting the domestic prices of traded goods, indirectly influence levels of production, employment, factor rewards, and consumption in domestic industries producing similar goods. Sometimes the primary reason for utilizing trade policies is to affect the volume or prices of traded goods, but more frequently the objective is to influence one of the variables that is only indirectly affected by trade measures, such as production or income. In its effort to influence the magnitude of these latter variables, the government may be pursuing either an economic objective (raising national economic welfare) or some noneconomic goal (raising noneconomic welfare at the expense of economic welfare).

There are three general ways in which a trade policy can be ineffective in attaining its stated purpose: domestic prices of imports or exports move in the opposite direction to that intended; domestic prices tend to change in the predicted direction but not by as much as policy-makers expect; and domestic prices move in the direction and to the extent desired, but the new prices fail to produce the indirect effects expected. If the objective of trade policy is to improve the country's terms of trade, there is still another kind of ineffectiveness. The terms of trade may worsen. However, as Kemp (1969, pp. 64-67 and 95) indicates, this result cannot occur if—as is usually assumed—trade taxes are redistributed to the private sector, there is a unique nonintersecting set of social indifference curves, and multiple equilibria are ruled out.

Underlying these ways in which trade policies can be ineffective are three economic principles that influence their effectiveness. The first and third principles have their counterparts in the literature on the welfare effects of economic distortions, while the second proposition is familiar from standard trade theory.

First, if an international economic distortion exists, it is possible for a trade measure introduced to increase the domestic production of a good by raising its domestic price to have the opposite effect. This principle is briefly discussed in section 2.

Second, the less comprehensive a trade-policy measure is in its commodity and country coverage, the less effective is it likely to be. Section 3 describes various responses—both legal and illegal—to trade measures that limit their effectiveness.

Third, the less directly the change in the price of imports or exports affects the economic variable that is the object of trade policy, the less effective is the policy likely to be. Section 4 describes some unexpected indirect results of trade policies.

2 International Distortions

If a country possesses unexploited monopoly power over the international terms of trade, that is, $FRT \neq DRT = DRS$, where FRT is the marginal foreign rate of transformation through trade, DRT is the marginal domestic rate of transformation in production, and DRS is the marginal domestic rate of substitution in consumption, a trade measure may have the opposite effect to that intended. This principle was discovered by Metzler (1949), although he did not state it in this manner. Metzler demonstrated that when a country introduces a tariff or export tax, the price of its importables will decline if the elasticity (in absolute terms) of the foreign demand for the exports of the tariff-imposing country plus the tariff-imposing country's own marginal propensity to spend on imports is less than unity. The necessary but not sufficient conditions for this outcome are, as he stated, that the foreign elasticity of demand is less than unity or that imports are an inferior good in the taxing country. However, it can easily be shown that if a country already has introduced an optimum tariff, so that $FRT = DRT = DRS$, any further tariff increase will raise the domestic price of the import good and thus tend to raise domestic production. Thus, the Metzler paradox depends upon the existence of an international distortion.

3 Offsetting Supply and Demand Responses

As noted above, a second condition determining the effectiveness of trade policies is their comprehensiveness and thus the extent to which they can prevent trade from being shifted to new supply or demand sources.

There is a variety of both legal and illegal ways in which trade can be shifted, and policy-makers often do not take account of them sufficiently (or at all) in introducing a particular trade policy.[2] Legal responses include importing or exporting the product in either more or less processed forms that are not covered by the trade measure, changing the quality mix of a traded product, shifting to a substitute product, varying the country or domestic-customer distribution of imports or exports, shifting the country distribution of production, and retaliating with another trade-policy measure. Furthermore, trade policies can have offsetting macro effects. Illegal ways of avoiding the restraining or promoting effects of a trade measure include smuggling, transshipping through third countries, incorrect invoicing, and bribing customs officials. As the following discussion shows, the extent to which these responses offset the intended price and quantity effects of a particular trade policy depends upon the nature

[2] As will be pointed out in considering why particular trade policies are selected, the fact that these reactions are not taken into account when policy-makers claim that a specific trade measure will achieve a particular goal does not necessarily mean that policy-makers are unaware of them.

and comprehensiveness of the trade policy being used. One important point emerging from the analysis is that quantitative restrictions are likely to be less effective in limiting offsetting supply or demand shifts than *ad valorem* duties.

Shifts in the Degree of Processing of Traded Goods

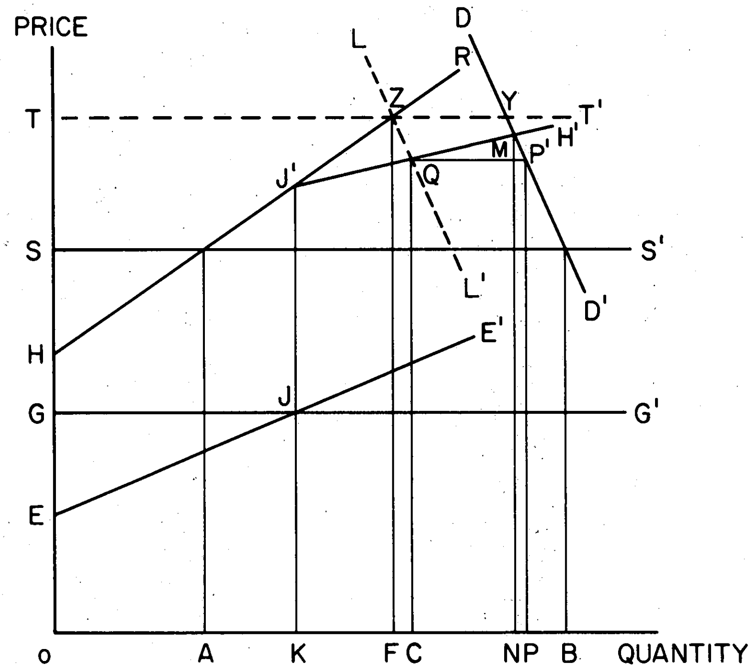
When a trade-distorting measure is introduced at a particular production stage of a product, the product is often imported or exported in a more or less processed form. The resulting shift in composition of traded goods is familiar from the literature on effective protection. Nevertheless, policy-makers often fail to take it into account when they establish levels of protection (or export subsidies), either from lack of knowledge or because of constraints imposed by the provisions of existing trade-policy legislation.

Avoiding an import restriction by exporting the product in less processed form is illustrated by the recent experience with Japanese shipment to the United States of small trucks. The U.S. tariff rate on assembled trucks had been raised earlier to 25 per cent, but the rate on unassembled trucks was left at 4 per cent. The difference between the duty-inclusive prices of assembled and unassembled small Japanese trucks exceeded the cost of assembling "knocked-down" trucks in the United States. Therefore, those trucks were shipped unassembled, and integrated domestic producers of trucks did not receive the degree of protection intended from the tariff on fully assembled trucks. In general, the imposition of an import tax on a processed item will produce a smaller-than-expected domestic price increase because the item will be imported in less processed form. Furthermore, a quota on the processed good that is set to produce the same expected increase in the domestic price will result in an even smaller actual price increase.

These points can be shown by Corden's (1971, p. 30) well-known diagrammatic representation of effective protection. In Figure 1, quantities of assembled and unassembled trucks are shown along the horizontal axis, where units are chosen so that one unit of unassembled trucks is needed to make one assembled truck. The foreign supply curves for unassembled and assembled trucks are GG' and SS', respectively. The domestic supply curve for the components needed to assemble trucks is EE'. The domestic supply curve for fully assembled trucks is $HJ'H'$ under free-trade conditions. This

FIGURE 1

SHIFTING FROM ASSEMBLED TO UNASSEMBLED TRUCKS



curve indicates that beyond OK units of finished trucks, it is cheaper to import unassembled trucks and assemble them domestically than to produce a finished truck within the integrated domestic truck industry. The domestic demand for assembled trucks is DD'.

In the absence of any duties, OA of assembled trucks are produced domestically, AB are imported, and the equilibrium price is OS. Since the unassembled trucks (OA) needed to produce OA of assembled trucks domestically are cheaper at home than abroad, there are no imports of unassembled trucks under completely free trade.[3]

Suppose that policy-makers wish to protect the domestic truck-

[3] The existence of transportation costs or a foreign tariff on unassembled trucks is necessary to explain why unassembled trucks are not exported, since at OA the foreign price, OG, is above domestic production costs. If they were exported, the domestic price of unassembled trucks would rise to OG and eliminate the domestic production of finished trucks if OG plus EH (the domestic cost of assembling the first finished truck) exceeded OS (the price of imported finished trucks).

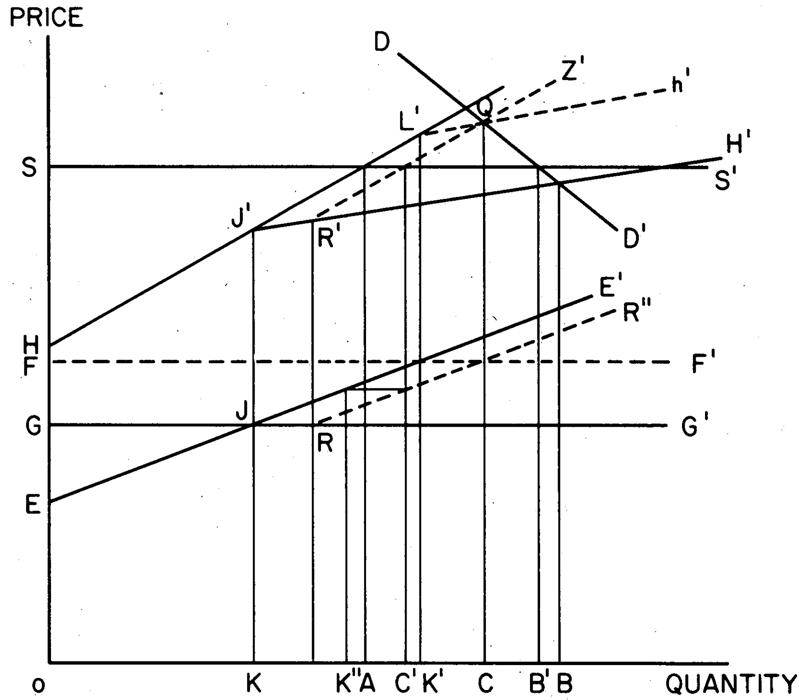
manufacturing industry and—not observing any imports of unassembled trucks—mistakenly believe that the domestic supply curve of assembled trucks will continue beyond J' along the curve $HJ'R$ rather than along $HJ'H'$. They introduce a tariff of TS/OS with the expectation that imports of assembled trucks will decline to ZY, the difference between DD' and $HJ'R$ at the price OT. In fact, imports of unassembled trucks begin when the price of finished trucks rises above $J'K$, and the actual equilibrium is reached when the domestic price of trucks reaches MN. The tariff has eliminated imports of assembled trucks, but KN of unassembled trucks are now imported and assembled domestically. The integrated domestic truck industry expands from OA to OK rather than, as expected, to OF. (The volume of assembly activity is greater than expected, but the individuals involved in assembling foreign-made trucks may not be those the government wants to help.)

The effect of imposing a quota rather than a tariff to reduce imports of finished trucks to the expected level, ZY, can be indicated by shifting the demand curve to the left by the maximum amount of permitted imports, that is, to LL'. The new equilibrium level for the domestic price of trucks will be $QC = P'P$ (rather than MN), and KC of unassembled trucks will be purchased abroad and assembled domestically, whereas KN were imported with the tariff. However, CP units of assembled trucks will also be imported. Thus, fewer foreign-made trucks will be assembled domestically with the quota and, although the volume of production in the integrated domestic truck industry is OK, the same as it was with the tariff, producer surplus in the integrated industry is less (because the domestic price is QC rather than MN). The tariff is more comprehensive in protecting total domestic assembling activity by keeping finished foreign trucks out of the domestic market. But the price of a license for importing finished trucks represents a windfall gain and can range from zero to the amount by which the tariff would increase the price of assembled trucks.

Imports of a product in a more fully processed form can undercut government's efforts to protect an intermediate-goods industry. This point can be illustrated by the same diagram. In Figure 2, let quantities of tool-making steel and of cutting tools be represented along the horizontal axis. As before, a fixed coefficient is assumed for the use of tool-making steel in making cutting tools, and units are chosen

FIGURE 2

SHIFTING FROM TOOL-MAKING STEEL TO CUTTING TOOLS



so that one unit of steel is needed to make one unit of cutting tools. The curves GG' and SS' are the foreign supply curves for steel and cutting tools, respectively, while EE' and $HJ'H'$ are the domestic supply curves for these goods.

In the absence of any protection, OK units of steel are produced domestically and KB units imported. There are no imports of cutting tools; all are produced domestically from either domestically produced or imported steel. Now suppose that the government imposes a duty at the rate FG/OG on steel with the expectation that the resulting shift in the domestic supply curve of cutting tools to $HL'h'$ will increase the domestic output of steel from OK units to OK' units, raise the domestic price of cutting tools to QC, and reduce imports of steel to $K'C$.[4] In fact, imports of cutting tools begin when

[4] If cutting tools were exported, a drawback equal to the duty could be claimed. Consequently, the domestic supply curve for cutting tools would not shift.

their price reaches OS, so that the domestic output of steel expands only to OA, imports of cutting tools become AB', and imports of steel disappear.

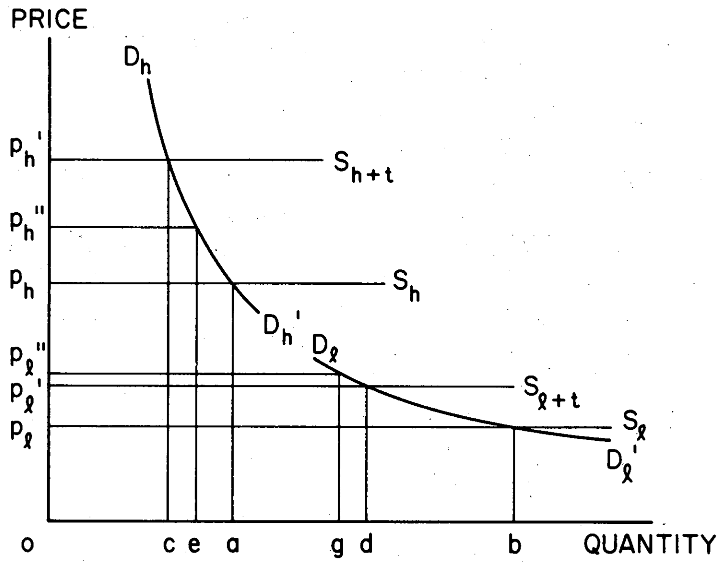
A quota on steel set equal to the amount expected to be imported under the tariff, $K'C$, will be less effective than the tariff in protecting the steel industry. As Corden (1971, pp. 216-217) explains, a quota on the intermediate good shifts the supply curve of steel from EJG' to $EJRR''$, where $JR = K'C$ is the maximum of steel imports permitted. This causes the domestic supply curve of cutting tools to shift from $HJ'H'$ to $HJ'R'Z'$. In the new equilibrium, $C'B'$ of cutting tools are imported and OC' produced domestically from domestically produced and imported steel. The domestic production of steel is OK'' (rather than OA, as with the tariff), and steel imports are $K''C' = K'C$.

Grossman (1981) analyzes two other situations involving protection of intermediate goods in which there may be a perverse outcome. Protection based on domestic content requirements, he points out, can decrease value added in the targeted industry rather than achieve its purpose of increasing value added. The reason is that the value-added effect of increasing the output of domestic components may be more than offset by the decrease in final-good production. The typical tariff-preference arrangement involving a content requirement imposed on the exporting countries also may decrease the volume of exports from the countries receiving preferential treatment.

Changes in the Quality Composition of Traded Products

Another likely market reaction to the introduction of an import or export restriction is a change in the quality composition of the affected goods. The introduction of quantitative restrictions on imports of textiles, shoes, and automobiles into the United States, for example, has led to the importation of higher-unit-value goods in these three product sectors. Suppose that D_hD_h' and D_lD_l' in Figure 3 are a trade-restricting country's import-demand curves for high- and low-quality shoes, respectively, and S_h and S_l the import-supply curves for the two types of shoes. Assume that the qualities are fixed but the import mix can be changed. (For an analysis of the change in the quality of goods produced, as distinct from the mix of goods, as a result of import restrictions, see Rodriguez, 1979, and Santoni and Cott, 1980.) Furthermore, assume initially that the cross-price de-

FIGURE 3
SHIFTING FROM LOW-QUALITY TO HIGH-QUALITY SHOES



mand elasticities for the two types of shoes are zero. The equilibrium prices and quantities under free trade and competitive conditions are op_l and ob for the low-quality shoes and op_h and oa for the high-quality shoes.

Now assume that a 50 per cent duty is imposed on shoes, so that the import-supply curves and domestic prices of both grades of shoes rise by 50 per cent, that is, prices rise to op_h' and op_l'. Suppose that the elasticities of import demand for the two types of shoes are the same, say, unity. The quantities imported of both types of shoes fall by the same percentage, $db/ob = ca/oa$. The quality mix remains unchanged. Obviously, if the import-demand elasticity (treated as a positive number) is greater for low-quality shoes than for high-quality shoes, there will be a relative shift in imports toward high-quality shoes, and vice versa.

Instead of using a tariff to reduce total imports of shoes from $oa + ob$ to $oc + od$, suppose the government utilizes an import quota. Competitive conditions in the quota market ensure that all quota licenses are used and that the price paid for a license will be the same whether it is used to import high-quality or low-quality shoes.

The absolute difference between the prices of shoes under the quota arrangement and free-trade conditions will be the same for both high-quality and low-quality shoes. With the *ad valorem* duty, by contrast, the absolute price increase was greater for high-quality shoes. Therefore, the shift from an *ad valorem* tariff to a quota will lead to an expansion of imports of high-quality shoes and a contraction of imports of low-quality shoes. Given the assumption made about equal import-demand elasticities, this also means that a higher proportion of high-quality shoes is imported under the quota than under free trade.[5] Equilibrium prices and imports with quotas are op_l'' and og for low-quality shoes and op_h'' and oe for high-quality shoes. The total imports of shoes are the same under the tariff and quota, $oc + od = oe + og$, but both prices rise from their free-trade levels by the same absolute amount under the quota arrangement, $op_h'' - op_h = op_l'' - op_l$, so that the total value of shoe imports (net of the quota premium) is greater. This may reduce the total value of domestic production.

Next, suppose that the cross-price elasticities of import demands are not zero. If these (as well as the own-price elasticities) equal each other or, as Falvey (1979) assumes, the sum of the own-price and cross-price elasticities is the same for both goods, the quality mix will not change with the *ad valorem* tariff, since the two prices rise by the same percentage. As Falvey (1979) points out, it also follows under these assumptions that a quota will cause a shift toward high-quality shoes.[6]

Policy officials often assert that a quota is preferable to a tariff because, given completely elastic supply curves, it is necessary to know the shape of import-demand curves in order to determine what will happen to the value of imports when a tariff is introduced. In

[5] With zero cross-price elasticities, the general condition determining whether the quality mix shifts toward or away from the high-quality good (compared with the free-trade composition of imports) is whether the ratio of the import-demand elasticities for the low- and high-quality goods, η_l/η_h, is greater or less than the ratio of the free-trade prices of those goods, $(\eta_l/\eta_h) \gtreqless (p_l/p_h)$. Since $p_l/p_h < 1$, by assumption, a sufficient (but not necessary) condition for a shift toward a higher-quality mix is $\eta_l > \eta_h$ (the elasticities being positive numbers).

[6] The condition for there to be a shift in imports toward the high-quality product is $(p_h/p_l) > [(\eta_{hh} + \eta_{lh})/(\eta_{ll} + \eta_{hl})]$, where η_{hh} and η_{ll} are own-price elasticities and η_{lh} and η_{hl} are cross-price elasticities. (I am indebted to E. T. Chang for pointing out this relationship.)

fact, as has been shown, in the typical quota case where (as usually happens) different qualities of a good are included in the quota category, it is necessary not only to have a knowledge of own-price import-demand elasticities but also cross-price import-demand elasticities to determine the change in the value of imports resulting from the introduction of a quota.

Shifts to Substitute Products

Instances where product substitution has limited the price-increasing effects of restrictive trade policies are familiar to all, and thus there is no need to dwell on this offsetting response. One interesting recent illustration relates to the European Community's Common Agricultural Policy. The Community has consistently increased the target price of feedgrains, yet the consumption of EC feedgrains has stagnated. The reason seems to be an import shift not only to oilseed meals but to such nontraditional nutrients as tapioca, beet pulp, and citrus pulp. Duties on these products were bound at zero or near-zero levels in the Dillon Round of GATT negotiations.

Shifts in the Country or Domestic-Customer Distribution of Traded Goods

One situation in which changes in the country distribution of traded goods can completely offset a trade-restricting measure is when a country restricts trade on a discriminatory basis. Suppose, for example, that the United States negotiates an orderly marketing agreement or voluntary export-restraint agreement that establishes a quantitative limit on imports of shoes from a particular foreign supplier, say Brazil.

As long as the international supply at the free-trade price from all countries other than Brazil plus the quantity of imports permitted from Brazil equals or exceeds import demand by the United States at the free-trade price, the quantitative restriction will have no effect on the price of shoes. If U.S. consumers initially are purchasing more shoes from Brazil than the amount allowed under the quota, they simply shift to other foreign sources, while foreign consumers shift to Brazilian suppliers.

These relations can be seen from Figure 4. Let the free-trade world price and traded quantity of shoes be *op* and *oc*, respectively. The U.S. import-demand curve is depicted as D_{US}, the import-demand curve by the rest of the world as D_{RW}, and the world import-demand curve as D_W, where $D_{US} + D_{RW} = D_W$. The export-supply curve of Brazil, the country against which the quota is imposed, is S_B, while the world supply curve is S_W. The export-supply curve of all countries other than Brazil is shown as S_{RW}. Even if the United States purchased all its imported shoes, that is, *ob*, from Brazil under free trade, a quota would have no price effect, provided it was no smaller than *ab* shoes.

FIGURE 4
SHIFTING THE SUPPLY SOURCES OF SHOES

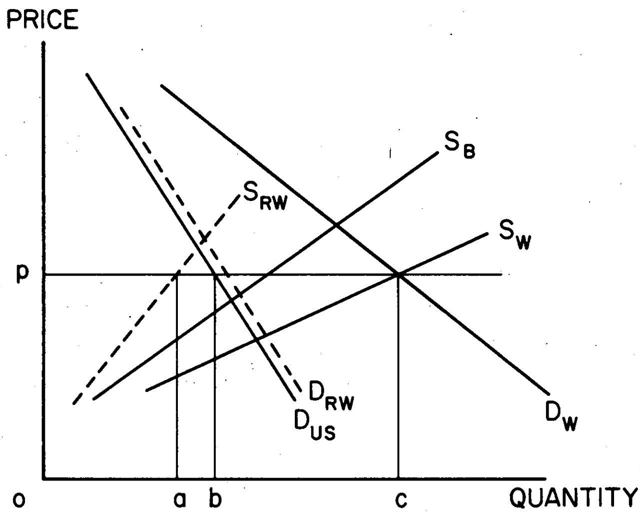


Figure 4 can be used to indicate the conditions under which an export quota against a particular country will be ineffective. Suppose that Brazil will not supply more than *ab* shoes to the United States. Since this quantity plus the free-trade supply of the rest of the world is as large as the free-trade import demand of the United States, the export quota does not raise the price of shoes for the United States. A redistribution of the world's traded supplies of shoes takes place among consuming countries to offset any price-increasing pressure.

As pointed out by Baldwin (1970, p. 73) and Baldwin and Richardson (1973), a preferential government purchasing policy is still another restrictive trade measure that can be completely offset by a shift in available supply among consumers. In this case, the condition for ineffectiveness is simply that the government's demand at the free-trade price be less than the supply available from domestic suppliers at that price. Suppose in Figure 4 that D_{US} is the government's demand curve for shoes, D_{RW} the demand curve on the part of private U.S. consumers, and D_W the demand curve of the government plus private domestic consumers. Furthermore, let S_B be the supply curve of domestic producers and S_{RW} the import-supply curve of foreign producers, where $S_W = S_B + S_{RW}$. If the government refuses to buy any shoes from foreigners, the price will still remain at the free-trade level. Private U.S. consumers will satisfy their demand at the free-trade price by purchasing the entire foreign supply at this price plus the excess domestic supply available after the government's purchases. If, instead, S_{RW} is the domestic supply curve and S_B the foreign supply curve, the price received by domestic producers will rise to the intersection point of S_{RW} and D_{US}, and the price to domestic consumers will fall to the intersection point of D_{RW} and S_B.

Shifts in the Country Distribution of Production

The developing countries have long deliberately used protectionist trade policies to attract foreign investment. Government officials may fail to appreciate, however, that the increase in foreign investment within their own countries in response to a general protectionist policy (and the increase in the supply of imports from other countries if the protection is discriminatory) can lead to a smaller domestic price increase than expected from an import-restricting policy. The aim may be, for example, to stimulate shoe production in a relatively depressed area of the economy. The additional foreign investment (and thus the additional domestic output) resulting from the domestic price-increasing effects of a tariff will limit the price rise and consequently limit the benefits to firms in the depressed region. As Mundell (1957) demonstrated in his classic article on factor mobility, an inflow of capital in response to a tariff can even increase the domestic output of the protected good sufficiently to restore its free-trade price.

Retaliation

Perhaps the best-known foreign response that offsets the objective of a country's trade policy is retaliation. Retaliation is usually brought up in discussing a country's effort to improve its terms of trade and raise its real income by means of an optimum tariff. Although Johnson (1953-54) and Scitovsky (1942) demonstrate that a country may still end up with better trading terms and a higher real income even when retaliation occurs, Johnson also shows how all trading partners could lose. One circumstance in which retaliation is mandated by law in most countries (and permitted under the GATT) is when a foreign country attempts to increase its exports by subsidies of one form or another. As Article VI of the GATT states, a countervailing duty that does not exceed the amount of the subsidy may be levied to offset the export-increasing effects of the subsidy.

Macro Effects

The macro effects of trade policies can also offset the intended purpose of these policies. For example, switching from a system of direct to indirect taxes in order to be able to introduce equivalent rebates on exports and taxes on imports and thereby improve the country's trade balance will not be effective if exchange rates or factor prices are flexible. Selective protection or subsidization, aimed at stimulating domestic production in certain sectors, will be partly offset if it is extensive enough to change the exchange rate or the level of factor prices.

A Naive View of Supply and Demand Elasticities

The ineffectiveness of some trade policies stems not from unexpected shifts in the import or export supply or demand curves but simply from an oversimplified view of the elasticities of these curves.

The border adjustments permitted under GATT rules are a case in point. By law, for example, the U.S. government must impose a countervailing import duty if foreign governments subsidize exports or production in export industries and thereby cause material injury to the import-competing domestic industry. The countervailing duty must be equal to the net amount of the subsidy. The purpose of the countervailing duty is clearly to restore domestic prices and production to the levels prevailing prior to the foreign subsidy. This will be the outcome, however, only if the foreign offer curve is infinitely elastic (see Baldwin, 1980, p. 90, for an analysis of this case). Otherwise, countervailing against an export or production subsidy can raise or lower the domestic price, depending on the relative income elasticities of demand and price elasticities of supply at home and abroad.

The rationale behind border-tax adjustments is also naive. For example, governments that impose an indirect production tax on an industry are permitted by the GATT to rebate this tax at the border. The reasoning is that the adjustment will restore the country's exports to their pre-tax level. However, as can be readily seen from either a partial-equilibrium or simple general-equilibrium analysis (Baldwin, 1970, Appendix B, and 1980, pp. 87-91), the net effect of the export rebate will be to increase the country's export supply and thus decrease price and output levels abroad. Thus, rather than achieve its apparently benign purpose, this trade policy has the effect of an export subsidy.

The levying of antidumping duties equal to the difference between the prices that foreign suppliers charge at home and abroad is also ineffective in its intended purpose of eliminating dumping.

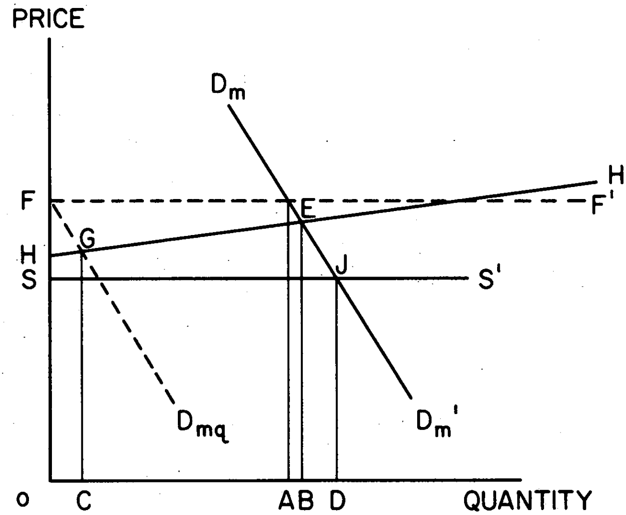
Smuggling and Other Illegal Responses

Smuggling, bribing customs officials, and deliberately invoicing incorrectly can all be analyzed by the method used to analyze legal attempts to avoid a trade restriction on a final good by importing or exporting the good in an unprocessed form. These illegal acts occur only when there are government border charges, and the avoidance of these charges involves costs. Therefore, the supply curve of a good imported under these conditions is above that for the same good shipped under free trade. Smuggling, for example, will affect the domestic price that would otherwise prevail when a good is protected by a tariff if the tariff-inclusive domestic price is higher than the unit cost of importing illegally the quantity of goods that would be imported legally if there were no smuggling. If the tariff-inclusive price is higher, all imports will flow through illegal channels and the tariff will not be fully effective. Cigarettes were smuggled into the Philippines several years ago in order to avoid border taxes, and trade through legal channels all but disappeared.

In Figure 5, let SS' and FF' be the foreign import-supply curve with and without a tariff, respectively. Let D_mD_m' be the domestic import-demand curve. The price and volume of imports will be OS and OD, respectively, with free trade, and OF and OA, respectively, with the tariff and no smuggling. Assume, however, that HH' is the

FIGURE 5

SHIFTING TO SMUGGLED GOODS



supply curve of the smuggled good, where the vertical difference between HH' and SS' is the cost of smuggling. If a tariff is imposed at the rate of FS/OS, all imports (equal to OB) will enter through illegal channels and the domestic price of the imported good will rise only to EB. The effect of a quota equal to OA units, the amount that will be imported if the tariff is effective, can be shown by shifting the demand curve to the left by OA units, to FD_{mq}. There will be OA of legal imports plus OC of smuggled imports, and the price will rise only to GC. Even if the tariff is effective, a quota will result in a lower price and larger volume of imports than the tariff.

Shipping goods via third countries in order to avoid import or export restrictions is relevant only in situations where country discrimination is being practiced. However, this method of avoiding country-specific controls places an effective limit on the price-increasing effects of such controls.

4 Uncertain Indirect Effects

As noted at the outset, a trade policy may not accomplish the desired objective even when it produces the expected effects on domestic prices and trade. This is because trade policies are often used not simply to shift domestic production to particular levels, for reasons such as national defense, but to change economic variables that are only indirectly related to the prices and quantities of traded goods. For example, an industry faced with a surge of injurious imports frequently seeks temporary protection, arguing that protection will give the industry the time and resources needed to introduce new and more productive equipment and techniques. The modernization will supposedly eliminate the need for protection after a few years.

Standard price theory does not suggest this result. If an industry can be profitable with new equipment once protection is removed, why can't the industry enter the capital market to obtain the necessary funds to purchase the equipment? The answer often given is that an improved short-term profit performance is necessary both as a source of capital funds and as an encouragement to other investors. However, a rational investor may attribute the better short-run profit performance to the higher import protection and thus base his judgment about long-term investment upon profit prospects in the absence of protection or else on the likelihood that protection will continue. Furthermore, profits generated by protection may be used by the industry to invest in completely different activities. Investment by the U.S. steel industry in non–steel-producing activities may illustrate this point. Protection for the steel industry, in the form of the trigger-price mechanism, was justified by the industry in large part as a way to maintain jobs in the industry by facilitating modernization. In any event, while it is obviously possible to imagine scenarios in which temporary protection pays off, this result is by no means certain.

Similar problems arise when protection is aimed at helping a particular group within an industry. For example, raising farm prices by means of trade measures in order to encourage family farming may increase the relative importance of corporate farms, since corporate farms may have easier access to capital markets and therefore be able to exploit new profit opportunities more rapidly. The short-run analysis of Mussa (1974) contrasted with the long-run analysis of Stolper and Samuelson (1941) also indicates how protection may at first raise a factor's real income but then decrease it as long-run adjustments take place.

Unexpected results can also occur when there are domestic distortions. For example, temporary protection is often justified as a means of overcoming domestic externalities associated with the acquisition of knowledge and on-the-job training. However, as has been pointed out in evaluating the case for infant-industry protection (Baldwin, 1969), the argument depends upon a number of assumptions whose validity is not obvious. Protection may lead merely to expansion using existing productive techniques and skill mixes. Similarly, when domestic production is monopolized, raising a protective tariff beyond the point where all imports are eliminated will, as Corden (1971, p. 23) notes, cause the monopolist to reduce rather than to increase output. And Gene Grossman has pointed out to me that a monopolist will reduce output more when a quota is used to restrict imports to a particular level than when a tariff is used for the identical purpose. The existence of domestic factor-market distortions can also lead to "abnormal" responses. Batra (1973, p. 249-250) demonstrates that, under these conditions, an increase in the domestic price of a product (brought about, for example, by a tariff) may lead to a decline in its output. Brecher (1974, p. 113) shows that import protection introduced for employment-creating purposes may lead to the contrary outcome in an economy with a minimum wage and unemployed labor.

5 Conclusions

For an approach that is touted by many pressure groups and government officials as an effective remedy for a host of economic ills, the use of trade policy does not receive high marks for effectiveness. Occasionally, it may produce effects exactly opposite to those desired. In a not insignificant number of instances, it can be expected to have no effect at all in furthering the desired objective and may even promote some other undesirable outcome. More frequently, it probably operates in the direction intended, but policy-makers either underestimate the extent of offsetting pressures or misunderstand the nature of its indirect consequences. Therefore, it does not fully accomplish its intended purpose. Furthermore, an important conclusion of the preceding analysis is that the ineffectiveness of trade policy tends to be greater when quantitative measures rather than tariffs are used to restrict imports.

Perhaps economists have understood this all along. Maybe we have not dwelt upon the inefficacy of trade policy because we know that usually the more effective trade policies are in achieving the purposes for which they are intended, the greater the resulting decline in national economic welfare.

It is also interesting to note that those trade policies that are growing in popularity, namely, discriminatory measures such as orderly marketing agreements, voluntary export restraints, and selective embargoes, are the very ones likely to be least effective. Pressure groups seem to believe that they have a better chance of gaining public support if they focus upon a particular country or set of countries and a product line where a surge of imports or an apparently unfair practice can be observed fairly clearly. Government officials also like this approach, since it avoids political pressures from other countries supplying the same or similar products who cannot be accused of disruptive or unfair behavior. Thus, protection may be easier to achieve when framed in this narrow manner. But it does not usually take very long for recipients of this type of trade-policy assistance to discover that their political achievement confers little economic benefit.

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