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DOMESTIC DEMAND AND ABILITY TO EXPORT

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Recent contributions to international trade theory have attempted to introduce new and more concrete elements into traditional explanations of comparative advantage. Thus Linder [10] has presented the hypothesis that the volume of trade between two countries is larger the closer they are in terms of per capita income; this fact being due, according to him, to the export potentiality developed in the two markets by the similar national demand patterns that accompany similar levels of income. Drèze [4], inquiring into the export-import performance of Belgium, advanced the hypothesis that small countries have a comparative advantage in products that are internationally standardized and subject to economies of scale. In fact, only large markets would allow exploitation of economies of scale; thus, only large countries are able to produce efficiently products having national characteristics that differentiate them from foreign products, when their production entails economies of scale. On the other hand, the market for internationally standardized products is world-wide and small countries are, in it, on the same footing as large ones. This would give them a comparative advantage to specialize their production into the latter products, export them and import the former products. Other recent contributions resort to factors like product innovation, technological gap (as reflected in R&D expenditures), relative age of industries, to explain trade in manufactured products.¹

Implicit or explicit in these new explanations of trade flows is the assumption that domestic demand is a prerequisite to developing an export industry, when the products of this industry have to overcome barriers in order to enter a foreign market². This paper presents an explanation of this assertion in terms of economies of scale and obstacles to trade; this explanation is not meant to contradict but only to supplement other reasons for considering domestic demand a prerequisite to the development of an export industry³.

The problems touched upon in this paper are not altogether new. The analysis is in fact based on traditional dumping and price discrimination theory, on which the classic contributions are those by Barone [2], Viner [15], Yntema [16], and Joan Robinson [13]. Even the question of the relationship between domestic demand and export trade has been the object of discussion before, particularly by Barker [1], Kahn [8], and Treasury [13]. The orientation of this paper, however, is in a different direction and new implications in terms of welfare analysis are developed.

Yntema, starting from the work of Barone and Viner, analyzed the problem whether dumping abroad would increase or decrease the price charged by the monopolist at home relative to the situation with no export. Joan Robinson's main interest was in deriving the conditions under which total output of the non-discriminating monopolist would be different from his output if he were to discriminate within his own market. Barker, Kahn and Treasury dealt with the effects on export prices of the purchase taxes introduced in Great Britain with the 1949 devaluation.

The existence of domestic demand is certainly not a prerequisite to the development of an export industry when, in absence of transport costs or other barriers to entry into a foreign market (tariffs, quota, etc.), domestic producers are able to reach a minimum average cost not higher than the price in the foreign market. This ability can be due either to a more efficient production technique or to a favourable availability of factors of production, or to both elements. Under these circumstances, traditional comparative cost theory along the lines of Ricardo or Heckscher and Ohlin, is sufficient to explain trade. However, if transport costs or other barriers effectively reduce the net price that exporters can gain on the foreign market below their minimum average cost, then the industry cannot export without incurring losses on the quantities produced for export. The same would be true, even without barriers, if minimum average cost were above the price in foreign markets. Thus relative inefficiency and/or transport costs (broadly defined) constitute similar obstacles to the development of an export industry. It is here that the existence

I. Positive analysis

Thus, while these authors built their analysis on the assumption that it is worth selling in both domestic and foreign markets, and enquired how prices and outputs would change in the different markets under various conditions, this paper's object is to enquire whether in fact it is profitable to sell in various markets, and the welfare consequences of doing so under a private monopoly.

of domestic demand becomes a prerequisite to export.

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In figure 1, lac is the long run average cost curve of

would-be exporters of the product in question; w is the price in the foreign market, so that for simplicity it is assumed that in absence of transport costs an export industry would be able to develop at a price that just covers its average cost, without need for a domestic market ⁵. If, however,

transport costs per unit of output are π , then the net price the firms would gain on the export market is only $w - \pi = \underline{w}$

and the industry could not enter the export market. The existence of a domestic market, however, changes the situation.

In fact, if dd is the domestic demand curve and average costs are falling, a single firm is able to monopolize the domestic market, provided it can keep it isolated from the foreign one. The marginal revenue curve for the home producer becomes the broken line $r_{\underline{w}}$ and the rational thing to do is to charge a

price at home higher than the foreign price, by equating marginal cost with marginal revenue in both markets. A quantity Q_1 will be sold at home, at a price OA , while the quantity $Q_1 Q_4$ is

exported. The net profit of the firm would be the difference

between the monopoly profit gained at home and the loss incurred in the export market, i.e., $ABCD - CEFG$. Thus, in this case,

the existence of a domestic market is a prerequisite for being able to export, provided the domestic market can be exploited monopolistically. For this to be the case, it is sufficient for the producer to be protected by a tariff that prevents

imports (or re-imports).

A natural question at this point is to ask why the pro-

ducer should export at all, since it incurs losses on the quantities exported. Would it not pay to concentrate solely on production for the domestic market rather than producing also for export? The answer is: it depends. If the net profit obtained by producing for both domestic and foreign markets is larger than the profit obtained by producing only for the home market, it pays to choose the first alternative. Although the foreign market entails a loss the paradox is only apparent, because the profit gained in the home market is different in the two cases. If the export market cannot be counted on to allow a reduction of average costs through economies of scale, the optimum point, where marginal revenue (which would then be simply the line rr) equals marginal cost, allows a profit equal to only HJK . If this profit is less than $ABCD - CEFG$, producing for both markets is the policy preferred by the profit-maximizing entrepreneur.

The point is that, because of economies of scale, adding one market when the other is given always reduces costs and so raises profitability and the likelihood that the industry comes into existence. On the basis of this principle an answer is found to the alternative question, whether access to the export market is a prerequisite to production for the home market. Thus, if the demand curve were below the average cost curve, the export market might allow profits on the domestic market when losses would be incurred without it.

An alternative and more illuminating way of explaining why exports are made even if their average cost is higher than their price, is to consider marginal rather than average cost

With a profit-maximizing monopoly social optimum is not attained and public intervention is in order. This intervention should equate the marginal social cost of obtaining the good (either through domestic production or through imports) with the marginal social evaluation of it (either through domestic consumption or through exports). Supposing that no other distortions and externalities are present, so that social costs equal private costs and marginal social evaluation is given by the marginal price, the optimum position entails respectively a situation of no trade, of exports or imports, according to whether the point of intersection between the domestic demand curve and the marginal cost

II. Normative analysis

and revenues. If production is only for the domestic market profit is the area between the marginal revenue and the marginal cost curves, up to point N in figure 1. Exporting has two effects. First, output Q_1Q_2 , previously sold at home, is exported and profit on this output will rise by GM^1M as a result. Secondly there is extra-output Q_2Q_4 on which total revenue is $M^1FQ_4Q_2$ while total cost is the area under MF , so that profit on it will be M^1MF . Exporting therefore adds to the profits of the monopolist the area between the net export price and the marginal revenue and marginal cost curves (GM^1M in figure 1). This area is positive provided the net export price exceeds marginal cost before exporting (MQ_2 in figure 1). This confirms the popular view that it pays to export if the foreign price covers marginal cost.

Always assuming that the tariff is high enough to enable full exploitation of monopoly power, we can identify the three cases as follows. Let output which would result if marginal cost equalled net foreign price be OQ_4 , let consumption which would result if average domestic revenue equalled net foreign price be OQ_3 , and let consumption which would result if marginal revenue equalled net foreign price be OQ_1 . Bearing in mind that OQ_3 is always larger than OQ_1 (average revenue is to the right of marginal revenue curve) and that consumption is governed by marginal revenue when the industry maximizes profit, while social optimum requires that it should be governed by average revenue, we have three possibilities :

- (a) $OQ_4 > OQ_3 > OQ_1$. This is the case represented in figure 1. Private optimum entails production equal to OQ_4 , domestic consumption equal to OQ_1 and exports equal to OQ_4 . Social optimum requires the same level of production, less exports (OQ_3) and correspondingly a larger domestic consumption (OQ_3). Thus, social optimum involves a production loss equal to DEFN, to be covered by fiscal means, since this financial loss is necessary to maximize social welfare. Compared to this optimum, private monopoly causes a social loss which is equal to the consumers' surplus that should be gained over the quantity that a private monopoly exports in excess of the socially optimum level of exports. In figure 1 this is equal to BLG.
- (b) $OQ_3 > OQ_4 > OQ_1$. IN this case production according to private interest would partly be exported (OQ_4), when in fact social optimum requires that it should all be sold domestically

and that it should be supplemented by imports (equal to Q_3Q_4). Consumption is therefore larger when the social optimum is attained, while production is again the same in either case. The social loss caused by a profit-maximizing industry is in this case equal in part, as in case (a), to the consumers' surplus foregone on the quantity exported when in fact it should be consumed domestically, plus the consumers' surplus foregone on the additional quantity that should be imported.

(c) $Q_3 > Q_4 > Q_1$. In this case the maximization of private profit would imply equal levels of production and consumption and therefore no trade. Social optimum requires, in general, smaller production and certainly larger consumption, to be made up by importing. Social loss, when this is not enforced, is equal to the consumers' surplus lost on the additional quantity that should be consumed plus the excess cost of producing domestically the amount that should instead be imported.

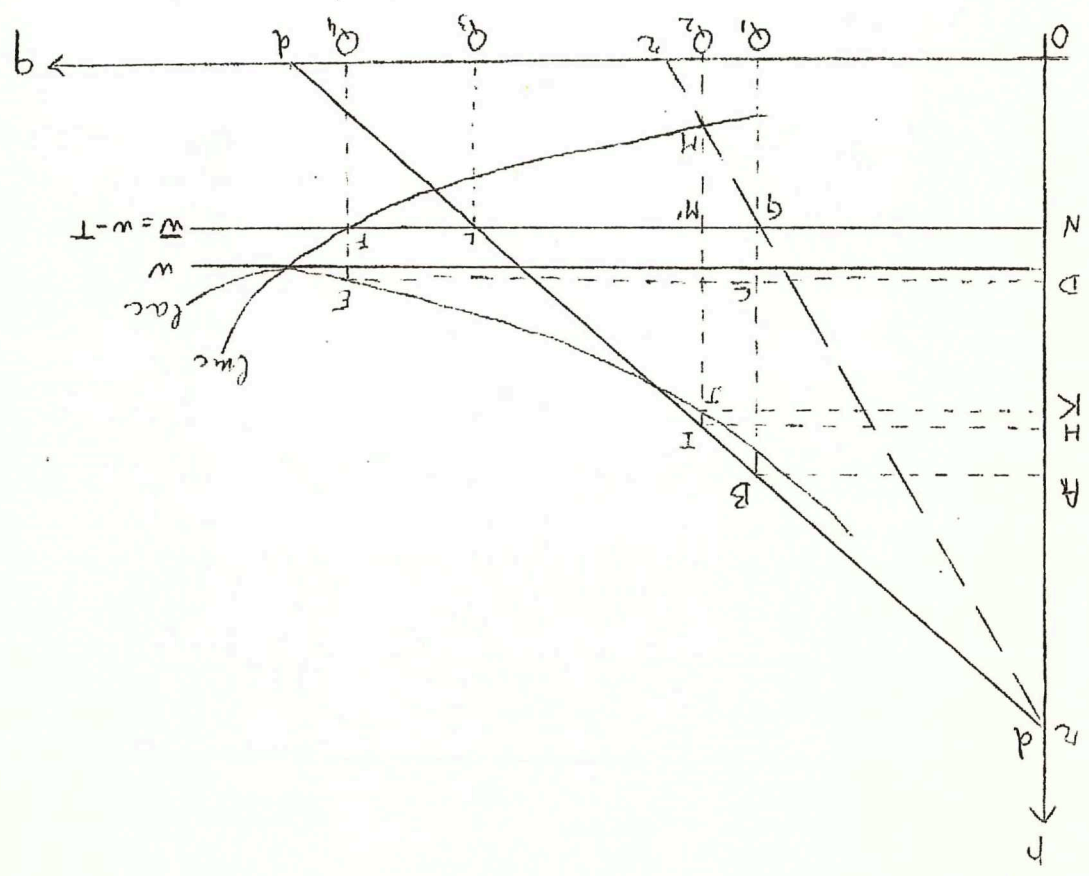
The conclusions reached above are applications of the principle of marginal optimum. To complete the analysis the structural optimum must also be considered⁷. Social structural optimum is identified, under the assumptions of this paper, by the difference between the integral of the demand curve and the integral of the marginal cost curve to the left of their last point of intersection. If this difference is positive, the industry is socially justified. Thus, and industry that would not be undertaken by private entrepreneurs might be socially profitable. On the other hand, by considering the three cases analyzed above, we can see whether some domestic production is socially desirable when protected private enterprise finds

Domestic demand, as shown in this paper, is a prerequisite to the development of an export industry when the net price that can be obtained in foreign markets is below the minimum average cost, provided domestic demand can be exploited monopolistically and the foreign price covers marginal cost before exporting. Moreover, it has been shown that a private monopolist might not trade a product that should be imported; that it might export too much of a product that should be exported, or even export it when in fact it should be imported. Social losses implied by these profit-maximizing choices can conceptually be identified. Finally, the analysis of marginal optimum has been completed by an analysis of the structural optimum.

III. Summary and conclusions

the industry profitable. In cases (a) and (b) the level of production is the same from a private and a social point of view. Thus, if private entrepreneurs find production profitable in these cases, it will be even more profitable socially, since the integral of the demand curve is necessarily larger than the integral of the marginal revenue curve, while, by assumption, the marginal cost curve is the same for society and for private entrepreneurs. On the other hand, in case (c), a protected private monopoly might find profitable to set up production when in fact social optimum would require that demand be completely satisfied by imports. This is the case when marginal cost is always above the net foreign price, i.e., when a private industry could not exist without protection.

Figure 1



Footnotes

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1 See especially Posner [12], Gruber, Mehta and Vernon [5], Keasing [9], Hufbauer [7], Hirsch [6].

2 Thus Linder [10], p. 87, writes: "It is a necessary, but not sufficient, condition that a product be consumed (...) in the home country for this product to be a potential export product". In fact this paper shows that the condition is not even necessary.

3 Other reasons usually proposed are entrepreneurs' lack of familiarity with foreign tastes, higher uncertainty in foreign markets, the costs of designing products for the foreign markets, and the like. See, for example, Linder [10], pp. 87-90. Most of these elements can however be reduced to measurable costs of entry into foreign markets and can thus be integrated into this paper's analysis under the broad definition of "transport" costs.

4 In this comments to a first draft of this paper, which I have largely incorporated, W.M.Corden has considered the parallel question whether the export market is needed in order to produce for the domestic market. As shown below, the same analytical

principle answers both questions.

5 The price in the foreign market is assumed to be fixed for the exporter. In other words, he has no monopoly power in the export market. More correctly, following the recent explanations of trade in terms of product innovation, differentiation, etc., we should assume a somewhat downward sloping demand also in the foreign markets. The geometrical analysis, however, would be greatly complicated without affecting the results obtained under the present simplifying assumption.

6 This loss is made up by a gross social loss equal to BLQ_3Q_1 (the gross consumers' loss), minus a gain equal to GLQ_3Q_1 (the value of foreign exchange earned by exporting Q_1Q_3). Social costs and benefits over the quantity Q_3Q_4 are in this case identical under private and public monopoly, aside from distribution. In fact, the quantity Q_3Q_4 is exported in both situations at the same price and costs.

7 The same distinction between marginal and structural analysis has been applied by Corden [3] to the discussion of a problem similar to that of this paper. See also Meade [11], appendix 3.

Bibliography

- 1 Barker, H.P., "Home and Export Trade : I", Economic Journal, LXI (1951), pp. 276-78.
- 2 Barone, E., "Les Syndicats", Revue de Métaphysique et de Morale, April-June, 1921.
- 3 Corden, W.M., "Monopoly, Tariffs and Subsidies", Economica, XXXIV (1967), pp. 50-58.
- 4 Drèze, J., "Quelques réflexions sereines sur l'adaptation de l'industrie belge au Marché Commun", Comptes Rendus des Travaux de la Société Royale d'Economie Politique de Belgique, No 275 (Décembre 1960)
- 5 Gruber, W., Nehta, D., Vernon, R., "The R&D Factor in International Trade and International Investment of the United States Industries", Journal of Political Economy, LXXV (1967), pp. 20-37.
- 6 Hirsch, S., Location of Industry and International Competitiveness, Oxford : Clarendon Press, 1967.
- 7 Hufbauer, G.C., Synthetic Materials and the Theory of International Trade, London : Duckworth, 1965.
- 8 Kahn, R.F., "Home and Export Trade : II", Economic Journal, LXI (1951), pp. 279-89.
- 9 Keating, D.B., "The Impact of R&D on the United States Trade", Journal of Political Economy, LXXV (1967), pp. 38-45.
- 10 Linder, S.B., An Essay on Trade and Transformation, New York : Wiley, 1961.
- 11 Meade, J.E., The Theory of International Economic Policy, vol. II, Trade and Welfare, London : Oxford Press, 1956.

- 12 Posner, M.V., "International Trade and Technical Change",
Oxford Economic Papers, XXXI (1961), pp. 323-41.
- 13 Robinson, J., The Economics of Imperfect Competition,
London : Macmillan, 1954.
- 14 Treasure, J.A.R., "Home and Export Trade : A Note",
Economic Journal, LXII (1952), pp. 674-76.
- 15 Viner, J., Dumping : A Problem in International Trade,
New-York : Kelley, Reprints of Economic Classics, 1966.
- 16 Yntema, T.O., "The Influence of Dumping on Monopoly
Price", Journal of Political Economy, XXXVI (1928),
pp. 686-98.