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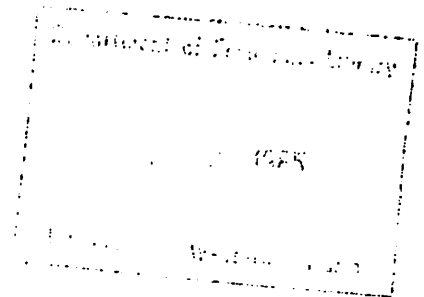THE UNIVERSITY OF WESTERN ONTARIO
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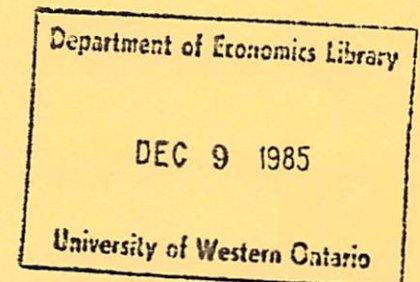
THE GENERAL NON-EQUIVALENCE OF

TARIFFS AND IMPORT QUOTAS

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THE GENERAL NON-EQUIVALENCE OF

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It is now well known that in a world which is not perfectly competitive, tariffs and quotas are not equivalent. Bhagwati (1965) showed that in the presence of monopoly the effects of tariffs and quotas could be quite different, and this argument was extended by Shibata (1968) and Bhagwati (1968). It is also well known that in the presence of uncertainty or if there are changes in the economy such as growth or price fluctuations tariffs and quotas may produce different results (see Fishelson and Flatters (1975) and Young (1979)). Rodriguez (1974) has also shown that tariffs and quotas produce different final equilibria if there is retaliation. In particular retaliatory behaviour with quotas will always lead both countries towards the zero trade position whereas retaliation with tariffs may lead to an equilibrium in which trade exists. Falvey (1975) has shown that, even in a perfectly competitive world, if the foreign offer curve is inelastic, some tariffs cannot be duplicated by an import quota.

What does not seem to be generally recognized is that even in the static, perfectly competitive world tariffs and import quotas are <u>never</u> equivalent if both countries pursue restrictive trade practices. This can be illustrated by reference to Figures 1 and 2. The standard offer curve equililbrium is shown in Figure 1 where O_h and O_f are the offer curves for countries H and F respectively. The free trade equilibrium is at A with prices P. If both countries impose tariffs the offer curves could shift to O_{ht} and O_{ft} with a new equilibrium at B.[1]

The question now is whether this tariff equilibrium, B, could be generated by import quotas. In Figure 2 the same offer curves and equilibrium
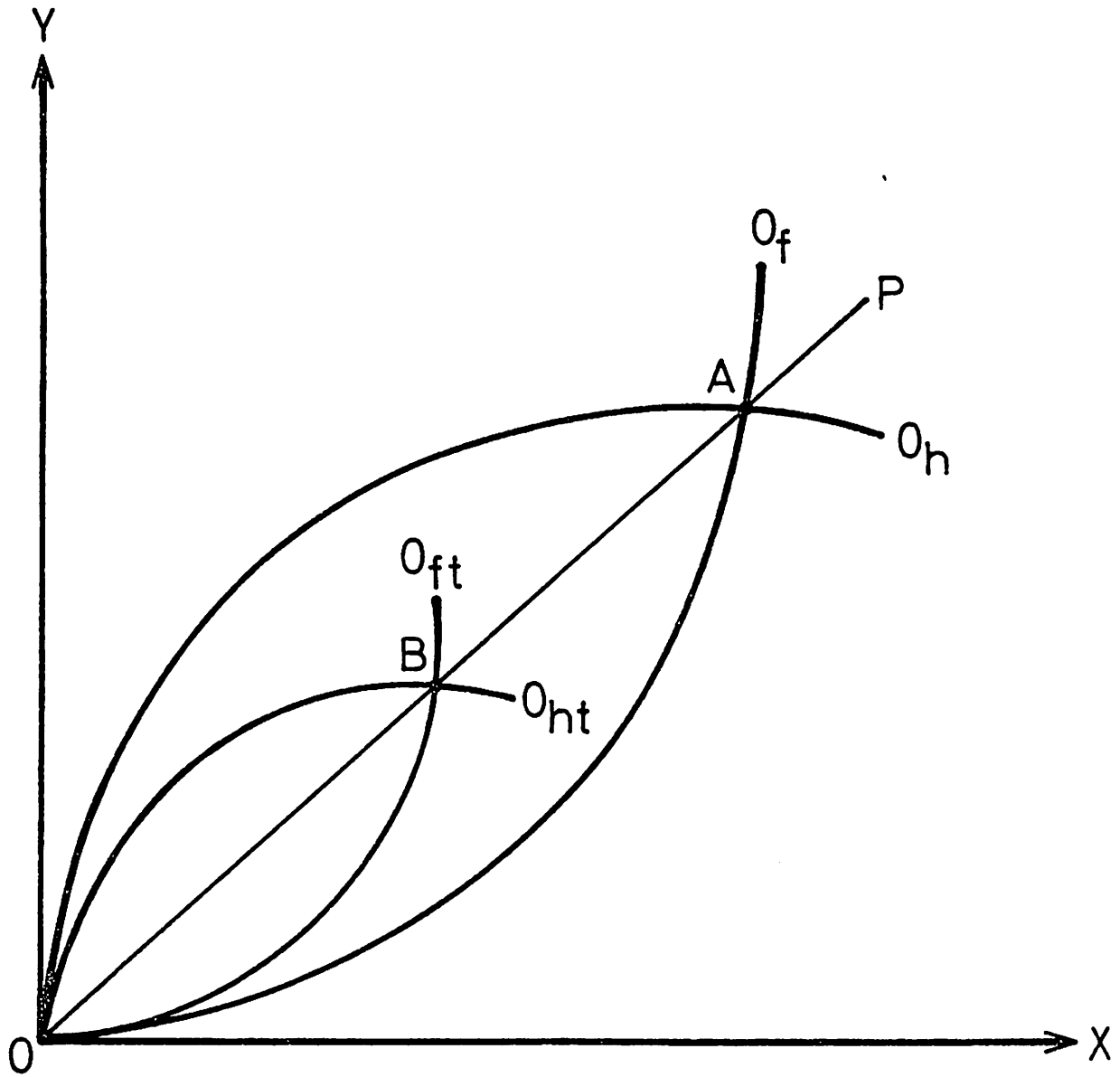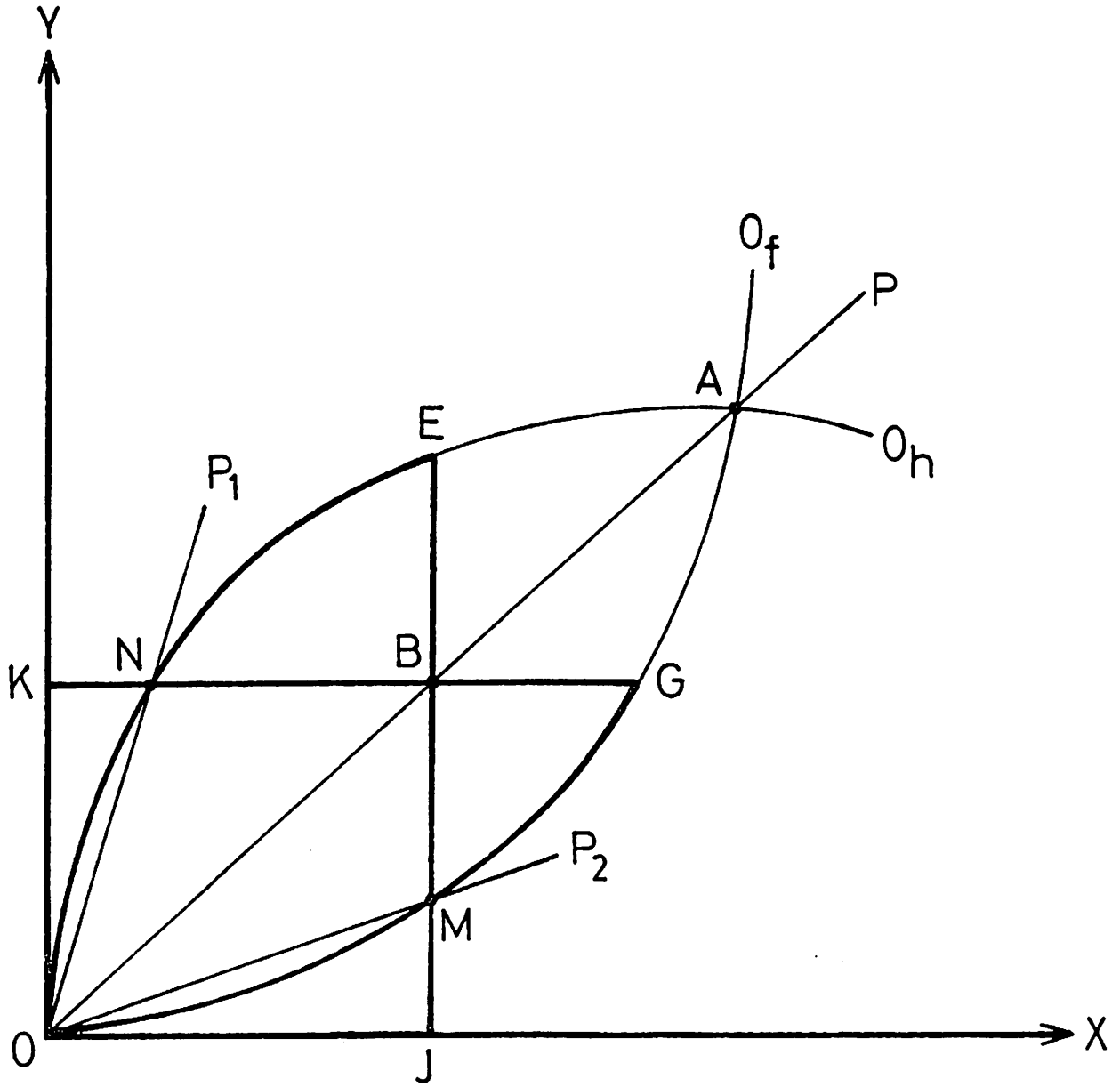
FIGURE 1

FIGURE 2

price line are shown, and now OJ and OK are the import quotas imposed by
countries H and F respectively. The offer curves for the two countries have how
become ONEJ for country H and OMGK for country F. While B, the interior
intersection of these two offer curves, is in equilibrium it is unstable and
therefore could not be sustained. This unstable equilibrium is bounded by the
two stable equilibria N and M which are associated with equilibrium prices P_1
and P_2 respectively. Which of these two equilibria will prevail depends on
which country imposes the quota first. Note that only one quota can be
effective and the effective quota will be the first one imposed.

It is clear that the argument just presented applies equally well for any
pair of tariffs imposed by the two countries. None of the equilibria associated
with tariffs by both countries can be reproduced by import quotas. It is
interesting to note that while any point in the lens-shaped area OEAG can be
generated by an appropriate choice of tariffs only the boundary of this set can
be generated by import quotas. Of course with tariffs in both countries none of
the boundary points are possible in a tariff regime. Thus the feasible sets of
equilibria for the tariff and quota cases are disjoint.

The fact that no tariff equilibria can be duplicated by import quotas
depends on the fact that tariffs have been assumed to exist in both countries.
If only one country imposes a tariff then all equilibrium points will be located
along the offer curve of the other country, or in other words, will be on the
boundary of the set OEAG. It is therefore only in the special case where only
one country is assumed to have a tariff that import quotas and tariffs are
equivalent.

In numerical general equilibrium analysis it is often difficult to quantify
the effects of quotas and other non-tariff barriers to trade. One approach

which is sometimes used is to calculate the tariff equivalents of such trade restrictions and to use these in the calculations. The analysis here suggests that such an approach may result in serious misspecifications of the model.

In the preceeding we have been careful to specify that only import quotas are being considered. With export quotas, or as they are now more commonly called voluntary export restraints, the situation is quite different. Again consider Figure 2 but now assume that country F imposes a voluntary export restraint equal to OJ and that country H imposes a voluntary export restraint equal to OK. The offer curves for countries H and F become ONG and OME respectively, and this gives rise to equilibrium at point B. This equilibrium is stable and thus any tariff regime can be duplicated by a set of voluntary export restraints. Indeed voluntary export restraints can generate all the points both in the interior and on the boundary of the area OEAG.[2]

It is generally argued that voluntary export restraints are an inferior form of protection when compared either to tariffs or export quotas because voluntary export restraints involves a transfer of revenue to foreign countries which would otherwise be captured by the domestic economy. Again this argument is seen to be true only in the case where voluntary export restraints are in place in one country but not the other. The voluntary export restraints of Figure 2 produce exactly the same equilibrium as the import tariffs in Figure 1, although domestic prices will generally not be the same in these two cases. Furthermore, voluntary export restraints can be shown to be superior to import quotas in a variety of circumstances. Voluntary export restraints permit a much larger number of possible equilibrium points, and this may be important if countries wish to cooperate in setting their commercial policies. Suppose that tariffs cannot be used, perhaps for political reasons, and that the choice is

between quotas and voluntary export restraints. With the quotas of Figure 2 the only possible equilibrium prices are P_1 or P_2, and in either case one of the two countries will be seriously disadvantaged by this form of trade restriction. With voluntary export restraints trade can be restricted but the initial terms of trade, P, can be retained so that neither country is subjected to a serious terms-of-trade deterioration. Perhaps the current use of voluntary export restraints is not as misguided a policy action as most economists have assumed.

It is now clear why Rodrigues (1974) found that retaliation through quotas produced different results than retaliation with tariffs. Optimal quota policy always involves a point on the boundary of the lens-shaped area OEAG of Figure 2, and thus retaliation will lead inexorably towards the origin. Optimal policy with tariffs will always imply an equilibrium in the interior of OEAG (as long as both countries have tariffs) and an equilibrium with positive trade is possible. Indeed, point B of Figure 1 could be an equilibrium with retaliation.

One might wonder why the instability of interior solutions with import quotas has not been noted in the earlier literature. One possible explanation is that much of the comparison between tariffs and quotas has been done using partial equilibrium analysis, where such problems do not reveal themselves. We have, then, another reminder that general equilibrium questions should be addressed using general equilibrium techniques.

FOOTNOTES

[*] I am indebted to Ian Wooton for helpful comments.

[1] Point B is shown on the same price line P simply to avoid clutter in the diagram. Any point in the interior of the lens-shaped area formed by the intersection of the two offer curves is possible.

[2] One might be tempted to argue that voluntary export restraints (VER's) are the more general form of trade restriction, since they can reproduce any situation generated either by tariffs or import quotas. While technically correct this argument is true only because some VER's are not binding. Boundary points can only be obtained if only one VER is effective. The point is that while all tariffs are effective, all VER's are not.

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