

## NON-ECONOMIC OBJECTIVES AND THE EFFICIENCY PROPERTIES OF TRADE

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IT is well known (Kemp, 1962; Samuelson, 1962; Bhagwati, forthcoming) that, for a country with no monopoly power in trade (or domestic distortions), free trade (in the sense of a policy resulting in the equalization of domestic and foreign prices and hence excluding trade, production and consumption taxes, subsidies, and quantitative restrictions) is the optimal policy. It follows, therefore, that free trade is superior to no trade.

It has also been argued recently (Kemp, 1962), that, even in the case where there is monopoly power in trade, so that both no trade and free trade are suboptimal policies, it is possible to demonstrate that free trade is superior to no trade.

What of the case where the country has no monopoly power in trade but has a non-economic objective which consists in requiring production to be maintained at a certain level in a specific activity? In the standard, two-commodity case, this type of objective can be treated as requiring production to be necessarily at a particular position on the production-possibility frontier—as has been done by earlier writers, such as Corden (1957) and Johnson (1965). Can we still rank trade as superior to autarky in this case? In the following analysis, we distinguish between two sets of possible trade policies: (1) trade with consumption at international prices and (2) trade with tariffs and (trade) subsidies.

\* The problems analyzed in this paper arose from a stimulating question of my student, Harriet Zellner, when we were discussing my paper "The Gains from Trade Once Again" (forthcoming), in the International Economics Workshop Seminar at Columbia University.

### I. SUPERIORITY OF TRADE (AND CONSUMPTION AT INTERNATIONAL PRICES) OVER NO TRADE

It can be shown quite readily that the stated non-economic objective can be reached at lower cost under a policy of trade (and consumption at international prices) than under autarky or no trade. Thus, even in the case of non-economic objectives of this specific variety, trade continues to be superior to no trade.

Consider two alternative cases: (1) where the desired production bundle is different from the self-sufficiency bundle under any given income distribution, and (2) where the desired bundle happens to coincide with the self-sufficiency bundle.

In the former case, analyzed with the aid of Figure 1a, it will be necessary to adopt a tax-cum-subsidy-on-production policy to shift production under autarky to the desired bundle  $P^*$ . Assume that the commodity price ratio  $P_s$  then faces the consumers, and the welfare level resulting is at  $U_{NT}$ . Now, there are three alternative positions for the given trade price ratio, which must pass through  $P^*$ , relative to  $P_s$ . If it happens to coincide with it, then equilibrium will again take the economy to welfare level at  $U_{NT}$ , and there will be de facto autarky. This is the borderline case. On the other hand, if the foreign price ratio is at  $P_F^1$  or  $P_F^2$ , the two remaining possibilities, the new welfare level can only be at a higher level than at  $U_{NT}$  (for the social indifference curves cannot intersect).

In the other case, where the desired production bundle happens to coincide with that under autarky, a similar conclusion

holds. This case is analyzed with the aid of Figure 1b, where autarky or no trade leads to production at  $P^*$  and to welfare level  $U_{NT}$ . Maintaining production at  $P^*$  with the aid of an appropriate tax-cum-subsidy-on-production policy under a situation of trade at international prices, the economy could achieve welfare level at  $U^1_{FT}$  or at  $U^2_{FT}$ . Alternatively, there would be the third borderline case where the foreign price ratio happens to coincide with the autarkic price ratio  $P_s$ , in which case trade will not take place even though the trade opportunity exists.

Thus, the analysis shows that trade (and consumption at international prices) will be a superior policy to no trade even when there is a non-economic objective with respect to the production bundle.<sup>1</sup>

In fact, this proposition is readily understood when it is realized that, under the assumptions made, free trade is the optimal policy if there is no additional constraint on

subsidy-on-production policy which will get to the desired bundle of production without imposing any other (consumption) cost than that which is implicit in the shift to an "inefficient" production bundle itself. Thus, for example, as Corden (1957) has shown, a tariff imposed with a view to shifting the production bundle to  $P^*$  (when the production of importables desired is higher than

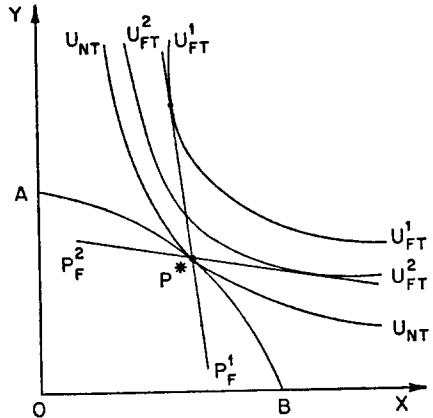


FIG. 1b

under free trade) will be inefficient relative to a production tax-cum-subsidy policy which will permit consumption to be undertaken at international prices.

Thus, we can conclude this section as follows: (1) Free trade is the optimal policy in the absence of a non-economic objective relating to the production bundle; (2) if there is a constraint in the form of a desired production bundle, a production tax-cum-subsidy policy, in conjunction with trade (and consumption at international prices), will be the second-best optimal policy; and therefore (3) when there is such an additional constraint on production, trade (and consumption at international prices) will be superior to no trade (which will be a sub-optimal policy).

II. TRADE WITH TARIFF AND SUBSIDY VERSUS NO TRADE

What happens, however, if we assume that the stated non-economic objective of

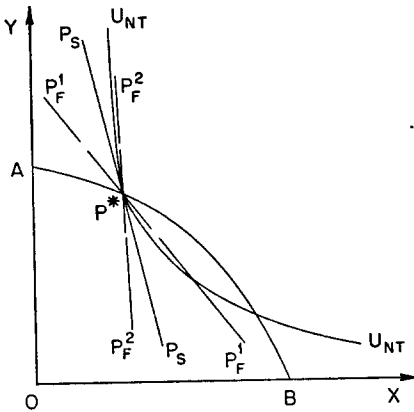


FIG. 1a

production. On the other hand, shifting production to a specific bundle other than the free-trade bundle imposes a cost that can be minimized by adopting a tax-cum-

<sup>1</sup> Note the similarity of this conclusion with that reached by Haberler (1950) for the case of factor immobility. This is not surprising as, in the factor-immobility situation, the production bundle is fixed in consequence, whereas in the present case it is fixed directly as a non-economic objective.

achieving a production bundle different from the free-trade bundle is to be reached, *not* by a second-best production tax-cum-subsidy scheme combined with trade (and consumption at international prices), but by a suboptimal trade policy involving the use of trade tariffs and subsidies? Is such a policy still superior to an autarkic, no-trade policy?

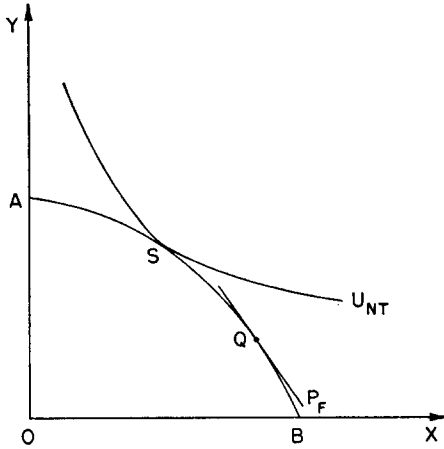


FIG. 2

The answer to this question depends on where the required production bundle is relative to the free-trade and no-trade bundles. In Figure 2, three relevant possibilities are distinguished, based on the free-trade production bundle  $Q$  and the no-trade bundle  $S$ . These three possibilities are that the required production bundle will lie in the ranges  $AS$  (excluding  $S$ ),  $SQ$ , and  $QB$  (excluding  $Q$ ).

First, in the range  $SQ$ , it can be shown that a "tariff-restricted" trade policy will be superior to a no-trade policy for achieving the required production objective.<sup>2</sup> Second, if, however, the required bundle is in the range  $QB$  (excluding  $Q$ ), then it would re-

<sup>2</sup> This argument excludes the two borderline cases, where the objective is to produce at  $Q$  or at  $S$ . Where  $Q$  is the objective, the free-trade policy, which is the first-best optimal policy, will naturally be superior to an autarkic policy of reaching  $Q$ . Where the objective instead is to reach  $S$ , the autarkic policy will become equivalent to the tariff policy, since the latter, in any case, will have to be prohibitive.

quire a trade subsidy policy, in a trade situation, to achieve it; and it can be shown that, unlike the preceding case, such a trade (subsidy) policy is *not* necessarily superior to no trade (that is, to an autarkic method of reaching the stated production objective). And, finally, in the range  $AS$  (excluding  $S$ ), the trade policy required will involve an export subsidy (on the export of commodity  $Y$  now) or an equivalent import subsidy (on commodity  $X$  now), and once again it cannot be shown that such a trade policy is necessarily superior to an autarkic way of achieving the production objective. Thus, while "tariff-restricted" trade can be shown to be superior to no trade, even when there is a non-economic objective relating to the desired production bundle—as this implicitly involves the location of the required production bundle within the range  $SQ$ —this is *not* the case with "trade-subsidy-assisted" trade vis-à-vis autarkic achievement of the required production objective, as such a comparison implicitly involves the loca-

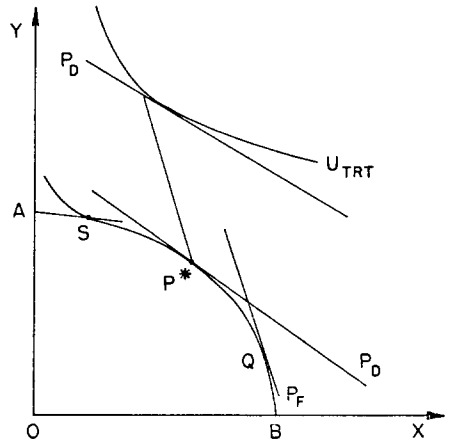


FIG. 3a

tion of the required production bundle on the range  $AS$  or  $QB$ . These propositions are demonstrated readily below.

In Figure 3a it is shown that, if the desired production bundle is at  $P^*$  which lies in the range  $SQ$ , and the foreign price ratio given to the economy is  $P_F$  and the tariff-inclusive domestic price ratio is  $P_D$ , then the utility level reached under this tariff-re-

stricted policy will be indicated by the social welfare curve  $U_{TRT}$ . It is then easy to see that the social welfare curve going through  $P^*$ , which will be the level attained under autarky by a suitable tax-cum-subsidy policy on consumption, must necessarily be inferior to  $U_{TRT}$ . Hence, we have demonstrated that the utility level achieved by a policy of tariff-restricted trade will be higher than that under an autarkic policy, when the production bundle desired lies in the range  $SQ$ .

In Figure 3b we examine the case where the desired production bundle  $P^*$  is in the range  $BQ$ . In this case, a suitable subsidy on the export of  $X$  (for import of  $Y$ ) will bring production to the desired level, with domestic price ratio at  $P_D$  and the foreign price ratio at  $P_F$ . The utility level reached will be indicated by the social indifference curve  $U_{TST}$ . On the other hand, in Figure 3b we have shown the case that the indifference curve passing through  $P^*$ , which will indicate the welfare level under an autarkic

been identical. Hence, we cannot establish that a trade-subsidy-assisted trade policy is necessarily superior to an autarkic policy for achieving a stated production objective when the required production bundle lies in the range  $BQ$ .

Finally, in Figure 3c, we examine the case where the required production bundle is in the range  $SA$ . In the diagram,  $P^*$  is this

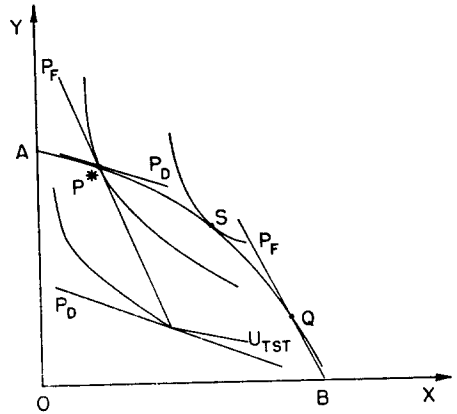


FIG. 3c

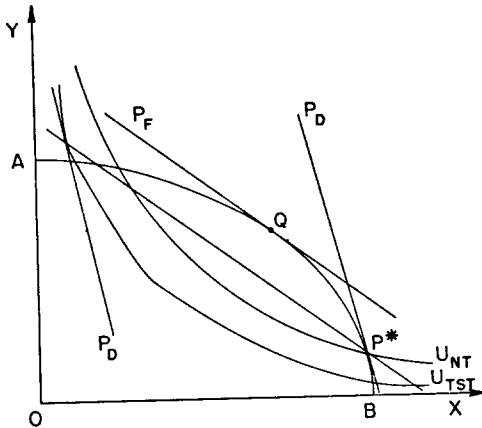


FIG. 3b

policy, will show an improvement ( $U_{NT} > U_{TST}$ ). Hence, this is a case where the trade-subsidy-assisted trade policy will be inferior to an autarkic policy. However, if the indifference curve  $U_{TST}$  had been drawn so as to pass above  $P^*$ , this conclusion would have been reversed; whereas if it had been drawn so as to pass through  $P^*$ , the welfare levels reached under the two policies would have

bundle, with an export subsidy now on commodity  $Y$  (or an import subsidy now on commodity  $X$ ), bringing production to the required point  $P^*$ , and utility level to  $U_{TST}$ . Assuming that the indifference curve passing through  $P^*$  is  $U_{NT}$ , we thus illustrate a case where the trade-subsidy-assisted trade policy results in lower welfare than an autarkic policy for reaching the same, required production bundle. We could equally well have illustrated a specific case where the ranking was the reverse:  $U_{TST} > U_{NT}$ . So, again, we cannot establish that a trade-subsidy-assisted trade policy is necessarily superior to an autarkic policy for achieving a stated production objective when the required production bundle lies in the range  $SA$ .<sup>3</sup>

<sup>3</sup> In fact, for the cases where a trade subsidy is required, it is possible to state the rather stronger conclusion (pointed out to be by Michael Michaely) that, where the parametric properties require that the subsidy granted to consumers under autarky exceeds the subsidy granted for export under the trade situation, autarky will be the superior policy, though no unique ranking of the two policies will be possible outside this range.

We can then conclude with the following propositions:

1. In the case where the desired production bundle can be reached by the use of a trade tariff, rather than a trade subsidy, autarky will still be an inferior policy, thus enabling us to rank in descending order the following three policies: (a) trade (and con-

sumption at international prices), (b) trade tariff, and (c) no trade or autarky.

2. Where the desired production bundle must be reached by the use of a trade subsidy, on the other hand, this strong ordering of policies will disappear, while trade (and consumption at international prices) continues naturally to be the optimal policy.

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