

## Free Trade versus Protection : Static and Dynamic Aspects

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This paper analyses whether the developing countries are pursuing an optimal foreign trade policy, given the theoretical and empirical evidence we have. The paper concludes that constraints in imposing other taxes than tariffs in many developing countries may justify having tariffs as part of an optimal taxation policy.

### I. INTRODUCTION

It is a fact that many developing countries still have a lot of protection in the foreign-trade sector. In this paper we shall consider whether this foreign-trade policy can be justified on the basis of the theoretical and empirical evidence we have. The common attitude on the part of a lot of international institution is that this protection policy can not be justified. Thus the latest report from the World Bank [17] states that

“Although gains in price and efficiency from freer international trade are still widely appreciated, developing countries are often victims of short-sighted government action. The political challenge is first to halt and then to reverse the drift towards protectionism. The ministerial meeting of GATT held in November 1982 set the stage for liberalization. Greater participation by developing countries in GATT would help strengthen its role as the most appropriate forum for continued negotiations to reduce trade barriers.”

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Also, economic science seems to be largely in agreement with this free-trade view. Thus, since the establishment of economic science two centuries ago, one of the main conclusions offered by the economic theory for the guidance of the economic policy-maker has been that free trade is on the whole economically more beneficial than protection. Nevertheless, all economists have not always agreed with this conclusion because of a lot of factors outside the original perfect competitive trade models, such as externalities, factor price differentials, and dynamic factors. Thus, as our science and economies developed, the views on what may be an optimal trade policy, not least for developing countries, have also changed.

It may, therefore, be of interest to see how our science today may view the issue of optimal trade policy for developing countries.

In doing so I shall also try to point out some shortcomings of the present trade theory, especially as applied to developing countries, and indicate some possible paths for future research. In my review of the theory of trade and resource allocation, it should be kept in mind that this theory has had a longer tradition, and is more established, than the theory of trade and growth. My presentation will reflect this.

## II. RESOURCE ALLOCATION ASPECTS OF FREE TRADE VERSUS PROTECTION

A well-known conclusion in the static theory of international trade is that free trade is an optimal policy for a country unable to influence the international terms of trade. However, this assumes that lump-sum taxes and transfers are possible or that all commodities can be taxed at any desired rates. If such a taxation policy is not possible, tariffs may be part of an optimal tax policy. Estimating the static costs of protection is the subject-matter of a main part of this section of the paper, which begins by following to a large extent early works by Corden [5] and Johnson [8]. We then proceed to incorporate the development in the theory of optimal taxation into their works. Finally, we draw on recent works by A. O. Krueger *et al.* [9; 10; 11] on the impact of a more free trade on income distribution and employment in developing countries.

The cost of protection to a country can be conceived of as comprising two main elements: (i) the gain in real income and welfare that could be obtained through abandoning of protection in favour of unilateral free trade, and (ii) any additional gain in real income that might be achieved through the use of the willingness of a country to abandon protection for obtaining tariff concessions from the rest of the world. This second element might be quite important for the developing countries in their trade relationships with developed countries because of the important part of their trade with those countries. Nevertheless, this last aspect of gain

from trade will be left out of account in the following discussion on the ground that it depends on concessions that can only be obtained in tariff bargaining, which cannot be analysed by traditional economic theory.

Introduction of free trade in a country under protection will obviously entail a re-allocation of resources among industries, changes in production and consumption patterns, along with appropriate changes in domestic product price and factor price, and in the pattern of international trade. The cost of protection to a country can be measured in terms of the goods that could be extracted from the economy in the free-trade situation without making the country worse off than it was under protection. Such a measure assumes that the country's welfare can be considered a unit, which in turn implies either that internal income distribution can be ignored or that the country implements a definite policy regarding it — perhaps a doubtful assumption in the case of many developing countries. In the later part of this section I shall be considering some of the implications of relaxing this assumption. The effects of adopting free trade and the problems of measuring the resulting gains are illustrated for the standard two-good general-equilibrium model of international trade in Figure 1, where  $T T'$  is the country's transformation curve between goods A and B, and



quantities of importable goods are measured along the X-axis and the price of imports in terms of exports is measured along the Y-axis.

Units of quantity of imports are chosen so that the domestic market price including the tariff ( $Op'$ ) is unity. Thus, the quantity and value (including tariffs) are equal and the excess ( $pp'$ ) of the domestic prices. ( $Op'$ ) over foreign price ( $Op$ ) represents the proportion  $\tau$  by which free trade will reduce the domestic price. If we denote the tariff rate by  $\tau$ ,  $\tau$  equals  $t/1+t$ . In the figure,  $dd'$  is the constant utility (or compensated) demand curve for the utility level reached with the tariff, and  $ss'$  is the general-equilibrium supply curve (expressed as a relation between relative price of importables and the quantity of them produced domestically along the transformation curve). For convenience, these curves are drawn as straight lines.

With the tariff, the consumption is  $OC$ , domestic production  $OP$  and imports  $PC$ .  $EGF$  is the consumption cost of protection corresponding to the distance  $ML$  in Figure 1, and  $ADN$  the production cost of protection corresponding to the distance  $LZ$ . The consumption and production costs of protection,  $EGF$  and  $ADN$ , can be estimated as  $\frac{1}{2}\tau dC$  and  $\frac{1}{2}\tau dP$ , respectively, where  $dC$  is the increase in domestic consumption compensated and  $dP$  the decrease in domestic production resulting from tariff elimination. Since by choice of units  $p' = 1$ , the total cost of protection is

$$\frac{1}{2}\tau (dP + dC) = \frac{1}{2}\tau^2 \frac{d}{dp'} (P-C) = \frac{1}{2}\tau^2 \eta V,$$

where  $\tau$  is the proportion of tariff protection in the final domestic price  $p'$ ,  $C$  and  $P$  are the quantities initially consumed and produced domestically,  $V = p' (C-P)$  is the initial domestic market value of import and  $\eta = - \frac{p'}{C-P} \frac{d}{dp'} (C-P)$  is the compensated elasticity of demand for imports. For the purposes of the subsequent analysis it will be desirable to define  $V$  as a proportion of GNP at market prices which can easily be done by redefining the costs as proportion of GNP.

On the basis of the  $\frac{1}{2}\tau^2 \eta V$  arrived at above, we will make some rough estimates of the costs of protection for a country. Unless the compensated elasticity of demand for imports is very high, the cost calculation is bound to turn out small because it involves multiplying the elasticity by half the product of three fractions, each of which is likely to be substantially below  $\frac{1}{2}$ . For example, suppose the tariff rate is 33 1/3 percent ( $\tau = 1/4$ ), the import share 25 percent and the compensated elasticity demand for imports 2. Then the costs would be

$$\frac{1}{2} \cdot \left(\frac{1}{4}\right)^2 \cdot 2 \cdot \frac{1}{4} = \frac{1}{64} = 0.016$$

Thus the cost of protection would amount to about 1.6 percent of the GNP. The multi-good case is considerably more complicated and has been dealt with by, for example, Johnson [8] and Leamer and Stern [12], and will not be treated explicitly here. However, in this case also it can be shown that the cost of protection is very small.

In the analysis above we assumed a perfect competitive international trade model without any kind of distortions in the product and/or factor market. However, when distortions exist – e.g. we have external economies or some kind of factor price differentials – which give rise to divergences between market prices and opportunity costs, trade intervention is not the optimal policy. Thus, in an economy with domestic distortions of any kind, trade protection still represents a cost to the economy. In such an economy, policy intervention should instead take place at the exact point at which distortion takes place, and should be equal to the degree of distortion in order to offset the distortion completely. This is the general rule for optimal policy intervention.<sup>1</sup>

Since trade intervention is not a first-best policy in the case of domestic distortions, the conclusions concerning the magnitude of the static costs of protection in the case of perfect competitive markets do not have to be significantly altered for the case of domestic distortions in the factor and/or product market.

The trade models we have been dealing with have implicitly assumed that lump-sum taxes and transfers are possible. However, it may well be that such policy is not feasible. For example, in the case of Pakistan tariffs are the source of about 50 percent of government revenue. If all tariffs in Pakistan were abolished, it might be very difficult to find alternative sources of government revenues for an amount corresponding to that lost due to the abolition of the tariffs. This means that if important goals of government consumption and income distribution are to be achieved, one will have to have a distortionary taxation, e.g. tariffs.

This kind of tariff problems has only to a small extent been dealt with in the literature on taxation,<sup>2</sup> and I feel that such problems may become an important field of research in the theory of international trade in the future. What can be said at this stage, however, is that living in a second-best world with tariffs will not be very costly as compared to living in a first-best world without tariffs as long as the tariffs are not very high.

Also, it is clear from Figure 2 that in the case where one can impose indirect taxes there will be no place for tariffs because a certain amount of tax revenue raised through indirect taxes will cause less deadweight loss than tariffs. However, in the

<sup>1</sup> For surveys of the literature on domestic distortions, see Chacholiades [4, Chapter 20] and Magee [13]. For an evaluation of models with factor market distortions and their relevance for developing countries, see Fløystad [7].

<sup>2</sup> One of the very few articles in this area is Broadway *et al.* [2].

case in which indirect taxes can not be imposed on all commodities, tariffs may be part of an optimal taxation policy. To see this, recall that the deadweight loss in the case of tariffs was estimated to be equal to  $\frac{1}{2}\tau\eta V$ . In the case of indirect taxes, the deadweight loss will be

$$\frac{1}{2}\tau dC = -\frac{1}{2}\tau \frac{dC}{dp'} = \frac{1}{2}\tau^2 \epsilon C$$

where  $\tau$  is the proportion of indirect taxes in the final domestic price  $p'$ , which is assumed to be equal to unity,  $C$  the quantity initially consumed, and  $\epsilon = -\frac{P'}{C} \frac{dC}{dp}$  is the elasticity of demand for consumption goods. We will now estimate the optimal tariffs and indirect taxes in the case of two commodities in which, for institutional or political reasons, indirect taxes can only be imposed on one of the commodities. It can easily be shown that the results would also apply to a more general case.

Suppose now that a fixed amount of revenue  $T$  has to be raised through distortionary taxes like tariffs and indirect taxes. The problem of the public sector is to raise this revenue with a minimum of deadweight loss. The problem in terms of the Langrangian becomes

$$L = \frac{1}{2} \tau^2 \eta V + \frac{1}{2} t^2 \epsilon C - \lambda (\tau V + tC - T)$$

Minimizing the above function with respect to  $\tau$  and  $t$  gives

$$\tau\eta - \lambda V = 0$$

$$t\epsilon C - \lambda C = 0$$

$$\tau = \frac{\lambda}{\eta} \text{ and } t = \frac{\lambda}{\epsilon}$$

These formulas of optimal tariffs and optimal indirect taxation are similar to the inverse elasticity formulas in the theory on optimal taxation and imply, of course, that optimal tariffs will be positive (except when the import demand elasticity is infinitely elastic) in the case where indirect taxes can not be imposed on all commodities.

In discussing the static costs of protection, it was assumed that the internal income distribution problems could be ignored or that the country implemented a definite policy regarding it, and that the resources of the country were fully utilized. However, these assumptions can hardly be said to be very realistic in relation to the situation in many developing countries. In these countries, labour may be unemployed or underutilized, and it is frequently a definite goal that the distribution

of income should be made more equal and more employment opportunities created. Then in what way may free trade influence employment and distribution of income? If protection leads to more employment and a more equal distribution of income, then I suppose it could be argued that the static costs of protection just estimated would be outweighed by the benefits of protection. On the other hand, if free trade leads to more employment and more equal distribution of income, then I suppose, this could be considered a further argument in favour of free trade.

According to the well-known theorem established by Heckscher and Ohlin, a country will export the commodities which are intensive in the use of the country's abundant resources. Since labour, and especially unskilled labour, may be supposed to be abundant in many developing countries, one should expect that free trade would increase the demand for labour, and also its price (wage).<sup>3</sup>

In recent years some interesting research has been undertaken by the National Bureau of Economic Research in New York, conducted by Anne O. Krueger, investigating into these matters. A main purpose of this research has been to investigate the relationship between choice of trade strategy, domestic factor markets, and the rate of growth of non-agricultural employment in developing countries. In this research it was generally confirmed, as shown in Table 1, that the average labour input per unit of domestic value added (DVA) was much higher in Heckscher, Ohlin and Samuelson (HOS) exportables than in the import-competing HOS activities. In that table, estimates are given of labour input per unit of DVA in exportable trade categories expressed as a ratio of labour per unit of DVA in HOS import-competing industries. Columns 3 and 4 give comparable estimates, again as a ratio to the figure for import-competing industries, for not-primary-commodity based (not PCB) HOS exportables and PCB-HOS exportables, separately.<sup>4</sup> The last column gives estimates of the labour coefficients for natural-resource-based (NRB) exportables for those countries for which such estimates are available.

As shown in Table 1, total HOS exportables for all countries, except Chile, had labour coefficients per DVA that exceeded those in the import-competing sectors. The difference between labour coefficients for total HOS exportables and HOS import-competing industries are sizable for many of the countries, exceeding a factor of two for Brazil, Indonesia and Thailand. Also, NRB exports turned out to

<sup>3</sup> However, in an economy with distortions in the factor market it is not certain that the shift in the production of a commodity which is intensive in the use of the abundant resources will be positive as its relative price increases owing to introduction of free trade. See Bhagwati and Srinivasan [1].

<sup>4</sup> HOS industries are manufacturing industries. The classification into exportable and import-competing industries for a given country was, in the project, made by the author of the country study, based on the criteria spelled out in [10, Chapter 1].



Table 1

*Direct Labour Coefficients per Unit of DVA (Ratio of Coefficients in Designated Trade Category to Coefficients in HOS Import-Competing Activities)*

Country	Period	HOS Exports			NRB Exports
		Manufactures	PCB	Total	
		Not PCB	Manufactures		
(1)	(2)	(3)	(4)		(5)
Argentina	1963	n.a.	n.a.	1.24	n.a.
	1973	n.a.	n.a.	1.30	n.a.
Brazil	1970	n.a.	n.a.	2.07	2.02
Chile	1966-68	1.50	n.a.	.80	n.a.
Colombia	1973	n.a.	n.a.	1.88	n.a.
Indonesia	1971	1.58	n.a.	2.09	n.a.
Ivory Coast					
Modern sector	1972	n.a.	n.a.	1.35	2.28
Total		n.a.	n.a.	1.16	9.04
Pakistan	1969-70	1.23	1.69	1.42	n.a.
Thailand	1973	3.20	1.58	2.07	n.a.
Tunisia	1972	2.08	.79	1.28	3.31
Uruguay	1968	n.a.	n.a.	1.53	1.45

Source: Anne O. Krueger [9, Table 5.1].

Notes: Ivory Coast: Modern sector ratios are relative to modern sector employment in modern sector HOS importables; total employment (including artisans) is relative to employment in all HOS importables.

Tunisia: Crude and refined oil are excluded from the individual exportable estimates; manufactured consumer goods were used for protected imports, import-competing sectors exclude those with negative IVA.

Uruguay: Data are for total workers per DVA (Benson and Caumont 1981, Table 11.12).

be more labour-using per unit of DVA than were NRB import-competing industries.<sup>5</sup> These conclusions hold regardless of the impact of policy measures and factor market distortions upon factor proportions and the commodity composition of trade. Of course, these statistics, as pointed out by Anne O. Krueger, provide only a glimpse of possible orders of magnitude of the potential impact of a shift in trade strategy on employment. They are nonetheless suggestive that a shift towards an outward-oriented trade strategy would generally be consistent with the goal of increasing employment opportunities and, thus, with the goal of a more equal distribution of income.

The NBER project also estimated separate coefficients for skilled, unskilled and managerial inputs as shown in Table 2.

Table 2

*Ratio of Direct Coefficients of HOS Exportable to HOS Import-Competing Industries per DVA, Managerial, Skilled, and Unskilled Labour*

Country	Period	Unskilled	Skilled	Managerial
Brazil	1959	n.a.	.954	n.a.
	1971	n.a.	.978	n.a.
Chile	1966–68	n.a.	.842	n.a.
Colombia	1973	2.174	.519	1.231
Indonesia	1971	2.273	.810	1.100
Ivory Coast	1972	1.510	.960	.835
Tunisia	1972	1.582	.810	n.a.
Uruguay	1968	1.404	.939	n.a.

Source: Anne O. Krueger [9, Table 6.1].

Notes: Colombia: Unskilled worker ratio refers to blue-collar workers.

Indonesia: "Unskilled" is sum of "male operative" and "female operative" man-days.

Ivory Coast: Modern sector HOS coefficients from Monson 1981, Table 6.13: averages for exportables and import-competing industries were used.

Uruguay: Skilled workers are "white-collar" workers.

<sup>5</sup> Note that Table 1 only gives direct labour coefficients per unit of DVA. However, tables showing direct-plus-home-goods-indirect-labour coefficients would have shown very similar results. See Krueger [9, Table 5.3].

There appear to be large and systematic differences between skill coefficients for HOS exportables and those for HOS import-competing industries. Thus, in each case for which breakdown is available, the unskilled labour coefficient for exportables exceeds that for import-competing industries. Likewise, in all cases the skilled labour coefficient in the exportable industries is less than that in the import-competing industries.

However, trade strategy is only one factor deciding the demand for labour in a country. Distortions in the wage-rental ratios may be equally important. Thus, exchange rate overvaluation, coupled with the reluctance of policy-makers to impose duties on imports of capital goods, has contributed to low capital costs under import substitution regimes. In the NBER project, data have been available for estimating the order of magnitude for countries like Chile, Pakistan and Tunisia. In all cases, estimates of the order of magnitude of subsidy from trade regime implicit in the pricing of capital goods were in the range of 30–40 percent. In addition, provision of some low-interest loans, not least to the modern sector, has been a feature of almost all developing countries. A main result of this policy is that demand for capital is encouraged, and the demand for labour discouraged, making the demand for labour less and the demand for capital greater than the corresponding demands under a more competitive market system.<sup>6</sup>

### III. CONCLUSIONS

Based on traditional welfare economics, we have shown that the cost of protection is quite small. Moreover, a main conclusion of the research undertaken by the NBER seems to be that, despite factor market distortions, developing countries' manufacturing exports tend to exhibit a factor intensity consistent with their factor endowment, and that the scope for further increasing the demand for labour through a free-trade policy and removing domestic factor market distortions is sizable. Thus, there does not seem to be any conflict between the objectives of pursuing a first-best policy of free trade and increasing the domestic demand for labour, especially unskilled labour.

However, many developing countries may be facing constraints in imposing taxes other than tariffs for political and institutional reasons. Constraints of this kind may be the only reason why an optimal trade policy of a developing country may imply having tariffs.

<sup>6</sup>For estimates of the increase in the demand for labour due to removal of factor market intervention and trade distortion, see Anne O. Krueger [9].

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