The Philippine Review of Business and Economics Vol. XV No. 2 June 1978

EFFECTIVE PROTECTION AND THE PROCESSING OF PRIMARY PRODUCTS

By

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Many less-developed countries (LDCs) have felt the need to adopt special measures to promote the domestic processing of primary products that they are currently exporting. These measures may include taxing or even banning the export of the primary product. Presumably the rationale for such policies is that a true comparative advantage in the processing activity exists, but is for some reason not indicated by market forces. The source of the market failure is, however, often obscured.

There are a number of possibilities of market failure. There might exist factor price distortion such that wage rates for comparable skills are higher in the processing than in the primary activity. This would permit the primary product to be exported at an exchange rate in which the processing activity might not be profitable even in the domestic market. Or, labor may be generally in surplus supply; and the opportunities to create employment may be greater in processing where the resources complementary to labor are more easily augmentable than in the primary activity where there is a natural resource constraint.

Again, there may be terms of trade disadvantage in exporting the primary commodity in the absence of an optimal export tax. The presumption is that a variety of processed articles would have higher elasticities of demand than the single primary commodity. The latter, then, should be taxed so as to restrict optimally its supply on the world market.[1]

It is, of course, well known that tariff structures in more-developed countries (MDCs) generally have the characteristic of

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[1]The optimal ad valorem tax rate would be 1/e, where e is the world elasticity of demand.

"cascading" rates — highest at the finishing stages of production a lowest at the primary stages. This creates a bias against the purch of processed products in favor of primary commodities. If, f example, MDCs allow copra to enter free of duty while coconut oil subject to an import tax, what might be a natural comparati advantage of LDCs in coconut oil would tend to be nullified, keepi them dependent on the export of copra.

It should be noted in this connection that even a modest nomi rate of protection can mean very substantial effective protection the processing activity when the primary product is imported fre duty. In these circumstances, a ten per cent nominal rate on t processed product, for example, would mean a 25 per cent effecti rate if value added in processing (at world prices) represented 40 p cent of the total value (at world prices).

This kind of bias in the protection structures of MDCs c therefore, represent a serious obstacle to the development manufactured exports in the LDCs. Moreover, it is a kind of bias t cannot be directly countered by the LDCs' own policies. It must attacked, rather, through political negotiation and bargaining.

All of the above have received some attention as explanations the failure of market forces to stimulate adequately the processing primary commodities in LDCs. What has not received attenti however, is the fact that protection systems in the LDCs themsel often impose an additional penalty on the processing of prim commodities for export. Thus, protection systems in both groups countries combine to create a double-edged bias in favor continued dependence of the LDCs on primary exports.

The bias against processing of domestic commodities impo (inadvertently, no doubt) by the LDCs comes from one or both two important consequences of their protection systems. The fir the general bias against exports in favor of import substitution. W the latter is often heavily protected, exports generally have nega net effective protection. Second is the bias in favor of the use internationally traded inputs over non-traded ones that results fr the undervaluation of foreign exchange that the system of protect defends.

Some explanation is, perhaps, in order with respect to these t sources of bias. Exports are penalized in two ways by the typ protection system. First, exports suffer from the higher cost

protected inputs. Second, exports suffer from the undervaluation of foreign exchange that the system of protection of import substitutes defends. Considering only the first, we would get negative effective protection in the absence of a compensating subsidy to exports. Adding the negative effect of the second influence gives *net* effective protection, the sum of the two negative influences. Note that even if there were fully effective drawbacks of duties and taxes on protected inputs, exports would still suffer from the undervaluation of foreign exchange.

The second source of bias stems again from the escalating rate structures, this time in the LDCs. While protection is generally high for import substitutes, the materials, parts and supplies used by these industries are often subject to liberal importation at relatively low duties. When taken together with the undervaluation of foreign exchange, this means that these imported supplies are made artificially cheap — sometimes at prices below those that would prevail under free trade.

If we consider two goods, a primary commodity and the product resulting from its being processed, and if we consider that the primary commodity might be exported or not, while the processed product might be exported or substituted for imports behind protection, we have four possible combinations. In order to determine the existence and nature of the bias against the processing of domestic commodities that the protection system imposes, we can compare each combination to an import substitution industry that is processing imported inputs behind equal protection.

First, if the primary commodity is not exported, industries using it as input will be at a disadvantage *vis-a-vis* import substitution industries using imported inputs because of the undervaluation of foreign exchange. (Imported inputs are assumed to have zero or low duties in accordance with the "escalated" protection structure.) This would be true even if the processed product were also a protected import substitute. If the processed product is an export, however, there will be a double disadvantage owing to the negative protection of exporting activities. On the other hand, if the primary commodity is exported, its price also will be lower because of the undervaluation of foreign exchange, so that its processing is at a disadvantage only if, and because, it produces a product for export. These results are

summarized in Table 1 where the nature of the bias, if any, is shown in the appropriate cell.

TABLE 1

Biases Against Processing Of Domestic Commodities

		Processed Good	
		Export	Import Substitute
Primary Commodity	Export	negative protection of exports	no bias
	No Export	both biases	undervaluation of imported inputs

It is important to note that we are comparing combinations of primary production plus processing with protected manufacturing that uses imported inputs. Often processing is judged in competition with production of the primary commodity. In the Philippines, for example, it was common in the past to compare the profitability of logging with that of plywood manufacture. This is simply not relevant. The logging activity will be undertaken in any case, whether the logs are exported as is or as plywood. It is not reasonable to suppose, in the absence of mistaken policies, that allocating resources to plywood means taking them away from logging. Rather, the resources will be diverted from the economy as a whole. And generally we can expect supply in the primary industry to be relatively inelastic, so that there would be little effect there. The real choice is between allocating resources to the processing of domestic materials for export and allocating them to protected manufacturing based on artificially cheapened foreign materials.[2]

Perhaps the most important case in Table 1 is that in the upper left corner, where both primary and processed products would be exported. It might, therefore, prove interesting to look at this case more closely. I propose to do so within a framework of analysis patterned after that of Hollis Chenery in his classic article "Comparative Advantage and Development Policy" (*American Economic Review*, March 1961). The case considered here is based on an actual case in the Philippines, though the numbers have been selected for convenience in arithmetic.

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[2] On this point I am indebted to Victor B. Valdepeñas. See his *International Trade and Investment Allocation in Philippine Wood-Based Industries*, unpublished M.A. Thesis, School of Economics, University of the Philippines, 19

Table 2 shows input-output relations for three production activities, two export activities, and two import activities. For example, production activity 3 produces (+) 1.0 unit of plywood and uses (−) 1.0 unit of logs and 1.2 units of primary inputs (labour and other inputs). Export activity 3 uses (−) 1.0 unit of plywood to produce (+) 2.0 units of foreign exchange. Import activity 1 produces (+) 1.0 unit of autos and uses (−) 11.0 units of foreign exchange.

The rate of logging is restricted by the need to maintain the forests. It is assumed that this rate of logging will permit log exports just sufficient to earn the foreign exchange needed for the import of CKDs (complete knocked-down assemblies) to meet the domestic demand for autos. If, however, autos were to be imported instead of CKDs, more foreign exchange would be needed. Note that export earnings can be expanded only by diverting logs to plywood manufacture for export. A unit of logs earns twice as much foreign exchange in the form of plywood, but the cost of primary inputs required to convert logs to plywood is such that it does not pay to do so at an exchange rate (price of foreign exchange) of 1.0. The exchange rate must move at least to 1.1 before plywood exports become profitable. ("Profitable" here means earning at least the necessary return to capital.)

TABLE 2

Plywood versus Automobile Assembly

	ACTIVITIES							PRICES			
	Production			Export		Import					
	1	3	4	3	4	1	2	Disequilibrium	Imp. Sub.	Export Exp. I*	Export Exp. II**
1 Autos	+10					+10		11.0	13.2	12.1	13.2
2 CKDs	−1.0						+1.0	10.0	10.0	11.0	12.0
3 Plywood		+1.0		−1.0				2.2	2.2	2.2	2.4
4 Logs		−1.0	+1.0		−1.0			1.0	1.0	1.0	1.2
5 Foreign Exchange				+2.0	+1.0	−11.0	−10.0	1.0	1.0	1.1	1.2
Labour	−2.0	−0.6	−0.5					1.0	1.0	1.0	1.0
Other Inputs	−1.0	−0.6	−0.5					1.0	1.0	1.0	1.0
Profitability											
Disequilibrium	−2.0	0	0	−0.2	0	0	0				
Imp. Substitution	+0.2	0	0	−0.2	0	0	0				
Exp. Expansion I	−1.9	0	0	0	0	0	0				
Exp. Expansion II	−1.8	0	+0.2	0	0	0	0				

* 9% tax on log exports

** no tax on exports

It is assumed initially that the official exchange rate is 1.0. At this rate autos can be imported at a price of 11.0 (11.0 units of foreign exchange multiplied by its price). Likewise, CKDs can be imported at a price of 10.0. Domestic production of autos would be at a unit cost of 13.0; hence, their domestic assembly is unprofitable. The prices of autos and CKDs will be determined, then, by their import prices. The prices of logs and plywood, in contrast, will be determined by the

higher costs of production (including necessary return to capital given the degree of monopoly) or net export price. The prices of labour and other inputs can each be set at 1.0 by choosing appropriate units. The prices of logs and plywood can then be calculated as 1.0 and 2.2, respectively.

All of these prices are shown in the column headed "Disequilibrium." Since only logs can profitably be exported at these prices foreign exchange earnings will fall short of the amount required by auto imports. Hence, there is balance of payments disequilibrium.

Two ways of meeting this problem are considered. The first is to reduce the demand for foreign exchange by protecting an auto assembly industry — import substitution. The other is to increase the supply of foreign exchange by promoting plywood exports — export expansion.

To protect auto assembly a 20 per cent tariff is imposed on autos (CKDs remaining duty free). The price of autos is now import price plus tariff or 13.2. Domestic production is now profitable. (Compare the profitability figures in column 1 under the heading, *Production*.) Indeed, monopoly profits are indicated. Domestic competition could drive the price down to 13.0, leaving a portion of the tariff redundant. Nothing else has changed, except that the balance of payments is now in equilibrium — log exports by assumption being just sufficient to meet the foreign exchange requirements of importing CKDs.

Alternatively, to increase export earnings so as to be able to continue duty-free imports of autos, the price of foreign exchange could be raised to 1.1. Now a unit of plywood earns 2.2 in domestic currency, rather than 2.0; and this is just sufficient to induce plywood exports. (Compare the profitability figures for Export Activity 3.) Note also that log exports now earn rents. These could be taxed to prevent the domestic cost of logs from rising. Under the assumption of such a tax, prices would be as shown in column Export Expansion I. If log exports are not taxed, the exchange rate would have to rise to 1.2, though a subsidy to plywood manufacture is an alternative. Prices under the assumption of no tax or subsidy are shown in column Export Expansion II.

What conclusions can we draw from this? First, recall that "escalated" tariff structures in rich countries can inhibit the development in poor countries of export industries based on the processing of their primary products. We now see how tariff

structures in the poor countries can be an additional inhibiting factor. The protection of import substitution can defend an exchange rate that undervalues foreign exchange to the extent that naturally comparatively advantageous exports, such as plywood in the present case, cannot develop. The country remains dependent on the export of logs.

Moreover, the effect of an escalated tariff structure in creating exaggerated effective protection rates is again important in the LDC case. If, for example, the 20 per cent tariff were imposed on both imports, autos would not be produced domestically, as the reader could verify. It is the combination of a seemingly modest tariff on autos with duty-free imports of CKDs at an undervaluation of foreign exchange that makes import substitution profitable here. With uniform tariffs the rate would have to be at least 200 per cent to induce import substitution. I wonder how many policy makers, who would balk at giving an industry 200 per cent protection, fail to realise that this is in effect what they might be doing when, as in the present case, they impose a 20 per cent duty on the product and allow the inputs to be imported free of duty.

What is the effective rate of protection for auto assembly in the case described above? As usually calculated it is 220 per cent — the percentage difference between value added under protection and value added at world prices (3.2 is 220 per cent greater than 1.0). But world prices under protection are not the same as equilibrium prices under free trade, when these are measured in domestic currency. So we could calculate "net effective protection" which takes into account the exchange rate adjustment. We would compare the prices of autos and CKDs not in the first and second price columns, but in the second and third or second and fourth. Net effective protection with the export tax on logs, then, would be about 191 per cent; while without the export tax it would be about 167 per cent. Net effective protection is less than effective protection because a portion of the latter is offset by the undervaluation of foreign exchange.

The key question is, however, which is the better social choice: import substitution in auto assembly or expansion of plywood manufacture for export? Each auto acquired via import substitution costs 13.0 in primary inputs — 10.0 to produce ten units of logs for export so as to be able to import one CKD plus 3.0 to assemble it. If, instead, autos are imported, one out of ten units of logs previously exported will have to go into plywood manufacture (since foreign

exchange requirements have risen by ten per cent). So the aver primary input cost per car will be 11.2 in this case — 10.0 to prod ten units of logs plus 1.2 to convert one of them into plywood.

The better social choice, then, is plywood. This conclusion wo be further strengthened if we took into account the terms of tr advantage of exporting fewer logs and if we introduced a shad price for labour. The former depends, of course, on a lower wo elasticity of demand for logs than for plywood. With respect to t latter, I am assuming a dualistic wage structure with rates comparable skills higher in manufacturing than in primary activit like logging.

The analysis above was carried out under the assumption that t expansion of logging was limited by conservation policies. T restricted the choice to the processing of logs versus the assembly CKDs. This is a reasonable approximation to a situation where t supply of the primary commodity is relatively inelastic. If instead is relatively elastic, there is a choice also between investing in t expansion of primary production for export versus investing in processing. Here the shadow wage could be an important factor.

The example set out above is, of course, artificial in the sense th the numbers were chosen to insure the result, as well as to make t exposition simple. Nevertheless, it illustrates a real situation f many less developed countries. If auto assembly serves as a proxy f all protected import substitution, and plywood serves as a proxy f all potential exports based on the processing of domestic materia we can see from the example that the protection of the former is the expense of the latter. This does not depend on the particul numbers chosen since the undervaluation of foreign exchange th protection of import substitution defends will inevitably destroy t profitability of some comparatively advantageous manufacturing f export. This, therefore, may be an important part of the explanati of why import substituion in manufacturing behind protection h not greatly reduced the LDCs' dependence on primary exports. Th writer is convinced that this is surely the case for the Philippines.

Finally, let me address myself briefly to the question why t adverse influence of MDC protection on the LDCs' ability to expo manufactures has received attention, while the additional adver influence of the LDCs' own protection systems has not. Th imbalance is particularly evident, I think, within UNCTAD. Rec that Raul Prebisch, in his first report in 1964 as Director-General

UNCTAD,[3] strongly criticised "inward-looking industrialisation" and emphasized the importance of manufacturing for export on the part of LDCs. To implement this redirection of industrialisation policy, however, the emphasis was entirely on revision of the protection systems in MDCs — none on reform within the LDCs, themselves. This emphasis cannot be attributed, I think, to a lack of understanding of the penalty on exports that protection imposes. Rather I think it is more likely that Prebisch had in mind the difference with respect to the terms of trade between "center" and "periphery" that is implied in the alternatives of trade preferences granted by MDCs versus reduced protection in LDCs. For while the latter would help unleash their industrial export potential, for the entire LDC bloc to attempt this would surely mean terms of trade losses in the absence of simultaneous reduction of protection in MDCs. Ironically, however, the implementation of UNCTAD trade preferences benefits most those few LDCs that go ahead with the reform of their protection systems, notwithstanding this argument.

There is yet another consideration that tends to mitigate the terms of trade argument. The UNCTAD view seems to be premised too heavily on the assumption of a two-bloc world, with the implication that increased exports from LDCs must go to MDCs rather than to other LDCs. Reinforcing this has been also a lack of attention to the effect of protection in LDCs in biasing against trade with each other in favour of trade with MDCs. Since this has not been spelled out anywhere, so far as I know, I will devote a little space to it here.

Put most simply this bias results from the fact that when two countries have similar rates of tariff protection (or equivalent import restriction) they are defending similar rates of overvaluation of their currencies. (This assumes that the international trade elasticities are also similar for the two countries.) Thus they have overvalued currencies in relation to the world, but not in relation to each other. There is, therefore, no offset to the tariff in trade with each other, while the effect of the tariff is reduced by the undervaluation of foreign exchange in the case of imports from the world. This means that the world is given a competitive advantage *vis-a-vis* each in sales in the other's market.

Let me put this more precisely in a simple example. Let B represent the bloc of countries with identical levels of protection and

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[3] *Towards a New Trade Policy for Developing Countries* (New York: United Nations, 1964).

rates of overvaluation; and let A represent any member of the bl
Assume that with this protection there are still imports from t
world, though less than there would be with free trade. Price
imports in A will be equal to the world price raised by the tariff a
converted at the exchange rate. Compared to prices under free trad
import prices will be higher by "net protection" — the combin
effect of the tariff and the undervaluation of foreign exchange. Thu
if free trade prices are F, prices in A under protection will be F (1
T)(1 — U), where T is the tariff rate and U is the rat
undervaluation. Of course the protection will mean that domes
production in A will partially displace imports, but at the ne
equilibrium exporters from B to A will receive the price discount
by the tariff, or $F\ (1 + T)(1 - U)(\frac{1}{1 + T}) = F\ (1 - U)$, whi
exporters from the world to A will receive the same raised by th
overvaluation of A's currency, or $F\ (1 - U)(\frac{1}{1 - U}) = F$. Impor
into A from the world will therefore tend to displace those from
Exporters in A, on the other hand, will find their net export pri
lower than under free trade by the extent of undervaluation
foreign exchange both for sales to the world and to bloc membe
The net result for each member of adopting these comm
protectionist policies is then to reduce imports and exports generall
and to bias the source of imports toward the world, away from th
block members.

The implication is that a simultaneous reduction of protecti
among all bloc B countries would tend to remove this bias a
increase trade with each other. This would at least mitigate, then, th
terms of trade effect noted above.

My conclusion from all of the above is that, while a reduction
protection in MDCs *vis-a-vis* the manufacture of LDCs is of gre
importance, the reform of protection systems within LDCs shou
not wait for this to happen. It seems also that there is an additio
argument for accomplishing this within the framework of p
ferential trade among those LDCs that have found themselv
trapped by inward-looking industrialisation behind protection
namely the removal of an unnatural bias against trade with ea
other. There is no reason, of course, for this preferential trade to
restricted to regional groupings. And, finally, such an arrangem
might provide the LDCs with a stronger bargaining position on th
question of MDC protection.