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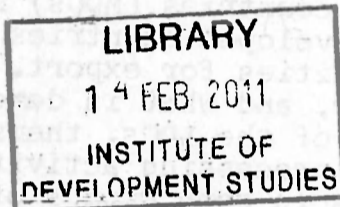
A NOTE ON PROTECTION AND THE
PROCESSING OF PRIMARY COMMODITIES

by

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Abstract

It is well known that "escalated" tariff structures
in more developed countries (MDCs) serve to inhibit the
ability of less developed countries (LDCs) to process their
own primary commodities for export. What has not received
attention, however, and what is demonstrated here, is that
tariff structures of the LDCs, themselves, may add an additional
bias against such processing activities. So reform of
protection systems in both groups of countries is important
to the success of industrialisation in LDCs. The terms of
trade implications are noted as a possible explanation of the
UNCTAD emphasis on trade preferences in MDC markets rather
than on LDC tariff reform. However, it is noted that LDC
tariff reform would tend to remove a bias against trade among
LDCs and that this mitigates the terms of trade argument.
Finally, this also provides a new argument for trade
preferences among LDCs.

A Note on Protection and the
Processing of Primary Commodities
by
John H. Power

Tariff structures in less developed countries (LDCs) and more
developed countries (MDCs) alike generally exhibit the characteristic
of "cascading" rates--highest at the finishing stages of production and
lowest at the primary stages. It has often been pointed out that the
effect of this kind of tariff structure in MDCs is to inhibit the abil-
ity of LDCs to process their own primary products for export to the
markets of the MDCs. If, for example, the latter allow copra to enter
free of duty while coconut oil is subject to an import tax, what might
be a natural comparative advantage of LDCs in the processing of copra
would tend to be nullified, keeping them dependent on the export of the
primary product. It should be noted in this connection that even a
modest nominal rate of protection can mean very substantial effective
protection of the processing activity when the primary product is im-
ported free of duty. In these circumstances a 10 per cent nominal rate
on the processed product, for example, would mean a 25 per cent effect-
ive rate if value added in processing (at world prices) represented
40 per cent of the value of the final product (at world prices).

This kind of bias in the protection structures of the MDCs
represents a serious obstacle to the development of manufactured exports
in the LDCs. What has not received attention, however, is the fact
that protection systems in the LDCs often impose an additional penalty
on the processing of primary commodities for export. Thus protection
systems in both groups of countries combine to create a double-edged
bias in favour of continued dependence of the LDCs on primary commodity
exports.

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

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 protection.

First, if the primary commodity is not exported, industries that use it as an input will be at a disadvantage vis a vis import substitution industries that use 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, however, the processed product is an export, there will be a double disadvantage owing to the negative protection of exporting activities. (Note that even if there were fully effective drawbacks of duties on protected inputs, exporting activities would still have negative net effective protection because of the undervaluation of foreign exchange.) 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 summarised 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

Perhaps the most important case is that in the upper left-hand 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 patterned after an actual case in the Philippines, though the numbers have been selected for convenience in arithmetic.

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.

Table 2
Plywood versus Automobile Assembly

	Production			Export		Import		Disequilibrium	Imp. Sub.	Export Exp. I[*]	Export Exp. II[**]
	1	3	4	3	4	1	2				
1 Autos	+1.0					+1.0		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	

[*] 2% tax on exports

[**] no tax on exports

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 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.)

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 of domestic 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 export earns 2.2 in
domestic currency, rather than 2.0; and this is just sufficient to
induce plywood exports. (Compare the profitability figures in Export
column 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 devel-
opment 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
can 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 sub-
stitution. 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 ex-
change 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 187 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 previ-
ously exported will have to go into plywood manufacture (since foreign
exchange requirements have risen by ten per cent). So the average pri-
mary input cost per car will be 11.2 in this case--10.0 to produce ten
units of logs plus 1.2 to convert one of them into plywood.

The better social choice, then, is plywood. This conclusion
would be further strengthened if we took into account the terms of
trade advantage of exporting fewer logs and if we introduced a shadow
price for labour. The former depends, of course, on a lower world
elasticity of demand for logs than for plywood. With respect to the
latter, I am assuming a dualistic wage structure with rates for compar-
able skills higher in manufacturing than in primary activities like
logging. The analysis above was carried out under the assumption that
the expansion of logging was limited by conservation policies. This
restricted the choice to the processing of logs versus the assembly of
CKDs. This is a reasonable approximation to a situation where the

supply of the primary commodity is relatively inelastic. If instead
it is relatively elastic, there is a choice also between investing in
the expansion of primary production for export versus investing in its
processing. Here the shadow wage could be an important factor.

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

Finally, let me address myself briefly to the question why
the adverse influence of MDC protection on the LDCs' ability to export
manufactures has received attention, while the additional adverse in-
fluence of the LDCs' own protection systems has not. This imbalance
is particularly evident, I think, within UNCTAD. Recall that Raul
Prebisch, in his first report in 1964 as Director-General of UNCTAD,
strongly criticised "inward-looking industrialisation" and emphasised
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 alter-
natives of trade preferences granted by MDCs versus reduced protection
in LDCs. For, while the latter would help to unleash their indust-
rial 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 implement-
ation of UNCTAD trade preferences will benefit most those few LDCs
that go ahead with the reform of their protection systems, notwith-
standing this argument.

There is yet another consideration that tends to mitigate,
I think, 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 (or equivalent import restric-
tion) protection they are defending similar rates of overvaluation of
their currencies. (This assumes that the international trade elasti-
cities are also similar for the two countries.) Thus they have over-
valued 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
rates of overvaluation; and let A represent any member of the bloc.
Assume that with this protection there are still imports from the world,
though less than there would be with free trade. Prices of imports in
A will be equal to the world price raised by the tariff and converted
at the exchange rate. Compared to prices under free trade, import prices
will be higher by "net Protection"—the combined effect of the tariff
and the undervaluation of foreign exchange. Thus if free trade prices
are F, prices under protection will be $F(1+T)(1-U)$, where T is the
tariff rate and U is the rate of undervaluation. Of course the pro-
tection will mean that domestic production in A will partially displace
imports, but at the new equilibrium exporters from B to A will receive
the price discounted by the tariff, or $F(1+T)(1-U)(\frac{1}{1+T}) = F(1-U)$,

while exporters from the world to A will receive the same raised by the overvaluation of A's currency, or $F(1-U)(\frac{1}{1-U}) = F$. Imports into A from the world will, therefore, tend to displace those from B. Exporters in A, on the other hand, will find their net export price lower than under free trade by the extent of undervaluation of foreign exchange both for sales to the world and to bloc members. The net result for each member of adopting these common protectionist policies is, then, to reduce imports and exports generally and to bias the source of imports toward the world, away from bloc members.

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

My conclusion from all of the above is that, while a reduction of protection in MDCs vis a vis the manufactures of LDCs is of great importance, the reform of protection systems within LDCs should not wait for this to happen. It seems also that there is an additional argument for accomplishing this within the framework of preferential trade among those LDCs that have found themselves trapped by inward-looking industrialisation behind protection--namely the removal of an unnatural bias against trade with each other. There is no reason, of course, for this preferential trade to be restricted to regional groupings. And, finally, such an arrangement might provide the LDCs with a stronger bargaining position on the question of MDC protection.