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Problems and Effects of a Developing Countries' Tariff Concession Round on South-South Trade

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Problems and Effects of a Developing Countries' Tariff Concession Round on South-South Trade*

Introduction

The developing countries' experiences with regional and sub-regional preferential trading arrangements are manifold but disappointing¹. Nonetheless despite these disappointments and shortcomings developing countries have not been deterred from starting another, even more ambitious trading arrangement: the UNCTAD approach to a discriminatory, reciprocal Global System of Trade Preferences based on a common tariff-cutting formula instead of an item-by-item approach².

Encouraged by the incorporation of "differential treatment" into the 1979 Tokyo Round framework of conduct, developing countries as a bloc, mostly because of political reasons, still favour discrimination in North-South trade and reciprocal arrangements among themselves. The apologists for collective self-reliance continue to plead for discrimination as an instrument to divert trade from

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¹ For information the following can be mentioned: the apparent failures of LAFTA, EAC, and CACM, the small weight of the francophone communities CEAO and UDEAC in West and Central Africa, the shortcomings of ECOWAS, the Andean group, the GATT protocol and the Tripartite Agreement, as well as the difficulties of ASEAN to reconcile outward-looking development strategies with inward-looking trade liberalization.

² This approach was officially launched in 1979 during UNCTAD V and still encompasses a confusing package of reciprocal tariff cuts, non-reciprocal concessions for land-locked and least developed countries, the lowering of tariff and non-tariff barriers as well, fiscal compensation schemes, the simultaneous strengthening of regional and sub-regional groupings, and monetary cooperation facilities (UNCTAD, 1981).

Northern to Southern sources and as a countervailing remedy against being exploited under "unequal exchange" conditions. Reciprocity is intended to stress the argument of "inter-LDC burden sharing" should trade liberalization focus on trade creation and hence lead to adjustment problems of domestic production in the short run. Thus, reciprocity is a way of defusing internal political opposition (Havrylyshyn/Wolf, 1981, p.31). The political perception of a long-term declining absorption in the North may explain why even the outward-looking Southeast Asian NICs within the Group of 77 (G 77) agreed to resort to a global discriminatory trading arrangement in spite of the disappointing experiences in the past.

Given this constellation this paper - after highlighting inter-regional trade among developing countries over the past decade - attempts to estimate trade effects of such an inter-regional arrangement under the condition of reciprocity. Furthermore, the impact of tariff-cut-induced structural changes in inter-developing country trade on transportation costs and the relevance of non-tariff barriers are briefly discussed.

I. Past Trends in Inter-Regional Inter-Developing Country Trade

During the last decade inter-regional South-South trade steadily increased in importance (Hughes, 1980, table I.3), thereby, however, a distinction can be made between total South-South trade and non-fuel South-South trade. Whereas the inter-regional share¹ in total South-South trade increased from 29.7 percent in 1970 to 47.9 percent in 1979, the share of non-fuel inter-regional trade in non-fuel South-South trade changed from 12.8 percent to 34.2 percent. These differences reveal that though trade in fuels plays a more important role in inter-regional than in intra-regional South-South trade, the dynamics of inter-regional trade are determined by non-fuel products, specifically by manufactures. Inter-regional South-South trade in manufactures increased by an annual average growth rate of about 32 percent during the seventies compared to 26 percent in intra-regional trade with manufactures. 45 percent of the absolute increase in inter-regional manufactured exports during 1970 and 1979 referred to South/Southeast Asian exports to the Middle East followed by manufactured exports from the same region to Africa (17 percent) and to Latin America (15 percent).

It becomes evident from these figures that the manufactured export surge of South/Southeast and East Asia to the North has found its parallel to the South, where more than three quarters of the inter-regional South-South manufactured export increases during the seventies originated from this region. The same parallel, however in a downward trend, holds for Latin America whose steady decline in world manufactured exports after a period of excessive regional import substitution has been accompanied by losses of "Southern" export markets outside Latin America: only 11 percent of the absolute increase in inter-regional South-South manufactured exports during

¹ Throughout this paper the term "developing countries" coincides with the UN definition which excludes Southern Europe and Israel but includes Turkey. Furthermore, trade in crude oil is neglected since this trade will hardly be affected by tariff barriers and hence will not be subjected to tariff bargaining. The term "South-South trade" is regarded as the short version of "inter-developing country trade".

the last decade originated from Latin America and only 2 percent were exported from Latin America to South/Southeast Asia.

What emerges from this very rough pattern of inter-regional trade flows is a complementary (inter-sectoral) rather than substitutive (intra-sectoral) division of labour between the four geographically defined blocs Latin America, Africa, Middle East and other Asia (South/Southeast Asia). The two most industrialized areas, Latin America and South/Southeast Asia, hardly trade with each other (table 1), and this small amount of trade (less than 10 percent of each area's non-fuel South-South exports) exhibits the ancient exchange pattern between a Ricardo goods exporter (Latin America mainly exporting food, agricultural and mineral raw materials and non-ferrous metals) and the Heckscher-Ohlin goods exporter South/Southeast Asia.

It is striking that, in manufacturing, the Asian export structure vis-à-vis Latin America is fairly similar to its overall export structure in South-South trade. Latin America, however, shows a clear discrepancy between its overall South-South trade pattern, which is determined by intra-area trade in manufactures, and that of its exports to South/Southeast Asia, where primary commodities prevail. Thus, Latin America seems to face the same problem in its trade with southern partners as with northern partners, that of being less competitive with manufactures outside its protected regional market.

Both areas still have their major South-South export outlets in intra-regional trade, with South/Southeast Asia being by far the more successful in spreading its non-fuel exports to the Middle East, Africa and Latin America (about 35 percent of its total non-fuel South South exports in 1979) than Latin America (23 percent).

Table 1: Sectoral Structure of Non-Fuel Trade between South and Southeast Asia and Latin America, 1970, 1975, 1979
in Percentage Shares of Total Bilateral Non-Fuel Trade Flows

Exports from (Reporting Area)	Partner Area	Food (SITC 0+1+22+4)			Agricultural and Mi- neral Raw Materials, Non-Ferrous Metals (SITC 2-22+68)			Manufactures (SITC 5+6+7+8-68)			Share of Partner Area in Reporting Area's Non-Fuel South-South Exports		
		1970	1975	1979	1970	1975	1979	1970	1975	1979			
South and Southeast Asia to	Latin America	7	10	9	30	21	14	61	68	72	5	4	7
	Total Develop- ing Countries	26	28	20	24	15	16	50	56	62			
Latin America to	South and Southeast Asia	37	34	48	49	41	33	13	23	19	8	4	8
	Total Develop- ing Countries	35	40	34	21	13	17	43	43	49			

Source: UNCTAD Handbook of International Trade and Development Statistics. Supplement 1981, New York 1982.

II. Tariff and Trade Structures of Sample Countries

The following analysis of trade effects due to tariff-cutting within an inter-regional South-South framework is derived from the tariff and trade structures of nine sample countries around 1978¹. The countries are generally important South-South trading partners and, more specifically, leading countries in their regions. They are partly NICs (Argentina, Brazil, Mexico, and South Korea), partly OPEC countries (Algeria, Saudi Arabia), and partly small outward-oriented middle-income countries (Thailand, Tunisia). India as the residual country is a border case with respect to the NICs status and has been included because of its strong South-South trade links. The choice of these countries was furthermore determined by the availability of compatible trade and tariff data². Free trade zones like Singapore and Hongkong, though being important South-South traders, were disregarded as a "non-problem" in South-South tariff bargaining. Sub-saharian African countries were neglected as well, since - given their small markets - they are not likely to play an important role in an inter-regional tariff bargaining process.

¹ The share of the sample countries in total non-oil South-South trade amounted to about 48 percent in 1978.

² Preference has been given to the 4-digit BTN tariff numbers as the most appropriate level of disaggregation in order to avoid the aggregation bias of averaging high and low tariffs (Cline et al., 1978, Appendix G., p. 285 seq.). A higher level which would have raised the number of items from about 1000 to about 5000 for each country, as applied by Cline et al., 1978, did not pass a cost-benefit evaluation. The discrepancy between tariffs and trade data on the one hand and the availability of import demand elasticities only on a much higher aggregation level on the other hand as well as the tremendous increase in data compiling and computational costs led to the a priori conclusion to apply the 4-digit BTN level even if some aggregation bias problems should emerge. For two countries Argentina and India only 5-digit and 4-digit SITC-trade data respectively, were available. In these cases trade data were converted into BTN equivalents in order to allow for a compatible disaggregation level for all sample countries.

Tables 2 - 4 illustrate both the nominal tariffs and trade patterns of the sample countries and their imports from the North and South structured by tariff frequencies. Notwithstanding inter-country differences in the import patterns of the sample countries, two common aspects are noteworthy (table 2):

Firstly, developing countries predominantly import intermediates from other developing countries, whereas capital and consumer goods are less important. There is only one significant deviation from this picture: Saudi Arabia whose import structure in 1980 revealed a greater share of consumer goods imports from developing countries. This obviously emerges from the country's high per capital income, its lack of import-competing domestic industries and its extraordinarily low protection level (table 3). Since intermediates are complements rather than substitutes to domestic industrial production, one may say that this first aspect underlines the complementary trading pattern in South-South trade.

Secondly, the sample countries' imports from the North are clearly biased against consumer goods. No clear predominance of either capital goods or intermediates in the sample countries from the North, can be ascertained. However, those countries which to a large extent launched public infrastructure investments (OPEC countries, Mexico) at the end of the seventies reveal a higher share of capital goods in imports from the North than others. This import structure mirrors the nominal tariff structure (table 3). For each sample country the tariff structure exhibits the well-known escalation effect of the tariffs and hence an effective rate of protection of consumer goods which exceeds the nominal rate. In view of the low income levels for the mass of the population in the sample countries and their demand preferences towards simple consumer goods, the escalation effect is likely to hamper South-South trade in these goods rather than in high quality imports from the North, where the tariff burden can be shifted much more easily to the high-income class consumers.

Table 2 - Sectoral Composition of Developing Countries' Imports from Developing and Developed Economies, by Broad Economic Categories (Percentage Shares)

Importing Country	Imports from Developing Economies			Imports from Developed and Socialist Economies		
	Intermediates ^a	Capital ^b Goods	Consumer ^c Goods	Intermediates ^a	Capital ^b Goods	Consumer ^c Goods
Algeria (1977)	79.2	5.6	15.2	38.7	54.5	6.8
Argentina (1978)	55.6	28.2	16.2	45.0	48.3	6.7
Brazil (1978)	74.4	13.7	11.9	48.3	45.1	6.6
India (1977)	76.1	10.7	13.2	47.4	42.9	9.7
Mexico (1976)	72.0	19.6	8.4	36.9	50.2	12.9
Saudi Arabia (1980)	45.6	20.5	33.9	32.6	51.8	15.6
South Korea (1978)	66.1	23.7	10.2	48.1	45.0	6.9
Thailand (1978)	78.5	14.7	6.8	47.9	45.5	6.6
Tunisia (1978)	75.6	2.2	22.2	46.2	43.2	10.6

^a ISIC Categories 3111-12, 3114-16, 3118, 3122-31, 3211, 3213, 3215-19, 3231-33, 3311-3419, 3511-22, 3529-59, 3691-3810, 3821, 3831. - ^b ISIC Categories 3811-19, 3822-29, 3832-52. - ^c ISIC Categories 3113, 3117, 3119, 3121, 3132-40, 3212, 3214, 3220, 3240, 3420, 3523, 3560-3620, 3853-3909.

Sources: See Statistical Appendix.

Table 3 - Average Nominal Tariffs^a in the Sample Countries,
by Broad Economic Categories Around 1978

	Intermediate Goods	Capital Goods	Consumer Goods
Algeria	22.3	14.9	40.4
Argentina	26.7	29.9	29.1
Brazil	49.1	49.0	65.8
India	64.2	65.2	85.1
Mexico	24.4	27.4	38.0
Saudi Arabia	2.4	2.5	3.5
South Korea	33.9	27.1	52.0
Thailand	29.2	21.8	45.2
Tunisia	18.5	14.8	36.2

^a Based on unweighted average tariffs for 4-digit ISIC categories.

Sources: See statistical Appendix.

Whereas the tariff structures reveal similar patterns, the tariff levels sharply deviate from each other, and this could raise serious problems with regard to the common tariff-cutting formula to be applied¹ and to the constraints of reciprocity. The tariff frequency distribution (table 4) shows that for seven of the nine countries the median tariff interval is lower or equal for imports from developing countries than for imports from developed countries. That means that on the average South-South trade occurs in lower tariff items than South-North trade and is consistent with the outcome emerging from table 2 (i.e. South-South trade centers on relatively low-tariffed intermediates thereby complementing the highly protected domestic finished goods production). Furthermore in general the frequency distributions exhibit something like a "prohibitive tariff wall" at the 70 percent level. Tariff reductions which would fail to cut the tariffs below the prohibitive rates could not be expected to stimulate imports.

The third aspect which seems to be common to all sample countries is the relatively low share of South-South imports in total imports once some primary commodities and fuels are excluded. Even in the Latin American countries where intra-regional trade is most advanced this share does not exceed 17 percent of total imports. In analogy to one of the basic theoretical principles of trade and welfare effects in a customs union, the positive correlation between the effects and the share of inter-partner trade in total

¹ It should be noted here that preferential tariffs which some of the sample countries concede either to partner countries in a regional integration scheme (for instance the Latin American countries within LAFTA) or within a sub-regional scheme (for instance within the GATT protocol), are disregarded in this paper in order to allow for a common and compatible MFN tariff base in the negotiation process. This leads necessarily to an overestimation of the trade creation effects for the three Latin American countries where in 1977 about 57 percent (Argentina), 80 percent (Brazil) and 52 percent (Mexico) of total intra-regional imports of the countries concerned occurred in preferential items, however, with preference margins mostly less than 30 percent (BID/INTAL, 1980).

Table 4

Developing Countries' Imports from Developing and Developed Countries, by Nominal Tariff Frequencies^b (Percentage Shares)

Tariff Interval	Algeria (1977)		Argentina (1978)		Brazil (1978)		India (1977)		Mexico (1976)		Saudi Arabia (1980)		South Korea (1978)		Thailand (1978)		Tunisia (1978) ^c	
	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries	Imports from Developing Countries	Imports from Developed Countries
0 - 4.9	38.7	49.4	3.9	2.1	6.8	4.6	1.1	0.4	46.4	7.6	86.8	91.4	11.3	3.0	10.9	14.0	7.4	17.1
5.0 - 9.9	5.3	3.0	0.2	1.0	0.4	4.6	—	—	6.2	8.5	7.7	4.2	10.6	4.2	9.6	15.4	36.5	30.5
10.0 - 14.9	5.8	19.1	30.0	27.4	16.9	1.5	—	—	16.1	18.2	2.1	1.3	8.7	12.4	8.0	19.3	13.6	10.8
15.0 - 19.9	43.8	1.2	23.3	18.5	8.1	11.8	—	—	9.8	26.3	1.0	1.9	5.9	19.7	6.9	20.1	0.4	10.6
20.0 - 24.9	0.3	4.7	13.3	14.3	6.7	11.5	—	—	7.8	17.2	2.4	1.2	19.0	24.1	3.9	3.7	0.3	7.2
25.0 - 29.9	4.8	12.3	10.6	14.9	19.7	5.3	0	7.3	3.3	16.2	—	—	2.9	4.7	45.7	7.5	11.8	7.1
30.0 - 34.9	0	5.6	13.2	13.6	10.5	16.3	5.8	5.2	4.5	2.5	—	—	13.4	18.4	7.5	6.8	1.5	4.5
35.0 - 39.9	0.4	0.4	1.2	3.4	4.1	9.8	—	—	0.6	1.3	—	—	0.2	1.7	1.6	0.8	0.9	2.5
40.0 - 44.9	0.8	2.5	1.8	3.6	1.3	3.8	38.5	25.2	0.1	0.6	—	—	4.3	3.9	0.6	2.0	8.6	5.9
45.0 - 49.9	0	0.2	0.7	0.2	7.4	6.9	3.6	7.5	0.5	0.3	—	—	6.8	0.4	0.4	0.7	0.1	0.3
50.0 - 54.9	0	0.5	0.4	0.1	5.5	12.8	7.5	6.3	1.4	0.4	—	—	1.4	1.2	1.4	1.7	14.2	1.1
55.0 - 59.9	0	0	0	0.1	3.2	3.4	3.0	11.9	0	0.8	—	—	0	0	1.6	0.4	0.9	1.9
60.0 - 64.9	0	0	0.4	0.3	3.1	2.3	31.2	16.7	0.1	0	—	—	14.9	4.3	0.9	6.9	0.1	0.1
65.0 - 69.9	0	0	—	—	1.2	1.5	0.1	5.0	0.1	0	—	—	—	—	0	0	—	—
70.0 - 74.9	0.1	1.0	—	—	1.2	0.6	0.2	2.2	2.6	0	—	—	0.6	0.1	0	0	0	0
75.0 - 79.9	0	0	—	—	1.1	0.2	0	0.1	0.2	0	—	—	—	—	0	0	—	—
80.0 - 84.9	0	0.1	0.1	0.2	0	0	0.1	1.1	0	0	—	—	0	0	0.6	0.3	—	—
85.0 - 89.9	0	0	—	—	1.6	2.3	0.2	1.3	0	0	—	—	0	1.2	—	—	0	0.3
90.0 - 94.9	0	0	—	—	0	0.1	0	0.1	0	0	—	—	—	—	0.3	0.1	—	—
95.0 - 99.9	—	—	0.8	0	0.1	0	0	0.1	—	—	—	—	—	—	—	—	—	—
100.0 - 104.9	0	0.1	—	—	0.3	0.6	8.8	9.6	0	0	—	—	0	0.5	0.2	0.2	—	—
105.0 - 109.9	—	—	—	—	0.8	0.2	—	—	—	—	—	—	0	0	—	—	—	—
110.0 - 114.9	—	—	—	—	—	—	0	0	—	—	—	—	—	—	—	—	—	—
115.0 - 119.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
≥ 120.0	—	—	—	—	—	—	0	0	0.1	0	—	—	—	—	—	—	3.5	0.1
Σ ^d	100.0	100.1	99.9	99.9	100.0	100.1	100.1	100.0	99.8	99.9	100.0	100.0	100.0	99.8	100.1	99.9	99.8	100.0
Share in covered imports	7.0	93.0	17.0	83.0	14.8	85.2	18.0	82.0	7.3	92.7	13.2	86.8	4.3	95.7	18.9	81.1	6.9	93.1
Number of four-digit BTN-items covered	1012		733		1009		498		1012		1012		931		1012		1012	
Share of covered imports in total non-crude oil imports	94.8		83.4		88.9		95.3		90.8		95.3		85.4		95.2		91.6	

^a Including socialist countries. - ^b Based on unweighted average tariffs and trade flows in four-digit BTN items except for Argentina and India, where trade flows available in five-digit SITC items resp. four-digit SITC items were made compatible with the average tariffs for four-digit BTN items. Items comprising raw materials such as cereals (BTN 1001-05), crude oil (2709), natural fertilizers (3101), natural rubber (4001) - to mention the most important ones - have been disregarded. - ^c Minimum tariff. -

^d Deviations from 100 percent are due to rounding.

trade¹, one can argue that, based on this criterion, the trade effects are likely to be small.

III. Trade Effects in a Developing Countries Tariff-Cutting Round

The trade effects which arise from multilateral tariff-cutting will differ according to whether the cuts are applied to the negotiating parties - in our case the sample countries - , or to all developing countries or, as a reference system, to all trading partners from developing and developed countries².

However, an agreement on a common formula will not only depend on the trade effects but also on reciprocity criteria such as the balance of additional imports and exports or the tariff revenues foregone. The latter criteria are economically doubtful, but as mentioned above, politically highly relevant. Under these conditions four questions will be empirically discussed:

Firstly, based on the sample countries, what are the trade creation effects of a discriminatory tariff-cutting round whereby tariff reductions on imports from all developing countries would be conceded by a common formula? In this case imports from developed countries would be discriminated.

Secondly, to what extent would the balance of tariff-cutting-induced additional imports and exports in each sample country be changed, if the tariff reductions were conceded to imports

¹ See Lipsey (1960).

² These effects only refer to trade creation, not to trade diversion. The reason why estimates on the shift of imports from developed countries' sources to developing countries' sources due to discriminatory tariff cuts are not presented in this paper is simply that estimates on cross price elasticities between imports from the two sources were not available. Assumptions on cross price elasticities (Armington, 1969) or second-best measures such as the Baldwin/Murray approach (1977) of linking trade diversion to trade creation (by equaling patterns of substitutability between imports from beneficiaries and domestic production on the one hand and imports from beneficiaries and non-beneficiaries on the other hand) do not seem to be appropriate in our case. Using the latter approach estimates made by the author on trade diversion in a discriminatory South-South tariff-cutting round yielded lower trade diversion than trade creation effects. This seems to be inherent with regard to the concept applied rather than to be realistic. The results (on a four-digit ISIC-level) are available upon request.

from the other eight partner countries? Hence in this case developed countries and also the rest of non-participating developing countries are discriminated against.

Thirdly, how would the trade creation effects be changed if the tariff cuts were applied to world imports of the sample countries? Thus in this case tariff-cutting would be non-discriminatory.

Fourthly, assuming the participating countries would agree to the average depth of tariff cut ("tariff revenue foregone" approach) as the common criterion of reciprocity in a discriminatory tariff concession round, which formula would be best suited to meet both conditions, reciprocity and a substantial tariff reduction?

The methodology of measuring trade creation is based on the familiar concept¹, that is the percentage change in the price of imports to the consumer caused by the tariff cut multiplied by the price elasticity of demand for imports. Since the consumer price is assumed to be equal to the cif-price plus tariff, the percentage reduction in the price of imports to the consumer equals the reduction of tariffs in percentage points divided by unity plus the initial tariff. The percentage reduction in the price of imports to consumers is multiplied by the initial value of imports from preferential sources in order to measure trade creation. Additionally world prices are assumed to be constant (infinite elasticity of import supply) so that the percentage change in the value of imports equals the percentage change in the quantity of imports.

Thus, if y_i is the reduction of tariffs in percentage points, t_i the initial tariff, η_i the price elasticity of import demand and M_i the initial value of imports from developing countries and i the 4-digit BTN item, trade creation (TC_i) is calculated as

$$TC_i = \eta_i \cdot \frac{y_i}{1+t_i} \cdot M_i$$

¹ See for example Baldwin/Murray (1977), Cline et al. (1978).

Secondly, it is implicitly assumed that import prices will fall by the same rate as tariffs fall. An increase of export prices due to rigidities on factor and goods markets in the exporting developing countries is ruled out. Though in general this "small-country" assumption seems to be appropriate for our case because of the low weight of inter-LDC trade, it is not unlikely that in some particular products where neighbour trade for instance is important, exporting partner countries may respond to the increasing demand of tariff-cutting importing countries with export price increases. This of course would reduce the trade creation effects. Since no empirical estimates on splitting the tariff reduction into an import price decrease and an export price increase component are available, this assumption has to be made¹.

With regard to the empirical estimates a discrepancy emerges between the high level of tariff disaggregation items and the inavailability of price elasticities both at this level and for the country group concerned. This problem is inherent to all such empirical enquiries and leads to the problem of either aggregating tariffs and trade flows up to levels comparable with the available elasticity estimates (and hence facing an aggregation bias in averaging low and high tariffs) or applying all items which can be subsumed under a broader category (say 2-digit BTN) to a common elasticity. In this paper which resorts to elasticity estimates from several studies (see appendix, table 5), the latter alternative has been chosen in order to keep the loss of information due to aggregation as low as possible .

In testing the responsiveness of trade creation effects to alternative tariff-cutting formulas nine formulas, all proposed by the GATT contracting parties during the Tokyo Round, are

¹ See for instance, Balassa for a discussion of the relevance of this aspect in inter-developed countries' trade (1967, p. 321 seq.).

considered (see appendix, table 4). They encompass linear cuts and harmonization formulas with different tariff floors. These formulas clearly mirror the bi- and multilateral export interests of the OECD countries which proposed them. Thus, developing countries, once they find themselves in a similar position of proposing formulas in a tariff bargaining process exclusively among developing countries, would probably have other perceptions concerning the formulas to be negotiated. The most realistic view, however, seems to be that they would have no ideas because of the negligible amount of trade among them, especially in inter-regional trade. Only neighbour countries like Brazil and Argentina whose bilateral trade is advanced would know about the tariff obstacles facing their exports to the neighbour and hence would propose specific formulas to eliminate them. The majority of the negotiating parties, however, would probably resort to linear cuts (as recently proposed by the UNCTAD Secretariat), due to the lack of knowledge of the other parties' tariff structures and of potential trade.

Therefore the Tokyo Round proposals employed here should only be regarded as guidelines which in view of the much higher tariffs in developing countries and the low volume of South-South trade are far from being realistic alternatives in the concrete bargaining process.

III.A. Trade Creation due to Discriminatory Tariff-Cutting

Table 5 provides some evidence with regard to the first question. The estimates of trade creation which emerge from the sample countries' tariff cuts conceded to all developing countries range between about 2 percent of Saudi Arabian imports from the South and about one quarter in the case of India. Not surprisingly, the bulk of additional South-South trade falls to Brazil and India, the two countries with the highest initial amount of South-South non-oil trade. Table 5 also highlights that although it makes a difference whether linear or harmonizing tariff-cutting formulas are applied, the differences are lower

Table 5 - Estimates of Trade Creation in South-South Trade under Alternative Tariff-Cutting Formulas^a

Tariff-Cutting Formula	Algeria		Argentina		Brazil		India		Mexico		Saudi Arabia		South Korea		Thailand		Tunisia	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
1	20.6	4.0	54.3	17.3	215.3	18.4	229.5	26.4	28.3	9.4	129.4	3.4	69.0	14.8	124.0	15.0	23.6	17.8
2	12.8	2.5	43.6	14.0	216.2	18.4	272.7	31.3	21.3	7.1	42.9	1.1	63.9	13.7	106.9	12.9	28.7	21.7
3	19.2	3.7	46.4	14.8	223.7	19.1	238.0	27.3	28.4	9.5	163.3	4.3	64.9	13.9	108.8	13.2	28.2	21.4
4	16.6	3.2	51.0	16.3	239.8	20.5	293.6	33.7	26.0	8.7	83.1	2.2	72.5	15.5	118.0	14.3	30.4	23.0
5	12.9	2.5	41.7	13.3	180.1	15.4	207.7	23.9	18.8	6.3	35.2	0.9	55.2	11.8	95.4	11.5	21.0	15.9
6	14.9	2.9	39.2	12.5	155.6	13.3	166.0	19.1	20.4	6.8	93.6	2.5	49.9	10.7	89.7	10.9	17.0	12.9
7	22.4	4.4	54.2	17.3	217.0	18.5	229.5	26.4	30.9	10.3	173.8	4.6	69.6	14.9	124.6	15.1	23.6	17.8
8	17.4	3.4	53.0	17.0	212.6	18.1	229.5	26.4	23.7	7.9	50.1	1.3	66.7	14.3	119.6	14.5	23.4	17.8
9	17.3	3.4	51.2	16.4	209.2	17.8	229.5	26.4	24.5	8.2	70.0	1.8	65.7	14.1	117.6	14.2	23.2	17.6

^a For a description of the trade creation measure and the tariff-cutting formulas see the text.

A = in Mill. US-\$. The official exchange rate has been applied for the conversion of the estimates made in national currency into US-\$ except for Argentina, India and South Korea where trade data in US-\$ were available.

B = in percent of initial imports from the developing countries.

Source: See statistical appendix.

than expected. This is because the harmonizing formulas mostly incorporate tariff floors in order to avoid a "leapfrog" effect, that is to cut down the higher tariffs on finished goods so much that they would end up even lower than intermediate tariffs. Since high tariffs are the rule rather than the exception in our sample countries, this built-in "break" in cutting high tariffs is often applied thus levelling the differences between the various formulas. Furthermore, since there is not much initial trade in high tariff items the empirical concept does not allow for high trade creation effects even if the break of tariff floors had not been built in. Here evidently the concept leads to an underestimation of the trade effects.

Two other findings are noteworthy. Firstly, following the calculation, a moderate linear cut of about 10 to 15 percent proposed by the UNCTAD secretariat as a starting point in the GSTP negotiations (UNCTAD, 1981) would have a "peanuts" effect of 4-6 percent additional South-South trade at a maximum. For a country like Saudi Arabia whose average tariff level is only 3 percent, such a moderate cut would be a "quantité négligeable".

Secondly, developing countries with tariff levels compatible to those of developed countries, such as Saudi Arabia in our case, will experience larger trade creation differences (in absolute terms) should the various Tokyo Round formulas be applied by them. This is because the formulas provide various options of how to handle cuts for low tariffs of about 5 percent or less (that means either to freeze them, to eliminate them or cut them by the common rates). For example, if developing countries would agree to eliminate the tariffs below 5 percent and to cut the other tariffs by 60 percent (the full US authority of liberalization under the 1974 US Trade Act, formula 7) Saudi Arabia would become a defacto free trade zone and would hence exhibit the largest trade creation effects under this formula (table 5).

III.B. Trade Creation in a 9-Country Concession Round

The second question put forth in the paper (the estimates on additional exports and imports in a 9-country concession round) can only be tackled very tentatively, since we did not record exports and imports of the nine countries with each other for individual items. Instead the share of the eight partner countries in each sample country's total non-oil South-South exports and imports has been multiplied by the trading partner's and the own trade creation effects (table 5). Thus the export side reflects the import estimates: the additional imports are taken as an increment of the supplier country's exports¹.

The results indicate that for six countries additional imports exceed additional exports (table 6). This group encompasses of course the two OPEC members Algeria and Saudi Arabia, whose export basket in South-South trade does not yet contain anything more significant than crude oil. Also the two largest South-South importers in this group, Brazil and India, would run a trade deficit as well as Tunisia and Thailand. The three other countries which are strong exporters of manufactures in their regions, Argentina, Mexico and South Korea would run a concession-induced surplus. Except in one case (Brazil, formula 6), the question of whether a deficit or a surplus is run, does not depend on the tariff formula applied.

In any case, the sample countries' balances are so small in relation to total trade, that they should not prove to be serious obstacles in a concession round². The more, however, the inter-

¹ In algebraical terms the additional imports and exports of a country m are:

$$M_m = \sum_{n=1}^8 TC_m \cdot r_{nm} \quad \text{and} \quad X_m = \sum_{n=1}^8 TC_n \cdot q_{mn}$$

where TC_m is total trade creation of country m, r_{nm} is the share of country n in total non-oil South-South imports of country m, TC_n is total trade creation of country n and q_{mn} is the share of country m in country n's total non-oil South-South imports.

² This may explain why in practice the problem of reciprocity in trade negotiations among developing countries under flexible or fixed exchange rates did not receive much attention contrary to the seven GATT rounds, where the alternatives of unilateral versus reciprocal trade liberalization were highly influenced by assumptions on exchange rate regimes (Blackhurst, 1977).

Table 6 : Estimates of Changes in Trade Balances Due to a 9-LDCs Discriminatory Tariff Concession Round, in Mill. US-\$ (X = Exports, M = Imports)^a

Formula	Algeria			Argentina			Brazil		
	X	M	Balance	X	M	Balance	X	M	Balance
1	0.4	13.1	-12.7	83.7	38.7	+46.0	79.7	105.3	-25.6
2	0.4	8.1	-7.7	83.2	57.7	+25.5	66.8	105.7	-38.9
3	0.4	12.2	-11.8	86.1	59.8	+26.3	76.5	109.4	-32.9
4	0.4	10.5	-10.1	92.7	64.3	+28.4	79.4	117.3	-37.9
5	0.3	8.2	-7.9	68.9	47.8	+21.1	83.4	88.1	-4.7
6	0.3	9.5	-9.2	60.2	41.8	+18.4	78.6	76.1	+2.5
7	0.4	14.2	-13.8	84.6	58.7	+25.9	81.7	106.1	-24.4
8	0.4	11.0	-10.6	81.3	56.4	+24.9	72.5	104.0	-31.5
9	0.4	11.0	-10.6	80.4	55.8	+24.6	72.2	102.3	-30.1
India				Mexico			Saudi Arabia		
1	21.9	41.5	-19.6	52.8	12.1	+40.7	7.6	41.5	-33.9
2	14.2	49.5	-35.3	52.8	9.1	+43.7	7.8	13.8	-6.0
3	23.8	43.1	-19.3	53.4	12.1	+41.3	7.8	52.4	-44.6
4	18.6	53.1	-34.5	58.8	11.1	+47.7	8.7	26.7	-18.0
5	12.1	37.6	-25.5	44.0	8.1	+35.9	6.4	11.3	-4.9
6	15.8	30.1	-14.3	38.2	8.6	+29.6	5.4	30.1	-24.7
7	25.3	41.5	-16.2	53.1	13.2	+39.9	7.6	55.8	-48.2
8	15.3	41.5	-26.2	52.1	10.1	+42.0	7.4	16.1	-8.7
9	16.7	41.5	-24.8	51.1	10.4	+40.7	7.3	22.5	-15.2
South Korea				Thailand			Tunisia		
1	44.2	22.9	+21.3	10.5	20.8	-10.3	2.8	6.8	-4.0
2	27.0	21.2	+5.8	9.3	18.0	-8.7	2.3	8.2	-5.9
3	49.5	21.6	+27.9	10.9	18.3	-7.4	2.7	8.1	-5.4
4	36.5	24.1	+12.4	10.7	19.8	-9.1	2.8	8.7	-5.9
5	22.5	18.3	+4.2	7.8	16.0	-8.2	2.0	6.0	-4.0
6	32.0	16.6	+15.4	7.7	15.1	-7.4	1.9	4.9	-3.0
7	52.7	23.1	+29.6	11.5	20.9	-9.4	2.9	6.8	-3.9
8	28.5	22.1	+6.4	11.0	20.1	-9.1	2.5	6.7	-4.2
9	32.1	21.8	+10.3	9.4	19.8	-10.4	2.5	6.6	-4.1

^aAdditional exports (imports) to (from) the eight partner countries.

Source: See statistical appendix.

regional character of such a round could be changed into an intra-regional round, say if instead of Thailand, Tunisia, South Korea and India other Latin American countries would participate, the more attention such balances would receive in a negotiating process. Developing countries are much more aware of concrete trade obstacles in intra-regional trade than in the less advanced inter-regional trade, and therefore they would tend to contribute own concessions to deteriorating trade balances in an intra-regional framework even if this could not be justified for economic reasons. A mixed group of developing countries from various regions would, therefore, seem less susceptible to misleading arguments in terms of trade balances than a group of regionally concentrated partners.

III.C. Trade Creation due to Non-Discriminatory Tariff Cuts

In answering the third question the tariff-cutting formulas were applied to the sample countries' imports from the world in each item instead of to the imports from developing countries only (table 7). Such a non-discriminatory tariff concession can of course only serve as a reference system for a discriminatory round. Table 7 should therefore be compared with table 5.

In general the sample countries would face a higher increase in their total imports than in their imports from developing countries, each measured in terms of initial imports from both sources (column B in tables 5 and 7). This result can be explained by drawing upon the tariff frequencies in South-North and South-South imports (table 4). Here it emerged that on the average actual imports from developed countries occur in higher tariff items than imports from developing countries. The obvious deviation from this average pattern, Thailand, also appears to be the exception with regard to the comparison between the share of additional imports due to either discriminatory and non-discriminatory tariff cuts. For Thailand the former ones yield slightly higher shares (table 5) than the latter ones (table 7). Thus, the tariff level differentials in South-North and South-

Table 7 - Estimates of Trade Expansion Due to Non-Discriminatory^a Tariff Cuts in the Sample Countries

Tariff-Cutting Formula	Algeria		Argentina		Brazil		India		Mexico		Saudi Arabia		South Korea		Thailand		Tunisia	
	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b	A ^b	B ^b
1	716.6	9.8	392.4	21.4	1815.7	22.9	1690.9	35.0	610.3	14.9	1038.8	3.6	2029.1	18.6	636.9	14.6	503.1	26.5
2	543.5	7.5	318.2	17.3	1872.0	23.6	2030.2	42.0	458.0	11.2	359.7	1.3	1729.6	15.8	519.1	11.9	601.9	31.7
3	671.5	9.2	331.3	18.1	1729.1	21.8	1785.8	36.9	524.2	12.8	1320.4	4.6	1803.2	16.5	581.4	13.3	576.6	30.3
4	658.0	9.0	370.0	20.2	2065.0	26.0	2177.9	45.0	545.4	13.3	675.4	2.3	1988.7	18.2	612.9	14.0	643.9	33.9
5	500.7	6.9	305.3	16.6	1549.1	19.5	1534.0	31.7	452.0	11.0	312.2	1.1	1595.3	14.6	469.3	10.7	446.1	23.5
6	518.4	7.1	283.8	15.5	1313.3	16.6	1223.1	25.3	441.4	10.8	751.4	2.6	1467.7	13.4	460.7	10.5	363.9	19.1
7	761.2	10.4	392.5	21.4	1815.4	22.9	1690.9	35.0	616.7	15.0	1402.6	4.9	2042.7	18.7	645.3	14.8	503.1	26.5
8	634.5	8.7	388.9	21.2	1799.0	22.7	1690.9	35.0	588.6	14.4	442.7	1.5	2000.7	18.3	593.3	13.6	498.4	26.2
9	632.0	8.7	374.0	20.4	1787.3	22.5	1690.9	35.0	568.6	13.9	578.6	2.0	1938.9	17.8	577.3	13.2	493.6	26.0

^a Tariff cuts are applied to world imports of the sample countries. - ^b See Table 5.

Source: See statistical appendix.

South trade affect the differentials in the amount of additional imports created by the cuts: Higher initial tariffs in South-North imports provoke higher growth rates in imports from the North (compared to the South-South trade) once the protection is lowered and vice versa.

IV. The Issue of Reciprocity

The requirement of sharing the costs and benefits of multilateral trade negotiations "equally" gained high attention in the past GATT rounds, especially of course under fixed exchange rate conditions, although it is a politically determined "subjective notion" (Arthur Dunkel) rather than an economically meaningful concept. Not only from the world's welfare viewpoint but also from an individual country's point of view it seems irrational to link import liberalization - which contributes to a more efficient allocation of the country's own resources - to the requirement that others behave in the same way.

However, politicians will look upon trade liberalization as a burden to be shared equally, the more the economic environment resembles the nationalist, mercantilist world described for instance by Schumpeter (1940) as a justification for protectionist measures. There is no reason to believe that multilateral trade negotiations among developing countries are stimulated by a higher degree of solidarity or a deeper economic understanding than tariff rounds among developed countries. As a matter of fact, the opposite could well be expected since developing countries' politicians are relatively open to étatist, autocratic decision-making and hence will be unwilling to give up national sovereignty in tariff policies in order to promote collective self-reliance or other relatively vague South-South cooperation ideals.

Reciprocity will therefore be an indispensable constraint in South-South tariff bargaining and - given the wide range of tariff levels among the negotiating partners - a most restrictive

one. The most commonly used practical concept of reciprocity is "the average depth of tariff cut" approach (Cline et al., appendix A). It only refers to the import side and considers an equal average percentage change in the tariff, irrespective of its initial level, as a "reciprocal" cut. Countries having low initial tariff levels such as Saudi Arabia in our case, receive a "bonus" of a smaller import price reduction under a given percentage change of the tariff than countries with relatively high tariffs. The major problem of calculation refers to the weighting problem if the average depth of tariff cut is to be calculated for each partner country. In spite of all shortcomings and distortions the import value is mostly accepted as the better alternative to unweighted averages. Of the two possible weighting concepts - the loss in tariff revenues measured as a share of total tariff revenues under pre-cut tariff conditions, and the weighting of individual tariff item depth of cut by the share of individual tariff item imports in total imports - the first one has been chosen here. Firstly, because it provides a countervailing effect against the whole reciprocity approach which is in favour of low initial tariffs¹. Secondly, because the loss of tariff revenues is likely to receive rather high political attention in tariff bargaining among developing countries whose budget sources depend to a large extent on indirect taxes many of which are import duties (Kostecki/Seck, 1982)².

The problem of reciprocity measured by the "tariff revenues foregone" concept only arises for harmonizing cuts, since the linear cut equals the depth of tariff cut by definition. Developing countries which would be prepared to strengthen South-South trade forcefully by eliminating the escalation effect of their tariffs,

¹ High tariff items have a stronger weight in the first weighting concept than in the second one.

² Admittedly, the loss of collectible revenues is economically the least convincing argument for reciprocity. In any case it has been responsible for the distribution disputes in many South-South regional schemes and for the consequent disintegration measures and their costs. It should therefore not be neglected in practice.

hence would face a conflict between this objective and the reciprocity constraint. Table 8, which displays the average depth of tariff cuts for our sample countries under the various formulas, firstly yields the result that for an individual country the range between the average depths for the harmonization formulas (2-5, 7-9) is the wider, the lower the initial tariff is (Saudi Arabia), because then the various tariff floors, which smooth the depth of cuts, are not applied. Secondly, for the same reason (tariff floors) the discrepancies between the negotiating partners' cuts under a given non-linear formula are the higher, the higher the initial tariff differentials. The relatively liberal developing countries with low tariff levels, which are the exception rather than the rule, will therefore complicate the bargaining process, if they should insist on both non-linear cuts and the "tariff revenues foregone" criterion for reciprocity.

Let us assume that the criterion of choice between the various depths of cuts under non-linear formulas would be to minimize the individual countries' deviations from an average depth for all partners. This would mean that also countries with relatively low tariffs would have to face a similar depth of cut as countries with high tariffs. Then in our case formula 7 would have to be chosen. Under this formula Saudi Arabia would have to eliminate almost all of its tariffs on imports from developing countries so that the percentage change of its tariff would be substantial and similar to those of the other partners with higher initial tariffs. Just the opposite would occur should the countries apply formula 2, the "three iteration" formula. Under this formula the percentage cut in the Saudi Arabian tariff would be by far lower and would therefore fail to guarantee an equal or at least similar average depth of tariff cut for all negotiating partners under non-linear formulas.

Irrespective of more sophisticated criteria of reciprocity, for instance that of balancing additional imports and exports,

Table 8 : Average Depth of Tariff Cut ("Tariff Revenue Forgone" Measure)^a under Alternative Tariff-Cutting Formulas in South-South Trade

Formula	Algeria	Argentina	Brazil	India	Mexico	Saudi Arabia	South Korea	Thailand	Tunisia
1	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
2	34.0	47.1	61.0	71.9	46.9	18.3	59.7	51.1	85.6
3	62.5	51.9	58.3	63.1	61.7	76.8	57.8	52.9	83.5
4	47.6	55.4	67.4	77.2	56.7	37.8	66.5	58.4	88.2
5	30.8	45.4	50.7	54.4	40.3	14.3	49.8	47.5	56.8
6	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4	43.4
7	71.4	60.1	60.3	60.0	65.7	81.4	60.3	60.2	60.0
8	40.3	58.5	59.5	60.0	50.1	20.6	58.8	58.7	60.0
9	43.9	56.5	58.6	60.0	52.0	30.5	58.1	58.0	59.7

^a Defined as $\frac{\sum_i y_i M_i}{\sum_i t_i M_i}$

where y is the change of tariff in the four-digit BTN heading i; t_i is the initial tariff in that heading; and M_i is the initial value of imports from developing countries in that heading.

Sources: See appendix

this very simple way of measuring reciprocity already highlights the restrictive nature of this constraint once the bargaining partners agree to change the structure (and not only the level of tariffs) by resorting to harmonization formulas.

V. Changing South-South Trade Structures and Transportation Costs

In his 1978 survey article on regional economic cooperation (integration) among developing countries Vaitosos condemned the whole trade creation/trade diversion debate as "thought diverting", "basically static or comparative static" (thus not addressing itself "to the issues of major interest on development" and hence, to a large extent, as irrelevant for developing countries (Vaitosos, 1978, pp. 750-751).

It is true that the trade creation/trade diversion concept is basically static. However, if it is to be empirically discussed for a wide range of countries without having to resort to guesswork or trivial statements, it is the only approach which can be taken. Furthermore, decision-makers in developing countries devote great attention to this subject as has been witnessed by the time-consuming debates on tariff-cutting procedures in regional and sub-regional arrangements. Much of this time could have been saved if the knowledge of the partner's tariff and trade structures would have been better thus reducing uncertainty and improving the transparency of the bargaining subject. Studies on trade creation/trade diversion issues, though being admittedly defective, clarify what is to be negotiated.

These issues can also be looked upon as a basis for developing further hypotheses. There is, for instance, the argument that South-South trade is seriously hampered by transportation costs in two ways: in absolute terms by high costs due (among others) to lack of shipping services among developing countries especially in inter-regional transport, and in relative terms by lower transportation costs in South-North imports of goods com-

peting with developing countries' imports from other developing countries¹. In this context Yeats (1980) proposed to charge South-North imports on a cif-basis and South-South imports on a fob-basis in order to eliminate this transport cost disadvantage.

However, apart from the implications of this proposal on a further regionalization of world trade, increasing bureaucracy in customs clearance procedures and growing incentives to fake invoices and to undertake indirect imports, the empirical evidence for this argument is not very convincing. For Brazil which records its imports on a cif and fob base, it could be shown that though such a disadvantage exists it neither appears systematic nor significant (Langhammer, 1983a). The appendix table 1 displays the 1978 cif-fob import unit value ratios for Brazil on a two-digit BTN base by different suppliers from developed and developing countries. For total imports the transportation costs amount to about 10 percent of the fob-value which is exactly the "thumb" rate used by the IMF to convert fob into cif data. On the whole it does not make any difference to transportation costs whether Brazil imports from the US, the FRG or Japan on the one hand or from South Korea, Hongkong or Singapore on the other hand, not to mention the intra-Latin American trade with Mexico and Argentina. The rates for imports from India, Israel and Taiwan show that this pattern is by no means systematic, that means that it differs according to supplier countries (even neighbouring countries) and particularly according to products. The distance does not seem to influence the transportation costs in a clear-cut way, because the costs which arise mainly depend on the sort of products traded South-South and on the technology of transport. Here tariff-cutting may have an essential impact on transportation costs in South-South trade. Should developing countries envisage an elimination of the escalation effects in their tariffs by negotiating a har-

¹ Incidentally, if this argument should hold, then the trade diversion effects would be less striking.

monization formula, then, for instance, low quality mass consumer goods not being currently traded would enter South-South trade. This trade would then become more substitutive and less complementary. More consumer goods in South-South trade, however, would mean more container shipping, reduced costs of trans-shipment, less requirements of establishing South-South liner services in routes where less-than-shipload quantities are involved (Ramsay, 1981) and ultimately lower transportation costs.

In short: The shift from traditional South-South bulk trade to new South-South piece goods trade opens the door towards containerization of South-South trade. This technology will reduce one of the major bottlenecks in South-South trade, the high costs of shipping a product say from South Asia to Latin America via a US or European container trans-shipment port. Parallel to the NIC's manufactured exports surge, these countries in particular, but also other developing countries experienced a rapid progress in containerizing their South-North trade during the last decade. The appendix table 2 shows that many developing countries surpassed developed countries in a ranking list of the world's most important container traffic ports. Above all this holds for Hongkong, Taiwan and Singapore, but also countries which did not appear in the 1973 ranking list such as Argentina, Ivory Coast, South Korea, Nigeria or Thailand improved their container facilities rapidly. That means that these countries would not only be prepared to be countries of origin or destination in South-South shipping but they could also serve as trans-shipment countries, if this should prove to be economically more viable than to use trans-shipment ports in developed countries. Growing South-North container trade has therefore the positive side-effect of improving the facilities for South-South container trade too, once South-South trade in finished goods could be released from the barriers of high effective protection.

VI. South-South Trade and Non-Tariff Barriers

NTBs are the most obvious but least well-known obstacles in South-South trade. Though inventories on specific NTBs in developing countries are available which simply enumerate the frequencies of barriers applied in order to find sectoral patterns of barriers (Langhammer, 1983b), the only way to explore the incidence of the barriers on trade is via comparison of world market prices and domestic prices. Here perhaps the United Nations International Comparison Project run by Kravis and his associates may be helpful because of its wide collection of binary purchasing-power parities (PPPs) for developing and developed countries in very detailed product categories (Kravis et al., 1982, pp. 208-215)¹.

A very preliminary approach towards detecting price differentials among developing countries was launched in this paper by using the Kravis data. The PPPs were transformed² into indices where the price for the "same" good in the US served as the common numéraire and hence as the base (US Price Level = 100). Furthermore, the indices were at first sectorally and then regionally aggregated up to the 3- or 4-digit ISIC level and then up to regional blocs respectively (appendix table 3). With regard to the latter aggregation the underlying hypotheses was that due to the larger intensity of intra-regional rather than of inter-regional trade links, the national price devia-

¹ In a letter addressed to the author Prof. Kravis, however, a warning was expressed not to rely too much on PPPs for individual detailed categories because they were based on such a small number of observations that they could not be offered as being of truly publishable quality. He recommended to aggregate them in a different way than he did.

² As exchange rates the 1975 official rates used by Kravis were applied for transformation purposes.

tions from a regional average would be smaller than from an average of all developing countries from all regions. Furthermore, the differences in average price levels and national deviations between the four regional blocs Africa, South Asia, Southeast Asia, and Latin America were of interest.

For a 4-digit ISIC average across the whole manufacturing sector (ISIC 3), in which, however, metal manufacturing industries (ISIC 382-85) predominate, the results are as follows:

Prices are the highest in Latin America and Africa and by about 20 percent lower in South- and Southeast Asia. On the average the price level in developing countries is by one third higher than in the US. However, there are large sub-regional deviations from this average.

The national price deviations in absolute terms and in relative terms (coefficient of variation), are larger in the total developing countries' sample, that means inter-regionally, than intra-regionally. Though the regional samples are very small and thus statistically not well-founded, this result could lend some support to the hypothesis mentioned above. Tendencies towards price equalization seem therefore to be more advanced in the intra-regional than in the inter-regional framework of South-South trade.

The three East and Central African countries Malawi, Kenya and Zambia are probably not only protected by tariffs and NTBs but also by transportation costs, especially with respect to the two land-locked countries. For these low-income developing countries some price differentials probably do not mark protection equivalents for a non-existing local industry but retail margins for distributors.

All developing countries reveal lower domestic food prices compared to developed countries' prices and the same holds for simple raw material-based industrial products such as textiles, footwear, and wood products. Again it should be stressed that the ISIC-3 average is biased by the metal manufacturing branches where the developed countries' prices are much lower.

Finally, it should be noted that on the basis of the Kravis data some attempts have been started to calculate tariff equivalents of NTBs in some developing countries as a residual of differences between world market prices plus tariffs on the one hand and domestic prices on the other hand¹.

Not surprisingly, the price differentials among developing countries are generally much higher than those among developed countries. This finding holds irrespective of whether one refers to neighbouring developing countries (where this distinction is less pronounced) or to a mixed sample of developing countries from all regions. Since the proportion between tariffs and the NTB residual seems to fluctuate heavily with regard to the product or product group concerned,

¹ It would go beyond the scope of this paper to record these results which are based on the average of the three lowest country price indices for an individual product as a world market price proxy. As an interesting result it emerged that in some product groups, especially in food products, the proxy-plus-tariff price exceeded the domestic price by far. Thus, it can be assumed that in these cases there was water in the tariff (as has also been experienced in the NBER countries studies (Krueger et al., 1981, p. 20). Copies of these estimates are available upon request.

detailed country studies will have to be made in order to analyse the relevance of both types of obstacles to South-South trade.

VII. Conclusions

South-South trade is still more complementary than substitutive. This pattern of inter-industry specialization will, in any case, change in the long run along rising income levels, but developing countries will not have to look on inactively. In the short run policy instruments are available to give incentives to promote substitutive trade. However, this implies adjustment costs for those countries which overproportionately relied on regional import substitution as a means of stimulating South-South trade. Mainly Latin American countries would have to cope with adjustment costs should they enter into global tariff-cutting negotiations with South/Southeast Asian countries.

Whereas the latter group of countries successfully penetrated into developing countries' markets outside its region, especially into the Middle East countries with their high absorption of manufactures during the late seventies, Latin American countries widely failed to spread their supply of manufactures traded among each other, to other developing countries' regions. Admittedly, the low-income African countries cannot play the role as export markets for Latin America that is played by the high-income Middle East countries for South/Southeast Asia. However, the patterns in bilateral trade between Latin America and South/Southeast Asia strongly support the hypothesis that South-South trade in competitive income-elastic goods, mainly simple consumer products, is not going to be dominated by the intra-regionally-oriented Latin American countries but by the extra-regionally oriented South/Southeast Asian countries.

Such a perspective renders reciprocal tariff bargaining between countries from both areas most difficult, especially if not based on an item-by-item approach but on a common formula. Inter-regional trade flows between developing countries are still small, hence open to rapid changes and subjected to a large amount of uncertainty. The negotiating partners will therefore have only vague perceptions of what would happen if tariffs would be cut.

Given the escalation effect in the developing countries' tariffs, competitive suppliers of finished goods would be better off than other countries, especially if instead of a linear cut a harmonization formula favouring South-South trade in consumer goods could be negotiated. Under such a scenario Latin American countries would see their regional preferential framework eroded without being able in the short run to profit with their export supply from market access improvements in other developing countries' areas. It is rather unlikely that politicians would agree to such a deal though for economic reasons a harmonization formula would be preferable. Among others a harmonizing cut would stimulate South-South container shipping, ease the trans-shipment problem and contribute to investments in the transportation sector. On the other hand, however, a harmonizing cut complicates the reciprocity aspect even more, the greater is the deviation of the individual countries' tariff levels from each other. That such discrepancies hold in the realm of developing countries has been demonstrated in our mini-concession group of nine countries.

Optimists within UNCTAD who indeed seem to prefer a "package" approach of combining tariff barriers and non-tariff barriers, reciprocal and non-reciprocal measures in the GSTP, should be reminded that it took more than three years within the Kennedy-Round (under high growth rate conditions) for relatively homo-

geneous partners to negotiate an across-the-board cut of 50 percent only as a "working hypothesis", which was later on seriously compromised by an undefined "bare minimum of exceptions". The period of negotiations doubled in the Tokyo Round.

There is not much guesswork in forecasting that the forthcoming GSTP negotiations once they start with a package deal approach will not undercut this period. The larger, however, the period, the higher the probability that the negotiating parties will revise their concessions in the light of changes in the economic environment which will have occurred in the meantime. It is, therefore, not unlikely that the negotiations will resemble endless disarmament conferences where each party seeks to minimize concessions granted, whereas in the meantime new hurdles (and negotiation topics) are introduced.

Isolated in a South-South framework the bargaining will be resource-wasting and frustrating. The more fruitful alternative would be to embody South-South trade liberalization in the broader framework of North-South trade liberalization, that means to widen the economic and political scope for more South-South substitutive trade by lowering non-tariff barriers imposed by the North against imports from the South. One could go even further by saying that without North-South trade liberalization South-South trade liberalization will fail. In institutional terms this link requires "one-track" and not "two-track" negotiations of GATT and UNCTAD bargaining where both tracks are isolated from each other.

The recent GATT accession of Colombia and Thailand as well as the new "code of conduct" (differential treatment) underline that in spite of its relatively low power to implement simple uniform rules, the GATT has become increasingly attractive for developing countries just because of its clear juridical framework. Reconciling this approach in North-South trade policies with the UNCTAD paradigm of highly specific universal rules in South-South trade

policies (where attention is paid to the varying characteristics and circumstances of different countries¹) should be the common objective of both organizations in order to link global liberalization in North-South trade and preferential treatment in South-South trade.

¹ See for the analysis of differences between uniform and universal rules (Streeten, 1982).

Appendix Table 1 - Ad Valorem Freight Rates of Brazilian Imports^a from Selected Developed and Developing Countries, 1978 by CCT Chapters

CCT Chapter	Partner Country											
	US	Fed. Rep. Germany	Japan	Argentina	Mexico	India	Israel	Singapore	South Korea	Taiwan	Hongkong	All countries
01 Live animals	15.3	26.2	13.8	4.9							61.3	6.7
02 Meat and edible meat offals	75.9			6.1								3.9
03 Fish, crustaceans and molluscs	23.6	61.1	49.5	10.9								9.2
04 Dairy produce; birds' eggs; natural honey	21.6			1.5	27.8	50.1						5.7
05 Products of animal origin	7.1	10.0		4.1								7.1
06 Live trees and other plants	53.0	152.8		97.2								48.6
07 Edible vegetables and certain roots and tubers	36.8	31.5	4.4	5.7	23.2						61.2	12.7
08 Edible fruit and nuts; peel of melons or citrus fruits	35.9		19.1	21.7	13.0					67.6	61.2	22.4
09 Coffee, tea, maté and spices	4.4	9.3	41.4	2.7	12.6	19.5		15.5	71.3		14.8	11.4
10 Cereals	12.4			14.5								12.4
11 Products of the milling industry	57.5	32.2	16.3	9.5	16.2							23.4
12 Oil seeds and oleaginous fruit	8.3	18.6	4.8	5.4	28.5	101.5	72.4	19.3				7.9
13 Raw vegetable materials; lacs, gums, resins	9.7	9.1	24.1	3.8	6.3	27.4		43.3	15.4	22.3	13.7	9.5
14 Vegetable plaiting and carving materials	18.9	11.8	103.6	2.1	7.2			4.6		32.7	28.3	10.0
15 Animal and vegetable fats and oils	8.1	11.1	38.7	5.3	13.0							6.0
16 Preparations of meat, of fish, of crustaceans of molluscs	33.6	12.6	18.6	2.1	10.2						29.8	6.4
17 Sugars and sugar confectionery	24.4	23.9	42.2	3.7								18.8
18 Cocoa and cocoa preparations	85.0			7.8								9.6
19 Preparations of cereals, flour or starch; pastry-cooks' products	94.0	95.0	22.5	7.9						35.6		17.9
20 Preparations of vegetables, fruits or other parts of plants	68.1		24.7	6.1	11.7							15.1
21 Miscellaneous edible preparations	13.4	77.2	21.7	1.9	8.5						20.9	11.7
22 Beverages, spirits and vinegar	34.4	27.3	28.3	7.8	14.6		26.3					21.4
23 Residues and waste from the food industries	7.5	17.2	10.2	16.7			4.7					12.3
24 Tobacco		39.9			11.9							10.5
25 Salt; sulphur; earths and stone	36.1	22.8	8.1	3.9	36.6		66.3				92.3	30.6
26 Metallic ores, slag and ash	8.5	1.2	30.3	3.0	36.1			2.0				6.5
27 Mineral fuels, mineral oils and products of their distillation	16.9	15.5	41.0	15.6								10.4
28 Inorganic chemicals	21.8	27.5	11.7	7.0	22.3	26.9	14.3			41.3	62.6	22.1
29 Organic chemicals	10.3	9.4	11.4	5.9	5.7		4.3		6.7	24.1	12.4	8.8
30 Pharmaceutical products	5.1	9.1	22.4	2.0	3.7				17.3		10.2	7.6
31 Fertilisers	16.7	28.3	30.2	0.5			34.9					20.9
32 Tanning and dyeing extracts; colours, paints and varnishes	10.6	9.1	18.9	1.4	8.7		16.7		12.5	10.6		8.2
33 Essential oils; perfumery, cosmetics and toilet preparations	5.5	11.2	2.0	2.4	6.2	40.0						3.5
34 Soap, organic surface-active agents, washing preparations, lubricating preparations	17.2	14.5	17.1	3.0	7.9	52.3					22.7	15.6

Appendix Table 1 continued

CCT Chapter	US	Fed. Rep. Germany	Japan	Argentina	Mexico	India	Israel	Singapore	South Korea	Taiwan	Hongkong	All countries
35 Albuminoidal substances;glues	12.2	21.0	39.7	2.1	10.5			57.3				16.2
36 Explosives;pyrotechnic products matches	91.0	12.9	3.7									27.5
37 Photographic and cinematographic goods	5.2	13.3	10.5	1.6	2.6			4.5			26.9	5.7
38 Miscellaneous chemical products	9.2	7.4	14.7	12.6	18.7	27.4	11.0			9.6	28.5	9.5
39 Artificial resins and plastic materials	12.8	14.9	16.3	2.1	17.8			30.9	13.6	81.4	23.4	14.6
40 Rubber, synthetic rubber, factice, and articles thereof	8.0	9.3	12.9	3.2			18.3	12.9		68.2		10.3
41 Raw hides, skins and leather	6.9	11.9	4.1	1.4								2.9
42 Articles of leather, saddlery and harness; travel goods	15.1	15.7	10.3			38.5				40.8	28.4	17.4
43 Furskins and artificial fur; manufactures thereof	47.7	21.2		4.1								4.4
44 Wood and articles of wood; wood charcoal	7.3	20.1	8.2	1.3		72.1				69.5	26.8	2.4
45 Cork and articles of cork	6.7	14.3	63.3									19.7
46 Basketware and wickerwork	17.8		9.1							45.6	17.2	3.6
47 Paper-making material	21.2	20.3	64.1	24.7	24.7				37.4			18.2
48 Paper and paperboard; articles of paper pulp, of paper or of paperboard	16.5	13.5	16.6	18.7	15.0	66.6				18.8	32.7	19.0
49 Printed books, newspapers, pictures	9.0	14.7	37.7	4.1	10.6	109.0	11.7	5.7		21.5	17.1	12.4
50 Silk and waste silk	4.4		8.2			15.5						6.3
51 Man-made fibres (continuous)	14.6	10.3	15.0	6.5	7.6		8.6		15.2			12.5
52 Metallised textiles			27.9									18.8
53 Wood and other animal hair	5.2			1.4								5.3
54 Flax and ramie		26.8										7.2
55 Cotton	23.0		9.2									9.8
56 Man-made fibres (discontinuous)		18.8	17.2	8.8	13.5					14.3	9.2	18.4
57 Other vegetable textile materials; paper yarn and woven fabrics of paper yarn	15.7	2.5										3.5
58 Carpets, mats, matting and tapestries	13.9	16.5	5.6	4.9		33.6				47.5	24.5	12.8
59 Wadding and felt; twine, cordage, ropes and cables	11.4	9.9	14.0	3.1	8.1					16.4	25.7	10.8
60 Knitted and crocheted goods	11.9	7.2	31.4					28.2		24.0	15.9	15.0
61 Articles of apparel and clothing accessories of textile fabric	14.1	11.2	7.4	0.0		36.9		35.8		39.2	14.3	12.5
62 Other made up textiles articles	15.9	12.9	13.0			44.3				8.3	4.7	10.9
63 Old clothing and other textile articles; rags	16.2	72.2	21.3									20.5
64 Footwear, gaiters and the like; parts of such articles	25.9	13.1	11.7	0.6						43.9	18.6	16.0
65 Headgear and parts thereof	10.3	17.0								15.5		6.7
66 Umbrellas, sunshades, walking-sticks	7.9	21.7	7.0							14.5	16.5	12.7
67 Prepared feathers and down and articles made of feathers or of down	20.5	10.9								13.2	59.3	33.5
68 Articles of stone, of plaster, of cement, of asbestos	9.5	10.2	11.4	3.8						19.1	28.3	9.2
69 Ceramic products	13.4	12.7	8.9	7.1						30.5	22.0	14.3
70 Glass and glassware	14.9	22.3	40.3	3.1	22.0		16.7				31.8	16.9
71 Pearls, precious and semi-precious stones, precious metals	1.0	2.2	3.8	1.0	1.9	19.7	0.2			13.7	6.8	1.4

Appendix Table 1 continued

CCT Chapter	US	Fed. Rep. Germany	Japan	Argentina	Mexico	India	Israel	Singapore	South Korea	Taiwan	Hongkong	All coun- tries
72 Coin												
73 Iron and steel and articles thereof	14.0	16.6	14.8	4.4	16.7	23.2			7.9	12.3	5.2	14.0
74 Copper and articles thereof	8.4	6.9	5.8	5.9		81.7				17.4	23.2	5.2
75 Nickel and articles thereof	4.1	5.4	4.9	3.4		111.1						4.7
76 Aluminium and articles thereof	10.0	7.5	10.5	3.1	12.5	79.0		56.0		12.7	7.7	8.6
77 Magnesium and beryllium and articles thereof	4.9	14.7										5.9
78 Lead and articles thereof	12.9	15.0	92.6	4.7	9.3							9.3
79 Zinc and articles thereof	12.8	12.5	10.5	5.9	9.4							10.9
80 Tin and articles thereof	9.5	9.3										9.1
81 Other base metals employed in metallurgy and articles thereof	3.4	4.8	4.9	1.2	4.0			6.7				3.8
82 Tools, implements, cutlery, spoons and forks, of base metal; parts thereof	5.3	5.3	8.8	2.0	1.4	63.9	4.9		15.0	5.1	10.7	5.6
83 Miscellaneous articles of base metal	9.6	12.7	12.7	3.8		93.6	1.8			25.3	30.9	10.5
84 Boilers, machinery and me- chanical appliances; parts thereof	6.2	6.2	5.7	2.2	5.8	10.6	58.1	13.2	11.6	11.1	10.3	6.4
85 Electrical machinery and equipment; parts thereof	5.8	5.8	8.2	2.2	4.8	6.6	5.5	10.7	11.1	16.0	13.1	6.8
86 Railway and tramway; traffic signalling equipment	5.7	10.2	11.0									9.6
87 Vehicles	6.1	7.2	10.3	1.9	11.9	12.4				15.3		7.1
88 Aircraft and parts thereof	2.3	3.5	14.0									2.4
89 Ships, boats	1.5	12.3	2.6							55.5	39.8	2.9
90 Optical, photographic, cine- matographic, measuring	4.9	5.4	7.4	2.3	6.6	35.3	6.6	9.6	14.9	10.7	9.1	5.6
91 Clocks and watches and parts thereof	4.5	6.8	4.9	3.2				2.8	4.8	34.4	6.3	5.0
92 Musical instruments; sound recorders and reproducers	9.1	8.1	8.8	4.6	8.0					19.6	21.7	9.2
93 Arms and ammunition; parts thereof	2.3	12.2	10.1							13.5		3.6
94 Furniture and parts thereof	36.6	21.5	19.4	1.2		113.3				64.8	37.2	12.7
95 Articles and manufactures of carving or moulding mate- rial	30.4			27.0							4.3	25.7
96 Brooms, brushes, feather dusters, powder-puffs and sieves	13.2	12.8	4.6								19.0	10.2
97 Toys, games and sports re- quisites; parts thereof	19.1	13.9	10.3	1.3	12.0	31.7			45.9	55.9	27.8	15.8
98 Miscellaneous manufactured articles	13.6	10.2	8.7	12.7	16.3				1.8	56.0	23.9	13.0
99 Works of art, collectors' pieces, and antiques	17.6	7.2	10.3	5.3		35.0						13.2
Total imports	10.2	9.4	7.6	9.1	10.7	27.2	20.4	10.8	9.7	18.3	10.4	10.0

^a $R_j = (V_{cif}/V_{fob} - 1)100$, where V is the 1978 cif or fob Brazilian import unit value in CCT chapter j.

Source: Ministério de Fazenda, Comércio Exterior do Brasil, Ano 7, Tomo I and II. - Own calculations.

Appendix Table 2 - World Port Container Traffic by Country 1973 and 1980

Country	1973	1980	Average annual growth rate 1973/80	Rank of largest individual country port in container traffic of world ports	
	in Thousand TEU ^a			1973	1980
<u>Developed Countries^b</u>					
USA	5109	8618	7.8	1	1
United Kingdom	1837	2236	3.5	13	24
Japan	1596	3320	11.0	3	4
Netherlands	884	2082	13.0	2	2
West Germany	653	1493	12.5	8	9
Australia	645	1245	9.9	10	21
Canada	480	789	7.4	34	34
Belgium	417	915	11.9	16	12
Italy	298	1074	20.1	30	38
France	282	1071	21.0	26	22
SweGen	226	315	4.9	31	38
Ireland	206	426	10.9	33	30
Spain	135	766	28.1	68	41
Portugal	99	101	0.3	54	71
<u>Developing Countries^b</u>					
Hongkong	474	1465	17.5	5	3
Taiwan	298	1644	27.6	28	5
Singapore	129	917	32.3	36	6
Israel	123	279	12.4	48	59
Philippines	48	426	36.6	60	25
Malaysia	12	172	46.3	102	64
Brazil	26	154	28.9	89	69
Trinidad	15	72	25.1	96	97
India	6 ^c	143	57.3	114	70
Saudi Arabia	n.a.	818	--	n.a.	19
South Korea	n.a.	688	--	n.a.	16
United Arab Emirates	n.a.	340	--	n.a.	45
Nigeria	n.a.	239	--	n.a.	47
Thailand	n.a.	181	--	n.a.	51
Kuwait	n.a.	171	--	n.a.	54
Ivory Coast	n.a.	134	--	n.a.	61
Argentina	n.a.	123	--	n.a.	65

^aTwenty Foot Equivalent Unit. - ^bIn 1980 developed market economies and socialist countries accounted for about 72 percent of the world container traffic compared to 88 percent in 1973. - ^cData are for Bombay only (1974).

Source: Containerisation International Yearbook, 1976 and 1982.

Appendix Table 3 - Average Price Levels^a for Selected Product Categories in Developing and Developed Countries, 1975 (US Price Level = 100)

Category / ISIC	Developing Countries															Developed Countries		
	Africa ^b			South Asia ^c			Southeast Asia, Far East ^d			Latin America ^e			Total Sample					
	Average Price Level	Standard Deviation	Coefficient of Variation	Average Price Level	Standard Deviation	Coefficient of Variation	Average Price Level	Standard Deviation	Coefficient of Variation	Average Price Level	Standard Deviation	Coefficient of Variation	Average Price Level	Standard Deviation	Coefficient of Variation	Average Price Level	Standard Deviation	Coefficient of Variation
Food products 311/12	56.5	14.3	25.3	44.9	2.5	5.6	54.5	11.2	20.6	55.0	15.0	27.3	53.0	11.5	21.6	103.9	18.3	17.6
Beverages 313	106.8	41.1	38.5	83.6	18.0	21.5	60.4	27.1	44.9	59.2	8.5	14.4	75.0	29.8	39.8	105.4	26.8	25.5
Tobacco 314	93.1	79.8	85.7	54.7	13.8	25.2	63.4	25.4	40.1	59.9	41.1	68.6	66.9	41.9	62.7	143.9	59.1	41.1
Textiles 3211, 3212, 3213, 322-23	87.5	19.7	22.5	43.8	12.8	29.2	41.5	8.7	20.8	70.7	28.1	39.7	60.2	25.7	42.7	119.3	21.6	18.1
Household textiles 3212	112.2	60.7	54.1	56.9	13.4	23.6	56.8	13.0	22.9	81.4	25.5	31.3	75.7	36.0	47.5	130.0	23.0	17.7
Floor coverings 3214	111.5	28.1	25.2	42.8	15.5	36.2	88.3	58.7	66.5	102.6	28.8	28.0	87.6	40.9	46.7	136.5	47.6	34.9
Footwear 324	66.1	32.3	48.8	27.2	1.8	6.5	28.7	5.3	18.4	72.1	28.5	39.5	48.8	28.7	58.7	113.5	31.3	27.6
Furniture, fixtures 332	58.8	21.6	36.6	35.5	9.8	27.5	23.5	14.0	59.6	56.9	24.2	42.6	43.2	22.7	52.5	58.8	28.3	48.2
Books, papers, magazines 342	57.3	20.1	35.1	34.1	4.0	11.7	64.6	19.8	30.6	90.9	37.1	40.8	64.0	30.2	47.2	89.6	17.0	19.0
Toilet articles 3523	94.1	27.2	28.9	64.8	5.9	9.1	75.4	22.1	29.3	103.2	18.2	17.6	85.1	23.5	27.6	101.8	22.7	22.3
Non-electrical machinery 382	145.5	6.4	4.4	108.6	8.3	7.6	115.6	28.0	24.2	128.1	23.7	18.5	124.1	22.7	18.3	115.3	17.6	15.3
Engines, turbines 3821	214.2	104.1	48.6	174.4	39.6	22.7	190.6	71.5	37.5	227.3	67.4	29.7	202.7	67.7	33.4	159.9	28.9	18.1
Agricultural machinery 3822	126.3	5.3	4.2	95.7	25.0	26.1	152.3	52.1	34.2	167.1	57.7	34.5	138.8	47.6	34.3	150.7	18.7	12.4
Metalworking machinery 3823	116.5	31.5	27.1	162.5	64.3	39.6	122.4	6.3	5.1	123.9	42.8	34.6	130.1	39.2	30.1	103.1	12.3	11.9
Construction, mining machinery 3824	165.8	17.3	10.4	150.1	88.3	58.8	128.0	27.1	21.2	118.5	7.4	6.2	138.1	42.3	30.6	148.6	23.4	15.8
Office machinery 3825	177.4	16.5	9.3	179.4	66.3	37.0	170.4	27.0	15.8	205.7	39.0	19.0	183.9	38.1	20.7	125.2	20.7	16.5
General industrial machinery 3829	146.7	13.2	9.0	121.9	52.9	43.4	101.9	15.8	15.5	125.4	37.6	30.0	122.5	33.3	27.2	100.1	24.6	24.6
Electrical machinery 383	138.3	29.9	21.6	120.0	19.0	15.9	120.0	19.0	15.9	132.6	27.4	20.7	125.7	27.4	21.8	139.7	29.9	21.4
Electrical transmission equipment 3831	134.0	29.3	21.9	162.7	30.3	18.6	130.8	25.5	19.5	171.7	82.2	47.9	150.0	48.4	32.2	112.1	23.8	21.0
Communications equipment 3832	160.9	51.3	63.8	103.0	21.5	20.9	159.3	60.4	38.2	142.2	38.8	27.3	142.4	46.7	32.8	138.8	29.7	21.4
Other electrical equipment 3839	153.5	80.5	52.5	109.5	26.0	23.7	78.1	36.4	46.6	101.5	28.0	27.6	107.7	48.5	45.0	209.3	90.5	43.2
Transport equipment 384	206.7	72.2	34.9	132.1	58.9	44.6	115.4	36.0	30.9	152.9	52.7	34.5	149.5	58.7	25.5	131.2	16.3	12.4
Ships, boats 3841	-	-	-	129.0	38.5	29.8	122.5	35.8	29.3	164.5	56.5	34.3	152.6	62.5	24.4	131.8	15.0	11.4
Railway vehicles 3842	136.5	64.7	47.4	102.9	28.5	27.7	706.0	46.5	43.9	144.6	75.0	51.9	122.9	54.2	44.1	110.8	18.7	16.9
Passenger automobiles 3843	230.6	24.9	10.8	173.4	45.8	26.4	207.5	27.8	13.4	254.2	112.8	44.4	218.5	66.8	30.6	160.0	50.0	31.2
Other transport equipment 3844 + 3849	157.3	20.5	13.0	122.7	48.0	39.1	109.6	10.0	9.1	175.0	31.7	18.1	141.2	38.4	27.2	100.7	33.9	33.7
Aircraft 3845	110.1	35.7	32.4	125.6	54.8	43.6	111.9	24.6	22.0	148.9	35.2	23.7	125.0	37.0	29.6	171.8	60.8	35.4
Professional goods 385	138.3	29.9	21.6	120.0	19.0	15.9	113.6	34.9	30.7	132.6	27.4	20.7	125.7	27.4	21.8	139.7	29.9	21.4
Instruments 3851-53	145.4	23.3	16.0	190.5	91.9	48.2	104.0	43.4	41.7	132.6	15.6	11.7	139.6	53.7	38.8	147.9	32.3	21.8
4-Digit ISIC average	143.4	36.3	27.6	121.7	40.5	33.0	118.8	32.3	28.0	145.3	43.6	27.9	132.9	44.8	34.0	134.7	31.5	22.5

^a $\frac{1}{n} \sum_{j=1}^n \frac{PPP_j}{P_j} \cdot 100$ for the developing countries' sample, respectively 11 for the developed countries

where PPP_j is the purchasing-power parity between the developing country j (respectively developed country) and the United States, and P_j is the 1975 exchange rate (currency units per U.S. dollar). PPP is defined as the number of units of country's j currency that are required to buy what can be bought in the United States with one U.S. dollar. The developing countries are Malawi, Kenya, India, Pakistan, Sri Lanka, Zambia, Thailand, Philippines, South Korea, Malaysia, Colombia, Brazil, Mexico and Uruguay. The developed countries are Ireland, Italy, Spain, U.K., Japan, Austria, Netherlands, Belgium, France, Denmark, Germany.

^b Kenya, Malawi, Zambia. ^c India, Pakistan, Sri Lanka. ^d Malaysia, Philippines, South Korea, Thailand. ^e Brazil, Colombia, Mexico, Uruguay.

Source: Calculated from: Irving B. Kravis, Alan. Neston, Robert Summers, 1982, World Product and Income. International Comparisons of Real Gross Product (Baltimore: Johns Hopkins), Summary, Multilateral Table 6-3; Appendix Table 6.3, pp. 176-79; 208-15.

Appendix Table 4 - Tariff-Cutting Formulas Applied

Formula No.	In Verbal Terms	In Algebraical Terms
1	60 percent linear cut	$y = 0.60 t_0$
2	Three-iteration harmonization with 15.23 floor	$t_1 = t_0 (1 - 0.01 t_0)$ 3 times if $t_0 \geq 50.0$, $t_1 = 15.23$
3	Canadian-type formula with 20.0 percent floor	$t_1 = 0.5 t_0$; if $t_0 < 5.0$, $t_1 = 0$ if $t_0 > 40.0$, $t_1 = 20.0$
4	Harmonization, 30 percent plus initial tariff y with 12.25 percent floor	$y = t_0 (0.3 + 0.01 t_0)$ if $t_0 \geq 35.0$, $t_1 = 12.25$
5	60 percent cut plus absolute 3 percent tariff	$t_1 = 3 + 0.4 t_0$ if $t_0 \leq 5.0$, $t_1 = t_0$
6	43.4 percent linear cut	$y = 0.434 t_0$
7	Full U.S. authority in the Tokyo Round	$y = 0.60 t_0$ if $t_0 \leq 5.0$, $t_1 = 0$
8	60 percent cut with 5 percent floor	$y = 0.60 t_0$ if $t_0 \leq 5.0$, $t_1 = t_0$ if $5 < t_0 < 12.5$, $t_1 = 5.0$
9	Swiss harmonization formula, almost identical to a six-iteration harmonization	$t_1 = \frac{14 t_0}{14 + t_0}$ if $t_0 - \left(\frac{14 t_0}{14 + t_0} \right) > 0.60 t_0$, $t_0 - \left(\frac{14 t_0}{14 + t_0} \right) = 0.60 t_0$
<p>y = tariff cut in percentage points t_0 = initial tariff in percent t_1 = final tariff after cut in percent</p>		

Source: William R. Cline et al., Trade Negotiations in the Tokyo Round, op.cit., p. 77.

Appendix Table 5

Price Elasticities of Import Demand Applied in Trade Expansion Estimates

BTN Chapter resp. Category	Price Elasticity ^a	BTN Chapter resp. Category	Price Elasticity ^a
02	0.79	41	0.22
03	1.29	42*, 43*	0.90
0401-0403, 0405- 0407	0.52	4401-4405	1.31
0404	1.94	4406-4428	1.22
0502-0515, 06-08*	1.18	45, 46	1.31
09	0.47	47	1.56
10	0.76	48, 49	2.44
11	0.47	50	2.12
1201	0.73	51	1.06
1202-1207, 1209- 1210	0.47	52*	1.67
1208	0.83	5301-5310	1.16
13*, 14*	1.18	5311-5313	1.22
1501-1506	0.32	54*	1.67
1507-1517	1.51	5501-5507	0.68
16	0.47	5508-5509	1.54
17	0.76	56-66*	1.67
18*, 19*	1.18	67-70 ⁺	1.71
20, 21	0.47	71-72	0.47
22*	1.03	7301-02*, 7304-40	2.48
23*	1.18	7303	2.05
24*	1.03	74, 75	1.45
25	0.91	76-79	1.01
26	1.67	80, 81	0.90
27	1.32	82-83	5.30
28	0.92	8401-8409	1.89
29	1.46	8410-8411	1.07
30	0.21	8412-8417	1.01
31	0.37	8418	1.14
32*	1.28	8419-8435	1.01
33	0.90	8436-8440	2.07
34-38	1.32	8441-8444, 8446-8450	1.01
39*	1.28	8445	4.37
40	1.23	8451-8455	1.65

Appendix Table 5 continued

BTN Chapter resp. Category	Price Elasticity ^a	BTN Chapter resp. Category	Price Elasticity ^a
8456-8465	1.01	9014-9016	1.69
85	1.14	9017-9029	1.06
86-89	2.02	91	5.01
9001-9013	0.91	92-99*	5.89
^a Negative sign is omitted.			

Sources: Noboru Kawanabe, "Disaggregated Import Demand Functions for Japan". In: William R. Cline et al., Trade Negotiations in the Tokyo Round. A Quantitative Assessment (Washington: Brookings, 1978). Elasticities marked by an asterix have been derived either from Mohsin S. Khan, 1975, "The Structure and Behaviour of Imports of Venezuela". Review of Economics and Statistics, Vol. 57, pp. 221-224, or from Richard Weisskoff, 1979, "Trade, Protection and Import Elasticities for Brazil". The Review of Economics and Statistics, Vol. 61, pp. 58-66.

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