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DISCUSSION PAPER

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Federal Government of Brazil

Secretariat of Strategic Affairs of the Presidency of the Republic
Minister Roberto Mangabeira Unger

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TEXTOS PARA DISCUSSÃO INTERNA

Nº 17

"A Memorandum on the Anti-Export Bias in Commercial Policies and Export Performance: The Recent Brazilian Experience"

William G. Tyler

Maio de 1980

A MEMORANDUM ON THE ANTI-EXPORT BIAS IN COMMERCIAL POLICIES AND EXPORT PERFORMANCE: THE RECENT BRAZILIAN EXPERIENCE

by

William G. Tyler *

I. Introduction

Economic policies affect the relative prices of export and import substituting production activities. For an established individual producer there is a choice, both in the short and long run, of selling his output in the export market or in the domestic market. This decision goes beyond, but is related to, the decision of how much to produce. The relative profitibility of the export versus the domestic market depends upon prices, which in turn are affected by economic policies. If the domestic currency remuneration for an exported unit of the product is greater than the domestic price, the producer will prefer *certeris paribus* to export his product. Conversely, in the case of domestic prices in excess of the potential export receipts per unit of the product, production for the domestic market will be

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* INPES/IPEA. The opinions and ideas presented are those solely of the author and do not represent those of any institution with which he is affiliated.

preferable. In addition to exchange rate policy, which affects the domestic currency prices of both exports and importables, commercial policies, including export incentives and import restrictions, also exercise a major influence in the determination of prices. If the domestic price effect of import restrictions and other domestic market protection exceeds the exporter price effect of the export incentives (i.e., subsidies), there exists an anti-export bias. In other woods, the balance of price incentive policies, either intentionally or unwittingly, discriminates against exports.

If an anti-export bias exists, it is reasonable to infer that changes in it will have an effect on export performance. It is this notion that this paper addresses. To what extent have changes in Brazil's anti-export bias affected the growth of Brazilian exports in recent years? Given such evidence, what is the outlook for Brazilian export growth in view of the changes in commercial policy announced in December 1979?

In addressing those questions we first examine, in Section II, the recent export experience. Section III follows with the development of a brief model relating commercial policy to export performance. Part of this model is estimated empirically from pooled times series and inter-industry cross-sectional data for the 1970-77 period. The results, reported in Section IV, present evidence that the growth rate for industrial exports has been adversely affected by the increase in import restrictions and, accordingly, in the anti-export bias. Sections V and VI examine the implications of these results both with respect to the measures of the December 1979 economic policy package and possible future commercial policy changes.

II. THE DECLINE OF BRAZILIAN EXPORT GROWTH

Following a long period of export stagnation in the 1950's and early 1960's, economic policy measures were undertaken which were more conducive to export performance.[1] Exports responded favorably, and throughout the late 1960's and early 1970's the rates of export growth were reasonably high and quite satisfactory, serving to reverse the declining Brazilian share in total world exports. As seen in Table 1, the annual compounded rate of growth for total Brazilian exports in constant US dollars for the period 1964-74 was 12.6 percent. While for this period primary product exports grew at satisfactory rates (8.7 percent annually in constant dollar terms), the most impressive growth occurred with industrialized product exports. These exports grew at real rate of 24.8 percent annually.

With the events accompany the petroleum price increases, the international recession, and subsequent economic policy measures of the mid-1970's, Brazilian export performance was adversely affected. The real rate of total export growth for the 1974-78 period declined to 5 percent annually - an amount less than the growth of total world non-petroleum exports. Brazilian primary product exports scarcely grew at all - admittedly in part for commodity price reasons. Yet, the 1974-78 period also witnessed a substantial decline in the country's growth of industrial exports; these exports, in constant US dollar terms, grew at 11.8 percent annually.

Many reasons have been offered as explanations for the decline in export growth performance. While these reasons possess merit, they by themselves

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[1] See, for example, Von Doellinger (1973) and Tyler (1976).

Table 1

ANNUAL GROWTH RATES OF BRAZILIAN EXPORTS,
1964-74 and 1974-78
(%)

	1964-74	1974-78
Total Exports		
in Current US Dollars	18.7%	12.3%
in Constant US Dollars[1]	12.6	5.0
Primary Product Exports		
in Current US Dollar	14.1	7.0
in Constant US Dollars[1]	8.2	0.04
Industrialized Products Exports		
in Current US Dollars	31.6	19.6
in Constant US Dollars[1]	24.8	11.8

Note: 1. The US wholesale price index was used to deflate the current dollar export receipts. In all cases the annual compounded growth rates are reported.

Source: Author's computations from CACEX materials and from US wholesale price information published in IMF, International Financial Statistics, various issues. See also CACEX, Comercio Exterior: Series Estatisticas, 1978.

are not entirely satisfactory. The most common and popular explanations have to do with international demand conditions. First, it is argued that the international recession of 1974-75 and its aftermath reduced the demand growth for Brazilian exports. Secondly, the argument is heard that increased protectionism on the part of the developed countries, particularly the United States and the European Common Market, has hampered the growth of Brazilian exports. Augmented import restrictions in those markets for shoes, textiles,and apparel have been especially apparent.

These demand side arguments, however appealing, can not be used to explain all of the decline in Brazilian export growth. First, it should be noted that Brazil's exports constitute only a minute part of total world exports (about 1 percent), so that Brazil's position in the world economy can be considered that of a price-taker. Given international prices and Brazilian competitiveness,Brazil's share of total world exports could easily expand irrespective of world demand conditions. In any case, Brazil's share should not fall with a decline the growth of world trade. Indeed, total world exports have expanded less rapidly in the 1974-78 period than for the earlier 1964-74 period, but, while Brazil's export growth exceeded that for the world as a whole for 1964-74, the opposite was the case for 1974-78.[2] The

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[2] By way of comparison, the total increase in current US dollar exports from 1973 to 1978 for various countries is as follows:

Brazil	101%
Japan	166
Germany	110
United States	102
Argentina	115
Chile	103
Singapore	157
Spain	154
South Korea	287
Taiwan	190
TOTAL WORLD	135%

Source: IMF, Direction of Trade Yearbook, 1979.

actual decline in Brazil's share of world exports since 1974 indicates that something beyond international demand conditions is responsible for the decline in Brazilian export growth. Secondly, the excellent export performance of many other countries, many similarly situated to Brazil, appears to counter the argument that international recession and protection have been the responsible factor for Brazil's relatively poor export performance since 1974. The same international demand conditions and import restrictions have also faced, and hampered, such countries as Taiwan, Spain, and South Korea.

If exogenous international demand conditions do not account entirely for the decline in Brazil's export performance, explanations must also be sought in terms of domestic export supply. Two policy related explanations are possible. First, exchange rate policy conceivably could explain the changes in export performance. Existing studies (Von Doellinger, 1973; Tyler, 1976; Barata, 1979; Cardoso and Dornbusch, 1979) all indicate a high export responsiveness to real exchange rate changes in Brazil; the relevant elasticities range from about 1.0 to 1.5. Yet, the evidence does show that there have not been significant movements in the real exchange rate over the 1968-78 period (see, e.g., IPLAN/IPEA, 1979). A rough purchasing power parity formula has evidently been pursued in adjusting the nominal exchange rate, and consequently changes in the real exchange rate do not appear to be important in explaining the slowdown in export growth.

A second export supply related explanation deals with commercial policy, in particular with import restrictions, export subsidies, and the anti-export bias. The petroleum price related terms of trade loss and the accompanying balance of payments difficulties were not dealt with through macroeconomic

absorption reducing policies and real exchange rate depreciation. Instead increased international indebtedness and increases in import restrictions were pursued in lieu of the more conventional policy responses. The increases in import restrictions had the effect of augmenting an already existent anti-export bias and therefore making export activity less economically attractive for domestic producers. In part captured by the increase in nominal legal tariff rates, the effect of the anti-export bias on export performance is the subject advanced in the remainder of this paper.

III. THEORETICAL CONSIDERATIONS

To examine the question at hand we begin by assuming that the country is relatively small economically such that it is a price-taker in the world market. An individual firm in the economy faces world prices for its tradeable products as modified through domestic exchange rate and commercial policies.

A simplified export supply equation can be posited as follows

$$(1) \qquad E_S = E_S (P_D, P_E, U) \qquad E'_{SP_D} < 0, \; E'_{SP_E} > 0$$

where P_D and P_E are the effective domestic currency prices received by the producer for domestic market sales and for export sales, respectively. The variable U represents unspecified shift variables, including production cost changes resulting from training effects, externalities, and economies of scale. While the indicated positive relationship between export supply and the export price received by exporters is straightforward enough, we have also posited a negative relationship between the domestic market price and exports. Exports and domestic market sales are seen as substitutes - although not perfectly so.

If the domestic market price increases, particularly in relation to the export price, producers will reduce their exports in order to take advantage of more profitable domestic market opportunities. Implicit in this argument is that producers are neither solely specialized in the domestic market nor the export market. For reasons of diversification of risk and other reasons producers sell in both markets. When the difference between P_O and P_E becomes very large, however, producers will compress their sales in the disfavored market.

In a trading economy, international prices exercise a decisive role in domestic price formation. Bearing the so-called law of one price in mind, we can then write:[3]

$$(2) \quad P_D = P_W \cdot R \cdot (1 + T)$$

and

$$(3) \quad P_E = P_W \cdot R \cdot (1 + S)$$

where

P_W = the world price of the product given in foreign currency,

R = the prevailing exchange rate as defined as the domestic currency price of foreign exchange,

T = the nominal rate of protection in the domestic market,

S = the nominal rate of export subsidy (or tax, if negative).

The anti-export bias is defined as the excess of the domestic price over the effective export price relative to the local currency equivalent of the world price. It is written as

$$(4) \quad B \equiv \frac{P_O - P_E}{P_W \cdot R}$$

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[3] A more complete, and realistic, model would formally incorporate domestic demand and supply conditions.

If negative, a pro-export bias is evident in commercial policies. Substituting Equations (2) and (3) into (4) we have

$$(5) \quad B \equiv \frac{P_W \cdot R\,(1 + T) - P_W \cdot R\,(1 + S)}{P_W \cdot R}$$

$$= T - S$$

or simply the nominal rate of domestic market protection minus the nominal export subsidy rate.

Given the nature of the export supply function, it is further posited that export supply is a negative function of the anti-export bias. The relationship $E_S = f(B)$, however, does not pretend to be a complete model. It explicity neglects some variables,e.g. cost factors, and holds others constant, e.g., the exchange rate. Nevertheless, some estimates can be made ceteris paribus of the relationship between export supply and the anti-export bias. If the elasticity of E_S with respect to the anti-export bias is constant, a log linear estimating form is suitable. Since the anti-export bias can be negative, as in the case of price incentive policies favoring export activity, a more appropriate estimating procedure would involve a direct estimation with percentage amounts as measured over time. This procedure is explained below.

IV. EMPIRICAL RESULTS

Before turning to the estimating procedures and empirical results, some observations about the data employed are in order. First, an inter-industry data base was used containing 58 tradeable goods producing industries, as organized according to the IBGE classification of the initial version of the 1970 input-output table. A full 56 of the 58 industries were manufacturing industries. Export and commercial policy information was assembled for the 58 industries for several years, including 1970, 1973, 1974 and 1977.

Second, the nominal anti-export bias was computed from tariff and export subsidy information. Import weighted averages for legal nominal tariffs were employed as representative of the protection from import competition afforded to domestic market sales. The export subsidy information was computed according to the subsidies actually provided and includes the IPI and ICM fiscal credits, the income tax incentives for export sales, and credit subsidies. Table 2 summarizes the commercial policy information for 1977. As seen, a nominal anti-export bias was prevalent in nearly all industries, averaging 44 percent. Because of the height of some of the tariffs (and accompanying import deposits),[4] the anti-export bias was extremely high, i.e., over 100 percent, for some industries such as beverages, tobacco, apparel, and footwear.

In pooling the time series and cross-sectional information we have computed the sectoral growth rates for exports in real terms for the periods 1970-74 and 1973-77. Also computed were changes in tariffs, export subsidies, and the nominal anti-export bias between 1973 and 1977. Our analysis seeks to explain the inter-industry variation in the changes in real export growth rates between the two periods. It is contended that, while real exchange rates are an important determinant of export supply, changes in the real exchange rate, which are faced by all industries, do little to explain the inter-industry variation in export performance. Implicitly the assumption is made that the elasticity of export supply with respect to the real exchange rate is constant over industries. What does vary across industries, of course, is commercial policy and changes in it. It is this relationship with export performance which we have focussed on. The basic estimating model can be derived from the theoretical notions expressed above. Holding the exchange rate constant across industries

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[4] An analysis of tariff policy is currently being conducted in INPES/IPEA by Wilson Suzigan and William G. Tyler.

Table 2

NOMINAL TARIFFS, EXPORT SUBSIDIES AND ANTI-EXPORT BIAS BY SECTOR, 1977

IBGE Sector Classification	Sector	Legal Nominal Tariff [1] (%)	Export Subsidy [2] (%)	Nominal Anti-Export Bias (%)
1	Mining	4.0	-2.3	6.3
2	Extraction of Combustible Minerals	1.0	0.0	1.0
101	Cement	35.0	26.0	9.0
102	Glass & Glass Products	96.0	26.8	69.2
103	Other Non-Metallic Mineral Products	75.0	22.7	52.3
111	Cast Iron and Basic Steel	24.0	21.6	2.4
112	Rolled Steel	26.0	30.0	-3.9
113	Steel and Iron Foundy Products	78.1	24.0	54.1
114	Non-Ferrous Metals	20.0	11.3	8.6
115	Other Metals Products	53.0	29.0	24.0
121	Pumps & Motors	52.0	30.0	21.9
122	Machine Parts	47.0	32.4	14.6
123	Industrial Equipment & Machinery	39.0	30.4	8.6
124	Agricultural Equipment & Machinery	28.0	21.8	6.3
125	Office & Domestic Equipment & Machinery	67.0	24.3	42.7
126	Tractors	28.0	26.7	1.3
131	Equipment for Electric Energy	73.0	29.3	43.7
132	Electrical Conductors	67.0	28.7	38.3
133	Electrical Equipment	62.0	26.0	35.9
134	Electrical Machinery	27.0	29.2	-2.2
135	Electronic Equipment	47.0	25.1	21.8
136	Communications Equipment	86.0	32.0	54.0
141	Automobiles	112.0	32.5	79.6
142	Trucks and Buses	31.0	31.3	-0.3
143	Motors & Vehicle Parts	91.0	30.9	60.1
144	Shipbuilding	9.0	32.8	-23.8
145	Railway & Aircraft Equipment	42.0	32.3	9.7
151	Lumber & Wood Products	140.0	12.6	127.4
161	Furniture	83.0	38.1	44.9
171	Pulp Products	20.0	6.2	13.8
172	Paper and Paper Board	25.0	35.3	-10.3
173	Paper Products	84.0	34.9	49.1
181	Rubber	98.0	31.4	66.6
191	Leather Products	155.0	11.2	143.8
201	Chemical Products	18.0	15.3	2.8
202	Petroleum Refining	7.0	3.9	3.3
203	Coal Products	19.0	0.0	19.0
204	Resins and Synthetic Fibers	42.0	30.1	12.0
205	Vegetable Oils	64.0	4.0	68.1
206	Paints and Varnishes	54.0	20.6	33.3
207	Miscellaneous Chemical Products	20.0	21.9	-1.9
211	Pharmaceutical Products	18.0	14.5	3.5
221	Perfumary and Soaps	55.0	26.0	29.0
231	Plastics	122.0	29.9	92.1
241	Natural Fiber Preparations	53.0	11.2	41.8
242	Synthetic Fiber Textile Mill Prod.	63.0	41.0	22.0
243	Natural Fiber Textile Mill Prod.	184.0	39.3	144.7
244	Other Textile Products, Inc.Knitting	64.0	42.1	21.9
251	Apparel	176.0	37.5	138.5
252	Footwear	170.0	23.0	147.0
261	Food Products	55.0	10.1	44.8
262	Sugar Refining	84.0	5.7	78.3
263	Refined Vegetable Oil Products	65.0	20.1	44.9
264	Other Food Products	115.0	25.2	89.9
271	Beverages	187.0	31.4	155.6
281	Tobacco	154.0	-1.2	155.2
291	Printing & Publishing	5.0	26.1	-21.1
301	Miscellaneous Manufacturing	42.0	28.9	13.2
	MANUFACTURING AVERAGE [3]	67.9	24.4	43.5

Notas:

1. Import weighted averages were used, including the import deposit actual tariff equivalents.
2. Export subsidies include the fiscal and credit subsidies.
3. Value added weights from the 1970 input-output table were used.

Sources: For the tariff and subsidy estimates FUNCEX materials were used. José Augusto Arantes Savasini et. al., "Acompanhamento da Quantificação da Estrutura de Incentivos às Exportações: Efeitos da Política Protecionista após 1975", Fundação Centro de Estudos do Comércio Exterior, unpublished paper, 1979, p.9 and Joal de Azambuja Rosa et al., "Alguns Aspectos da Política Tarifária Recente", Fundação Centro de Estudos do Comércio Exterior, unpublished paper, November 1979, p. 92.

and making the assumption that export supply has a constant elasticity with respect to the price effects of commercial policies, the changes in export growth rates across industries can be seen to be a linear function of the changes in commercial policy instruments, as measured as proportional nominal rates.

Empirical results with several variants of the estimating model are reported in Table 3. In Regression Equation 1 it is seen that changes in nominal tariffs have had a significant, negative effect on export growth rates. For their part, changes in the export subsidies were not significant in explaining the inter-industry variance in export growth rate changes, although the coefficient had the theoretically correct sign and a plausible magnitude. (Regression Equation 2). The explanation may lie in the fact that by 1973 the export incentives were largely in place; subsequent changes were not very large.

As hypothesized, the empirical evidence suggests that the anti-export bias exerts an important influence on export supply behavior in Brazil. Regression Equation 3, while accounting for only 9 percent of the inter-industry variance in the export growth rate changes, does demonstrate that changes in the nominal anti-export bias do possess the predicted, negative effects. The regression coefficient is statistically significant at the one percent level. For each percentage point increase in the nominal anti-export bias the real export growth rate falls by 0.12 percent. If this elasticity seems low, relative to that normally estimated for the real exchange rate, it must be remembered that tariff levels are high and possess considerable redundancy. It is clear that other explanatory factors are omitted from the model, but the effect of the anti-export bias on export behavior appears unquestionable.

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[5] Our specification, by focussing on changes in export growth, also possesses the advantage of avoiding the problem of accounting for and incorporating possible shifts of the export supply function due to economies of scale, training effects, or other externalities.

Table 3

INTER-INDUSTRY REGRESSIONS FOR CHANGES IN EXPORT GROWTH RATES, 1970-74 AND 1974-77

Regression Equation	Intercept	Coefficients for Changes in: Nominal Tariffs	Nominal Export Subsidies	Anti-Export Bias	R^2
1.	288.5	-10.1* (2.584)	-	-	.11
2.	266.2	-	1.13 (0.009)	-	.00
3.	238.3	-	-	-8.5* (2.408)	.09

NOTE:

* indicates statistical significance at the 1 percent level of confidence. The t-values appear in parantheses beneath the regression coefficients.

V. IMPLICATIONS FOR THE ECONOMIC POLICY REFORMS OF DECEMBER 1979

The empirical analysis summarized in Table 3 possesses some significant implications for recent economic policy changes in Brazil, particularly with regard to the announced December 1979 economic policy reforms, i.e., the so-called "pacote". As a result of these policy changes,it is clear that the nominal anti-export bias in commercial policies has increased. The fiscal credit export subsidies have been eliminated, thus increasing the anti-export by the same amount. In 1977 these subsidies averaged 18.6 percent for manufacturing exports.[6] The announcement to eliminate the tariff reducing industrial incentives (except for a few priveleged programs) will have the further effect of increasing the anti-export bias through the implementation of higher tariffs actually charged. Offsetting these increases to some extent, however, is the elimination of the prior import deposit, which had an average tariff equivalent value of 16.2 percent in 1977.[7]

In order to sum up the individual effects of commercial policy changes on the anti-export bias, two alternative assumptions have been made about the change in tariff levels as a result of the elimination of tariff reductions as industrial incentives. First, we have assumed actual tariff changes equal to the difference between current realized tariffs and full legal tariffs. Estimation of tariff averages were made from the 1978 data,[8] but it is presumed that there would be few differences between 1978 and 1979. Under such an assumption the increase in the average nominal anti-export bias for manufacturing was calculated to be 61.0 percent. In conjunction with our estimates from Regression Equation 3 in Table 3, this implies that the December 1979 economic policy

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[6] Savasini et al., (1979),p. 9.

[7] Azambuja et al., (1979), p. 55.

[8] Nominal and realized tariff rates for 1978 are presented in Appendix Table 1.

reforms will have the effect certeris paribus of reducing the real rate of manufactured export growth by 6.9 percent annually. This must be considered as an upper bound estimate and should not be used by itself to project manufactured export performance.

An alternative estimating procedure has assumed that, because of tariff redundancy and the continued existence of some tariff reduction incentive programs, the actual tariff increases amount to only one half of the difference between the realized tariffs and the full legal tariff rates. This assumption provides an estimate of the nominal anti-export bias increase of 31.7 percent. An accompanying, and consequent, estimate of the effect on export performance is that the real rate of manufacturing export growth will fall by 3.7 percent annually.

It is clear that, beyond the effects of changes in the anti-export bias of commercial policies on export performance, other factors must also be considered in making current projections of export growth. While the maxi-devaluation was partly offset by the elimination of the fiscal credit export subsidies for manufactured products and the imposition export taxes for agricultural products, the net effect of the December 1979 economic policy reforms was to increase real remmuneration for exports in nearly every sector of the economy. However, in view of the intention of the government to limit nominal exchange rate depreciation to 40 percent during 1980, real questions are raised concerning future export remuneration, competitiveness, and performance. Moreover, the apparent abandonment of the purchasing power parity formula for exchange rate adjustments has created additional uncertainty as to the stability of real exporter incomes. This greater uncertainty will serve to constrain export growth. The magnitude of this effect is a matter

of judgement, as there has been little research on the question.[9] The author's judgement, on the basis of what little concrete evidence that there is, is that this effect may be considerable.

VI. IMPLICATIONS FOR POSSIBLE FUTURE POLICY MEASURES

From the preceeding analysis it seems clear that steps are desirable to reduce the anti-export bias of current commercial policies. In any case, attempts to increase tariff protection, despite worsening balance of pagments conditions, should be resisted. If exports are to be effectively promoted, as they should be, some combination of two measures appears necessary under present conditions.

First, steps to reduce import protection would not only have the effect of stimulating efficiency in production but would also exercise a favorable influence on export growth as well. Some tariffs are extremely high (e.g., over 100 percent), and possess no reasonable economic justification. A reduction of tariff levels, even in the common case of redundancy, would provide a signal to producers that they are not immune from import competition and secure in concentrating on the domestic market.

Second, an expansion of current export subsidies should be considered. Such export subsidies will become more important still if real exporter remuneration is to be eroded through the present administration of exchange rate policy. Needless to say, any increase in export subsidies should be designed in such a way so as to minimize the probability of protectionist

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[9] The major research was been done by Coes (1978). His work demonstrates that evenness in real exporter remuneration has exercised an important role in the expansion of Brazilian exports.

retalliation on the part of the developed countries, especially the United States and the European Economic Community. Automaticity and uniformity over sectors should also be considered as objectives in the design of any increased export subsidy scheme.

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Apêndice

Tabela 1

TARIFAS NOMINAIS E REALIZADAS POR SETOR

1978-1980

Número do Setor		Denominação	t_{n1} [a]	t_{n2} [b]	t_R [c]
IBGE (antigo)	IBGE (novo)				
001	0501	Extração Mineral	70,66	54,63	19,65
002	0502	Extr.Comb.Minerais	0,00	36,67	0,00
101	1001	Cimento	33,36	51,17	2,86
102	1002	Fabr. de Vidro	93,35	126,31	33,89
103	1003	Prod.Min.não Met.	49,36	139,26	23,91
111	1101	Gusa e Lingotes	24,08	54,08	9,69
112	1102	Fab.Lamin. de Aço	30,97	28,92	1,33
113	1103	Fundidos de Fe.,Aço	63,27	88,50	9,85
114	1104	Metalurg.Não Ferrosos	22,03	42,55	3,39
115	1105	Outros Metalúrgicos	66,82	92,96	25,77
121	1201	Bombas e Motores	50,25	53,13	14,75
122	1202	Peças Mec.p/Máquinas	52,26	53,20	26,78
123	1203	Máq.Equip.Industriais	39,05	26,81	8,95
124	1204	Máq.Equip.p/Agricult.	27,13	24,85	12,08
125	1205	Máq.Uso Dom.Escritório	60,66	113,64	22,34
126	1206	Máq. Rodoviárias	29,70	19,99	6,84
131	1301	Equip.p/Energ.Elétrica	69,02	59,23	12,20
132	1302	Cond. Elétricos	73,37	65,50	20,20
133	1303	Material Elétrico	65,44	76,44	24,73
134	1304	Aparelhos Elétricos	24,77	50,92	7,83
135	1305	Material Eletrônico	47,91	43,53	19,80
136	1306	Equip.Comunicação	100,83	132,04	20,33
141	1401	Fabric. Automóveis	114,99	141,00	0,00
142	1402	Caminhões, ônibus	45,52	79,25	0,46
144	1404	Indústria Naval	8,23	30,82	0,28
145	1405	Veic. Ferrosos, Outros	45,55	64,63	5,11
151	1501	Madeira	143,79	147,66	3,28
161	1601	Mobiliário	112,85	137,85	3,78
171	1701	Celulose	21,11	34,50	7,83
172	1702	Papel e Papelão	17,31	75,53	5,82
173	1703	Artefatos de Papel	87,81	150,16	58,23
181	1801	Borracha	68,83	118,75	31,50
191	1901	Couros e Peles	149,18	124,72	3,07
201	2001	Elementos Químicos	21,88	18,75	8,95
202	2003	Refin.e Petroquímica	11,45	32,14	6,33
203	2004	Deriv.Carvão Mineral	19,82	17,35	14,46
204	2005	Resinas, Elastom.	40,13	53,67	27,53
205	2006	Óleos Vegetais Bruto	49,00	26,55	6,38
206	2007	Pigmentos, Tintas	62,21	88,21	44,56
207	2008	Prod.Quím.Diversos	20,65	44,20	5,80
211	2101	Farmacêutica	18,11	23,39	14,41
221	2201	Perfumaria	62,21	169,89	47,91
231	2301	Matéria Plástica	203,34	202,54	34,67
241	2401	Benef.Têxteis Naturais	45,33	59,47	19,83
242	2402	Fiação,Tecel.Artificial	67,25	198,77	18,92
243	2403	Fiação,Tecel.Fib.Nat.	194,97	159,22	1,46
244	2404	Outras Têxteis	87,50	172,41	25,75
251	2501	Vestuário	164,95	180,62	10,23
252	2502	Calçados	170,38	170,00	0,39
261	2603-2612	Agro.Indust.Alimentar	97,39	124,58	9,73
262	2610	Ref. de Açúcar	166,67	155,00	166,67
263	2613	Ref.Óleos Vegetais	53,24	75,23	19,34
264	2614	Outras Ind.Alimentares	59,21	156,70	10,67
271	2701	Bebidas	60,97	178,33	41,06
281	2801	Fumo	155,70	177,78	142,95
291	2901	Editor e Gráfica	6,12	63,86	3,06
301	3001	Diversas	45,10	81,19	18,84
400	0101-0301	Agricultura	59,25	70,53	10,30
		Média [d] de Manufaturados	73,30	105,81	17,18

FONTE: Para t_{N1} e t_R - Comércio Exterior do Brasil - Importação 1978, Ano 7, Tomo 1.

t_{N2} - Consolidação da Tarifa Aduaneira do Brasil (TAB).

NOTAS:

a. t_{N1} - Tarifa Nominal calculada para 1978 usando ponderações das importações.

b. t_{N2} - Tarifa Nominal de janeiro 1980 calculada como média simples baseada nos itens na Tarifa Aduaneira do Brasil.

c. t_R - Tarifa Realizada (1978), calculada como a receita do imposto da importação arrecadada dividida pelo valor das importações.

d. Média calculada usando ponderações do valor adicionado no ano 1970.

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