TRADE POLICIES AND INDUSTRIAL INCENTIVES IN BRAZIL, 1980 - 81

by
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Chapter 1

INTRODUCTION

The nature and impact of commercial and industrial policy
in Brazil are questions which have received considerable polemical
attention. Questions regarding such questions are hotly debated
in public fora among business and government alike. As in other
countries, economic policies in Brazil affect the relative prices
and profitabilities of certain sectors of the economy vis-à-vis
other sectors. In an economy heavily based upon market mechanisms,
profits serve as economic signals to attract investment and
other economic resources. Market distortions imposed by govern-
ment policies thus affect relative prices, profitabilities, and
resource allocation. In a general sense those policies which
alter relative prices among sectors can be regarded as commercial
and industrial policies.

The actual formulation and implementation of such economic
policies are carried out in pursuit of diverse economic objectives
by various government institutions and policy-making authorities,
acting at times in a seemingly independent fashions. The economic
policy areas of concern can be classified into five major cate-
gories. First, and most sweeping, is exchange rate policy which
affects the prices of all tradable products vis-à-vis nontradable
goods and in so doing determines the competitiveness of Brazilian
tradables. Second, restrictions on imports, including tariffs,
surcharges and nontariff barriers, directly or indirectly af-

fect prices in the domestic economy. The same can be said for regulations for exports, either in the case of export restrictions or subsidies. Fourth, subsidies for domestic production also affect price and output levels; such subsidies consist of a large variety of fiscal and credit incentives. Finally, domestic price controls also have an important effect on relative prices-and accordingly constitute an important instrument of industrial policy.

That these very diverse and varied economic policy instruments often work at cross purposes is illustrated by a simple example. Consider the case of the Brazilian steel industry. This industry, as are all others producing tradable products, is discriminated against by an exchange rate policy which maintains an overvalued exchange rate. Offsetting this discrimination, however, is a complex and involved system of import restrictions for steel products, including tariffs, quotas, and direct controls exercised by CONSIDER. In addition, the industry receives fiscal incentives in the form of IPI tax credits and financial subsidies through its ability to obtain loans at less than market interest rates. The industry also benefits from government policies maintaining the domestic prices for iron one — an important input — at levels substantially beneath international prices. On the other hand, the industry has to acquire other inputs, notably capital equipment, at prices considerably above international prices. Moreover, since steel itself is an important industrial input, the government has sought to both combat inflation and stimulate the development of steel using industries by controlling the domestic price of steel through the CIP (Conselho Interministerial de Preços). To assure that the domestic market is supplied at the stipulated domestic prices export controls exist: Governmental permission is required to export. Yet, in

the case of authorized exports there are export subsidies in the form of credit incentives and a direct fiscal subsidy.

What the net effect of all these conflicting policies is not clear at a cursory glance or with only a qualitative, i.e., nonquantitative, assessment. Is the Brazilian steel industry benefitted or discriminated against by the existing constellation of economic policies? And to what extent? How does it fare relative to other industries? A further dimension of the relative incentives or disincentives received by the steel, or any other, industry concerns the balance between incentives for it to produce for the domestic market or for the export market. Is there a pro- or anti-export bias in the economic policies affecting different sectors? Only a systematic, comprehensive and quantitative analysis can provide answers to such questions.

The premise for this study is that it would be useful to know what the net effects of economic policies are on different sectors of the economy. Accordingly, the major questions posed are (1) what are the net effects of economic policies for different sectors and (2) to what extent are different sectors protected or disprotected in relation to other sectors. Our study presents an analytical framework for examining such questions and presents the results of a modest attempt to do so.

To analyze the questions posed for this study regarding the net effects of commercial and industrial policies it is necessary (1) to quantify the effects of the various economic policies in question separately and (2) to incorporate the separate effects in an examination of the net effects. A major analytical shortcut can be obtained if it is possible to directly observe joint effects. We have been able to do this through the

direct observation of international and domestic prices. Differences in such prices for any given product are imposed by economic policies. Consequently, a measure of these differences provides an approximate measure of the impact of economic policies. Instead of trying to quantify the effects of different economic policies, we have observed their price effects directly.

The analytical framework employed in this study is partial equilibrium in nature, despite the need examine policy effects in a larger, or general equilibrium, environment. Domestic demand and supply functions are posited for each product in question along with a single international price for that product expressed in foreign exchange. Making the small country assumption in relation to world markets, and adjusting for transport charges, the given international price for the product can be regarded as either a foreign supply or demand schedule, possessing infinite elasticity. Various economic policy instruments pursued by the government have effects on domestic price levels, domestic output, and trade flows.

To incorporate the effects that policies have induced indirectly on final products through their effects on inputs we have employed incentive (disincentive) measures dealing with value added. To what extent do policies permit the value added for an industry to differ from that implied by international prices, i.e., the absence of policy interventions? Accordingly, our analysis involves the estimation of effective rates of protection for domestic market sales and effective rates of export promotion.

There have been several previous studies of effective protection for Brazil, consisting of efforts by Bergsman and

Malan (1971), Bergsman (1970), Tyler (1976) and Neuhaus and Lobato (1977). With the exception of Neuhaus and Lobato, all the previous work has been based upon nominal tariffs, with the implicit assumption being that domestic prices differ from international prices by the extent of the nominal tariff or tariff equivalent. In the case of tariff redundancy, protection is over-estimated. On the other hand, other policy instruments in these studies are ignored. In the past, tariff redundancy may at one point not have been excessive. At the present time, however, tariff redundancy is widespread, as are other policy instruments used to promote or penalize different economic activities. Consequently, any current attempts to estimate the effects of current economic policies can not be based upon nominal tariffs.

The effective protection study by Neuhaus and Lobato, while still based upon tariff information, avoided the problem of tariff redundancy by using realized tariffs instead of nominal legal tariffs as the measure for nominal protection. Thus realized tariffs, computed as actual tariff collections divided by imports, are taken to represent the degree to which domestic prices are allowed to differ from international prices. The problem is that these realized tariffs merely reflect the extent to which the prevailing legal tariffs have been waived or reduced under various industrial incentive schemes. Such tariff reductions are not applied universally but rather on a case by case manner. The realized tariffs tehmselves have no bearing on actual protection afforded and should not be depicted as such.

Our study is different from the previous, tariff based, studies in that it (1) employs a superior measure of nominal protection, (2) is of course more current, reflecting the conditions during 1980-81, and (3) provides a greater level of disaggregation. While it is the most ambitious effort yet attempted

to analyze the system of incentives in Brazil, it is far from definitive. In fact, caution must be exercised in interpreting our results. Our intention has been to demonstrate how the problem of analyzing the overall system of incentives can be addressed and to provide some estimates of a general order of magnitude.

Chapter 2 will present a discussion of the methodology employed in the implicit tariff and implicit nominal protection estimates. Also in this chapter the data sources and gathering procedures are discussed along with the estimates themselves for 72 tradable goods sectors. Chapter 3 also focuses on the domestic market, presenting the estimates for effective protection for domestic sales and analyzing the structure of such protection. In Chapter 4 estimates of nominal and effective export promotion are presented and discussed, along with a subsequent analysis of pro- and anti-export biases in economic policies. Chapter 5 presents the major conclusions of the study and offers some, first step, policy recommendations with a view towards achieving a more rationale and consistent incentive system.

Chapter 2

IMPLICIT TARIFFS AND IMPLICIT NOMINAL PROTECTION

I.   INTRODUCTION

The complexity of the incentive system in Brazil rules out
any straightforward method of analyzing its effects through an
examination of the tariff policies or any other single policy
instrument. The effects of the entire constellation of economic
policies on relative prices must be taken into consideration.
For that reason a point of departure in any analysis of the
incentive system requires direct comparisons between actual
domestic and international prices. Only in that way can one   .
begin to assess effects of incentive or disincentive instruments.
These policy instruments have the effect of allowing domestic
and international prices to differ. The extent to which they do •
in fact differ reflects the incentives or disincentives provided
to an industry or sector.Accordingly, for tradable goods the law
of one price is taken as given and serves as an analytical point
of departure. Differences from international prices, barring
transportation costs, are seen as reflecting policy distortions.[1]

For analysing protection afforded in the domestic market,
the direct price comparisons permit the calculation of an implicit

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[1] As will be discussed below, market imperfections may also be
reflected in the observed divergences.

tariff on an individual product basis. The implicit tariff is defined as follows:

(6.1)
$$t_{IMPj} = \frac{P_{Dj}}{P_{Mj}} - 1$$

where

(6.2)
$$P_{Mj} = (P_{Wj} + C_{Fj}) \, r$$

and where

P_{Dj} = the domestic FOB factory(producer) price, excluding the IPI and ICM taxes for product j

P_{Mj} = the CIF import price of product j expressed in domestic currency for product j

P_{Wj} = the "world" price for tradable product j expressed FOB at reference point of origin in foreign currency

C_{Fj} = cost of freight and insurance from reference point of origin to Brazilian port of entry, expressed in foreign currency

r = prevailing official exchange rate, defined as cruzeiros per foreign currency unit.

The implicit tariff reflects the proportional amount by which the domestic producer price exceeds the international price through the exercise of domestic economic policies. In such instances production for the domestic market is provided positive protection through the incentive system. In the case

where $t_{IMP}<0$, disregarding for the moment transportation costs, the sector is being discriminated against by export taxes, controls or other disincentives. It should be noted that in either case, i.e., $t_{IMP}>0$ or $t_{IMP}<0$, adjustments should be made to account for any direct production subsidies. The latter have the effect of reducing P_D, and consequently such production subsidies, either of a fiscal or credit nature, must be netted out.

In making the direct price comparisons we have examined individual products on as a detailed basis as possible. There are many standardized tradable products for which there exist established international markets. For such products making the price comparisons, albeit onerous, is relatively straightforward. The greatest problems arise when the products are not standardized, such as is most readily apparent with finished consumer goods and capital goods. In these industries product differentiation and quality differences are of considerable importance. Even in these cases, however, price comparisons can frequently be made by selecting the more simplified and standardized products within a given industry. Moreover, in the case of industries where multinational firm production is important, products can be chosen which are the same whether produced in Brazil or abroad.

Since the price comparisons are made on a product by product basis, aggregation over products is necessary in order

to generalize from the results and to render them more readily comprehensible. Such aggregation presents formidable problems. Our procedure has been to select products subject to the criteria of comparatibility, data availability and sectoral representativeness. Efforts have been made to obtain some product coverage for every tradable goods sector for a large number of sectors. A simple average of the implicit tariffs for the products in each sector was then calculated. It is these means that are used as the basis for computing nominal protection for domestic market production in the subsequent analysis.

Our rather simplistic aggregation procedure presents several difficulties. First, the sector classification is in many instances arbitrary and disparate, including widely heterogeneous products. Second, even though efforts have been made to ensure that the products selected presented some degree of representativeness for the sector in question, it is not clear that a selectivity bias does not exist for some sectors. Similarly, the more standardized products ·in a given sector themselves may not be representative of the sector as a whole. Some of these problems could admittedly be attenuated with larger product samples. Finally, and very importantly, there is a question of the meaning of the tariff averages for the sectors if there is observed substantial variance around the sectoral product means. As will be discussed below, this is a significant problem with some sectors, especially those aggregated in such a way to include a disparate range of

heterogeneous products. Despite these difficulties our
aggregation procedure has been employed simply because there
existed no viable superior alternative. In many cases, it is
felt that the problems imposed in the aggregation are minor,
if at all relevant. In a few others, however, serious difficulties
do exist and appropriate qualifications must be made in
interpreting the results.

The aggregation of the individual product implicit tariff
calculations is made according to the IBGE industrial
classification. Specifically, the classification system employed
is that of the IBGE input-output accounts. The most
disaggregated level,i.e., the 5 digit level, in the input-output
accounts contains 160 product groups, of which 132 encompass
nominally tradable goods. Of these, some 111 are manufactured
product groups. The more aggregated 4 digit level consists of
87 sectors, including 72 tradable goods sectors. Again the
great majority - 67 sectors - are manufacturing sectors. For
purposes of presenting the data in a more readily compehensible
form, we have frequently employed the familiar IBGE 2 digit
level of aggregation, encompassing   21 manufacturing
industries.

The use of the IBGE input- output format in classification
and aggregation presents the advantages of (1) enabling
comparisons and analysis with other Brazilian data series
organized in a comparable format and (2) permitting the

calculation of effective rates of protection using the
Brazilian input-output tables. On the other hand, the uniqueness
of the classification system for Brazil renders more difficult
the comparison of the Brazilian incentive system with those of
other countries. Moreover, some of the sectors, reflecting the
production structure of the Brazilian economy, appear rather
arbitrary and even somewhat artificial. For example, in the 5
digit classification there are a total of 3 different sectors
producing coffee and coffee products at different stages of
production.[2]

II. DATA SOURCES

Three distinct data gathering strategies were simultaneously
pursued, involving different data sources in order to
undertake the direct price comparisons. In general the objective
was to obtain the most up-to-date price information available.
The period of data collection roughly ran from June 1980 to
April 1981. The next few pages will describe the data collection

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[2] They are undried coffee beans,dried coffee beans and roasted,
ground and instant coffee. The distinction between the first
two product groups seems especially arbitrary since drying
usually takes place on the farm.

efforts from the three·principal data sources.[3]

A. CPA Information

In order to bring about a change in tariff rates or other commercial practices, a firm can petition the Council for Tariff Policy (Conselho de Política Aduaneira, or CPA). In support of its application the soliciting firm must provide extensive documentation, including information on domestic and international prices for the products in question. Basically, three types of CPA processes are of interest - those requesting tariff rate increases, tariff rate reductions or reference prices. The majority of the processes request additional protection. Based upon an examination of the requests and some independent verification of price information, the CPA can then grant tariff

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[3] A fourth data gathering strategy was originally planned. It consisted of extracting NBM 8 digit domestic price information from the IPI tapes and comparing it with CIF import price information, as collecte by CACEX. This effort, to have been undertaken in cooperation with FUNCEX, was necessarily abandoned owing to problems of data access and excessive data processing costs. In addition, such analysis woul have presented problems of having to rely on unit values, i.e., value per unit of weight, instead of actual prices. Even at the highly disaggregated 8 digit leve there still exists substantial product heterogeneity for some product lines. In any case, previous research including, most importantly, that of Kravis and Lipsey(1971), has indicated some of the pitfalls of using unit values. It should also be pointed out that employing Brazilian import data to generate the import unit values would restrict the price comparisons to product groupings for which there are actually imports. As will be subsequently demonstrated, imports in many sectors are nearly nonexistent.

schedule changes.

The information generated in the CPA evaluation process permits some direct price comparisons. The CPA was kind enough to grant access to its files and reports("pareceres")[4]; in addition valuable current information was provided by the SEPLAN representative on the CPA. On the basis of such data covering the period 1978-81 some 350 direct price comparisons were made.[5]

While it can be argued that, to the extent that there are more tariff increase requests than those for tariff reductions, there is a bias resulting in an overstatement of the implicit tariffs. A firm must be able to demonstrate that it "needs" a higher tariff, and this implies a possible tendency on the part of firms to exaggerate the domestic-international price differences. This line of reasoning, however, has its limits. If the need for protection is shown to be excessive, the CPA is liable to reject the request on grounds of economic efficiency.

The 350 usable direct price comparisons from the CPA processes unfortunately are not evenly, or randomly, distributed over sectors. Some sectors are heavily protected with redundant tariffs and widespread quantitative restrictions on imports. Such protection and the virtual prohibition of imports results in little in the way of requests to change the system.

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[4] To our knowledge, no other study, outside the CPA, has been conducted making use of such materials.

[5] Some information was also included for the year 1977.

Firms receiving such protection are indeed happy to leave things

the way they are, and potential importers correctly perceive

any request for import liberalization for these products to be

futile. Consequently, there are no CPA processes, and resultant

price comparisons, in such industries as textiles, apparel,

shoes, furniture, and beverages. While our CPA derived price

comparisons do in fact cover a total of 41 five digit level sectors,

there is considerable concentration in such sectors as Other

Chemical Products(62 product price comparisons) Miscellaneous Manufacturing

(37 price comparisons) and Petrochemicals(31 price comparisons).[6]

B. FIPE Interviewing Survey

One approach to obtaining price information on an

internationally comparable basis for individual products is to

ask those who presumably are most knowledgeable about such

matters - the managers of the producing firms themselves. This

approach was tried in the form of a large scale interviewing

survey conducted in the state of São Paulo by the FIPE, in

collaboration with the World Bank. Although the focus of the

survey was the analysis of locational factors for the firms,

general quantitative information about the firms' operations was

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[6] Of the 62 price comparisons in the Other Chemical Products sector
(IBGE classification nº 20013) 44 resulted from processes seeking
to increase protection, i.e.,tariff increases or reference prices,
while the remaining 17 were derived from requests to decrease
tariffs.

included. Moreover, questions were incorporated into the questionaire dealing with domestic and international prices for both the firm's outputs and inputs[7]. Along with other requests for quantitative information, these questions were included into a "leave behind" annex to the questionaire administrated during the on-the-spot interview at the firm. The field interviews were conducted during the period August-December 1980. As a result, the price information obtained from the survey covers that approximate period.

The results obtained from this large scale effort, at least as far as our research interests were concerned, were disappointing. To be expected, the response rate in returning the leave behind annexes was low, despite concerted efforts on the part of the FIPE personnel administering the survey. A total of 588 industrial firms were interviewed throughout the state of São Paulo, representing a wide range of industrial activities. Of these some 104 constituted new plant operations for which little in the way of quantitative information on the firms' operations, including price information, was available at the time of the interview. Of the remainder only 143 returned the questionaire annexes - a response rate of only 30 percent.

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[7] The questions were framed in such a way that the firm could list "international" prices as either CIF import prices in Brazil or FOB export prices at some other point of origin. Adjustments were subsequently made. The firm was also provided the option of presenting a percentage difference between international and domestic prices.

Examining the 143 returned annexes, it was observed that 36 firms presented neither any of the requested domestic or international prices. Since these firms obviously possessed knowledge of their own domestic prices, the failure to provide at least this information must be construed as (1) a lack of interest in bothering to complete the form or (2) a feeling on the part of the responding firm that the price information was confidential or sensitive. Another 77 firms were willing to provide domestic price information,in greatly waying degrees of accuracy and completeness,but did not provide any international price data for either any of their products or inputs. It was only the remaining 30 firms - out of an initial 588 - that provide some of both domestic and international prices. Even these questionaires were frequently not complete.

Given the fact that some 77 of the responding firms were unable to provide any comparable international price information for either their products or inputs, a question of interpretation arises. In examining the questionaires, frequently there were encountered pencilled in remarks such as "imports not permitted", "question irrelevant", "product not imported",etc. One can not escape the fact that in many instances the firms simply did not know what the prevailing international prices were. There are elements of both rational market behavior and market knowledge imperfections in such ignorance. The lack of knowledge about international prices in some instances can be

interpreted as an indication of high levels of protection afforded in the domestic market. Import competition is simply not a factor, so there is no need for the firm to be apprised of what the comparable imported good would cost, either with or without tariffs. What matters to such firms are domestic market conditions.

By the same measure, export activity is not of interest if the domestic market , presumably heavily protected, presents greater profit opportunities than international markets. A problem arises through not keeping abreast   of international prices in that, when export does become profitable, the firm may be ignorant of such prospects. The development of redundancy in import restrictions may mean that exports do become profitable at some point. Yet the firm may look to the formal protection and import situation for its products rather than at international prices. If so, export opportunities may be lost as a result of such market knowledge imperfections. Our judgment is that there are elements of this type of market imperfections existent. It can also be noted that, comparing the interviewed firms furnishing and not furnishing international price information,those firms providing the requested international price data exhibited a tendency to be larger, export involved, and multinational in operation.

In addition to the low response rate for the price questions from the FIPE survey, there was a problem involving the quality of the information collected from the 30 responding

firms. The manner in which the questionaires were completed by the firms varied greatly, as one would expect. Some firms obviously took the task quite seriously, while others appeared quite lackadaisical and careless in completing the form. Some of the furnished price information was obviously incorrect. Internal checks of consistency were incorporated into the FIPE questionaire, and external checks for prices were possible through information generated from other sources. In the cases of apparently incorrect and unreconcilable price information a follow-up call to the firm was made to obtain clarification and correction, or the erroneous information was simply jettisioned. After the data cleaning process was completed[8], we were left with 112 usable price comparisons from a fairly wide range of some 29 five digit level manufacturing sectors.[9] Unlike the price comparisons made from the CPA information, the FIPE survey based price comparisons were not so heavily concentrated. The greatest of the latter's price comparisons were in Other Food Products(13), Pumps and Motors(10), and Polyethelene,PVC and Other Resins(10).

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[8] Some efforts were made to utilize the domestic price information available from the 77 completed questionaire annexes supplying such data. Yet, the definition of the products, even at the highly disaggregated NBM 8 digit level, presented problems in identifying exactly equivalent internationally produced counterparts. For this reason, along with problems of data quality, these efforts were abandoned.

[9] Since the FIPE survey information also generated individual firm cost data, some individual product estimates of effective protection were possible at the firm level. In general these estimates were consistent with those made using the more aggregated input-output accounts.

C. Miscellaneous Direct Price Comparisons

A third major source for our direct price comparison information is miscellaneous in nature. Domestic and international price information was gathered from nearly wherever it was available in the hopes that product comparability could be ascertained. The various sources included published materials, newspaper accounts and price lists. In addition numerous interviews with firms were undertaken to complement the data otherwise gathered in our research. A total of 214 direct product price comparisons were made in this fashion, raising the total number from all sources of information to 676. In some respects, the miscellaneous source category is the most important of the three data collection strategies. It was used to both fill gaps and complement the price comparisons generated from the CPA information and the FIPE survey. Accordingly, the sectoral coverage is the greatest from these price comparisons. Furthermore, since the data were gathered and compared by ourselves, we are a bit more confident of their quality that for the price comparisons made from price data generated by others. For example, it was possible in these estimates to control for representativeness of the products composing a sector.

Turning first to the sources for domestic price information, a single major source was the Interministerial Price Council (Conselho Interministerial de Preços, or CIP). In 1980 CIP price controls were comprehensive, extending to most of the industrial

sector with the major exception of the capital goods producing industries. While the original intention of CIP was to prevent monopolistic market power abuses, by 1980 some 2,000 products were subject to CIP control, although many of the covered industries, such as textiles and apparel, were clearly not characterized by oligopolistic market structures. The CIP was kind enough to make many of its price lists and information available. The problem then become one of finding the international prices of comparable products.

Two major difficulties are apparent with the use of the CIP price information. First, there is the problem of representativeness of the 1980 period itself. All of the CIP prices we employed were from either late 1980 or early 1981. During 1980 CIP was used as a anti-inflation devise. The CIP became more stringent in awarding price increases to firms, and the processing of requests was dragged out for longer periods rendering the granted increases less effective in real terms. The result was that profits for the controlled firms were squeezed and relative prices were distorted. The price controls have in fact constituted an unwitting disincentive to the industrial sector. Controlled prices were consciously held down, and, since we have employed this price information, there is a bias in understating the implicit tariffs. It was not possible to eliminate this bias, doing so would require some sort of estimate as to what the domestic price of a certain product would be in the absence of price controls[10].

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[10] Conceivably one might approach such estimates by comparing firm (sectoral) profit rates prior to and after the imposition of price controls.

A second difficulty inherent with the use of the CIP price materials concerns the timing of the increases. Since price adjustments are normally made only every six months, the real price of the product in question falls over the price period. As such, there is a problem as to which dates to select for a given product. Instead of using a mid-point, we have elected to use the date of the price increase for making the price comparisons. The resultant upward bias in our computed implicit tariffs, is thus offsetting in character to the downward bias concommitant with the existence of stringent price controls.

In addition to the CIP price information, other materials were also employed to obtain domestic price data. Newspapers publish information on various key agricultural products on a daily basis, and there exist numerous specialized publications, both by government agencies and private concerns, that furnish detailed price data[11]. Efforts were made at the time of data collection to obtain the most recent price information available. Thus the data points generally fall within the period October 1980-March 1981. In general the location selected was the Center-South, particularly São Paulo.

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[11] A few of the domestic price sources consulted were: Informações do Mercado Agrícola, Preços Recebidos pelos Agricultores, Preços Pagos pelos Agricultores, Informações Econômicas do Estado de São Paulo, Boletim de Custos and A Construção.

The international price information originated from a wide variety of sources[12]. Various international institutions collect and publish price information for internationally traded goods. These materials were used extensively. The World Bank in particular was highly cooperative in making available much information available in its files. Some U.S. and European domestic prices, with appropriate adjustments, were employed for products where those countries were exporters. Use was made of both government and private sector publications, the latter frequently being of a specialized industry nature. Whenever possible price lists were employed.

On the basis of the price information available, products were selected. As indicated above, efforts were made to include products considered to be representative of the different sectors. For example, in the cement industry common portland cement is by far the single most important product. Accordingly, this product was included in the analysis.

The form in which international price data are available varies greatly. Frequently, they are quoted in export FOB values.

[12] A list of the sources used for international prices includes World Bank, Commodity and Price Trends, UN, Monthly Statistical Bulletin; FAO, Monthly Bulletin of Statistics; U.S. Department of Labor, Produce Prices and Price Indexes; The Journal of Commerce; 1981 Building Construction Cost Data; The Commercial Bulletin; CRU Metal Monitor; Daily News Record; The Almanac of the Canning, Freezing and Preserving Industries; Leather and Shoes; Cotton Outlook; Engineering News Record; Asbestos; Preise and Preisindizes für die Ein und Ausfuhr; and Chemical Marketing Reporter.

In such cases freight and insurance costs have to be added to arrive at a hypothetical import CIF prices for a Brazilian port of entry. This adjustment has been made by adding the average freight and insurance costs to the FOB price values[13]. Typically, these shipping costs average an additional 10-15 percent of the FOB export price.

The price comparison timing problem, mentioned above in reference to CIP price adjustments for industrial products, is accentuated with agricultural products. In addition to annual fluctuations due to general supply and climatic conditions, agricultural prices are subject to substantial seasonal fluctuations. As indicated, our agricultural product price comparisons generally covered the period October 1980-April 1981. This period has included the end of harvest point for some products and an inter-harvest point for others. The seasonal fluctuations problem for domestic prices is complicated still further by the fact that international prices for agricultural products are volatile as well. For price comparison purposes these difficulties are reduced if a large number of randomly selected products is included[14]. Our sample of agricultural products, while including most of the major products, is

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[13] Brazilian import statistics are recorded and published in both FOB and CIF values. Average freight and insurance costs by product category can be computed as the proportional differences.

[14] This difficulty could also be attenuated by calculating average implicit tariffs for each product examined over time, e.g.,monthly periods. This,however, did not prove feasible. Only one point in time for each product was observed. However,it can be noted that our agricultural price comparisons results are roughly consistent with those in an extended time period analysis reported for key agricultural products in a recent study by Homem de Melo(1980).

relatively large. Given the relatively low variances around the means for the implicit tariffs, we feel that our estimates are reasonably robust.

Another problem inherent with agricultural sector product price comparisons stems from the distinction between domestic producer and wholesale prices. The prices should be expressed as producer prices. Yet, such data were not always available, necessitating some adjustments with wholesale price quotations. In general we have been very conservative in these adjustments; if there exists a bias it has been to overstate the domestic producer prices, thus overstating the implicit tariffs for the agricultural sector. It should be noted that agricultural commercialization and distribution costs in Brazil are very high relative to those of other countries. Expressed in another way, the inefficiency of the agricultural commercialization system serves to discriminate against agricultural producers in Brazil.

The price comparisons for some products and sectors only proved possible through conducting interviews with producing firms. Some 17 firms were interviewed, representing a wide variety of sectors, in addition to those firms included in the FIPE survey. In general these firms proved very cooperative, and the quality of the price information obtained from them was considered high.

A final qualification is in order. The question must be asked as to how representative the 1980-81 period is for making direct price comparisons and undertaking an overall examination of the incentive system. In general the period of analysis was one of an acceleration of the rate of inflation. Such inflationary acceleration is normally thought to be accompanied by a dispersion in relative prices[15]. The activities of the CIP during 1980 seem to attest to this distortion of relative prices. Furthermore, the 1980-81 period has witnessed an enornous proliferation of subsidized credit, most notably for agriculture, and, as will be discussed below, it is difficult, owing to data limitations, to empirically incorporate the effects of such production subsidies into a nominal protection measure. Thus, one can say that indeed the 1980-81 period is not a happy period for measuring incentives. But then again, one might well ask just what period is truly representative, and of what. The system exists, and it is the present system, prevailing at the time of this writing which we are trying to assess. Only in that fashion can one obtain a better understanding of possible allocation effects that the incentive system may have.

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[15] For some empirical evidence regarding the Brazilian experience see Moura da Silva (1981). Moura da Silva also argues that an inflationary spurt also has an initial effect of increasing agricultural prices relative to prices for industrial sector products.

III. PRICE OBSERVATIONS AND IMPLICIT TARIFF ESTIMATES

Combining the various information sources for the direct price comparisons, the results of the implicit tariff estimates undertaken at the 5 digit level are reported in Appendix Table A 6.1. Aggregation into the IBGE 4 digit level has been done by taking a simple average of those products in each sector. The means along with their standard deviations are reported in each case. For comparison purposes the December 1980 nominal tariff rates, as computed from the tariff schedule, i.e., the TAB, are listed in Column 1 of Appendix Table A6.1. A more aggregated two digit listing for the industrial sector, along with the relevant averages, is presented in Table 6.1.

Looking first at the value added weighted implicit tariff averages presented in Table 6.1, it is observed that the overall averages for Primary Agriculture(i.e., Forestry, Agriculture and Livestock) and Manufaturing are surprisingly low ‾ ‾23.0 and 11.9 percent respectively. Within manufacturing a cascading protective structure, readily apparent with the nominal legal tariffs, is no longer evident with the implicit tariff averages. While the implicit tariff average for consumer goods is higher than that for capital goods or intermediate products, the protection implied through the price system for capital goods exceeds that for intermediate products. In addition, at the two digit level substantial inter-industry differences are abundant in the industry averages.

Table 6.1
NOMINAL PROTECTION MEASURES
FOR INDUSTRY AT THE 2 DIGIT LEVEL, 1980- 81

Industry	Nominal Legal Tariff December 1980 (%)	Average Implicit Tariff (%)	Average Implicit Nominal Protection (%)
ining	27.0	-15.9	- 3.6
on-Metallic Minerals	107.5	-22.5	-17.7
etallurgy	54.3	3.0	10.8
achinery	56.3	24.0	58.7
lectrical Equipment	99.1	45.2	81.7
ransportation Equipment	101.9	-16.7	- 3.7
umber & Wood	125.3	- 8.9	- 4.3
urniture	148.2	20.0	26.1
aper	120.2	-19.9	-16.1
ubber	107.3	-23.3	-15.4
eather	156.6	10.0	15.6
hemicals	50.3	40.7	55.1
harmaceutical Products	27.9	79.0	97.4
erfumary	160.5	28.5	35.1
lastics	203.8	14.3	28.9
extiles	167.3	20.6	25.2
pparel	181.2	24.2	30.6
ood Products	107.8	-21.3	- 3.4
everages	179.0	- 9.9	- 5.3
obacco	184.6	- 3.6	1.3
rinting & Publishing	85.5	18.1	24.1
iscellaneous	87.0	73.9	91.8
AVERAGES[1]			
Primary Agriculture[2]	53.8	-23.0	- 7.2
Manufacturing	99.4	11.9	29.4
Capital Goods	83.3	13.6	45.5
Intermediate Products	76.5	5.6	25.2
Consumer Goods	135.2	13.9	14.6

otes: 1. Value added weights of 1979 are used for aggregating from the four digit to two digit level and for computing the more aggregated means.

2. Includes Forestry and Fishing, Agriculture, and Livestock and Poultry.

ource: Appendix Table A6.1.

Those industries with the lowest implicit tariffs are Rubber
(-23.3 percent), Non-Metallic Mineral Products(-22.5 percent),
Food Products(-21.3 percent), and Paper(-19.9 percent). Seen as
receiving the most domestic market protection through the price
system are Pharmeceutical Products(79.0 percent),Miscellaneous
Manufacturing Products(73.9 percent), Electrical Equipment(45.2
percent), and Chemicals(40.7 percent).

It is clear that such averages as those presented in Table
6.1 disguise a number of relevant considerations, including that
of considerable product heterogeneity. Greater detail is provided
through an examination of the more disaggregated Appendix Table
A6.1. Within the agricultural sector(Sector 0201) the
discrimination that agricultural activities receive through
prices and the commercial policy system is readily apparent and
widespread. Nearly all products display domestic producer prices
below international (i.e., import CIF) price levels. The
important exception is wheat, for which domestic protection is
generously supplied through a price support system; the implicit
tariff for wheat, calculated for February 1981, was 118
percent.[16] Excluding the exceptional case of wheat from the

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[16] While producer prices are set at high levels to stimulate
domestic production, the government simultaneously maintains low,
heavily subsidized prices for domestic wheat consumers through the
administration of a government wheat monopoly.The rationale of
this policy of subsidying domestic wheat consumption is ostensibly
to combat inflation and benefit low income groups. The consumer
prices are set beneath the world price level, serving to swell
consumption and imports. The difference between the purchase and
sales price of wheat is made up through fiscal means. This wheat
subsidy in recent years has substantially contributed to money
supply emissions by the government.

average implicit tariff.for Agriculture reduces the variance around the mean considerably.[17]

The heterogeneity of the products included even at the disaggregated 5 digit level serves to frequently present high standard deviations for the implicit tariff means reported. While much in this regard is evident from Appendix Table A6.1, some specific remarks concerning some of the sectoral means and variances are in order. With respect to the metallurgy industry, it can be noted that for Flat Iron and Steel Sheet (Sector 11021) and Rolled Iron and Steel Sheets(Sector 11022) the implicit tariff means are -9.9 and -22.2 percent, respectively, with substantial standard deviations. Yet, for both sectors the principle products have implicit tariffs near the means, and it is less significant, outlying,products that.inflate the standard deviations.

In the Petroleum Refining Sector(Sector 2003), the products are also quite diverse. Listed under Gasoline and Diesel Oils are two basic products subject to very different government pricing policies. In February 1981 the implicit tariff for gasoline was calculated at 175 percent, with domestic prices maintained at high levels by the government to inhibit consumption. For diesel fuel the comparable implicit tariff was estimated at 11 percent. In both these cases, along with those of other petroleum derivatives, the prices are set by government fiat and, given the nature of

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[17] Without wheat the sector mean falls to -19.4 percent and the standard deviation drops to 28.9 percent.

petroleum production and distribution in Brazil, have little to do
with production incentives. With the exception of gasoline and
nafta, which is priced low to provide incentives to the petrochemical
industry, the government policy with respect to petroleum derivations
is to price them in accordance with international price movements.

As is evident from Appendix Table A6.1, the standard
deviations around the implicit tariff means are particularly large
for the capital goods industries. Undoubtedly product mix
considerations and the enormous product heterogeneity inherent
in these industries goes a long way in explaining the large variances
around the means. Yet, there is another, compelling explanation.
In addition to tariffs and other explicit import restrictions, the
government has undertaken still other measures to promote the
cpaital goods industries. Various credit and fiscal incentive
measures are provided, sometimes of substantial quantitative
importance. In general these measures are discretionarily awarded
by diverse government agencies on a product by product and firm
by firm basis.[18] Thus it is quite reasonable to expect there to be
considerable domestic price variance in these industries, even
at times for the same products.

The distinction between nominally tradable and nontradable
goods is fundamentally transportation costs. While some goods
such as raw sugar cane and fresh bread are clearly nontradables,
the distinction for many products is by no means dichotomous. Some

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[18] For a description of these measures and an attempt to quantify
their impact, see Tyler (1980).

such products are included in our sample. Natural protection for
the domestic market is provided through transportation costs. Since
in our estimates the international prices are taken to be CIF
import prices, the implicit tariffs can not be uniformly be
regarded as reflective of international competitiveness. A product,
or sector, may exhibit a low implicit tariff but some of this may
merely reflect high transportation costs. The non-metallic mineral
product manufacturing and beverage industries are especially
characterized by such high transportation cost circumstances.

Comparing the nominal legal tariffs with the implicit tariff
estimates it is clear that widespread tariff redundancy exists.
As can be seen in Appendix Table A6.1, in all but 6 of the 72 nominally
tradable goods sectors listed at the four digit level the
nominal legal tariff exceeded the implicit tariff. In most instances
the differences were quite large. With industrialization and
economic growth the relative prices of many manufacturing products
have fallen resulting in extensive "water" in the tariff
system. With such redundancy apparent it is to be expected that,
barring tariff reduction incentive schemes, imports are
effectively inhibited. When the existence of the extensive nontariff
barriers is introduced into the discussion, the effective restriction
of imports becomes even more dramatic.

The effect of the high, and redundant, tariff levels, along
with the extensive and intricate system of nontariff barriers, has

been to reduce imports in many industries to practically nothing.
Viewed in another way this is tantamount to saying that
import substitution in these industries is complete, and has
been so for some time[19]. Brazil's imports have been compressed to
consist almost entirely of petroleum, some basic good grains,
industrial intermediate goods, and some, generally more
sophisticated, capital goods. These products are generally admitted
under special tariff arrangements. This compression of imports by
the prevailing system of commercial policies is evidenced in Table
6.2 at the two digit level and Appendix Table A6.2 at the more
disaggregated IBGE 4 digit level. In examining the ratios of imports
to total available domestic supply in 1979, only four industries
(Machinery, Electrical and Communications Equipment, Chemicals, and
Miscellaneous Manufacturing) indicated imports accounting for 10 percent or
more than total available domestic supply. The imports for many
industries, particularly those producing durable consumer goods,
are seen to be minuscule relative to domestic production.

On the export side, it has been noted that the transportation
costs incorporated into the implicit tariff estimates may give an
exaggerated notion of export competitiveness, disregarding other
policies. To be sure, the dramatic increases in exports, especially
of manufacturing products, since the mid-1960's reflect decreasing

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[19] The average ratio of imports to available domestic supply (i.e.,
domestic production plus imports) for all manufacturing had
declined from .36 in 1919-20, to .20 by 1939, and to .06 by 1964.
In 1964 these ratios for individual 2 digit industries exceeded
.10 for only the machinery, chemicals, and miscellaneous
manufacturing industries. For a discussion see Tyler(1976), pp.
67-77.

Table 6.2

RELATIONSHIP BETWEEN TRADE AND OUTPUT
FOR MANUFACTURING, 2 DIGIT LEVEL, 1970 AND 1979

Industry	Ratio of Imports to Total Available Domestic Supply (M/ (X + M))		Ratio of Exports to Output (E/X)	
	1970	1979	1970	1979
ᴉ-Metallic Minerals	.027	.024	.008	.018
:allurgy	.100	.046	.032	.183
:hinery	.284	.195	.036	.142
:ctrical Equipment	.188	.141	.014	.044
ᴉnsportation Equipment	.078	.036	.007	.099
ᴉber & Wood	.004	.010	.142	.089
:niture	.001	.001	.003	.008
ᴉer	.086	.049	.009	.077
ᴉber	.029	.044	.009	.034
ᴉther	.005	.026	.135	.213
:micals	.156	.118	.057	.114
ᴉrmeceutical Products	.060	.081	.008	.025
:fumary	.022	.012	.002	.011
ᴉstics	.005	.003	.001	.008
:tiles	.006	.006	.074	.065
ᴉarel	.008	.003	.010	.074
ᴉd Products	.009	.051	.133	.169
ᴉerages	.045	.013	.003	.018
ᴉacco	.000	.001	.115	.221
ᴉnting & Publishing	.023	.020	.003	.006
:cellaneous	.217	.211	.022	.077
Total	.080	.068	.057	.111

levels of policy discrimination against export activities and increased export competitiveness. At the same time, however, it is evident from Table 6.1 and Appendix Table A6.1 that many sectors still do in fact suffer economic policy discrimination. Domestic prices for many products are systematically kept beneath international price levels through the use of price controls, export taxes, and export restrictions. Agricultural products, for example, are subject to payment of the ICM tax for exports, a practice which was elimated in the late 1960's for manufactured exports. Specific de facto export taxes also prevail for a number individual products such as coffee and minerals. In addition, an involved system of export restrictions and licensing exists for many products. The bureaucratic justification for such discrimination against export activity is almost always the stated desire to satisfy the domestic market at lower than international prices for reasons of equity, inflation repression, and industrial promotion. The result is that the exportable surplus mentality, observed in Brazil during the 1950's[20], still exists for many basic products. Within the manufacturing sector by 1979, despite the observed rapid export growth, there were few industries where exports accounted for more than 10 percent of output. (Table 6.2)

The conclusion from the analysis is inescapable. At least, and especially, on the import side, commercial policies in Brazil have transformed many nominally tradable goods into another type of analytically distinct goods. These goods can be regarded as pesudo-nontradables. Commercial policies of the type pursued in Brazil

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[20] See Leff (1967).

have effectively severed the link between international and
domestic prices. The traditional partial equilibrium analytical
framework, where international prices, in conjunction with trade
policy instruments, are taken to determine domestic prices for
tradable goods, is of little usefulness in analysing domestic price
formation in Brazil[21]. These goods, or at least many of them, are no
longer in effect tradable goods but rather pseudo-nontradables,
whose prices, like other non-tradables, are determined by domestic
demand and supply conditions instead of international prices and
trade tax equivalents.

IV. ADJUSTMENTS FOR CREDIT AND FISCAL PRODUCTION SUBSIDIES: IMPLICIT NOMINAL PROTECTION ESTIMATES

The estimated implicit tariffs can not be considered measures
of nominal protection for domestic market sales. To do so would
understate the nominal protection afforded in the domestic market.
Domestic production subsidies, brought about through credit or
fiscal mechanisms, constitute production incentives since they serve
to increase profitability at a given domestic price. It is therefore
necessary to include such subsidies in our estimates of nominal
implicit protection.

First, to handle production subsidies conceptually in our
estimates some assumptions must be made regarding average, or unit,
profitability. At a given domestic FOB factory price P_{Dj} total

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[21] Analytically, the divorcing of domestic prices and international
prices for many nominally tradable goods also undermines the
usefulness of many of the two sector open economy models, along
Mundell lines, involving the distinction between tradable and
nontradable goods. With Brazilian style trade policies some goods
can flip-flop back and forth between the two sectors.

profits for the price-taking firm are written as

$$(6.3) \quad \pi = P_{Dj} - C(Q) + S_{Dj}$$

Assuming S_{Dj} - the domestic subsidy amount - to be proportional to output Q, we can write

$$(6.4) \quad S_{Dj} = s_{Dj} \cdot P_{Dj} \cdot Q_j$$

where s_{Dj} can be regarded as the total domestic subsidy rate for product j. Accordingly, unit profits can be expressed as

$$(6.5) \quad \pi/Q = P_{Dj} (1+s_{Dj}) - \frac{C(Q)}{Q}$$

While this specification separates production subsidies from the more customary supply-side considerations, it allows us to view the domestic price and subsidy rate in an analogous fashion with respect to profitability. To maintain unit profitability domestic prices and the subsidy rate can be substituted in accordance with Equation (6.5).

This relationship allows us to extend the basic implicit tariff framework by incorporating direct production subsidies into a more generalized measure of nominal implicit protection (p_{IMPj}). It is expressed as

$$(6.6) \quad p_{IMPj} = \frac{P_{Dj}(1+s_{Dj})}{P_{Mj}} - 1$$

This concept provides a measure of the impact that economic policies, at a given official exchange rate, have on imparting nominal protection to product j relative to the import CIF price. It is this measure that we have employed in our analysis.

The actual measurement of the domestic market subsidy rate (s_D) for different sectors at a disaggregated level is exacting and requires a number of unfortunately rather arbitrary assumptions in view of the data availability limitations. The basic fiscal and credit subsidy schemes have been described above in Chapter 5, and Tables 5.1 and 5.3 provide some general indications of their aggregated magnitude. Our task here is to disaggregate both the fiscal and credit subsidies to the 4 digit level.

Turning first to the fiscal incentives, it can be noted that these incentives take various forms. The major type of fiscal incentive granted by the government is the reduction or exemption of import duties for government approved projects. Since these benefits do not formally constitute production subsidies, they have been excluded from our adjustments.[22] The fiscal credit for steel producers, based upon 95 percent of the IPI, was estimated from the 1979 fiscal credit total and output data at 2.5 percent of steel product outputs. For the capital goods industries two fiscal credit programs were relevant for domestic market sales. As described in Chapter 5, a discretionary system of fiscal credits related to the IPI exists for approval capital goods under D.L. 1335. For the products included this constitutes a direct

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[22] Since duty free imports at an overvalued exchange rate imply a subsidy, it can be noted that there is in fact a subsidy element involved to the extent that the degree of the prevailing exchange rate overvaluation exceeds that of the tariff reduction. There is no straightforward way, however, that such a consideration can be incorporated into our estimates.

production subsidy. While these subsidies can conceivably range up to 20.7 percent, as measured on a value of product basis, in practice the benefits are not awarded on a widespread basis. Comparing the total fiscal credits granted in 1979 under the program with output data, we have estimated an average subsidy rate of 2 percent on a value of product basis. A more widely used fiscal incentive for domestic capital goods sales is an accelerated depreciation provision in the income tax laws. A previous study has made a rough estimate of the magnitude of this incentive, and it is this estimate that we have employed.[23] In general, there have been few revisions in the relevant fiscal incentive schemes during the period 1978-81. It therefore seems reasonable to use incentive estimates made with 1978-79 data to approximate the fiscal incentives for the 1980-81 period.

In comparison with the fiscal incentives, the credit subsidies are more involved, more extensive, and even more difficult to estimate on a 4 digit level. These subsidies result from the ability of producing firms, or farms, to obtain loans at interest rates beneath what would constitute free market rates. A realized credit subsidy rate (s_{CR}) can be estimates as:

$$(6.7) \quad s_{CRj} = \frac{S_{CRj}}{X_j} = \frac{Q_{CRj}}{X_j} \cdot \left(\frac{i-i'}{1+i} \right)$$

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[23] See Tyler(1980). With the present tax rates, and under assumptions concerning general profitability, it has been estimated that this incentive amounts to 5 percent on a value of product basis.

where

S_{CRj} = total amount of credit subsidy for firm or product j

Q_{CRj} = loan amount

X_j = output of firm or product j

i = market interest rate

i' = subsidized interest rate.

The last expression on the right hand side of equation (6.7) can be regarded as the credit subsidy rate.

The credit subsidies in the agricultural and livestock sectors of the economy are presently of considerable magnitude. For years it has been a government policy to intentionally provide the rural sector with subsidized credits, but with the acceleration in the inflation, in part itself due to the extension of agricultural credits, the amount of the subsidies grew rapidly in the late 1970's.[24] We have estimated the 1980 agricultural and livestock sector realized credit subsidy rates to be equal to 21.1 percent of output.[25]

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[24] For good discussions see Sayad (1978) and Resende (1980,1981).

[25] The credit subsidy rate, as opposed to the realized credit subsidy rate, was estimated at 39.1 percent. Our estimates have been based on assumed market rate of interest for 1980 of 115.2 percent-5 percent above the increase in the general price index, a realized nominal interest rate for agricultural and livestock loans of 31.0 percent, loan balance amounts in the banking system, and production and income estimates. These data, along with alternative credit subsidy estimates, are presented and discussed in the on-going research of Gervãsio Castro de Resende and Milton da Mata entitled "Crédito Agrícola no Brasil". Their subsidy estimates, while comparable, are slightly higher than ours.

Our difficulty with using such an estimate stems from the fact that it is, by its nature, an average. The actual provision of agricultural credit through the banking system, most notably the Banco do Brasil, is extremely lopsided. Favored crops, including most of the major export crops, account for disproportionately large amounts of credit, while other products, such as the basic foodstuffs of mandioc, beans, and potatoes, receive little. Moreover, as to be expected with such a subsidized credit bonanza and its implied credit rationing, the recipients of such governmental largess tend to be large firms. Ferreira (1981) has estimated that in 1975 in the Northeast only 4 percent of the credit went to farms of 50 hectares or less.

The average industrial sector realized credit subsidy rate was estimated in an analogous manner to that for agriculture and livestock. Central Bank accounting and reports list loan balances, according to major sectors of the economy, for the consolidated banking system. From such information loan activity is approximated for the industrial sector as a whole. The average credit subsidy rate, given presumed free market interest rates, monetary correction factors, and observed nominal interest rates, was estimated as 25.7 percent. Adjusting for loan activity as a proportion of output, the average realized credit subsidy rate for industry was calculated to be equal to 10.3 percent. No inclusion was made for investment credits through the investment banking, as opposed to commercial banking, system. As such, our estimates may be conservative, although it can be argued that it is current production credits rather than investment credits which are at issue.

The individual 4 digit level industry realized rates were estimated in a qualitative, but necessary, fashion.[26] Five categories of credit preference through the commercial banking system were assumed in relation to the average. They are very low, low, average, high, and very high. Expressed as multiples of the average realized credit subsidy rate, the multiples were assigned values of 0.5, 0.75, 1.0, 1.25, and 1.5, respectively. Thus the realized credit subsidy rates were taken to range from a very low of 5.1 percent to a very high of 15.4 percent. In consultation with bankers and businessmen, the individual sectors were then each assigned a preference category and consequently a realized credit subsidy rate.

Another type of important credit incentive has to do with suppliers' credits for domestically produced capital goods. FINAME has in recent years liberally provided such credit, financing at subsidized interest rates approximately two-thirds of domestic capital goods sales. The effect of these credits is to make domestically produced capital goods more competitive. For 1978 the net price effect of these incentives was estimated at 8.8 percent on a value of product basis (Tyler, 1980). Although these incentives increased in 1979 and 1980, we have elected to use the more conservative 8.8 percent figure. Consequently our estimates may be somewhat downward biased for the capital goods industries.

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[26] Lending activity data are simply not collected on a highly disaggregated basis.

The domestic market fiscal and credit production subsidies, including elements permissable under GATT practices, have been combined additively into an overall domestic subsidy rate, i.e., $s_{Dj} = s_{FISj} + s_{CRj}$. Subsequently, the implicit nominal protection rates were computed in conjunction with the estimated implicit tariffs. The results are presented in the last column in Tables 6.1 and Appendix Table A6.1. The implicit nominal rate of protection for manufacturing as a whole is seen to be 29.4 percent.

In some cases the domestic production subsidies provide for substantial increases in implicit protection relative to the implicit tariffs. A particularly noteworthy feature, observed in Table 6.1, is the reversal of the cascading protection structure evident from the legal tariffs and, to a lesser extent, from the implicit tariffs. The greatest implicit nominal protection exists for the capital goods industries, followed by the intermediate goods·industries and finally consumer goods. It is precisely such a structure that one would expect given the governments' stress in recent years on import substitution in the capital·and intermediate producing goods industries.

While the rates of implicit nominal protection provide a view of the country's protective system for the domestic market, a still more comprehensive view can be obtained by incorporating the effects of protection on a given sector's inputs. For such an analysis an effective protection framework is necessary, and it is to this question that we now turn.

Appendix Table A6.1

IMPLICIT TARIFF CALCULATIONS FOR 4 AND 5 DIGIT LEVEL INDUSTRIES.

1980 - 81

IBCE 4 and 5 Digit Codes	Industry	Nominal Legal Tariff 1980 (%)	Implicit Tariff Calculations			Implicit Nominal Protection (%)
			Number of Products in Sample (n)	Average Implicit Tariff (%)	Standard Deviation (%)	
0101	Forestry and Fishing	80.7	7	-41.2	28.8	-38.2
01011	Logs	86.7	1	-22.5	--	
01012	Firewood & Charcoal	32.5	1	-32.7	---	
01013	Fish & Shellfish	-126.0	2	-34.6	6.1	
01014	Other Forestry & Fishing	88.2	3	-54.6	44.0	
0201	Agriculture	58.5	29	-17.1	37.1	- 0.4
02011	Coffee Beans	0.0	1	-35.4	--	
02012	Sugar Cane	55.0	--	n.c.[1]	--	
02013	Seed Cotton	0.0	1	-13.0	--	
02014	Husked Rice	45.0	1	-10.1	--	
02015	Wheat	45.0	1	117.9	--	
02016	Beans	55.0	2	01.3	8.8	
02017	Tobacco	155.0	2	-36.7	19.3	
02018	Vegetables & Fruits	97.9	11	-18.4	37.3	
02019	Other Agricultural Products	73.0	10	-28.2	18.0	
0301	Livestock and Poultry	27.9	6	-24.3	10.7	- 8.3
03011	Live Poultry & Eggs	110.0	2	-21.8	15.5	
03012	Cattle & Swine	15.8	2	-27.7	01.3	
03013	Unprocessed Milk	0.0	1	-11.2	--	
03014	Other Livestock & Poultry	85.5	1	-35.6	--	
0501	Mining	28.7	15	-16.7	35.4	- 3.9
05011	Metallic Mineral Mining	6.0	5	-32.5	52.8	
05012	Non-Metallic Mineral Mining	53.7	10	-15.5	34.8	
0502	Combustible Mineral Extraction	11.4	2	-13.7	19.2	- 0.4
05021	Petroleum & Natural Gas	13.3	1	0.0	--	
05022	Coal & Other Mineral Fuels	2.2	1	-27.3	--	
1001	Cement	48.1	2	-34.1	21.0	-25.7
010011	Cement	48.1	2	-34.1	21.0	
1002	Glass Products	123.4	6	19.5	85.2	25.6
10021	Sheet Glass	71.8	4	-18.4	39.2	
10022	Glass Containers	145.0	2	95.1	120.3	
10023	Other Glass Products	143.8	n.a.[2]	n.a.[2]	--	
1003	Other Non-Metallic Mineral Products	120.8	11	-27.5	63.2	-23.8
10031	Other Non-Metallic Mineral Products	120.8	11	-27.5	63.2	
1101	Pig-iron, Iron Alloys & Primary Steel	49.2	5	-13.7	37.2	- 0.5
11011	Pig-iron	70.0	1	-32.9	--	
11012	Steel Ingots & Iron Alloys	37.6	4	- 8.9	41.2	
1102	Iron & Steel Sheets	37.4	16	- 8.5	32.3	5.5
11021	Flat Iron & Steel Sheets	38.4	5	- 9.9	36.9	
11022	Rolled Iron & Steel Sheets	37.5	6	-22.2	35.2	
11023	Scrap Metal	16.6	5	9.5	17.7	
1103	Iron & Steel Castings	95.9	3	31.3	65.3	- 3.6
11031	Iron & Steel Castings	95.9	3	31.3	65.3	
1104	Non-Ferrous Metals	44.1	11	-16.5	64.0	
11041	Copper	44.5	5	-19.2	96.9	
11042	Other Non-Ferrous Metals	44.0	6	-14.3	25.4	

Appendix Table A6.1(continued)

IMPLICIT TARIFF CALCULATIONS FOR 4 AND 5 DIGIT LEVEL INDUSTRIES,

1980 - 81

IBGE 4 and 5 Digit Codes	Industry	Nominal Legal Tariff 1980 (%)	Implicit Tariff Calculations			Implicit Nominal Protection (%)
			Number of Products in Sample (n)	Average Implicit Tariff (%)	Standard Deviation (%)	
1105	Miscellaneous Metal Products	105.7	20	10.3	34.2	27.2
11051	Iron & Steel Wire	38.5	1	13.4	--	
11052	Iron & Steel Forgings	107.5	2	-16.4	16.1	
11053	Tin-plated Cans	55.0	1	-25.3	--	
11054	Other Metal Products	119.7	16	15.7	35.5	
1201	Pumps and Engines	58.8	17	17.1	65.7	50.6
12011	Pumps and Engines	58.8	17	17.1	65.7	
1202	Machine Parts	58.1	30	85.1	83.8	138.0
12021	Bearings	60.0	n.a.	n.a.	--	
12022	Power Transmission Equipt.	55.9	n.a.	n.a.	--	
12023	Other Machine Parts,inc. Tools	58.1	30	85.1	83.8	
1203	Industrial Equipt. & Machinery	51.8	22	29.5	73.2	66.5
12031	Industrial Equipt. & Machinery	51.8	22	29.5	73.2	
1204	Agricultural Equipt. & Machinery	42.0	10	-18.3	8.6	5.1
12041	Agricultural Equipt. & Machinery	42.0	10	-18.3	8.6	
1205	Office & Domestic Use Equipt & Mach.	130.4	10	-10.8	23.9	3.5
12051	Office Equipt. & Machinery	58.9	4	-18.3	7.3	
12052	Household Appliances	159.4	6	-5.8	30.3	
1206	Tractors	41.5	6	-47.8	23.0	-32.9
12061	Tractors	41.5	6	-47.8	23.0	
1301	Electric Energy Equipment	72.2	2	-3.0	11.0	24.7
13011	Electric Energy Equipment	72.2	2	-3.0	11.0	
1302	Electric Wire & Cables	68.8	5	12.9	4.0	45.2
13021	Electric Wire & Cables	68.8	5	12.9	4.0	
1303	Electric Equipment	88.5	17	49.1	48.7	91.7
13031	Electric Motors & Generators	62.6	1	-11.3	--	
13032	Electric Material	96.3	16	52.9	47.6	
1304	Electrical Machinery & Appliances	61.1	16	34.7	84.7	73.2
13041	Electrical Machinery & Appliances	61.1	16	34.7	84.7	
1305	Electronic Equipment	55.4	11	96.4	69.5	152.6
13051	Electronic Equipment	55.4	11	96.4	69.5	
1306	Communications Equipment	144.1	4	63.2	115.0	95.0
13061	Television,Radio& Record Playing Euipt.	176.9	2	-22.0	44.1	
13062	Other Communications Euipt.	88.4	2	148.4	93.3	
1401	Automobiles	126.3	5	-23.2	9.1	-15.3
14041	Automobiles	126.3	5	-23.2	9.1	
1402	Trucks and Buses	83.6	3	-46.2	3.6	-39.3
14021	Trucks and Buses	83.6	3	-46.2	3.6	
1403	Motors & Vehicle Parts	112.5	3	-15.5	1.9	-9.1
14031	Motors & Vehicle Parts	112.5	3	-15.5	1.9	
1404	Shipbuilding	27.0	3	19.6	12.7	53.8
14041	Ships & Boats	27.0	3	19.6	12.7	
1405	Railway Equipt.& Other Vehicles	63.5	4	-6.4	32.3	20.4
14051	Railway Rolling Stock	39.3	3	-21.7	12.6	
14052	Other Vehicles	84.0	1	39.6	--	
1501	Wood	125.3	4	-8.9	40.1	-4.3
15011	Lumber, Plywood & Vaneer	117.7	1	33.6	--	
15012	Wooden Boxes & Crates	170.0	n.a.	n.a.	--	
15013	Other Wood Products	151.7	3	-23.1	34.8	

IMPLICIT TARIFF CALCULATIONS FOR 4 AND 5 DIGIT LEVEL INDUSTRIES,

1980 - 81

IBGE 4 and 5 Digit Codes	Industry	Nominal Legal Tariff 1980 (%)	Implicit Tariff Calculations			Implicit Nominal Protection (%)
			Number of Products in Sample (n)	Average Implicit Tariff (%)	Standard Deviation (%)	
1601	Furniture	148.2	2	20.0	21.2	26.1
16011	Furniture	148.2	2	20.0	21.2	
1701	Wood Pulp	34.5	1	-37.7	--	-29.7
17011	Wood Pulp	34.	1	-37.7	--	
1702	Paper	85.2	8	- 9.0	41.7	0.4
17021	Paper	85.2	8	- 9.0	41.7	
1703	Paper and Paperboard Products	166.8	1	32.4	--	-25.4
17031	Paper & Paperboard Boxes,etc.	175.0		n.a.	--	
17032	Other Paper & Paperboard Products	125.1	1	-32.4	--	
1801	Rubber	107.3	3	-23.3	7.2	-15.4
18011	Tires & Inner Tubes	85.0	2	-20.9	8.2	
18012	Other Rubber Products	158.8	1	-28.2	--	
1901	Leather & Leather Products	156.6	1	10.0	--	15.6
19011	Leather & Leather Products	156.6	1	10.0	--	
2001	Chemical Elements & Compounds	33.3	66	55.1	62.9	75.0
20011	Caustic Soda	33.0	1	-33.2	--	
20012	Soda Ash	30.0	1	36.3	--	
20013	Inorganic & Organic Chemicals	33.7	64	56.7	62.8	
2002	Alcohol	160.0	3	- 9.3	12.3	4.7
20021	Alcohol	160.0	3	- 9.3	12.3	
2003	Petroleum Refining	20.8	37	26.1	60.5	45.5
20031	Gasoline & Diesel Oil	0.0	2	93.2	116.2	
20032	Fuel and Lubricating Oils	40.0	1	0.0	--	
20033	Naphta	20.0	1	-34.2	--	
20034	Liquid Petroleum Gas	0.0	1	- 1.7	--	
20035	Other Petroleum Refining Products	58.4	1	11.9	--	
20036	Petrochemicals	31.9	31	24.9	59.1	
2004	Coke & Coal Derivations	18.0	5	-47.3	54.7	-39.2
20041	Coke & Coal Derivations	18.0	5	-47.3	54.7	
2005	Chemical Resins & Fibers	88.7	48	64.8	73.1	90.2
20051	Polyethylene,PVC & Other Resins	71.2	35	66.7	84.6	
20052	Synthetic Yarns & Fibers.	103.0	12	63.6	20.3	
20053	Synthetic Rubber	59.1	1	11.7	--	
2006	Vegetable Oils &Oilseed Products	47.8	2	-46.5	8.0	-42.4
20061	Crude Vegetable Oils	66.8	1	-40.8	--	
20062	Other Oilseed Products	18.6	1	-52.1	--	
2007	Pigments and Paints	89.4	4	42.1	90.9	56.7
20071	Pigments and Paints	89.4	4	42.1	90.9	
2008	Miscellaneous Chemical Products	52.2	20	71.1	104.0	93.0
20081	Fertilizers	7.9	4	17.8	26.9	
20082	Other Chemical Preparations	77.9	16	84.4	112.3	
2101	Pharmaceutical Products	27.9	20	79.0	89.0	97.4
21011	Basic Pharmaceutical Products	29.5	17	65.6	90.0	
21012	Dosed Pharmaceutical Products	27.8	3	155.1	19.1	
2201	Perfumary & Soaps	160.5	8	28.5	17.3	35.1
22011	Perfumary & Soaps	160.5	8	28.5	17.3	

IMPLICIT TARIFF CALCULATIONS FOR 4 AND 5 DIGIT LEVEL INDUSTRIES,
1980 - 81

IBGE 4 and 5 Digit Codes	Industry	Nominal Legal Tariff 1980	Implicit Tariff Calculations			Implicit Nominal Protection
			Number of Products in Sample	Average Implicit Tariff	Standard Deviation	
		(%)	(n)	(%)	(%)	(%)
2301	Plastics	203.8	4	14.3	43.4	28.9
23011	Plastics Sheets	205.0	n.a.	n.a.	--	
23012	Plastic Wrappings	205.0	n.a.	n.a.	--	
23013	Other Plastic Products	202.4	4	14.3	43.4	
2401	Basic Textile Processing Products	71.4	1	- 5.0	--	- 0.2
24011	Unginned Cotton & Other Nat.Fibers	72.5	1	- 5.0	--	
24012	Cottonseed & Other Textile Residues	66.2	n.a.	n.a.	--	
2402	Synthetic Fiber Textile Products	197.8	10	15.3	16.1	21.2
24021	Synthetic Fiber Textile Products	197.8	10	15.3	16.1	
2403	Natural Fiber Textile Products	166.7	19	21.7	14.6	27.9
24031	Cotton & Other Nat.Fiber Yarns	105.9	10	22.5	17.9	
24032	Natural Fiber Fabrics &·Products	194.9	9	20.8	10.8	
2404	Other Textile Products	173.0	3	26.0	11.6	32.4
24041	Coth Bags	205.0		n.a.		
24042	Knitwear & Hosiery	196.1	1	12.9	--	
24043	Special Fabrics	169.4	1	30.0	--	
24044	Finished Yarn & Fabric Products	0.0	1	35.0	--	
2501	Apparel	185.3	7	23.1	13.2	29.4
25011	Apparel	185.3	7	23.1	13.2	
2502	Footwear	170.0	2	27.5	3.5	34.0
25021	Footwear	170.0	2	27.5	3.5	
2601	Coffee Bean Products	60.0		-38.6[3]	4.5	-29.1
26011	Coffee Bean Products	60.0		-38.6	4.5	
2602	Processed Coffee Products	72.5	1	-41.7	--	-32.7
26021	Processed Coffee Products	72.5	1	-41.7	--	
2603	Processed Rice	50.0	1	-23.8	--	-19.9
26031	Processed Rice	50.0	1	-23.8	--	
2604	Wheat Flour	100.0	2	-28.3	2.3	-24.6
26041	Wheat Flour	100.0	2	-28.3	2.3	
2605	Other Vegetable Products	127.7	6	23.3	34.4	-29.6
26051	Cereals & Starches,exc.Wheat	107.6	2	21.4	11.6	
26052	Other Processed Vegetable Products	151.8	4	24.3	43.8	
2606	Meat Products	64.0	6	6.2	59.4	11.6
26061	Fresh or Frozen Meat	46.1	2	-25.4	6.4	
26062	Prepared & Preserved Meat	115.8	3	55.1	27.1	
26063	Raw & Salted Hides	41.9	1	-77.2	--	
2607	Poultry Products	100.2	2	-10.5	10.7	- 5.9
26071	Poultry Products	100.3	2	-10.5	10.7	
2608	Prepared Fish Products	137.8	1	- 2.4	--	2.6
26081	Prepared Fish Products	137.8	1	- 2.4	--	
2609	Dairy Products	119.0	7	64.2	66.9	72.6
26091	Processed Milk	99.6	2	62.6	3.8	
26092	Other Dairy Products	165.5	5	92.7	52.5	
2610	Crude Sugar Products	75.2	2	3.1	1.8	-47.2
26101	Crude Sugar Products	75.2	2	3.1	1.8	
2611	Refined Sugar	110.0	1	-71.1	--	-69.6
26111	Refined Sugar	110.0	1	-71.1	--	

IMPLICIT TARIFF CALCULATIONS FOR 4 AND 5 DIGIT LEVEL INDUSTRIES,

1980 - 81

IBGE and 5 Digit Codes	Industry	Nominal Legal Tariff 1980 (%)	Implicit Tariff Calculations			Implicit Nominal Protection (%)
			Number of Products in Sample (n)	Average Implicit Tariff (%)	Standard Deviation (%)	
2612	Bakery & Pastry Products	169.3	3	-45.8	28.6	-43.0
26121	Bread & Rolls	164.4		n.t.		
26122	Noodles, Biscuits, etc.	176.4	3	-45.8	28.6	
2613	Edible Oils & Fats	75.2	2	3.1	1.8	8.4
26131	Edible Oils & Fats	75.2	2	3.1	1.8	
2614	Other Food Products	115.4	15	-23.4	18.4	19.5
26141	Animal Feeds	53.2	2	-33.5	7.3	
26142	Other Food Products	164.8	13	-21.8	19.3	
2701	Beverages	179.0	2	- 9.9	3.7	- 5.3
27011	Beverages	179.0	2	- 9.9	3.7	
2801	Tobacco Products	184.6	1	- 3.6	--	1.3
28011	Tobacco Products	184.6	1	- 3.6	--	
2901	Publishing and Printing	85.5	2	18.1	60.5	24.1
29011	Newspapers & Books	112.8	2	18.1	60.5	
29012	Printing & Graphics	0.0				
3001	Miscellaneous Manufactured Products	87.0	42	73.9	105.6	91.8
	Total		676			

Notes: 1. nontradable : products

2. not available

3. For the purposes of the effective protection estimates the implicit tariff for coffee bean products (Sector 2601) was taken to be a simple mean between coffee beans (02011) and processed coffee products(26021).

Appendix Table A 6.2

RELATIONSHIPS BETWEEN TRADE AND OUTPUT, 4 DIGIT LEVEL, 1970 AND 1979

IBGE 4 Digit Code	Industry	Ratio of Imports to Availabe Domestic Supply (M/(X + M))		Ratio of Exports to Output (E/X)	
		1970	1979	1970	1979
0101	Forestry and Fishing	.018	.067	.040	.075
0201	Agriculture	.073	.043	.073	.056
0301	Livestock and Poultry	.005	.009	.012	.001
0501	Mining	.099	.189	.372	.961
0502	Combustible Mineral Extraction	.630	.982	.003	.000
1001	Cement	.031	.006	.000	.011
1002	Glass Products	.055	.083	.042	.035
1003	Other Non-Metallic Mineral Products	.019	.017	.003	.016
1101	Pig-Iron, Iron Alloys & Primary Steel	.014	.003	.065	.060
1102	Iron & Steel Sheets	.113	.039	.047	.034
1103	Iron & Steel Castings	.019	.005	.053	.010
1104	Non-Ferrous Metals	.339	.176	.018	.032
1105	Miscellaneous Metal Products	.061	.086	.006	.047
1201	Pumps and Engines	.233	.354	.003	.739
1202	Machine Parts	.343	.259	.039	.274
1203	Industrial Equipment & Machinery	.295	.221	.017	.044
1204	Agricultural Equipment & Machinery	.131	.019	.013	.049
1205	Office & Domestic Use Equipment & Machinery	.188	.213	.120	.283
1206	Tractors	.351	.049	.039	.134
1301	Electric Energy Equipment	.400	.208	.012	.018
1302	Electric Wire & Cables	.046	.037	.001	.010
1303	Electric Equipment	.108	.116	.006	.055
1304	Electrical Machinery & Appliances	.145	.133	.006	.012
1305	Electronic Equipment	.405	.519	.088	.176
1306	Communications Equipment	.195	.072	.019	.046
1401	Automobiles	.003	.000	.001	.036
1402	Trucks and Buses	.026	.006	.007	.207
1403	Motors & Vehicle Parts	.061	.011	.016	.120
1404	Shipbuilding	.177	.121	.010	.162
1405	Railway Equipment & Other Vehicles	.424	.225	.006	.263
1501	Wood	.004	.009	.142	.089
1601	Furniture	.000	.001	.003	.008
1701	Wood Pulp	.222	.059	.135	.306
1702	Paper	.105	.107	.001	.061
1703	Paper & Paperboard Products	.031	.007	.001	.023
1801	Rubber	.029	.043	.009	.034
1901	Leather & Leather Products	.005	.026	.135	.213
2001	Chemical Elements & Compounds	.402	.450	.011	.082
2002	Alcohol	.000	.000	.000	.000
2003	Petroleum Refining	.127	.057	.010	.042
2004	Coke & Coal Derivatives	.072	.056	.002	.001
2005	Chemical Resins & Fibers	.229	.132	.008	.040
2006	Vegetable Oils & Oilseed Products	.008	.023	.288	.512
2007	Pigments & Paints	.070	.049	.001	.005
2008	Miscellaneous Chemical Products	.205	.149	.058	.043

Appendix Table A6.2 (continued)

RELATIONSHIPS BETWEEN TRADE AND OUTPUT, 4 DIGIT LEVEL. 1970 AND 1979

IBGE 4 Digit Code	Industry	Ratio of Imports to Available Domestic Supply (M/(X + M))		Ratio of Exports to Output (E/X)	
		1970	1979	1970	1979
2101	Pharmeceutical Products	.060	.081	.008	.025
2201	Perfumary & Soaps	.022	.012	.002	.011
2301	Plastics	.005	.003	.000	.08
2401	Basic Textile Processing Products	.004	.002	.368	.039
2402	Synthetic Fiber Textile Products	.007	.007	.002	.020
2403	Natural Fiber Textile Products	.003	.001	.032	.117
2404	Other Textile Products	.009	.015	.006	.055
2501	Apparel	.011	.000	.004	.018
2502	Footwear	.000	.001	.023	.267
2601	Coffee Bean Products	.000	.000	1.490	.429
2602	Processed Coffee Products	.000	.000	.168	.267
2603	Processed Rice	.000	.161	.012	.000
2604	Wheat Flour	.009	.383	.000	.000
2605	Other Vegetable Products	.034	.020	.209	.417
2606	Meat Products	.002	.058	.065	.063
2607	Poultry Products	.004	.000	.000	.137
2608	Prepared Fish Products	.045	.221	.240	.405
2609	Dairy Products	.028	.006	.001	.002
2610	Crude Sugar Products	.000	.001	.217	.143
2611	Refined Sugar	.000	.000	.000	.127
2612	Bakery & Pastry Products	.000	.000	.000	.007
2613	Edible Oils & Fats	.030	.015	.002	.010
2614	Other Food Products	.015	.010	.004	.035
2701	Beverages	.043	.013	.003	.018
2801	Tobacco Products	.000	.001	.114	.220
2901	Publishing and Printing	.023	.020	.003	.006
3001	Miscellaneous Manufactured Products	.217	.211	.022	.077

Sources: Estimates of 1979 output were made from unpublished IBGE data for value added. The 1970 output and trade data were taken from the published IBGE input-output tables (IBGE, Matrix de Relações Intersetoriais. Brasil, 1970). The 1979 export and import series were taken from FUNCEX and our own estimates, respectively, based upon manual reclassifications of the published trade data.

William Tyler
July 1981

. Chapter 3

EFFECTIVE PROTECTION ESTIMATES AND THE STRUCTURE OF DOMESTIC MARKET
PROTECTION

I. METHODOLOGY AND ESTIMATING PROCEDURES

To measure effective protection for domestic market sales we have
employed the conventional partial equilibrium estimating procedures.[1]
In the following chapter analogous procedures will be developed and
employed to estimate effective export promotion rates. Measuring
the protection of domestic value added relative to value added in
world prices, the effective rate of protection for domestic market
sales can be written as

(7.1)
$$g_j = \frac{t_j - \Sigma_i a_{ij} t_i}{1 - \Sigma_i a_{ij}}$$

where

g_j = the effective rate of domestic market protection
for product j

t_j = the nominal rate of protection for product j

a_{ij} = the technical coefficient for input i used in the
product of product j, as measured in world prices

t_i = the nominal rate of protection for input i.

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[1] See Balassa and Associates(1971) and Corden(1971) for the most
exemplary treatment. It is clearly recognized that the conventional
effective protection estimating procedures imply well known
simplifying assumptions and present ample conceptual difficulties.
Yet, in the absence of any viable alternative, we have opted to use
the procedures described, problems and all.

It is this formulation that has been used in a wide variety of empirical studies.

Since the a_{ij}'s in Equation (7.1) are expressed as ratios calculated from international price values, an adjustment must be made if the technical coefficient information available was computed from domestic prices and values. Accordingly, the estimating formula can be expressed as

$$(7.2) \qquad g_j = \frac{t_j - \sum_i a_{ij} \left(\frac{1+t_j}{1+t_i} \right) t_i}{1 - \sum_i a_{ij} \left(\frac{1+t_j}{1+t_i} \right)}$$

where the a_{ij}'s represent the technical coefficients as measured from domestic price and value information.

The rate of effective protection depends upon two main elements: (a) the nominal protection afforded the final product and (b) the input structure and the protection afforded those inputs. Accordingly, the measure of effective protection can be easily decomposed into two components reflecting these different effects. First, there exists a subsidy equivalent to domestic producers as effected through the protection afforded to the final product in question. Secondly, there also exists a tax equivalent imposed on the same domestic producers through the increase of input prices

associated with commercial·policies. Both components are expressed in proportional value added terms and can be written simply as:

$$(7.3) \quad g_j = \frac{t_j}{1 - \sum_i a_{ij}} - \frac{\sum_i a_{ij} t_i}{1 - \sum_i a_{ij}}$$

where the first term on the right hand side, $t_j / (1 - \sum_i a_{ij})$, represents the subsidy equivalent component, while the second term depicts the tax component working through higher input prices. If the latter component exceeds the subsidy component, the effective rate of protection is negative, indicating a discrimination against the activity producing the final product j.

While we have called these two components of domestic market effective protection the subsidy and tax effect components, respectively, there is no presumption that they always possess those particular effects. In the case where the domestic prices for inputs, through the exercise of economic policies, are effectively set at levels beneath international prices, the tax effect component in the second term of Equation (7.3)'s right hand side effectively becomes a subsidy effect component. It takes on a negative sign and thus serves to increase the effective protection afforded to the final product. Such effects are not at all uncommon; conscious government policy may, and frequently does, seek to keep down the prices of industrial inputs through subsidies or price controls. Similarly, the subsidy effect component itself may also take on quite different features. Again

through the exercise of commercial policies, the final product can be explicity discriminated against, i.e., $t_j < 0$.

So far we have discussed nominal protection in tariff equivalent terms. In the absence of direct production subsidies, implicit tariffs can be utilized to estimate rates of effective protection. A problem arises, however, when we incorporate adjustments for production subsidies and develop what we have termed the implicit nominal protection rates. Such protection exists for the final product, but it is not representative of the tax effect component of the effective protection rate. Firms buy inputs at the observed domestic market prices. It is irrelevant for these firms whether or not the input producing industries receive production subsidies or not. What matters are the domestic prices for the inputs in question, even though those prices would clearly be higher in the absence of production subsidies for the input producing industries. A distinction is apparent between the costs to firms and the costs to society as a whole. But, since it is the costs of producing facing firms that are at issue in analyzing resource pulls, it is necessary to make adjustments in the estimates. Therefore, the implicit tariffs, and not the implicit nominal rates of protection, should be used to estimate the tax effect component of effective protection. Accordingly, our estimating equation is expressed as

$$(7.4) \qquad g_j = \frac{P_{IMPj} - \sum\limits_{i} a_{ij} \left(\frac{1+t_{IMPj}}{1+t_{IMPi}}\right) t_{IMPi}}{1 - \sum\limits_{i} a_{ij} \left(\frac{1+t_{IMPj}}{1+t_{IMPi}}\right)} .$$

The technical coefficients used in our estimates of effective protection were derived from the 1970 IBGE input-output accounts (IBGE,1979). The difficulties in using these tables are readily apparent. During the period 1970-1981 industrial output has nearly tripled, and accompanying changes in industrial structure are strongly evidenced. Moreover, during the period there were significant changes in relative prices, particularly of energy inputs. Despite these problems, it is necessary to use the 1970 input-output accounts for any detailed study involving input structure in Brazil, such as for example the estimation of effective protection. There is simply no disaggregated and viable alternative with Brazilian data. While IBGE is planning to up-date the coefficients with the results of the 1975 economic census, this information was not available for our analysis, nor is it expected until 1982. One can note that with the firm cost structure data gathered in the FIPE survey, the estimation of effective protection for a number of assorted individual products was undertaken. These results, while not reported here, were in general consistent with our aggregated 4 digit level estimates made with the input-output accounts.

Of the 87 sectors in the 4 digit A' matrix 72 are ostensibly traded goods producing sectors. A greater level of disaggregation did not prove possible.[2] The Corden method was employed to deal with problem of nontraded inputs.These sectors accordingly are incorporated into

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[2] The IBGE 87x87 A' matrix is estimated as the product of two rectangular matrices. Conceivably, through changing the order of multiplication, an A' matrix of 160x160 could be generated. This, however, proved impossible for us because of the nature of one of the rectangular matrices and the difficulty in making the appropriate adjustments. More recently, this has been accomplished by Frederico de Carvalho. See his "Matrizes de Coeficientes Técnicos-Brasil 1970:Uma Nota", FUNCEX, unpublished paper, May 1981. A logical extension of the present research would be a further disaggregation, as well as estimations with up-dated technical coefficients.

value added.[3]

II. EFFECTIVE PROTECTION ESTIMATES

The basic estimates of effective protection for domestic market sales are presented in Appendix Table A7.1 for 72 tradable goods sectors. More aggregated figures, at the 2 digit level along with still larger aggregates, are provided in Table 7.1. The ranking of the sectors in Appendix Table A7.1 according to effective protection rates provides an idea of the relative ordering of those sectors to the extent that they have been benefitted or discriminated against by economic incentive policies with respect to their domestic market sales. The Primary Agriculture sector, consisting of Forestry and Fishing, Agriculture, and Livestock and Poultry, is seen to be discriminated against in the domestic market with a rate of effective protection of -8.2 percent. Agriculture itself, on the average, appears to be somewhat less discriminated against but still displays a negative rate of effective protection for domestic market sales. Within agriculture it is clear that considerable disparities exist in effective protection rates across products, or even farms, owing to the way in which the substantial financial subsidies are awarded.

For the manufacturing sector as a whole the average rate of effective protection for domestic market rates was computed to be 45.0 percent (Table 7.1). While this average figure appears modest in

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3 Had the Balassa method of dealing with nontraded inputs been employed, our estimates of effective protection would have been slightly higher. We feel, however, that the Corden method is more appropriate..

Table 7.1

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EFFECTIVE PROTECTION ESTIMATES FOR DOMESTIC MARKET SALES,

2 DIGIT LEVEL, 1980-81

Industry	Effective Protection Estimate (%)	Effective Protection Decomposition		Net Effective Protection Estimate (%)
		Subsidy Effect (%)	Tax Effect (%)	
₊ing	- 4.2	- 3.9	0.3	-19.4
₊-Metallic Minerals	-19.6	-21.4	- 1.8	-32.3
₊allurgy	34.2	20.1	-14.1	12.9
₊hinery	93.3	95.3	2.1	62.7
₊ctrical Equipment	129.3	144.4	15.0	93.0
₊nsportation Equipment	- 6.5	- 8.2	- 1.6	-21.3
₊iber & Wood Products	17.7	- 8.3	-26.0	- 0.9
₊niture	52.7	50.8	- 1.9	28.5
₊er	-18.5	-24.4	- 6.0	-31.3
₊ber	-21.4	-20.3	1.1	-33.8
₊ther	13.9	19.3	5.4	- 4.2
₊micals	86.4	87.8	1.4	56.9
₊rmeceutical Products	116.3	122.2	5.9	82.1
₊fumary	91.6	80.3	-11.3	61.3
₊stics	28.3	38.7	10.4	8.0
₊tiles	36.7	44.2	7.5	15.1
₊arel	46.7	63.8	17.1	23.5
₊d Products	26.1	8.4	-17.7	6.2
₊erages	- 1.1	- 7.8	- 6.8	-10.8
₊acco	5.7	1.7	- 4.0	-11.0
₊nting & Publishing	31.9	32.6	0.6	11.1
₊scellaneous	171.7	172.5	0.8	128.7
AVERAGES[1]				
Primary Agriculture[2]	- 8.2	- 7.7	0.4	-22.8
Manufacturing	45.0	41.3	- 3.7	23.1
Capital Goods	63.3	67.5	4.2	44.7
Intermediate Goods	46.0	40.5	- 5.5	22.9
Consumer Goods	34.2	28.5	- 5.7	13.0

₊tes: 1. Value added weights of 1979 are used for aggregating from the four digit to two digit level and for computing the more aggregated means.

    2. Includes Forestry and Fishing, Agriculture, and Livestock and Poultry.

₊rce: Appendix Table A7.1.

relation to the potential effective protection possible in the absence of tariff redundancy, it masks considerable disparities in the rates for individual sectors,or sector aggregates..As was also evidenced with our measure of implicit nominal protection, the reverse cascade effect is apparent in effective protection. Capital goods in general receive the highest rates of effective protection for domestic market sales. Protection for that sector would appear higher still if Transportation Equipment, including automobile production, were excluded from the capital goods average.

As indicated, the effective protection averages themselves are a bit misleading because of the considerable variation in the estimated rates across sectors. At the 4 digit level, incorporating 72 tradable goods sectors, it is seen that some sectors are benefitted through very high rates of effective protection. Among those sectors receiving the highest rates of domestic market effective protection are Dairy Products, Machine Parts, Electronic Equipment, Miscellaneous Manufacturing, Electric Equipment,and Alcohol. A total of 16 out of the 72 estimated sectors displayed effective rates of protection greater than 100 percent.(Table 7.2) In addition to the Primary Agricultural sectors, sectors heavily discriminated against in the domestic market through the exercise of economic policies include Trucks and Buses, Vegetable Oils and Oilseed Products, Coke and Coal Derivations, and Wood Pulp. Some 27 sectors possessed negative rates of effective protection for domestic market sales. In any case, the disparities in the rates between sectors are very high. The existence of such great disparities in the protection system is entirely consistent with the empirical evidence derived from other semi-industrialized economies.

Table 7.2

FREQUENCY DISTRIBUTION OR PROTECTIVE MEASURES

ge of ection %)	Nominal Legal Tariff 1980		Implicit Nominal Protection		Effective Rate of Protection		Net Effective Rate of Protection	
	Number of Sectors	(%)	Number of Sectors	(%)	Number of Sectors	(%)	Number of Sectors	(%)
0	0	0	30	42	27	39	33	47
25	3	4	15	21	9	13	12	17
50	13	18	11	15	9	13	8	11
75	15	21	7	10	8	11	6	9
100	10	14	7	10	3	4	4	6
100	31	43	2	3	14	20	7	10
otal	72	100	72	100	70[1]	100	70	100

e: 1. Those 2 sectors for which negative value added at world prices was calculated were omitted from the computations.These -two sectors accordingly displayed very high effective protection and would presumably fall into the category with effective protection net effective protection rates greater than 100 percent.

irce: Appendix Tables A6.1 and A7.1.

It is apparent from Table 7.1 and Appendix Table A7.1 that in most cases the great part of the effective protection is derived from the subsidy effect element in the effective protection computation. The tax effect element is generally rather small, indicating that in general Brazilian industry,and agriculture, are not disproportionately adversely affected from having to acquire inputs at greater than world prices. There are, of course, some exceptions to this generalization. Such sectors such as Synthetic Fiber Textile Products, Apparel, Communications Equipment, and Plastics are among those with tax effects amounting to greater than 10 percent on a value added basis. The use of production subsidies for input producing industries had kept domestic prices down and in doing so has benefitted the user industries.

For many industries, including the manufacturing average, the tax effect is negative. In other words, many industries are benefitted by being able to purchase inputs at prices beneath world prices. The effect of this of course ceteris paribus is to increase effective protection. In fact, this characteristic of a negative tax effect element has been a major component of Brazilian industrial policy. Input prices are kept down so as to serve as an incentive to user industries. Direct production subsidies have been used to offset, and in some instances overcome, the disincentive inherent to the input producing industries. Those industries especially benefitting from policies maintaining less than world prices for their inputs include, among others, alcohol, the basic metal producing industries, lumber and wood, paper, basic textile processing, and the food product industries.

In general, these are industries that are intensive users of primary or agricultural products.

III. CORRELATIONS AMONG DIFFERENT PROTECTION MEASURES

Previous studies of protection in Brazil and other countries have found significant positive correlations among the various measures of protection.[4] Table 7.3 presents the results of Spearman rank correlations among the different protection measures that we have developed and estimated for Brazil. While the import-weighted nominal tariffs, the realized tariffs, and the nominal legal tariffs are demonstrated to all be positively related, it is clear that the tariff schedules, or tariff information, do not provide an accurate picture of the protection actually present through the operation of market forces and other, non-tariff, policy measures.[5] The nominal legal tariffs, for instance, possess no correlation with the implicit tariffs, implicit nominal protection, or rates of effective protection for the domestic market. For its part, effective protection is seen to be significantly positively correlated to implicit nominal protection, the implicit tariffs, and both the subsidy and tax effect components of effective protection.[6]

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[4] See Guisinger and Schydlowsky (1971),Bergsman and Malan(1971),Tyler(1976), Little,Scitovsky and Scott(1970) and Balassa and Associates(1971).

[5] The exception to this is the realized tariff rates. As indicated in Table 7.3, significant positive correlations were evidenced between realized tariffs, on the one hand, and effective protection,implicit tariffs, and implicit nominal protection, on the other.

[6] Regressing the effective protection rates over sectors on the rates of implicit nominal protection, the following equation was estimated

$$g_j = 20.0 + 1.4 t_j$$
$$(11.61)$$
$$R^2 = .66.$$

Table 7.3

SPEARMAN RANK ORDER CORRELATION COEFFICIENTS BETWEEN DIFFERENT
DOMESTIC MARKET PROTECTION MEASURES, 72 TRADABLE
GOODS SECTORS (n=72)

	Import Weighted Nominal Tariff, 1979	Realized Tariff Rate, 1979	Nominal Legal Tariff, 1980	Potential Effective Tariff Protection Rate, 1980	Implicit Tariff Rate, 1980-81	Implicit Nominal Protection Rate, 1980-81	Effective Protection Rate, 1980-81	Subsidy Effect Component of Effective Protection 1980-81	Tax Effect Component of Effective Protection 1980-81
Import-Weighted Nominal Tariff, 1979	-								
Realized Tariff Rate, 1979	.43**	-							
Nominal Legal Tariff, 1980	.59**	.21**	-						
Potential Effective Tariff Protection Rate, 1980	.65**	.35**	.88**	-					
Implicit Tariff Rate, 1980-81	.15	.28**	.10	.12	-				
Implicit Nominal Protection Rate, 1980-81	.08	.28**	.00	.00	.97**	-			
Effective Protection Rate, 1980-81	.01	.20**	-.01	-.01	.86**	.88**	-		
Subsidy Effect Component of Effective Protection, 1980-81	.05	.21**	.02	-.03	.90**	.93**	.92**	-	
Tax Effect Component of Effective Protection, 1980-81	.01	.13	.03	.01	.43**	.47**	.36**	.49**	-

Note : ** indicates significance at the 5 percent level.

IV. NET EFFECTIVE PROTECTION

The effective protection estimates presented above were made at existing exchange rates. Yet the existence of the protection system implies an exchange rate different from that which would prevail under a free trade regime. Domestic market protection allows the governmental authorities to maintain an overvalued exchange rate. The point of reference for trade policy analysis should be one of the country's true social opportunity costs. That point of reference should involve a free trade regime, an equilibrium exchange rate, and macroeconomic policies undertaken to pursue internal stability. This means that our effective protection estimates should be adjusted for exchange rate overvaluation associated with the prevailing set of trade policies. The result of this adjustment, insofar as domestic market protection is concerned, can be referred to as net effective protection.

Incorporating the effects of exchange rate overvaluation (or conceivably, undervaluation), the net effective rate of protection(g_j'), for domestic market sales can be written as

$$(7.5) \qquad g_j' = \frac{r}{r^*} (1+g_j) - 1$$

where r and r* are the prevailing official and shadow exchange rates, respectively. In the case exchange rate overvaluation, i.e., $r^*>r$, the net effective rate of domestic market protection (g_j') for a given industry j will be less than the effective rate of protection (g_j).

The problem, of course, is determining what an equilibrium, or shadow, exchange rate would be. There is a literature on the subject,

and some estimating procedures do exist.[7] By and large, these
procedures consitute measures of the trade flow impact of existing
trade policy distortions. Problems arise with the consideration of
capital account movements in the balance of payments, the formulation
of domestic monetary policies, nontradable goods, and protection in
trading partners. Elasticity considerations are important as well, and
any shadow exchange rate estimates prove quite sensitive to measures
of domestic trade policy distortions.

In our analysis we have used the shadow exchange rate estimate of
a recent study by Roberto Incer.[8] Employing the Bacha-Taylor estimating
formulation, Incer estimated a shadow exchange rate premium of 18.8
percent over the prevailing official rate for 1981. It is this figure
that we have employed.

Our estimates of net effective protection for domestic market sales
are presented in Column 4 of Table 7.1 and Appendix Table 7.1. Adjusting
for exchange rate overvaluation, it is clear that the discrimination
borne   by Primary Agriculture is substantial; a weighted average
rate of net effective protection for the domestic market was calculated
as -22.8 percent for that sector. For the manufacturing sector as a
whole the average was 23.1 percent. As is of course the case with our
effective protection estimates for domestic market sales, the net effective
protection estimates show considerable variance between sectors. It
can be noted in Table 7.2 that 33 out of 72 sectors displayed negative

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[7] See Bacha and Taylor(1971), Balassa (1974) and UNIDO(1972).

[8] Roberto Incer, "Brazil: Shadow Exchange Rate Estimation for 1980-85",
unpublished paper, May 1981.

rates of net effective protection. Presumably these are the sectors that would benefit the most from any dismantling of the protection system.

V. THE STRUCTURE AND IMPACT OF DOMESTIC MARKET PROTECTION

The industry ranking of effective protection possesses important implications for the allocation of economic resources. The theory of effective protection suggests that resources will be pulled into those econmic activities receiving high effective protection and out of those receiving low effective protection. In a two good general equilibrium model this result is clear. A problem, however, arises in the general equilibrium context when there are many products. The ranking of the industries, while describing the protection received through economic policies, may not entirely predict resource flows resulting from protection or its elimination.[9] Demand considerations and the effects of changes in factor prices can only be incorporated in a general equilibrium framework. These objectives notwithstanding, it can nevertheless be argued that in general terms the ranking of effective protection should provide an approximate indication of the overall direction of resource pulls. This appears to be most unequivical at the extremes of the range of effective domestic market protection.

We have attempted to examine some of the domestic market protection, along with its structure, through carrying out some simple bivariate statistical tests. Pearson and Spearman correlations were undertaken between the protection measures, on one hand, and variables reflecting

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[9] For general equilibrium treatments of the theory of effective protection see Bhagwati and Srinivasan (1973), Ramaswami and Srinivasan (1971), and Taylor and Black (1974). See also Giannetti(1978).

economic performance and structure, on the other, for our cross-section
of 72 tradable goods sectors. The results of these tests are reported
in Table 7.4. For comparison purposes, correlations with the tariff
rates are presented alongside of those with implicit nominal
protection and effective protection. Because of the ordinal nature
of the problem and the accompanying difficulties in interpreting the
cardinality relationship between the variables concerned, we feel
that the Spearman correlation coefficients are more meaningful and
representative of the relationships we seek to explore. The Pearson
coefficients are nevertheless presented for comparison purposes.

There is some evidence, although flawed, to suggest that protection
and profitability are positively related, as hypothesized from the
theory of effective protection. Both our measures of implicit nominal
protection and effective protection are significantly positively
correlated with the ratio of gross profits per unit of output. (Table 7.4)
For this correlation result to be meaningful, however, it is necessary
to assume that the profitability pattern existent in 1970 over
industries was the same in 1980-81. Since our measure of profitability
captures all the returns to capital, and is therefore a measure of
capital intensity as well, the profitability pattern, at least as we
have measured it, is likely to be fairly stable over time.[10]

Reflecting any possible increase in profitability resulting from
domestic market protection, one would expect, as hypothesized by the

[10] Alternatively, for our results to hold, it could be assumed that the
structure of protection has not changed since 1970. This assumption,
however, is unrealistic.

Table 7.4

CORRELATIONS BETWEEN DOMESTIC MARKET PROTECTION MEASURES AND
ECONOMIC STRUCTURE AND PERFORMANCE VARIABLES,

72 TRADABLE GOODS SECTORS

	Nominal Legal Tariff Rate		Implicit Nominal Protection Rate		Effective Protection Rate	
	Pearson	Spearman	Pearson	Spearman	Pearson	Spearman
orts to Output Ratio, i.e., X/X, 1979	-.14	-.03	-.12	-.06	-.08	.01
orts to Total Available estic Supply Ratio, i.e., M/Z, 1979	-.39**[3]	-.49**	.32**	.40**	.20**	.25*
ie Added Growth Rate:						
1970-74	-.02	.01	.16*[4]	.24**	.03	.16*
1974-79	.15*	.07	-.13	.01	.01	.08
1970-79	.07	.06	-.04	.18*	.02	.19*
ie Added to Labor Ratio, i.e., V/L^1	-.35**	-.38**	.09	.09	.07	.09
rage Wages	-.34**	-.39**	.26**	.32**	.11	.18*
ect Labor Inputs per out Ratio, i.e., L/X^1	-.09	.32**	-.10	.14	-.13	.06
ect and Indirect Labor its per Output Ratio, i.e., $L*/X^1$	.03	.29**	-.38**	-.38**	-.04	-.15*
fits per Output Ratio, i.e., $T/X^{1,2}$	-.09	-.10	.22**	.36**	.06	.22*
es Cost per Value Added io, i.e., W/V^1	.10	.12	.20**	.16	.03	.05

Notes:
1. Variables were calculated from information in the 1970 IBGE input-output accounts.
2. Profits were calculated as a gross residual, including all returns to capital.
3. ** indicates significance at the 5 percent level.
4. * indicates significance at the 10 percent level.

theory of effective protection, to find a positive association between effective protection and output growth over industries. This association is suggested in Table 7.4. Significant positive Spearman coefficients were evidenced between both implicit nominal and effective protection and value added growth for the 1970-79 period.[11] For the 1970-74 sub-period this association was also evident. It is, however, disconcerting that there is no apparent relationship between protection and growth during the 1974-79 subperiod. This is precisely the period for which one would expect to find the strongest association.

The association between domestic market protection and import substitution are noteworthy. A strong negative relationship between legal tariff rates and the ratio of imports to total available domestic supply is evidenced in Table 7.4. The latter variable measured for 1979, depicts the degree of import substitution that has occurred and the possibilities for future import substitution. For those sectors which have inherently completed all possible import substitution, i.e.,possessing an M/Z approaching 0, very high legal tariffs can be observed. The tariff system, while presently anachronistic, was in fact used in the past as a primary instrument to promote import substitution and industrial development. Presumably at some point the presently observed tariff redundancy did not exist. The appearence of widespread redundancy, as evidenced by comparing our implicit tariff estimates with the legal tariff rates, has been a characteristic of Brazilian industrial growth in the past twenty-five years. Accompanied with the closing of the future prospects for further

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[11] Appendix Table A7.2 presents the computed annual value added growth rates for the 72 tradable goods sectors used in our analysis.

import substitution, the development of tariff redundancy can be viewed as evidence to a certain degree of success in import substitution. Sectors which have received heavy protection in the past have grown and become more efficient. Those sectors which have undergone the import substitution process have seen their relative prices fall.

Table 7.4 also demonstrates that those sectors possessing the greatest possibilities for further import substitution, i.e., high M/Z's are those sectors receiving the most protection, both in nominal and effective terms. All the relevant Pearson and Spearman correlation coefficients are positive and significant. The domestic market protection system does appear to be heavily geared to import substitution. The protection system is not random and does in fact possess a logic.[12] At the same time, however, the magnitude of some of the effective protection estimates indicates that the welfare costs of this strategy can be substantial.

The theory of protection predicts that a country will seek to protect its scarce factors of production. In the Brazilian case one accordingly would expect to find that the structure of protection favors physical and human capital intensive industries. This expectation is in fact supported by the empirical evidence. As indicated above, our measured profit rate variable can also be

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[12] By the same t·ken, it is clear from Table 7.4 that the legal tariff system presently possesses no coherent logic or structure.

regarded as a measure of physical capital intensity. As seen in Table 7.4, it is significantly positively correlated with both nominal and effective protection. While our data base does not possess a reliable measure of physical capital, the variable value added to labor (V/L) is frequently used as a proxy of the capital-labor ratio.[13] The correlations between V/L and both nominal and effective protection, while positive, are not statistically significant. Stronger evidence is apparent with our proxy measure of human capital intensity. For the latter, in keeping with notions of human capital and reasonably efficient labor markets, we have used average wages. This variable is seen to be significantly positively related to both nominal and effective protection. Accordingly, one can conclude that the Brazilian system of domestic market protection favors human capital. Analysing the factor intensity structure of protection can also be approached from the opposite direction through an examination of the relationship between labor intensity and protection. Table 7.4 shows a negative and significant relationship between the ratio of total, direct and indirect, labor requirements per unit of output and both nominal and effective protection. It thus appears that labor and especially unskilled labor, is disprotected by the domestic market protection system. The distributional implications of the domestic market protection structure are apparent in both economic and political terms.

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[13] This widespread empirical shortcut dates from Lary (1968).

Appendix Table A7.1

EFFECTIVE PROTECTION ESTIMATES FOR DOMESTIC MARKET
SALES, 4 DIGIT LEVEL, 1980-81

IBCE Code	Industry	Effective Protection Estimate (%)	Effective Protection Decomposition		Net Effective Protection (%)
			Subsidy Effect (%)	Tax Effect (%)	
0101	Forestry and Fishing	-38.9	-39.3	- 0.5	-48.5
0201	Agriculture	- 1.1	0.4	1.5	-16.8
0301	Livestock and Poultry	- 8.0	-10.1	- 2.1	-22.6
0501	Mining	- 4.6	- 4.3	0.3	-19.7
0502	Combustible Mineral Extraction	- 0.7	- 0.4	0.3	-16.4
1001	Cement	-29.2	-32.1	- 2.9	-40.4
1002	Glass Products	27.1	32.9	5.7	7.0
1003	Other Non-Metallic Mineral Products	-26.0	-28.9	- 2.9	-37.7
1101	Pig-Iron, Iron Alloys & Primary Steel	33.0	- 1.2	-34.2	11.9
1102	Iron & Steel Sheets	21.9	11.0	-10.9	2.6
1103	Iron & Steel Castings	105.9	93.8	-12.1	73.3
1104	Non-Ferrous Metals	- 0.5	- 5.0	- 4.5	-16.3
1105	Miscellaneous Metal Products	50.6	48.1	- 2.5	26.7
1201	Pumps and Engines	73.1	81.2	8.0	45.7
1202	Machine Parts	259.7	263.1	3.4	202.8
1203	Industrial Equipment & Machinery	91.6	94.3	2.7	61.3
1204	Agricultural Equipment & Machinery	6.6	7.2	0.7	-10.3
1205	Office & Domestic Use Equipment & Machinery	- 2.7	4.8	7.5	-18.1
1206	Tractors	-40.0	-47.6	- 7.7	-49.5
1301	Electric Energy Equipment	32.2	33.6	1.4	11.3
1302	Electric Wire & Cables	62.7	61.2	- 1.5	36.9
1303	Electric Equipment	157.0	161.9	4.9	116.3
1304	Electrical Machinery & Appliances	119.8	125.5	5.7	85.0
1305	Electronic Equipment	229.3	241.6	-12.3	177.2
1306	Communications Equipment	147.6	183.8	-36.1	108.4
1401	Automobiles	-23.5	-26.6	- 3.1	-35.6
1402	Trucks and Buses	-58.7	-65.4	- 6.7	-65.2
1403	Motors & Vehicle Parts	-11.0	-13.0	- 2.0	-25.1
1404	Shipbuilding	71.3	78.1	6.9	44.2
1405	Railway Equipment & Other Vehicles	28.6	28.5	- 0.2	8.3
1501	Wood	17.7	- 8.3	-26.0	- 0.9
1601	Furniture	52.7	50.8	- 1.9	28.5
1701	Wood Pulp	-34.2	-43.4	- 9.3	-44.6
1702	Paper	10.6	0.6	-10.0	- 6.9
1703	Paper & Paperboard Products	-34.4	-36.7	- 2.3	-44.7
1801	Rubber	-21.4	-20.3	1.1	-33.8
1901	Leather & Leather Products	13.9	19.3	5.4	- 4.2
2001	Chemical Elements & Compounds	128.0	130.8	2.9	91.9
2002	Alcohol	148.7	19.3	-129.3	109.3
2003	Petroleum Refinig	64.4	63.4	- 1.0	38.4
2004	Coke & Coal Derivatives	-43.0	-47.0	4.0	52.0
2005	Chemical Resins & Fibers	137.1	147.4	10.3	99.6
2006	Vegetable Oils & Oilseed Products	-50.5	-56.2	- 5.7	-58.4
2007	Pigments & Paints	83.5	91.9	8.4	54.5
2008	Miscellaneous Chemical Products	139.2	145.7	6.4	101.4
2101	Pharmaceutical Products	116.3	122.2	5.9	82.1
2201	Perfumary & Soaps	91.6	80.3	-11.3	61.3
2301	Plastics	28.3	38.7	10.4	8.0
2401	Basic Textile Processing Products	21.2	- 0.5	-21.7	2.1
2402	Synthetic Fiber Textile Products	16.3	33.4	17.1	- 2.1
2403	Natural Fiber Textile Products	52.0	57.6	5.5	28.0
2404	Other Textile Products	38.2	49.3	11.1	16.3
2501	Apparel	41.7	62.6	20.8	19.3
2502	Footwear	60.3	67.2	6.9	35.0
2601	Coffee Bean Products	-38.4	-52.7	-14.2	-48.2

EFFECTIVE PROTECTION ESTIMATES FOR DOMESTIC MARKET
SALES, 4 DIGIT LEVEL, 1980.81

| IBCE Code | Industry | Effective Protection Estimate (%) | Effective Protection Decomposition | | Net Effective Protection (%) |
			Subsidy Effect (%)	Tax Effect (%)	
2602	Processed Coffee Products	v.h.[1]	--	--	--
2603	Processed Rice	-22.4	-34.3	-11.9	-34.7
2604	Wheat Flour	-42.4	-35.7	6.7	-51.5
2605	Other Vegetable Products	100.4	73.7	-26.7	68.6
2606	Meat Products	37.7	21.8	-15.8	15.9
2607	Poultry Products	22.9	-15.7	-38.6	3.4
2608	Prepared Fish Products	104.4	11.1	-93.3	72.1
2609	Dairy Products	278.7	251.8	-26.9	215.7
2610	Crude Sugar Products	-62.7	-68.5	- 5.8	-68.6
2611	Refined Sugar	-82.0	-110.3	-28.2	-84.9
2612	Bakery & Pastry Products	-53.8	-70.9	-17.1	-61.1
2613	Edible Oils & Fats	v.h.[1]	--	--	--
2614	Other Food Products	-21.4	-28.3	- 7.9	-33.8
2701	Beverages	- 1.1	- 7.8	- 6.8	-16.3
2801	Tobacco Products	5.7	1.7	- 4.0	-11.0
2901	Publishing and Printing	31.9	32.6	0.6	11.1
3001	Miscellaneous Manufactured Products	171.7	172.5	0.8	128.7

Note: 1. Value added in world prices was calculated as negative, indicating very high estimates for effective protection.

Source: Computed from implicit nominal protection estimates. For a description of the methodology employed see text.

Appendix Table A7.2

VALUE ADDED ANNUAL GROWTH RATES, 4 DIGIT LEVEL, 1970-79

IBE Code	Industry	Value Added Annual Growth Rates[1] (%)		
		1970-74	1974-79	1970-79
101	Forestry and Fishing	6.8[2]	3.7	5.1
201	Agriculture	6.8[2]	3.7	5.1
301	Livestock and Poultry	6.8[2]	3.7	5.1
501	Mining	20.0	5.5	11.7
502	Combustible Mineral Extraction	2.2	3.2	2.8
001	Cement	12.9	9.3	10.9
002	Glass Products	11.5	12.5	12.0
003	Other Non-Metallic Mineral Products	26.9	6.6	15.2
101	Pig-Iron, Iron Alloys & Primary Steel	10.9	10.2	10.5
102	Iron & Steel Sheets	16.6	12.3	14.2
103	Iron & Steel Castings	26.8	4.5	13.9
104	Non-Ferrous Metals	13.5	9.4	11.2
105	Miscellaneous Metal Products	24.0	7.3	14.4
201	Pumps and Engines	30.5	19.4	24.2
202	Machine Parts	5.4	-12.0	-4.7
203	Industrial Equipment & Machinery	24.0	0.9	10.6
204	Agricultural Equipment & Machinery	45.1	1.0	18.7
205	Office & Domestic Use Equipment & Machinery	22.4	6.7	13.4
206	Tractors	19.6	4.3	10.9
301	Electric Energy Equipment	12.1	5.2	8.2
302	Electric Wire & Cables	24.7	3.3	12.3
303	Electric Equipment	15.8	7.3	11.0
304	Electrical Machinery & Appliances	20.2	11.2	15.1
305	Electronic Equipment	24.9	-0.2	10.3
306	Communications Equipment	24.2	10.5	16.4
401	Automobiles	29.9	2.9	14.1
402	Trucks and Buses	10.9	2.9	6.4
403	Motors & Vehicle Parts	59.0	8.6	28.6
404	Shipbuilding	-4.9	13.8	5.1
405	Railway Equipment & Other Vehicles	17.1	-0.7	6.8
501	Wood	19.5	6.6	12.1
601	Furniture	19.6	6.6	12.2
701	Wood Pulp	35.4	7.0	18.8
702	Paper	14.6	5.6	9.5
703	Paper and Paperboard Products	15.2	6.0	10.0
801	Rubber	18.5	5.3	11.0
901	Leather & Leather Products	18.3	6.6	11.6
2001	Chemical Elements & Compounds	17.9	8.0	12.3
2002	Alcohol	0.3	43.0	22.2
2003	Petroleum Refining	12.8	4.3	8.0
2004	Coke & Coal Derivations	8.9	10.3	9.6
2005	Chemical Resins & Fibers	27.7	8.0	16.3
2006	Vegetable Oils & Oilseed Products	11.5	11.2	11.3
2007	Pigments and Paints	27.4	7.4	16.9
2008	Miscellaneous Chemical Products	27.2	7.8	16.0
2101	Pharmaceutical Products	19.2	4.7	10.9
2201	Perfumary & Soaps	12.3	10.1	11.1
2301	Plastics	23.3	13.8	17.9

VALUE ADDED ANNUAL GROWTH RATES, 4 DIGIT LEVEL, 1970-79

IBGE Code	Industry	Value Added Annual Growth Rates[1] (%)		
		1970-74	1974-79	1970-79
2401	Basic Textiles Processing Products	- 1.5	0	- 0.7
2402	Synthetic Fiber Textile Products	7.5	8.0	7.8
2403	Natural Fiber Textile Products	10.1	1.0	5.0
2404	Other Textile Products	12.1	2.4	6.6
2501	Apparel	16.3	6.1	11.4
2502	Footwear	7.3	2.7	4.7
2601	Coffee Bean Products	9.9	6.1	7.7
2602	Processed Coffe Products	18.1	7.8	12.3
2603	Processed Rice	9.9	6.0	7.7
2604	Wheat Flour	6.8	7.5	7.2
2605	Other Vegetable Products	20.7	12.3	16.0
2606	Meat Products	2.8	1.2	1.9
2607	Poultry Products	32.6	12.9	21.3
2608	Prepared Fish Products	5.2	3.1	4.0
2609	Dairy Products	8.9	1.0	4.4
2610	Crude Sugar Products	6.4	4.5	5.4
2611	Refined Sugar	9.4	4.4	6.6
2612	Bakery & Pastry Products	13.5	6.6	9.6
2613	Edible Oils & Fats	9.5	10.4	10.0
2614	Other Food Products	11.6	5.8	8.3
2701	Beverages	12.8	7.7	9.9
2801	Tobacco Products	7.1	6.5	6.8
2901	Publishing and Printing	19.5	6.6	12.2
3001	Miscellaneous Manufactured Products	19.5	6.6	12.2

Notes: 1. The growth rates were computed on an annually compounded basis.

2. For sectors 0101, 0201, and 0301 only aggregated estimates were available from the national income accounts. Our analysis proceeds on the assumption that growth for the 3 primary agricultural sectors was equal.

Source: Computed from IBGE estimates. The IBGE data are preliminary estimates and subject to revision.

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Chapter 4

NOMINAL EXPORT INCENTIVES AND EFFECTIVE

EXPORT PROMOTION ESTIMATES

I. NOMINAL EXPORT INCENTIVES

The system of export incentives had been widely described and

analyzed in the literature.[1] Our intention here is not to repeat

these efforts but to present an up-dated picture of the system as it

affected different tradable goods sectors during the period 1980-81.

No time series analysis or involved discussion of the system's

evolution over time are undertaken. Nor is any analysis provided

integrating commercial policies with broader macroeconomic policies,

which involve the exchange rate regime and affect exchange rate

levels. After some general remarks as to the nature of the system,

this chapter will discuss in turn direct export controls, export

credit subsidies, and fiscal measures affecting exports.

The major policy instrument affecting the prices of all tradable

goods relative to nontradable goods is the exchange rate. Beginning in

August 1968 and lasting until December 1979, the government pursued a

mini-devaluation policy based upon a rough purchasing power parity

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[1] See von Doellinger et al.(1973), Barata (1979), de la Cal (1981),
Pastore et al.(1977), Savasini (1978), Suplicy (1977), Senna(1980),
Cardoso (1980), Braga (1981), Musalem (1981), and Tyler (1976).

formula. The studies computing real exchange rate time series all
demonstrate that movements of the real exchange rate during the period
were relatively minor.[2] The government's policy was to devalue the
cruzeiro regularly, ranging from one to four weeks, in accordance with
internal inflation and that observed in the country's principal trading
partners, primarily the United States. The objective was to maintain
the real purchasing power equivalent of the currency and in so doing
eliminate swings in the real exchange rate. Since the overall
movements in the real exchange rate were minor, exchange rate policy
during this period did not serve to either appreciably increase or
decrease the real remuneration of Brazilian exporters. What in fact did
serve to increase such remuneration in the late 1960's was the
establishment of an elaborate system of fiscal incentives for the export
of manufactured goods.

A major change in the exchange rate and trade regime occurred in
December 1979 with the so-called package of economic policy reforms.
Accompanying the 30 percent maxi-devaluation, there were simultaneously
announced measures to immediately remove the fiscal credit export
subsidies, eliminate the import deposit scheme, reform the tariff
reducing industrial incentive system, and establish export taxes for
key agricultural exports. As such, the devaluation was in fact a
compensated develuation. On the export side, since the fiscal export
subsidies averaged around 20 percent for the manufacturing sector as
a whole, the immediate net remuneration gain for manufacturing exporters
was on the order of some 10 percent. For some sectors, whose exports

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[2] In addition to the studies cited above in Footnote 1, see also Coes
(1979), Fendt (1981), and IPLAN/IPEA(1980).

were heavily subsidized such as textiles and apparel, the net gains were quite small.[3]

The abandonment of the purchasing power parity basis of the country's mini-devaluation policy was further emphasized with the announcement in January 1980 that subsequently both monetary correction and nominal exchange rate depreciation were to be pre-fixed, i.e., announced in advance. These amounts were then set for 1980 at 45 percent for monetary correction and 40 percent for exchange rate depreciation. In the face of inflation then running around 80 percent annually, the difficulties and inherent dangers of such a course were clearly evident.[4] By November 1980, in the face of increasing economic uncertainty, the government decided to cut its losses and abandon this policy course. It announced that beginning in January 1981 monetary correction would be fully based upon the national consumer price index and that the purchasing power parity basis in exchange

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[3] See Kume (1981).

[4] For those who applauded the December 1979 economic policy reforms as an increased policy emphasis on market force resource allocation, the January 1980 announcements concerning pre-fixation brought bewilderment. The rationale for the decision to pre-fix monetary correction and therefore necessairly the nominal exchange rate depreciation is unclear. The most common economic explanation is that the government sought to affect inflationary explanations. Yet, when in the preceeding month — December 1979 — the money supply (M_1) had increased by an astounding, and publisized, 19 percent, it is difficult to accept the argument that inflationary expectations would somehow be substantially dampened by the government's announcement of pre-fixation. What the government did in effect was to prepare a trap for itself by putting its own credibility on the line. That it emerged from the episode 11 months later with minimal damage to its credibility is a testament to the adroitness of the economic policy authorities. In economic terms, the legacy is that sometime in the future another compensated exchange rate adjustment, along lines similar to that of December 1979, cleaning up distortionary commercial policies, will undoubtedly prove imperative.

rate policy would be restored. Yet, by this time there had been witnessed a substantial real appreciation of the currency, thus undermining Brazilian competitiveness in international markets. From December 1979, prior to the maxi-devaluation, to the end of December 1980, the real exchange rate, adjusted from the elimination of the fiscal subsidies for manufacturing exports, appreciated by 19 percent on the average for such exports.[5]

Many of the commercial policy measures implemented during 1980 and 1981 were undertaken in response to the constraints imposed on exchange rate policy by the pre-fixation directly of the nominal exchange rate depreciation and indirectly of the monetary correction indexes. The intention of these commercial policy measures has been to reduce the loss of international competitiveness concommitant with the conduct of exchange rate policy during 1980 and the accompanying, although unstated, desire of the governmental authorities to increase the price of Brazilian tradable goods vis-à-vis nontraded goods. On the import side, the extension of a financial transaction tax (the IOF) to imports has had a generalized tariff, or exchange rate depreciation, equivalent for those products covered. The proliferation of direct import controls and other nontariff barriers during 1980 and 1981 is also consistent with governmental desires to redress the effects of the real exchange rate appreciation. On the export side, both the increase of the export credit subsidies and the reinstitution of a fiscal export subsidy, to be discussed below, were designed to compensate exporters for their loss in real remuneration. To a great

[5] See Senna (1981) and IPLAN/IPEA (1981).

degree, these commercial policy measures undertaken in 1980-81 have served as substitutes, abeit imperfect ones to be sure, for more appropriate exchange policy measures, which however were constrained in 1980 by other policy objectives.

A. Direct Export Controls

In addition to a response to exchange rate conditions and policy, commercial policies have also reflected, and served as an accompaniment, to other economic policies pursued by the government. The clearest case is the one of direct export controls necessitated by the pursuit of domestic price controls. If domestic prices, for whatever reason, are kept beneath international price levels, export taxes and/or controls will prove a necessary accompaniment. For many years the prices of domestic agricultural products have frequently been maintained beneath international prices by the government. Consequently, these products have been subjected to either periodic export prohibitions de facto or quotas. While specific export tax equivalents have involved only a few basic products such as coffee, cocoa, and minerals, export licensing, administered by CACEX, has been prevalent. Until very recently, agricultural exports have been those primarily affected by such export restrictions.

As discussed in Chapter 5, the year 1980 witnessed an extension of the industrial price control system administered through the CIP. Price controls were consciously used as a means of combatting inflation.

In addition to the resultant distortions in relative prices, a concommitant feature of the system was a greater control of exports by the CACEX. The exports of certain industrial commodities, such as wood pulp, cement, and basic steels, were subject to controls. In addition, CACEX approval of exports was increasingly accompanied by enforcement of export price minimums. Export regulations in the last few years have become more extensive.[6] Despite CACEX lip-service as to the desirability to debureacatratize export procedures, CACEX controls over exports, particularly for some products, seem to have grown. The discretionary nature of this system, especially where export quotas are concerned,[7] lends itself to abuse.

B. Export Credit Incentives

There are presently functioning in the country two basic types of export credit incentives - suppliers' credits and direct production and working capital financing for exports. The system of suppliers' credits dates back to the mid-1960s and consists primarily of long-term financing for manufactured products, particularly capital goods. This system, evolving into what is currently known as FINEX, is administered by CACEX. The loans are provided in US dollars at terms comparable to, or slightly more attractive than those prevailing for official suppliers' credits from most industrialized countries. Depending upon the product, CACEX will finance up to 85 percent of the FOB value exports in US dollars at interest rates of 7 percent annually

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[6] A recent CACEX listing of prohibited and controled exports, along with the pertinent regulation references, covered 46 tightly spaced pages. See CACEX, Normas Administrativas que Orientam as Exportações, Comunicado nº 79/6, pp. 56-102.

[7] It should be noted that CACEX also administers a system of export quotas in the cases of products for which import quotas for Brazilian products exist in the importing countries. For example, CACEX allots different export quotas to firms exporting textile and apparel products to the European Economic Community.

for periods up to 8-10 years. Under this system CACEX extended long-term credits of US$ 345 million in 1978, of which 48 percent was for transport equipment sales.[8] This facility has since been greatly expanded. In 1979 it was supplemented by the establishment of a scheme under which CACEX interest rate subsidies for suppliers' credits are extended through the commercial banking system.

In an attempt to stimulate manufactured exports during a period of tight credit conditions, in 1971 the government initiated a system of direct financing for export production. Under this scheme, originally referred to as Resolution 71, manufacturing exporters could avail themselves of specified amounts of credit through the commercial banking system at heavily subsidized rates of interest. These loans were discounted by the Central Bank. This system has evolved since the early 1970's, but its fundamental features remain essentially in tact. The amount of the subsidy expressed as a percentage of FOB export unit values varies according to the amount of credit obtained relative to exports and the difference between the market, or shadow, interest rate and the subsidized interest rate. In 1977 these export credit subsidies were estimated to have an average value of 5.0 percent of the value of manufactured exports.[9] With the pre-fixation of the exchange rate in 1980, efforts were made to expand the system and

[8] Information kindly furnished by CACEX. The operations in 1977 - totaling US$ 376 million - amounted to about one-fourth of Brazilian capital goods exports for that year.

[9] Savasini et al.(1979). The intesectoral differences in these estimates were substantial and were not stable over time, as is evident from a comparison between estimates for 1975 and 1977.

and increase the subsidy levels in order to compensate for the real exchange rate appreciation and the removal of the fiscal incentives for manufactured exports.

The currently prevailing system, i.e., that as of July 1981, is governed by Central Bank Resolution 674 of January 22,1981.[10] While its financial resources are channeled through the commercial banking system, the amount of credit for which an exporting firm is authorized is determined by CACEX in accordance with an involved set of regulations. CACEX issues firms a basic Certificate (Certifica do de Habilitação), which subsequently allows these firms to obtain Resolution 674 resources through the commercial banks. This Certificate is awarded on the basis of the firms' export performance in the preceeding year, its trade balance, and a set of allotment rates specified in Resolution 674. If a firm shows a negative trade balance, i.e., an excess of its imports over exports, it is not eligible for Resolution 674 unless some accomodation can be reached with CACEX. After the basic Certificate is issued, a firm may qualify for an additional certificate if it shows an increase in its exports greater than 10 percent in a 6 month period. The interest rates for Resolution 674 funds are set at a nominal rate of 40 percent annually, paid semi-annually.[11] These credits, given the export

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[10] The system of direct production financing for exports has been governed by a number of different Central Bank Resolutions. The most recent have been Resolutions 398, 515, 602, and 641.

[11] The Resolution governing the system for most of 1980 was Resolution 641. While Resolution possessed some allotment rates of up to 50 percent, the effective nominal interest rate under Resolution 641 was substantially higher owing to the fact that the interest was pre-paid.

experience of the firm, are generally renewed every 6 months.

While the Resolution 674 system is not automatic as far as CACEX is concerned, some estimates of the nominal subsidy value of the program are possible. The allotment rates vary over products and are set at 0,12,20,30 or 40 percent of the previous period's exports. Since the interest rates are the same facing all firms, it is the allotment rates that determine the amount of the subsidy that different products, and industries, can receive. An approximation of the export credit subsidy rate (s_{CR}) is estimated as:

$$(8.1) \qquad s_{ECRj} = k_j \left(\frac{i - i^-}{1 + i} \right)$$

where

k_j = export credit allotment rate for industry j, expressed as a ratio of observed export performance.

i = nominal market interest rate expressed annually.

i^- = nominal subsidized interest rate available under Resolution 674 expressed in annual effective terms.

The Sectoral export credit allotment rates (k_j) an computed as simple means over the products comprising the sector. A nominal market interest rate of 120 percent annually is posited for 1981, given observed interest rates in the uncontrolled segment of the market.Consequently, if the allotment rate equals 30 percent, the nominal subsidy rate s_{ECRj} is equal to 10.4 percent.

Estimates for the nominal export credit subsidy rates for 72 tradable goods sectors are presented in Appendix Table A8.1 for 1980 and 1981. For 1981 they range up to 13.8 percent (for synthetic textiles and for footwear), with a large number falling in the 8-11 percent range. Table 8.1 presents averages at the 2 digit level for manufacturing industries. For manufacturing as a whole the average nominal export credit subsidy rate was calculated at 8.1 percent for 1981, as compared to 6.9 percent in 1980. While the system was not originally designed to provide financing for agricultural product exports, the relevant tables indicate that some such products have been recently included under the scheme.

Our estimates are overestimates to the extent that (1) CACEX does not in fact authorize the full amounts of credits to which firms are entitled, (2) the banking system does not provide the authorized financing at the stipulated interest rates, (3) exports are growing, and (4) exporting firms possess negative trade balances. In 1981 the complaints of firms regarding (1) and (2) were relatively minor, and the availability of additional financing with rapidly growing exports diminishes the importance of (3). Qualification (4) is harder to assess. It can be noted however that some firms have set up separate importing affiliates in order to circumvent such difficulties.

The government rationale for expanding the export production credit subsidy system has been the need to compensate for the removal of the fiscal credit export subsidies and for the real appreciation of the

Table 8.1[7]

NOMINAL EXPORT INCENTIVES

2 DIGIT LEVEL, 1980-81

Industry	Export Credit Subsidy Rate, s_{ECR} (%)		Export Fiscal Subsidy Rates, s_{EF} (%)			Nominal Export Subsidy Rate, s_E (%)		
	1980	1981	November 1979	1981	Projected 1982	1980	1981	Projected 1982
ining	1.8	2.3	- 6.5	- 1.0	- 3.2	- 4.7	1.3	- 1.6
on-Metallic Minerals	7.9	10.3	12.7	12.2	7.3	7.9	22.5	13.9
etallurgy	5.8	6.9	16.9	13.2	7.9	5.8	20.1	12.3
achinery	8.8	10.4	17.7	15.0	9.0	8.8	25.6	15.7
lectrical Equipment	8.7	8.6	16.5	15.0	9.0	8.7	25.4	15.6
ransportation Equipment	7.4	8.7	19.4	15.0	9.0	7.4	23.7	14.5
umber & Wood Products	4.4	5.8	12.3	8.6	5.2	4.4	14.4	8.9
urniture	9.4	11.2	21.0	15.0	9.0	9.4	26.2	16.2
aper	7.6	8.8	18.8	14.3	8.6	7.6	23.2	14.3
ubber	5.4	8.8	17.1	13.6	8.2	5.4	22.4	13.8
eather	9.2	11.5	4.4	11.3	6.8	9.2	22.8	14.1
hemicals	3.4	4.1	8.4	6.1	3.3	2.4	10.2	5.9
harmaceutical Products	6.4	7.7	11.0	14.9	8.9	6.4	22.6	13.9
erfumary	5.3	7.5	17.4	12.5	7.5	5.3	20.0	12.3
lastics	6.0	10.6	13.4	15.0	9.0	6.0	25.6	15.8
extiles	10.8	11.7	26.7	13.4	8.0	10.8	25.2	15.6
pparel	11.2	11.8	20.5	14.5	8.7	11.2	26.3	16.3
ood Products	4.3	5.1	2.4	- 0.2	- 0.9	2.4	4.9	2.4
everages	7.7	9.0	12.8	6.4	3.8	7.7	15.4	9.6
obacco	7.5	7.3	- 5.7	1.8	- 1.2	1.8	9.1	3.5
rinting & Publishing	7.4	8.9	8.7	15.0	9.0	7.4	23.9	14.7
iscellaneous	8.4	10.2	16.8	14.8	8.9	8.4	25.0	15.4
AVERAGES[1]								
Primary Agriculture[2]	1.9	3.1	- 6.8	- 5.7	- 6.4	- 5.7	- 2.7	- 4.5
Manufacturing	6.9	8.1	14.1	11.1	6.5	6.5	19.3	11.8
Capital Goods	8.3	9.3	17.9	15.0	9.0	8.3	24.9	15.3
Intermediate Goods	5.4	6.9	12.9	11.0	6.5	5.1	17.9	10.9
Consumer Goods	7.6	8.6	13.0	8.9	5.0	6.8	17.5	10.5

Notes: 1. Value added weights of 1979 are used for aggregating from the four digit level
and for computing the more aggregated means.

2. Includes Forestry and Fishing, Agriculture, and Livestock and Poultry.

Source: Appendix Table A8.1.

cruzeiro during the 1980 period of exchange rate pre-fixation.

Consequently, one would expect to find a strong positive correlation

between the intersectoral structure of the export credit subsidies and

the pre-December 1979 fiscal subsidies. This is in fact the case. A

Pearson correlation coefficient of .62 was computed between the two

over the 72 sector cross-section. The comparable Spearman rank

correlation coefficient was .57.

C. Fiscal Export Incentives

The fiscal system dealing with exports is involved and complex,

comprising a variety of incentives and disincentives. There are fiscal

measures, mentioned above, which constitute de facto export taxes for

certain commodities, such as for coffee and cocoa. Similarly,there is

a tax on minerals (the IUM) applied to exports. After the December

1979 maxi-devaluation, temporary export taxes were imposed in rates

varying up to 30 percent on practically all agricultural products. The

taxes have been gradually eliminated, and by early 1981 all had been

removed.

A specific fiscal instrument that affects exports is the state

valve added tax (the ICM). In the mid-1960's the payment of this

indirect tax was exempted for manufactured exports. The payment of

the ICM for non-manufactured product exports,however, remains. In

effect this constitutes an export tax for these products, unless of

course they are excluded from the ICM altogether, as is the case with

most vegetables. The amount of the estimates nominal export incentives

(disincentives) should include all taxes or benefits relative to the

producer FOB factory (or farm) price. In our estimates of the fiscal export subsidies we have used the 1979 estimates of Kume (1981) to derive export tax equivalent information reflecting the payment of the ICM on nonexempted exported products.

The ICM tax and tax credit system also was used prior to December 1979 to provide a subsidy element to manufactured exports. The overall system of fiscal export subsidies, frequently referred to as the IPI credit premium system, incorporated components from the ICM as well as from the IPI. These subsidies, which gradually evolved during the late 1960's, existed only for manufacturing exports. Because of the variations of the IPI tax rates across products, the export subsidy rates displayed substantial variance across manufacturing sectors. Column 3 of Appendix Table A8.1 and Table 8.1 present estimates of the fiscal subsidies as they existed in November 1979, For manufacturing as a whole, the value added weighted average was 14.1 percent. While the textile and apparel industries received high export subsidies, the capital goods industries as a group were the most benefitted, with an average of 17.9 percent. With the economic policy reforms of December 1979 the IPI and ICM based fiscal subsidies for export were eliminated. During 1980 there were no comparable fiscal export subsidies.

Reflecting a governmental concern with the net compensated real exchange rate appreciation during 1980, measures were taken in April 1981 to reintroduce a system of fiscal export subsidies on a temporary basis, consistent with Brazil's international commitments made in

conjunction with the GATT Subsidy Code.[12] For those products covered

a credit, payable through the banking system, is provided for exports

amounting to 15 percent of the FOB export value in 1981, 9 percent

in 1982, and 3 percent in 1983 until June 30,1983. Although referred

to as the IPI credit premium,owing to its basis in the previous

legislation, the new system consixtutes in fact an automatic,

nondiscretionary,and direct fiscal subsidy for exports. A noteworthy

feature of the new system is that, unlike the pre-December 1979

fiscal subsidy system, the subsidy rates are ostensibly administered

across the board. From a resource allocation viewpoint it makes sense

to have a uniform subsidy. Yet,as it turns out,all products are not

covered,and the noninclusion of many products, especially basic

primary products, means that,like the old system,there exist

intersectoral differences in the fiscal export subsidy rates.

Our estimates of the 1981 fiscal export subsidy rates,

presented in Appendix Table 8.1 and Table 8.1, are based upon simple

averages of the covered and noncovered products comprising each sector.

Any existing export tax equivalents are also included so that the

figures reported are net average estimates. As observed, the

manufacturing average is 11.1 percent for 1981, with the capital

goods industries group receiving the full 15 percent. Since the

legislation specifies a reduction for 1982, the projected 1982

estimates are also presented in the relevant tables. For 1982 a

manufacturing average export fiscal subsidy rate of 6.5 percent is

projected, barring any further changes in the governing legislation.

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[12] Ministry of Finance Portaria NP 78, April 1,1981.

The estimates presented and employed in this study do not reflect other fiscal measures designed to promote exports. Two such programs are worthy of special mention. First, there exists an income tax provision enacted in the mid-1960's exempting firms from income tax on that part of their profits deriving from export sales. While previous studies have found this particular incentive to be quantitatively rather small, i.e, 1-2 percent,[13] the provision increases in importance as exports grow in relation to the total sales of an individual firm. Unfortunately, there was no viable way to measure the magnitude of this incentive over the sectors in question.

A second distinct fiscal program for export promotion is the drawback. For those products destined for export, firms are allowed to import intermediate products without paying import duties. The idea is to permit export producers to obtain tradable inputs at world prices instead of at higher domestic prices brought about through protection of the intermediate goods industries. With an effectively functioning drawback system, an export producer is not penalized from having to purchase higher priced domestically produced inputs. We have not attempted to measure the magnitude of this scheme. It should be noted, however, that our estimates of the tax effect component of the effective protection rates were relatively low.[14]

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[13] Tyler (1976), Savasini et al.(1979).

[14] This does not mean, however, that the drawback is inconsequential. Some inputs have prices substantially above international prices.

D. Combined Nominal Export Incentives

The combined nominal export incentive rates (s_E) are estimated as a simple linear sum of the credit and fiscal subsidy rates. They are presented in Appendix Table A8.1 and Table 8.1 in the final columns. While there are a number of the 72 sectors with export subsidy rates greater than 25 percent, the 1981 average for manufacturing was 19.3 percent. For 1982 the comparable figures is projected to fall to 11.8 percent. As is evident from the separate credit and fiscal subsidy rates, the combined nominal subsidy rates possess a reverse cascade, similar to that observed with nominal and effective protection for domestic market sales. The capital goods industries are seen to receive the highest export subsidy rates.

Comparing the nominal export incentives with our measures of implicit nominal protection for domestic market sales, a fundamental difference must be noted. As discussed above, our implicit tariff computations were based upon actual price observations. With adjustments for domestic production subsidies these implicit tariffs served as the basis for our implicit nominal protection estimates. The export incentive measures, on the other hand, are not based on actual price comparisons. They quantify the direct magnitudes of policies themselves. The sectoral average export incentives represent the amount by which those sectors' firms can reduce their international prices in relation to their domestic FOB factory prices while maintaining their unit profitability. Alternatively, these export incentives can be viewed as the proportional increase in domestic currency export remuneration received by exporting firms if their external sales can be sold at prices equivalent to their domestic FOB factory prices.

II. THE MEASUREMENT OF EFFECTIVE EXPORT PROMOTION

A. Methodology

The rationale for making estimates of effective export promotion is analogous to that for undertaking estimates of effective, as distinct from nominal, protection for domestic market sales. The effect of protection on inputs must be accounted for, and the resultant measure is similarly a measure of the effect of commercial policies on value added. Our estimating equation can be written as

$$(8.2) \qquad \sigma_{Ej} = \frac{s_{Ej} - \sum_i a^-_{ij} \left(\frac{1 + t_j}{1 + t_i}\right) t_i}{1 - \sum_i a^-_{ij} \left(\frac{1 + t_j}{1 + t_i}\right)}$$

where

σ_{Ej} = the effective export promotion rate for sector j

s_{Ej} = the combined nominal export incentives for sector j

The technical coefficients a^-_{ij} are measured in domestic prices, and adjustments must be made as before to estimate value added in inernational prices. Since exports constituted small proportions of sectoral output for the years of our input-output table, the a^-_{ij}'s reflect domestic prices for final products rather than international prices. Accordingly, we have employed our implicit tariff measures to adjust the coefficients and to measure the effects of commercial policies on inputs.

As was the case with the effective domestic market protection estimates, the IBGE 1970 input-output transactions table, problems and all, was used to make our estimates of effective export promotion rates. As before, estimates were possible for 72 tradable goods

sectors. The Corden method was employed to make adjustments for nontraded inputs by incorporating them into value added.

B. Estimates

The estimates for the effective export promotion rates are presented in Appendix Table A8.2 and Table 8.2. The combined nominal export incentives are reproduced in both these tables for comparison purposes. Estimates were made for both 1980 and 1981, and projections were made for 1982 based upon the changes expected in the nominal export incentives. Following the pattern of the nominal incentives, the effective export promotion rates increase, in some cases substantially, from 1980 to 1981. Similarly, declines are projected for 1981.

Examining the averages in Table 8.2, it is observed that Primary Agriculture is discriminated against in the export incentives. For 1981 the weighted average estimate of the effective export promotion rate for Primary Agriculture was - 3.2 percent. For manufacturing the average was 34.9 percent. At the two digit level, rates of effective export promotion exceeding 50 percent were estimated for perfumary products, lumber and wood products, and furniture. The reverse cascade effect that was apparent in with our domestic market protection measures and with the nominal export incentives is no longer apparent. The differences in the group averages among capital goods, intermediate products, and final consumer goods are no longer appreciable.

Table 8.3 presents information on the frequency of our export incentives measures according to the magnitude of incentives provided in 1981 for our 72 tradable goods sectors. While the

NOMINAL EXPORT INCENTIVES, EFFECTIVE EXPORT PROMOTION RATES,
AND NET EFFECTIVE EXPORT PROMOTION RATE ESTIMATES, 2
DIGIT LEVEL, 1980-81

Industry	Nominal Export Subsidy Rate, u_E (%)		Effective Export Promotion Rate.σ_E (%)			Net Effective Export Promotion Rate,σ_E (%)	
	1980	1981	1980	1981	Projected 1982	1980	1981
Mining	- 4.7	1.3	- 5.5	1.1	- 2.3	-20.5	-14.9
Non-Metallic Minerals	7.9	22.5	11.4	29.3	18.8	- 6.2	8.9
Metallurgy	5.8	20.1	25.7	54.1	38.7	5.8	29.7
Machinery	8.8	25.6	11.3	36.4	21.7	- 6.3	14.8
Electrical Equipment	8.7	25.4	- 0.1	28.4	11.8	-15.9	13.9
Transportation Equipment	7.4	23.7	13.1	39.1	24.6	- 4.8	17.1
Lumber & Wood Products	4.4	14.4	34.4	53.6	43.0	13.1	29.3
Furniture	9.4	26.2	20.1	52.9	33.4	1.1	28.7
Paper	7.6	23.2	17.2	40.0	26.9	- 1.4	17.8
Rubber	5.4	22.4	6.0	28.5	17.2	-10.7	8.2
Leather	9.2	22.8	5.9	22.7	12.1	-10.8	3.3
Chemicals	2.4	10.2	3.0	15.5	8.5	-13.3	- 2.8
Pharmaceutical Products	6.4	22.6	2.2	22.5	11.5	-14.0	3.1
Perfumary	5.3	20.0	23.3	57.0	39.4	3.8	32.2
Plastics	6.0	25.6	- 2.3	23.9	10.8	-17.8	4.3
Textiles	10.8	25.2	11.4	36.7	19.8	- 6.2	15.0
Apparel	11.2	26.3	6.1	37.7	16.7	-10.7	15.9
Food Products	2.4	4.9	23.6	28.9	23.7	4.0	8.5
Beverages	7.7	15.4	18.1	29.6	21.0	- 0.6	9.1
Tobacco	1.8	9.1	6.4	16.0	8.6	-10.4	- 2.4
Printing & Publishing	7.4	23.9	9.4	31.6	19.2	- 7.9	10.8
Miscellaneous	8.4	25.0	15.0	46.2	28.2	- 3.2	23.1
AVERAGES[1]							
Primary Agriculture[2]	- 5.7	- 2.7	- 6.8	- 3.2	- 5.4	-21.5	-18.6
Manufacturing	6.5	19.3	13.4	34.9	22.2	- 4.5	13.9
Capital Goods	8.3	24.9	8.6	34.9	19.7	- 8.6	15.3
Intermediate Goods	5.1	17.9	13.8	34.7	23.3	- 4.2	13.4
Consumer Goods	6.8	17.5	16.0	35.0	22.5	- 2.4	13.6

Notes: 1. Value added weights of 1979 are used for aggregating from the four digit level
and for computing the more aggregated means.

2. Includes Forestry and Fishing, Agriculture, and Livestock and Poultry.

Source: Appendix Table A8.2.

Table 8.3

FREQUENCY DISTRIBUTION OF EXPORT INCENTIVE

MEASURES, 72 TRADABLE GOODS SECTORS,1981

nge of centives (%)	Nominal Export Subsidy Rate		Effective Export Promotion Rate		Net Effective Export Promotion Rate	
	Number of Sectors	(%)	Number of Sectors	(%)	Number of Sectors	(%)
< 0	5	7	5	7	16	23
- 25	41	57	16	23	44	63
5 - 50	26	36	39	56	7	10
0 - 75	0	-	7	10	1	1
5 - 100	0	-	1	1	0	-
> 100	0	-	2	3	2	3
OTAL	72	100	70[1]	100	70	100

ote: Calculations have omitted those 2 sectors for which value
added in world prices was estimated as negative.

ources: Appendix Tables A8.2 and A8.3.

nominal export subsidies are rather tightly concentrated, it can be observed, as to be expected, that this is much less the case with the effective export promotion rates. For the latter measure the range of greatest frequency is the 35-50 percent range, but 10 sectors displayed effective rates greater than 50 percent. With both the nominal and effective rate measures 5 sectors displayed negative rates. These sectors were absolutely discriminated against by export promotion measures.

III. NET EFFECTIVE EXPORT PROMOTION ESTIMATES

Discrimination through export promotion policies is also apparent with the administration of exchange rate policy. Adjusting for exchange rate overvaluation accompanying the prevailing commercial policies, but retaining the nominal export incentives, can provide a notion of the structure of export promotion resulting from the export incentives and prevailing input protection. An approsimation is possible as to which sectors are absolutely benefitted or discriminated by these measures. The nominal export incentives in fact serve as substitutes for exchange rate policy. The question is how appropriate are the nominal export incentives in overcoming exchange rate overvaluation. This question can be considered on an effective rate basis with the concept of net effective export promotion.

Similar to the adjustment made with the effective rate of protection for domestic market sales, the net effective rate of export promotion $(\sigma_E^=)$ can be written as

$$(8.3) \qquad \sigma_{Ej}^= = \frac{r}{r^*} (1 + \sigma_{Ej}) - 1$$

where, as before, r and r^* represent respectively the prevailing offical exchange rate and the shadow, or free trade equilibrium, exchange rate. As was the case with the g_j^- estimates, we have employed the Incer estimates of the shadow exchange rate premium, amounting to 18.8 percent.[15]

·Appendix Table 8.2 and Table 8.2 present estimates of the net effective rates of export promotion for 1980 and 1981. As observed, most of the estimated rates were negative in 1980 indicating that the export incentives existent during that year were of insufficient magnitude to overcome the estimated exchange rate overvaluation. The Primary Agricultural sector displays a considerable amount of discrimination, with an estimated net effective rate of -21.5 percent for 1980. The manufacturing average was -4.5 percent. In 1981, while agriculture continues to be discriminated against, it can be observed that the export incentives have more than overcome the exchange rate discrimination effect for most manufacturing industries. As demonstrated in Table 8.3, 54 sectors (22 percent of the total) possessed positive rates of net effective export promotion in 1981. The manufacturing average net effective rate was calculated to be 13.9 percent.

IV. THE STRUCTURE OF EXPORT INCENTIVES

Given the nature of interindustrial relations in Brazil, it can be hypothesized that the nominal export incentives and the effective rates of export promotion are positively correlated. Such a relationship was evident between implicit nominal domestic market protection and the effective rates of protection for domestic market

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[15] Incer (1981).

sales. As observed in Table 8.4, an analogous, but much weaker, relationship exists between the nominal and effective rates of export promotion. As computed over the 72 tradable goods sector cross-section, the Spearman rank correlation coefficient was .38, significant at the 5 percent level.

.A more interesting question concerns the relationship between the export incentives, both nominal and effective, on the one hand, and the various measures of domestic market protection, on the other. It is possible that the industrial interests and forces politically effective enough to obtain high domestic market protection levels are also effective in obtaining high rates of export incentives. If so, one would expect positive correlations between the domestic market protection measures and the export incentive estimates. Table 8.4 provides evidence supporting this general hypothesis. The Peasorn and Spearmen correlation coefficients between the nominal export subsidy rates and the various domestic market protection measures presented in Table 8.4 are all positive and significant, with the exception of that for 1979 realized tariffs. The highest correlation coefficients, as perhaps to be expected, are those for the implicit nominal protection rates. With the important exception of effective domestic market protection, the correlations between the effective rates of export promotion and the various measures of domestic market protection, while generally positive, are weaker. In the case of the two effective measures the Pearson and Spearman correlation coefficients are .45 and .39, respectively. This suggests similarities in the structure of domestic market protection and export promotion measures seen across sectors.

Table 8.4

CROSS-SECTION CORRELATIONS BETWEEN EXPORT INCENTIVES AND DOMESTIC

MARKET PROTECTION MEASURES, 72 TRADABLE GOODS SECTORS

	Nominal Export Subsidy Rate 1981		Effective Export Promotion Rate 1981		Anti-Export Bias 1981	
	Pearson	Spearman	Pearson	Spearman	Pearson	Spearman
Nominal Export Subsidy Rate, 1981	1.00	1.00	-	-	-	-
Effective Export Promotion Rate, 1981	.11	.38**	1.00	1.00	-	-
Anti-Export Bias Rate, 1981	-.02	.19**	.43	.04	1.00	1.00
Realized Tariff Rate, 1979	.06	.30**	-.01	.14	.03	.16*
Nominal Legal Tariff Rate, 1980	.32**	.34**	.03	.21**	-.13	-.09
Implicit Tariff Rate, 1980-81	.43**	.46**	-.02	.15*	.60**	.84**
Implicit Nominal Protection Rate, 1980-81	.46*	.51**	-.02	.14	.61**	.86**
Effective Rate of Domestic Market Protection, 1980-81	.21**	.32**	.45**	.39**	.87**	.88**

Notes:

    *   indicates significance at the 5 percent level.

    **   indicates significance at the 10 percent level.

Source: Author's computations.

In the case of nominal and effective domestic market protection, we have seen that there exists evidence that the structure of such protection favors human and physical capital and disfavors more labor intensive economic activities. If the domestic market protection and export promotion measures are themselves rather tighly positively correlated, one would expect to find a similar economic structure of the export promotion measures. As it turns out, however, this expectation is not fulfilled. The evidence on the structure of the nominal and effective export incentives is ambiguous. This evidence is summarized in Appendix Table A8.4 in the form of Pearson and Spearman correlations between the export incentives measures and various economic performance and structure variables. As observed, there is little consistence in signs or significance levels. There is no clear cut or rational economic structure for export promotion incentives across sectors. There is some evidence to suggest, however, a positive relationship between the export incentives and economic growth. Similarly, it appears that those industries with the most complete import substitution tend to receive the highest effective rates of export promotion incentives.

V. ANTI-EXPORT BIASES: THE BALANCE BETWEEN DOMESTIC MARKET AND EXPORT INCENTIVES

Up to this point we have considered domestic market protection and export incentives separately. In their effect on presumed resource allocation and economic performance there is of course a connection. The question is whether the constellation of economic policies favors production for the domestic market or for the external market. If policies favor the former, it can be said that

there exists an anti-export bias in the prevailing economic poli-
·cies.

Our effective rate measures of both domestic market sales and
export promotion provide rankings of the resource pulls into the
respective sectors resulting from policies either affecting the
domestic market or export remuneration. The net effect between the two depends
upon the magnitude of the two different effective rates. Accordingly,
we can define the anti-export bias (B_j) as the difference between
the effective rate of protection for domestic market sales and the
effective rate of export promotion, i.e. $B_j = g_j - \sigma_{Ej}$. The anti-
export bias represents a proportional increase in domestic value
added permissable as a result of producing for the domestic market
over that possible for export production. If $B_j > 0$, there exists
an anti-export bias in economic policy, while if $B_j < 0$ a pro-
export bias exists. In the case of $B_j = 0$ there is evident a
neutrality of economic policies between domestic market and export
activities. An approximation of this neutrality is normatively
desirable on resource allocational and efficiency grounds. This
question of the policy bias towards domestic market or export
activities is a question apart from the more generalized question
of the sectoral ranking according to either effective domestic
market protection or effective export promotion. For example, a
sector may be discriminated against by both domestic market pro-
tection measures and export policies, but the overall balance
of both these types of incentives (disincentives) may be ap-
proximately even. Brazilian agriculture, for instance, finds
itself in such a situation.

Appendix Table 8.3 and Table 8.5 present estimates of the anti-export biases apparent through the exercise of Brazilian economic policies. Looking first at the aggregate measures, in 1981 there was a slight pro-export bias in policies for the Primary Agricultural sector. For industry as a whole in 1981 the average anti-export bias was 11.5 percent. While considerable sectoral variance exists in the anti-export bias estimates, the reverse cascade effect, revealed in the effective domestic market protection estimates, remains. Very high anti-export biases are evident in the machinery and electrical equipment industries, resulting in the capital goods group possessing the highest average for the major manufacturing groupings. The weight of heavy domestic market protection is strong indeed, imposing high anti-export biases for many sectors. In other sectors, strong pro-export biases exist, in many instances deriving from negative domestic market effective protection.[16]

While the value added weighted means for the larger·manufacturing aggregates all display anti-export biases, the variances in the estimates over sectors is great. For this reason care must be taken in interpreting the means. Moreover, a great ·number of sectors display pro-export biases. Table 8.6 provides the frequency distributions of our anti-export bias estimates. In 1981 40 out of the 70 sectors measured had pro-export biases. At the same time 15 sectors were seen to possess anti-export biases of greater than 75 percent.

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[16] This is evidenced by the estimated Pearson and Spearman correlation coefficients between the two variables of .89 and .88, presented in Table 8.4. The effective export incentives, also positively correlated with the anti-export biases, are frequently simply not of sufficient magnitude to offset the high rates of effective domestic market protection.

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Table 8.5

ESTIMATED AND PROJECTED ANTI-EXPORT BIASES, 2 DIGIT LEVEL, 1980-83

Anti-Export Biases
(%)

Industry	Estimated 1980	Estimated 1981	Projected 1982	Projected June 1983
Mining	1.3	- 5.4	- 2.0	1.1
Non-Metallic Minerals	-31.0	-48.9	-38.4	-29.0
Metallurgy	8.4	-20.0	- 4.5	9.7
Machinery	81.9	56.9	71.5	84.9
Electrical Equipment	129.5	100.9	117.5	132.7
Transportation Equipment	-19.6	-45.6	-31.2	-17.9
Lumber & Wood Products	-16.7	-35.9	-25.3	-15.7
Furniture	32.6	- 0.3	19.2	36.9
Paper	-35.5	-58.4	-45.3	-33.4
Rubber	-27.4	-49.9	-38.5	-28.2
Leather	7.9	- 8.8	1.8	11.2
Chemicals	83.4	70.9	77.9	84.4
Pharmaceutical Products	114.1	93.8	104.8	114.9
Perfumary	68.2	34.5	52.1	68.3
Plastics	30.6	4.4	17.5	29.4
Textiles	25.3	0.0	16.9	31.9
Apparel	40.7	9.0	29.9	48.7
Food Products	2.6	- 2.8	2.3	6.6
Beverages	-19.2	-30.7	-22.1	-14.7
Tobacco	- 0.6	-10.3	- 2.8	3.7
Printing & Publishing	22.6	0.3	12.7	24.1
Miscellaneous	156.7	125.6	143.6	159.9
AVERAGES[1]				
Primary Agriculture[2]	- 1.2	- 4.8	- 2.6	- 0.8
Manufacturing	33.0	11.5	24.2	35.6
Capital Goods	63.4	37.0	52.1	66.0
Intermediate Goods	28.2	7.2	18.7	29.2
Consumer Goods	19.8	0.7	13.2	24.3

Notes: 1. Value added weights of 1979 are used for aggregating from the four digit to two digit level and for computing the more aggregated means.

2. Includes Forestry and Fishing, Agriculture, and Livestock and Poultry.

Source: Appendix Table A8.3.

Table 8.6

FREQUENCY DISTRIBUTION OF ESTIMATED AND PROJECTED

ANTI-EXPORT BIASES, 70 TRADABLE GOODS SECTORS[1],

1980 - 83

	Anti - Export Bias							
nge	1980		July 1981		Projected 1982		Projected 1983	
%)	Number of Sectors	(%)	Number of Sectors	(%)	Number of Sectors	(%)	Number of Sectors	(%)
< 0	34	5	40	57	34	49	32	46
- 25	9	13	10	14	14	20	11	16
- 50	8	11	5	7	3	4	6	9
- 75	5	7	4	6	8	11	7	10
- 100	3	4	3	4	1	1	3	4
> 100	11	16	8	11	10	14	11	16
OTAL[1]	70	100	70	100	70	100	70	100

Note: 1. Two sectors with very high protection and effective export promotion have been omitted. These sectors were estimated to possess negative value added in international prices.

Source: Appendix Table A8.4.

Despite the peaks in the anti-export bias rates, the overall structure of the anti-export biases displays neither any clear rationale nor any consistent pattern. This is evidenced in Appendix Table 8.4. The lack of a well defined economic structure in the anti-export biases must in great part be attributed to the fact that frequently the effective incentives for domestic and export market sales offset one another. Privileged individual sectors are often afforded high domestic market protection and export incentives, and vice versa.

One pattern suggested by the cross-section evidence, however, is that those sectors with the highest anti-export biases tend to be those with the highest ratios of imports to total available domestic supply.[17] Where the possibilities of continued import substitution are the greatest, the impact of economic policies is seen to be heavily in favor of forced import substitution. For those sectors the high effective rates of domestic market protection, as evidenced in Chapter 7, outweigh the effect of any export incentives.

The presence of anti-export biases in economic policies possesses implications for export performance. Those sectors with the heaviest anti-export biases are those for which exports should be expected to grow the least. Given the lack of an earlier benchmark estimate of effective anti-export biases, it has proved impossible here to measure the effect of such policy biases on

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[17] The Spearman rank correlation coefficient between sectoral anti-export biases and sectoral ratios of imports to total available domestic supply was calculated to be .33, significant at the 5 percent level. (Appendix Table A8.4).

observed export behavior across industries.[18] The recent changes
in Brazilian commercial policies prevent assumptions of stable
anti-export biases in recent years for any time series analysis of
exports. One can only conjecture what effect the recent changes
in anti-export biases will have on export performance. Yet the
theoretical basis for such conjecture is both straightforward and
sound. Comparing the 1980 estimates with those for 1981, it is
clear that the restoration of the fiscal subsidies did much to
reduce the observed levels of anti-export biases apparent in 1980.
Consequently, it can be expected that exports should respond
favorably, as distinct from any response resulting from the mana-
gement of exchange rate policy.

Since the export incentives are scheduled to change in 1982
and 1983, a useful exercise is to project the anti-export biases
into the future. If events are allowed to proceed as expected, what
will the level of anti-export biases be in 1982 and 1983? The
assumptions made in these projections are presented in Table 8.7.
For their part, the effective rates of domestic market protection
are assumed to remain unchanged from the estimated 1980-81 levels.
The fiscal export credit premium subsidy is reduced in accordance
with the prevailing legislation. It has been further assumed that
the credit subsidy mechanism remains as it is presently constituted
but inflation rates and therefore nominal market interest are assumed to
fall, signifying a reduction in the credit subsidy rates.

The results of the projection exercise are presented in
Appendix Table A8.3, Table 8.5, and Table 8.6. In relation to 1981
the anti-export biases in the prevailing constellation of economic
policies are expected to rise in 1982 and 1983, reaching by June
1983 levels exceeding those evident in 1980. The manufacturing

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[18] One cross-section study (Tyler, 1980), based upon nominal tariffs and nominal
export subsidies, found that changes in the nominal sectoral anti-export biases
between 1974 and 1978 partially explain sectoral differences in export perfor-
mance during the period.

Table 8.7

ASSUMPTIONS UNDERLYING·PROJECTIONS FOR EFFECTIVE EXPORT
PROMOTION RATES AND ANTI-EXPORT BIAS

	1981	1982	1983
ort Credit Subsidy Rate:			
arket Interest Rate	120%/yr.	85%/yr.	65%/yr.
ubsidized Nominal Effective Interest ate[1]	44%/yr.	44%/yr.	44%/yr.
ector Credit Allocation Rates	as determined by Resolution 674	same as in 1981	same as in 1981
ort Fiscal Subsidies and Export Taxes:			
xport Credit Premium[2]	15%	9%	3%
'thers Fiscal Measures Affecting xports[3]	same as in January 1980	same as in January 1980	same as in January 1980
ective Protection Rates for Domestic ket Sales	same as in 1980-81	same as in 1980-81	same as in 1980-81

es: 1. as specified by Resolution 674 and computed on an annual affective basis.

2. as stipulated by law, in the Ministry of Finance's Portaria nº 78 of April 1,1981.

3. does not include the specific export taxes of 1980, covering mostly agricultural products and imposed with the maxidevaluation of December 1979. These export taxes were eliminated on a product by product basis during 1980.

average anti-export bias in June 1983 is projected at 35.6 percent; for the second half of 1983 it is expected to be even higher. Those sectors receiving the highest present nominal export subsidies will be those most adversely affected. If this situation is allowed to come to pass, economic polcies will exercise a considerable hindrance on export activities and efforts. The government has in effect bought itself a breathing spell with the reintroduction of the fiscal export subsidies. This time could well be used to undertake some desirable, although painful, basic reforms in commercial policies.

NOMINAL EXPORT INCENTIVES, 72 TRADABLE GOODS SECTORS
1980 - 81

IBGE CODE	Industry	Export Credit Subsidy Rate, s$_{ECR}$ (%)		Export Fiscal Subsidy Rate, s$_{EF}$ (%)				Nominal Export Subsidy Rate, s$_E$ (%)		
		1980	1981	November 1979	1980	1981	Projected 1982	1980	1981	Projected 1982
0101	Forestry and Fishing	1.7	2.1	5.2	0.0	0.1	0.1	1.7	2.2	1.4
0201	Agriculture	1.6	2.2	-11.4	-11.4	-11.3	-11.3	- 9.8	-9.1	- 9.9
0301	Livestock and Poultry	2.8	6.6	- 1.5	- 1.5	5.8	2.9	1.3	12.4	7.1
0501	Mining	2.0	2.5	- 7.2	- 7.2	- 1.1	- 3.5	- 5.2	1.4	- 1.9
0502	Combustible Mineral Extraction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1001	Cement	5.8	6.9	12.0	0.0	0.0	0.0	5.8	6.9	4.4
1002	Glass Products	8.6	10.3	13.2	0.0	15.0	9.0	8.6	25.3	15.6
1003	Other Non-Metallic Mineral Products	8.3	11.2	12.8	0.0	15.0	9.0	8.3	26.2	16.2
1101	Pig-Iron, Iron Alloys & Primary Steel	5.1	6.1	17.5	0.0	12.1	7.3	5.1	18.2	11.2
1102	Iron & Steel Sheets	6.2	7.5	18.7	0.0	14.5	8.7	6.2	22.0	13.5
1103	Iron & Steel Castings	8.6	10.4	15.0	0.0	15.0	9.0	8.6	25.4	15.6
1104	Non-Ferrous Metals	1.0	1.2	10.6	0.0	8.2	4.9	1.0	9.4	5.7
1105	Miscellaneous Metal Products	9.0	10.1	20.1	0.0	15.0	9.0	9.0	25.1	15.5
1201	Pumps and Engines	8.6	10.4	19.0	0.0	15.0	9.0	8.6	25.4	15.6
1202	Machine Parts	9.6	10.9	18.4	0.0	15.0	9.0	9.6	25.9	16.0
1203	Industrial Equipment & Machinery	8.8	10.5	17.0	0.0	15.0	9.0	8.8	25.5	15.7
1204	Agricultural Equipment & Machinery	8.6	10.4	16.3	0.0	15.0	9.0	8.6	25.4	15.6
1205	Office & Domestic Use Equipment & Machinery	8.6	10.4	20.7	0.0	15.0	9.0	8.6	25.4	15.6
1206	Tractors	7.9	9.5	18.7	0.0	15.0	9.0	7.9	24.5	15.1
1301	Electric Energy Equipment	8.6	10.4	15.0	0.0	15.0	9.0	8.6	25.4	15.6
1302	Electric Wire & Cables	8.6	9.2	15.0	0.0	15.0	9.0	8.6	24.2	14.9
1303	Electric Equipment	8.9	10.7	16.0	0.0	15.0	9.0	8.9	25.7	15.9
1304	Electrical Machinery & Appliances	8.6	10.4	9.9	0.0	15.0	9.0	8.6	25.4	15.6
1305	Electronic Equipment	8.6	10.4	16.2	0.0	15.0	9.0	8.6	25.4	15.6
1306	Communications Equipment	8.6	10.5	19.5	0.0	15.0	9.0	8.6	25.5	15.7
1401	Automobiles	5.8	6.9	19.6	0.0	15.0	9.0	5.8	21.9	13.4
1402	Trucks and Buses	6.2	7.5	19.5	0.0	15.0	9.0	6.2	22.5	13.8
1403	Motors & Vehicle Parts	9.4	10.6	19.4	0.0	15.0	9.0	9.4	25.6	15.8
1404	Shipbuilding	8.6	10.4	17.9	0.0	15.0	9.0	8.6	25.4	15.6
1405	Railway Equipment & Other Vehicles	9.5	11.4	20.4	0.0	15.0	9.0	9.5	26.4	16.3
1501	Wood	4.4	5.8	12.3	0.0	8.6	5.2	4.4	14.4	8.9
1601	Furniture	9.4	11.2	21.0	0.0	15.0	9.0	9.4	26.2	16.2
1701	Wood Pulp	5.8	6.9	11.3	0.0	10.0	6.0	5.8	16.9	10.4
1702	Paper	6.6	7.9	20.0	0.0	15.0	9.0	6.6	22.9	14.1
1703	Paper & Paperboard Products	8.8	10.0	19.9	0.0	15.0	9.0	8.8	25.0	15.4
1801	Rubber	5.4	8.8	17.1	0.0	13.6	8.2	5.4	22.4	13.8
1901	Leather & Leather Products	9.2	11.5	4.4	0.0	11.3	6.8	9.2	22.8	14.1
2001	Chemical Elements & Compounds	5.6	6.8	7.3	0.0	14.1	8.5	5.6	20.9	12.8
2002	Alcohol	14.4	6.9	0.0	0.0	0.0	0.0	14.4	6.9	4.4
2003	Petroleum Refining	0.5	0.6	2.9	0.0	0.1	0.1	0.5	0.7	0.4
2004	Coke & Coal Derivatives	1.3	1.5	9.5	0.0	3.3	2.0	1.3	4.8	3.0
2005	Chemical Resins & Fibers	3.5	4.9	24.3	0.0	13.3	8.0	3.5	18.2	11.1
2006	Vegetable Oils & Oilseed Products	4.8	6.0	-10.3	-10.2	- 9.8	-10.0	- 5.4	- 3.8	- 6.1
2007	Pigments & Paints	5.8	6.9	15.1	0.0	15.0	9.0	5.8	21.9	13.4
2008	Miscellaneous Chemical Products	4.5	5.4	11.5	0.0	10.7	6.4	4.5	16.1	9.9
2101	Pharmaceutical Products	6.4	7.7	11.0	0.0	14.9	8.9	6.4	22.6	13.9
2201	Perfumary & Soaps	5.3	7.5	17.4	0.0	12.5	7.5	5.3	20.0	12.3
2301	Plastics	6.0	10.6	13.4	0.0	15.0	9.0	6.0	25.6	15.8
2401	Basic Textile Processing Products	2.5	3.4	18.6	0.0	2.7	1.6	2.5	6.1	3.8
2402	Synthetic Fiber Textile Products	12.7	13.8	30.1	0.0	15.0	9.0	12.7	28.8	17.9
2403	Natural Fiber Textile Products	10.9	11.5	25.4	0.0	14.2	8.5	10.9	25.7	15.9

Appendix Table A8.1

NOMINAL EXPORT INCENTIVES, 72 TRADABLE GOODS SECTORS

1980 - 81

IBGE Code	Industry	Export Credit Subsidy Rate, s_{ECR} (%)		Export Fiscal Subsidy Rates, s_{EF} (%)				Nominal Export Subsidy Rate, s_E (%)		
		1980	1981	November 1979	1980	1981	Projected 1982	1980	1981	Projected 1982
,04	Other Textile Products	11.6	12.9	28.2	0.0	14.4	8.6	11.6	27.3	16.9
501	Apparel	10.0	1,1.1	24.7	0.0	14.3	8.6	10.0	25.4	15.7
502	Footwear	14.4	13.8	9.0	0.0	15.0	9.0	14.4	28.8	17.9
501	Coffee Bean Products	0.0	0.0	-13.0	-13.0	-13.0	-13.0	-13.0	-13.0	-13.0
502	Processed Coffee Products	4.1	5.0	- 4.6	- 4.6	- 4.6	- 4.6	- 0.5	0.4	- 1.4
503	Processed Rice	0.0	0.0	-13.0	-13.0	-13.0	-13.0	-13.0	-13.0	-13.0
504	Wheat Flour	0.0	1.0	-12.9	-12.9	-12.9	-12.9	-12.9	-11.8	-12.2
505	Other Vegetable Products	5.1	5.8	13.8	0.0	2.3	1.4	5.1	8.1	5.1
506	Meat Products	3.9	4.0	8.8	0.0	1.0	0.6	3.9	5.0	3.2
507	Poultry Products	7.7	9.2	- 1.6	- 1.6	- 1.6	- 1.6	6.1	7.6	4.3
508	Prepared Fish Products	9.5	10.7	6.8	0.0	5.6	3.4	9.5	16.3	10.2
509	Dairy Products	1.2	1.4	6.9	0.0	0.0	0.0	1.2	1.4	0.9
510	Crude Sugar Products	4.6	5.5	0.8	0.0	0.0	0.0	4.6	5.5	3.5
511	Refined Sugar	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0
512	Bakery & Pastry Products	8.3	10.0	2.1	0.0	3.4	2.0	8.3	13.4	8.4
513	Edible Oils & Fats	4.2	5.0	- 3.5	- 3.5	- 3.5	- 3.5	0.7	1.5	- 0.3
514	Other Food Products	5.6	6.9	3.8	0.0	7.0	4.2	5.6	13.9	8.6
701	Beverages	7.7	9.0	12.8	0.0	6.4	3.8	7.7	15.4	9.6
801	Tobacco Products	7.5	7.3	- 5.7	- 5.7	1.8	- 1.2	1.8	9.1	3.5
901	Publishing and Printing	7.4	8.9	8.7	0.0	15.0	9.0	7.4	23.9	14.7
001	Miscellaneous Manufactured Products	8.4	10.2	16.8	0.0	14.8	8.9	8.4	25.0	15.4

Notes: 1. Includes the credit premium based upon the IPI and indirect taxes imposed on exports such as the ICM and IUM.

2. The specific export taxes for 1980, covering mainly agricultural products, are not included.

Sources: See text for the description of estimation procedures. The November 1979 fiscal subsidies for export were kindly furnished by Honório Kume from his on-going research. See his "Quantificação da Proteção Efetiva Após Pacote de Dezembro de 1979 e Simulações da Política Tarifária", Fundação Centro de Estudos de Comércio Exterior, unpublished paper, 1981.

NOMINAL EXPORT INCENTIVES, EFFECTIVE EXPORT PROMOTION RATES,
AND NET EFFECTIVE EXPORT PROMOTION RATE ESTIMATES,
72 TRADABLE GOODS SECTORS, 1980-81

IBGE Code	Industry	Nominal Export Subsidy Rate,s_E (%)		Effective Export Promotion Rate,o_E (%)			Net Effective Export Promotion Rate,u_E (%)	
		1980	1981	1980	1981	Projected 1982	1980	1981
101	Forestry and Fishing	1.7	2.2	2.2	2.7	1.9	-13.9	-13.5
201	Agriculture	- 9.8	- 9.1	-12.5	-11.7	-12.6	-36.3	-25.7
301	Livestock and Poultry	1.3	12.4	3.7	17.3	10.8	-12.7	- 1.3
501	Mining	- 5.2	1.4	- 6.1	1.2	- 2.5	-21.0	-14.8
502	Combustible Mineral Extraction	0.0	0.0	- 0.3	- 0.3	- 0.3	-16.1	-16.1
001	Cement	5.3	6.9	10.1	11.6	8.5	- 7.3	- 6.1
002	Glass Products	8.6	25.3	5.3	26.7	14.3	-11.4	6.7
003	Other Non-Metallic Mineral Products	8.3	26.2	12.9	34.7	22.5	- 4.9	13.4
101	Pig-Iron,Iron Alloys & Primary Steel	5.1	18.2	47.0	79.8	62.2	23.7	51.3
102	Iron & Steel Sheets	6.2	22.0	23.3	54.7	37.8	3.8	30.3
103	Iron & Steel Castings	8.6	25.4	27.8	58.4	40.6	7.6	33.3
104	Non-Ferrous Metals	1.0	9.4	5.9	17.7	12.5	-10.9	- 0.9
105	Miscellaneous Metal Products	9.0	25.1	18.4	46.8	29.8	- 0.3	23.6
201	Pumps and Engines	8.6	25.4	5.8	32.7	17.1	-10.9	11.7
202	Machine Parts	9.6	25.9	14.9	46.1	27.2	- 3.3	22.9
1203	Industrial Equipment & Machinery	8.8	25.5	9.8	33.4	19.6	- 7.6	12.3
1204	Agricultural Equipment & Machinery	8.6	25.4	11.6	35.4	21.6	- 6.1	13.9
1205	Office & Domestic Use Equipment&Machinery	8.6	25.4	4.4	27.5	14.1	-12.1	7.3
1206	Tractors	7.9	24.5	19.1	43.1	29.5	0.3	20.5
1301	Electric Energy Equipment	8.6	25.4	10.4	33.1	19.9	- 7.1	12.0
1302	Electric Wire & Cables	8.6	24.2	13.2	34.3	21.7	- 4.7	13.0
1303	Electric Equipment	8.9	25.7	10.9	40.5	23.2	- 6.6	18.3
1304	Electrical Machinery & Appliances	8.6	25.4	9.1	37.8	21.1	- 8.2	16.0
1305	Electronic Equipment	8.6	25.4	1.4	27.9	12.5	-14.6	7.6
1306	Communications Equipment	8.6	25.5	-19.4	13.2	- 5.7	-32.2	- 4.7
1401	Automobiles	5.8	21.9	13.1	41.2	26.4	- 4.8	18.8
1402	Trucks and Buses	6.2	22.5	17.1	44.2	29.7	- 1.4	21.3
1403	Motors & Vehicle Parts	9.4	25.6	15.4	38.7	24.7	- 2.8	16.8
1404	Shipbuilding	8.6	25.4	5.7	30.0	15.8	-11.1	9.4
1405	Railway Equipment & Other Vehicles	9.5	26.4	13.4	37.0	22.9	- 4.5	15.3
1501	Wood	4.4	14.4	34.4	53.6	43.0	13.1	29.3
1601	Furniture	9.4	26.2	20.1	52.9	33.4	1.1	28.7
1701	Wood Pulp	5.8	16.9	17.7	34.0	24.5	- 0.9	12.8
1702	Paper	6.6	22.9	20.0	44.6	31.2	1.0	21.7
1703	Paper & Paperboard Products	8.8	25.0	15.1	38.4	24.6	- 3.1	16.5
1801	Rubber	5.4	22.4	6.0	28.3	17.2	-10.7	8.2
1901	Leather & Leather Products	9.2	22.8	5.9	22.7	12.1	-10.8	3.3
2001	Chemical Elements & Compounds	5.6	20.9	7.0	33.6	19.5	- 9.9	12.4
2002	Alcohol	14.4	6.9	188.5	157.7	147.5	142.8	116.9
2003	Petroleum Refining	0.5	0.7	1.7	2.0	1.7	-14.4	-14.1
2004	Coke & Coal Derivatives	1.3	4.8	5.5	9.8	7.5	-11.2	- 7.6
2005	Chemical Resins & Fibers	3.5	18.2	- 4.6	19.5	7.9	-19.7	0.6
2006	Vegetable Oils & Oilseed Products	- 5.4	- 3.8	- 1.5	0.7	- 2.4	-17.1	-15.2
2007	Pigments & Paints	5.8	21.9	0.9	27.1	13.4	-15.0	7.0
2008	Miscellaneous Chemical Products	4.5	16.1	0.6	18.8	9.1	-15.3	0.0
2101	Pharmaceutical Products	6.4	22.6	2.2	22.5	11.5	- 4.0	3.1

NOMINAL EXPORT INCENTIVES, EFFECTIVE EXPORT PROMOTION RATES,
AND NET EFFECTIVE EXPORT PROMOTION RATE ESTIMATES,
72 TRADABLE GOODS SECTORS, 1980-81

IBGE Code	Industry	Nominal Export Subsidy Rate, s_E (%)		Effective Export Promotion Rate, σ_E (%)			Net Effective Export Promotion Rate, σ_E' (%)	
		1980	1981	1980	1981	Projected 1982	1980	1981
2201	Perfumary & Soaps	5.3	20.0	23.3	57.0	39.4	3.8	32.2
2301	Plastics	6.0	25.6	- 2.3	23.9	10.8	-17.8	4.3
2401	Basic Textile Processing Products	2.5	6.1	27.5	35.7	30.4	7.3	14.2
2402	Synthetic Fiber Textile Products	12.7	28.8	2.9	28.4	11.1	-13.4	8.0
2403	Natural Fiber Textile Products	10.9	25.7	17.0	47.4	27.2	- 1.5	24.1
2404	Other Textile Products	11.6	27.3	6.5	30.4	14.6	-10.3	9.8
2501	Apparel	10.0	25.4	0.4	33.2	12.5	-15.5	12.1
2502	Footwear	14.4	28.8	21.6	50.1	28.4	2.3	26.3
2601	Coffee Bean Products	-13.0	-13.0	- 9.3	- 9.3	- 9.3	-23.6	-23.6
2602	Processed Coffee Products	- 0.5	0.4	v.h.	v.h.	v.h.	v.h.	v.h.
2603	Processed Rice	-13.0	-13.0	-10.5	-10.5	-10.5	-24.6	-24.6
2604	Wheat Flour	-12.9	-11.8	-25.4	-23.7	-24.3	-37.2	-35.8
2605	Other Vegetable Products	5.1	8.1	39.4	46.8	39.4	17.3	23.6
2606	Meat Products	3.9	5.0	23.2	25.3	21.9	3.7	5.5
2607	Poultry Products	6.1	7.6	54.9	59.0	50.1	30.3	33.8
2608	Prepared Fish Products	9.5	16.3	134.0	163.1	137.1	96.9	121.4
2609	Dairy Products	1.2	1.4	31.0	31.8	30.1	10.3	11.0
2610	Crude Sugar Products	4.6	5.5	12.5	13.9	11.0	- 5.3	- 4.2
2611	Refined Sugar	0.0	0.0	28.2	28.2	28.2	7.9	7.9
2612	Bakery & Pastry Products	8.3	13.4	30.8	39.1	31.0	10.1	17.1
2613	Edible Oils & Fats	0.7	1.5	v.h.	v.h.	v.h.	v.h.	v.h.
2614	Other Food Products	5.6	13.9	16.3	28.7	20.8	- 2.1	8.4
2701	Beverages	7.7	15.4	18.1	29.6	21.0	- 0.6	9.1
2801	Tobacco Products	1.8	9.1	6.4	16.0	8.6	-10.4	- 2.4
2901	Publishing and Printing	7.4	23.9	9.4	31.6	19.2	- 7.9	10.8
3001	Miscellaneous Manufactured Products	8.4	25.0	15.0	46.2	28.2	- 3.2	23.1

Note : The two sectors possessing negative value added in international prices are indicated as having very high (v.h.)
effective rates.

Source: Author's estimates. See text for the description of the estimating procedures.

* Appendix Table A8.3

ESTIMATED AND PROJECTED ANTI-EXPORT BIASES,

72 TRADABLE GOODS SECTORS, 1980-83

IBGE Code	Industry	Anti-Export Bias[1] (%)			
		Estimated 1980	Estimated 1981	Projected 1982	Projected June 1983
0101	Forestry and Fishing	-41.1	-41.6	-40-8	-40.1
0201	Agriculture	11.4	10.6	11.6	12.3
0301	Livestock and Poultry	-11.7	25.3	-18.8	-13.0
0501	Mining	1.5	- 5.9	- 2.2	1.3
0502	Combustible Mineral Extraction	- 0.4	- 0.4	- 0.4	- 0.4
1001	Cement	-39.3	-40.7	-37.6	-35.3
1002	Glass Products	21.8	0.4	12.8	24.1
1003	Other Non-Metallic Mineral Products	-38.9	-60.7	-48.5	-37.5
1101	Pig-Iron, Iron Alloys & Primary Steel	-14.1	-46.8	-29.2	-13.0
1102	Iron & Steel Sheets	- 1.4	-32.9	-15.9	- 0.3
1103	Iron & Steel Castings	78.0	47.5	65.2	81.4
1104	Non-Ferrous Metals	- 6.5	-18.2	-13.0	- 8.0
1105	Miscellaneous Metal Products	32.1	3.7	20.7	36.2
1201	Pumps and Engines	67.3	40.5	56.1	70.2
1202	Machine Parts	244.8	213.7	232.6	249.7
1203	Industrial Equipment & Machinery	81.8	58.2	72.0	84.5
1204	Agricultural Equipment & Machinery	- 5.0	-28.2	-15.0	- 2.4
1205	Office & Domestic Use Equipment & Machinery	- 7.1	-30.2	-16.8	- 4.6
1206	Tractors	-59.1	-83.1	-69.5	-57.1
1301	Electric Energy Equipment	21.8	- 0.9	12.3	24.3
1302	Electric Wire & Cables	49.5	28.4	41.0	52.5
1303	Electric Equipment	146.1	116.5	133.9	149.6
1304	Electrical Machinery & Appliances	110.7	82.0	98.7	113.8
1305	Electronic Equipment	227.9	201.4	216.8	230.8
1306	Communications Equipment	167.1	134.4	153.3	170.5
1401	Automobiles	-36.6	-64.7	-49.9	-36.2
1402	Trucks and Buses	-75.8	-102.8	-88.4	-75.0
1403	Motors & Vehicle Parts	-26.4	-49.7	-35.7	-22.9
1404	Shipbuilding	65.6	41.3	55.4	68.2
1405	Railway Equipment & Other Vehicles	15.2	- 8.3	5.7	18.4
1501	Wood	-16.7	-35.9	-25.3	-15.7
1601	Furniture	32.6	- 0.3	19.2	36.9
1701	Wood Pulp	-51.8	-68.12	-58.7	-50.1
1702	Paper	- 9.3	-33.9	-20.6	- 8.3
1703	Paper & Paperboard Products	-49.4	-72.8	-58.9	-46.3
1801	Rubber	-27.4	-49.9	-38.5	-28.2
1901	Leather & Leather Products	7.9	- 8.8	1.8	11.2
2001	Chemical Elements & Compounds	121.0	94.4	108.5	121.6
2002	Alcohol	-39.9	- 9.1	1.1	8.8
2003	Petroleum Refining	62.7	62.4	62.7	63.0
2004	Coke & Coal Derivatives	-48.5	-52.8	-50.5	-48.5
2005	Chemical Resins & Fibers	141.7	117.6	129.2	140.0
2006	Vegetable Oils & Oilseed Products	-49.0	-51.2	-48.2	-45.8
2007	Pigments & Paints	82.6	56.4	70.1	82.9
2008	Miscellaneous Chemical Products	138.6	120.4	130.2	139.2
2101	Pharmaceutical Products	114.1	93.8	104.8	114.9
2201	Perfumary & Soaps	68.2	34.5	52.1	68.3
2301	Plastics	30.6	4.4	17.5	29.4
2401	Basic Textile Processing Products	- 6.3	-14.5	- 9.2	- 4.6
2402	Synthetic Fiber Textile Products	13.5	-12.0	5.3	20.7

Appendix Table A8.3

ESTIMATED AND PROJECTED ANTI-EXPORT BIASES,

72 TRADABLE GOODS SECTORS, 1980-83

IBGE Code	Industry	Anti-Export Bias [1] (%)			
		Estimated 1980	Estimated 1981	Projected 1982	Projected June 1983
2403	Natural Fiber Textile Products	35.0	4.6	24.8	43.0
2404	Other Textile Products	31.7	7.8	23.6	37.7
2501	Apparel	41.4	8.5	29.2	47.8
2502	Footwear	38.8	10.2	31.9	51.2
2601	Coffee Bean Products	-29.1	-29.1	-29.1	-29.1
2602	Processed Coffee Products	414.4	4.8.5	409.7	403.1
2603	Processed Rice	-11.9	-11.9	-11.9	-11.9
2604	Wheat Flour	-170.0	-18.6	-18.0	-17.6
2605	Other Vegetable Products	61.0	53.5	61.0	67.2
2606	Meat Products	14.5	12.3	15.8	18.6
2607	Poultry Products	-32.0	-36.1	-27.3	-20.5
2608	Prepared Fish Products	-29.5	-58.6	-32.6	-10.5
2609	Dairy Products	247.7	246.8	248.6	249.9
2610	Crude Sugar Products	-75.2	-76.6	-73.7	-71.5
2611	Refined Sugar	-110.3	-110.3	-110.3	-110.3
2612	Bakery & Pastry Products	-84.6	-92.9	-84.8	-78.1
2613	Edible Oils & Fats	350.6	353.1	347.7	343.7
2614	Other Food Products	-37.7	-50.1	-42.2	-35.2
2701	Beverages	-19.2	-30.7	-22.1	-14.7
2801	Tobacco Products	- 0.6	-10.3	- 2.8	3.7
2901	Publishing and Printing	22.6	0.3	12.7	24.1
3001	Miscellaneous Manufactured Products	156.7	125.6	143.6	159.9

Note 1. Defined as the effective rate of domestic market protection minus the effective rate of export promotion, i.e., $B_j = g_j - \sigma_{Ej}$.

Sources: Author's estimates as described in text.

Appendix Table A8.4

CROSS-SECTION CORRELATIONS BETWEEN EXPORT INCENTIVE MEASURES AND ECONOMIC STRUCTURE AND PERFORMANCE VARIABLES, 72 TRADABLE GOODS SECTORS

	Nominal Export Subsides Rate, 1981		Effective Export Promotion Rate, 1981		Anti-Export Bias, 1981	
	Pearson	Spearman	Pearson	Spearman	Pearson	Spearman
Export to Output Ratio, i.e., E/X, 1979	-.27**[3]	.04	-.04	.14	-.04	-.06
Imports to Total Available Domestic Supply Ratio, i.e., M/Z, 1979	-.04	.13	-.17*[4]	-.27**	.14	.33**
Value Added Growth Rate:						
1970-74	.40**	.39*	-.03	.18*	.01	.12
1974-79	-.08	-.07	.29**	.04	.07	.04
1970-79	.27**	.23**	.14	.22**	-.03	.10
Value Added to Labor Ratio, i.e., V/L[1]	-.25**	-.30**	-.10	-.24**	.13	.15
Average Wages, i.e., W/L[1]	.17*	.23**	-.12	-.05	.10	.19*
Direct Labor Inputs per Output Ratio, i.e., L/X[1]	-.21**	.49**	-.18*	.15*	-.07	.05
Direct and Indirect Labor Inputs per Output Ratio, i.e., L*/X[1]	-.74**	-.46**	.16*	.11	.18*	-.16*
Profits per Output Ratio, i.e., π/X[1,2]	.13	.24**	-.20**	-.20**	.06	.30**
Wage Costs per Value Added Ratio, i.e., W/V[1]	.66**	.69**	.01	.31**	-.08	.01

NOTES:

1. Variables were calculated from information in the 1970 IBGE input-output accounts.
2. Profits were calculated as a gross residual, including all returns to capital.
3. ** indicates significance at the 5 percent level.
4. * indicates significance at the 10 percent level.

Source: Author's computations.

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. Chapter 5

MAJOR .CONCLUSIONS AND POLICY IMPLICATIONS

I. MAJOR CONCLUSIONS.

In terms of the total array of commercial policy instruments
Brazil must be regarded as one of the world's most protectionist
countries. The magnitude and coverage of the various import re-
strictions is substantial. As we have seen, the average tariff
rate for manufacturing as a whole approximates of 100 percent,
a level which is exceptionally high relative to other countries.
Further import protection is provided by a comprehensive system
of non-tariff barriers. Few of Brazil's 72 tradable goods sec-
tors escape some sort of direct non-tariff barrier, encompas-
sing outright prohibitions, suspensions, quotas,reference prices,
and special authorizations. The overall system of import regu-
lations is complex, obtuse, and in clear violation of interna-
tionally accepted GATT norms.

In addition to the direct import restrictions, there also exists
an elaborate system of production incentives. This .system involves
both measures which operate through the price system, such as the
various fiscal and financial incentive programs, and those which
entail direct controls, such as government purchasing policies,
de facto industrial licensing, and market reserve programs. On
the export side, market intervention is also widespread with the
coexistence of selective direct controls, some de facto export
taxes, and export subsidies. In sum, the prevailing trade regime
constituted by the diverse commercial and industrial policies
is highly repressive and distortionary.

industrial policies is highly repressive and distortionary.

The examination of the different policy instruments separately inexorably leads one to the conclusion that the allocative costs of the trade regime must be substantial. Government intervention in the goods markets implies divergences between international and domestic prices, which in turn entail static welfare costs. The conclusion of considerable allocational costs imposed by the trade regime, however, must be tempered by the fact that economic policies frequently work at cross purposes and in doing so possess at least partially offsetting effects. Our study has focused on the net effects of the constellation of economic policies. The use of the implicit tariff computations, based upon actual price comparisons for a wide variety of products, has permitted us to measure realized divergences between international and domestic price comparisons. In general, the social welfare costs of the prevailing trade regime, while significant, are far less than one would surmize from an examination of the very restrictive policies themselves.

The price comparisons conducted as a part of the study have revealed that widespread tariff redundancy exists. Such redundancy was especially evident in the consumer goods industries. If in earlier years redundancy was either nonexistent or of lesser magnitude, our analysis indicates that important changes in relative prices have occurred. The development of tariff redundancy can be at least partially explained in terms of technological progress, economies of scale, learning effects, and favorable externalities in industry environments which present some semblance of competitive market conditions. The prevalence of such redundancy

implies that the current system of tariff and non-tariff import re-
strictions is outmoded. For many products substantial liberalization
of import restrictions could take place without affecting imports.

In addition to demonstrating widespread tariff redundancy,
the price comparisons have presented evidence of export compe-
titiveness. Even at the presently overvalued exchange rate, it
is clear that many lines of Brazilian tradable goods are inter-
nationally competitive. The rapid and continuing growth of manu-
factured exports observed since the early sixties provides sup-
porting evidence attesting to major changes in relative prices
and the growth of competitiveness of Brazilian manufacturing.

In view of the development of tariff redundancy and the
emergence and growth of Brazilian industrial exports, one can
venture some observations as to the changing costs of the forced
import substitution policies pursued in the post-war period.
As has been noted elsewhere (Tyler, 1976) and suggested in this
study, relative prices for manufacturing have fallen. While the
social welfare costs of the import substitution policies may
at one point been great, it is a mistake to analyze these costs
in a strictly static sense. The maturation and growth in com-
petitiveness in many Brazilian manufacturing industries suggest
that the welfare costs associated with commercial policies have
been reduced with time. In many instances these costs have proved
temporary. The national automobile industry is now international-
ly competitive, but it is doubtful whether the industry would
have developed as it has without government protection. Infant
industries, or at least some of them, do in fact grow up. The
trick of course is picking the right ones. Forced import subs-
titution, while assocaited in Brazil with high costs and un-

desirable socio-economic effects, can, if appropriately pursued, generate eventual dividends.

The repressive nature of Brazilian trade policies, at least on the import side, has signified the emergence of a distinct group of products which can be regarded as pseudo-nontradables. While ostensibly tradable goods, redundant tariffs and ample non-tariff barriers have reduced these goods to a nontraded status. Virtually no imports of these products are effected. In Brazil many intermediate and consumer goods fall into this category. Economic theory demonstrates that international prices, in conjunction with domestic trade policy distortions, determine the domestic prices for tradable products. In other words, international and domestic prices are linked. Commercial policies exercised as in Brazil, however, with widespread tariff redundancy and frequent export restrictions, serve to sever the link between international and domestic prices. For those products subjected to such policies, domestic market conditions, as is the case with other nontradables, determine the domestic price levels. What happens in international markets is of no consequence in the formation of these domestic prices..

The professional literature in recent years has witnessed a growth in Mundell type two sector models consisting of tradable goods and nontradable goods sectors. In cases where commercial policies of the type observed in this study are prevalent, the distinction between tradables and nontradables becomes problematic. The existence of pseudo-nontradables goods, which we have observed, undermines the relevance of the tradable-nontradable goods models. Indeed, with the ability to economically flip-flop back and forth between tradables and nontradables, depending upon economic policies, pseudo-nontradable goods

pose problems and present interesting possibilities for the de-
velopment of economic theory.

In our analysis of the levels of protection for domestic
market sales, we have computed an average effective rate of
protection for manufacturing as a whole of 45 percent. In gen-
eral a reverse cascade in the protection system is observed.
The highest average effective protection for domestic market
sales was evident for capital goods, followed by intermediate
goods and finally consumer goods. The policies of providing
production subsidies for input producing industries have kept
costs, and our measured protection, down in the industries
using those inputs.

In comparison with the estimates for other countries, es-
pecially other Third World countries, the Brazilian averages
appear quite modest. In fact, as indicated above, the overall
welfare costs of the trade regime appear low in relation to
what they could be. Yet, the comparisons between the Brazilian
averages and those of other countries are misleading for reasons
beyond the obvious dissimilarities in computational procedures.
Moreover, the tempting conclusion that the Brazilian protection
system is not somehow overly restrictive is unwarranted. The
means for protection are rendered misleading because of the
high degree of variance over the sectoral protection rates. Al-
location efficiency in the economy would be increased if such
variance were reduced.

As is evident from our estimates of domestic market protection,
such protection, either expressed in nominal or effective terms,
can be very high. Even on the most liberally interpreted dyna-

mic efficiency grounds it is impossible to justify rates of effective protection in excess of, say, 50 percent. Yet, 25 out of 70 sectors demonstrated such rates. On the other hand, our analysis has also demonstrated negative effective rates of domestic market protection, even at the prevailing overvalued exchange rates, for a large number of sectors. These sectors are absolutely discriminated against in the domestic market by the existing economic policies.

Evidence has been presented indicating that the actual domestic market protection system is geared toward continuing import substitution. Rather than being random, the system does possess an underlying logic or consistency. Moreover, the structure of protection favors physical and human capital. Expressed in another way, economic activities intensively using Brazil's abundant economic factor — unskilled labor — are seen to be discriminated against by the protection system. In view of the country's pressing socio-economic problems, it appears desirable that greater attention should be given to the employment and distributional dimensions of domestic market protection. Trimming both ends of the effective protection continuum would have a favorable impact on employment and poverty.

Our efforts to quantify the nominal export incentives resulted in averages for the manufacturing sector as a whole in 1981 of 8.1 percent for the production financing credit incentives and 11.1 percent for the fiscal incentives. These are best considered as upper bound estimates and are not inconsistent with the governments' international committments under the GATT subsidy code. Analyzed on a value added basis, the average rate of effective export promotion for manufacturing in 1981 was estimated to be 34.9 percent. As was the case with domestic market effective

protection, the estimated sectoral effective export promotion
rates display great variance around the means. Positive cor-
relations were revealed between domestic market protection and
the export incentives. Despite these apparent similarities in
structure, the export incentives were not seen to possess a
structure favoring Brazil's presumed scarce factors of produc-
tion — physical and human capital. In fact, unlike the case
with domestic market protection, there is evidenced no clear
relationship between factor intensities and the export incen-
tives.

The reinstitution of a measure comparable to the previous
IPI credit premium has served to offset the increased overval-
uation in the exchange rate imposed in 1980 with the pre-fixa-
tion of the nominal currency depreciation. Also, in increasing the
nominal and effective export incentives, it has had an effect
on the balance between incentives to produce for the domestic
market and those to produce for the export market. In 1980 the
tilt of economic policies, as expressed in our measure of the
anti-export (or pro-export) bias was on the average in favor of
domestic market production and sales. The estimated anti-export
bias for manufacturing as a whole was 33.0 percent in 1980.
By 1981, because in the increase in the export incentives, the
comparable figure had fallen to 11.5 percent, with many sectors
displaying pro-export biases. Exports can be expected to respond
to the export incentives and the concommitant reduction in anti-
export biases. With the scheduled reduction of the nominal ex-
port incentives, however, sectoral anti-export biases are pro-
jected to increase again in 1982 and 1983, presenting retarding
effects on export growth.

In view of the trade restrictive nature of Brazilian economic policies a question must be posed. Why does a country like Brazil deny itself the benefits of greater international trade? Unfortunately, no easy answers are apparent, but some possible explanations are apparent from the country's economic and intellectual history. The inward orientation with import substitution type growth over the past 50 years has proved to be a successful formula for fostering industrialization and economic growth. The argument that growth might have been even faster, with fewer socioeconomic problems, under alternative policies is a counterfactual and academic one bound to fall on deaf ears. It is hard to argue with success. Moreover, unless policymakers can be convinced that in fact Brazil's economic circumstances are substantially different in the 1980's than they have been previously, there will be reluctance to depart from what has proved to be a successful formula for sustained economic growth in the past.

· A second possible explanation for Brazil's not taking greater advantage of international trading opportunities deals with possible ignorance as to either the effects of the prevailing commercial policies or the benefits of a greater economic participation in world markets. While the self-denial of the benefits of trade is not as great as would appear from an examination of individual trade policy instruments, we have seen that the costs of the existing trade regime are in fact considerable.

Finally, a more fundamental conjecture concerning reasons for Brazilian international economic self-denial deals with the country's intellectual history. In the nineteenth century the emulation of things European left a profound mark on the country's intellectual elite in the form of a sense and feeling of

national inferiority, economically as well as culturally. Such
attitudes are no longer consistent with the economic facts of
Brazilian industrialization and national growth. The modern
day equivalents of the 19th century attitudes are expressed,
among other ways, in the form of excessive fears of the "in-
ternationalization" of the economy. The fact is that Brazil's
economic circumstances have changed markedly over the past
50 years, and the country is presently in a position to compete
in international marketplaces in a wide range of products and
to reap the benefits of a fuller economic participation in the
international community of nations.

II. POLICY IMPLICATIONS

In general terms the policy implications of the study are
to take greater advantage of international trading opportunities.
We believe that a greater opening up of the economy would re-
sult in a more efficient allocation of resources, higher rates
of economic growth, greater labor absorption into productive
activities, and a concommitant reduction in poverty and eventual
improvement in the distribution of income. On a more specific
level, directly reflecting the results of the study, a number
of policy implications are apparent. These implications are
presented and discussed as the cautiously offered recommenda-
tions listed below. These measures can be regarded as constitu-
ting a timid, though not painless, first step towards a more
liberalized trade regime.

A. Reduce the dispersion in domestic market protection.

In order to improve allocational efficiency, the rates of
domestic market protection should be trimmed at both ends of
continuum of nominal and effective protection. Protection for

those sectors with either very high or very low effective protection should be either decreased or increased. The peaks in the protection system should be cut.

B. Reduce the very high levels of effective protection.

As a first step in cutting the peaks, nominal protection for those sectors displaying levels of effective protection in excess of 75 percent should be reduced. This can be accomplished by reducing the direct production subsidies for those sectors and by loosening up on the nontariff import barriers protecting those sectors. Despite very high tariffs and widespread tariff redundancy, there still are some sectors for which the implicit tariffs exceed the legal tariffs. The beneficial effects of import competition for those sectors could be brought about by a relaxing, or better still, a dismantling, of the nontariff barriers protecting them.

As a whole the capital goods producing industries are seen to frequently receive very high effective protection. In these instances, this protection can only be considered as excessive. Until the mid-1970's this sector, to be sure, received relatively low protection and in fact was frequently discriminated against by economic policies. Yet, capital goods production grew and flourished. Why these industries now "require" and receive heavy domestic market protection is unclear in terms of any consistent economic rationale.

C. Eliminate negative rates of effective protection for domestic market sales.

As a part of cutting the peaks and reducing the dispersion in domestic market protection rates, the overt discrimination

against those sectors with negative effective protection should
be removed. This can be accomplished by (1) easing domestic
price controls for the products in question, (2) dismantling
restrictive export controls, and (3) removing de facto export
taxes for products other than coffee. With respect to agri-
culture, additional gains in allocational efficiency could be
achieved by substituting improved price incentives for the
prevailing, and distortionary, system of direct production
subsidies operating through the credit system.

D. Initiate liberalizing reform in the system of tariffs
and non-tariff barriers.

As has been demonstrated, the tariff system is outmoded and
anachronistic. The presence of widespread redundancy in tariff
levels would allow considerable tariff reductions without ac-
tually affecting imports. Such possibilities should be ex-
ploited by the government in international bargaining with
trading partners in order to obtain advantages for the placing
of Brazilian products abroad. Similar costless negociating
advantages are possible with the reduction of non-tariff bar-
riers. In the case when the reduction of import restrictions
does actually lead to increased imports, such a result should not
be considered as undesirable. Increased imports are to be ex-
pected in any program seeking to alter the trade regime so as
to expand exports. A logical first step in a tariff reform,
consistent with that suggested for actual effective protection,
would be to cut the peaks. Initially, all tariffs over 100
percent could be reduced to 100 percent.

E. Increase the transparency in the system of import restrictions.

The prevailing system of non-tariff barriers should be drastically simplified and rendered more transparent with a view towards its eventual elimination. The CACEX system of "import programs" is especially onerous and deserving of abolition. To the extent that protection is deemed socially desirable production subsidies and the tariff system can be used to supply the desired protection. The reform of the tariff system can be used to restore its role as an instrument of industrial policy.

F. Reduce the discretionary basis for providing incentives.

Providing greater automaticity in the way in which production subsidies, especially fiscal incentives, are awarded would increase allocational efficiency and reduce the scope for possible abuse. The discretionary element in government policy is particularly high for the capital goods producing industries. There can be no economic justification for varying incentives on a case by case or firm by firm basis for a specific economic activity. Such governmental discretion, however well meaning, should be curtailed.

G. Encourage competition and promote technological progress.

In addition to greater economic openness and reliance on market forces, other measures to foster competition and technical progress would bring benefits to the economy. Income tax measures can be envisaged which provide greater incentives for research and development. Also, existing market reserve programs should be reexamined in view of any effects they may have on market structure, competition, and technological progress.

H. Reduce anti-export biases in economic policies.

In keeping with the need to reduce the peaks in domestic market protection, the government should concern itself about existing and future anti-export biases. Besides reducing the protection for domestic market sales, measures should be taken to reduce the discrimination against those sectors possessing negative rates of effective export promotion.

I. Undertake measures to institute a free trade regime for export production.

Exports should not be penalized by existing commercial policies. Export producers should have total and free access to inputs on the international market. To provide such access the government should study the possibilities of (1) an expanded, simplified, and streamlined version of BEFIEX for export production, (2) a liberalized drawback system, and (3) the establishment of one or more export processing zones, located most preferably in the Northeast.

J. Undertake a study of the options and effects under trade regime reform.

Special attention should be provided to the sequencing of policy changes and the interactions of different policy instruments.

III. POSSIBLE DIRECTIONS FOR FUTURE RESEARCH

Once there is consensus on the desire to have a more complete understanding of the net effects of different economic policy instruments on resource allocation, there are several implica-

tions for future research along lines similar to those advanced
in this study. In general,efforts could be made to improve upon
and and extend our analysis. First, a greater degree of disag-
gregation is desirable and evidently possible. Second, the
technical coefficients used in our estimates of effective do-
mestic market protection and effective export promotion should
be up-dated, possibly with information from the 1980 economic
census. Third, a larger and better product sample should be
used for undertaking the implicit tariff estimations. For
primary products subject to either seasonal price changes or
sizable price fluctuations in international markets the compu-
tation of average implicit tariffs over time would appear
desirable. Fourth, efforts should be made to improve upon
our estimates of direct production subsidies across sectors.

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